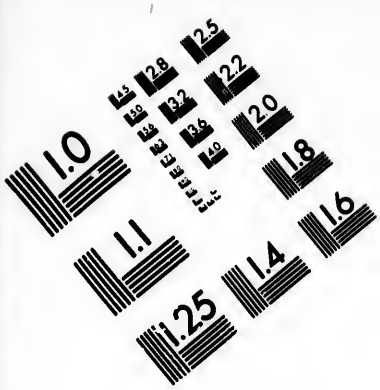

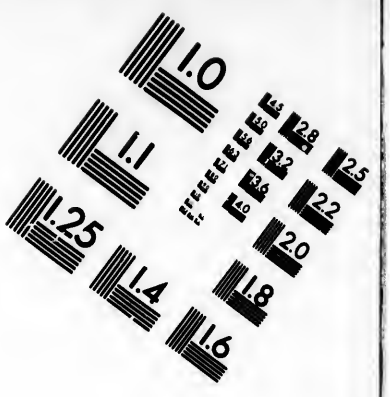

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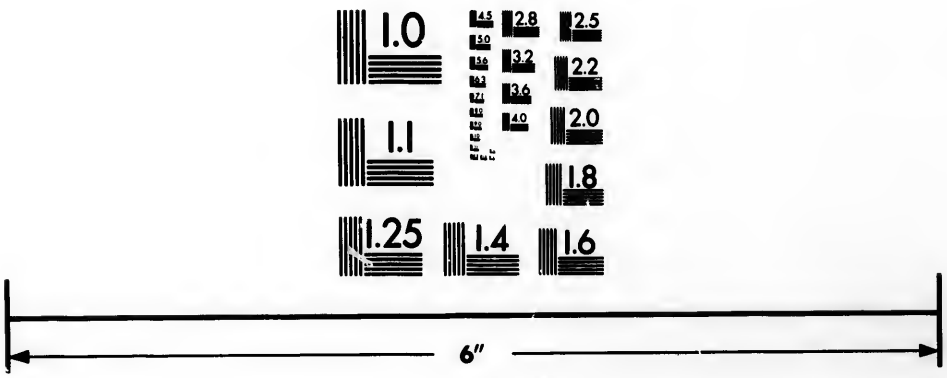

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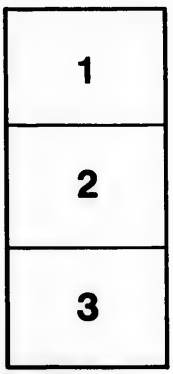

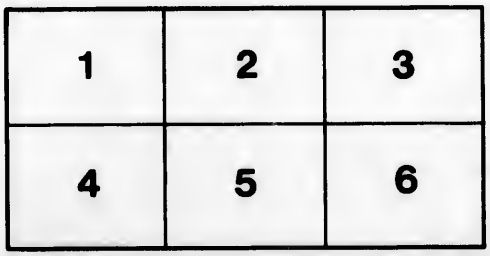

THE

NORTH AMERICAN SYLVA;

OR,

A DESCRIPTION OF THE FOREST TREES

OF THE

UNITED STATES, CANADA AND NOVA SCOTIA,

NOT DESCRIBED IN THE WORK

OF

F. ANDREW MICHAUX,

AND CONTAINING ALL THE

FOREST TREES DISCOVERED IN THE ROCKY MOUNTAINS, THE TERRITORY OF OREGON, DOWN TO THE SHORES OF THE PACIFIC, AND INTO THE CONFINES OF CALIFORNIA, AS WELL AS IN VARIOUS PARTS OF THE UNITED STATES.

ILLUSTRATED BY 122 *FINE PLATES.*

BY THOMAS NUTTALL, F. L. S.,

Member of the American Philosophical Society, and of the Academy of Natural Sciences of Philadelphia, &c. &c. &c.

IN THREE VOLUMES.—VOL. II.

BEING THE SIXTH VOLUME OF MICHAUX AND NUTTALL'S NORTH AMERICAN SYLVA.

PHILADELPHIA:

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Ficus pedunculata.

Cherry fig-tree *Figuier pedunculé*

FIG-TREES.

Natural Order, ARTOCARPEÆ, (R. Brown.) *Linnæan Classification*, POLYGAMIA, DIŒCIA.

FICUS,† (TOURN. LINN.)

DIŒCIOUS.—The common receptacle spherical or pyriform, resembling a berry, fleshy and closed, including numerous distinct and minute flowers. *Male*, calyx 3-parted. *Corolla* none. *Stamens* 1 to 3. *Female* with the calyx 3 to 5-parted, and no corolla. *Pistillum* 1; style 1, subulate; the stigma simple or bifid and unequal. *Seed* 1, covered by the persistent subcarnose calyx.

Lactescent trees or shrubs, chiefly of tropical America, Africa, and India; leaves alternate, stipulate, stipules terminal, conical, convolute. Receptacles mostly axillary, solitary, or crowded, rarely disposed in terminal racemes, often bracteolate at base.

CHERRY FIG-TREE.

FICUS PEDUNCULATA, *foliis ovato-oblongis integerrimis acuminatis obtusis, basi obsolete cordatis, receptaculis globosis subgeminatis calyculatis pedunculatis.* WILLD. Sp. pl. AITON. Hort. Kewen., vol. 3. p. 450.

Ficus arbor americana, arbuti foliis non serrata, fructu pisi magnitudine, funiculis e ramis ad terram dimissis prolifera. PLUKEN. Almag. p. 144. tab. 178. fig. 4.?

THIS species of Fig-Tree was discovered by Jacquin in the island of Martinique; it is also indigenous to some other of the West India islands, as well as to the neighbouring continent of tropical America. At Key West, according to Dr. Blodgett, it becomes a large spreading tree 50 feet in height, and like some other

† A Latin word of uncertain derivation.

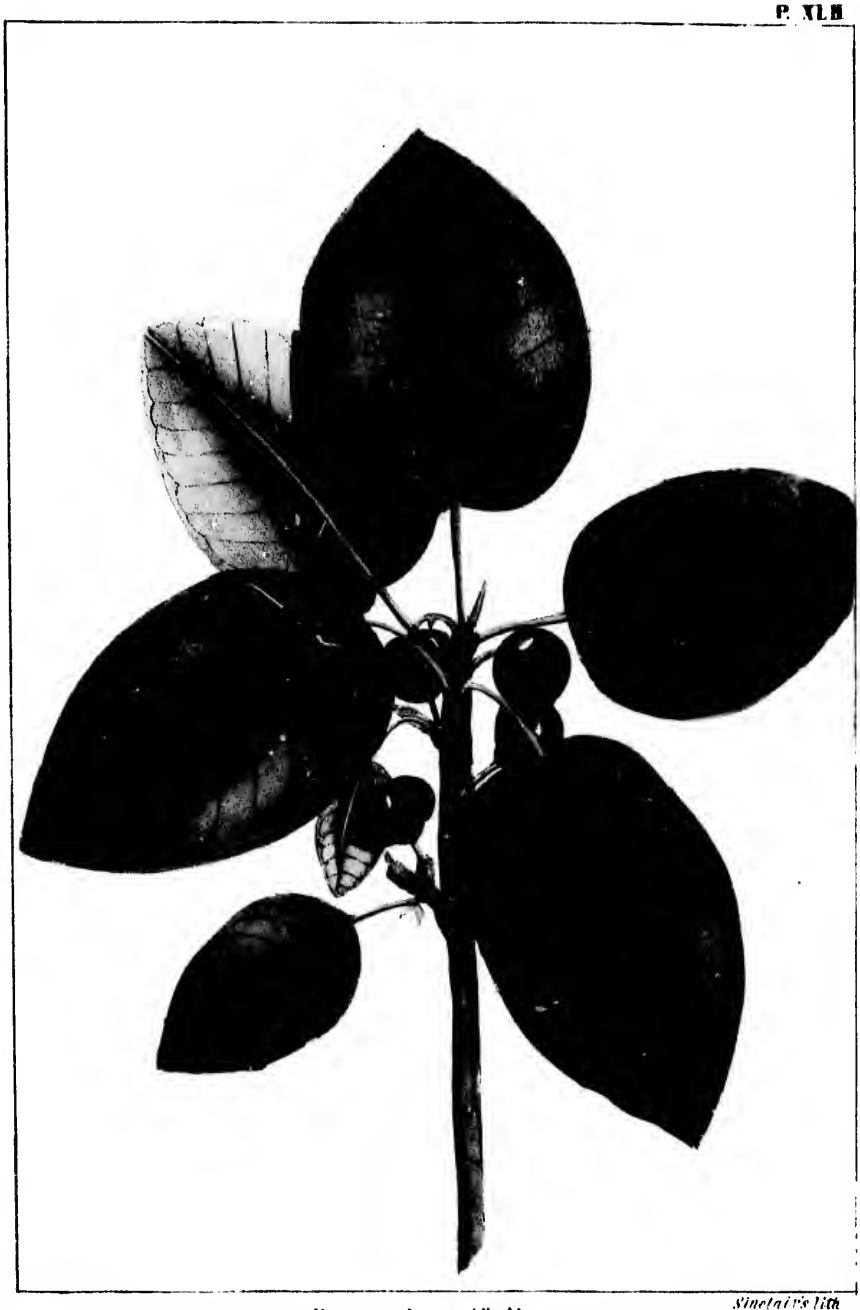
species, particularly the famous Banyan tree, (*F. indica*,) it sends down roots from its lofty branches resembling ropes, which, on reaching the soil, at length become so many independent trunks, in turn producing others; and spreading themselves on all sides without interruption, they present an united summit of prodigious extent, which, reposing on a multitude of trunks of different dimensions, seems like the airy vault of some vast edifice sustained by innumerable columns.

The bark of the branches appears to be grey and even, the leaves are very smooth on both sides, but covered with innumerable minute dots on the upper surface. They are 3 to 4 inches long, 1½ to 2 inches wide, with a peduncle about 1½ inches long. They have a few distant pennated nerves inosculating towards the margin of the leaf, with innumerable intermediate slender reticulations of vessels; they are generally of an ovate form, rounded or almost cordate at the base, with a short and blunt acumination; from their axills arise 1 or 2 peduncles about ¾ of an inch long, each terminated by a bifid involucel, improperly called a calyx. The figs themselves are nearly globose, but sensibly wider at the summit, about the magnitude of small cherries, greenish-yellow and purple at the summit, (as they appear in a withered state,) with a few purplish pale spots.

Of this species there appears to be a distinct variety, if not a species, which I shall for the present call *β. acuta;* the leaf is elliptic, shortly acuminate, acute at base and faintly nerved beneath. It also becomes a large tree, producing a fig about the size of a cherry, which is yellow when ripe.

PLATE XLI.

A branch of the natural size. *a.* The fruit.



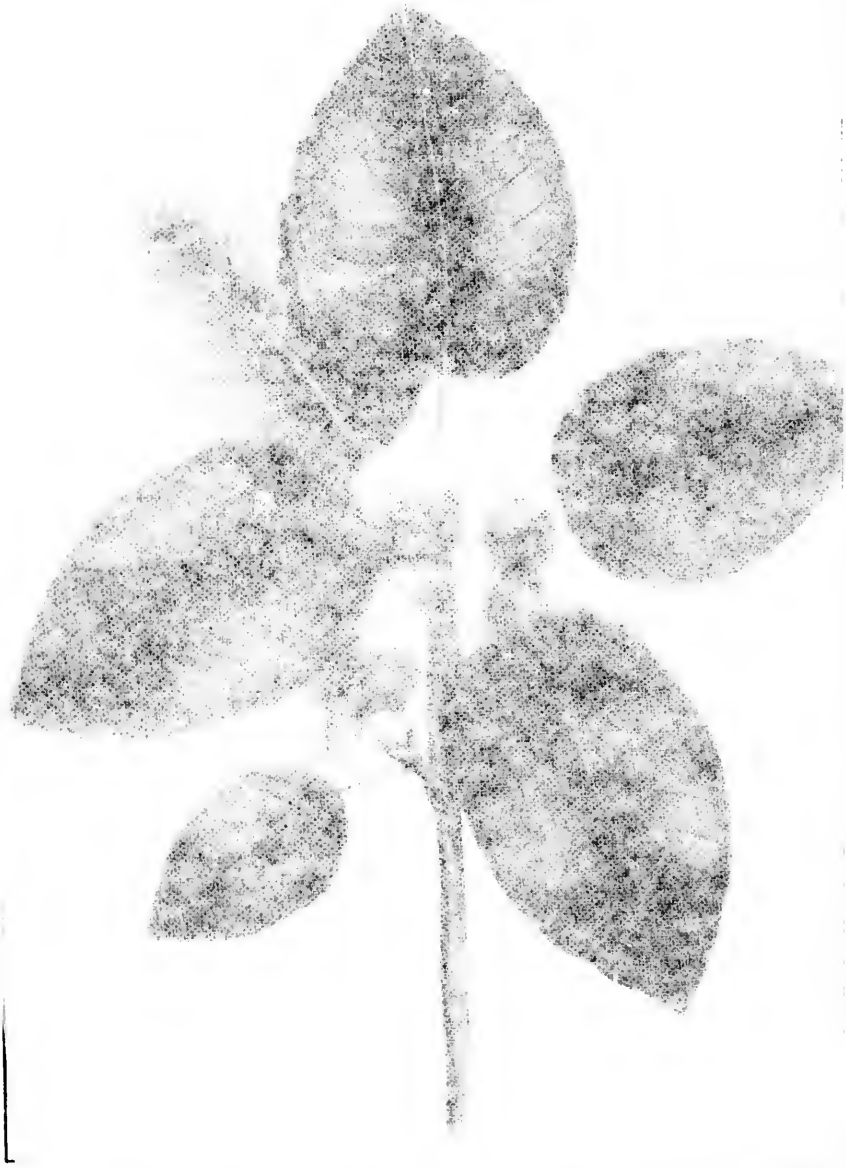
Sinclair's lith

Ficus brevifolia.

Short leaved Fig tree *Figuier à feuilles courtes*

P. XLII

...nclair's lith



SHORT LEAVED FIG-TREE.

FICUS BREVIFOLIA, *foliis cordato-ovatis integerrimis obtusis abbreviatis brevi petiolatis glabris, venis immersis, receptaculis globosis depressis umbilicatis solitariis brevi pedunculatis, involucellis bifidis.*

THIS is also a species of arborescent Fig, indigenous to Key West, in East Florida, but by no means common, and, according to Dr. Blodgett, its discoverer, it forms a tree with a slender, almost horizontal stem, which in its progress throws off funicular roots that serve as props to prevent the main trunk from becoming entirely prostrate.

The branches are covered with a light grey bark. The leaves are about 2 inches long by $1\frac{1}{2}$ inches wide, perfectly smooth on both surfaces, on petioles from $\frac{1}{2}$ to $\frac{3}{4}$ of an inch long. The veins on the under surface are so far immersed as to be scarcely visible. The figs, about the size of small cherries, are of a flattened, spheroidal form, at first, as well as the bifid involucrum, slenderly villous; they grow out chiefly at the extremities of the twigs, on thick pedicels, about 2 or 3 lines long, and when ripe are of a brightish purple red. We do not find any species with which the present agrees. From the description and specific name, we should suppose the present species allied to the *F. padifolia* of Humboldt and Bonpland, but it differs too much to be referred to that species.

PLATE XLII.

A branch of the natural size.

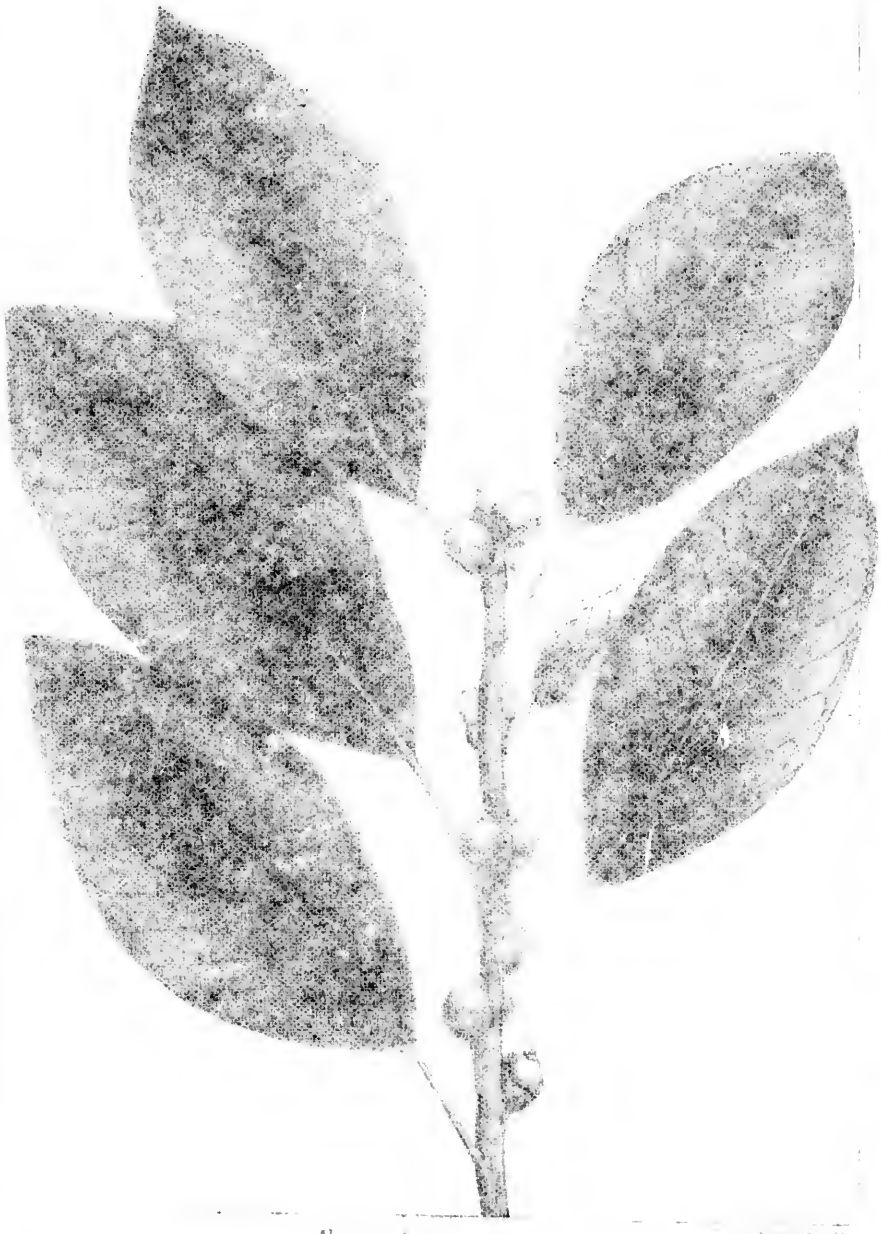
SMALL FRUITED FIG-TREE.

FICUS AUREA, *glabra, foliis integerrimis ellipticis subacuminatis acutiusculis basi plerisque angustatis penninerviis brevi-petiolatis, fructibus globosis geminatis sessilibus involucratis, involucris subtrifidis majusculis.*
β. LATIFOLIA, *foliis lato-ovatis subellipticis.*

THIS species, according to its discoverer, Dr. Blodgett, becomes at Key West, in East Florida, a large tree, at first parasitical on other trees, but destroying its supporter, it at length reaches the ground and forms an independent trunk of large dimensions. It bears, however, a very insignificant fruit, only about the size of a pea, and orange-yellow when ripe.

The branches are covered with a whitish bark. The leaves 3 to 4½ inches long, are from 1½ to 2½ broad; the peduncles are about an inch in length. The form of the leaves are almost similar with those of the Orange, elliptic and narrower below, with a rounded summit, and a very short, rather acute, projecting point or acumination, they are dark green above, paler beneath, with conspicuous feathered nerves which run together within the margin. The figs are sessile, clustered by pairs, with a small valvular orifice, and are nearly half embraced by the sheathing, bifid or trifid, one-sided involucrum.

This species appears to be very nearly allied to the *F. martinicensis* of Willdenow, (the *F. laurifolia* of Lamarck,) but we can by no means reconcile it to Sloane's figure, (Hist. Jam. t. 223,) for in that species the leaves are lanceolate, and 8 or 9 inches long, by 2 wide, on



Ficus Aurea.

Small Fruited Fig. tree.

Figuier doré.

Sinclairs lith

petioles 2 inches or more in length; the fruit is also said to be scarlet, of the size of a hazel-nut, and sweetish and not unpleasant. In our variety β. the leaves are wholly oval and not narrowed at the base.

PLATE XLIII.

A branch of the natural size.

The milky juice of the Fig-trees is more or less acrid and fœtid, however sweet and wholesome the fruit may be, and that of the *Ficus toxicaria* of Sumatra is accounted poisonous. The sap of several of the South American and Mexican species, inspissated, affords caoutchouc.

The cultivated Fig, (*Ficus Carica*,) in its wild state, is a humble and distorted shrub, affecting rocks and ruins, bearing a fruit of inferior flavour, but with the parts of fructification very perfect. Such figs as seem to drop off before maturity, are commonly those in which the stamens are most numerous or effective. These are carefully collected in the Levant to fertilize the female blossoms of the cultivated Fig, which will explain the mystery of *caprification*. In these countries the fruit, fresh, or dried in the sun, forms an important part of the food of the inhabitants.

The BANYAN TREE, (*Ficus Indica*,) nearly allied to our *F. aurea*, becomes in India an immense tree, spreading very wide, and throwing down rope like roots into the soil. Marsden mentions one of these growing near Memgee, 20 miles west of Patna, in Bengal, which gave the enormous diameter of 370 feet; the circumference of the shadow, at noon, was 1,116 feet, and there were 50 or 60 stems. It is called the priests' tree, and held in such veneration by the Gentoos, that if any one cuts off a branch, he is looked upon as sacrilegious, and held in the greatest abhorrence.

HAWTHORN.

Natural Order, Rosaceæ, (*sub-order*, Pomeæ, Jussieu.)
Linnæan Classification, Icosandria, Di— Pentagynia.

CRATÆGUS, (Linn., excluding some species.)

Adnate *calyx* tube urceolate, with a 5-cleft border. *Petals* 5, orbicular. *Stamens* 15 or more. *Styles* 3 to 5, (rarely 1.) *Pome* or apple fleshy, ovate or globose, closed and crowned with the persisting teeth of the calyx, and containing 2 to 5 hard 1-seeded nuts.

These are spiny shrubs or small trees, almost exclusively indigenous to Europe and the United States of America, with simple, angularly lobed, incised, or toothed leaves, furnished with stipules of somewhat different forms on the fertile or infertile branches. Flowers white, in terminal corymbs, sometimes solitary. Bractes subulate, deciduous. The fruit rather small, sweet, or agreeably aciduious.

RED THORN, or SIBERIAN HAWTHORN.

CRATÆGUS sanguinea, *spinosa, foliis septangulis serratis basi productis petiolis submarginatis.* Pallas, Flora Rossica, vol. 1. p. 25. tab. 11. (very good.)

Cratægus sanguinea, leaves broadly obovate, somewhat cuneate at the base, incised and serrate, often slightly 5 to 7 lobed, a little pubescent when young, on short petioles, at length coriaceous and shining; corymbs glabrous or somewhat pubescent; segments of the calyx entire, and, as well as the pedicels, not glandular; styles 3-4; fruit globose. Torrey and Gray, Flora N. Amer., vol. 1. p. 464.

β. *Douglasii*, spines short and stout (long in cultivation, *Loudon*); fruit small, dark purple.

Cratægus sanguineus.

Red Thorn — *Alizier rouge*

CRATÆGUS *punctata*, β. *brevispina*. DOUGL. in HOOK. Flor. Bor. Am., vol. 1. p. 201.

CRATÆGUS *glandulosa*, PURSH, vol. 1. p. 337, (as it regards the plant collected by Capt. Lewis in the Rocky Mountains.)

CRATÆGUS *Douglasii*, LINDL. Bot. Regist. tab. 1810. LOUDON, Arbor. Brit., vol. 3. p. 823.

THIS species of Hawthorn, which becomes a tree 18 to 25 feet in height, is first met with to the West, on the borders of rivulets, in the range of the Rocky Mountains, particularly on their western declivity, from whence it continues along the banks of the Oregon, and particularly its tributaries, down to the shores of the Pacific. We found it also, in great perfection, loaded with its sweet, nearly black, and pleasant fruit, on the banks of the Wahlamet. The stem attains to about the diameter of 3 to 6 inches, with a whitish, compact, close-grained wood, of which, in common with the Crab Apple of that country, the natives make their wedges for splitting trees.

The Siberian plant, according to Pallas, begins to be found to the south of the Uralian Mountains, and continues beyond the Obi through all the southern tract of Siberia, in dry mountainous situations, and in the thickets which border the higher rivulets; exactly the sort of situations affected by the American plant in the Alpine region where it commences. It also, like ours, becomes a tree 12 to 18 feet in height.

Lewis and Clarke speak of finding haws, probably of this or the following species, on Flat Head River, which heads against the sources of the Missouri.

Almost entirely deprived of vegetable food, every accession of fruit, however meagre, was hailed with delight by our famished party, and the ripe berries of this fine Hawthorn were collected with avidity. The bushes, or rather trees were, however, so high that we

could only come at the fruit on horseback, or after ascending the trunk, which often appeared equal to that of an ordinary apple tree.

The summit of the tree is round and spreading, and the thorns vary in size, though they are often short, and in no case numerous. The leaves are broad and somewhat rounded above, cuneate at the base, smooth, on the upper surface, and always more or less pubescent beneath, the margin is incise and serrate, and divided often into 5 to 7 shallow lobes. The flowers are white, rather large, and numerous, disposed in a corymb, with the peduncles and base of the calyx more or less pilose and glandular. The styles 3 or 4, are occasionally as many as 5. The segments of the calyx are rather long and acuminated, membranaceous on the margin and appressed to the flower. The berries are shortly elliptic or oval, and nearly black or dark purple when ripe. In the Siberian plant, described by Pallas, they are scarlet; but he remarks, that according to Steller, the haws of Kamtschatka are both red and black, and that there they are not only used as agreeable fruits, but are also collected for the purpose of distillation into spirits. A good spirit is likewise obtained by the fermentation and distillation of the fruit of the common Hawthorn, (*C. oxyacantha.*)

This species is very nearly allied to *C. coccinea*, with which indeed Pallas compares it; but in *C. coccinea* the leaves have longer petioles, it bears much larger flowers, with larger segments to the calyx. The fruit is also (in our plant) smaller, and the plant more decidedly arborescent.

PLATE XLIV.

A branch of the natural size. *a.* The fruit.

RIVER HAWTHORN.

CRATÆGUS RIVULARIS, *foliis ovatis vel obovatis, obtusis acutisve inciso-serratis basi attenuatis brevi-petiolatis; corymbis multifloris glabris, floribus parvulis, calycis laciniis obtusis brevissimis eglandulosis; fructibus nigris.*—NUTT. in TORREY and GRAY, Flor. Amer., vol. 1. p. 364.

β. CUNEATA, *spinis brevibus, foliis cuneatis obtusis, incisis.*

ALONG the shady borders of the rivulets of the Rocky Mountains we observed this species blended with the former, becoming equally a tree and producing the same kind of pleasant dark fruit. It was also observed by Douglas in the interior of Oregon, where we likewise met with it. It is, in all probability, the smoother, supposed variety of *C. punctata*, mentioned by Hooker in his Flora.

The branches are reddish-brown, the leaves nearly as entire as those of the Apple tree, except in β. where they are slightly lobed; beneath very smooth, slightly pubescent above, acute and rather sharply serrate, with long spines. The peduncles and calyx perfectly smooth, the segments of the latter mere broad, obtuse dentures. The flowers are white and smaller than in the preceding. The berries are also black, and possess nearly the same sweet and rather insipid taste of the Common Haw, (*C. oxyacantha.*)

LANCE-LEAVED HAWTHORN.

CRATÆGUS ARBORESCENS, *inermis, foliis lanceolatis inciso-serratis utrinque acutis rariter sublobatis glabris subtus ad venis puberulis, corymbis multifloris, calicibus pilosis laciniis subulatis integris, floribus pentagynis.*

CRATÆGUS *arborescens.* ELLIOTT. Sketch., vol. 1. p. 550. TORR. and GRAY, Flor. N. Amer., vol. 1. p. 466.

ACCORDING to Elliott this species becomes a tree of 20 to 30 feet in height, with spreading branches. The fruit is globose, quite small and red. Of the quality of the wood nothing is yet known; but nearly all the arborescent species are of slow growth, and have whitish close-grained, very hard, and durable wood; that of the Common Hawthorn, (*C. oxycantha,*) is tough, and in England is used occasionally for axletrees and handles of tools.

The Lance-leaved Thorn of Mr. Elliott was found on the borders of the Ogeechee river, in Georgia, near Fort Argyle, and near New Orleans, and in Texas by Drummond and Berlandier. It is without armature. The leaves are lanceolate, acute at each end, deeply serrated, smooth both above and beneath, except some small tufts of hairs at the divisions of the veins, sometimes slightly lobed towards the summit, (though not at all in our specimen.) The flowers are small, the calyx hairy at the base, with the segments small and subulate.

To show the great age to which the Common Hawthorn attains, Withering states of the variety called the Glastonbury Thorn, existing in his time, in a lane by the churchyard of the abbey, (1801,) "It appears to be a very old tree. An old woman of 90 never remem-

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Cratægus Arborescens.

Lance leaved hawthorn.

Stuclair's lith

Alizier arborescent.

bers it otherwise than as it now appears. It blossoms twice a year, the winter blossoms, which are almost the size of a sixpence, appear about Christmas, and sooner, if the winter be severe. These produce no fruit." The summer flowers bore berries containing only a single seed, which, when sown, produced plants nowise differing from the common kind.

The Common Hawthorn, though so humble in the hedge-row, beneath the cropping of the shears, when suffered to grow up and stand alone, attains the ordinary size of an Apple-tree; and, occupying the village green for a long series of years, it becomes connected with our earliest recollections of the joyful arrival of spring—the *old Hawthorn*, again white with its fragrant blossoms, and their falling on the ground like a shower of snow, marks a delightful era in the distant reminiscences of the writer, when yet the simplest boon of nature gave delight. With these pleasing recollections of the past, how touching and graphic are those beautiful lines of Goldsmith descriptive of the deserted village.

—"The Hawthorn bush, with seats beneath the shade,
For talking age and youthful converse made!
How often have I bless'd the coming day,
When toil remitting lent its turn to play;
And all the village train from labour free,
Led up their sports beneath the spreading tree."

PLATE XLV.

A branch of the natural size. *a*. The germ and styles.

NAKED FLOWERED HAWTHORN, or APPLE HAW.

CRATÆGUS æstivalis, *subspinosa, floribus præcocibus, foliis oblongo-cuneiformibus vel ellipticis brevi-petiolatis apice subsinuato-dentatis angulatis vel inciso-crenatis rarius trilobatis, junioribus tomentosis, demum glabris, subtus ad venis pubescentibus; corymbis* 3 *ad* 5*-floris glabris, eglandulosis; stylis* 4–5, *fructibus maximis globosis rubris.*

Cratægus *æstivalis.* Torrey and Gray, Flor. 1. p. 468.

Cratægus *elliptica.* Elliott, Sketch. 1. p. 549.

Cratægus *opaca.* Hook and Arnott, Compan. Botan. Magaz., vol. 1. p. 25.

Mespilus æstivalis. Walter, Flor. Caroliniana, p. 148.

This is another arborescent species of Hawthorn confined to the southern states of the Union, growing along the low wet banks of rivers and ponds, from South Carolina and Georgia to Florida; it grows also in Louisiana and Arkansas. In Florida it is already in flower in the early part of the month of March, and presents a very unusual appearance, as yet nearly destitute of leaves, or presenting only their unfolding silky buds. The flowers are nearly as large as apple blossoms, and pure white. It becomes at length a tree of 20 or 30 feet in height, branching from the base. The leaves are elliptical or oblong wedge-shaped, on the infertile branches often obovate, on short petioles, towards the summit sinuately toothed, angled, or irregularly crenate, rarely 3-lobed or cleft, quite whitely tomentose when young before expansion, at length glabrous, but clothed along the veins beneath with a brownish pubescence. The corymbs are 3 to 5 flowered, and

smooth. The divisions of the calyx are short, triangular, smooth and without glands; the styles are 4 or 5. The fruit, which becomes red, is very large and round, ripening in May or June, and is ½ an inch or ¾ of an inch in diameter, juicy, fragrant, of an agreeable subacid taste, and is much esteemed for tarts, jellies, and other articles of the dessert.

Other species of Hawthorn, indigenous to the United States, might be adduced as attaining the size of trees from 10 to 25 feet in height, but as we have little or no notice of their use and economy, we shall at present omit them.

CHERRY TREE.

Natural Order Rosaceæ, (*sub-order* Amygdaleæ, Jussieu.)
Linnæan Classification, Icosandria, Monogynia.

CERASUS, (Jussieu.)

Calyx urceolate-hemispherical; the border 5 cleft, deciduous. *Petals* spreading. Stamens 15 to 30. *Ovary* glabrous, with 2 collateral pendulous ovules. *Drupe* globose, fleshy, destitute of bloom; the nut hard and bony, mostly globose and even.

Trees or shrubs chiefly of the temperate parts of Europe and North America, forming several natural sections. Leaves serrated, deciduous or sempervirent.

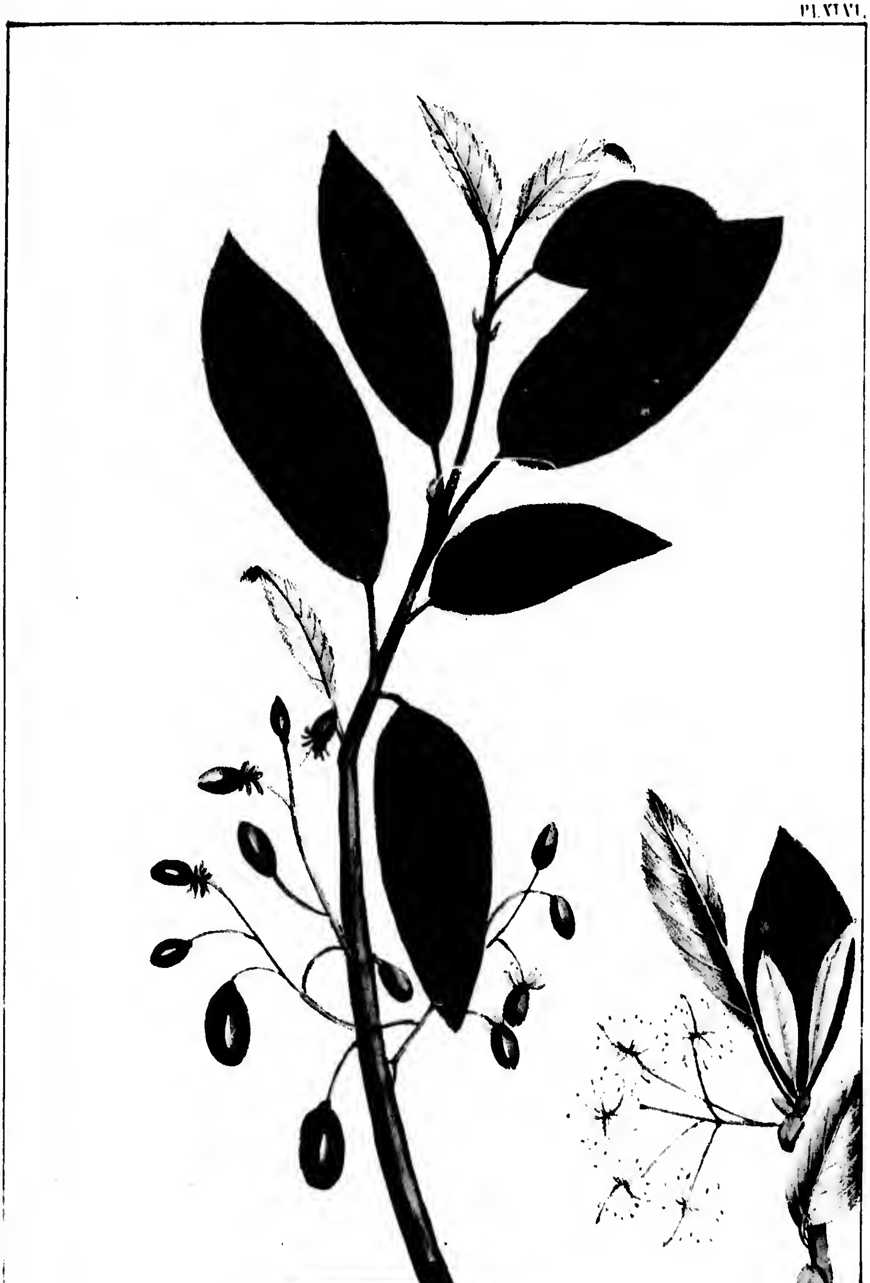
§ I. *Flowers corymbose or clustered. Leaves deciduous.* True Cherries.

SOFT-LEAVED CHERRY.

CERASUS mollis, *foliis oblongis ovatisve plerisque obtusis serrulatis subtus tomentoso-pubescentibus, corymbis racemosis 5 ad 6 floris tomentosis, laciniis calycinis obtusis reflexis tubo pubescente brevioribus, drupa ovoidea.*
Cerasus *mollis.* Douglas in Hooker. Flor. Bor. Amer., vol. 1. p. 169. Torrey and Gray, Flor. N. Amer. 1. p. 410.

This species of Cherry, growing 12 to 25 feet high, is confined to the Oregon Territory, and particularly to the borders of the Oregon River and its tributaries as far as its sources. We met with it in thickets on hills,

PL. XLVI.



Soft leaved Cherry **Cerasus mollis.** *Cerisier à feuilles molles*

near the Wahlamet, flowering about the month of May. The young branches are dark grey and somewhat downy. The leaves are softly downy beneath, on short petioles, oblong, or oblong-ovate, mostly obtuse, sometimes acute, minutely serrulate, 2 to 2½ inches long, by about an inch in width; stipules small and deeply ciliate as well as the bractes. Flowers small and white, the petals rounded and concave. Segments of the calyx ovate, short and obtuse. Stigma clavate, petioles and calyx tomentose. Fruit ovate, astringent and unpleasant.

Plate XLVI.

A branch of the natural size with young fruit. *a.* The flower.

Red or Northern Cherry. (*Cerasus Pennsylvanica.* Tor. and Gray. *C. borealis*, Mich. and Mich. Sylva, p. 90.) According to Macmin of West Chester, this tree in the Beech woods of Tioga county, Pennsylvania, attains the height of 60 feet, with a diameter of 18 inches.

§ III. *Flowers in racemes, axillary. Leaves sempervirent or persistent.*—LAUROCERASUS. Tourn. Decand. *Laurel Cherries.*

HOLLY LEAVED CHERRY.

CERASUS ILICIFOLIA, *foliis lato-ovalibus subcordatis brevi-petiolatis spinosa-sinuato-dentatis reticulatis coriaceis nitidis, racemis erectis foliis subæquantibus, drupa nigra ovoidea acuminata.*

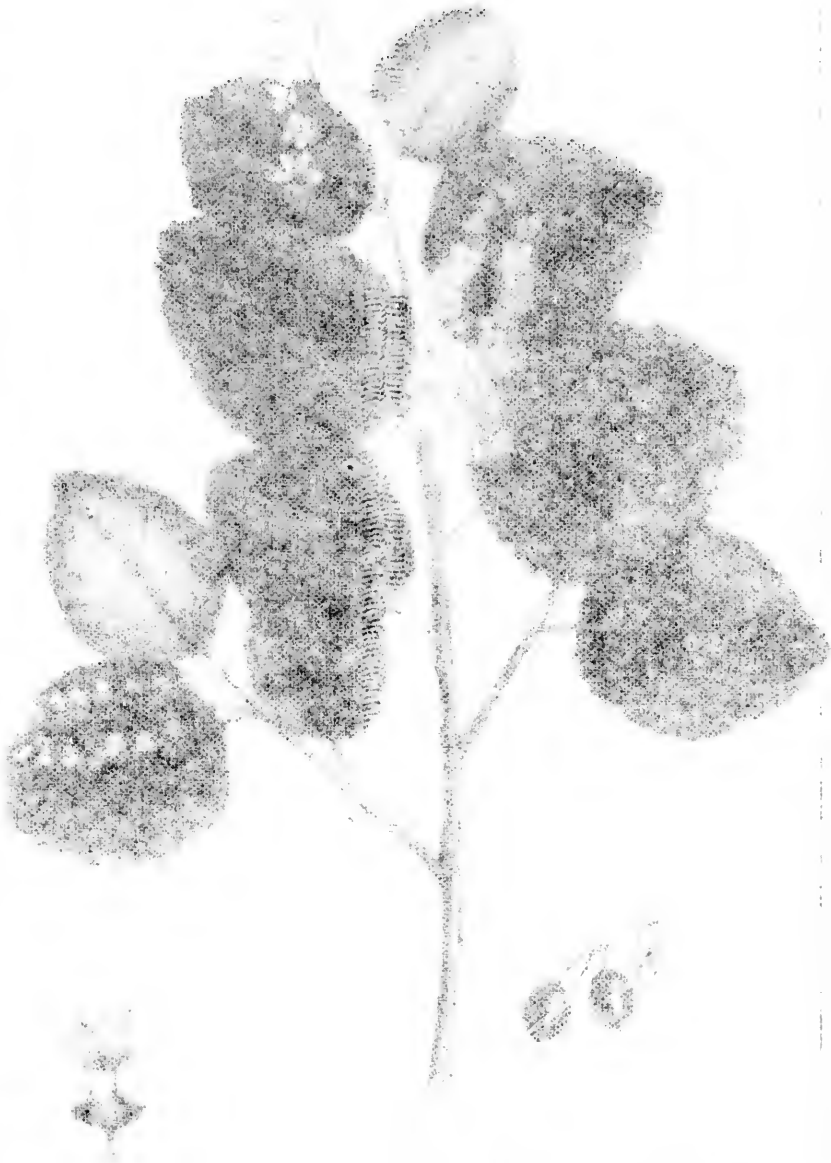
CERASUS *ilicifolia.* NUTT. in TORR. and GRAY. Flora N. Amer., vol. 1. p. 411. HOOK and ARNOTT. Bot. Beechey, Suppl. p. 340. tab. 83.

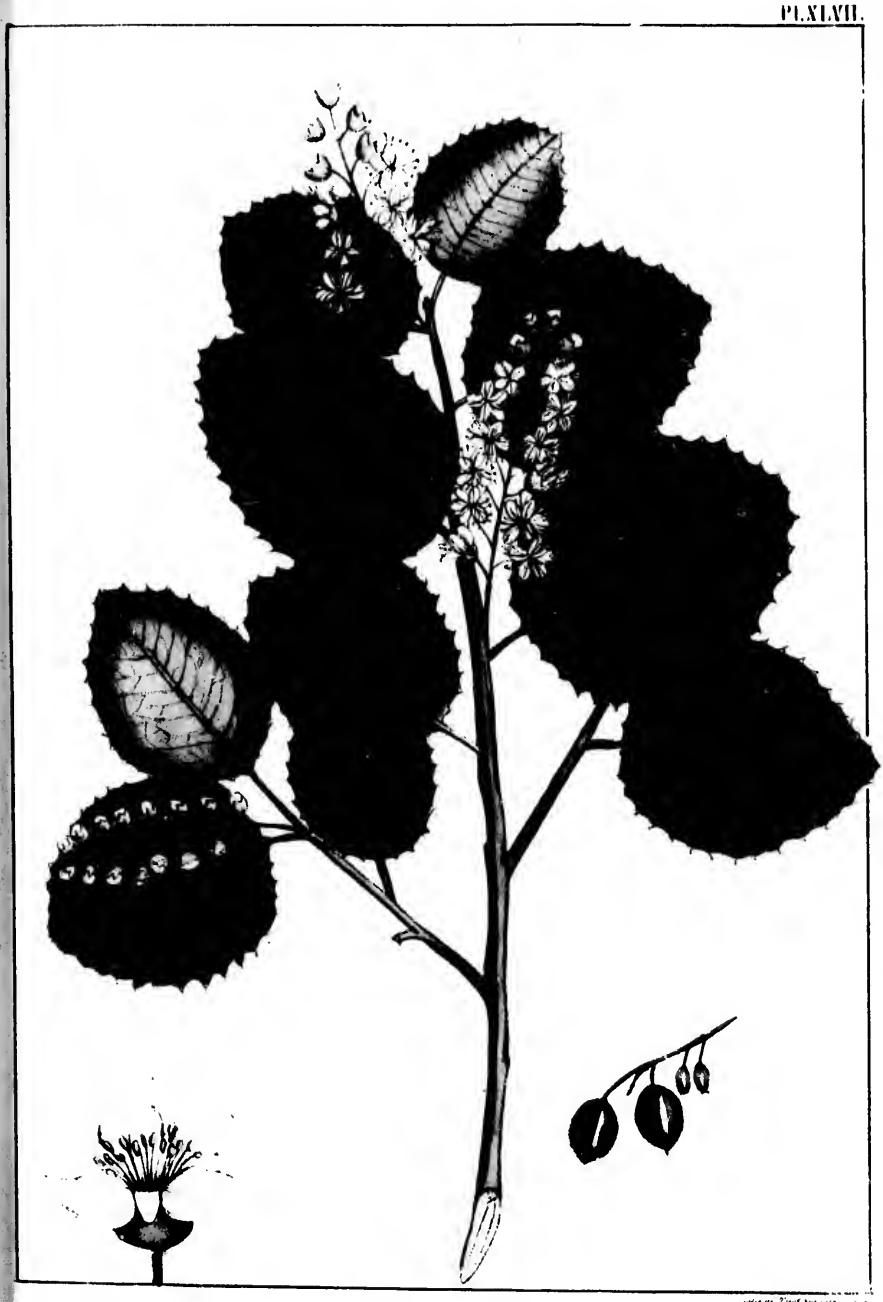
THIS is a small tree of Upper California, round Sta. Barbara attaining the height of 12 to 20 feet, and chiefly affecting dry and elevated hill sides within the mountain range. The bark is grey and somewhat rough; the wood is reddish, tough, and close-grained. The leaves, which are rigid, shining and evergreen, look entirely like those of the Holly, they are broadly oval, pointed, somewhat heart-shaped at the base, very smooth and shining above and elegantly reticulated, often undulated, and with sharp pungent serratures. The racemes of flowers are erect, somewhat crowded; the flowers white and small, on short pedicels, the petals rounded and short; the calyx hemispherical, with short triangular teeth. The stamens seated near to the summit of the calyx; the stigma simple and obtuse.

This tree, from its remarkable and elegant appearance, is well worth cultivating as an ornament, and in its qualities ranks with the true Laurels. The fruit is rather large, dark purple, bitter and astringent.

PLATE XLVII.

A branch of the natural size. *a.* The cherry. *b.* The flower.





Holly leaved Cherry.

Cerasus ilicifolia

Cerisier à feuille de Houx

The Laurel, (*Prunus Lauro-Cerasus*,) now so generally cultivated in Europe, was brought from Asia Minor. Lucullus, after conquering the king of Pontus, with whom the Romans had warred for 40 years, among his other trophies, brought the Cherry from the fields of Cerasonte, and, in transplanting it into Italy, secured a monument of his triumph far more durable than that which the senate and the people decreed him. The Laurel, transplanted at first from Trebizond to Constantinople, had not so brilliant a destiny; an envoy from the Emperor of Germany, David Ungnad, whose name is now scarcely known, 262 years ago brought a living plant to Clusius, at Vienna. The name of *Lauro-Cerasus* was given to it by Belon, who had seen it in its native country, from its leaves being like those of the Bay, and its fruit similar to cherries.

The leaves afford by distillation a liquor which proves a violent poison to men and animals. According to Duhamel, a spoonful of this water given to a dog, killed him instantaneously. Various experiments and accidents tend to confirm the fact of the powerfully poisonous nature of Laurel water. Fontana found that a single drop of the essential oil of this plant, applied to a wound on a dog, proved equally as fatal as the venom of the viper, and was attended with the same symptoms.

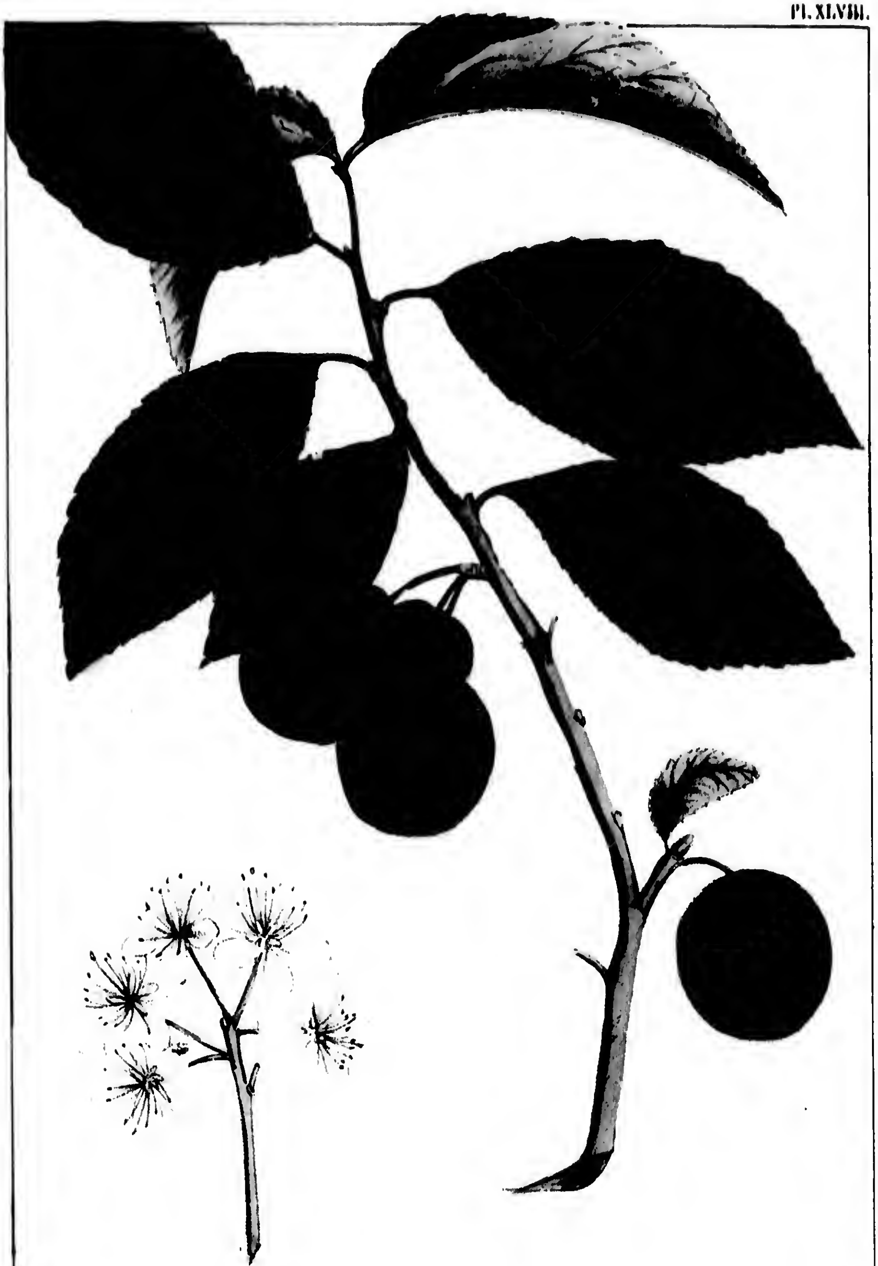
The emanations from the Laurel, being, in fact, the diluted but volatile prussic or hydrocyanic acid, are not without their inconveniences, for, after reposing beneath its shade on a warm day, a headache and tendency to vomit is said sometimes to occur. Considerable use was formerly made of Laurel-water for the sake of the Bitter Almond flavour which it communicates to various articles of the dessert, but from its dangerous effects it is now but little used.

The effect of this poison is so extremely rapid and

violent, attacking the very seat of vitality, the nervous system, that no remedies have any time to operate. In the hand of the skilful physician, however, this volatile poison proves sometimes a powerful remedy.

ALMOND CHERRY, (*Cerasus Caroliniana*, Mich. Flor., vol. 1. p. 285. Wild Orange Tree, Mich. Sylva, vol. 2. pl. 89.) This elegant tree, nearly allied to *C. Lusitanica*, appears to be common along the banks of the Mississippi from New Orleans to Natchez. It is also indigenous to South Carolina, Florida, and Arkansa. It forms a fine evergreen tree 40 to 50 feet high, flowering in March and April. The leaves, according to Elliott, are very poisonous, frequently destroying cattle that are tempted to browse on them early in the spring. It is known to the French inhabitants of Louisiana by the same name as the Laurel of Europe, *Laurier-Amand*.

The fruit of this species is a small black bitter cherry, with very little pulp and a shell so thin as to crack between the fingers. A second, (*C. occidentalis*,) and probably a third species of this section from St. Domingo, in the collections of Poiteau, has the same thin, fragile shell. These seem to form a separate genus from the true Cherries, no less than from the Laurels, and may be called Leptocarya, in consideration of the thin and fragile, merely cartilaginous shell of the drupe. In this respect the drupe affords a much more important distinction than that which exists between *Prunus* and *Cerasus*.



John T. French del.

T. Sinclair's Lith. Phila.

Prunus Americana.

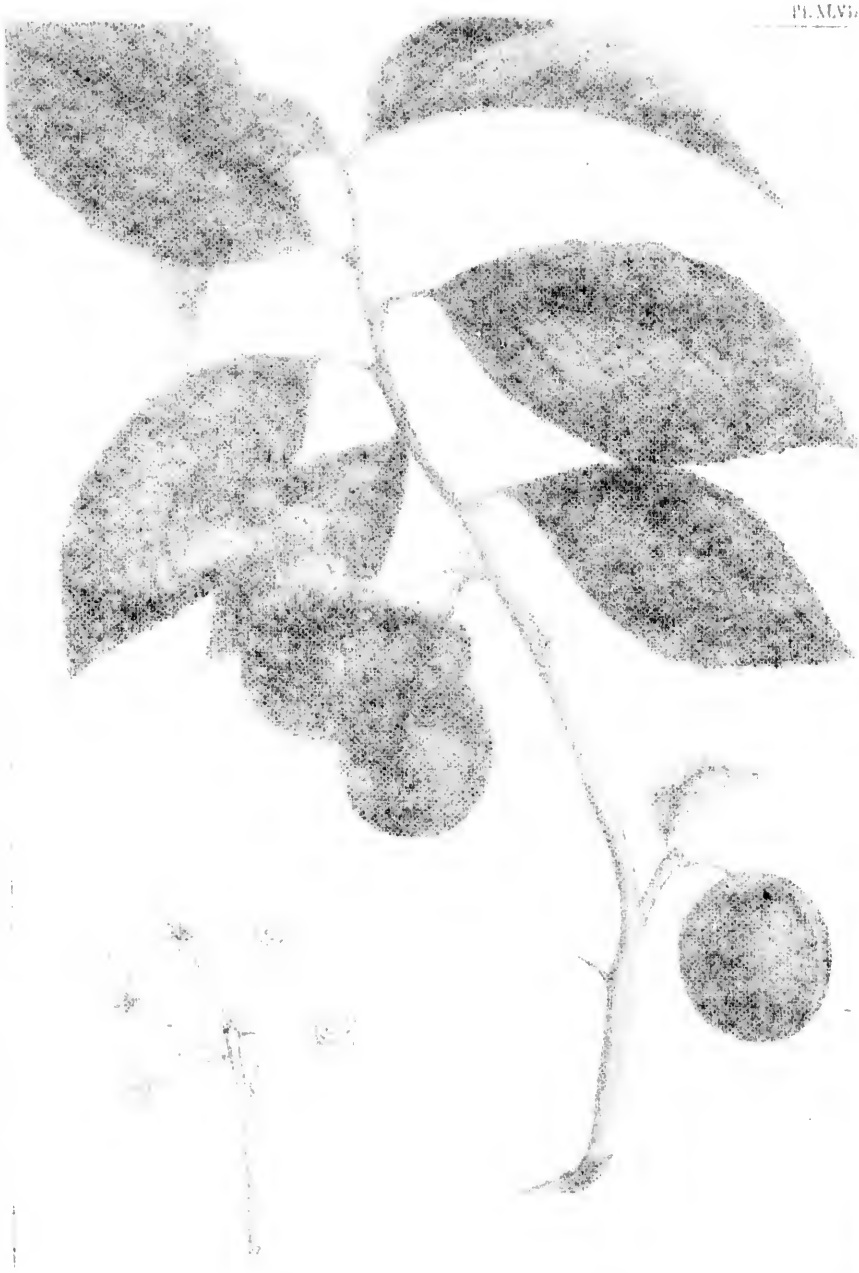
Wild Plum

Prunier d'Amerique

Pl. XLVIII.

T.Sinclair's lith Phila

ramer d'Amerique



PLUM TREE.

Natural Order, Rosaceæ, (*suborder* Amygdaleæ, Juss.)
Linnæan Classification, Icosandria, Monogynia.

PRUNUS, (Tournefort.)

Calyx urceolate-hemispherical, the border 5-cleft, deciduous. *Petals* spreading. *Stamens* 15 to 30. *Ovary* glabrous, with 2 collateral pendulous ovules. *Drupe* ovate or oval, fleshy, glabrous, usually covered with a bloom; nut hard and bony, more or less compressed, acute and even, the margins partly grooved.

Trees or shrubs of temperate climates in the northern hemisphere with the leaves serrated, convolute in vernation (or before expansion.) The flowers earlier than the leaves, with the pedicels in umbellate clusters.

WILD PLUM.

PRUNUS americana, *arborescens, ramis spinescentibus, foliis ovato-oblongis vel obovatis argute serratis acuminatis basi cuneatis, subtus venosis demum glabris, petiolis sub-biglandulosis, umbellis sessilibus pauciforis* (2-5), *fructibus ovalibus.*

P. Americana. *Marshall.* Arbust. p. 111. Darlington. Flora Cestr. p. 287. and in Annal. Lyceum. N. York., vol. 3. p. 87. t. 1. Torrey and Gray. Flor. N. Amer. vol. 1. p. 407.

P. nigra. *Aiton.* Kew. (ed. 1.,) vol. 2. p. 165. Bot. Mag. t. 1117. Pursh. Flor. Am. vol. 1. p. 331. Willd. Sp. pl. vol. 4. p. 993.

P. HIEMALIS. Elliott, Sk., vol. 1. p. 542.
CERASUS NIGRA, (*Loisel.*) SERINGE in DECAND. Prodr., vol. 2. p. 538. HOOK. Flor. Bor. Amer., vol. 1. p. 167.

FEW plants in North America have a more extensive range than this species of Plum: it is met with from the Saskatchewan towards Hudson's Bay, and through all the intermediate country to Georgia, Louisiana, and Texas. In the western part of the State of New York it is very common, and, in some instances, (as it appeared to me in 1810,) it has been cultivated by the aborigines around their dwellings in the same manner as the Chickasaw Plum. When truly wild, it seems to affect the banks of streams and rich bottom lands. In New Jersey, near Franklin furnace, (Sussex county,) I have observed trees 20 to 30 feet high, and with trunks from 6 to 14 inches in diameter. The ordinary height, however, is from 15 to 20 feet. The wood is hard and of a reddish colour, like that of the Wild Cherry, (*Prunus serotina.*) The fruit, when mature, which is in the month of August, is from ½ an inch to an inch in diameter, in some instances almost wholly yellow, but commonly vermilion red on one side, wholly red, or a mixture of both colours, and in all the varieties covered more or less with a very evident bloom. When ripe it contains a very sweet thin pulp, with the disadvantage however of having a thick bitterish acerb skin, but by cultivation it is considerably improved, and the fruit is sometimes, as Dr. Darlington remarks, as large as a common Apricot. In Upper Canada, where it was formerly cultivated, I have seen as many as twelve distinct varieties in the same orchard. It is also free from the attacks of the insects which have proved so fatal to nearly all the cultivated Plums.

The stem spreads out into a roundish head, with many rigid and somewhat thorny branches. The leaves

are oblong-ovate and sometimes obovate, almost always narrowed below, with a distinct abrupt point or acumination, sharply serrated, strongly veined, and more or less pubescent beneath. The pedicels are smooth, 2 to 5 together, in clusters. Calyx pubescent, the segments lance-linear, serrulated at the apex; the petals oval or obovate, and rounded.

Plate XLVIII.

A branch of the natural size in fruit. *a.* A cluster of flowers.

CRAB APPLE.

Natural Order, Rosaceæ, (*sub-order*, Pomeæ, Juss.) *Linnæan Classification*, Icosandria, Pentagynia.

PYRUS, (Linn.)

Calyx tube urceolate, adnate to the fleshy ovary, from which it is inseparable, with the border 5-lobed. *Petals* 5, roundish, concave, on short claws. *Styles* usually 5 or less, distinct or conjoined at the base. *Pome* (or apple) fleshy, closed, internally 5-celled, the cells cartilaginous and 2-seeded. The seeds with a chartaceous coat.

Trees or shrubs (in the present section) with entire or palmately lobed, serrated leaves. Flowers in terminal flattish clusters or corymbs. Fruit edible when not too acerb or astringent.

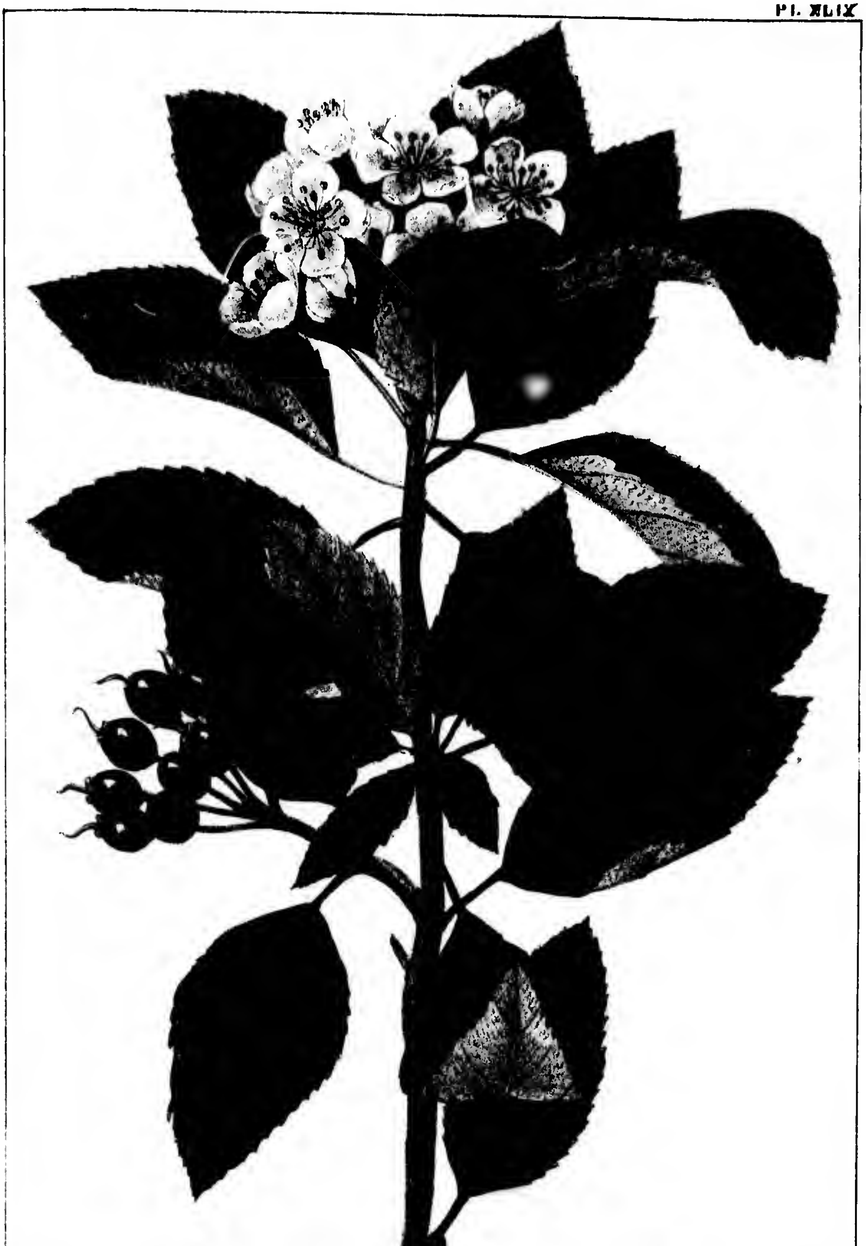
RIVER CRAB APPLE.

PYRUS rivularis, *foliis ovatis acutis indivisis junioribus trilobatis incisis argute serratis subtus pubescentibus, stylis* (3-4) *basi coalitis glabris, fructibus perparvis subglobosis vix umbilicatis, lobis calicinis demum deciduis.*

Pyrus *rivularis.* Douglas in Hook. Flor. Bor. Am., vol. 1. p. 303. tab. 68. Torrey and Gray, Flora N. Amer., vol. 1. p. 471.

Pyrus *diversifolia,* Bongard. Veget. Sitcha. l. c. p. 133.

This elegant species of Pyrus is common throughout all the lower or maritime portion of the Oregon territory, and it uniformly affects the shade of rich alluvial forests near the lesser streams and ponds. It becomes



J. T. French Del. *Sinclair's Lith.*

Pyrus rivularis

River Crab *Poirier rivulaire*

a tree about the size of the Siberian Crab, to which it has a close affinity, and grows from 15 to 25 feet in height, producing a hard wood, capable of receiving a high polish, and is employed by the natives for making wedges. The fruit grows in clusters, and is small and purple, scarcely the size of a cherry, of an agreeable flavour, like that of some of our Haws; it has nothing of the acerbity or acidity of the Common Crab, but is sweetish and subacid when ripe. The natives near the sea employ it, as they do many more berries of the country, for food, being all too indolent to cultivate the earth for any purpose whatever.

It extends, in all probability, from Upper California to the Russian possessions in the north, as far as the latitude of 57°. Menzies appears to have been its first discoverer, on what was then vaguely termed the North-West coast.

The leaves, which appear with the flowers, are ovate, obtuse or acute, entire, and more or less serrated, pubescent beneath, villous in the bud, at length nearly smooth; the later produced leaves are more or less incisely lobed, sometimes distinctly 3-lobed, the middle lobe incise and sharply serrated. The flowers conspicuous, white or tinged with red, in terminal corymbs, with the calyx and peduncles villous, or tomentose, at other times with the exterior of the calyx smooth. The petals oval. The germ is pear-shaped, with 3 or 4 styles. Apples very small, dark purple, almost black when ripe, and somewhat translucent, globose-ovoid, scarcely umbilicate at base, and with the summit naked, the calyx, as in the Siberian Crab, being deciduous. Seeds, like those of the apple, and 2 in a cell, as usual.

I think it probable that the plants with "smooth pedicels and with the calyx externally smooth," ought to constitute a distinct variety, which may be termed

Pyrus rivularis β. levipes, in these the pedicels are also glandular.

What this plant may become by cultivation, cannot yet be determined. The Siberian Crab, (now so ornamental and generally cultivated,) which also affects the alluvial borders of streams and rivers, round Lake Baikal, and in Daouria, according to Pallas, in its native soil, it only attains the height of 3 or 4 feet, with a trunk about as thick as a man's arm, and full of tortuous branches. The berries, also, in Pallas' figure, (Flora Rossica, vol. 1. tab. 10.) are not so large as ordinary peas, and pyriform or attenuate at the base like a pear. All this tribe of plants, so eminently serviceable both for ornament and use, deserve cultivation in a pre-eminent degree, and the present species has also the advantage of being perfectly hardy in all temperate and even cold climates, as it stretches along the coast nearly to the vicinity of eastern Siberia.

All the plants of this section of *Pyrus* are natives of temperate Europe and northern Asia.

Plate XLIX.

A branch of the natural size. *a.* The apple.

Narrow Leaved Crab Apple, (*Pyrus angustifolia*, Aiton.) This appears to be scarcely more than a variety of the *Pyrus coronaria;* distinguishable indeed by its narrower leaves, usually entire, which are often acute below, but as the styles are neither perfectly distinct nor constantly glabrous, and that the young leaves are also pubescent, no sufficient distinction remains. The fruit is likewise wholly similar.

John T. French

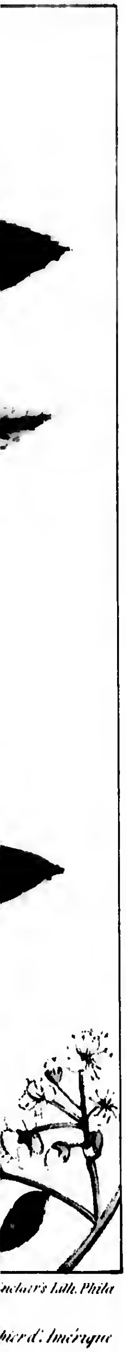
T. Sinclair's Lith. Phila

American Mountain Ash

Pyrus Americana.

Sorbier d'Amérique

Pl. L.



nclair's Lith. Phila

bier d'Amérique

MOUNTAIN ASH.

§ III. *Leaves pinnate or pinnatifid; styles* 2 *to* 5, *distinct; pome globose or turbinate; pulpy.* SORBUS. Linn.

AMERICAN MOUNTAIN ASH.

PYRUS AMERICANA, *foliis pinnatis glabris, foliolis oblongo-lanceolatis acuminatis inciso-serratis, serraturis setaceo-mucronatis, cymis compositis multifloris, fructibus globosis.*—DECAND. Prod., vol. 2. p. 637. TORREY and GRAY. Flor. N. Amer., vol. 1. p. 472.

SORBUS AMERICANA. *Willd.* Enum., vol. 1. p. 520. PURSH. Flor. vol. 1. p. 341.

SORBUS AUCUPARIA, *β. Mich.* Flor. Bor. Am., vol. 1. p. 290.

THE Mountain Ash, or Roan Tree of North America, is met with sparingly in shady moist woods in mountainous situations, from Labrador and even Greenland, throughout the New England States, New York, Pennsylvania, and the variety *microcarpa*, with smaller berries, extends to the high mountains of Virginia and North Carolina.

It forms a small tree of great beauty, remarkable for its elegant feathered foliage, in May and June clad with its white and fragrant blossoms, and to the close of the year, even into winter, decorated with its large clusters of bright berries, which afford a favourite repast for thrushes and other frugivorous birds, on their annual

round to more genial climates, or during their hybernal residence:—

"Sanguineisque inculta rubent aviaria baccis." VIRGIL.

The European species, which differs very little from the present, becomes in the North of England, Scotland, and Wales a tree of considerable size, so as occasionally to be sawn into planks and boards. It attains the height of 25 to 30 feet, with a diameter of 2 feet, and a tree in Scotland, in Forfarshire, at Old Montrose, 65 years old, is 50 feet high, with a diameter of 2 feet 10 inches. The wood is said to be hard and durable, fit for economical purposes, such as mill-work, screws for presses, spokes for wheels, &c. In ancient times it was also esteemed for bows next to the Yew. The berries dried and reduced to powder have even been made into bread, and an ardent spirit may be distilled from them of a fine flavour, but in small quantity. Though acid and somewhat astringent, they are accounted wholesome, and, in the Highlands of Scotland, are often eaten when perfectly ripe; in the cold and sterile climate of Kamtschatka, according to Gmelin, they are used for the same purposes.

The tree was formerly held sacred, and in the North of England it is called the Witch-Hazel. In Wales it was formerly planted in the church-yard as commonly as the Yew, and on a certain day of the year, every body religiously wore a cross made of the wood as a charm against fascinations and evil spirits!

The American species, scarcely forms so large a tree as that of Europe, attaining only the height of 15 to 20 feet, and the leaves are very smooth, except before their complete expansion; the leaflets are about from 13 to 15, oblong-lanceolate, acuminated, with sharp and deep

mucronate serratures. The cymes or flower clusters are large and compound, and the fruit, like that of the European species, is of a bright light scarlet. The berries of the variety *microcarpa* are also of the same colour, but smaller. The seeds, 2 in a cell, appear to have the same cartilaginous coat as in the apple.

Plate L.

A branch of the natural size. *a*. A cluster of flowers. *b*. A flower enlarged.

CERCOCARPUS.†

(Humb., Bonpl. and Kunth.)

Natural Order, Rosaceæ, (Juss.) (Sub-tribe *Cercocarpeæ*.)
Linnæan Classification, Icosandria, Monogynia.

Tube of the *calyx* cylindrical, elongated, the lower part persistent, the border hemispherical, 5-lobed, deciduous. *Petals* none. *Stamens* many, seated on the border of the calyx. *Ovary* solitary; *style* terminal, filiform and villous. *Achenium* narrow, coriaceous, caudate with the long persistent and enlarging plumose style. *Seed* linear.

Shrubs or small trees, with alternate straight-veined, coriaceous, serrate or entire leaves on short petioles. Stipules small, adnate to the base of the petiole. Flowers small, white, axillary or terminating short branchlets, mostly clustered.

FEATHER BUSH.

CERCOCARPUS ledifolius, *foliis crebris perennantibus lanceolatis integris demum glabris subtus tomentosis margine revolutis; floribus sessilibus paucis fasciculatis; cauda carpelorum longissimum tortuosum.*—Nuttall in Torrey and Gray, Flor. Am. 1. p. 427. Hooker ic. pl. tab. 324. (ined.)

We first observed this curious small tree in the Rocky Mountain range, on the lofty hills of Bear River of Timpanagos, near the celebrated "Beer Springs" which

† The name derived from κερκος a tail, and καρπος a fruit, in reference to the character of the fruit.

John T. French del. *T. Sinclair's lith. Phila.*

Feather Bush **Cercocarpus ledifolius.** *Buisson à plumes*

abound with carbonic acid. We saw it afterwards in the central chain, on either side Thornberg's ravine, towards the summits of the highest ridges, to which, by its enduring and dark verdure, it contributed to give a wild and gloomy robing, contrasted by the glittering white of the impending cliffs of gneiss near which it grew. On the summits of the Beer Spring hills it formed extensive thickets, each tree spreading out many branches at a few feet from the ground with considerable regularity, almost in the manner of a Peach tree. The stem was in some trees about a foot in diameter, and the greatest height of the plant did not exceed 15 feet. It had much the appearance of a stunted Olive tree, and was bitterish to the taste.

The wood is hard, tough, whitish, and very close-grained, somewhat resembling that of the Birch. It appeared to be of slow growth and sempervirent; the bark smooth and whitish, the branchlets full of circular cicatrices, and the leaves clustered at the extremities of the twigs. The leaves are at length nearly smooth, at first hairy, with a short pubescence, beneath always softly villous, with brownish curled hairs; their form is lanceolate, about 1¼ inches long, and 3 or 4 lines wide, the border entire and revolute; beneath the hairs on the under side we see the usual straight nerves. The older leaves and other parts of the plant exude in small quantities an aromatic resin, having the scent of that found on some species of Birch (or *Betula*). The flowers are small and white, produced at the extremities of the twigs, and are succeeded by the fruit, which forms one of the most remarkable and singular characters of the genus; these have a strong resemblance to the seeds of the Geranium, each small cylindric carpel sending out a long plumose, tortuous tail, nearly two inches in length, covered with yellowish-white silky hairs, which appear-

ing simultaneously all over the bush, gives it a most remarkable and uncommon appearance. It seemed to prefer poor dry soils, and would bear the climate of Europe or the northern parts of the United States very well from the alpine situations in which we uniformly saw it. It is somewhat astringent to the taste, and agreeably, though not powerfully aromatic.

Plate LI.

A branch of the natural size with its fruit. *a.* The flower. *b.* The fruit.

John T. French del.

T. Sinclairs Lith. Phila

Piscidia erythrina.

Jamaica Dogwood.

Bois vivant de la Jamaique

PL.LII.

...ours Lith Phila

la Jamaique

WEST INDIA DOGWOOD.

Natural Order, Leguminosæ. *Linnæan Classification*, Diadelphia, Decandria.

PISCIDIA,† (Linn.)

Calyx campanulate, 5-toothed. *Corolla* papilionaceous, with the keel obtuse. *Stamens* monadelphous, with the 10th free at the base. *Style* filiform, glabrous. *Legume* pedicellated, linear, with 4 broad longitudinal wings, the seeds separated by interruptions in the pod. The *seeds* oval and compressed, with a lateral hylum; embryo curved; cotyledones thick and elliptic; the radicle inflected.—West India trees with deciduous, unequally pinnated leaves, produced after the developement of the flowers.

JAMAICA DOGWOOD.

PISCIDIA Erythrina, *foliolis ovatis, leguminis stipite calyce multo longiore, alis interruptis.*

Piscidia *Erythrina.* Linn. Sp. pl. Jacq. Amer. p. 206. Swartz, Obs. p. 277. Macfadyen, Flora of Jamaica, vol. 1. p. 258.

Ichthyomethia foliis pinnatis ovatis, racemis terminalibus, siliquis quadrialatis. Browne, Jamaica. p. 296.

Coral arbor polyphylla non spinosa, fraxini folio, siliqua alis foliaceis exstantibus rotæ molendinariæ fluviatilis aucta. Sloane, Jam., vol. 2. p. 32. tab. 176. fig. 4, 5. Lamarck, Illust., tab. 605. fig. A.

Pseudo-acacia, siliquis alatis. Plumier, Icon. 229. tab. 233. f. 2.

The Jamaica Dogwood is a native of the Antilles as

† The name from *piscis*, a fish, in allusion to its employment as a fish poison.

well as of the neighbouring continent of America, having been observed by Humboldt and Bonpland in mountainous places in New Spain, between Acapulco and Mazatlan, and we have now to record it as a native of Key West, in East Florida, where it was collected by Dr. Blodgett. It becomes a tree of about 20 to 25 feet in height, not remarkable for the elegance of its form, the branches being straggling, but yet beautiful in the season of flowering, which is about April, when, with blossoms similar to our favourite White Locust, (*Robinia pseudo-acacia*,) the whole summit of the tree is profusely loaded; they come out some time before the leaves, in numerous panicles or spreading clusters, of a whitish colour, mixed with purple; the uppermost petal or vexillum in the centre tinged with green. The vexillum, externally, as well as the calyx, is covered with a silky pubescence. The leaves are unequally pinnate, with about 5 leaflets, which are either broad ovate or obovate, and slightly acuminate, entire, and beneath, as well as the footstalk, more or less pubescent, particularly when young. The pod is large, stipitate and villous, with four broad undulated longitudinal wings.

In Jamaica this is esteemed one of the best timber trees in the island; the wood is heavy, hard, and resinous, coarse, cross-grained, and of a light brown colour; it is very durable either in or out of water. It makes excellent piles for wharves; and the stakes soon form, in the tropical countries it inhabits, a good live fence. The bark of the trunk is very astringent: it cures the mange in dogs, and would probably answer well for the tanning of leather: it is best known, however, for its effects as a fish-poison, for which purpose it is pounded and mixed with the water in some deep part of a river or creek, when the water soon acquires a reddish shade, and in a few minutes the fish begin to rise to the sur-

face, where they float, as if they were dead, the larger ones, however, recover, but the smaller fry are destroyed. The tincture of the bark, indeed, is found to be an intense narcotic, and has been employed beneficially to relieve the pain produced by carious teeth. Jacquin observes that this quality of intoxicating fish is found in many other American plants. *Tephrosia toxicaria* of South America and *T. piscatoria* of India and the South Sea Islands, both plants of the same family with the present, likewise possess the faculty of intoxicating fish.

Plate LII.

A branch of the natural size. *a*. The flowers and young pods. *b*. The more perfect pod.

ACACIA.†

(Necker, Willd.)

Natural Order, Leguminosæ. *Linnæan Classification*, Polygamia, Monœcia.

Flowers polygamous, perfect and staminiferous.—*Calyx* 4 to 5-toothed. *Petals* 4 to 5, distinct or united into a monopetalous 4 to 5-cleft corolla. *Stamens* from 8 or 10 to 200. *Legume* without interruptions between the seeds, dry, (without pulp,) and 1-valved.

These are trees and shrubs principally of warm or mild climates, with or without stipular or scattered spines. The leaves are usually small and variously pinnated, sometimes (particularly in the New Holland species) the true leaves in the adult are abortive, and the simple leafy petioles, called phyllodes, alone supply their place. Flowers often yellow, more rarely white or red, disposed in spherical heads or in spikes.

BROAD-PODDED ACACIA.

ACACIA latisiliqua, *inermis glabra, pinnis 5-jugis, foliolis 10-15-jugis ellipticis obtusis, stipulis bracteiformibus dimidiato-cordatis, capitulis pedunculatis aggregatis in paniculam terminalem subdispositis, legumine longe stipitata, plana, utrinque acuta.*—Decand. Prod., vol. 2. p. 467.

Acacia latisiliqua, *inermis, foliis bipinnatis partialibus quinquejugis, ramis flexuosis, gemmis globosis.* Linn Sp.

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† An ancient Greek name, from ακαζω, *to point*, or *sharpen*, many of the species being thorny.

PL. LIII.

J. B. Bauer del. Lith. by Thos. Sinclair

Broad-podded Acacia — **Acacia latisiliqua.** — Acacia à large silique

Pl. Persoon. Synops., vol. 2. p. 265. Willd. Sp., vol. 4. p. 1067. Macfadyen, Flor. Jam., vol. 1. p. 318.

Acacia non spinosa, siliquis latis compressis, flore albo. Plumier, (Ed. Burm.) tab. 6.

This species, like many others of the genus, remarkable by its light waving feather-like foliage, is, according to Dr. Blodgett, rare at Key West, where it becomes a very large and spreading tree, flowering in the month of May. It is also a native of the West Indies and the warmer parts of the neighbouring continent, where it was found by Plumier and Aublet. According to Macfadyen, it is a cultivated plant in Jamaica. It bears a great resemblance to the Acacia figured by Catesby, tab. 42, which is quoted as *A. glauca*, though by no means the same plant as plate 36 of Trew, which latter is the species most commonly cultivated under that name.

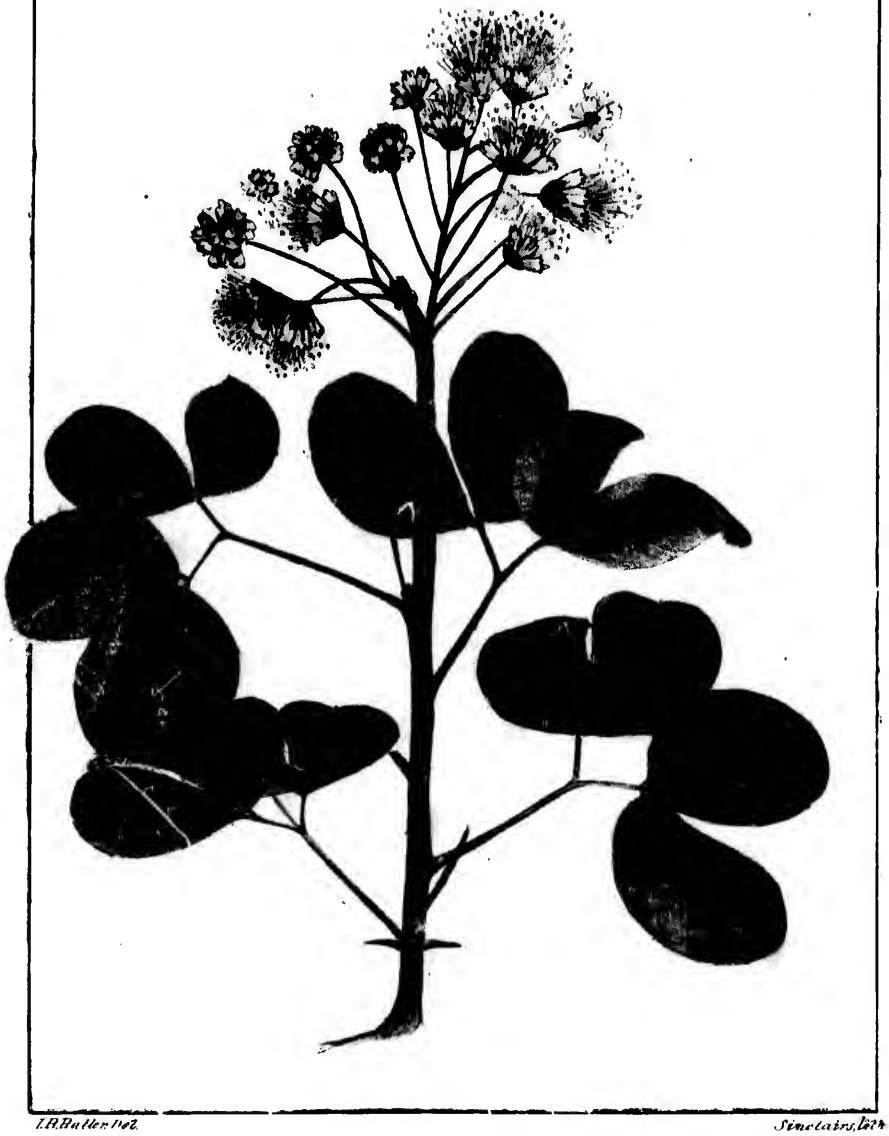
The wood of this Acacia is said to be white, hard, and close-grained. The trunk, as described by Catesby, attains a diameter of three feet, and is accounted an excellent wood, next to the mahogany of Jamaica, and is the best to be found in the Bahama islands. For curious cabinet work it excels mahogany in its variable shining tints, which appear like wa ared satin. Several species of the genus afford very ' ard and durable wood.

The small branches in this species are grey, slender, and somewhat zigzag. The leaves are bipinnate, on main petioles, a little more than an inch long; between the first pair of pinnules, is usually seen on the petiole a projecting though sometimes merely a depressed gland, the next pairs are without glands to the summit of the leaf stalk, where there is then another depressed gland. The pinnules vary in our plant from 2 to 4 pair, (we have not seen 5.) The leaflets of the pinnule are oblong-elliptic, nearly smooth, obtuse, somewhat oblique, and rounded at base, in from 8 to 15 or 16 pairs. From the

axills of the 2 or 3 uppermost leaves come out simple or aggregated peduncles, usually by 3's, above, running together so as to form a small sparse flowered panicle, with each of the clusters subtended by rather large deciduous, amplexicaule, semicordate and acuminate smooth bractes, which resemble stipules. The flowers are disposed in spherical, rather small heads, on peduncles about ¾ of an inch long; they appear white from the colour of the long tortuous hair-like stamens. The calyx is canescent, with a close pubescence, and 5-cleft at the summit. The corolla is deeply 5-parted, and of a purplish-brown, with oblong-lanceolate divisions. The stamens are 10 or more, with very long filaments, and very small whitish rounded anthers. The legume, (according to Dr. Blodgett,) is 4 or 5 inches long, flat, thin, many-seeded, and an inch or more in breadth.

Plate LIII.

A small branch of the natural size. *a*. The flower somewhat enlarged.



I.B.Butler del.

Sinclairs,lith.

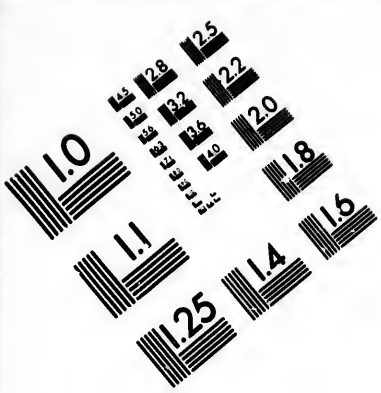
Blunt leaved Inga.

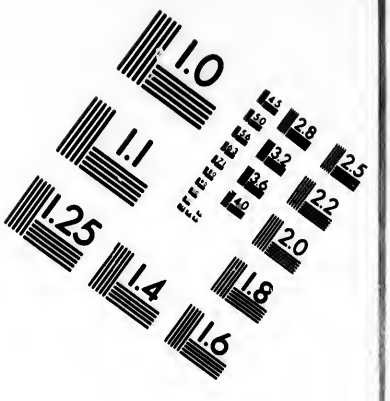
Inga Unguis Cati

Inga ongle de chat

Sinclair, lith.

chat





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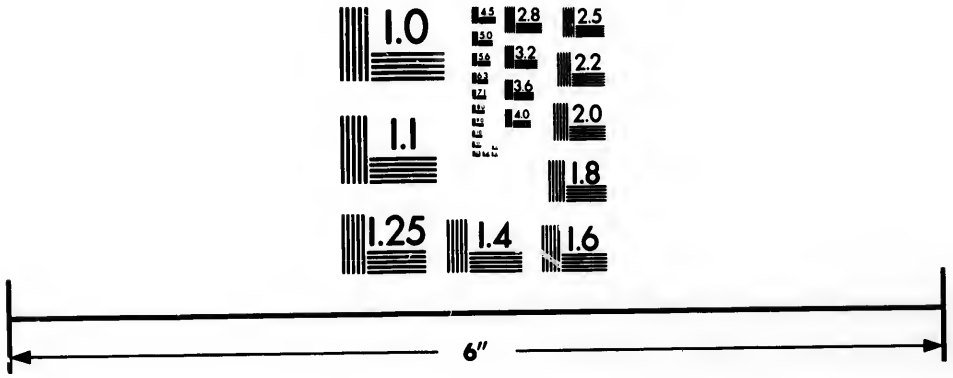

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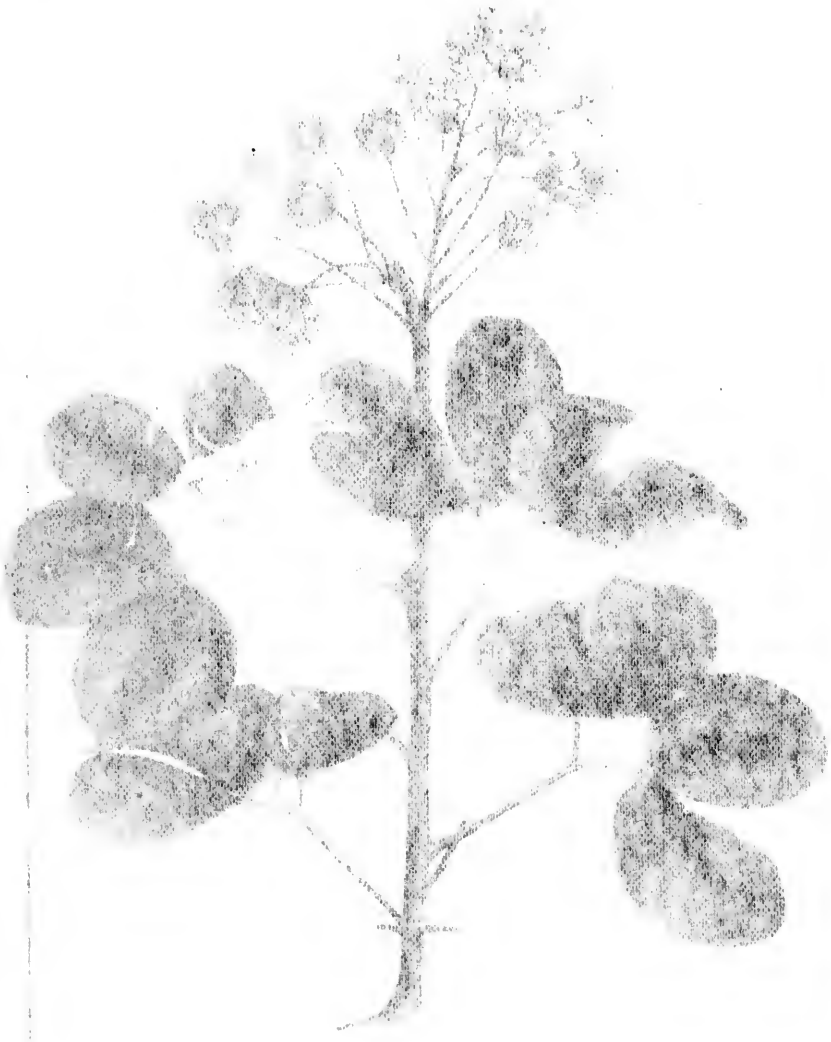

INGA.†

(PLUMIER, WILLD.)

Natural Order, LEGUMINOSÆ. *Linnæan Classification*, POLYGAMIA, MONŒCIA.

Flowers POLYGAMOUS, perfect, and male.—*Calyx* 5-toothed. *Corolla* monopetalous, tubular-funnel-formed, exceeding the calyx in length, with the border regular and 4 or 5-cleft. *Stamina* numerous, exserted, (10 to 200,) with the capillary filaments more or less united into a tube. *Legume* broadly linear, compressed, 1-celled. *Seeds* usually covered with pulp, more rarely with a pellicle or with farinaceous matter.

Shrubs or trees of warm or tropical climates, chiefly indigenous to India and America, usually unarmed. Flowers in spikes or globular heads, red or white, rarely yellow.

BLUNT LEAVED INGA.

INGA UNGUIS-CATI,‡ *spinis stipularibus rectis, foliis conjugato-geminatis, foliolis subrotundo-ellipticis subdimidiatis membranaceis glabris, glandula in dichotomia petioli glabri et inter foliola, florum capitulis globosis in racemum terminalem dispositis, legumine torto.*—DECAND. Prod., vol. 2. p. 436.

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† An American name adopted by Plumier.

‡ The specific name of *unguis-cati*, alludes to the short and rather concealed thorns with which this tree is provided. Browne calls it the *black-bead* shrub, and from others in Jamaica, according to Macfadyen, it receives the names of *Barbary-thorn* and *Nephritic tree.*

Mimosa *Unguis-cati.* Linn. Spec. 499. Willd. Sp. pl., vol. 4. p. 1006. Jacquin, Hort. Schoenbrunn, vol. 2. tab. 34. Descourt. Flor. Antil., vol. 1. tab. 11. Swartz, Obs. p. 389. Macfadyen, Flor. Jam., vol. 1. p. 306.

Acacia quadrifolia, siliquis circinnatis. Plumier, (Ed. Burman,) Icon. 4. Pluken., tab. 1. fig. 6.

Acacia arborea major spinosa, pinnis quatuor, siliquis varie intortis. Sloane, Hist. Jam., vol. 2. p. 56.

Mimosa fruticosa, foliis ovatis binato-binatis, seminibus atro-nitentibus. Browne, Jamaic., p. 252.

This very singular leaved tree, attaining about the height of from 10 to 20 feet, is indigenous to many of the West India Islands, as well as to Cumana and Cayenne on the neighbouring continent, where it was observed by Humboldt and Bonpland, and in the latter place by Aublet. This is also another of the Caribbean productions which extends to the limits of the United States, having been recently found in Key West by our friend Dr. Blodgett.

The wood is said to be yellow, the summit of the tree irregular, and the branches straggling. The smaller twigs are round and gray, inclining to brown, and covered with minute warts. The thorns are stipular, or come out at the junction of the leaf with the stem; they vary in size, but are always short, and in some of the twigs wholly absent. The leaves are bipinnate, only 4 in number, the leaflets on each pinule being only a single pair, sessile, obovate, very obtuse or subemarginate and rounded above, glabrous and of a thin texture, with widely reticulated nerves; the petiole channelled above, with a hollow circular gland at the junction of the secondary petioles. Racemes terminal, thyrsoid, the pedicels long and fastigiate, almost like a corymb. Flowers greenish-yellow and smooth, in globose heads. Calyx small, 5-toothed. Corolla more than twice the

length of the calyx, 5-cleft towards the summit, the segments acute. Filaments numerous, slender and capillary, yellow, three times the length of the corolla. Legume torulose, spirally twisted, of a reddish-purple colour; seeds 5 or 6, black, shining, roundish, compressed, half covered with a white fleshy arillus-like pellicle.

This plant has the credit of being a sovereign remedy for nephritic complaints, for the stone and gravel, and also for obstructions of the liver. The bark is the part employed, and Barham states (in his account of Jamaica, where this tree grows) that in his time it was in such general use, that it was rare to meet with a tree that had not been barked. The decoction, of a red colour, is very astringent, and acts as a diuretic. It has also been employed externally as a lotion and injection, to remove the relaxation of the parts. Upon the whole, it would seem to be entitled to the notice of physicians, and deserves a further examination.

Plate LIV.

A branch of the natural size. *a.* The flower somewhat enlarged.

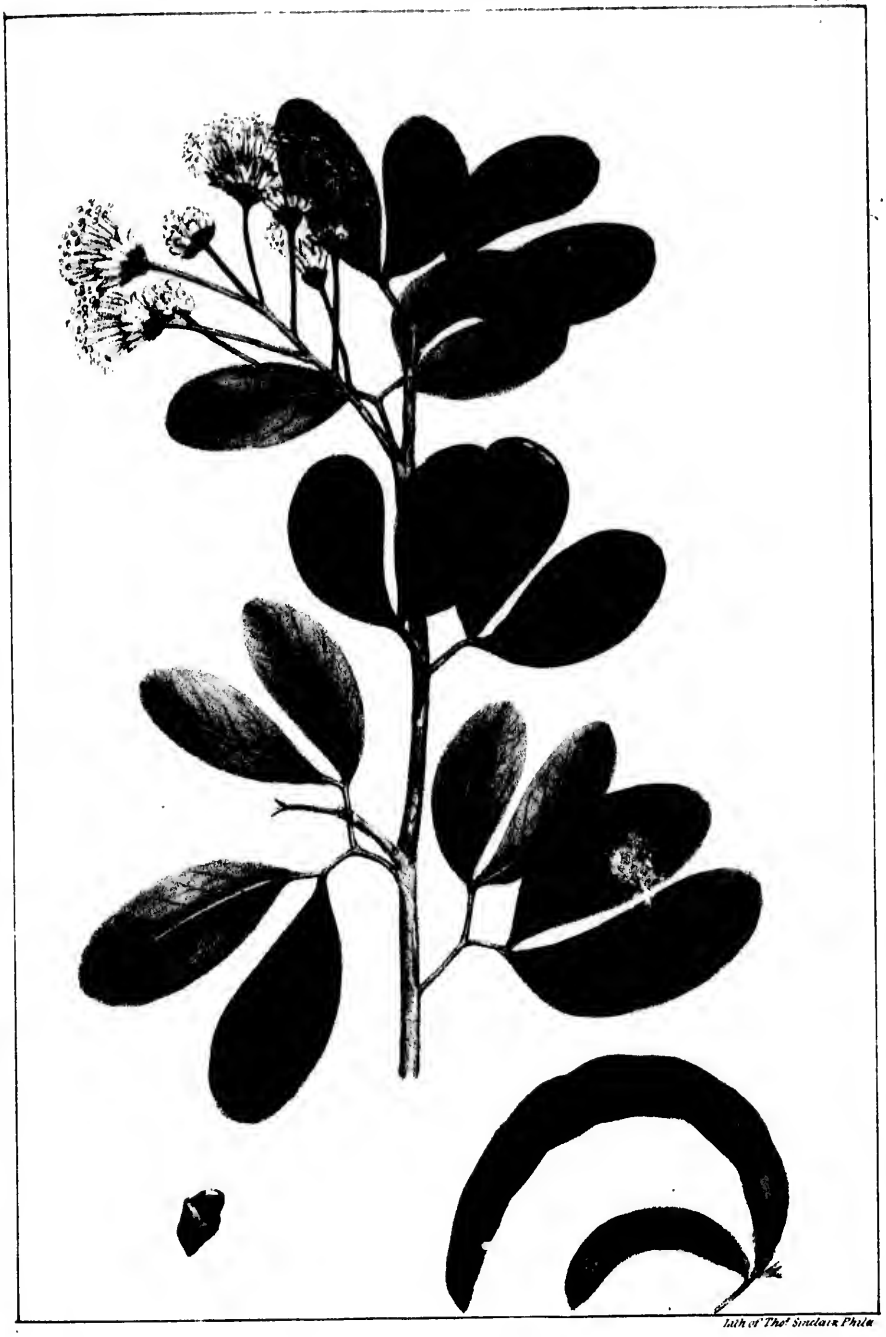
GUADALOUPE INGA.

INGA GUADALUPENSIS, *inermis, foliis conjugato-geminatis, foliolis obovatis subrhombeis obtusis venosis glaberrimis, glandula in dichotomia petioli glabri et inter foliola, capitulis globosis pedicellatis racemosis, legumine torto glabro.* DECAND. Prod., vol. 2. p. 436.

MIMOSA GUADALUPENSIS, *foliis bijugis foliolis ovalibus, obliquis subcoriaceis, capitulis corymbosis.* PERSOON. Synops., vol. 2. p. 262.

THIS species also becomes a tree of 12 to 20 feet elevation at Key West, according to the observation of the same gentleman who discovered the preceding. The specimen described by Persoon, came from the island of Guadaloupe. Decandolle suspects that it may be a mere thornless variety of the preceding species, (*I. Unguis-cati,*) but from numerous specimens which we have inspected from Florida, there can remain very little doubt of its distinction as a peculiar species.

The spines appear to be wholly wanting, the bark of the branches is grey and rough with minute warts. The petioles are about three lines long, and of the same length with the partial ones; both are strongly grooved and distinctly articulated. The leaves are smooth and coriaceous, shining above, dull and paler beneath, delicately and reticulately veined, quite opaque from their thickness, cuneate-oblong or lanceolate-oblong, obtuse, and sometimes rounded at the apex, at other times rather acute and apiculated. A depressed gland at the summit of the petiole between the stalks, and also one less distinct between the pairs of leaflets. The flowers are axillary and long pedunculate; they likewise termi-



lith of Thos Sinclair Phila

Guadaloupe Inga

Iuga Guadalupensis.

Inga de la Guadeloupe

nate the branches in corymbose racemes. The heads of flowers are hemispherical, and appear to have been yellowish-green. The calyx is campanulate, with acute and very distinct teeth; the corolla is monopetalous, more widely campanulate at the summit, twice as long as the calyx, with acute segments. The pods are dark purplish-brown, much curved, 3 to 4 inches long, about ½ an inch wide, attenuated at the base, torulose and irregularly narrowed between the seeds, but not intercepted within. The seeds are deep black, somewhat compressed, and at one extremity half covered by a bright rose-red fleshy and lobed arillus.

Plate LV.

A branch of the natural size. *a*. The ripe pod. *b*. The seed.

SCHÆFFERA.†

(JACQUIN.)

Natural Order, CELASTRINEÆ? *Linnæan Classification*, DIŒCIA, TETRANDRIA.

DIŒCIOUS.—*Calyx* small, 4-parted, persistent. *Petals* 4, alternating with the sepals. *Stamina* 4, opposite to the petals. *Ovarium* 2-celled. *Stigmas* 2. *Berry* dry, bipartite, cells 1-seeded. *Seed* erect, plano-convex; albumen fleshy; *embryo* central, straight and flat.

Trees of tropical America with alternate, entire, coriaceous leaves; stipules none; flowers several, axillary, small and pedicellated, white or green.

JAMAICA BOX-WOOD.

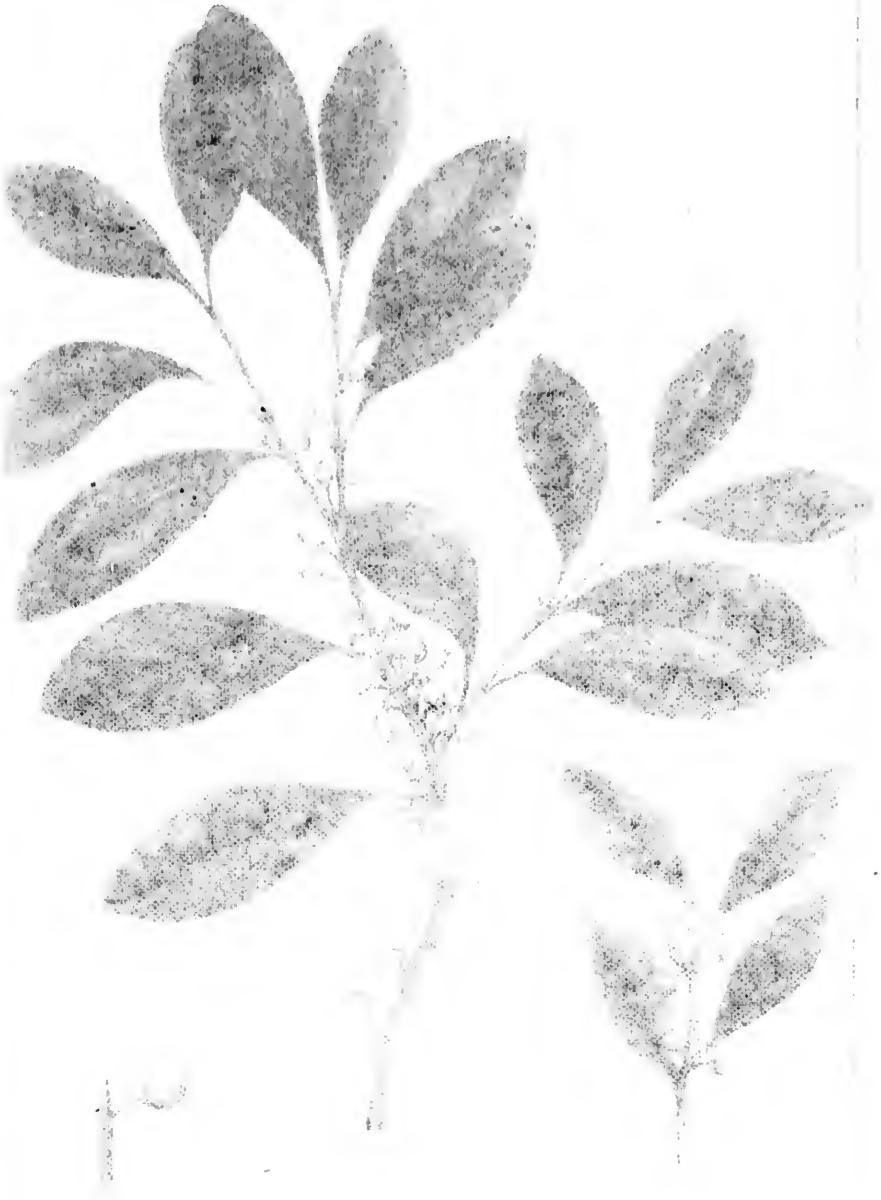
SCHÆFFERA BUXIFOLIA, *foliis lanceolato-ovatis basi attenuatis plerisque acutis ramulisque glabris, petalis viridis obtusis.*

SCHÆFFERIA FRUTESCENS, *β. buxifolia*, foliis latius ovatis mucronatis. DECAND. Prod., vol. 2. p. 41. LAM. Illust. t. 809.

Buxi folio majore acuminato, arbor baccifera, fructu minore croceo dipyreno. SLOANE, Hist. Jamaica, vol. 2. p. 102. tab. 209. fig. 1.

ACCORDING to Dr. Blodgett, this plant, common at Key West and on the adjoining keys of East Florida, becomes a tree of 30 feet in height, and is an article of

† Named in honour of James Christian Schæffer, of Ratisbon, author of several Botanical works.



Pl. LVI.

Lith of Thos Sinclair Phila

Schœffera buxifolia.

Jamaica Box-wood

Schœffera à feuilles de buis

export from the Bahama islands, where it is valued at about 40 dollars the ton. From Poiteau's herbarium it appears to grow in the island of St. Domingo; it is also apparently identic with the Jamaica plant of Sloane. The wood is pale yellow, very close and fine-grained, and might easily be mistaken for that of the true Box, which name it bears in the Bahamas.

The twigs are slender and covered with a light grey bark. The leaves are very smooth and shining on the upper surface, with slender branching veins, lanceolate and very acute, yet on the lower part of the same specimen blunt or even emarginate, but they are always narrowed below. The male flowers (the only ones I have seen) are small, on very short peduncles, 3 or 4 together, with a rather minute calyx, and 4 broadish, green, oblong, obtuse petals. The stamens are usually 4, shorter than the petals, sometimes more by the ingraftment of 2 peduncles. The stigmas are 2 and short. The berries rather flattened and 2-lobed, about the size of a grain of cubebs, dry, but with a thick integument, 2-celled, 2-seeded, and of a pale orange-yellow when ripe. Appearances of resin are visible on some of the buds, and the berries have rather an acrid bitter taste, something like that of tobacco; yet, notwithstanding their disagreeable taste, they are greedily devoured by birds.

The white flowers of *S. frutescens*, the *S. completa* of Swartz, and its humble stature, appear to distinguish it from our plant.

PLATE LVI.

A branch of the natural size. *a*. The male flower. *b*. The fruit.

CEANOTHUS.†

(Linn., in part.)

Natural Order, Rhamneæ, (Decand.) *Linnæan Classification*, Pentandria, Monogynia.

Calyx campanulate, shortly 5-cleft, with the border deciduous. *Petals* 5, cucullate and arched, exserted, with long claws. *Stamens* exserted. *Disk* thickened at the margin surrounding the ovary. *Styles* 3, united to the middle. *Fruit* dry and rigid, mostly 3-celled, obtusely triangular, seated on the persistent tube of the calyx, tricoccous, dehiscing by the inner sutures. *Seeds* obovate, even.

Shrubs or undershrubs, rarely small trees of the temperate parts of America. Roots large and ligneous. Leaves alternate, ovate or elliptical, mostly serrate, sometimes entire, persistent or deciduous. Flowers white or blue, in umbel-like clusters, aggregated at the extremities of the branches into thyrsoid corymbs. The taste of the root and most other parts of the plant more or less astringent. One of the species was formerly employed as a succedaneum for tea, and hence the name of "*New Jersey Tea.*"

TREE CEANOTHUS.

CEANOTHUS thyrsiflorus, *arborea, erecta; ramis angulatis, foliis ovato-oblongis, subellipticis, obtusis crassiusculis, glanduloso-serrulatis subglabris, subtus subvillosis; thyrsis oblongo-ovalibus densifloris corymbulis axillaribus terminalibusque, ramis floriferis foliosis; floribus azureis.*

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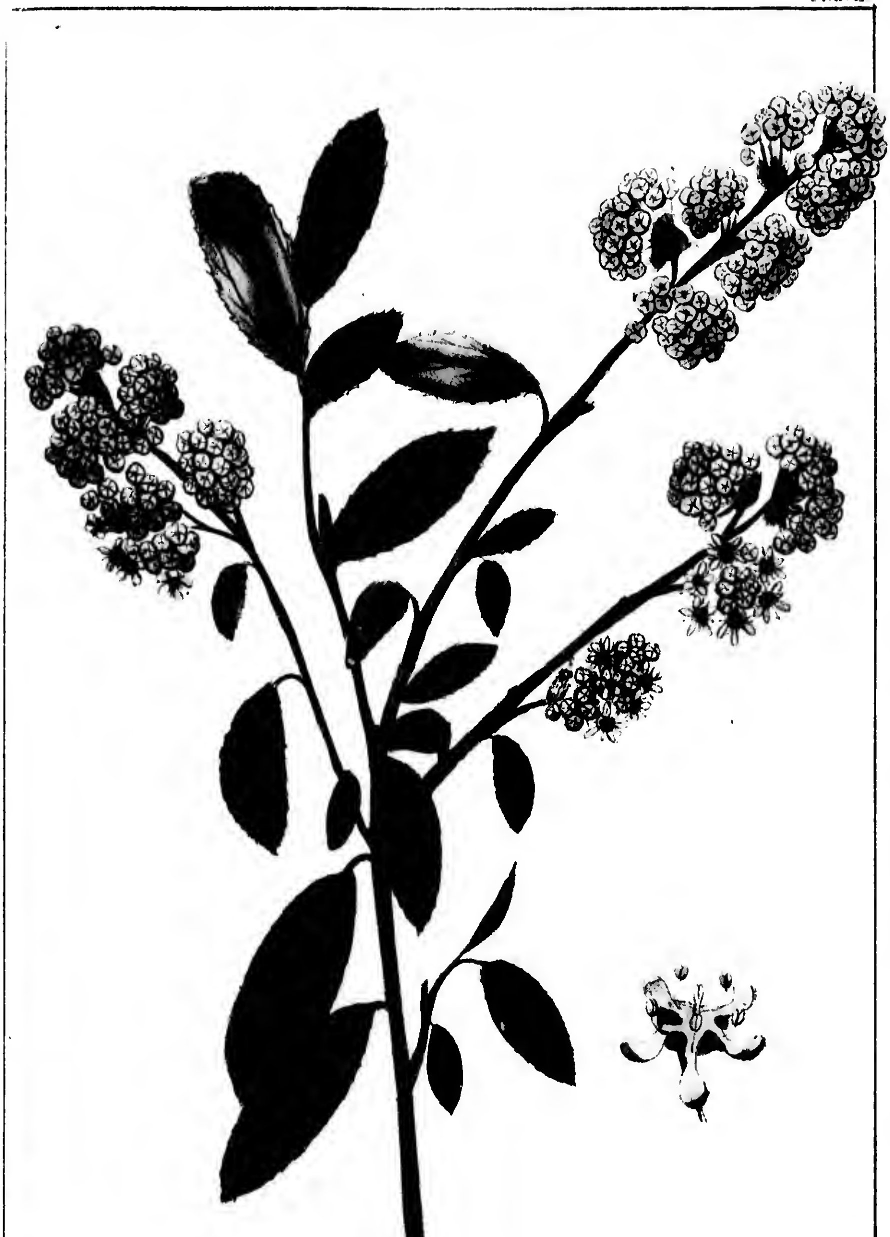
† An ancient Greek name employed by Theophrastus for a plant now unknown.



I. B. Butler Del. Sinclair's lith.

Tree Ceanothus

Ceanothus thyrsiflorus *Ceanothe thyrsiflore*

CEANOTHUS *thyrsiflorus*. ESCHOLTS, in Mem. Acad. St. Petersb. (1826.) HOOKER, Flor. Bor. Amer. 1. p. 125. HOOKER and ARNOTT, in Botan. Beechey, p. 136. TORREY and GREY, 1. p. 266.

THOUGH several species of this elegant genus in California, Oregon, and along the North-West Coast become considerable shrubs, this is the only one which can be classed amongst trees. It was somewhat abundant on dry gravelly hills in the vicinity of Monterey, where I arrived in the month of March, about the time that it was bursting into flower. My attention was called to it in the wood-pile, where considerable stems, at least as thick as a man's leg, lay consigned to the ignoble but still important use of fire-wood. The wood appeared hard, tough, of a reddish colour, and it afforded a durable fuel. The branches were tortuous, spreading, and covered with a rough bark, the branchlets green and angular. Leaves nearly elliptic, the uppermost ovato-oblong, all glandularly serrulate; above smooth, beneath pubescent, particularly along the three strong nerves which traverse the leaf to the summit; the petioles very short; the upper branchlets terminating in thyrsoid panicles of deep blue and very elegant flowers, made up of numerous round, dense clusters, in small corymbs; the terminal mass oval, about three inches long, by about an inch in width; the clusters are subtended by ovate, acuminate, broad, villous and deciduous bractes. The calyx, petals and peduncles, are of a deep sky-blue; the segments of the calyx ovate; the petals, as usual, unguiculate and exserted as well as the stamens; the anthers are yellow. With the fruit I am wholly unacquainted.

As this is a hardy and very ornamental plant it well deserves cultivation. The flowers appear early in the

spring, and the whole summit of the tree appears of an intense blue.

The bark of the *Ceanothus azureus*, a plant allied to the present species, is esteemed in Mexico as a febrifuge.

Plate LVII.

A branch of the natural size. *a*. The flower.

Ceanothus *macrocarpus*. Nutt. in Torrey and Grey. As this is not the plant of Willdenow, I take this opportunity of correcting the error, and propose to call it *Ceanothus megacarpus*.

Persimmon (*Diospyrus virginiana*.) *β*. pubescens, *foliis subtus molliter pilosis*.

Of this remarkable variety, with the leaves softly pilose beneath, I have seen specimens from Louisiana collected by Mr. Teinturier, and a very similar, but less pubescent variety, was found in Georgia by the late Dr. Baldwyn, (according to specimens in the herbarium of the Academy of Natural Sciences in this place.)

T.D. Butler. Del. Sinclair. sculp.

Snake Wood

Colubrina Americana *Bois de Couleuvre*

Snake Wood

Colubrina Americana — *Bois de couleuvre*

COLUBRINA.

(Richard.)

Natural Order, Rhamneæ. *Linnæan Classification*, Pentandria, Monogynia.

Calyx spreading, 5-cleft; the tube hemispherical. *Petals* 5, obovate, convolute. *Stamens* 5, with ovate, 2-celled anthers. *Disk* fleshy, rather flat, slightly 5-angled. *Ovary* immersed in and adhering to the disk, 3-celled. *Style* trifid. *Stigmas* 3. *Fruit* capsular, dehiscent, tricoccous, girt at the base by the adnate, permanent, entire tube of the calyx. *Seeds* furnished with a short stalk, the testa coriaceous, very smooth.

Trees or shrubs of tropical America and Asia. Leaves alternate, with pinnate nerves and reticulated with transverse veins. Flowers in short axillary cymes.

SNAKE-WOOD.

COLUBRINA americana, *foliis ovatis subacuminatis integris, subtus ramulis floribusque ferrugineo-villosis, floribus axillaribus corymboso adgregatis.*

Ceanothus *colubrinus*. Lamarck. Decand. Prod., vol. 2. p. 31. Persoon. Synops., vol. 1. p. 244.

Rhamnus *colubrinus*. Jacquin, Amer. 74. No. 2. Hort. Vindobon., vol. 3. tab. 50. Vogel, icon. rar. tab. 105. Linn. Syst. vol. 1. p. 195.

Rhamnus *arboreus, foliis obovatis venosis, capsulis sphæricis, inferne ad medietatem calyptratis.* Browne, Jamaic. p. 172. No. 2.

RHAMNUS *ferrugineus.* NUTT. in TORREY and GRAY. Flora N. Am. 1. p. 263. and Journ. Acad. Nat. Sc. Philad., vol. 7. p. 90.
Arbor baccifera indica, foliis majoribus splendentibus flore pentapetalo. COMM. Hort. p. 475. tab. 90.

A FLOWERING specimen of this tree was collected at Key West, in East Florida, by Mr. Titian Peale. From this imperfect relic I conceived it to belong to a new species which I hence called the ferruginous Buckthorn, but on comparing it more attentively with a fine specimen of *Rhamnus colubrinus* collected in St. Domingo by Poiteau, I felt satisfied of their identity. It is indigenous to the islands of St. Martin, the Bahamas, Jamaica, St. Domingo, and Cuba, where, on the high mountains, it becomes a tree of 20 feet in height; but on the borders of the sea, among the brushwood, it seldom attains a greater height than that of 6 or 7 feet. The branches spread out horizontally and are thickly covered with leaves. It is remarkable for the ferruginous down spread over the petioles and young leaves, as well as upon the peduncles and calyx of the flowers. The bark is smooth and blackish, but the younger branches are grey and downy. The leaves are alternate, oval, somewhat acuminately and abruptly pointed, entire, smooth and shining above, tomentose beneath when young, afterwards only so on the nerves, 3 to 4 inches long by about 2 inches wide; the petioles from a quarter to half an inch long. The flowers are small, disposed in short axillary corymbs, containing in each cluster about 7 to 10. The calyx is villous and ferruginous, 5-parted, the divisions ovate and somewhat acute, the petals, 5 in number, are narrow, linear-oblong, about the length of the divisions of the calyx, unguiculate, concave, and partly embracing the stamens, which are about the same length. Fleshy disk of the germ conspicuous, broadly 5-lobed. The style is simple,

terminating in 3 simple, obtuse stigmas. The fruit nearly half way embraced by the persistent base of the calyx, is a capsule of 3 lobes, with 3 valves, and 3 elastic cells. The seeds are solitary, nearly round and somewhat compressed, shining and black, remaining often after the lapse of the capsule attached to the base of the cells. With the wood of this tree or its economy, I am unacquainted.

Another species of this genus, with smooth, elliptic and somewhat acuminated leaves on longish petioles, occurs, according to La Sagra, in Cuba. In this also, the small axillary umbels are very few-flowered, smooth and pedicellated; this might be called *Colubrina glabra.*

Plate LVIII.

A branch of the natural size. *a.* The umbel of flowers. *b.* The flower a little enlarged. *c.* The seed remaining attached to the receptacle.

BUCKTHORN.

Natural Order, Rhamneæ. *Linnæan Classification*, Pentandria, Monogynia.

RHAMNUS,† (Linn.)

Calyx urceolate, with the border 4 or 5-cleft. *Petals* 4 or 5, alternating with the calyx, entire, emarginate or 2-lobed, more or less convolute, sometimes wanting. *Torus* thin, lining the tube of the calyx. *Stamina* situated before the petals. *Ovary* free, and not immersed in the torus or disk, 2 to 4 celled. *Styles* 2 to 4, distinct, or combined. *Fruit* drupaceous, containing 2 to 4 cartilaginous nuts.

The Buckthorns are all shrubs or small trees, with alternate and rarely opposite leaves, on short petioles, often pennately nerved. The flowers are small and greenish, usually in short axillary clusters or small corymbs.

CAROLINA BUCKTHORN.

RHAMNUS carolinianus, (Walter, Flor. Carol. p. 101.) *erectus, foliis ovali-oblongis integriusculis glabris, umbellis pedunculatis, floribus hermaphroditis, fructibus globosis.* Michaux, Flora Boreal. Amer., vol. 1. p. 153. Decand. Prod., vol. 2. p. 26.

Rhamnus Carolinianus; erect, unarmed; leaves oval-oblong, obscurely serrate, nearly glabrous (or rarely pubescent beneath); umbels axillary, on peduncles much shorter than the petioles; flowers perfect, pentandrous (sometimes tetrandrous), petals minute, embracing the very short stamens; styles united to the summit; stigmas 3; fruit globose, rather dry, 3 to 4 seeded. Torrey and Gray, Flora N. Amer. 1. p. 262.

This fine Buckthorn, though usually a shrub in our

† From the Celtic *ram*, branching: and hence the Greek ῥαμνος.

southern and south-western forests, on the borders of Palmetto creek, Laurens county, in Georgia, the late Mr. Croom observed trees of this species 30 to 40 feet high. In the forests of Arkansa, they attain the height of ordinary peach or apple trees, and congregated together produce shady groves of considerable extent. The quality or uses of its wood remain a desideratum. The stems are, however, slender for their height, being not more than 4 to 6 inches in diameter.

The leaves are 3 to 6 inches long, and 1 to 2 inches wide, oval-oblong and widening towards the summit, the extremity more or less briefly acuminate, the border slenderly serrulate, and sometimes irregularly waved, the lateral pennate veins are 10 to 12 and rather distant; the very young leaves before expansion are somewhat ferruginously villous. Umbels on stout pedicels, from 10 to 15 flowered. The calyx pubescent but not ferruginous, the segments lanceolate; petals 2-lobed at the extremity. The fruit black, as large as a small pea, is mostly 3-seeded. Seeds black, plano-convex, without a groove.

This species begins to appear in North Carolina, and extends through Georgia to Florida. West of the Mississippi, it is abundant on the banks of the Arkansa, and Mr. Say collected it within the range of the Rocky Mountains.

In Bartram's Botanic Garden, at Kingsessing, where this species is perfectly hardy, it forms an elegant tree, and has attained the height of near upon 25 feet in 20 years. Colonel Carr, the worthy proprietor of this interesting garden, tells me that for a considerable time the berries remain red and are very ornamental; at length towards winter they turn black, and remain so for a long time, until some famished flock of Robins falls upon and strips them nearly at once.

PLATE LIX.

A branch of the natural size. *a*. The flower enlarged. *b*. The berries.

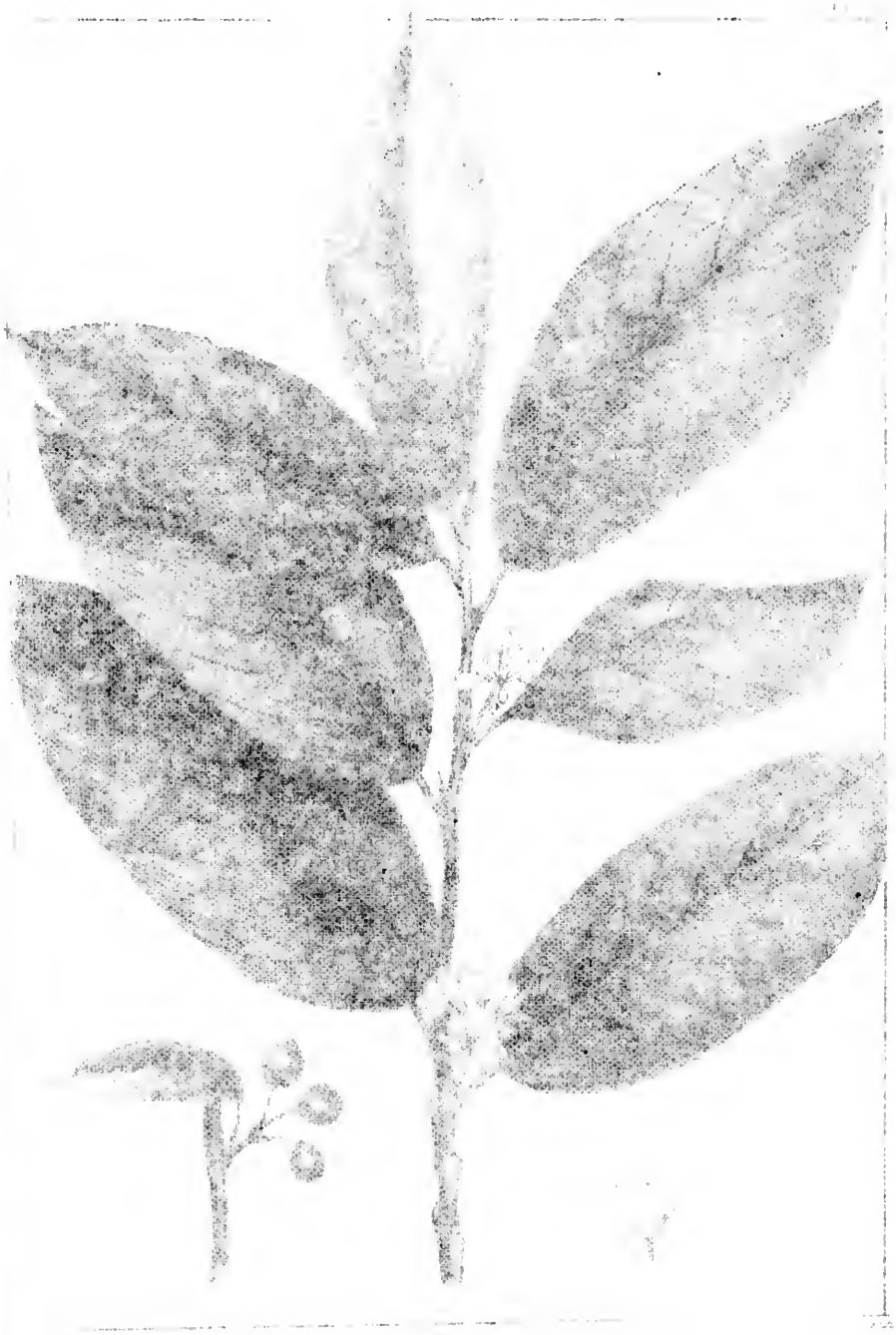
PURSH'S BUCKTHORN.

RHAMNUS PURSHIANUS, (Decand.) *inermis, erectus, foliis lato-ellipticis minute denticulato-serratis subtus pubescentibus nervis lateralibus obliquis lineatis, pedunculis axillaribus umbellatis floribusque pubescentibus, calyce 5-fido, petalis minutis cucullatis.* HOOK. Flor. Bor. Amer., vol. 2. p. 123. t. 43. DECAND. Prod., vol. 2. p. 25.

RHAMNUS *alnifolius.* PURSH, Flor. Am. Sept., vol. 1. p. 166. (non *L'Heritier.*)

THIS is another species of Buckthorn which becomes a tree of 10 to 20 feet elevation, with a trunk of 9 inches in diameter. It was discovered within the Rocky Mountain range on the banks of Salmon river, by Captain Lewis; and it is of common occurrence on the borders of the Oregon, in the upland shady woods near the skirts of the prevailing Pine forests. Menzies also met with this tree near Nootka, on the North-West coast of America. It bears a strong resemblance to the *R. Carolinianus*, but the leaves are broader, shorter, and more decidedly serrated, and the berry is strongly 3-lobed.

The branches are round, dark brown and pubescent. The leaves are 3 to 5 inches long, petiolate, deciduous, but at length somewhat coriaceous, broadly elliptic, rounded or rarely somewhat acute at the base, obtuse or sometimes very shortly acuminate, the margin minutely serrulate, the young leaves pubescent at length,



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[illegible]

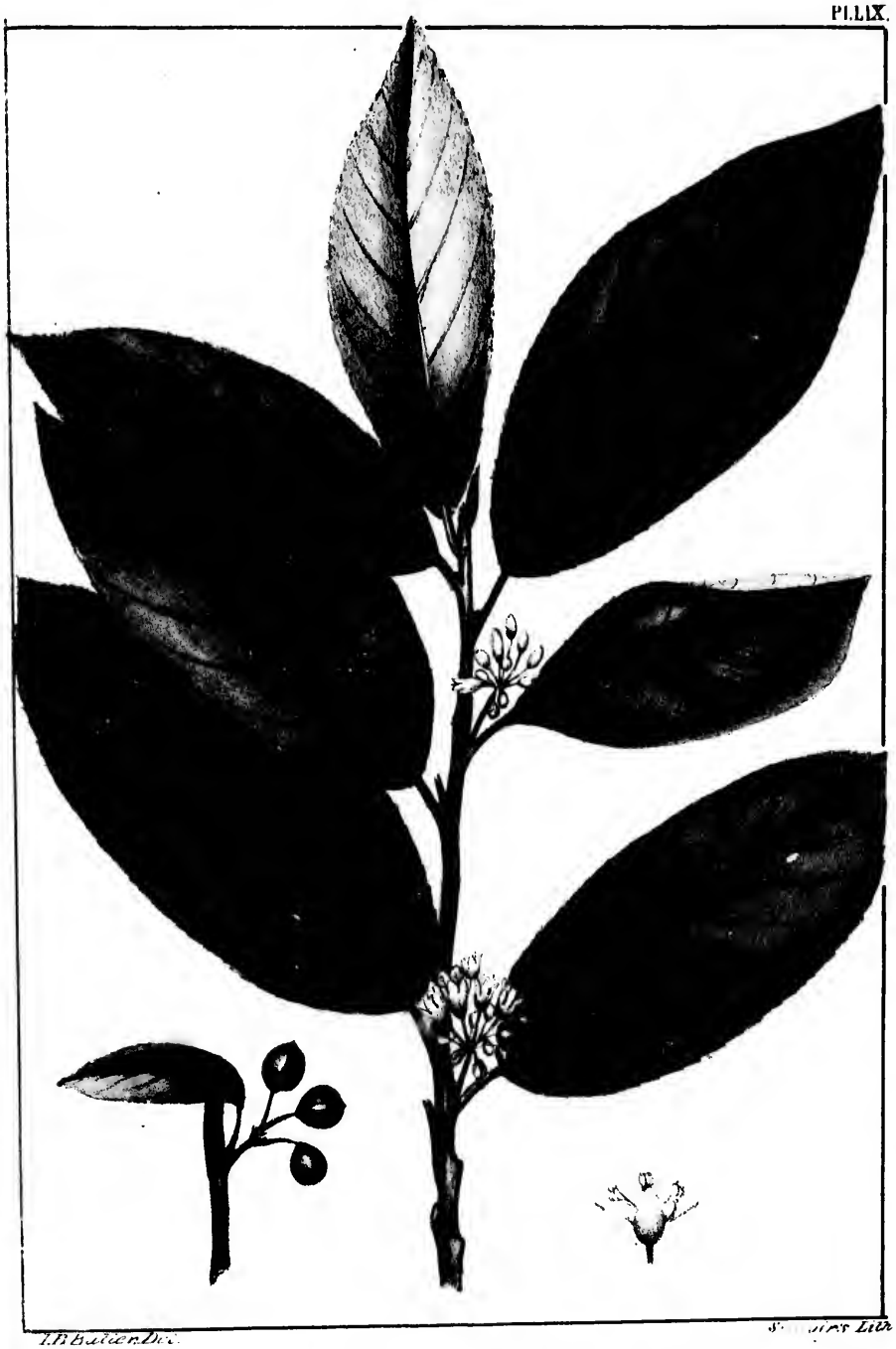
P[illegible]RSH'S BUCKTHORN.

[illegible] *inermis, erectus,* [illegible] *foliis* [illegible] *pubescentibus,* [illegible] Hook. Flor. Bor. Amer. [illegible] Prel. vol. 2. p. 97.

[illegible] Pursh, Flor. Amer. Sept. vol. 1. p. 166.

[illegible] B. [illegible] of 9 [illegible] Cap- [illegible] the [illegible] ear [illegible] North-West coast of America. [illegible] a strong resemblance to the *R. Caroliniana*, but the leaves are broader, shorter, and more decidedly serrated, and the berry [illegible] strongly 3-lobed.

The branches are round, dark brown and pubescent. The leaves are 3 to 5 inches long, petiolate, [illegible] but at length somewhat coriaceous, [illegible] elliptic, [illegible] somewhat acute [illegible] pubescent at length.



Carolina Buckthorn

Rhamnus Carolinianus

Nerprun de la Caroline

only so on the nerves beneath, the nerves in oblique lines; petioles pubescent. Stipules quickly deciduous, peduncles solitary, an inch or more long, umbellated; pedicels pubescent, elongated in the fruit. Calyx externally pubescent, 5-cleft, the segments acute, internally carinate. Petals minute, cucullate, bifid at the apex, shorter than the calyx, very concave and cucullate. Stamens opposite the petals and involved in them. Germ small, ovate. Style shorter than the germ; the stigma obtuse and 3-lobed. Berry wider above, 3-celled, 3-seeded. The seed obovate, black, very shining, convex externally, internally with a central elevated line at the base, at the hylum yellow.

The Cathartic Buckthorn (*Rhamnus cathartieus*) appears to be a native of the northern states of the Union, as it occurs in the wildest situations. The berries and syrup of this species have long been employed in medicine. The juice of the berries, in a dose of 5 or 6 drachms, proves a strong cathartic, but it is generally made into a syrup. The bark has also an emetic quality. The juice of the unripe berries with alum gives a yellow dye; that of the ripe fruit, concentrated by evaporation, and treated in the same manner with a solution of alum, gives a green paste, the sap green employed by painters, and from the manner in which it is prepared for sale, is called in France, *vert de vessie.*

In New England, particularly in the vicinity of Boston, this species is much employed for useful and ornamental hedges, and bearing well to be cut, growing thick, and remaining green till winter, it is strongly recommended for this useful purpose.

MANCHINEEL.

Natural Order, Euphorbiaceæ? *Linnæan Classification*, Monœcia, Monadelphia.

HIPPOMANE,† (Linn.)

Monœcious.—*Male* flowers with a subcampanulate, emarginate calyx and no corolla. A single columnar filament terminating in 4 anthers.—In the *fertile* flower there is a 3-leaved calyx and no corolla. *Style* very short. *Stigma* 6 or 7 cleft. *Fruit*, a drupe containing a 6 to 7 or more celled nut; each cell with one seed; the cells indehiscent.

A large poisonous tree of tropical America, with alternate entire leaves; the male flowers clustered in interrupted terminal spikes. The fruit solitary and sessile, resembling an apple.

MANCHINEEL.

HIPPOMANE mancinella, *foliis ovatis serratis.* Linn. Willd. Sp. Pl. Lamarck, Illust. tab. 793. Jacq. Amer. edit. piet. tab. 238. Aublet. Guian., vol. 2. p. 885.

Malus americana, laurocerasi folio, venenata. Mancinello arbor seu Massinilia dicta. Commel. Hort., vol. 1. p. 131. tab. 68.

Juglandi affinis arbor julifera, lactescens, venenata, pyrifolia, Mancanillo *hispanis dicta.* Sloane, Jamaic. Hist., vol. 2. p. 3. tab. 159.

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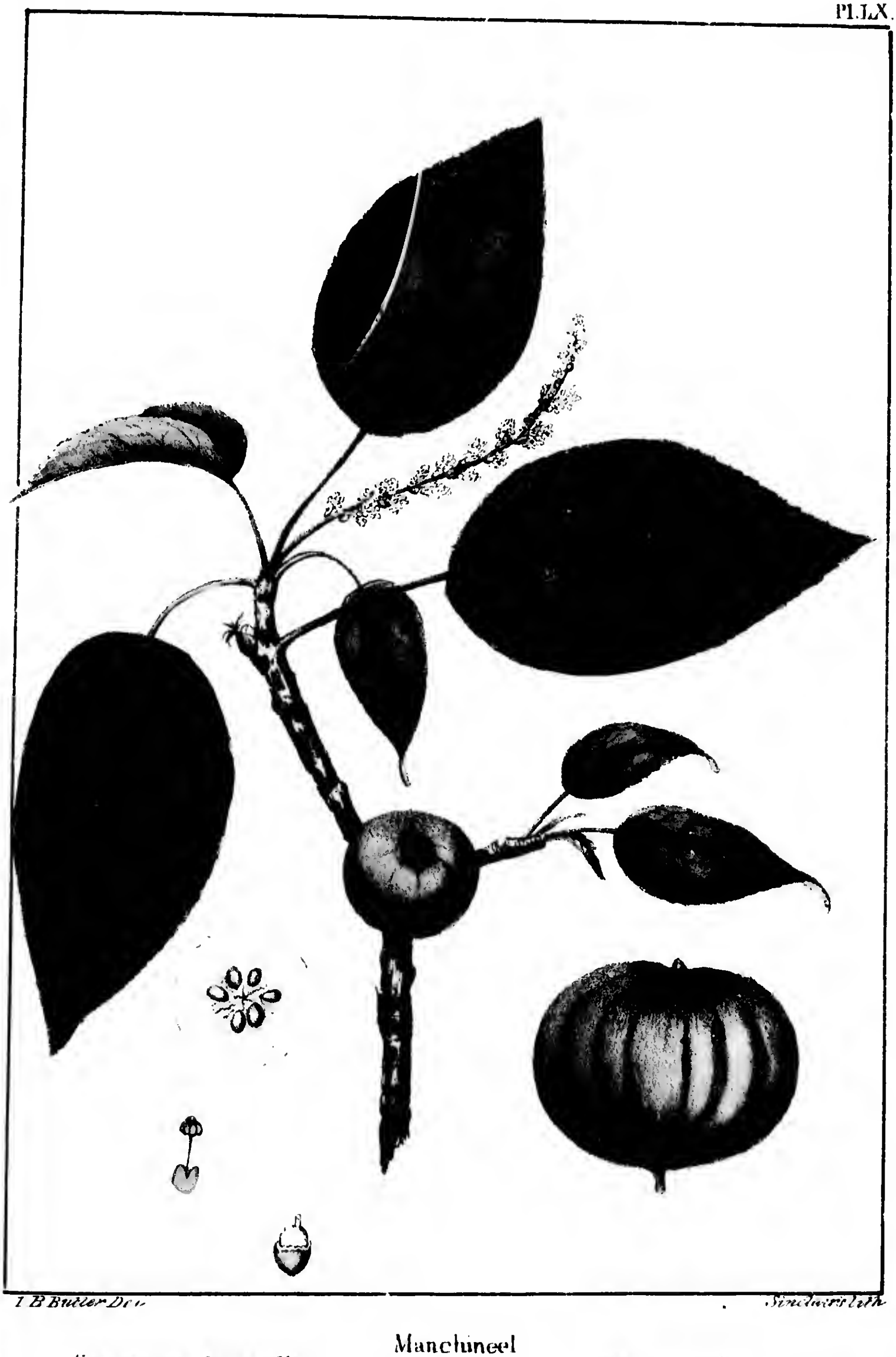
† From ἵππος, a *horse*, and μανία, *madness*. The name, however, was applied by the Greeks to a very different plant which grew in Arcadia, said to render horses furious.



I. B. Butler Del.

Sinclair's lith.

Manchineel

Hippomane. Mancinella *Mancenillier*

Mancanilla pyrifacie. PLUMIER. Gen. p. 49. tab. 3. MSS. vol. 6. t. 109. CATESBY'S Carol., vol. 2. p. 95. t. 95.

Arbor americana Mancinello *dicta, fructu pomi venenato, nucleis septenis et pluribus, in ossiculo muricato, totidem loculis dispertito, inclusis.* PLUKEN. Almag., p. 44. Phytog. tab. 142. fig. 4.

Hippomane arboreum lactescens, ramulis ternatis; petiolis glandulâ notatis; floribus spicatis, mixtis. BROWN, Jam. p. 351.

THE Manchineel Tree attains a great size on the sea coast in various parts of the West India Islands and the neighbouring continent. It has also been found growing very common at Key West, in low places, where it attains the height of 30 to 40 feet. It has much the aspect of a pear tree at a distance, while the fruit resembles in appearance and scent a small apple, and is produced in such abundance that the ground, when they fall, appears as it were paved with them; they possess, however, very little pulp, being internally occupied by a deeply grooved nut as large as a chestnut. No animal, except goats and maccaws, chooses to feed on them, and they become dry, brown and spongy, and as useless as they are deleterious. The wood, on the contrary, is in great esteem for tables, cabinets, and other articles of furniture, being close grained, heavy, durable, finely variegated with brown, white, and shades of yellow, and susceptible of a high polish. Tables made of it almost resemble marble, and are equally smooth and shining. Great caution, however, is necessary in felling the tree; and before they begin, it is the usual practice of the workmen, first to kindle a fire round the stem, by which means the milky sap becomes so much inspissated as not to follow the blows of the axe. They also take the further precaution to cover the face with a net of gauze, to prevent the access both of the juice and the particles of sap wood, which might be deleterious.

All parts of the Manchineel tree abound with a white milky sap, which is very poisonous, and so caustic, that a single drop received upon the back of the hand immediately produces the sensation of the touch of a coal of fire, and soon raises a watery blister. The Indians, according to Hawkins, used to poison their arrows with this juice, which retained its venom for a long time. Another and much more deadly poison was commonly used for this purpose, however, by the American savages of the warmer parts of America, namely, the *warari*, chiefly obtained from the juice of the *Strychnos*, and this was distinguishable by producing the effect of *tetanus* or lock-jaw, which, mostly fatal, was sometimes protracted for several days before producing death. It is reported, that many of the Europeans who first landed in Surinam died suddenly from sleeping under this tree; and there may probably be some foundation in truth for such reports, when we take into consideration the volatile nature of the poisonous principle of these plants. As in the venomous species of Rhus or Sumach, also, while many individuals are affected by the poison, others, for no evident reason, can touch or handle these plants with impunity. Hence, though Jacquin asserts that he reposed under the shade of the Manchineel for the space of 3 hours without experiencing any inconvenience, it does not follow that it would be equally harmless to all who should hazard the experiment; and with a laudable prudence, the inhabitants of Martinique formerly burnt down whole woods of the Manchineel in order to clear their country of so dangerous a pest.

Catesby acknowledges that he was not sufficiently satisfied of its poisonous qualities "till assisting in the cutting down a tree of this kind on *Andros* Island, I paid for my incredulity; some of the milky poisonous juice spurting in my eyes, I was two days totally deprived of

sight, and my eyes and face much swelled, and felt a violent pricking pain the first 24 hours, which from that time abated gradually with the swelling, and went off without any application or remedy, none in that uninhabited island being to be had. It is no wonder that the sap of this tree should be so virulent, when rain or dew, falling from its leaves on the naked body, causes blisters on the skin; and even the effluvia of it are so noxious as to affect the senses of those which stand any time under its shade."

Oily substances are considered the best remedy for this poison. Some also recommend a large glass of sea-water to be drank instantly as a preventive.

The branches of the Manchineel are covered with a greyish smooth bark. The leaves, which fall annually, are alternate, petiolate, numerous, oval, pointed, almost cordate at the base, slightly and distantly serrulate, dark green, rather thick, shining, veined, and transversely nerved, 3 to 4 inches long, by about 2 inches wide. Stipules oval and caducous. The flowers are small and of a yellow colour, monœcious, and grow upon straight terminal spikes, like catkins. The male flowers are minute, collected together in clusters of about 30 together, each cluster subtended by a concave, caducous scale. The calycine scales are accompanied at their base by 2 large lateral orbicular depressed glands. The fertile flowers are sessile and solitary. The drupe in colour and odour is so like a small apple that it might easily be mistaken for it; it is shining, and of a yellowish-green colour, with a white and milky pulp. It contains a thick, bony nut, full of angular crests which project almost through the skin; it has ordinarily 6 or 7, sometimes as many as 14? 1-seeded cells, which have no spontaneous dehiscence or valves. The *male* flowers have a very small one-leaved, roundish, bifid calyx, with

a straight slender filament, as long again as the calyx, bearing 4 roundish anthers. The *female* flower, like the preceding, has no corolla, and consists of a 3-leaved calyx, with roundish, obtuse, connivent leaflets. The ovary is oval, superior, as long as the calyx, surmounted by a straight short style, deeply divided into 6 or 7 long subulate, pointed and reflected stigmas.

Plate LX.

A branch of the natural size. *a.* The male flower. *b.* The apple-like drupe of the natural magnitude. *c.* A transverse section of the drupe having 6 cells and one abortive cell. *d.* The seed of its natural magnitude. *e.* The kernel, with the inverted embryo of the natural size.

The poisonous Upas (*Antiaris toxicaria*), bearing solitary female flowers with 2 styles and an unequal drupaceous fruit, though only of 1 cell, still approaches nearer to the anomalous Manchineel, in this family, than to any plant of the *Artocarpeæ*, with which it is so unnaturally associated.

Aleurites by its fruit, a 2-celled, 2-seeded, indehiscent drupe, appears to be almost intermediate with Antiaris and Hippomane. We are unacquainted with the structure of the seed in Antiaris, but the obliquity of the fruit, and its swelling out more to one side, would seem to indicate the presence of 2 germs. These poisonous plants, as well as the Aleurites, seem to form a natural group which further observation must decide; if so considered, they might bear the name of Hippomaneæ from the well known Manchineel, and will be distinguished chiefly from the Euphorbiaceæ by their indehiscent drupaceous fruit of 1 or 2 to 7 or more 1-seeded

cells, in place of 3, the characteristic number in Euphorbiaceæ.

The large oily kernels of the *Aleurites triloba*, known in the Sandwich and Friendly Islands by the name of Too-tooe, are employed by the natives generally for lights; pierced with a skewer, they are lighted like a candle or a torch, and burn well and for a long time, giving out a bright flame and smoke. An excellent oil is obtained from these nuts by expression, which is used for a variety of purposes, and answers well for paint. It constitutes likewise one of the most ornamental and characteristic trees of the forest, visible at a great distance by the paleness and whiteness of its verdure, and hence the name of Aleurites given to it by Forster, from its mealy appearance. It grows rapidly and affords a fine shade, producing leaves which resemble those of the Plane tree.

EXCÆCARIA.†

Natural Order, Euphorbiaceæ. *Linnæan Classification*, Diœcia, Monadelphia.

Diœcious or Monœcious.—*Male* flowers in cylindric aments, solitary, or by 3's, subtended by single scales; the filament of the *stamens* 3-parted at the summit. *Female* flowers solitary or in spikes, with a calyx of scales. *Capsule* tricoccous.

§. Gymnanthes. (*Gymnanthes*, genus. Swartz.) Monœcious. *Female* flowers solitary, pedicellate, the pedicel articulated and terminated by a minute toothed calyx, its base surrounded by embracing scales. *Male* flowers by 3's.—Trees of tropical America, with alternate, entire, sempervirent leaves.

SHINING-LEAVED POISON WOOD.

Excæcaria lucida, *floribus fœmineis subsolitariis pedicellatis; masculis tripartitis spicatis; foliis cuneato-ellipticis, lanceolatisve subserratis.*

Excæcaria lucida, *monoica, floribus pedicellatis, staminibus trichotomis, femineis pedunculatis, foliis ellipticis subserratis.* Swartz, Prod. p. 1122.

Ricini fructu glabro, arbor julifera, lactescens, folio myrtino. Sloane, Catal. Hist., vol. 2. p. 131. tab. 158. fig. 2.

According to Dr. Blodgett, this plant, in Key West, becomes a tree of 30 to 40 feet in height. It is also indigenous to Jamaica and Cuba, and a broad leaved variety was collected by Poiteau in St. Domingo. The wood is yellowish-white, hard and close grained, but of its uses, or the economy of the plant, we are as yet ignorant.

The branches are covered with a grey and somewhat rough bark. The leaves are alternate, shortly petiolate,

† From *excæcare*, to blind. The juice of the plant being so acrid as to cause blindness.

T. Sinclair's lith.

Exe caria lucida

Shining leaved Poison Wood *Agalloche luisant*

smooth and shining on the upper surface, and on both sides rather prominently and elegantly veined and reticulated; they are slightly and distantly serrulated, often lanceolate, and somewhat obtuse. On other branches the leaves are almost oblong-elliptic, and narrowed or wedge-formed at the base. In the rainy season, towards the extremities of the twigs come out close, brown, cylindric, axillary aments, which at length shoot into loose spikes or aments covered with numerous male flowers, growing by 3's together on a common pedicel, which divides above into the 3 flowers, each subtended (apparently?) by a still smaller scale, and consisting of a secondary short stipe, divided into 3 stamens. The anthers are round, small, and 2-celled. At the base of the catkin, or below in a separate axill, issues the pedicellated female flowers, subtended at the base by appropriate scales, and with the rudiments of a calyx beneath the germ. The stigmas are 3, rather thick, and reflected. The fruit is tricoccous, supported upon an elongated pedicel and rather large. The tree, like most of the family of the Euphorbiaceæ, is filled with a caustic milky juice.

According to Rumphius, the juice of the *Excœcaria Agallocha*, and even its smoke when burnt, affects the eyes with great pain, as has been sometimes experienced by sailors, in cutting the wood for fuel, who, having accidentally rubbed their eyes with the juice, became blinded for a time, and some of them finally lost their sight. The Agallocha wood, formerly so much esteemed, remarkable for its fragrant odour and inflammability, belongs to the genus *Aquilaria*, and has no relation with this family of plants.

Plate LXI.

A branch of the natural size. *a*. The male flower. *b*. The female do.

TALLOW TREE.

Natural Order, Euphorbiaceæ, (Jussieu.) *Linnæan Classification*, Monœcia, Monadelphia.

STILLINGIA,† (Linn.)

Monœcious.—*Staminiferous* flowers solitary, or many and small, with an entire hemispherical involucrum. *Perianth* tubular, widened and ciliated on the border. *Stamens* 2 or 3, exserted, with the filaments slightly united at the base. *Fertile* flowers solitary, involucrate; perianth as in the male. *Style* with 3 stigmas. *Capsule* 3-lobed, 3-grained, surrounded by the enlarging involucrum. *Seeds* 3.

Arborescent, shrubby or herbaceous plants, with a milky sap. Leaves alternate, entire or serrulated, having stipules. Flowers in spikes, the spikes solitary, lateral or terminal, the upper part staminiferous.

TALLOW TREE.

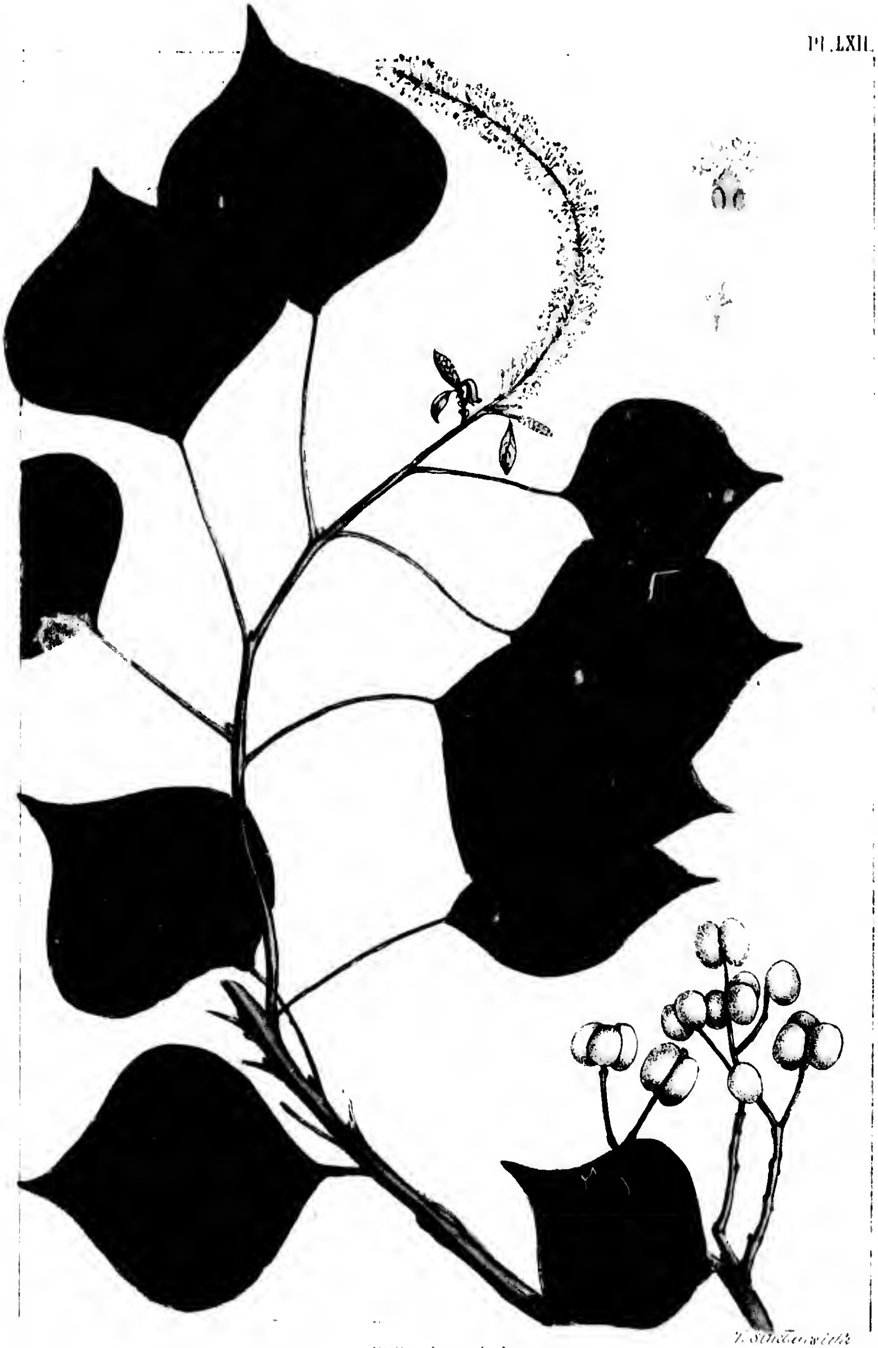
STILLINGIA sebifera, *arborea; foliis petiolatis, rhombeis acuminatis integerrimis, infra basin glandula petiolari, floribus masculis numerosis.*—Willd. Sp. Pl. 4. p. 588. Mich. Flor. 2. p. 213. Pursh, 2. p. 608. Elliott, Sk. 2. p. 651.

Croton *sebiferum.* Linn. Sp. Pl. l. c.

Ricinus Chinensis sebifera, populi nigræ folio. Petiver. Gazoph. 53. tab. 34. fig. 3. Plukenet. Amalth. 76. tab. 390. fig. 2.

The Tallow tree grows to the height of 20 to 40 feet,

† So named in honour of Dr. Stillingfleet, an English botanist.



Stillingia sebifera

Tallow tree

Stillingie porte-suif

and so nearly resembles the black poplar in its foliage that it might be mistaken for it if the leaves were serrated. It is indigenous to China, where it grows on the borders of streams. It is now naturalized in both Indies, in the south of Europe, and in the southern part of the United States, along the sea-coast. It resembles a cherry-tree in its trunk and branches. The bark is of a whitish-grey, and soft to the touch. The branches are long, smooth and flexible, ornamented with leaves from their middle to their extremities, where they grow in a kind of tuft. These leaves are oval-rhomboidal, on longish petioles, wider than long, very entire, acuminated, green and smooth on both sides, furnished at their base with two very small sessile glands; before falling, at the approach of winter, they become red. The stipules are membranous and linear-lanceolate. The flowers are terminal, disposed in erect spikes, resembling catkins, which are about two inches long. The male flowers are numerous, very small and pedicellated, with a very short monophyllous and almost truncated calyx; with 2, 3, and sometimes more stamens having exserted filaments. The fertile flowers are in small numbers at the base of each spike. The capsules are smooth, brown, and oval, 3-lobed, divided internally into 3 bivalvular cells. Each cell contains a somewhat hemispherical seed, internally flattened and grooved, externally convex and rounded, covered with a somewhat firm, white, sebaceous or fatty substance. The seeds remain firmly attached above by 3 threads, which traverse the fruit, and thus remain suspended after the fall of the valves of the capsule, so that the tree seems to be covered with clusters of white berries, which, contrasted with the red colour of the fading leaves, produces a very peculiar and elegant appearance.

The Tallow tree, as its name implies, furnishes the

Chinese with a material for candles; they extract besides from its seeds oil for their lamps. The ordinary method employed in separating the tallow from the fruit, is by bruising together the capsules and seeds, afterwards boiling the mass in water, and skimming off the oil that arises to the surface, which, when cold, becomes condensed like tallow. To every 6 pounds of this fat is sometimes put 3 pounds of linseed oil, with a little wax to give it a more solid consistence. The candles thus obtained are of an extreme whiteness, but are also made red by the addition of vermilion. It is said that the Chinese steep these candles in a sort of wax, also the produce of a tree, which forms a crust around the tallow that hinders them from melting.

In the Southern States, though the trees produce an abundance of perfect fruit, no use is yet made of it.

Plate LXII.

A branch of the natural size. *a*. A cluster of male flowers. *b*. A single male flower. *c*. The seeds or nuts coated with wax.

PRIVET LEAVED STILLINGIA.

STILLINGIA LIGUSTRINA, *foliis lanceolatis utrinque attenuatis integerrimis petiolatis, floseulis masculis subsolitariis, triandris.*

STILLINGIA *ligustrina.* MICH. Flor. Bor. Amer., vol. 2. p. 132. WILLD. Sp. Pl. 4. p. 566. PURSH, vol. 2. p. 608. NUTT., vol. 2. p. 226. ELLIOTT, vol. 2. p. 651.

THIS native species of the genus Stillingia, in the forests of East Florida, according to the observations of my friend Mr. Ware, becomes a tree, and attains an elevation of 30 feet. In Georgia, at Columbus, on the banks of the Chatahoochee, where I have observed it in considerable abundance, it only forms a shrub of 10 or 12 feet. Although a handsome tree or shrub, nearly evergreen, and resembling the privet when in flower, so far from being pleasing, it emits a very disagreeable odour, almost as fœtid as carrion.

The bark is nearly smooth and brownish-gray, the branches diffuse, and only clad with leaves towards the summits; these are from 1 to 2 inches in length and about ¾ of an inch in width, they are either wholly lanceolate or oval-lanceolate, very smooth, entire, and acute or acuminated at either extremity; the petioles are about 2 or 3 lines long. The flowers are small, greenish-yellow, in lateral and terminal shortish spikes; in some specimens, wholly staminiferous, in others with a few fertile flowers at the base of the spikes. Scale or bracte of the sterile flowers short, ovate, mostly 1-flowered. Perianth 3-cleft, stamens generally 3, the filaments very short. Fertile flower similar. Styles 3, united at base, reflected; stigmas simple. Capsule 3-seeded.

DRYPETES.

(VAHL.)

Natural Order, EUPHORBIACEÆ ? (JUSS.) *Linnæan Classification*, DIŒCIA, TETRANDRIA to OCTANDRIA.

DIŒCIOUS.—MALE with the calyx 4 to 6 leaved, and unequal. *Corolla* none. *Stamina* 4 to 8, exserted. Disk central, villous.—FEMALE, with the flower as in the male. *Ovary* free, subovate, villous, 2-celled, or by abortion 1-celled; ovules 2 in each cell, pendulous. *Styles* 2, or by abortion 1, short; stigmas capitate, villous. *Drupe* subovate, villous, dry, 1-celled, 1-seeded, rarely 2-celled, 2-seeded. *Seed* filling up the cell of the fruit; albumen large and fleshy; embryo large, inverted, straight; cotyledones foliaceous.

Trees of the tropical parts of America with alternate, nearly exstipulate leaves, and axillary clusters of small herbaceous flowers.

SMALL FLOWERED DRYPETES.

DRYPETES CROCEA, *foliis oblongo-lanceolatis acuminatis integerrimis nitidis, flore masculo* 4-6-*andro, femineo distylo.*

DRYPETES CROCEA, *foliis oblongis, integerrimis, nitidis, flore masculo* 4-5-*andro, femineo distylo.* POITEAU, Annales du Museum Hist. Nat. (3d series,) vol. 1. p. 159. tab. 8.

SCHÆFFERA LATERIFLORA, *floribus lateralibus apetalis.* SWARTZ, Flor. Ind. Occident., vol. 1. p. 329.

THIS plant, at Key West, in East Florida, (according

PL. LXIII

T. Sinclair's lith.

Drypetes crocea

Small flowered Drypetes — *Drypetes Saffrané*

to Dr. Blodgett,) becomes a large tree. The wood appears to be whitish and close-grained, and that of *D. alba* is very hard, and much esteemed by carpenters. At St. Domingo, Poiteau remarked, that it generally seemed to prefer the protecting shade of other large trees with which it grew. It appears to be a very elegant evergreen; the twigs exuding a slightly aromatic resin, in small quantities, which, spreading over the petiole and mid rib of the leaves, communicates, at times, a white or glaucous hue. The leaf, to the taste, is slightly bitter and astringent, with some aroma arising from the resin it possesses; and it has so much the flavour of tea, as almost to promise a succedaneum for that favourite beverage.

The bark is of a light grey and warty. The leaves are from 3 to 3½ inches long, and from 1 to 1½ wide, entire or slightly repand, attenuated into a short petiole, of a coriaceous consistence. The surface is delicately and lightly reticulated as in the leaf of the Bay (*Laurus*). The flowers are small and numerous, in axillary roundish clusters; these in the male consist of a brownish-green calyx of 4 small ovate divisions, pubescent on the margin, containing 4 to 6 short stamens. The calyx of the female contains a germ with 2 short styles and capitate stigmas; there are 2 ovules in each cell; the drupe is villous, and when ripe is of the colour of saffron, containing but a single seed. The perisperm has the hot and acrid taste of strong mustard, but is, notwithstanding, the particular food of a small beetle.

Plate LXIII.

A branch of the natural size. *a*. The male flower. *b*. The female flower. *c*. The fruit.

GLAUCOUS DRYPETES.

DRYPETES GLAUCA, *foliis ovato-oblongis, aliis obtusiusculis, remotè crenulatis, aliis longioribus, integerrimis, acuminatis; floribus* 6-8-*andris.* VAHL. Eclog. Amer. fascic. 2. p. 49.

THIS species also becomes a tree, and grows at Key West with the preceding; it is likewise indigenous to Montserrat and Porto Rico. The branches are cylindric, somewhat angular above, with the buds thinly covered with a brownish down. The leaves are very similar to those of the preceding species, and often glaucous, with a thin resinous coating. The male flowers are 4 to 5-leaved, with 6 to 8 stamens; there is no corolla. The drupe is oval, villous, becoming the size of a small hazelnut, with a suture on one side, and terminated, when young, with a single, sessile, reniform stigma.

The wood is probably of the same quality as in the preceding species.

PL. LXIV.

C. P. Tuttle del.

Sinclairs lith, Phila.

Æsculus Californica

California Horse Chestnut

Marronnier de Californie

HORSE-CHESTNUT.

(Marronier d'Inde, Fr.)

Natural Order, Hippocastaneæ, (Decand.) *Linnæan Classification*, Heptandria, Monogynia.

ÆSCULUS,† (Linn.)

Calyx tubular-campanulate, 5-toothed. *Petals* 4 or 5, more or less unequal, unguiculate. *Stamens* 6 to 8, (often 7,) with separate filaments. *Ovary* roundish, 3-celled, with 2 collateral ovules in each cell. *Fruit* subglobose, coriaceous, even or echinate, 1 to 3-celled. *Seeds* solitary, large, with a broad hilum, and no albumen. *Cotyledones* subterraneous.

Trees or shrubs of North America and temperate Asia, with opposite, digitate, serrated leaves. Flowers conspicuous, in terminal panicles, on articulated pedicels.

§ 3. *Fruit unarmed, leaves stipulate, the tube of the calyx at length cleft.*—Calothyrsus.

CALIFORNIAN HORSE-CHESTNUT.

Æsculus californica; *staminibus corolla longioribus, petalis 4, subæqualibus, calycibus tubuloso-campanulatis inæquali-dentatis; thyrsus abbreviatis densifloris; petiolis marginatis, foliolis quinque ovato-lanceolatis subellipticis acutis serrulatis glabris glaucescentibus, basi rotundatis subcordatis.*—Nutt. in Torr. and Gray. Flora N. Amer., 1. p. 251.

Calothyrsus *Californica.* Spach, in Ann. Sc. Nat. (ser. 2.) p. 62.

This is the only species hitherto discovered of this ornamental genus, on the Western side of the American continent; and it differs from the ordinary type quite sufficient to constitute a separate section.

† The Latin name of a tree which furnished an esculent nut.

I observed it very sparingly on the border of a small stream in the immediate vicinity of Monterey, in Upper California, flowering in the month of March, with the usual precocious habit of the genus. It appears also to have been observed in some part of California by Botta, according to Spach.

It forms a low spreading bushy tree, about 15 to 20 feet high, with clusters of spreading branches issuing from near the root, so as to form a sort of thicket. The trunk is smooth and grey, only a few inches in diameter, and the wood very similar to that of other species of the genus.

The leaves, usually in 5's, have broad and flat marginated petioles, terminating usually in 2 long, linear, conspicuous and somewhat membranaceous stipules; the whole cluster of leaves is also subtended by several broad stipules, which appear to be the innermost series of bud scales, but they are quite persistent and frequently terminated by rudiments of leaves; the inner leaves of the flowering branches are often in 3's or 4's. The leaflets, 3 to 4 inches long, are supported upon long and slender petioles, beneath they are pale and somewhat glaucous, everywhere smooth, finely and obtusely serrulated and acute at the points, below they are rounded and sometimes sinuated. The flowers are of a pale rose-colour without a mixture of any other colour, and produced in a crowded, compound spike or thyrsus. The calyx is somewhat whitely villous, indistinctly 5-toothed, and at length cleft down nearly to the base on the lower side. The petals appear connivent, with the claws shorter than the calyx, scarcely at all spreading, and are generally in 4's. Stamens 5 or 6. I have not seen the fruit, but the germ is 2 or 3-celled, and villous.

PLATE LXIV.

A branch of the natural size. *a*. The germ.

In the Herbarium of the Academy of Natural Sciences in Philadelphia, is a specimen collected in Nepal by Dr. Wallich, named *Æsculus indica*, which bears no inconsiderable resemblance to the present species. It has the same perfectly smooth leaflets, 7 in number, oblong-lanceolate, serrulate and acuminate, without stipular scales. The thyrsus is very large, compound and showy, with a villous irregularly-toothed calyx, often anteriorly cleft, as in the preceding species. The petals appear to have been white, 4 in number, the 2 inner much narrower, with a fading red spot in the centre of each. The stamens are 5 to 7, and much exserted; the fruit without spines, is therefore a *Pavia*. I find no description or allusion to this magnificent species, which well deserves a place in gardens, and is probably hardy.

In passing, I must remark, that no two species of the genus are more perfectly distinct from each other than the *Æ. Ohioensis* of Decandolle and Michaux (Pavia of the latter), and the *Æ. glabra*. The *Ohioensis* becomes a lofty tree, with 5 or more remarkably long leaflets, (7 to 9 inches long,) acuminated at each end, and beneath more or less pubescent, at least along the ribs. The flowers are also white and showy, not green or yellowish-green, and inconspicuous as in the constantly dwarf plant known as *Æ. glabra*.

Long-Spiked Pavia (*Æsculus macrostachya*, Mich.) This elegant and very distinct Pavia grows abundantly in all the lower parts of Alabama and West Florida. The fruit, like all the rest of the genus, is inedible and bitter, and in place of food, affords a pretty good fish-poison. The fæcula of the seeds of all the species can be manufactured into starch.

SOAP-BERRY TREE.

(Savonnier, Fr.)

Natural Order, Sapindaceæ. (Jussieu.) *Linnæan Classification*, Octandria, Trigynia.

SAPINDUS, (Linn.)

Sepals (or calyx leaves) 4 to 5. *Petals* 4 or 5, glandular or bearded within, or with a lateral filament at the summit of the claw. *Stamens* 8 to 10, with the filaments villous. *Styles* combined, stigmas 3. *Carpels* 3, globose, fleshy, connate, 2 of them in general abortive. *Seed* large and spherical, one in each carpel (or small capsule).

The plants of this genus are small trees, with the present exceptions, and one of doubtful character in Japan, all inhabitants of the tropical climates of America and India. The leaves are without stipules, abruptly pinnate, or unequally pinnate by the abortion of the last pair of leaflets. The flowers are small and whitish, very numerous, disposed in racemes or panicles. The pulp of the berries in all the species is saponaceous. (The name is a contraction of *Sapo-indicus*, or Indian soap.)

FLORIDA SOAP-BERRY.

SAPINDUS marginatus, *rachi superne auguste marginata, foliolis glabris inæquilateralis lanceolatis subfalcatis acuminatis 5-6 jugis, paniculis compositis terminalibus, petalis inappendiculatis.*

Sapindus *marginatus*. Willd. Enumer. p. 432. Decand. Prod., vol. 1. p. 607. Torrey and Gray, vol. 1. p. 255.

Sapindus *saponaria*. Lamarck's Illust. tab. 307. Mich. Flora Bor. Am. 1. p. 242. Pursh. Flor., vol. 1. p. 274. Nutt. Gen. Am. 1. p. 257. Elliott's Sketches, Bot., vol. 1. p. 460. *S. inæqualis*. Decand., vol. 1. p. 608.

This elegant tree, exclusively indigenous to the United

Sapindus Marginatus

Florida Jean Berry

Savannah de la Floride

States, is found along the coast of Georgia and Florida, and in the interior as far as Arkansaw. It varies in height from 20 to 30 feet and sometimes even to 40 feet. Branches erect and smooth; the leaves smooth and shining, composed of 4 to 9 pair of alternate, lanceolate, acuminate, subfalcate leaflets. Panicles of flowers large, dense, terminal and axillary.

Berries about the size of a cherry, with a saponaceous pulp, usually only one of the three carpels fertile.

The *S. saponaria* of the West Indies, to which this species is allied, has long been in use by the natives for the purposes of soap. The fleshy covering of the seed, and also the root in some measure, makes an excellent lather in water; but if used too frequently and of too great strength, is apt to burn and injure the texture of the cloth.

The round black seeds were at one time largely imported into England, for the purpose of making buttons for waistcoats, being durable and not apt to break.

At present they are used in the West Indies for various ornamental purposes, being tipped with silver or gold, and strung for beads, crosses, &c. It is also used as a medicine, and pounded and thrown into water, has the singular property of intoxicating and killing the fish which may be there.

The wood is soft and not very durable.

PLATE LXV.

Represents a branch of the natural size. *a*. A panicle of flowers.

MELICOCCA,* (Browne, Linn.)

(Knepier, Fr.)

Natural Order, Sapindaceæ. *Linnæan Classification*, Octandria, Monogynia.

Flowers polygamous. *Calyx* 4 to 5-parted, persistent. *Petals*, the same number with the divisions of the calyx inserted into a hypogynous disc. *Stamens* often 8. *Ovary* superior, mostly 3-celled. *Style* 1, the stigma capitate or 3-lobed. *Drupe* coated, mostly 1-celled, 1-seeded. *Seed* attached to the axis of the cell.

Trees or shrubs, mostly of tropical America, with equally pinnated, alternate leaves, usually in 2 to 3 pairs, and entire. The flowers small, disposed in axillary or terminal spikes or panicles; the fruit with a succulent pulp.

ROUND FRUITED HONEY-BERRY, or GENIP TREE.

MELICOCCA paniculata, *foliis pinnatis, 2-3-jugis, foliolis oblongo-lanceolatis integris, floribus paniculatis subcorymbosis laxis, 5-petalis drupis sphæricis.*

Melicocca *paniculata.* Juss., Mem. Mus. Hist. Nat., vol. 3, p. 187, t. 5. Decand. Prod. vol. 1, p. 615.

This species, nearly allied to the common Honey-Berry of the West Indies, (*M. bijuga*), was discovered in St. Domingo by M. Poiteau, and of which a very excellent

*From μελι, *honey*, and κοκκος a *berry*, in allusion to the sweetness of its fruit.

Melicocca paniculata

Round fruited honeyberry — *Knepar panicato*

figure is given by Jussieu, in the Memoirs of the Museum of Natural History. Dr. Blodgett has also met with it on Key West, where it becomes a large tree. Of the nature of the wood we are not informed. The fruit of the common species is said to be about the size of a large plum, and green; containing a sweet, acid, and slightly astringent, gelatinous pulp, resembling the yolk of an egg. The berry of the present kind appears to be wholly similar, but it is spherical instead of ovate. The nuts of the Genip Tree are also eaten, after being roasted in the manner of chesnuts. The flowers appear in April, when the leaves are shed, and are very fragrant, even at a distance, attracting swarms of bees and humming birds. This species, according to Browne, was brought to the West Indies from Surinam.

The wood of the *Melicocca trijuga*, (*Schleichera trijuga* Willd.) of the isles of France and Bourbon, is so hard and fine grained as to afford to the natives a favourite wood for bows, arrows, and the shafts of their spears, called *sagaye's*. The *M. bijuga* becomes a large and beautiful tree 30 to 40 feet high, affording an extensive and grateful shade. The bark of the branches in the Florida plant, are brownish and rough, with small whitish excrescences. The leaves are smooth on both surfaces, (in the St. Domingo specimens, a little pubescent on the mid rib beneath,) of a dark shining green above, and scarcely any paler beneath. They are pinnated usually in 2 pairs, rarely 3 or only 1 pair, 3 to 3½ inches long, by from 1 to 1¾ of an inch wide, with the main petiole about half an inch long; they are lanceolate or oblong, usually obtuse, delicately feather veined, with the vessels running together and reticulating below the margin. The flowers are small and disposed in axillary, but chiefly terminal panicles. The calyx is tomentose, with 5 obtuse, ovate, spreading and reflected segments; the petals, 5, are smaller, pale yellow, and narrowed

below into a minute claw. Stamens, 6 to 10; often 8; shorter in the fertile flowers, and in them usually 6. Germ ovate. Style distinct, with a capitate, somewhat 3-lobed stigma. Drupe spherical, 1 seeded, coated with a dry, rather brittle integument, externally yellowish.

Plate LXVI.

A branch of the natural size. *a*. The male flower. *b*. The female do. *c*. A cluster of the drupes about half grown.

Common Ailanthus. (*Ailanthus glandulosa*.) This tree, originally from China, is now commonly cultivated for its shade, in towns in many parts of the United States. It grows with great rapidity, and produces a great deal of wood, which is found to be of a close grain, and capable of acquiring a fine polish. In this State, it somewhat resembles satin-wood. With its durability I am unacquainted; but if found useful, it might be cultivated or planted over waste lands in the southern and middle States with advantage.

Acer Macrophyllum.

Large leaved Maple. *Erable a grandes Feuilles.*

MAPLES.

(Erable, Fr.)

***Natural Order*, Acerineæ. (Decand.) *Linnæan Classification;* Polygamia or Octandria, Monogynia.**

ACER.* (Tournefort.)

Flowers polygamous.—The *calyx* 5-lobed, or 5 parted. *Petals* 5 or none. *Stamens* rarely 5, often 7 to 9; *ovarium* 2-lobed, stigmas 2. *Samaræ* or pericarps in pairs, winged, united at base; each, by abortion, 1 or rarely 2-seeded, the wings of the pericarp lanceolate and diverging, thicker and blunt on the outer margin. *Embryo* curved, with wrinkled leafy cotyledones, and an inferior radicle: *albumen* none.

Trees and shrubs of temperate climates, chiefly of Europe and North America, the leaves opposite as well as the branches, palmately lobed. Flowers clustered, or pendulously racemose, arising from buds of the preceding season, mostly lateral.

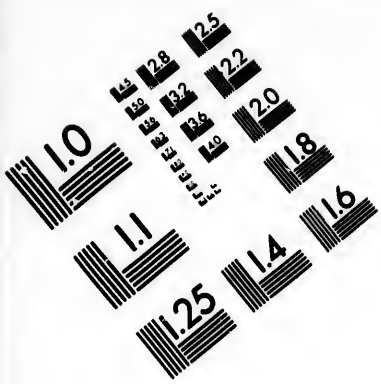
LARGE LEAVED MAPLE.

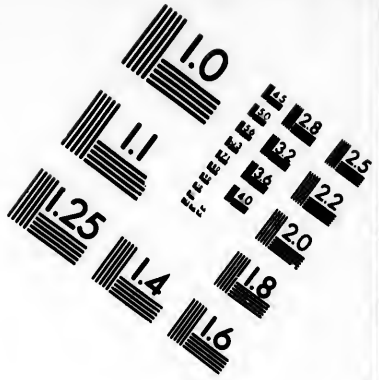
ACER macrophyllum; *foliis digitato-5-lobis, sinubus rotundatis, lobis subtrilobatis repando-dentatis, subtis pubescentibus, racemis erectis, filamentis 9, hirsutis, ovariis hirsutissimis.* Pursh. Flor. Amer. Sept. vol. 1, p. 267. Decand. Prod. vol. 1, p. 594.

Acer macrophyllum; leaves large, very deeply 5-lobed; lobes oblong or slightly cuneiform, entire, or sinuately 3-lobed, the margins somewhat repand; racemes nodding; flowers rather large; petals obovate; fruit hispid, with elongated slightly diverging glabrous wings. Torrey and Gray, Flora N. Amer. vol. 1, p. 246.

Acer *Macrophyllum.* Hooker's Flora Boreali Americana, vol. 1, p. 112, t. 38.

*From the Latin, *acer*, sharp; the wood having been used for pikes or lances.





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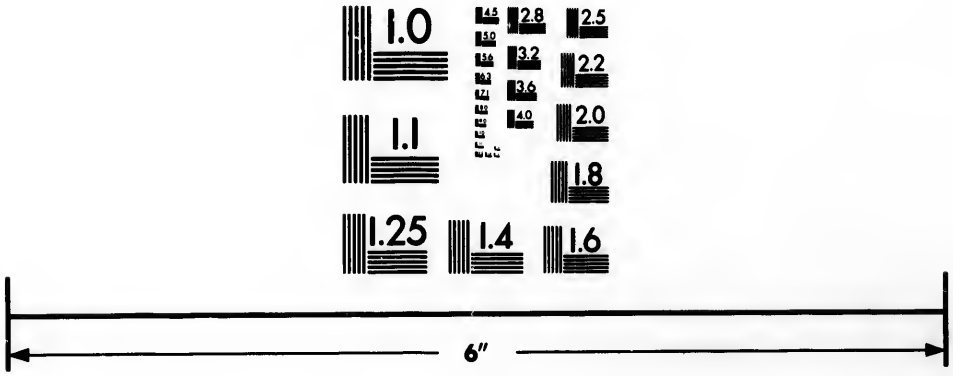

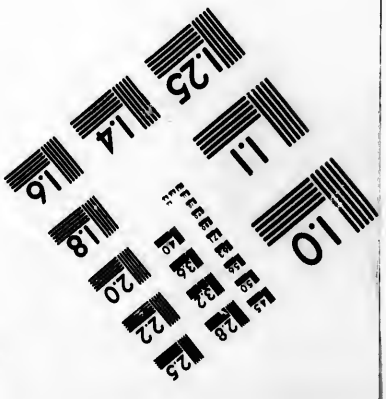

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The topographical range of this splendid species of Maple, wholly indigenous to the north-west coast of America or the territory of Oregon, is a somewhat narrow strip along the coast of the Pacific, not extending into the interior beyond the alluvial tracts of the Oregon, which commence at the second cataracts of that river, (known by the name of the Dalles,) and at the distance of about 130 miles from the sea. To the north, it extends probably to the latitude of 50°, or the borders of Fraser's river, and although by Decandolle, it is said to extend to Upper California on the south, we did not observe it in the vicinity of Monterey; and therefore conclude that its utmost boundary in this direction must be to St. Francisco, in about the 38th degree of latitude. This fine species was discovered by Menzies, and afterwards collected by Lewis and Clarke. It nowhere presents a more interesting appearance to the traveller than in the immediate vicinity of the falls of the Oregon; its dense shade, due to the great magnitude of its foliage and lofty elevation, as well as the wide extent of its spreading summit, are greatly contrasted with the naked, woodless plains of that river, which continue uninterruptedly to the mountains; a tract over which the traveller seeks in vain for shade or shelter, and where the fuel requisite to cook his scanty meal, has to be collected from the accidental drift wood which has been borne down from the distant mountains of its sources.

The largest trunks of this species that we have seen, were on the rich alluvial plains of the Wahlamet, and particularly near to its confluence with the Tlacamas; here we saw trees from 50 to 90 feet in height, with a circumference of 8 to 16 feet. It appears always to affect the drier and more elevated tracts, where the soil is well drained.

The wood, like that of the Sugar Maple, exhibits the most beautiful variety in its texture; some of it being undu-

lated or curled,—other portions present the numerous concentric spots which constitute the Bird's-eye Maple; and so frequent is this structure, that nearly every large tree which was cut down afforded one or other of these varieties of wood. As yet, in those remote and unsettled regions, it has only afforded a beautiful and curious material for the gun-stock of the savage or the hunter. Like the Sugar Maple also, it affords an abundance of saccharine sap, which to an infant settlement, may one day be turned to advantage. As an ornamental plant, it stands pre-eminent; and from the latitude it occupies it must be entirely hardy in every part of Europe below the latitude of 60°. The young trees are often tall, slender and graceful, and when in blossom, which is about the month of April, present a very imposing appearance, clad with numerous drooping racemes of rather conspicuous yellowish and somewhat fragrant flowers. At an after period, the spreading summit of deep green leaves, each near a foot in diameter, affords an impervious and complete shade. The fruit or carpels are also larger than usual, and have the remarkable character of being clothed, even when ripe, with strong hispid hairs. The flowers, irregular in the number of their parts, present often as many as 10 sepals, in two rows, and the same number of stamens. The carpels or seed-vessels also grow sometimes as many as 3 together.

According to Loudon, specimens of the timber, which were sent home by Douglas, exhibit a grain scarcely inferior in beauty to the finest satin wood. A tree grown in the London Horticultural Society's Garden, had in 1835, attained the height of 25 feet, and it makes, when well cultivated, annual shoots of from 6 to 10 feet in length, and plants are to be had in London at half a crown a-piece. It deserves to be cultivated also in the United States, as it is one of the most useful and ornamental trees of the genus,

and at the same time perfectly hardy in all temperate climates.

PLATE LXVII.

A leaf of the natural size. *a.* The raceme of flowers. *b.* The fruit.

ROUND LEAVED MAPLE.

ACER CIRCINATUM; *foliis orbiculatis basi subcordatis 7-lobis inæqualiter acute-dentatis utrinque glabris, nervis venisque ad axillas pilosis.* PURSH. Flor. Amer. Sept. 1, p. 267. HOOKER. Flor. Bor. Am. 1, p. 112, t. 39.

ACER CIRCINATUM; leaves cordate, 7 to 9-lobed, the nerves all radiating directly from the apex of the petiole; lobes very acutely serrate, with a slender acumination; corymb few flowered; petals ovate or linear, shorter than the calyx; fruit glabrous, with oblong divaricate wings. TORREY and GRAY, Flor. Amer. 1, p. 247.

This remarkable species, like the preceding, is confined to a narrow district along the coast of the Pacific, bounded, according to the observations of Mr. Douglas, between the latitudes of 43° and 49°. It is certain that we did not meet with it in any part of Upper California, and it is therefore fully as hardy as the preceding. Though much more singular in mode of growth and general appearance, it has nothing of its imposing grandeur. The trunk, which is smooth, only attains the height of 15 to 40 feet. It affects the lowest alluvial flats, that escape the influence of the periodical inundations to which the rivers it borders are subject; here the stems arise in clusters of 4 or 5 together, conjoined at the root, from whence they spread out in wide curves, sending off slender spreading branches, that often on touching the ground strike out roots, and give rise to offsets so numerous and so entangled, as almost

PL. LXVIII.

Acer Circinatum

Round leaved Maple [illegible]

Acer Cincinatum

Round leaved Maple *Erable Circiné*

wholly to obstruct the progress of the hunter through the forest, the dense shade it also produces excludes nearly every other vegetable, and its curved and interlaced trunks, like those of the Mangrove, form a kindred forest sometimes of several acres in extent. It is this singular tree, chiefly in connection with the Large Leaved Maple, which on descending the Oregon, at the Lower Falls, first presents us with the phenomena of a forest, and that too of the most impervious shade, and which in low situations, continues to accompany us even into the heart of the Pine forest, to the shores of the Pacific.

According to Douglas, the wood is fine, white, close-grained, tough, and susceptible of a good polish, and like that of the Red Maple, it sometimes presents a beautiful curled fibre. From the slender branches, the aborigines make the hoops of their large scoop-nets employed in taking the salmon at the rapids, and in the contracted parts of the river to which they ascend.

The leaves of this species are of a delicate and thin consistence, and from their nearly equal and numerous points, with the straight direction of the ribs, present the appearance of small outspread fans. At the extremities of the twigs, when the leaves are almost fully grown, in the month of May, come out the scattered clusters of flowers, which at a little distance appear red from the colour of the calyx. The fruit itself, or winged capsules, also appear of a bright and lively red, and have a peculiarity in the direction of the wings, nearly at right angles with the peduncle or flower stalk, which does not exist in any other of our species.

Judging merely from the very brief specific character of the *Acer Septemlobum* of Japan, as described by Thunberg, we should imagine there existed in that species no inconsiderable affinity with our plant.

PLATE LXVIII.

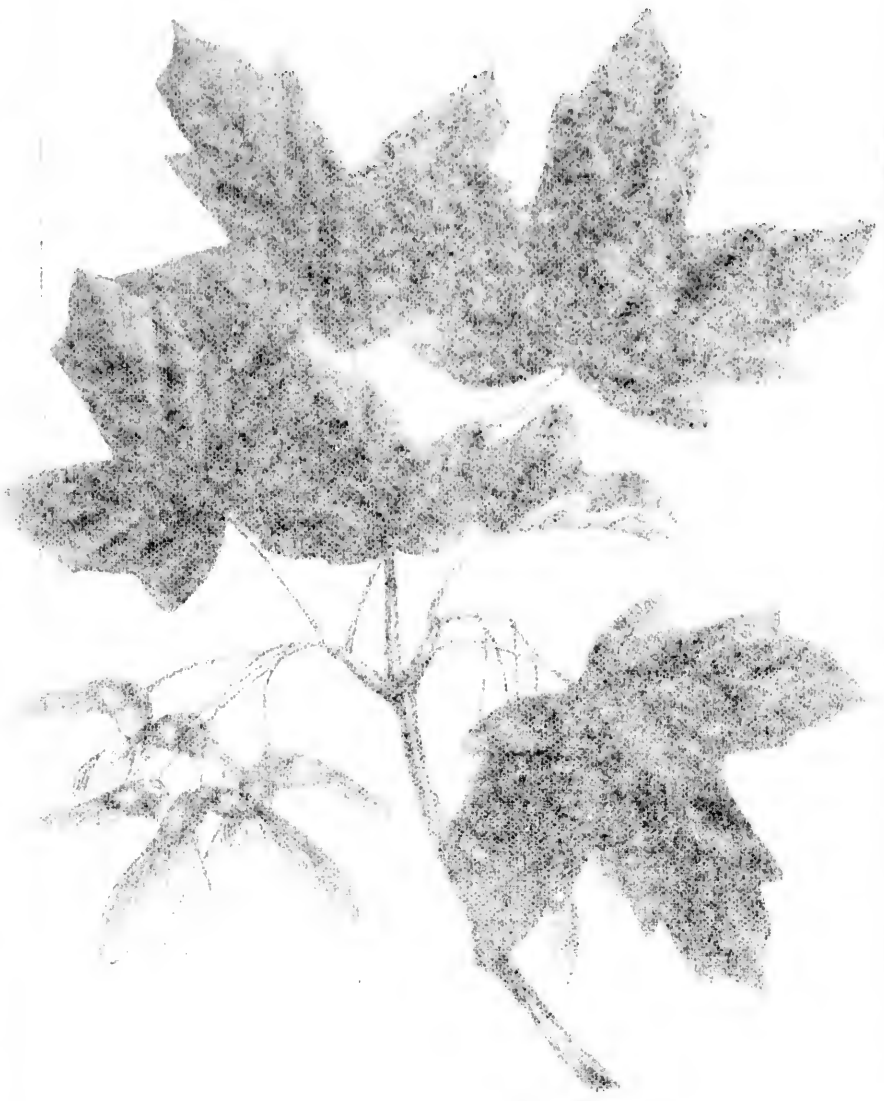
A twig of the natural size. *a.* The fertile flowers. *b.* The male do.

MOUNTAIN SUGAR MAPLE.

ACER GRANDIDENTATUM, leaves slightly cordate or truncate at the base, with a minute sinus; pubescent beneath; rather deeply 3-lobed, the sinuses broad and rounded; lobes acute with a few sinuous indentations; corymb nearly sessile, few flowered; the pedicels nodding; fruit glabrous, with small diverging wings. NUTTALL in TORREY and GRAY, Flora, N. Amer. 1, p. 247. *A. barbatum?* DOUGL. in HOOK. Flora, Bor. Amer. l. c. (not of Michaux.)

This species, nearly related to the Common Sugar Maple, occurs in the high valleys of the Rocky Mountains, nearly in the same situations with the Currant Leaved species, forming small groves by themselves, remarkable for the delicate paleness of their verdure, and filling, apparently, situations occupied by scarcely any other forest trees but the trembling and large toothed Poplars. They never attain the magnitude of the true Sugar Maple, all that we saw being mere saplings of 18 to 20 feet high, and but little thicker than a man's leg, with a smooth pale bark. The leaves are also smaller, as well as the winged capsules, and the leaves, when adult, are still rather softly hairy beneath, and with both surfaces nearly of the same colour; the pedicels and base of the calyx are also hairy. From the affinities of this species, there can be little doubt but that it might be employed, as far as it goes, for all the purposes to which the Sugar Maple is applicable, and probably in some of the richer and lower lands, it may attain a sufficient growth for economical purposes.

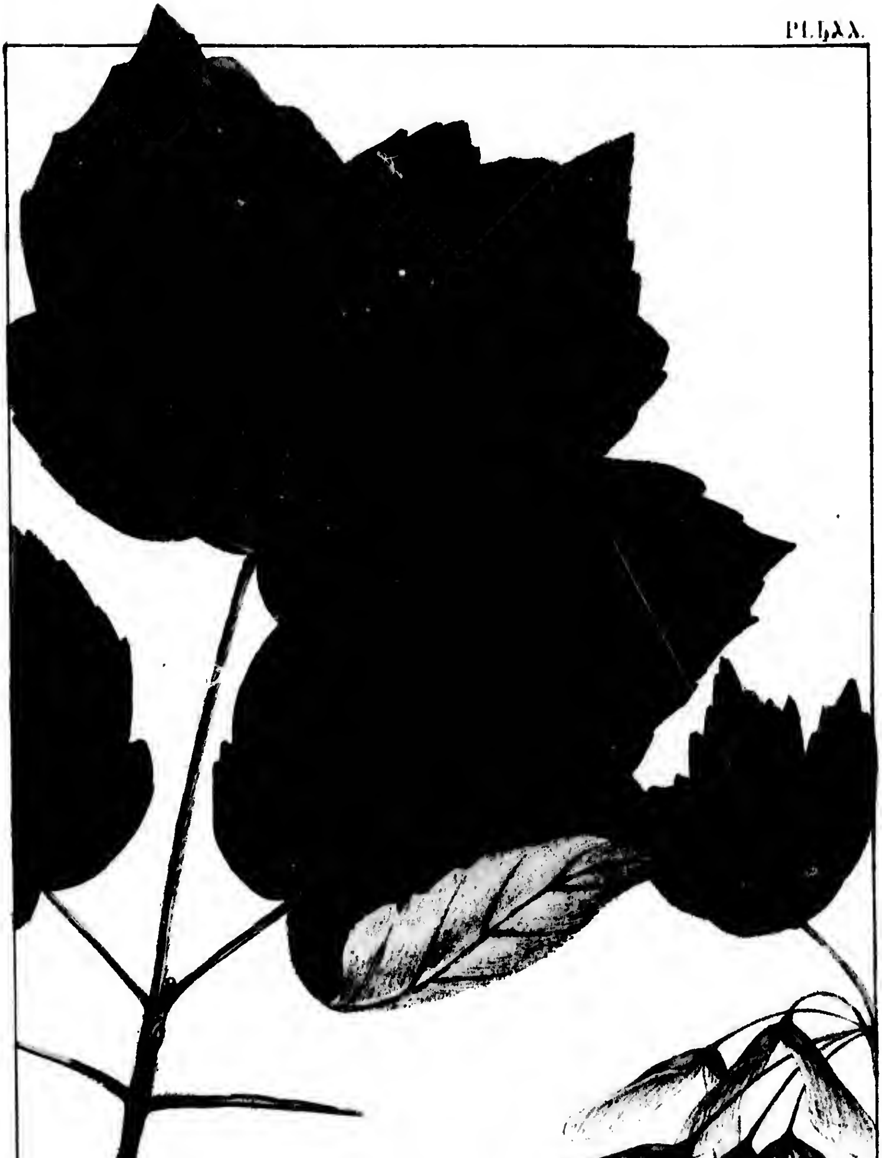
This species is, doubtless, the *Acer barbatum* of Douglas,



J. T. French del. | *T. Sinclair's lith.*

Acer Grandidentatum

Mountain Sugar Maple | *Erable de Montagne*



J. T. French del. T. Sinclair's lith.

Acer Drummondi.

Drummond's Maple. *Erable de Drummond.*

...inchar's lith.

not of Michaux.

and Gray ...

Mountains.

This tree, though ...

sufficiently distinct ...

... existence in the ...

not of Michaux, (which is indeed a nonentity made of fragments of several species.) He found it growing in valleys, near springs, on the West side of the Rocky Mountains, near the sources of the Columbia. We also met with it in a lofty ravine on the 3 Butes, two days march to the west of Lewis's River. The real Sugar Maple is said by Torrey and Gray, to grow as far west as Arkansas and the Rocky Mountains.

PLATE LXIX.

A branch of the natural size with the fruit.

DRUMMOND'S MAPLE.

ACER DRUMMONDII, *foliis cordatis majusculis, 3-5-lobatis subtus tomentosis canescentibus lobis acutis fastigiatis inæqualiter inciso-dentatis, pedicellis elongatis, fructibus glabris, alis lato lanceolatis vix divergentibus.*

ACER DRUMMONDII, *Hooker* and *Arnott*, in Journ. Botan. p. 199.

ACER RUBRUM, γ? *Torrey* and *Gray*, Flora N. Amer. vol. 1, p. 684.

This fine species of Maple was discovered by Drummond and Professor Carpenter, in Louisiana. It is found exclusively in very low swamps, generally subject to inundation, and flowers in February, 3 weeks earlier than any other species in the same country, according to Professor Carpenter; he met with it more particularly in the swamps of Opelousas.

This tree, though allied to the Red Maple, appears to be sufficiently distinct from that species, as well by its general appearance as its geographical range, as yet being only known to the swamps of Louisiana. I have also been told of its existence in the province of Texas.

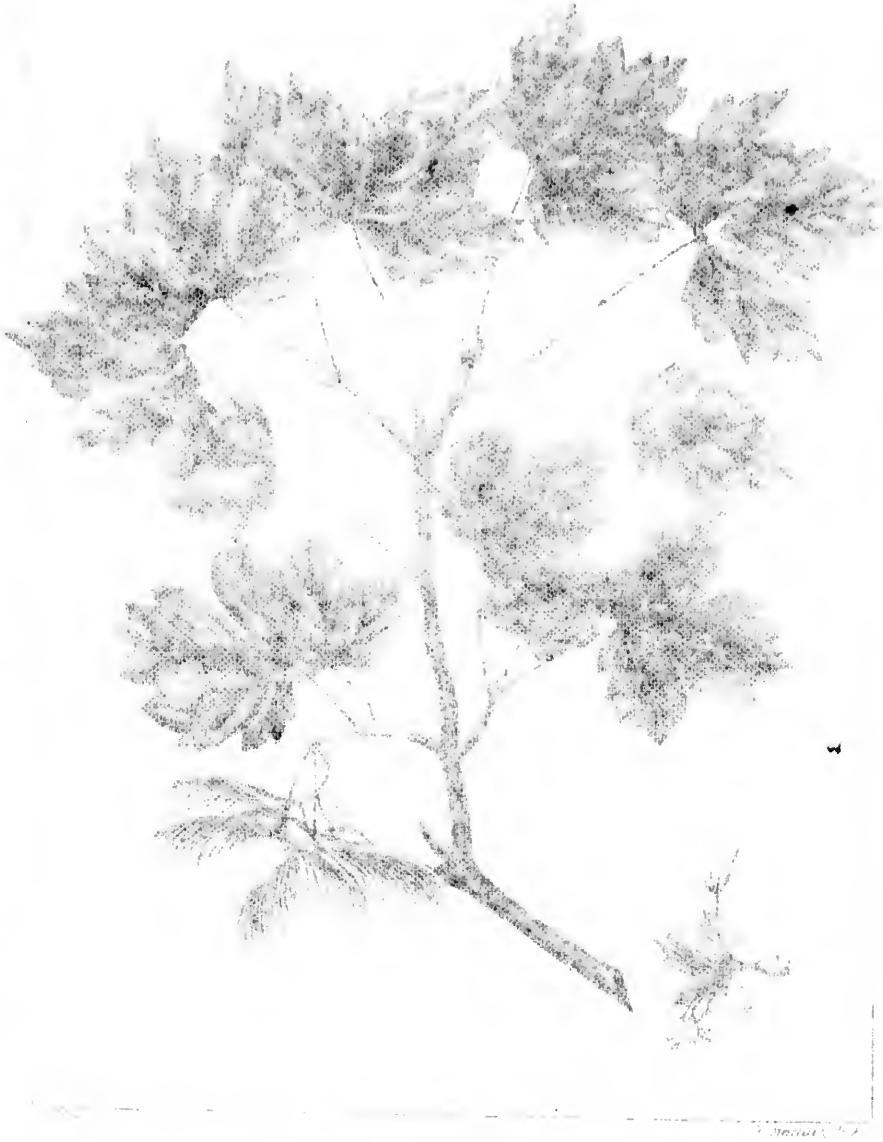
The bark of the small branches appears to be light brown; the young shoots, petioles, and the lower side of the leaves, are clothed even when adult, with a white, soft, and woolly pubescence, which when removed from the foliage, leaves a glaucous surface; above they are smooth. The leaves are 3 to 4½ inches long, by 4 or 5 wide, with 3 to 5 rather short lobes, having acute sinuses, the lower lobes are small and obtuse, the terminal ones acute, but scarcely acuminate, and the central lobe scarcely longer than the rest; the base of the leaf, when fully grown, is auriculated with a small sinus, the margin is irregularly serrated and toothed, with the serratures and teeth distant and often obtuse. The fruit situated on long smooth clustered peduncles is at first divergent at an acute angle, at length almost convergent by the inner enlargement of the wing of the carpel, which is broadly lanceolate, strongly veined and confluent below, down to the juncture of the fruit. The wings of the samara, are, at first, reddish, at length brown. The adult samara is from 1½ to 1¾ of an inch long, and about ½ an inch wide.

Plate LXX.

A branch of the natural size, with a cluster of the fruit in a young state, and the adult samara.

Acer tripartitum

Currant leaved Maple *Erable triparti*



CURRANT LEAVED MAPLE.

ACER TRIPARTITUM; *foliis subreniformi-orbicularis trifidis tripartitis ve, laciniis inciso-dentatis, medio cuneiformibus sublobatis, lateradi subrhomboidea, racemis corymbosis; fructibus glabris, alis brevissimis latis cuneato-ovalibus divergentibus.*

ACER *tripartitum;* leaves with a subreniform orbicular outline, 3-cleft or 3-parted; segments incisely toothed; the middle one cuneiform, often slightly lobed, the lateral ones somewhat rhomboidal; racemes corymbose; fruit glabrous, with very short and broad cuneate-oval diverging wings. NUTTALL in TORREY and GRAY'S Flora Bor. Am. 1, p. 247.

This singular shrub, which we introduce into the Sylva of the United States, to complete the history of the Maples, was discovered in the Rocky Mountain range, in about the latitude of 40°, within the line of Upper California, in the narrow valleys and ravines occupying the lofty hills near the borders of Bear River, which passes into the lake of Timpanagos. It appeared to be a scarce species, confined to an alpine region, for we found, by observing the boiling point of water, that the plains themselves, stretching far and wide like interminable meadows or steppes, were elevated between 6 and 7000 feet above the level of the ocean.

At a little distance, this diminutive species might have been taken for a currant bush both in the size of the plant and by its leaves. It formed small clumps on the declivities of the mountains, where some moisture still remained amid the drought which constantly prevails throughout the summer in this western mountain tract. From the cool and elevated region occupied by this species, it is certain that it might be cultivated in all the temperate parts of Europe and the United States, as a matter of curiosity, if not of beauty. The leaves, divided down to the base, make

an approach in habit to the genus *Negundo* or Box Elder, though in other respects different.

The height of this species is not more than about 3 feet. The leaves have petioles longer than themselves. The branches are whitish, and smooth, as is every other part of the plant; the leaves of a dark glossy green. The winged fruit is small, and in proportion with the reduced stature of the species; having the wings broad even at the base, so as to leave between them an unusually small sinus. Bud scales broad, ovate, villous within.

Japan again affords, apparently, an analogous species to the present in the *Acer trifidum* of Thunberg, but in this the leaves are also entire as well as trifid, and the divisions themselves entire. It is also marked as becoming a tree.

PLATE LXXI.

A branch of the natural size.

DWARF MAPLE.

ACER GLABRUM; *foliis subrotundis, 3-5-lobatis basi truncatis, lobis incisis acute dentatis utrinque glabris, corymbis pedunculatis; fructibus glabris, alis erectis subobovatis brevibus; petiolis foliis brevioribus.*

Acer glabrum, TORREY, Am. Lyceum N. York 2, p. 172.

ACER GLABRUM; leaves nearly orbicular, truncate or subcordate at base, 3 to 5 lobed; lobes short and broad, acutely incised and toothed; flowers in a corymbose raceme, fruit glabrous, the wings very short and broad, somewhat obovate, nearly erect. TORREY and GRAY, Flor. N. Amer. vol. 1. p. 247.

This diminutive species, closely related to the Currant Leaved Maple, was met with in the Rocky Mountains, by

Doctor James, in about the latitude of 40°. In size and form, the leaves resemble the common currant, and are somewhat smaller than in the preceding; they are smooth, and commonly 3-lobed, with very acute and narrow sinuses, which scarcely extend down to the middle of the leaf; the lobes are broader than long, blunt, and often subdivided into 2 or 3 lesser parts. The petioles are shorter than the leaves. The flowers about 6, in a short umbellate raceme. Stamens and linear obtuse sepals, quite smooth. Stamens about 8, with the same number of sepals. The wings of the fruit approach the size of those of the European *Acer campestre*, or a little shorter, but broader and more obtuse. Douglas also found the same species, (according to T. & Gray,) growing in the Blue Mountains of Oregon, which are about 40 miles east of the Oregon or Columbia River.

We have not had an opportunity of figuring this species, the specimens being too imperfect.

In regard to the geographical limits of the N. American Maples; the *A. dasycarpum*, or WHITE MAPLE, so abundant along all the great western streams, also continues into the western prairies as far as the banks of the Arkansas, till, at length, stripped of its rich alluvial lands, it enters the arid plains of the far West. It is also met with on the banks of the Kansas and Big Vermillion river, west of the Missouri, accompanied by the *Negundo acerοides*, or Box Elder, which latter continues to the borders of the Platte. It is now much cultivated as a shade tree in the streets of our towns and cities, where it grows with rapidity, and is not attacked by insects.

The RED MAPLE, (*A. rubrum*,) which extends from the Gulf of Mexico to Canada, is also, according to Douglas, found west to the sources of the Oregon; this fact, however, we have not been able to corroborate. A variety with *yellowish* flowers, noticed by Marshall, is not unfrequent in

the vicinity of Philadelphia, in New Jersey, and in Chester County, according to Dr. Darlington. In this the leaves are smaller and 3-lobed, and more or less tomentose beneath.

The Bearded Maple. (*A. barbatum* of Michaux), according to Torrey and Gray, turns out to be a nonentity, as it is founded upon the flowers of the Sugar Maple, the fruit of the Red Maple, and a leaf (probably) of the *Acer spicatum* or Mountain Maple!

Sugar Maple. (*Acer saccharinum.*) It is reported that 1,065,000 pounds of maple sugar have been made annually of late, in New Hampshire, and that several of the counties use it exclusively, raising some also for sale.

The Sugar Maple, in and about Warwick, Goshen, and Edenville, in the state of New York, as well as in the neighbouring parts of New Jersey, attains an unusually large growth. Trees near Edenville may be seen which are 80 to 90 feet high, and with a diameter of from 2, 3, or even 4 feet. A very vigorous tree with a round summit, clad nearly to the base with a dense and very shady circle of branches, about 70 feet high, having a diameter of 2 feet 10 inches, and yet a comparatively young and vigorous tree, may be seen near the late Dr. Fowler's house, at Franklin Furnace, and several others in the same neighbourhood appear equally beautiful and large. In the old trees, the bark accumulating for ages, gives the trunk a rough and shaggy appearance, almost equal to that of the Shell-bark Hickory.

Of this genus, there are according to Decandolle, 1 species in Tartary, 5 in Europe, (excluding varieties erected into species,) 6 in Japan; *one* with oblong acuminate entire leaves in Nepaul, and specimens of 6 more species in the Herbarium of the Academy of Natural

Sciences of Philadelphia, collected also in Nepaul, by Dr. Wallick, and probably in the region of the Himmalay Mountains, of these the most remarkable is the *Acer candatum*, with unequally serrated 3-lobed leaves, having slender acuminated points an inch or more in length.

NEGUNDO.

(Moench. Nutt. Gen. Am.) Acer, (Linn.)

Flowers dicious.—*Calyx* minute 4 to 5-toothed. *Petals* none. Male, *Stamens* 4 to 5, anthers linear and acuminate. *Samara* (or fruit) similar to that of the Maple.

Trees of North America, with pinnate or twice trifoliate leaves, the leaves ovate or lanceolate, toothed or incisely cleft, resembling those of an Ash. Racemes of the male flowers short and aggregated, with filiform pedicels. Fertile flowers racemose.

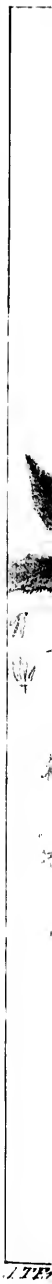
CALIFORNIAN BOX ELDER.

NEGUNDO californicum, *foliis trifoliolatis pubescentibus junioribus tomentosis, foliolis ovatis acuminatis trilobatis inciso-serratis; fructibus pubescentibus.*

Negundo Californicum. Hook. and Arnott, Bot. Beechy. Suppl. p. 327, t. 77. Torrey and Gray, Flora 1, p. 250 and 684.

Of this species, collected by Douglas in Upper California, we know nothing from personal observation, not having met with it in our visit to that country. It is remarkable for the almost tomentose pubescence of its leaves, and the petioles and young branchlets are said to be velvety; the leaflets usually 3, are ovate acuminate, 3-lobed, cleft, and serrated. The samara oblong, pubescent, rather shorter than the oblique, obovate, and nearly erect wings of the seed.

It appears there is yet a third species of this Genus, called by Decandolle, *Negundo Mexicanum*, which has also trifoliate leaves.



Pl. XXII

J. T. French Del. Sinclairs Lith.

Negundo Californicum

Californian Box Elder Erable de Californie

Plate LXXII.

A branch of the natural size in fruit. *a.* The male flowers.

Box Elder, (*Negundo aceroides.*) This tree, on the low alluvial borders of rivers, extends much farther to the north than was supposed by Michaux. Richardson, Drummond, and Douglas, found it to be abundant about the Red River and Saskatchawan, which latter river, (in latitude 54°,) is its most northern limit. It also occurs on the western banks of the Missouri, and those of the streams which enter it from the West. It likewise extends into the interior of Arkansas, and for some distance on the borders of the Platte. According to Douglas, the Crow Indians manufacture Sugar from its sap, but it is not near as saccharine as that of the Sugar Maple.

BUCKWHEAT TREE.

Natural Order, Malpighiaceae. (Juss.) *Linnæan Classification*, Decandria Monogynia.

CLIFTONIA,* (Solander, herb. Banks and Gærtner.) Mylocarium, (*Willd.* Enum.)

Calyx inferior, 5-cleft. *Petals* 5, unguiculate. *Stamens* 10, 5 of them shorter, the filaments dilated at base; anthers opening longitudinally. *Germ* prismatic, 3 or 4 sided; *Stigma* sessile, 3 or 4-lobed. *Capsule* dilated, mostly 3-winged, 3-celled. Seed solitary.

A tree with alternate, entire, coriaceous, evergreen leaves, without stipules. Flowers bracteolate, in terminal racemes, white tinged with a blush of red.

BUCKWHEAT TREE.

CLIFTONIA ligustrina. *Mylocarium ligustrinum*, Willd. Enum. Hab. Berol. Pursh. Flor. Bor. Am. 1, p. 302, t. 14. Elliott, Sketch 1, p. 508. Bot. Mag, t. 1625.

This elegant tree which enlivens the borders of the pine barren swamps of the South, is met with no where to the north of the Savannah river, on the line of Georgia and South Carolina. From hence it is occasionally seen in all the lower and maritime region of Georgia, as well as the lower part of Alabama and West-Florida. It attains the height of 8 to 15 or more feet, being much branched, and

* In honour of Dr. Francis Clifton, of London, a Fellow of the Royal Society, and a medical writer of the last century.

Pl. XXIII

J. T. French del. *Sinclair lith*

Cliftonia ligustrina

Buck-Wheat Tree. *Cliftonie à feuilles de Troene*

spreading out at the summit like an apple tree. The verticillate branches are regularly covered with a smooth grey bark. The wood is compact and whitish. It is exceedingly ornamental in flower, which takes place in early Spring, in the month of March, when the whole surface of the tree is covered with the most delicate, elegant, and somewhat fragrant flowers. The borders of all the still and sluggish streams, and the dark swamps of the South are enlivened by the numerous trees of this species with which they are interspersed. In the intervals of their shade, in West Florida, we frequently saw growing and already in flower, the Atamasco Lily, or Amaryllis of the North.

When the flowers are past, the tree puts on a still more curious appearance, being loaded with triangular, winged capsules resembling Buckwheat, and hence its common name. The leaves resemble those of Privet, are evergreen, thick, very smooth, not perceptibly veined, and glaucous beneath.

In the Spring of 1773, the indefatigable Wm. Bartram discovered this tree, where I afterwards also saw it growing, on the borders of the Savannah River, in Georgia. He thus very clearly decribes it, as "a new shrub of great beauty and singularity. It grows erect, 7 or 8 feet high. A multitude of stems arise from its root, there divide themselves into ascending branches, which are garnished with abundance of narrow lanceolate obtuse pointed leaves, of a light green, smooth and shining. These branches with their many subdivisions, terminate in simple racemes of pale incarnate flowers, which make a fine appearance among the leaves. The flowers are succeeded by desiccated triquetrous pericarpi, each containing a single kernel." (Bartram's Travels, page 31.) How so fine a plant came to be overlooked for near half a century, is really surprising, considering the avidity of collectors and gardeners. In the northern States and in Britain, it is a hardy

greenhouse plant, and well worth cultivating. But to see it in perfection, you must behold it in its native swamps, attaining the magnitude of a tree, and blooming profusely on the verge of winter, without any thing near it as a contrast, save a withered carpet of leaves and leafless plants, and in the midst of a gloom and solitude that scarcely any thing else at the time relieves.

In Bartram's Botanic Garden, (Kingsessing), it appeared to be quite hardy, and survived for many years without any protection.

PLATE LXXIII.

A branch of the natural size, the fruit.

CYRILLA.

Natural Order, Cyrilleæ.* (*Torrey* and *Gray*, in note, Flor. N. Amer. I., p. 256.) Ericeæ, (Jussieu.) *Linnæan Classification*, Pentandria, Monogynia.

CYR) †Richard, in Mich. Dr. Garden and Linn, excluding the fruit.)

Calyx 5 ersistent, the divisions small, ovate-lanceolate acute. *Petals* 5 ate, lanceolate and acute, thick and convex in the centre, exceeding the length of the calyx. *Stamens* 5, about the length of the petals, the filaments subulate, anthers cordate, distinct, 2-celled, opening longitudinally. *Ovary*, superior, oval, with a short style, and 2, or rarely 3 thick obtuse stigmas; *ovules* solitary, suspended. *Pericarp* oval, small, at first somewhat fleshy indehiscent, at length suberose, 2-celled, the cells 1-seeded, and the seed pendulous from the summit of the cells.

* To this genus, as a natural groupe, Torrey and Grey refer also the *Cliftonia*, (*Mylocarium*, Willd.,) as well as the *Elliottia* of Muhlenberg, and the whole are considered as a sub-order of Ericaceæ. Of Elliottia, however, I conceive we know too little to be able to decide on its natural affinities, it will probably remain near Clethra in Ericaceæ. *Cliftonia* appears to be inseparable from the Malpighiaceæ. The only genus, then, at present embraced in this order, is that of Cyrilla, which without any real affinity to the Ericaceæ, is allied to the Malpighiaceæ by its fruit. The description of the genus, for the present, may be considered also as that of the order. The fruit of some other plant than the present, is described by Linnæus, Schreber, Willdenow, L'Heritier, and Duhamel; as they give a bilocular, bivalvular capsule, containing many small angular seeds. It is to Richard, in Michaux, that we owe the first correct description of the fruit of Cyrilla.

† In honour of Dominico Cyrilli, professor of Medicine, at Naples, and a botanical author.

CAROLINA CYRILLA.

CYRILLA RACEMIFLORA, *foliis cuneato-lanceolatis, vix acutis, sub-membranaceis, glabris, petalis calyce triplo longioribus medio convexis.*

CYRILLA *racemiflora.* LINN. Mantis, p. 50. WALTER. Flor. Carol. p. 103. WILLD. Sp. Pl. l. c. ELLIOTT, Sketch, I. p. 294. Nouv. DUHAMEL, vol. 1, p. 215, t. 46.

CYRILLA *racemifera*, VANDELL. Florul. Lusitan. et Bresil, specim. 88.

CYRILLA *Caroliniana.* RICHARD in Mich. Flor. Bor. Amer. 1, p. 158. PERSOON 1, p. 175.

ITEA *Cyrilla.* L'HERIT. Stirp. vol. 1, p. 137, tab. 66. SWARTZ, *Prod.* p. 50. Sp. pl. 1, p. 1146.

This very elegant tree begins to appear in the low humid woods and pine barrens of South Carolina, in swampy places, where it attains the height of 12 to 20 feet, with a diameter of 8 to 10 inches, and is sometimes so loaded with its numerous racemes of white flowers that we can scarcely perceive the leaves. It is in fact one of the most beautiful trees of the southern forests, and is therefore often preserved in the vicinity of habitations as an ornament. It continues to be met with throughout Georgia and the Floridas; reappears in the West Indies, and was discovered by Vellozo in Brazil. According to Michaux the elder, there is also a second species, (*Cyrilla Antillana,*) with laurel-like leaves in the Antilles.

From the name of Iron-Wood sometimes given to it by the English, it would appear that the wood is hard and close-grained, but no experiments have yet been made upon it. In Bartram's Botanic Garden, at Kingsessing, in this vicinity, it is perfectly hardy; there is now growing there a tree near upon 20 feet high, and 2 feet 2 inches in circumference. The bark on the old trunks is of a reddish

J. T. French del. T. Sinclair's lith.

Cyrilla racemiflora

Carolina Cyrilla — Cyrille de Caroline

brown colour, in layers of about a line in thickness, of a soft, elastic, fibrous and friable consistence, almost like Agaric, and may be used like that substance as a styptic.

The tree presents a widely spreading bright green summit, and the branches come out in a circular order, presenting numerous slender twigs. The leaves are alternate, rather narrow and lanceolate, very entire, sometimes oblanceolate, nearly perennial. The flowers are small but very numerous, disposed in slender pendulous racemes, producing a very graceful effect, and these racemes are clustered at the extremities of the branches of the former season. The petals are three times as long as the calyx, inserted without claws at the base of the germ, and have each an oblong, convex elevation or thickening of the petal on the lower part. The filaments alternate with the petals, and are somewhat shorter. The anthers are incumbent, cordate, 2-celled, bifid at the base. Style short, the stigmas 2 and obtuse. The pericarp of an oval form, never opens, is 2-celled, the sides filled with a dry spongy granular pulp, and with a single ovate seed in each cell.

Plate LXXIV.

A branch of the natural size. *a.* The flower enlarged.

MAHOGANY.

(Mahagon, Fr.)

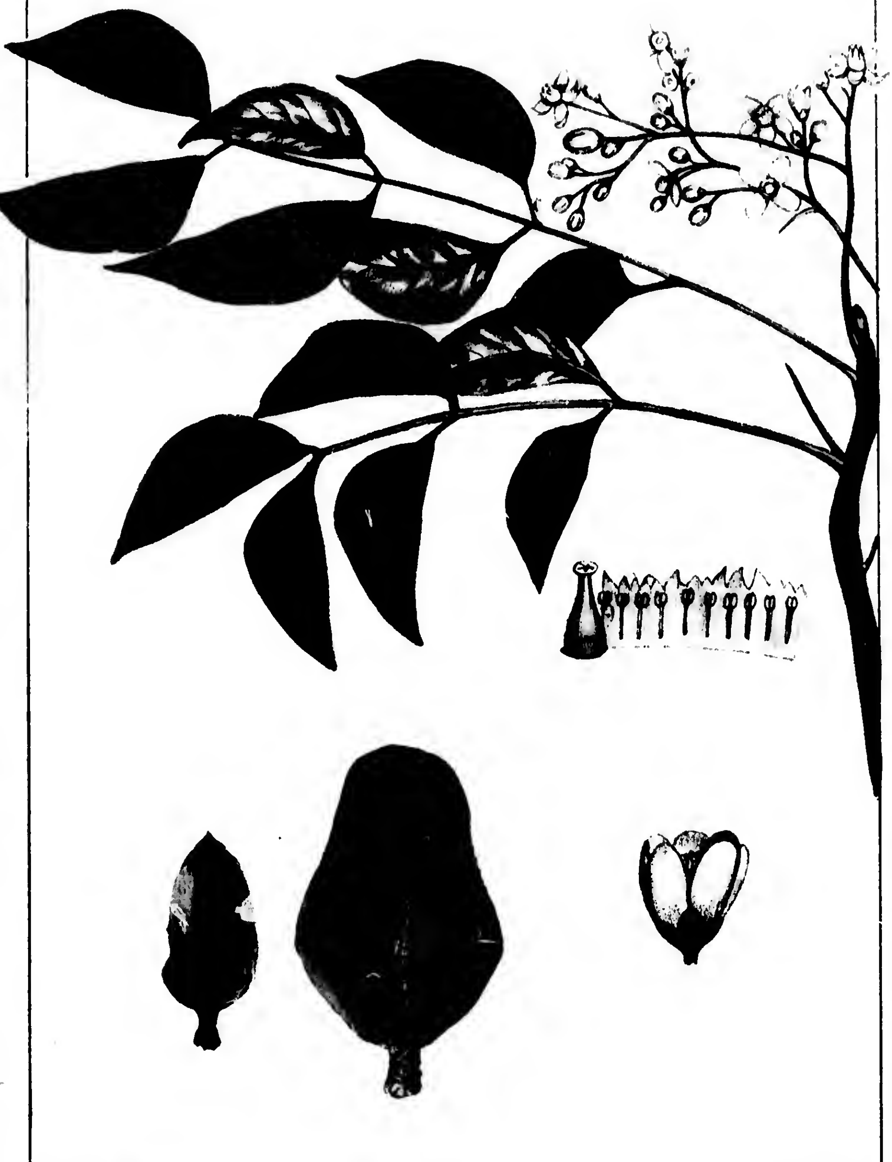
Natural Order, Cedreleæ. (R. Brown.) *Linnæan Classification*, Decandria, Monogynia.

SWIETENIA.* (Linn.)

Calyx minute, 4 to 5-lobed, deciduous. *Petals* 4 or 5. *Stamina* 8 to 10, united into a subcampanulate 10 toothed tube, internally antheriferous. *Style* short; stigma discoid, dentate. *Capsule* ovoid, large and woody, 5-celled, many seeded, opening from the base upwards, with 5 marginal valves; the axis large, persistent, pentangular above, 5-winged below with the partitions of the valves. *Seeds*, alated, pendulous, about 12 in each cell, imbricated in a double series. *Embryo* transverse. *Cotyledons* confluent in and confounded with the fleshy albumen.

Trees of warm or tropical climates, chiefly India and America, with hard dark reddish wood. The leaves abruptly pinnated, mostly with unequal sided leaflets. Flowers in axillary or somewhat terminal loose panicles.

* Named by Jacquin, in honour of Gerard L. B. Von *Swieten*, archiater to Maria Teresa, Empress of Germany, who, at his persuasion, founded the Botanic Garden at Vienna.



French del. T. Sinclair's lith.

Swietenia Mahogoni

Mahogany Tree — Mahogoni d'Amèrique

MAHOGANY TREE.

SWIETENIA MAHOGONI, *foliis subquadrijugis, foliolis ovato-lanceolatis falcatis acuminatis basi inæqualibus, racemis axillaribus paniculatis.* —Linn. Sp. pl. DECAND. Prod. vol. 1, p. 625. CAVAN. Dissert. vol. 7, p. 365, t. 209. JACQ. Amer. (Ed. picta), p. 127. CATESBY, Carol. vol. 2, t. 81. ADR. JUSSIEU, Mem. Mus. vol. 19, p. 249, t. 11. LAMARCK, Encyc. vol. 3, p. 678. HOOK. Bot. Miscel. vol. 1, p. 21, t. 16. TORR. & GRAY, Flor. vol. 1, p. 242.

CEDRELA *foliis pinnatis, floribus sparsis, ligno graviori.* BROWN, Jam. p. 158.

CEDRUS *mahogoni.* MILLER, Dict. No. 2.

THE late Doctor Muhlenberg was the first to announce the existence of the Mahogany tree within the limits of the United States, and he gives it in his catalogue as a native of Florida. Torrey and Gray add in their Flora, "We have seen in the herbarium of the late Mr. Croom, a capsule from a collection made in Southern Florida by the late Doctor Leitner, who considered the tree to which it belonged to be the true Mahogany," 1, p. 242. In one of those botanical excursions to explore the wilds of Florida, in which he had previously been so eminently successful, the indefatigable Leitner fell a victim to the savage hostility which has now so long been protracted over that devoted soil. He ascended a creek into the interior,—and was seen no more!

> . . . facilis descensus Averno.
> Sed revocare gradum, superasque evadere auras,
> Hoc opus, hic labor est.
>
> ÆNEID. lib. VI.

The Mahogany tree is said to be of rapid growth, becoming a lofty tree, with a graceful spreading summit,

the stem attaining very large dimensions, acquiring a diameter of 5 or 6 feet. It grows in the warmest parts of America, as in Cuba, Jamaica, St. Domingo, Acapulco on the Pacific, Realijo in Guatemala, and the Bahama islands, and generally affects a rocky soil or the sides of mountains, growing often in places almost absolutely deprived of earth. The seeds germinate in the clefts of rocks, and when the roots meet any insurmountable impediment, they spread out and creep till they find entrance into other clefts into which they can penetrate, and sometimes it happens that the increasing dimensions of the roots succeed so far as to split the rocks themselves. Such trees in the Bahama islands, growing so contorted for want of soil, produce the much esteemed and curiously veined wood, known in Europe as "Madeira wood." In Jamaica it is also a common tree on the plains or lower hill sides, and Dr. Macfadyen remarks, in that island he had never met with it at an elevation above 3000 feet, nor very close to the sea shore. In some of the islands it is now rare in the neighbourhood of the sea, because of its convenience for embarkation, and it is cut down of all ages, without any forethought for the future.

Doctor Macfadyen, speaking of the Mahogany of Jamaica says, "It is at present much more scarce than it appears to have formerly been. It was from this island that the supply for Europe was in former times principally obtained, and the old Jamaica Mahogany is still considered superior to any that can now be procured from other countries. In 1753, according to Dr. Browne, 521,300 feet in planks, were shipped from this island, but at present very little is exported from it. It was formerly so plentiful as to be applied to the commonest purposes; such as planks, boards, shingles, &c." "The beauty of the Mahogany wood, is said to have been first discovered by a carpenter on board of Sir Walter Raleigh's vessel, at the time the

ship was in harbour at Trinidad, in 1595." The first use to which it was applied in England, was the humble one of forming a candle-box, and about the end of the 17th century, it was brought into notice by Dr. Gibbons, a London physician, who had received planks of it from his brother, commanding a vessel in the West India trade. Since which time it has been employed for costly furniture, and occupies the most distinguished place in the drawing-rooms of nobility and fashion, quite supplanting the old oaken tables and domestic panelling of antiquity.

The most beautiful wood for variety of figure and agreeable accident, is obtained from sections of the base of the stem and root. No other wood can rival it for diversity of shades, presenting spots, waves and clouds, more varied even than the tortoise shell, which it so much resembles. Its superior density also allows it to acquire the highest polish of which any wood is susceptible.

The principal supply of Mahogany is now obtained from Honduras; but it is of a very inferior quality, being open grained, light and porous, and of a paler and inferior colour. Trees, it seems, grown in low or alluvial lands, never give a rich and hard wood. Hence the Mahogany of St. Domingo and that of the Bahama Islands, is considered superior to what is at present exported from Jamaica. It was formerly employed by the Spaniards of Havanna in shipbuilding, and it is said to be unattacked by worms, to endure long in water, and to receive the bullet without splitting. Mr. Crout, cabinet maker, in Philadelphia, so curious in our native woods, has favoured me with a specimen of Mahogany from East Florida, remarkable for its waving spots, which almost exactly resemble those of the Bird's Eye Maple.

The bark of the Mahogany is astringent, and considered useful in diarrhœa; indeed it resembles that of the Cinchona in colour and taste, though somewhat more bitter.

It has been given with success in powder, as a substitute for Peruvian Bark.*

The leaves of the Mahogany have a very light, airy and graceful appearance, feathered or pinnate, in 3 to 5 pairs of leaflets, ending abruptly without any terminal one. They are remarkable for their obliquity or the inequality of their sides, the lower portion of the leaf from the mid-rib not being more than half as wide as the upper, they are quite entire, smooth, shining, and coriaceous like the laurel, being probably of long duration, and giving the tree the character of an evergreen; their form is between ovate and lanceolate, with a very slender and sharply acuminated point; the general footstalk is about an inch and a half long. The flowers are small and greenish-yellow, disposed in loose, axillary, long pedunculated panicles, 3 to 4 inches long and pendent. The flowers and their mode of growth are a good deal like those of the Melia, or Pride of India, but they are smaller. The calyx is minute, with 5 very shallow lobes. Petals oblong-ovate. Tube of the stamens cylindric-campanulate, 10 toothed, internally a little below the summit, bearing the anthers, which are small, yellow, and alternating with the teeth of the tube. A short denticulate disc encircles the base of the ovary. Ovary ovate, green; style cylindrical; the stigma peltate, with 5 denticulations. Capsule egg-shaped, the size of an orange, rufous-brown, minutely tuberculated, 5-celled, opening with 5 valves from the base, covered within with a distinct coriaceous plate. Receptacle central, large, pentagonal, with the angles prominent, opposite, and meeting up with the edges of the valves, so as to form the septa of the cells; seeds at the apex of the receptacle, 15 in each cell, compressed, truncated at base, expanded at the summit into a membranaceous, oblong wing.

* *Macfadyen*, Flora Jamaic. p. 177.

To show the present extensive use of Mahogany in England, it may be sufficient to mention that in 1829, the importation amounted to 19,335 tons.

In Cuba and Honduras, it becomes one of the most majestic of trees, growing and increasing for some centuries. Its gigantic trunk throws out such massive arms, and spreads the shade of its shining green leaves over such a vast surface, that all other trees appear insignificant in the comparison. A single log not unfrequently weighs 6 or 7 tons, and a tree has been known to contain as much as 12,000 superficial feet, and to have produced upwards of 1000*l.* sterling. The largest log ever cut in Honduras, was 17 feet long, 57 inches broad, and 5 feet 4 inches in depth; measuring 5,168 superficial feet, or 15 tons weight.

The Mahogany of Honduras* is cut about the month of August, by gangs of men of from 20 to 50 each. The woods are penetrated and surveyed from the summit of some lofty tree, and the leaves at this season having acquired a yellow reddish hue, are discerned by an accustomed eye at a great distance. The trees are commonly cut 10 or 12 feet from the ground, a stage being erected for the purpose. The trunk from the dimensions of the wood it furnishes, is deemed the most valuable; but for ornamental purposes, the limbs, or branches, are generally preferred.

A sufficient number of trees being felled to occupy the gang during the season, they commence cutting the roads upon which they are to be transported. This may fairly be estimated at two-thirds of the labour and expense of Mahogany cutting. Each mahogany work forms in itself a small village on the bank of a river,—the choice of situ-

* Supposed by Mr. R. Browne to be a peculiar species, on the authority of Brown's Hist. of Jamaica.

ation being always regulated by the proximity of such river to the mahogany intended as the object of future operation.

These roads are cleared out by the cutlass and the axe, in the same manner that the first roads in our back forests are made; bridges have also to be constructed. The trunks of the trees are then cut into square logs. April and May, being the driest season in this climate, is chosen as the only time when the logs can be drawn to their destination from the interior of the forest. Each truck requires 7 pair of oxen and 2 drivers, and 12 to lead or put the logs on the carriages. From the intense heat of the sun, the cattle especially, would be unable to work during its influence, and consequently the loading and carriage of the timber is performed in the night. On the rise of the rivers at the close of May, the logs are floated down to their destination and finally shipped from Belize in Honduras to Europe.

Plate LXXV.

A branch in flower of the natural size. *a.* The capsule. *b.* The seed.

ORANGE TREE.

(L'Oranger, Fr.)

Natural Order, Aurantiaceæ, (Correa.) *Linnæan Classification*, Polyandria Monogynia.

CITRUS.* (Linn.)

Calyx 5-cleft, persistent. *Petals* 5 or more, oblong, spreading. *Stamens*, filaments about 20 to 60, forming a cylinder and disposed in several sets. *Germ* superior, style cylindrical with a capitate stigma. *Berry* many-celled, inclosed by a fleshy glandular rind, the cells 9 to 18, separated from each other by membranous envelopes, pulp watery, contained in numerous utricular vesicles. *Seeds* oblong, attached to the inner angle of the cell, albumen none. *Embryo* straight, the seed leaves or cotyledones large and thick, often more than 2.

Trees or shrubs of tropical or mild climates, chiefly indigenous to eastern Asia, India, and China, with a single species in Guiana, (tropical America.) Leaves alternate, solitary, articulated to the summit of a petiole which is usually margined or alated, the axils of the leaves, in the uncultivated state, usually produce simple spines.

* Derived from κιτρια, the *Lemon*, and κιτριον, the *Citron*, which among the Greeks and Romans included also the *Cedar* or some similar tree, which they probably associated from the fragrance of its wood.

WILD ORANGE TREE.

CITRUS VULGARIS, (RISSO) *petiolis alatis, foliis ellipticis acutis crenulatis, floribus icosandris, fructuum globosorum cortice tenui scabroso, pulpa acri amara.* DECAND. Prod. I. p. 539. RISSO, Annal. Mus. vol. 20, p. 190.

CITRUS *Aurantium Indicum.* GALL. citr. p. 122.

CITRUS *Bigarradia.* Nouv. DUHAMEL, vol. 7, p. 99.

Bigarade of the French, or Bitter Orange.

CITRUS *spinosissima?* MEYER, ESSEQUIB. p. 247.

Aurantium vulgare, acre; primum. FARRARIUS, Hesper. p. 374.

Aurantium sylvestre, medulla acri. TOURNEFORT's Institutes, p. 620.

Malus Aurantia sylvestris, J. BAUHIN, Hist. vol. 1, p. 99.

From the relation of William Bartram, in his Travels up the St. John's in East Florida, in the year 1774, it is evident that the Orange tree is abundantly indigenous to the banks of that stream. Groves of Orange trees, of large dimensions, loaded with their golden fruit, spread themselves before the traveller in the greatest profusion, and he might readily imagine himself transported in reality to the gardens of the Hesperides. As the Orange was there found an established denizen of the country, previous to all European settlement, we must of course conclude it to be, like the banana and some other tropical productions, a native alike of both the old and the new continent. These forests of the Wild Orange trees are frequent in East Florida as far north as the latitude of 28°. According to the observations of the late Mr. Croom, "they are rarely found north of latitude 29° 30′, although there is a small grove near the Alligator Pond, which is somewhat north of latitude 30°. The fruit, (according to Torrey and Gray,) is known by the name of the Bitter-Sweet Orange.

To show the extent of these groves, in a notice of the

J.V. French del. F. Sansom sculp.

Citrus vulgaris

Wild Orange Tree. Oranger Sauvage.

town of New Smyrna, Bartram observes, "I was there about 10 years ago, (1764), when the surveyor run the lines of the colony, where there was neither habitation nor cleared field. It was then a famous Orange grove, the upper or south promontory of a ridge nearly half a mile wide, and stretching north about 40 miles," &c. All this was *one entire Orange grove*, with Live Oaks, Magnolias, Palms, Red Bays, and others. (BARTRAM's *Travels*, in a note to page 144.) On page 253, he also remarks, "I have often been affected with extreme regret, at beholding the destruction and devastation which has been committed, or indiscreetly exercised on those extensive fruitful Orange groves, on the banks of St. Juan, by the new planters under the British government, some hundred acres of which, at a single plantation, have been entirely destroyed, to make room for the Indigo, Cotton, Corn," &c.

In the forests of Essequibo there appears to be a variety of this species of Orange, equally indigenous with the present, it is also wild about Vera Cruz, and near Mexico and Panuco,* and is indigenous in Porto Rico, Barbadoes, and the Bermudas, as well as in Brazil, and St. Jago of the Cape Verd Islands. Hughes also speaks of it in his time as being natural in the woods at Orange Bay in Jamaica, both the sweet and sour kinds in great plenty. The specimens which I have seen brought from East Florida, by Mr. James Reed, are evidently referable to the present species, the Orange of India, though we have not had the satisfaction of seeing any specimen of the fruit; but, according to Bartram, the taste is sufficiently grateful, as he made use of it to season and add a relish to his animal food.

India is the native country of the Orange now so generally naturalized in the south of Europe, particularly along

* PHILLIPS in Hakluyt's Voyages, l. c.

the coast of the Mediterranean. About Nice all the known species and varieties of this grateful fruit are cultivated in perfection. The Orange has also been supposed to be a native of the Hesperides, or Canary Islands, and its fruit to be the golden apples, which the daughters of Hesperus caused to be so strictly guarded by a watchful dragon. Under this idea, Ventenat changed the name of the natural order to which it belongs from Aurantiæ to Hesperidæ, an innovation more poetic than philosophical, and which has not been adopted.

The Lemon appears to have been the first of the genus which was introduced into Europe. Theophrastus, and after him Pliny, speak of a fruit known under the name of the *Apple of Persia*, or of *Media*. Virgil in his Georgics, extols the happy effects supposed to be produced by the use of the Apple of Media.

> . . . Animos et olentia Medi
> Ora fovent illo, et senibus medicantur anhelis.
>
> Georg. Lib. 2.

The Phocians are supposed to have been the first who planted this tree on the coast of the Mediterranean, when they founded the city of Marseilles. In the 11th century the Seville Orange was already spread through all the islands of the Mediterranean, and in the 13th century it was established about Nice. The species of Orange of which we are now treating, (the Bigaradier of the French,) appears to have been introduced from India into Europe by the Arabs, who cultivate it in all the countries subjected to their dominion. The Citron passed from Egypt into Europe in the time of the Crusades. According to the testimony of one of the Arabian writers, it was from Phenicia that the golden Orange was conveyed to the gardens of Seville. No traveller has in a positive manner established the native country of the true Orange; and it is nearly alike

whether we should attribute it to Japan or the islands of the Pacific, more particularly the Philippines.

The duration of the Orange tree, in the countries where it is indigenous, is no doubt very great. Many of those cultivated in the maritime Alps of France, are more than 250 years of age; and according to Risso, a wind from the S. S. E. in February 1807, overturned in the commune of Esa, citron trees which were more than 500 years old. Tamara and Ferrarius both describe an Orange tree, planted in the year 1200 by Saint Dominick, in the garden of the convent of Saint Sabine in Rome, which is said still to exist.

The Orange is considered the most beautiful tree of Europe; the majesty and regularity of its form, the brilliant and unfading green of its graceful foliage, its white and fragrant flowers, and splendid fruit, strike the beholder with admiration. Its beauty is not transient like that of ordinary orchard trees, but nearly throughout the year it is luxuriantly adorned with flowers and fruit. The cultivated Orange attains the height of 25 to 30 feet, with a circumference of 2 or 3 feet. The wild Orange of Florida, however, acquires a greater height than those which I have observed in cultivation in the Azores. The wood is compact, close and fine grained, very hard, and susceptible of a fine polish, slightly veined, and suitable for inlaid work. The wood of the Wild or Bitter Orange is preferred by chemists because of its superior density. The leaves have also a more powerful odor, distilled they give a bitter aromatic water, known in Languedoc by the name of *l'Eau de Naples*. By the same operation is also obtained an essential oil of a better quality than that from the leaves of the true orange. The *Orange-Flower Water*, a well known perfume, is obtained also from this species. It is praised for its cordial virtues, and as a cephalic, vermifuge, and antispasmodic. The fruit is made great use of

for seasoning fish and meats, and to give a relish to various sauces. A wine is also made from the juice of the sweet Orange, mixed with the extract of the peel fermented, which keeps a long time, and when old acquires the taste of the Malvoisie of Madeira.

The smell of the Orange flower is almost universally esteemed, it is salutary and refreshing, and is unrivalled for its excellent perfume. The juice of the fruit is equally grateful, it allays heat and thirst, and by promoting various excretions, proves of considerable use in febrile and inflammatory diseases. The outer yellow rind of the Seville Orange is a grateful aromatic bitter, tending to improve the appetite, and it is employed in making the well known conserve, marmalade.

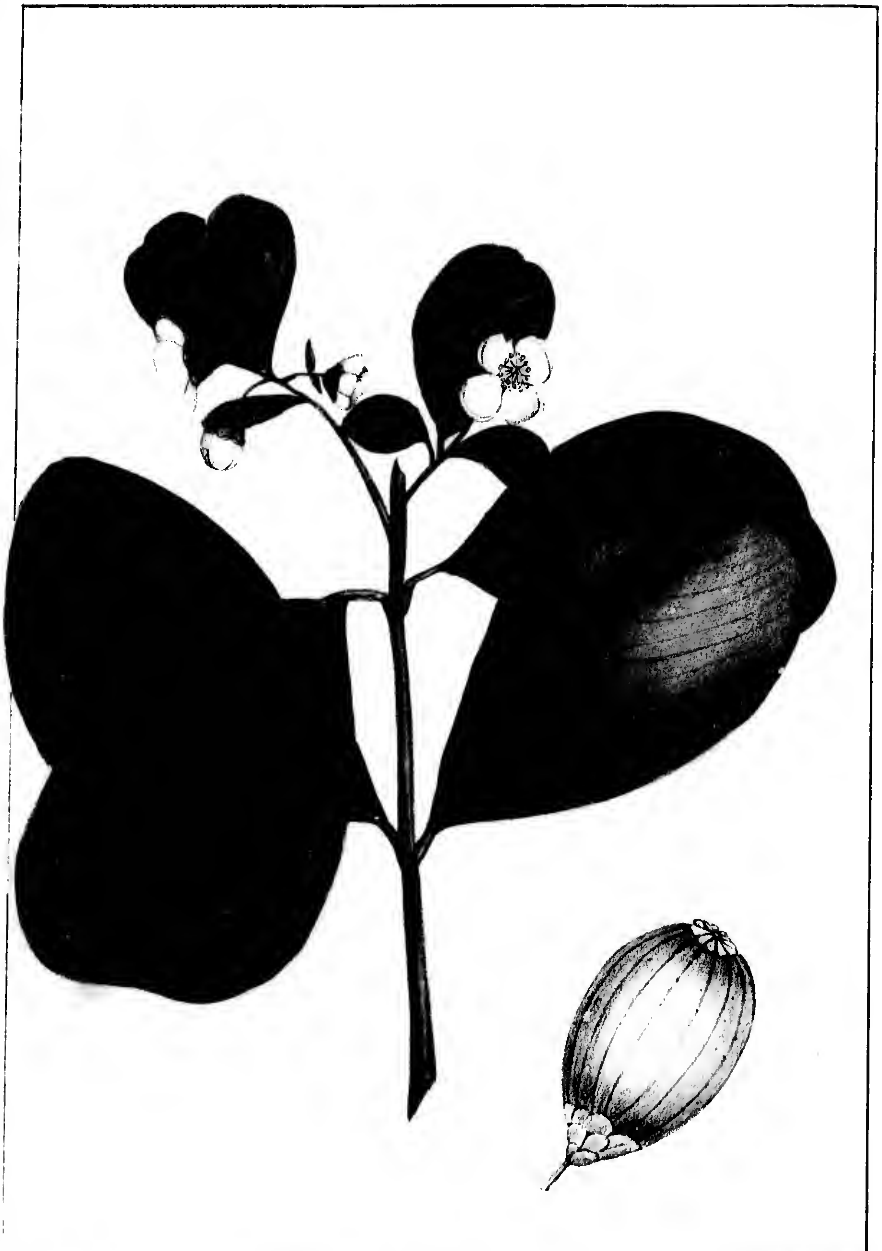
In the Azores, the cultivation of the Orange as an article of commerce, is of great importance to the inhabitants, and every means are employed for its success. The trees in Fayal are defended from the severe sea breezes by very high stone walls, and plantations of young trees are defended for several years by rows of the Faya (*Myrica Faya*,) planted between them, and though the trees there rarely attain a greater height than 20 or 25 feet, they spread out many large branches and sometimes a single tree has produced as many as 6000 Oranges. The best kind brought to the European markets are those from the island of St. Michael. They have an even shining rind with a deliciously sweet and agreeable pulp.

As I have already remarked, a specimen of the Wild Orange from Florida, is in no way distinguishable from the *Citrus vulgaris* of Asia, it has the same elliptic leaves, with alated peduncles, small axillary spines, and axillary and terminal white flowers on short peduncles, with 20 stamens.

PLATE LXXVI.

A branch of the natural size, with the fruit.

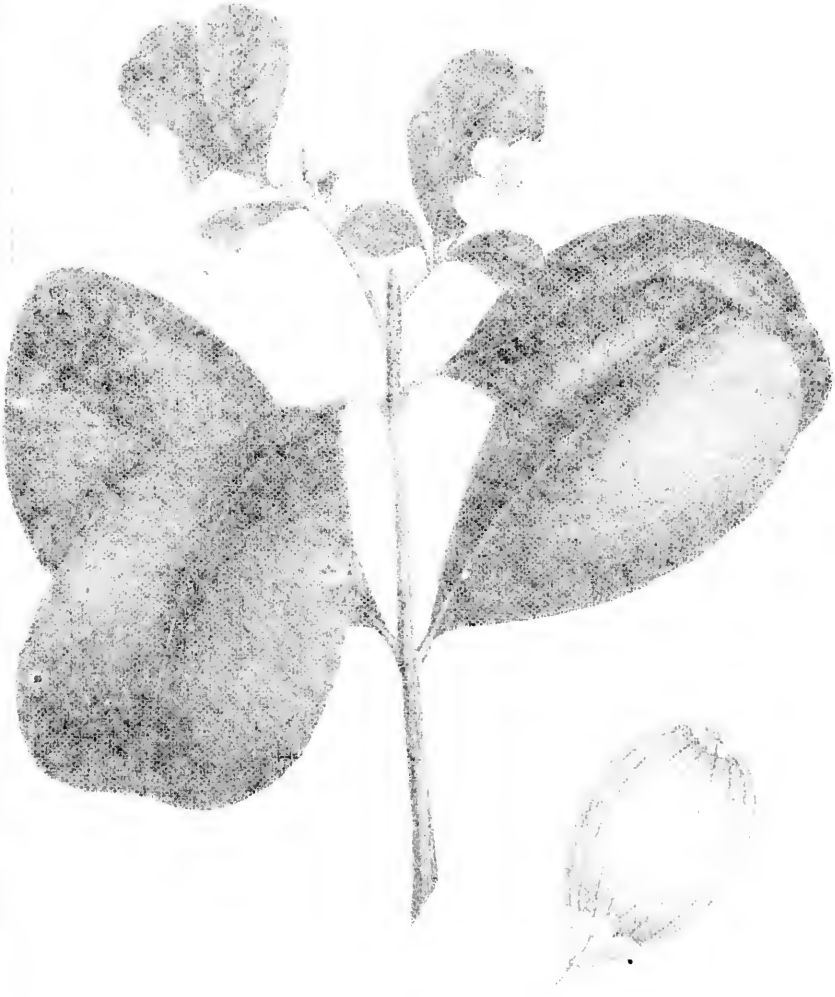
Pl LXXVII



J. T. French del. T. Sinclair's lith.

Clusia flava

Yellow-flowered Balsam Tree *Clusier jaune*



BALSAM TREE.

Natural Order, GUTTIFERÆ, (JUSS.) *Linnæan Classification*, POLYANDRIA MONOGYNIA.

CLUSIA.* (LINN.)

Calyx of 4 to 8 sepals imbricated and coloured. *Corolla* of 4 to 8 petals. *Stamens* numerous. *Style* none. *Stigma* radiately peltate. Flowers commonly polygamous, with the fertile ovary surrounded by a short thick nectary. *Capsule* fleshy, coriaceous, 5 to 12 valved, opening at the apex; placentæ triangular, united into a central column, each one attached to the introflected valvules. *Seeds* terete; cotyledones separable.

Parasitical trees of tropical America, with opposite coriaceous entire leaves without stipules.

YELLOW FLOWERED BALSAM TREE.

CLUSIA FLAVA, *floribus polygamis, calyce polyphyllo, corolla tetrapetala flava, staminibus numerosis brevibus, stigmatibus circiter* 12, *foliis obovatis obtusis aliquando emarginatis, breviter petiolatis striatis.* DECAND. Prod. vol. 1, p. 559.

CLAUSA FLAVA, *foliis aveniis, corollis tetrapetalis.* LINN. Syst. Veg. vol. 4, p. 328. JACQ. Stirp. Amer. p. 272, t. 167.

* Named in honour of Charles de l'Ecluse, a celebrated botanist of the 16th century.

Clusia *arborea, foliis crassis, nitidis, obovato-subrotundis; floribus solitariis.* Brown, Jam. p. 236.

Terebinthus folio singulari, non alato, rotundo succulento; flore tetrapetalo, pallide luteo, fructu majore, monopyreno. Sloane, Jam. p. 167. Hist. vol. 1, p. 91, t. 200, f. 1.

This singular and splendid tree is a native of Jamaica, and Cayenne in South America, where it is found among rocks on the declivities of mountains. We have now also to record it as a native of Key West in Florida, where it has recently been found with so many other tropical productions by Dr. Blodgett. It grows to the height of about 20 feet or upwards, and like other kindred species of the genus, is parasitic on the trunks or limbs of other trees, a habit supposed to be occasioned by birds accidentally scattering the viscid seeds, which take root like those of the Misseltoe; when having obtained a considerable size, the roots creep along the surface of the tree in quest of nourishment and support, penetrating into any decayed cavity of the supporting trunk, and finally reaching the ground though at forty feet distance, where now, at length, permanently fixed, it becomes a large and independent tree. A viscid or resinous balsamic whitish juice exudes from every part of the tree when cut, which becomes red or brownish when exposed to the air, and hardens like other gums or colophony. As yet this substance has been applied to no useful purpose more than as a dressing to the sores of horses, and by the Indians is mixed with tallow to pay their boats to prevent leakage.

The leaves of this plant as well as those of C. *rosea* and C. *alba* are very remarkable in their form and appearance; being very smooth and of a thick leathery consistence, wedge-shaped or inversely oval, 5 or 6 inches long by about 4 wide, entire or slightly repand at the summit, which is rounded, they are insensibly narrowed downwards to a thick petiole about half an inch in length, and marked beneath

with many transverse ascending veins which are scarcely perceptible at the surface, all inosculating together near the border. The flowers are shortly pedunculate, axillary and terminal, solitary or by 3's on the same peduncle. The calyx is almost quadrangular, composed of 16 sepals, disposed in 4 ranks; they are somewhat rounded and concave, the inner series gradually becoming larger. The corolla is pale yellow, of 4 oval petals somewhat unguiculated, very thick, two of them larger than the others. Stamens very numerous, on short thick filaments, nearly in 4 rows round the germ, with the anthers distinctly 2-lobed. The germ is very small, with a thick 12 rayed, almost capitate stigma, with 4 lateral appendages. The capsule with 12 cells and 12 thick valves containing numerous oblong seeds, enveloped in a soft pulp and attached to a large oblong 12 furrowed placenta or receptacle. The fruit is about the size of a fig with something of its form, and hence it is known to the Negroes by the name of the *Wild Fig*. (MACFADYEN.)

PLATE LXXVII.

A small branch with the leaves reduced to about one-half their natural size.

TORCH WOOD.

(Balsamier, Fr.)

Natural Order, Amyridaceæ, (R. Brown). *Linnæan Classification*, Octandria Monogynia.

AMYRIS.* (Linn.)

Calyx 4-toothed, persistent. *Petals* 4, oblong, spreading, imbricated in the bud. *Stamens* 8, shorter than the petals. *Stigma* sessile, obtuse and indistinct. *Drupe* 1-seeded, with a chartaceous nut.

Trees or shrubs of tropical America, with opposite compound leaves, mostly of a single pair, or trifoliate pinnate; the leaflets as well as the drupe filled with pellucid aromatic glands. Flowers white, in terminal, trichotomous panicles.

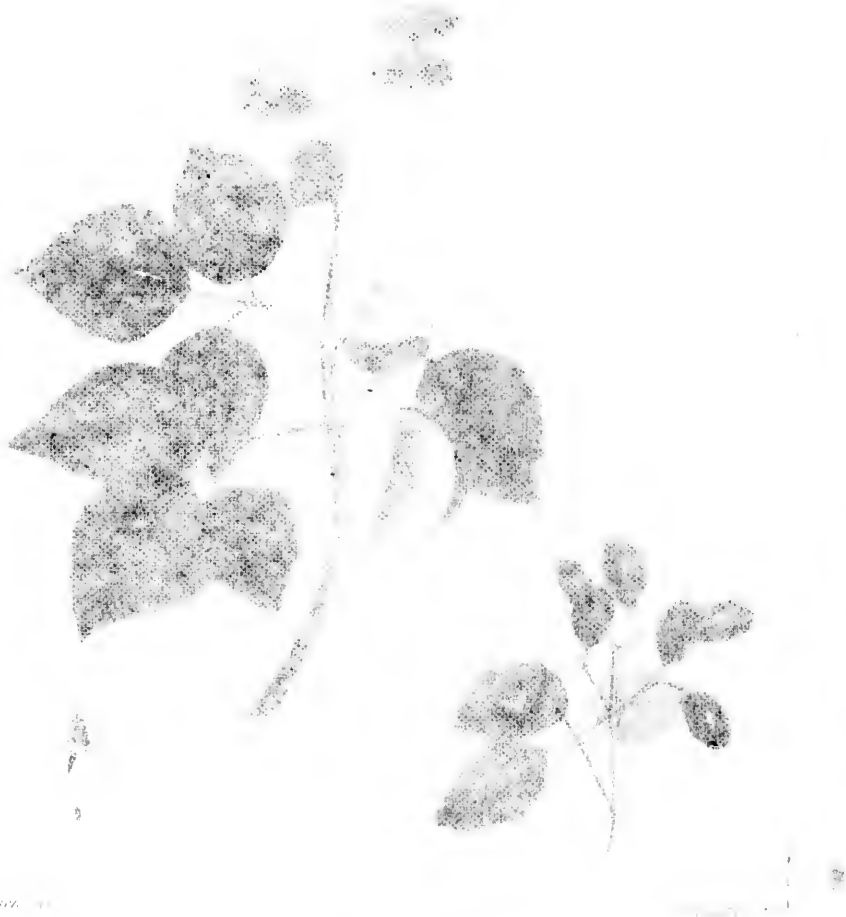
FLORIDA TORCH WOOD.

AMYRIS floridana, *foliis brevi-petiolatis, foliolis* 1-*jugis cum impari ovatis integerrimis obtusiusculis subacuminatis nitidis, paniculis terminalibus abbreviatis, drupa subglobosa basi angustata.*

Amyris *Floridana*, Nutt. in Sillim. Journ. vol. 5, p. 294. Decand. Prod. 2, p. 81. Torrey & Gray, Flora of North Amer. 1 p. 221.

This plant forms a small evergreen tree, about 15 to 20 feet high, and like most of the genus, affects the borders of the sea. Major Ware first found this species in some part

* The name is derived from μυρρα, *Myrrh*, in allusion to the gum or resin afforded by different species of the genus.



...ench del. *T. Sinclair's lith.*

Amyris Floridana

Florida Torch Wood *Balsamier des Florides*

of East Florida, no doubt near the coast; and fine specimens have been collected on the shores of Key West, by Dr. Blodgett.

The general appearance of this elegant tree, and its lucid leaves almost remind one of the myrtle; the leaves, always growing by 3's, are equally filled with aromatic, oily reservoirs, looking like pellucid dots when viewing the leaf as held up to the light. They are opposite, on petioles of about ¼ an inch in length; the petiole of the central leaflet of the three is also about the same extent; the leaflets are short, about 1 to 1¼ inches long, by an inch in width, perfectly entire, of a broad ovate form, shortly acuminate, with the point mostly obtuse, but slightly apiculated; beneath dull and paler, above reticulately veined and shining. The flowers are small and yellowish white, in terminal, shortish, oppositely branched panicles. The calyx is minute, and 4 toothed. The petals 4, oval-oblong, concave, spreading and glandular beneath. Stamens 8, shorter than the petals, with long, white, oblong-linear 2-celled anthers, which open lengthways. The germ is ovate, with a small, sessile, concave stigma. The berry is black and glaucous with a bloom, narrowed below, about the size of a grain of black pepper, and covered with an agreeably aromatic, oily pulp.

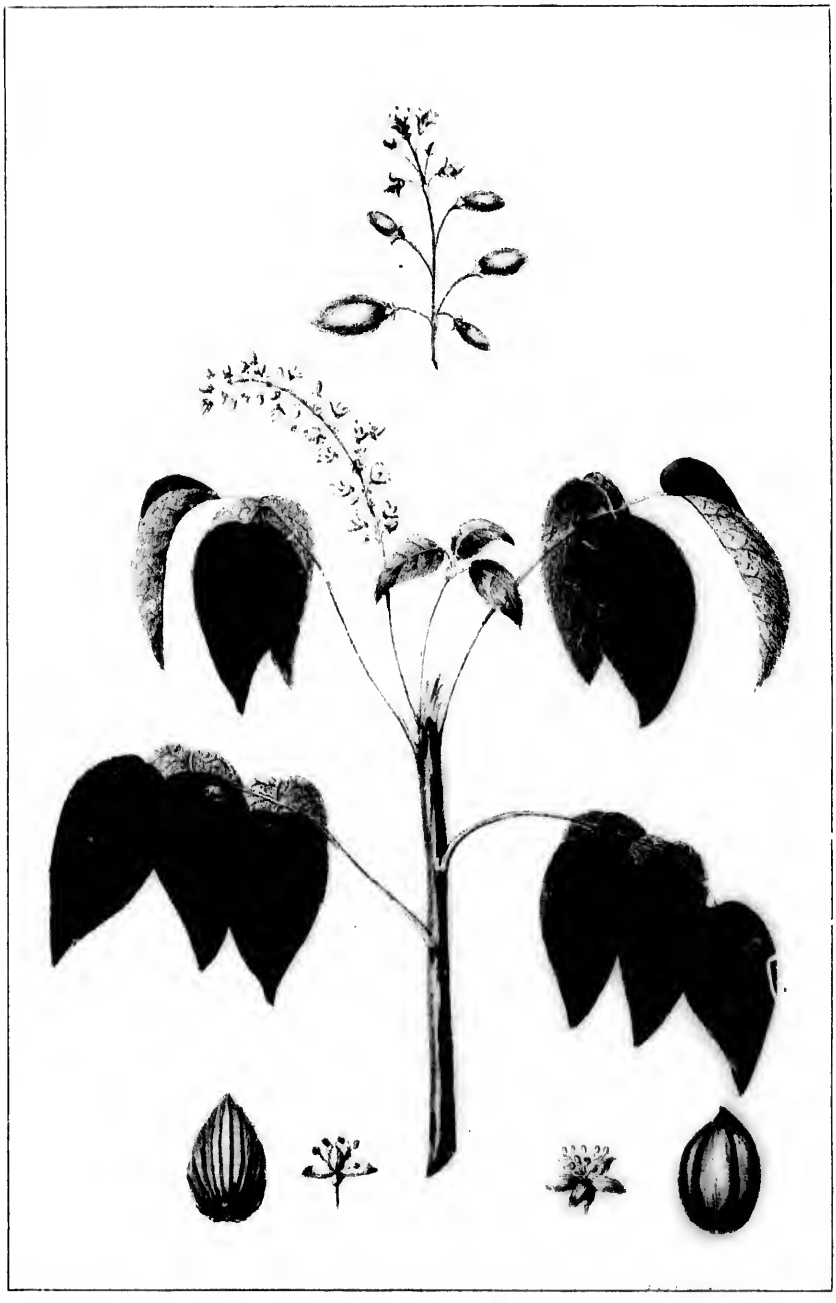
This species is considerably allied to *Amyris maritima*, which produces a white, hard and odoriferous wood, but in that plant the leaves are really obtuse, almost round, not acuminate, decidedly crenate on the margin, and of a much thicker consistence.

The wood of this species is yellowish white, close grained, and capable of receiving a high polish. The leaves and bark of several of the West India species of this genus yield a fine balsamic juice, wholly resembling that of the Gilead balsam. By distillation the wood would also yield a very grateful perfume.

One of the oriental species formerly included in this genus, has been long familiar; namely the *A. Gileadensis*, which yields the balsam of Mecca or of Gilead, the most fragrant and pleasant of balsams. From the *A. Elemifera* of Brazil, is obtained the gum Elemi. The *A. Ambrosiaca* of Guiana, (now referred to *Icica* of Aublet,) becomes a tree, and yields a very odoriferous balsam from the trunk and branches, which is used in dysentery, and burnt in houses and churches as a perfume. It also produces the resin of Coumia.

PLATE LXXVIII.

A branch of the natural size. *a*. The flower. *b*. The fruit.



Bursera Gummifera.

West Indian Birch tree. *Gomart d'Amerique.*

BURSERA. (Jacquin.)

(Gomart, Fr.)

Natural Order, Burseraceæ, (Kunth.) *Linnæan Classification*, Polygamia Diœcia.

Flowers Polygamous. Male. *Calyx* small, 3 to 5-parted, with obtuse lobes. *Petals*, 3 to 5, spreading, with a valvular astivation. *Stamina* 6 to 10; annular disk, with 6 to 8 crenulations. Fertile Flowers, with the calyx 3-parted. *Petals* 3. *Stamens* 6. *Ovary* ovate, 3-celled. *Style* short, with a capitate obtuse, 3-lobed stigma. *Drupe* oblong, with 3 nuts; the bark succulent and trivalvular; 2 of the nuts abortive; the fertile one fleshy, bearing 2 ovules, and perfecting only one seed. *Seed* pendulous, without albumen; cotyledones foliaceous, with wrinkled folds, the radicle straight and superior.

Tropical American balsam-bearing trees, with unequally pinnated and sometimes simple articulated leaves, with small flowers in axillary racemose panicles.

Named after Joachim Burser, Professor of Botany at Sara, in Naples.

WEST INDIAN BIRCH TREE.

BURSERA gummifera, *foliis deciduis sæpius impari-pinnatis, foliolis ovatis acutis membranaceis, racemis axillaribus.* Decand. Prod. vol. 2, p. 78. Jacquin. Amer. p. 94, tab. 65. Swartz, Obs. p. 130.

Terebinthus *major betulæ cortice, fructu triangulari.* Sloane, Jam. t. 199.

Terebinthus *foliis cordato-ovatis pinnatis, cortice lævi rufescente, floribus masculis spicatis.* Brown, Jam. p. 345.

The West Indian or Jamaica Birch becomes a large, lofty

and graceful tree, with an upright, smooth, round trunk of 3 to 4 feet in diameter, having an even, thin, membranaceous brown or greyish bark, peeling off in shreds like the European Birch; but in other respects it bears not the slightest relation to that tree. It produces a fine, spreading, much branched summit, full of elegant, feathery leaves, almost like those of the Ailanthus; and though an exclusive native of the tropics, it annually sheds its leaves in the winter, flowering and renewing its foliage in the months of March and April. It is common in most of the West India islands, as well as in the adjoining continent, and is described as being common on Key West, by our friend Dr. Blodgett. It is known to the French inhabitants by the name of *Gummier*, from the circumstance of its affording resin; by the Spaniards it is called *Almicigo* or Mastic Tree, each one comparing it with something growing in their native country.

All parts of the plant abound with a glutinous, balsamic juice, having the odor of turpentine, which soon thickens in the air, and forms a transparent gum-resin of a dark green color, bearing some resemblance to mastic, but with an unpleasant alliaceous smell. It is soluble in alcohol, and may be employed, like mastic, as a transparent varnish. It might also be substituted in the form of pills for Copaiba and other nauseous balsams, in diseased discharges from the mucous membranes. Jacquin observes, that the bark of the root is often exported to Europe in place of that of the Simaruba, and by some it is said to possess, in fact, the same properties as Quassia.

As a timber tree, the Bursera is considered of little value, the wood being white, soft and brittle, and it is seldom put to any use but as fuel.

The leaves are alternate, and unequally pinnated; rather long petiolate, composed each of 3, 5, 7, or even sometimes 9 opposite leaflets, which are petiolated, oval, acuminate,

rounded at base, and somewhat cordate, entire, at length smooth on both sides, even, and a little shining above, (an inch and a half to two inches wide, and about 3 inches long, when fully expanded after the flowering period.) The flowers are small, whitish, scentless, growing in axillary, clustered flowered racemes or panicles, towards the summits of the branches. The drupe is about the size of a hazel nut, greenish, tinted with brownish purple when ripe, resinous, fragrant, with a succulent bark, appearing somewhat 3-lobed, 3-celled and 3-valved, with only 1 seed usually coming to perfection, the nuts of the 2 other cells being abortive; the nuts are very white, a little compressed, each containing one kernel.

Two other species of this genus are described by Decandolle, *B. acuminata*, from St. Domingo, of which but little is known, and the *B. simplicifolia*, which is probably not a congener, having a single nut, exactly 3-sided, with the angles partly salient. This bears simple leaves, and forms a tree only about 15 feet in height.

The *Bursera paniculata*, (now *Colophonia mauritiana*,) the Bois de Colophone of the isle of France, gives out from the slightest wound in the bark, a copious flow of limpid oil with a pungent, turpentine odor, which soon congeals to the consistence of butter, assuming the appearance of camphor.

Plate LXXIX.

A branch of the natural size. *a*. The drupe. *b*. The nut. *c*. The male flower. *d*. The female flower. *e*. A small fruiting branch.

SUMAC II.

Natural Order, ANACARDIACEÆ, (R. Brown.) *Linnæan Classification*, PENTANDRIA TRIGYNIA.

RHUS.* (LINN.)

Flowers POLYGAMOUS OR BISEXUAL.—*Calyx* small, 5-parted, persistent. *Petals* 5, small, ovate spreading, imbricated in æstivation. *Stamens* 5, equal, free. *Torus* an orbicular disk. *Ovary* ovate or globose, 1-celled: ovule solitary. Styles 3, distinct or combined. *Fruit* almost a dry drupe. The *Nut* bony, 1-celled, 1-seeded, even or grooved. *Seed*, (by abortion,) solitary, attached to the extremity of a basilar funiculus. *Embryo* inverted; cotyledones foliaceous; radicle curved and opposite to the hylum.

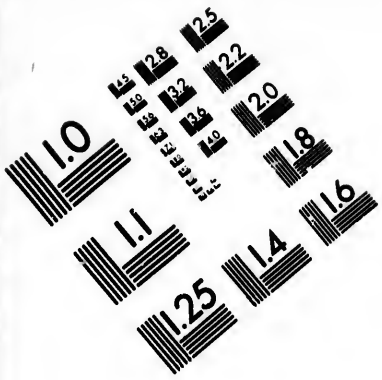
Shrubs or trees of various countries and climates, but more abundant in those which are mild. Leaves alternate, compound, ternate or pinnate. Panicles axillary and terminal, the flowers small, greenish, and inconspicuous.

§ METOPIUM. *Drupe ovate-oblong, dry and smooth, nut chartaceous. Seed arillate.*

* The name is derived from the Celtic word *rhudd*, signifying red, from the prevailing colour of the fruit. The name *Sumach* is from the Arabic name *Simâg*.

Rhus Metopium.

Coral Sumach. *Sumac Metopi.*



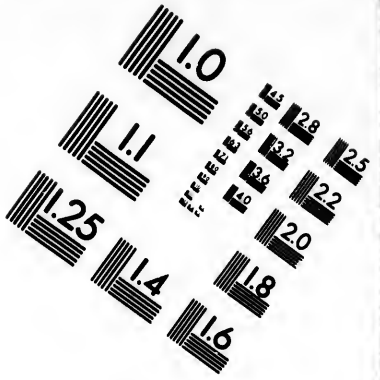
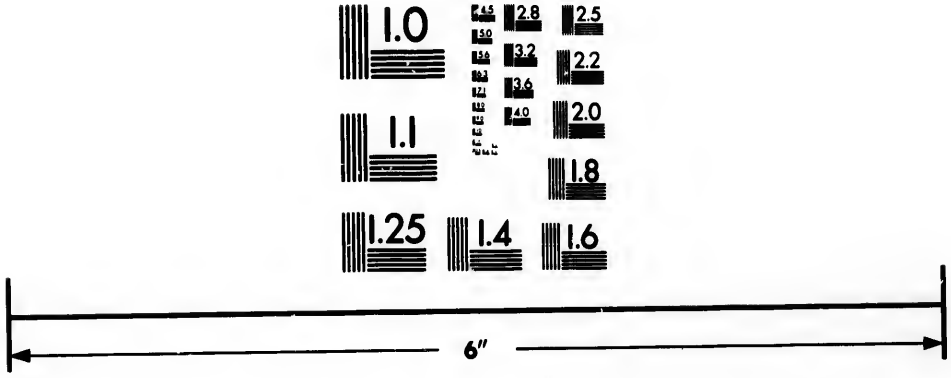


IMAGE EVALUATION TEST TARGET (MT-3)



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2.8
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2.5
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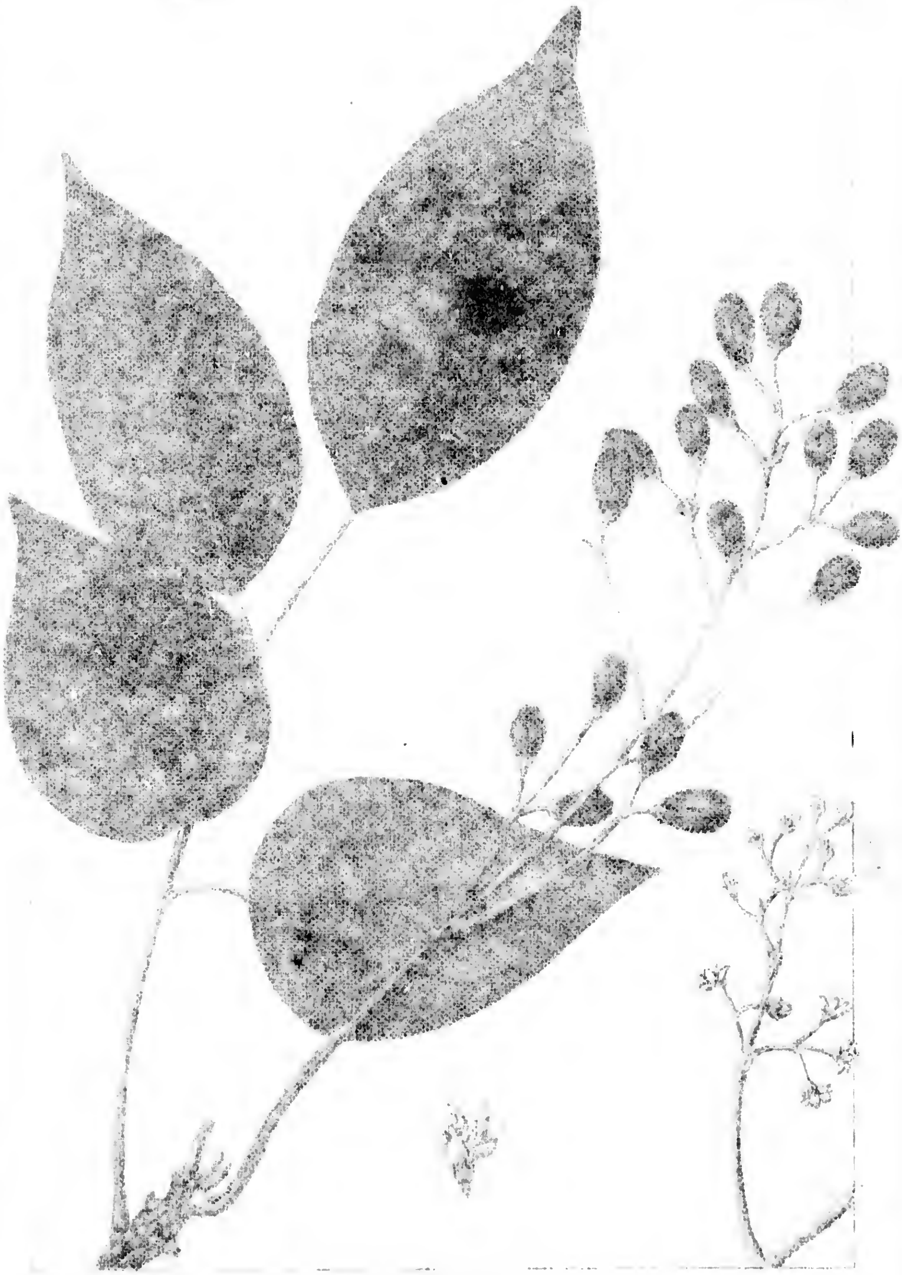

Rhus Metopium

Coral Sumach — *Sumac Metop.*

CORAL SUMACH.

RHUS METOPIUM, *foliis pinnatis 2-3-jugis cum impari glaberrimis, foliolis petiolulatis ovatis integerrimis.*

RHUS METOPIUM. LINN. Amœn. Acad. vol. 5, p. 395. DECAND. Prod. vol. 2, p. 67.

METOPIUM *foliis subrotundis pinnato-quinatis, racemis alaribus.* BROWN, Jamaic. p. 177, tab. 13, fig. 3.

Terebinthus maxima, pinnis paucioribus majoribus atque rotundioribus, fructu racemoso sparso. SLOANE, Jam. 167. Hist. vol. 2, p. 90, t. 199. Fig. 3. RAII, Dendrol. p. 51.

Borbonia fructu corallino, flore pentapetalo. PLUMIER, ic. 61.

This stately species of Sumach becomes a tree of 15 to 20 or more feet in height, and in Jamaica affects the calcareous hills. It is also a native of Cuba and Key West, (Dr. Blodgelt). The wood is hard, and when large enough, suitable for furniture.

Like several other native species of the genus, it is to some individuals poisonous to the touch. This, and the Mountain Sumach, are called in St. Domingo, "Mountain Manchiniel," from the poisonous qualities of the juice they exude. The branches are erect and smooth. The leaves come out at the ends of the branches, and are unequally pinnate, usually 2 pair and an odd one, but sometimes 3 pair and a terminal leaflet. The leaves are very smooth and coriaceous, quite entire, upon long petioles; the leaflets are usually broad-ovate and acuminate, on longish partial petioles, the upper pair unequal at the base; sometimes they are of an elliptic form, and occasionally obtuse and rounded at the extremity. The flowers are dioicous; in terminal, loose, open, spreading panicles which are about the length of the leaves; the bracts are very small. The

calyx is 5-parted, the segments ovate and dilated with membranous margins. Petals 5, ovate, yellowish-white, covered with dark longitudinal lines. Stamens 5, not exserted. In the fertile flower the stigma appears to be very small and unequally 3-lobed. The berries are oblong, smooth, somewhat oblique, scarlet, and as large as peas; the nut is thin and chartaceous.

A transparent gum in small quantities, exudes spontaneously from the peduncles of the flowers, which probably is of the nature of varnish.

Among the useful and remarkable species of this extensive genus, may be mentioned the Elm-Leaved Sumach, (*Rhus Coriaria*), which is so far harmless as occasionally to be employed for culinary purposes, the seeds being commonly used in Aleppo at meals to provoke an appetite. The leaves and seeds are also used in medicine as astringent and styptic applications. From time immemorial it has been employed like oak bark for tanning leather, and that of Turkey is chiefly tanned with this plant. The pulp of the drupes of several species affords an agreeable acid, similar to that of wood sorrel, either the oxalic or tartaric.

The *Rhus vernix* affords the Japan varnish, which oozes from incisions made in the tree, and grows thick and black when exposed to the air. It is so transparent, that when laid pure upon boxes or furniture, every vein of the wood may be clearly seen. With it the Japanese varnish most of their household furniture made of wood. The milky juice of the plant stains linen a dark brown; the whole shrub like our Poison Ash, (*R. venenata*), to which it is nearly allied, is in a high degree poisonous; and the poison is communicated by touching or smelling any part of it. Inflammations appear on the skin in large blotches, succeeded by pustules which rise in the inflamed parts, and

fill with watery matter, attended with burning and itching, which continues for several days, after which the inflammation subsides. The extremities and glandular parts of the body are those which are most affected. Our *Rhus radicans* and *R. Toxicodendron*, (Poison Vines), operate nearly in the same way, though in a less degree than the Poison Ash or *Rhus vernix*. Many persons, however, can approach and handle these deleterious plants with impunity. One of the most dangerous species in America, is the *Rhus pumila*, of Michaux, a native of North Carolina. Mr. Lyons, a well-known and assiduous collector of rare and ornamental plants, suffered extremely from its venom, by merely collecting the seeds; it produced a general fever, and affected the use of his limbs for several years.

Plate LXXX.

A branch of the natural size. *a*. The male flowers. *b*. A flower enlarged.