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Hunt Institute was dedicated in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971 the Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography and the Library.

FLORA HAWAIIENSIS

FAMILY: 221

GENUS: Hibiscadelphus

SPECIES: Hualalaiensis

(149)

MAIVACACEAE

MAILOW FAMILY

HIBISCADELPHUS HUALALAIENSIS Rock

HUALALAI HIBISCADELPHUS; HAU KUAHIWI

Hibiscadelphus hualalaiensis Rock in Bull. Haw. Board Agric. & For.  
1: 14. 1911.

Tree 5 - 7 meters high with erect 3 cm. thick gray trunk and with terete branches bearing prominent leaf scars. Leaves orbicular to <sup>obovate</sup> ~~bluntly~~ <sup>3-5 pointed</sup> ~~bluntly~~, 1 - 2 dm. wide, cordate to somewhat reniform at base, blunt at apex, with subentire margin, with about 6 main nerves which branch several times, above ~~with~~ with scattered yellowish stellate hair especially on the nerves, below tomentulose, with 8 - 16 cm. long petioles; young leaves hirtellous. Flowers single or a pair of unequal ages on 1.5 - 2 cm. long stellate-pubescent pedicels side by side in axil of same leaf, 2.5 - 3 cm. long, opening only slightly. Involucral bracts usually 5, subequal, tooth-like, 1 - 2 mm. long. Calyx irregularly 3- to 6-lobed, the acute lobes of unequal size with some only 2 mm. long and others up to 15 mm. long, yellowish-gray, scurfy-hirtellous, marcescent and breaking away irregularly due to swelling of capsule. Corolla grayish greenish-yellow without and reddish-tinged within, ~~contorted~~, evenly ciliate, hirsute excepting on inner side near base, with especially the lower 2 petals recurved at apex; lower 2 petals slightly obliquely oblong, 35 mm. long ~~xxxxx~~ and 13 mm. wide, about 10-nerved, adnate to torus at one side of truncate

to

base, long-cuspidate at apex; lateral 2 petals falcate, 40 mm. long and 13 mm. wide, about 10-nerved, truncate at base, long-cuspidate at apex; upper petal similar but slightly longer. Staminal column about 3.5 cm. long, glabrous, exserted one third its length, bearing numerous filaments toward upper end; anthers semicircularly curved, about 1 mm. in diameter. Ovary conical, densely silky-tomentose, 5-celled, with 3 ovules in each cell; ovules ovate, the upper ascending and the lower horizontal; style branches ~~xxxxxxxxxxxx~~ 5, erect, reddish, 5 mm. long, hirsute with forward-pointing whitish hair; stigmas thickened.

apex acutely 5-dentate with 1 mm. long teeth.

Capsule narrow-ovoid, woody, longitudinally 5-grooved into septa alternating with slight longitudinal depression, 2 cm. long and 1.5 cm. wide, flattened toward top, covered with yellowish gray scurfy-stellate hair and bearing remains of woody calyx at base. Seeds reniform, covered with a dense long yellowish white ~~xxxxxxxxxx~~ pubescence.

LOCALITY: insert

LOCAL RANGE: Less than a score of these remarkable trees are known to be in existence. They are endemic to the lava fields of Hualalai and in the forest of Wainou, North Kona, Hawaii. These plants have been visited so rarely that the exact season for their flowering and fruiting can not be given. They have been found in flower as early as March and as late as July, and in fruit in June and July. A native tree of this kind would be far more worthy of cultivation in Hawaiian gardens than so many of the exotic trees planted there so commonly now.

(Illustrated on following page)

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LEGUMINOSAE

PEA FAMILY

EDWARDSIA UNIFOLIATA (Rock) Degener  
UNIFOLIOLATE MAMANISophora chrysophylla var. unifoliata Rock in Bot. Bull. 5 : 44, pl. 15, 1919.  
Edwardsia unifoliata comb. nov.

Tree up to 7 meters high with grayish bark and more or less straight branches having their woody twigs and their buds fulvous-silky-pubescent. Leaves alternate, unifoliolate or rarely bifoliolate consisting of terminal leaflet and smaller lateral leaflet or extremely rarely palmately trifoliolate; leaflet broadly ovate-oblong, 15 - 45 mm. long and 10 - 25 mm. wide, subentire, blunt and retuse at apex, obtuse to rounded at base, sparingly silky-pubescent to glabrate and shiny above, silky-pubescent and paler below; petiole up to 2 mm. long; petiolule up to 2 mm. long. Flowers bright yellow, about 5 on 8 - 13 mm. long pedicels in fulvous-silky-pubescent about 2 cm. long racemes which are commonly grouped in threes at the ends of the branches; bractlet at base of each pedicel lanceolate, up to 2 mm. long. Calyx fulvous-strigose-pubescent, cup-shaped, 4 mm. long and 8 mm. wide and about 5 mm. broad, with upper side of margin retuse and lower two-thirds with 5 ~~XXXXXX~~ blunt broad lobes. Corolla yellow, glabrous; standard broadly ovate, with narrow claw, obtuse, almost 20 mm. long and 13 mm. wide; wings narrowly obliquely oblong, 22 mm. long and 4 mm. wide, obtuse at apex, cuneate at base into 4 mm. long claw; keel petals separate, obliquely oblanceolate, 20 mm. long and 7 mm. wide. Stamens yellow, 10; filaments subequal, 16 - 18 mm. long, yellowish, free, widened at base; anthers yellow, 1 mm. long. Ovary densely pubescent; stigma minute. Pod unknown.

TYPE LOCALITY: "Puuwaawaa; slopes of Hualalai, on old aa (rough) lava flow, elevation 2000 feet," Hawaii.

LOCAL RANGE: First collected by a Mr. Young of the fiber textile department of the U. S. Dept. of Agriculture somewhere on the Island of Hawaii in 1913. Four years later J.F. Rock discovered a single tree at Puuwaawaa and briefly described it as variety unifoliata of the endemic mamani. This name is unfortunate because the plant is not unifoliolate, but unifoliolate. It bears many compound leaves ~~XXX~~ which by reduction consist of a short petiole attached by a distinct joint to the petiolule of the one remaining leaflet, the terminal one. In 1932 Alfred Meebold discovered four or five of these trees at Puuwaawaa near the ranch house and kindly brought specimens to the writer. From these the description and drawing have been made. Neither Rock, who collected his specimens in August, nor Meebold, who collected in May, found pods. All Meebold's specimens, derived from a single tree, bore double pistils. This condition is obviously an abnormality. If Rock's specimens had likewise possessed double pistils, he most likely would have recorded the fact. We know he studied the organ because he states definitely that the ovary of his specimen is "densely pubescent".

EXTRA RANGE: Known only from the type locality where it is doomed to extinction unless protected from the cattle which now have access to it. An inexpensive fence around these trees, constructed by the government or by some public-spirited individual, would protect them effectively and ~~XXXXXXXXXX~~ enable them to reseed themselves. ~~XXXXXXXXXX~~ At present, all seedlings are eaten ~~XXXXXXXXXX~~ and killed by livestock.

(Illustrated on following page)



*STRONGYLODON LUCIDUS* (Forst. f.) Seem.

*MAUI*, or *NIHUKIWI KKKK* (derived from the Hawaiian word *nuku* meaning *beak* and the name of the *tui*, a native bird of brilliant red plumage having a curved beak).

*Glycine lucida* Forst. f. Prodr. 51. 1736.

Not *Glycine lucida* R. Gray. in Wall. Cat. n. 9511. 1828. (which is *Calceolaria lucida*)

Not *Glycine lucida* Blanco Fl. Filip. ed. 1: 578. 1837. (which is *Calceolaria lucida*)

*Glycine lucida* DC. Prodr. 2: 387. 1825.

*Strongylodon ruber* Vog. in Linnaea 10: 585. 1836.

*Strongylodon ruber* A. Gray in Bot. W. S. Exalt. Exped. 446, pl. 48. 1854.

*Strongylodon lucidum* Seem. Fl. Vit. 61. 1865.

*Insula altissima* Hook. at Arn. Bot. Beech. 81. 1841.

and *1* at base up to 1 dm. thick.

A tall woody glabrous climber with younger stems slender and herbaceous and often reddish. Leaves becoming 20 cm. long; petiole about 5 cm. long, often reddish, not serrate; rachis about 2 cm. long, often reddish; stipules membranous, obliquely deltoid, 5 mm. wide and 3 mm. long; stipels flattened-subulate, 4 mm. long and about half as long as swollen green petioles; leaflets membranous, ovate to oblong-ovate, often 2 cm. long and 1 cm. wide, tripinnate, shiny on both sides, acuminate at apex and rounded at base, the two lower leaflets somewhat oblique. Flowers crimson, *KKKK* on 2 cm. long reddish pedicels fascicled in twos or threes on swollen short side nodes of persistent reddish 2-3 dm. long racemes. Calyx dull greenish-red; tube campanulate, 1 mm. long and 2 mm. wide; lowest lobe smallest but overlapping lower side of lateral lobes while 2 upper lobes are connate and longer. Standard reflexed, oblong-ovate, 4 cm. long, about 17 mm. wide, acute and folded toward apex; wings with narrow white 7 mm. long claw and exposed part 11 mm. long 6 mm. wide obliquely obovate crisp on upper part purplish; keel falcate, incurved, about 2 cm. long and 7 mm. wide. Stamens white with often pink tinge; anthers yellowish. Ovary glabrous, 1-2 ovuled, pale green, sulcate above, on 6 mm. long stipe; style white, 2 cm. long; stigma minute. Pod chartaceous, obliquely ovoid or obovoid, compressed, 9-12 cm. long and 4 cm. broad, 1- or rarely 2-seeded. Seeds brownish-black, 25-30 mm. long, 20 mm. wide and 15 mm. thick, half surrounded by the linear raised reddish raphe.

TYPE LOCALITY: "Insula Societatis."

LOCAL RANGE: A beautiful liane that can festoon the tallest trees. It is native to all the larger Islands where it grows in the dense rain forest between an elevation of 500 and 2500 feet. It is rare excepting in certain localities as, for example, in Hamakua and between Hilo and Glenwood, Island of Hawaii; and north-west of Mt. Eke, Maui. It flowers in summer. Its stem are so long and strong that they, as well as those of species of *Ipomoea*, were used as swings by the ancient Hawaiians.

EXTRA RANGE: Found in some other Polynesian islands. In Fiji ~~and~~ in Tahiti, and in the Philippines.

(Illustrated on following page)



FLORA HAWAIIENSIS

FAMILY: 124  
GENUS : Ranunculus  
SPECIES: Repens

RANUNCULACEAE  
CROWFOOT FAMILY

RANUNCULUS REPENS L.  
CREEPING BUTTERCUP

Ranunculus repens L. Sp. Pl. 554. 1753.

Low creeping hirsute to rarely glabrate herb rooting at the nodes and usually forming extensive patches. Leaves long-petioled; blades 4 - 7 cm. long, 3-divided, into ovate cleft and lobed divisions which are cuneate and truncate or acute and of which only the terminal or all 3 divisions are stalked and often blotched. Flowering runners usually 2-flowered, with pedicels 5 - 9 cm. long and bearing paired bracts at base. Sepals small, not reflexed at anthesis. Petals yellow, obovate, about 1 cm. long. Head of fruit globose, with margined but smooth achenes each bearing a persistent stout short recurved beak.

TYPE LOCALITY: "Habitat in Europae cultis."

*italics*

LOCAL RANGE: ~~First collected in 1922 in a wet pasture between Glenwood and Kilauea, Island of Hawaii.~~ An introduced weed first collected in 1922 in a wet pasture between Glenwood and Kilauea, Island of Hawaii. By 1930 it had spread considerably in that general region. In 1926 it was found on the same island in the cattle ranges between Waimea and Hawi. This plant is fully naturalized and will probably become a permanent element in pastures at medium elevations.

EXTRA RANGE: Widely scattered throughout temperate regions in many perplexing forms and varieties.

(Illustrated on following page)

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FLORA HAWAIIENSIS

FAMILY: 169b

GENUS: Biancaea

SPECIES: Sepiaria

LEGUMINOSAE

PEA-FAMILY

BIANCAEA SEPIARIA (Roxb.) Todaro  
MYSORE THORN, ~~XXXXXXXX~~ (WAIT-A-BIT)

Caesalpinia sepiaria Roxb. Hort. Beng. 32. 1814. nom. nud.

~~Caesalpinia sepiaria Roxb. Hort. Beng. 32. 1814. nom. nud.~~

Not Caesalpinia sepiaria Wall. Cat. n. 6834. 1832.

Caesalpinia sepiaria Roxb. Fl. Ind. 2. 2 : 360. 1832.

Biancaea scandens Todaro, Nuov. Gen. 22. 1858 - 61.

Biancaea sepiaria Todaro, Hort. Bot. Panorm. 3. 1876.

A much-branched quick-growing very prickly straggling shrub 3 meters high or less and often covering large areas, with old branches having dark glabrous smooth bark and with young greenish twigs puberulent and beset with almost straight prickles about 5 mm. long. Leaves 1 - 5 dm. long, of 4 - 10 pairs of pinnae; petiole thick, tapering into rachis which is very slender toward apex, like rachis puberulent and on upper surface often red while on lower surface armed with subopposite backward-curving sharp prickles commonly 3 - 4 cm. long; pinnae short-petioluled, paired at right angles to rachis which is armed on upper surface with single forward-curving prickle between each pair of pinnae; secondary rachis on upper surface unarmed but on lower surface obscurely armed with single recurved prickle between each pair of ultimate leaflets; ultimate leaflets 7 - 12 pairs, thin, oblong to obovate-oblong, 8 - 20 mm. long, rounded to retuse at apex, obliquely ob-

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tuse at base, on petiole 1 mm. long or less, somewhat dark green above and pale beneath, obscurely silky-pubescent to glabrate on both sides; stipules herbaceous, half-sagittate, about 1 cm. long and 6 mm. wide, acuminate and spinescent at apex, early deciduous. Flowers light yellow, deflexed at anthesis, on 1.5 - 3 cm. long pedicels jointed toward top and at base, usually many to form a puberulent axillary or terminal raceme about 25 cm. long. Calyx tube 2 mm. long, ~~XXXXXXXXXXXX~~ 3 mm. wide, ~~XXXXXXXXXX~~ 6 mm. high, green, obcompressed; lobes subequal, about 7 mm. long and 3 mm. wide, glabrous within and ~~XXXXXXXXXXXX~~ puberulent without, greenish-yellow at base and light yellow toward apex, becoming reflexed, the lowest lobe differing from the others in being broadly keeled and longer. Petals light yellow, glabrous; upper lobe reflexed, pale, obovate-spatulate, 9 mm. long and 4 mm. wide; lateral pair obliquely orbicular, 9 mm. in diameter; lower pair obliquely obovate, 12 mm. long and 8 mm. wide. Stamens 12 - 14 mm. long; filaments pale; anthers 2 mm. long, brown; pollen orange. Ovary 5 mm. long, pubescent; style 10 mm. long, pubescent except toward apex; stigma glabrous, green. Pod obliquely oblong; glabrous, horizontal, leathery, first dehiscent by upper valve, 2 - 9 cm. long and 2 - 2.5 cm. wide, abruptly long-beaked, 4- to 8-seeded. Seeds oblong-ovoid, smooth, black with yellowish brown markings, 8 mm. long and 5 - 6 mm. thick.

TYPE LOCALITY:

mit

weed

LOCAL RANGE: A naturalized ~~XXXX~~ which Hillebrand in 1888 recorded from the Islands as being "planted in hedges", while Rock in 1920 stated that it "is rather common especially on the Island of Oahu." Between 1922 and 1932 the present writer has found this species only near Waiahole and along Kaukonahua Gulch, Oahu. In the latter ~~XXXXXX~~ locality it is extremely common. Although this plant is very ~~XXXX~~ ornamental when flowering, it should be eradicated because of its nasty, recurved thorns. It is apt to become troublesome in the drier lowlands and pastures. It seems to have a short flowering season. Both of the Oahu stations were observed flowering in profusion in January. In the middle of February not a single flower could be seen, but only ripening and ripe pods.

EXTRA RANGE: Native to the East Indies; ~~XXX~~ long naturalized in many tropical countries where it is occasionally planted as a hedge.

(Illustrated on following page)



FLORA HAWAIIENSIS

FAMILY: 190

GENUS: Poinsettia

EUPHORBIACEAE

SEURGE FAMILY

POINSETTIA R. Graham, Edin. N. Phil. Jour. 20 : 412. 1836.

More or less erect annual or perennial herbs or shrubs with copious milky acrid juice and solid or hollow stems. Leaves alternate below and opposite above, similar throughout or very various in shape, those subtending the inflorescence usually red or rarely yellow or green. Flowers much reduced and subtended by an involucre resembling a calyx, in inflorescences clustered at the ends of the branches. Involucral lobes fimbriate with 1 or rarely 3-4 ~~many~~ glands. Glands fleshy, unappendaged, external and marginal, concave, saucer- to cup- or goblet-shaped.

Staminate flowers numerous in the involucre, each flower reduced to a single stamen jointed to its pedicel. Pistillate flowers ~~solitary~~ solitary in the middle of the involucre, each flower become exserted by the lengthening of the pedicel and consisting of a 3-celled ovary having 1 ovule in each cell and of a 3-parted style which is free or more or less connate. Fruit a 3-lobed exserted capsule separating from ~~axis~~ a persistent axis into 3 cocci each of which splits elastically into 2 valves. Seeds narrowed upward, usually anatropous, tuberculate, with obscure caruncle or this wanting.

NAMED in honor of Joel Roberts Poinsette, of South Carolina, who traveled in Mexico in the early days.

TYPE SPECIES: Euphorbia pulcherrima Willd.

About 12 species, native chiefly to warmer regions of the New World.

*Tribulus cistoides* L. Sp. Pl. 387. 1753.

Perennial diffuse prostrate herb with thick woody root and with 3 - 8 dm. long stems that have thickened nodes and are pubescent and sparingly hirsute but may become glabrate with age. Leaves silky tomentose to glabrate above and canescent silky-tomentose beneath, often alternate on older parts of stem and opposite elsewhere, 4 - 8 cm. long of which petiole is less than 2 cm. long, with somewhat winged rachis and mostly 8 pairs of leaflets of which lower leaflet nearest stem is greatly reduced and the odd terminal leaflet usually almost completely aborted; leaflets 2 cm. long or less, shortly petiolulate, obliquely oblong to elliptic, somewhat acute to obtuse, entire, often mucronulate; stipules paired, the one on lower side much smaller and often marcescent, the one on upper side obliquely ovate-lanceolate 4 - 7 mm. long and persistent. Flowers solitary, on ascending slender ~~petioles~~ at least half as long as the leaves. Calyx glabrous within and pubescent without, of 5 subequal lanceolate sep-

peduncles



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Family: 17<sup>th</sup>

Genus: *Tribulus*

Species: Cistoides

## FLORA HAWAIIENSIS

FAMILY: 344

GENUS: *Hesperomannia*SPECIES: *Arbuscula*COMPOSITAE  
COMPOSITE FAMILY*HESPEROMANNIA ARBUSCULA* Hilleb.  
MAUI *HESPEROMANNIA**Hesperomannia arbuscula* Hilleb. Fl. Haw. Isl. 232. 1888.

A weak shrub with long and slender branches which extend over the ground or lean for support on neighboring shrubs. Leaves ovate to ovate-oblong ~~suborbicular~~, 10 - 15 cm. long and 6 - 9 cm. wide, sharply and closely dentate, rounded at base, pale puberulous beneath, quite thin, on 2.5 - 3.5 cm. long petioles. Heads 5 cm. or less high, single or 2 or 3 together at the end of a branch on short peduncles. Involucre 2.5 cm. long. Corolla 2.5 cm. long. Achenes cuneiform, 8 - 10 mm. long. Pappus 2.5 cm. long.

TYPE LOCALITY: "W. Maui, about 1200 ft. above Lahaina."

LOCAL RANGE: An exceedingly rare plant probably known only from the type specimen which was collected by the late Mr. E. Bishop before 1888.

EXTRA RANGE: Not known elsewhere. Though the writer botanized in 1927 in the general region where this plant had been found, he failed to rediscover it. It may be extinct.

## FLORA HAWAIIENSIS

FAMILY: 307

GENUS: *Calonyction*~~XXXXXXXXXX~~~~XXXXXXXXXX~~

CONVOLVULACEAE

MORNING-GLORY FAMILY

## KEY TO LOCAL SPECIES OF CALONYCTION:

Stems more or less aculeate, glabrous to glabrate; outer sepals appendaged with horn-like tips; stamens exserted - - - - - *C. aculeatum*-Stems not aculeate, glabrate to densely pubescent; sepals unappendaged; stamens more or less included - - - - - *C. tuboides*



FLORA HAWAIIENSIS

FAMILY: 332

GENUS: Coffea

RUBIACEAE  
MADDER FAMILY

COFFEA L. Sp. Pl. 172. 1753.

Shrubs or small trees. Leaves broad, opposite or rarely in whorls of 3; stipules intrapetiolar. Flowers perfect, regular, white to yellowish, fragrant, clustered in the axils of the leaves. Calyx tube turbinate to oblong, with 4 - 6 lobes. Corolla funnel- to salverform, with glabrous to villous throat and with 4 - 6 oblong lobes which are contorted in the bud. Stamens 4 - 6, borne at the mouth of the corolla; filaments very short; anthers free, linear, twisted or curved after dehiscence. Ovary 2-celled, with 1 ovule in each cell; style 2-branched; stigmas slender. Fruit a fleshy oblong to globose drupe having 2 very thin endocarps surrounding the seeds. Seeds convex, large, with abundant horny endosperm and with foliaceous cotyledons.

NAME derived from the Arabian one for the drink which is thought to have originated in Caffa, a district in southern Abyssinia.

TYPE SPECIES: Coffea arabica L.

Probably between 20 and 40 species, all native to the warmer regions of the Old World; the exact delimitation of some of these species is not yet well understood.

FLORA HAWAIIENSIS

FAMILY: 332

GENUS: Coffea

RUBIACEAE  
MADDER FAMILY

KEY TO LOCAL SPECIES OF COFFEA:

Leaves commonly 15 cm. long; petals 5 - - - - C. arabica

Leaves commonly 30 cm. long; petals 6 - 8 - - - - C. liberica

black  
montana

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CONVOLVULACEAE  
MORNING-GLORY FAMILY

STICTOCARDIA CAMPANULATA (L.) House

~~STICTOCARDIA~~ PILIKAI

- Ipomoea campanulata* L. Sp. Pl. 160. 1753.  
*Convolvulus tiliaefolius* Desr. in Lam. Encycl. 3 : 544. 1791.  
*Rivea tiliaefolia* Choisy, Conv. Or. 25. 1834.  
*Argyreia tiliaefolia* Wight, Ic. 4. 2 : 12, pl. 1358. 1850.  
*Stictocardia tiliaefolia* Hallier f. in Bot. Jahrb. 18 : 159. 1894.  
*Ipomoea turpethum* Mann in Proc. Am. Acad. 7 : 195. 1867.  
*Ipomoea turpethum* Sinclair, Indig. Fl. Haw. Isl. ~~XXXXXX~~ pl. 14. 1885.  
*Ipomoea turpethum* Pope, Wayside Fl. Haw. 179. 1929.  
*Not Ipomoea turpethum* R. Br. Prodr. 485. 1810.  
*Not Operculina turpethum* S. Munso, Enum. Subst. Braz. 16. 1836.  
*Rivea campanulata* House in Muhlenbergia 5 : 72. 1909.  
*Stictocardia campanulata* House in Muhlenbergia 5 : 72. 1909.

Large puberulent to glabrate vine with rather stout stem at base woody and covered with brown bark but elsewhere light green and canescent especially toward the ends. Leaves cordate to somewhat reniform, at apex shortly acuminate with rounded tip mucronate, at base with rounded auricles, with margin entire or nearly so, impressed along midrib and ~~XXXX~~ nerves, glabrous to glabrate above, ~~XXXX~~ punctate and glabrate to occasionally densely puberulent below, with blade up to 18 cm. long and 15 cm. wide and with stout petiole up to 2 dm. long. Flowers on usually 1 cm. long pedicel in 3- to 4-flowered 3-15 cm. long cymes of which the 2 or 3 lateral pedicels and flowers usually abort; bracts caducous, obovate-oblong, about 1 cm. long. Corolla glabrous except for ciliolate margin which is emarginate between the lobes and cuspidate in center of lobes, pale purplish red with tube darker on inner side, about 8 cm. long and with limb about 8 cm. wide, delicate and thin above but stiff and thicker below.

Sepals green, dull and glabrate to glabrous without, shiny and glabrous within, the scarious margins, thickish and tightly imbricate, broadly ovate; outer pair about 17 mm. long and 19 mm. wide; inner 3 sepals about 14 mm. long and 14 mm. wide.

Stamens connate with corolla tube for 7 mm. above base; filaments subequal, about 4-4.5 cm. long; free part for 3 mm. above base purplish red and dilated and coarsely tomentose with purplish red hair; rest of filament filiform, whitish, glabrous; anthers whitish, lanceolate-ovate with cordate base, flat, 5 mm. long and 2 mm. wide, flat; pollen ~~XXXX~~ white. Ovary quadrangular, conic, faintly 4-grooved at base, glabrous, yellowish, 2 mm. long; disk undulate-annular, yellowish; style filiform, white, glabrous, somewhat thicker below, 4.5 cm. long; stigma white, depressed-oblong-capitate, 2 mm. long and 1.5 mm. wide, rugose. Fruit when young of pointed ovary firmly surrounded by the spongy green enlarged sepals, subspheric and obscurely pointed, about 3.5 cm. in diameter; when old similar but dark brown and dry, the ovarial wall brittle-chartaceous and surrounded by the sepals and these do not spread with age. Seeds 4, obovoid, obscurely angular and somewhat pointed, grayish brown, puberulent, about 10 mm. long and 8 mm. wide.

## TYPE LOCALITY:

LOCAL RANGE: According to Hillebrand this plant is "probably an escape from early cultivation", but according to the present writer it seems more likely to be indigenous or possibly of aboriginal introduction. It is very var-

EXTRA RANGE: Native from India through Malaya to possibly Polynesia; ~~and~~ introduced into many other tropical countries.

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table in respect to abundance or absence of pubescence, and is to be found more often in isolated localities than near habitations of man. It is not common but, where found, is usually gregarious. It was collected on Oahu by Mann & Brigham around 1865 and has been found in such isolated places as upper Makua and Keaau Valleys. It was collected by Sinclair in Kauai and illustrated by her in color in 1885. From Molokai Hillebrand records it as growing in Māpulehu and Degener in 1926 from Pukoo; from Maui Hillebrand records it from Kaanapali and Degener in 1927 from *Wailuku*; from Hawaii Hillebrand reports it from Hilo while Degener collected ~~it~~ in 1926 in the Kau Desert and in Punaluu. The early Hawaiians valued the seeds of this plant ~~as~~ highly as a medicine.

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(Illustrated on following page)

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cm. long; skin thick or thin, woody or leathery, rough or smooth, yellowish-green to maroon or dark purple; flesh butter-like or watery, stringy or stringless, yellow in center and green toward periphery. Seed bitter, on ripening of fruit being loose or attached to flesh, invested by thin brown parchment-like skin, ovate or spherical or conical.

TYPE LOCALITY: *"Habitat in America calida."*

LOCAL RANGE: According to records of the Royal Agricultural Society the avocado was introduced into the Islands probably early in the 19 Century by Don Marin, the Spanish settler. Bloxam #, on the other hand, definitely states that "2 Laurus persia" plants were brought here from Rio de Janeiro in the "Blonde" in 1825. Whatever the earliest date for the introduction of this plant may be, it remained a rarity for at least two or three decades. According to Judge Sanford B. Dole, its fruit was exhibited under the auspices of the Hawaiian Agricultural Society in 1852 or '53. In 1853 the "Portsmouth" arrived in Hilo from Central America. The paymaster of that vessel brought some avocado plants with him which he planted in the old Coan premises in Hilo, and presumably later also in Honolulu. Avocados were given by an officer of some warship, probably the "Portsmouth", during 1852 or '53 to Dr. Sereno Bishop in Lahaina, Maui. These were the first avocados known to Dr. Bishop from the Islands. Hillebrand, presumably referring to ~~XXXXXX~~ conditions previous to 1871, records the plant "as cultivated in gardens". In 1895 Rear Admiral Beardslee, on leaving San Francisco for the Hawaiian Islands, was presented with some avocados. On his arrival he gave three of the seeds, wrapped in moist cotton, to friends. One was planted in Honolulu on the premises now occupied by the Macdonald Hotel, and ~~XXXXXXXXXX~~ another in Wailuku, Maui. These developed into excellent trees from which many choice seedlings were distributed. Later plants were introduced repeatedly from the coast. By 1910 the avocado was one of the commonest trees in gardens throughout the Territory at lower elevations, occurring in innumerable horticultural varieties, some of them indicating probable early hybridization with *P. drymifolia*. They vary greatly in character of fruit - the flesh varies in flavor, in dryness or wateriness, in the relative abundance or absence of stringy fibrovascular bundles, and in the ratio of size of flesh to size of seed. Of late years commercial orchards have been planted to the best varieties. The tree is often spontaneous in the lower forest and along moist, shaded roadsides. ~~XXXXXXXXXX~~ It begins to bear when 4 - 8 years old, flowering from January to April and producing the main crop from June to August. Winter-fruiting forms also occur. The trees have the tendency to fruit more heavily in alternate years. The unripe fruit is poisonous. The flesh of the ripe fruit may be eaten plain or seasoned with salt and pepper, or with sugar. It may be made into a sauce with lemon juice, or used as a thickening for soup. The seed produces an indelible brownish stain on linen. When ground and mixed with cheese, it can be used to poison rats and mice. The fruit is practically immune to infestation by maggots of the Mediterranean fruit fly.

EXTRA RANGE: Native to some part of continental America, but its exact home is not known. It has been cultivated and transported by the Aztecs in their wanderings since prehistoric times. Their name for the fruit was ahuacatl. This, borrowed by the Spaniards, was modified into ahuacate (aguacate), and still later corrupted into the English as "avocado". The plant is extremely common in Central America, where it is a partial substitute for meat in the dietary of the natives. Innumerable horticultural varieties and forms exist of which the so-called *P. drymifolia* possibly may be one. The flesh of the fruit contains 4 - 30% of a greenish oil which in some countries is extracted and used for lighting or in the making of soap. While the fruit is usually eaten as a salad in the Hawaiian Islands and throughout the United States when available, in Brazil it is more commonly made into an ice cream.

# Diary of Andrew Bloxam, 92. 1925.

(Illustrated on following page)

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FLORA HAWAIIENSIS

FAMILY: 137  
GENUS : Persea  
SPECIES: Americana

LAURACEAE  
LAUREL FAMILY

PERSEA AMERICANA (L.) Mill.

AVOCADO (locally often called PEAR, an abbreviation for ALLIGATOR PEAR#)

Laurus persea L. Sp. Pl. 370. 1753.

Persea americana Mill. Gard. Dict. ed. 8. 1768.

Persea gratissima Gaertn. f. Fruct. 3 : 222. 1807.

Persea macrocarpa Rafin. in Med. Repos. N. York. 5 : 352. 1808.

Persea persea Cockerell Bull. Torrey Club 19 : 95. 1892.

Quick-growing tree up to 18 meters high but usually much smaller, ~~and~~ with trunk up to 6 dm. in diameter and with soft reddish-brown brittle wood having a specific gravity of about 0.6. Leaves all deciduous immediately before flowering or deciduous during flowering, *only faintly aromatic when crushed*; blades oblong to elliptic-lanceolate or oval or slightly broadest above or below the middle, 7 - 25 cm. long and 3 - 16 cm. wide, acute to short-acuminate or rounded at apex, acute to rounded or subtruncate at base, glabrous and shiny above, usually somewhat glaucous and often sparingly puberulent on the veins ~~below~~ or on the entire surface beneath, with yellowish prominent nerves; petioles 1.5 - 5 cm. long, sulcate above, often puberulent. Flowers numerous but only a few ever maturing into fruit, on 5 mm. long puberulent pedicels in broad compact often 15 cm. long terminal panicles. Calyx lobes yellowish-green, subequal, oblong-lanceolate to oblong-elliptic, 4 - 6 mm. long, spreading, glabrous within, tomentulose without. Stamens yellowish-green, each of the inner series having 2 orange nectaries at base; filaments puberulent; anthers glabrous, with the 2 upper valves much smaller than the 2 lower valves. Stamens orange sagittate. Ovary pilose, yellowish-green, 1 mm. long; style pilose, 3 mm. long; stigma glabrous. Fruit pear-shaped to subglobose to oval or ovate, 8 - 20

# Name not recognized by American Joint Committee on Horticultural Nomenclature.



## FLORA HAWAIIENSIS

FAMILY: 80

GENUS: Spathoglottis

SPECIES: Plicata

## ORCHIDACEAE

## ORCHID FAMILY

SPATHOGLOTTIS Plicata Blume

SPATHOGLOTTIS

*Spathoglottis plicata* Blume Bijdr. 401. 1825.*Spathoglottis spicata* Lindl. in Journ. Linn. Soc. 3: 9. 1859.

Terrestrial orchid with conic pseudobulb covered with leaf fibers. Leaves 6 - 12 cm. long and 3 - 5 cm. wide, lanceolate, plicate; petioles 15 - 45 cm. long. Flowers on purplish about 2 cm. long glabrate pedicels in axils of reflexed purplish almost 2 cm. long obovate to lanceolate cuspidate bracts to form a many-flowered 3 - 12 dm. high glabrous scape. Sepals ovate-oblong, 18 mm. long and 9 mm. wide, acute at apex, spreading, magenta. Petals slightly larger than sepals, 11 mm. wide. Lip with oblong truncate reniform emarginate central lobe having narrow base and 2 bright yellow 4 mm. wide calluses. Ovary about 1 cm. long, purplish, longitudinally grooved. Column magenta, 13 mm. long and 5 mm. wide. Capsule oblong, pendulous, 3.5 cm. or more long.

## TYPE LOCALITY:

LOCAL RANGE: A few plants were purposely introduced from the Philippines for curiosity and ornament, and grown in the tree nursery of the Hawaiian Sugar Planters' Association in Vineyard Street, Honolulu. These soon flowered, apparently shedding their innumerable minute seeds among the nursery stock propagated there. When this was set out in various localities on the Island of Oahu, the obscure orchid seeds and seedlings became scattered without design. By 1930 and 1931 mature plants were found naturalized in numbers near the base of the Pua-God Trail in Punaluu Valley; a few were found each near the source of Kaluanui Stream, on the northern side of Kaipapau Valley, along the Pupukea-Kahuku Trail near Pupukea, near Haleiwa, and in Makua Valley. As this orchid was not known as an escape on Oahu previous to about 1930 and has become naturalized in so many localities in so short a time, it will undoubtedly continue to spread. Let us hope that it may develop into a welcome addition to our flora and not become a pest like the tritonia and the isotoma, two other ornamental plants. It thrives in open, grassy situations, even where the soil is poor and dry. It blooms throughout most of the year



EXTRA RANGE: Widely distributed, growing in the Philippines, Formosa, Sumatra, Java, Borneo, New Guinea, Caroline Islands and elsewhere.

(Illustrated on following page)

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ster, with black coat shiny and membranous without and fleshy within surrounding 2 - 3 mm. spherical endosperm containing minute subulate embryo.

D.R.: Habitat in India.

I.R.: Introduced as an ornamental before 1888 and by now planted sparingly on probably all Islands. In Honolulu it usually flowers during October and November.

E.R.: Native to Eastern Asia and Japan but widely cultivated as an ornamental in warm and even temperate countries.

(Illustrated on following page)

✓ O.K. P



FAMILY: 190  
 GENUS: Ricinus  
 SPECIES: Communis

EUPHORBIACEAE  
 STURGE FAMILY

RICINUS COMMUNIS L.

COMMON CASTOR-BEAN (PALMA CHRISTI); KOLI (KAPEA, KALIALI, AILA)

*Ricinus communis* L. Sp. Pl. 1007. 1753.

*Ricinus communis* Gaud. Voy. Jap. Bot. 91. 1827. (nom. nud.)

Herb. or tree with herbaceous erect more or less branched green or reddish hollow stem solid at base, perennial in the tropics and rarely up to 7 meters high or annual when grown in temperate regions and 1 - 3 ~~XXXXXX~~ meters high. Leaves 1 - 8 dm. wide, suborbicular in outline, dark green above, pale below, parted beyond the middle into ovate-oblong to lanceolate acute to acuminate lobes having coarse callous teeth; petioles about two-thirds as long as blade, with 1 - 3 nectaries scattered on upper side near base and 1 or 2 nectaries on upper side adjoining blade. Panicle erect, when beginning to flower about 1 dm. long but with age up to 5 dm. or more long, flowering more or less irregularly from base. Staminate flowers on slender pedicel about 1 cm. long; calyx with subequal lanceolate to ovate-lanceolate acute gradually reflexed lobes almost 1 cm. long; stamens yellow, forming 8 mm. long clusters of glomerate anthers. Pistillate flowers on shorter pedicels which elongate in fruit; calyx lobes lanceolate, smaller; ovary green, with appressed soft spines; stigmas 6 reddish. Capsule 15 - 25 mm. long, covered with dark brown soft spines easily decaying on moistening leaving horny endocarp. Seed shiny, smooth, 10 mm. or more long and 5 mm. or more wide, black variegated with white or mottled with gray and brown markings.

TYPE LOCALITY:

LOCAL RANGE: An introduced weed growing throughout the Islands at lower elevations in waste and cultivated grounds, especially in the drier districts. It was found here as early as 1819 by Gaudichaud. Don Marin, the Spaniard who settled in Honolulu in 1791, is reported to have manufactured castor oil from this plant in the early days. The plants before the latter half of the 19th Century were certainly not as widely disseminated as they are today, otherwise Bingham (p. 219) would not have expressly stated that "Palma Christi shrubs" surrounded the house of Rev. Ruggles near Waimea, Kauai in 1824, nor would Captain Wilkes (69) have mentioned seeing this plant growing near Lihue, Kauai in 1840. Around 1905 an attempt was made to grow this plant commercially north of Nuuanu Pali, Oahu, for its oil. As the plants mature their fruits at various times of the year and this fruit on drying soon scatters the seed in all directions, it is necessary to harvest the crop frequently. Without a supply of cheap labor the cost of doing so was prohibitive, and the enterprise failed. Before 1930 the U. S. Experiment Station and private individuals had introduced a red-stemmed form into the Territory as an ornamental.

EXTRA RANGE: Naturalized throughout all warm countries; probably native to Africa, but distributed by man in the tropics of the Old World for such a long time that its original home is not definitely known. In temperate regions it is grown as an annual for its ornamental foliage, the plant dying after the first heavy frost. It occurs in numerous varieties and forms, many of horticultural origin. These vary chiefly in color, in number and shape of extra-floral nectaries, in size and presence or absence of prickles on capsule, and in markings on seed. It is much cultivated for its leaves, which are used as food for a certain species of silk worm; and especially for its seed, the source of castor oil. One ~~XXXXXX~~ acre planted to this herb will produce 500 - 1600 lbs., of seed. This furnishes on pressure 30 - 40% of castor oil. This is valuable in medicine, as a ~~XXXXXX~~ lubricant especially for airplane motors, as a dressing for leather, in the making of soap, and by the Chinese and Koreans for cooking. The small-seeded forms produce the superior oil. The seeds are extremely poisonous, containing the alkaloid ricin. A single seed has been known to be fatal to man.

(Illustrated on following page)

FLORA HAWAIIENSIS  
MALVACEAE  
MALLOW FAMILY

FAMILY: 221  
GENUS: Pariti  
SPECIES: Macrophyllum

PARITI MACROPHYLLUM (Roxb.) G. DON; Degener  
LARGE-LEAVED HAU

Hibiscus macrophyllus Roxb. Hort. Beng. 51. 1814; ex Hornem. Hort. Hafn.

Suppl. 149. 1819.

Paritium macrophyllum G. Don, Gen. Syst. 1 : 485. 1831.

Pariti macrophyllum comb. nov.

Tall fast-growing tree with grayish bark and with twigs beset with tawny hirsute shiny stellate hairs simulating tufted simple hairs often 1 cm. long. Leaves very large, cordate, rugose-veined, crenulate to subentire, coarsely tomentose on both sides but somewhat pale on lower side, with apex often abruptly acuminate, with main veins on under side each bearing single linear nectary about one-third the distance from apex to base of blade, with petiole often becoming 35 cm. long and blade 30 cm. wide; stipules linear-lanceolate hispidulous-tomentose especially without. Flowers on 1 cm. long densely hirsute pedicels, blooming 1 - 2 per day in about 15-flowered coarse usually 3 dm. long panicle with only the upper axillating leaves leaves reduced to 6 - 8 cm. in length. Involucral bracts linear-lanceolate, 25 mm. long and 3 mm. wide, dull orange and reddish punctate, densely shiny-yellow-hirsute. Sepals slightly longer and thinner than involucral bracts, 14 mm. wide; pinkish, 3-nerved, less densely hirsute. Petals obliquely obovate, 6 cm. long and 4.5 cm. wide, within glabrous and yellow except for dark red 15 mm. long eye at base, without hirsutulose and yellow except for reddish sheen from eye. Staminal column 4 cm. long, light yellow, glabrate, giving off between apex and 5 mm. from base about 100 distinct light yellow filaments 5 - 8 mm. long; anthers light yellow, 1.5 mm. long, reniform. Ovary ovoid-conical, 7 mm. long and 5 mm. wide, densely hirsute with abundant long white shiny hair; style yellowish, filiform, glabrous, protruding beyond staminal column for about 8 mm. into 5 dark purplish red long-pilose branches bearing shallowly bounded 1.5 mm. wide minutely pilose stigmas. Capsule erect, on thickened pedicel, obovoid, apiculate, rigid, about 3.5 cm. long. Seeds reniform, 4 mm. long and 2 mm. wide, with long tawny hair ~~XXXXX~~ along edges.

TYPE LOCALITY: India.

LOCAL RANGE: Recorded in 1917 by Rock as planted sparingly in Honolulu for ornament and as growing naturalized in Kaipapau and neighboring valleys, Oahu. In 1932 trees were still growing in these valleys and seeding profusely. On the Island of Hawaii he reported several trees as growing on the premises of the late Dr. B. D. Bond in Kohala.

EXTRA RANGE: Native of India, the Malay Peninsula and Java.

(Illustrated on following page)

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CONVOLVULACEAE  
MORNING-GLORY FAMILY*Per*  
*Perispermum* *albiflorum* Degener  
WHITE-FLOWERED *PERISPERMUM**Per*  
*Perispermum* *albiflorum* sp. nov.

Long straggling vine up to 10 meters long with smooth pale yellowish-gray bark; young branches fulvous-tomentose, twining, distantly leafy, soon becoming woody, later bearing short erect leafy spurs. Leaves soft-coriaceous, oblong-elliptic, 8 to rarely 3 cm. long and 3.5 to rarely 1.5 cm. wide, entire, emarginate at apex, rounded at base, tomentulose and hoary to glabrate above, densely fulvous-tomentose below, on 8 - 20 mm. long sulcate petiole; leaves on the one seedling observed were glabrous. Flowers pendent, diurnal, lasting one day, on commonly 15 mm. long densely fulvous-tomentose peduncle bibracteolate about 2 mm.; above base with 2 mm. long linear-subulate bractlets; flower buds erect. Calyx of 5 ovate lobes glabrous within; 2 outer lobes about 10 mm. long and 8 mm. wide, densely fulvous-tomentose, soft-coriaceous; 3 inner lobes about 7 mm. long and 7 mm. wide, less densely fulvous-tomentose and thinner; persistent and brittle in fruit. Corolla

white, 22 mm. long and 16 mm. wide, funnel-form with narrow spreading limb of 5 subtruncate mucronate lobes each divided by shallowly cordate sinus, glabrous on both sides except for part exposed while in the bud which is covered with pale tawny silky hair. Stamens 20 mm. long, glabrous; filaments filiform, stiff, of uniform thickness throughout, adnate to corolla for 6 mm.; anthers almost white, 3.5 mm. long; pollen very pale yellow. Disk narrow; ovary 3 mm. long and 2 mm. wide, ovoid-conical, greenish-white, obscurely longitudinally 2- to 4-carinate; style white, about 15 mm. long, connate for 1.5 mm. at base; stigmas rugose-capitate with flattened base, yellowish-white, almost 1 mm. wide. Capsule pendent on stiff pedicel, completely indehiscent, smooth, about 15 mm. long and 10 mm. wide, ovoid-conical, stramineous, very thin, usually bearing within fragments of dissepiment, containing 4 - 2 (or rarely 1) seeds which are often completely united below but separated above; sepals marcescent, somewhat spreading, brittle. Seeds covered with dry-fleshy black perisperm 0.5 mm. thick or less, 8 mm. long and about 5 mm. wide, ovoid-angular aconvex, with yellowish-brown testa and thick tegmen and yellow embryo surrounded by transparent cartilaginous endosperm swelling on wetting.

TYPE LOCALITY: Small arid, rocky gully two-thirds of a mile from the sea on south slope of Keaau Valley, Oahu.

LOCAL RANGE: A very rare xerophyte sprawling over rocks and climbing on trees. Only three mature plants were observed and these grew on the southern slope of Keaau Valley, Oahu. These were sparsely flowering but profusely fruiting in 1932. An immature *Perispermum* with glabrate leaves, collected on the southern slope of Makua Valley in 1931, probably belongs to this species. It is also possible that some of the specimens cited by Hillebrand as *Breweria Menziesii* belong to *P. albiflorum*.

EXTRA RANGE: Not known elsewhere.

TYPE SPECIMEN: Degener, Park & Y. Nitta 4111.

(Illustrated on following page.)



## CYPERACEAE

## SEDGE FAMILY

NTH

CYPERUS TRACHYSANTHOS  
STICKY GALINGALE

*Cyperus trachysanthos* Hook. & Arn. Bot. Beech. 99. 1832.  
*Cyperus trachysanthos* Hilleb. Fl. Haw. Isl. 465. 1888.  
*Cyperus viscosus* Mann. Enum. 504. in Proc. Am. Acad. 7: 208. 1866.  
 Not *Cyperus viscosus* Sw. Prod. Veg. Ind. Occ. 20. 1788.  
 Not *Cyperus elegans* L. Sp. Pl. 45. 1753.

Varnished pale sedge somewhat viscid to highly so especially toward base, perennial from short rootstocks. Leaves 8 dm. long or less, about 4 mm. wide, long-acuminate, usually folded except toward the top, the upper third distantly but sharply aculeolate along the margins and keel while the lower part is often almost smooth, membranously-margined at base. Culms solid, obtusely trigonal, smooth or sometimes below the umbel somewhat scaberulous, 7 dm. long or less. Umbel of 4-6 projecting rays besides the sessile central cluster; rays bearing at apex a cluster of 10-20 spikelets or occasionally a secondary umbel of about 2 rays each terminating with a cluster of spikelets, longest rays 2-8 cm. long. About 2 involucral leaves much longer than the others, the longest about 4 times as long as its subtended ray; leaves involuclers short, filiform, few. Spikelets oblong-elliptic, much compressed, about 4 mm. wide, 2 to 16-flowered, light green to tawny. Glumes gaping, discrete in fruit, ~~about~~ 3 to almost 4 mm. long and 1.5 mm. wide, broadly ovate, with prominent keel distinctly serrulate below apex to about half way to base, with sharp-pointed ~~apex~~ usually somewhat spreading-curved apex, outer third pale green subcoriaceous and faintly 4- to 5-veined, inner part brownish-hyaline. Rachis slender, very narrowly margined, with shallow grooves about one third the length of the glume. Stamens 3; filaments flattened; anthers yellow, 1.5 mm. long. Style deeply 3-lobed, 3 mm. long. Achene 2 mm. long, about half the length of the glume, obovoid, trigonal, apiculate, black, shiny, smooth.

TYPE LOCALITY: "Sandwich Islands" *in Hawaii*

LOCAL RANGE: A rare sedge growing near sea level usually in wet clay soil partial to drying. Collected by Hillebrand on Oahu "on lava rocks of the eastern end near Cape Mokapu [Makapu?; probably not Mokapu]"; collected by the writer on Oahu between 1925 and 1931 in sun-baked clay in several of the smaller valleys between Kulikouou and Makapu Head, south of Ulupau Head, and in considerable numbers in the marshes at Kawaihapai; robust, extremely viscid specimens were found at Mana, Kauai in 1926. C.N. Forbes recorded ~~this~~ this species as occurring on Nihoa in 1912. The degree of stickiness of this sedge seems influenced in part by its exposure to heat: specimens growing in the more sheltered, hotter localities seem stickier than those growing elsewhere.

EXTRA RANGE: Apparently endemic; but closely related to *C. elegans* L., of the West Indies and continental tropical America.

(Illustrated on following page)

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FLORA HAWAIIENSIS

FAMILY: 169 b  
GENUS: Psilorhegma  
SPECIES: Gaudichaudii

LEGUMINOSAE  
PEA FAMILY

PSILORHEGMA GAUDICHAUDII (Hook. & Arn.) Degeher

*Gaudichaud's Psilorhegma; Kalamona, Hehuhihi*

Cassia Gaudichaudii Hook. & Arn. Bot. Beech. 9. 1832.

Psilorhegma Gaudichaudii comb. nov.

Shrub or small <sup>5-20 dm. high</sup> tree with <sup>and spreading branches</sup> brownish-gray bark and young shoots silky-tomentose. Leaves 5 to rarely 15 cm. long, silky-tomentose except for upper surface of blade of leaflets, with 1 - 2 cm. long petiole grooved in upper surface as is rachis, with 4 - 6 pairs of opposite leaflets of which the smallest are below and the longest above; leaflets 2 - 6 cm. long, elliptic-oblong, emarginate, with 1 - 3 mm. long petiolule, the lowest leaflets bearing a stipitate or clavate 2 mm. long gland between them; stipules subulate, 7 - 12 mm. long. Flowers articulate less than 1 mm. below calyx, on stiff slender pedicels about 15 mm. long in the axils of lanceolate to ovate-lanceolate usually persistent 3 - 5 mm. long bracts to form an axillary silky-tomentose 3 - 6 cm. long raceme which is naked in the lower half. Sepals silky-tomentose without and glabrous within, obtuse, the two outer 6 - 7 mm. long and the three inner 11 mm. long or less. Petals oblong-spatulate, pale greenish-yellow, about 12 mm. long and 7 mm. wide, pubescent without and glabrous within. Stamens alike, somewhat curved, glabrous; filaments yellowish-green, 2 mm. long; anthers oblong, grayish-brown, 3 mm. long, up-curved; ovary densely pubescent. Legume pubescent to glabrate, long-persistent, 6 - 12 cm. long and 1 ~~cm.~~ cm. wide of which stipitate part is 1 cm. long, apiculate near middle of top; very flat, somewhat impressed externally and septate internally between the 5 - 10 seeds which are transverse and parallel with the thin light-brown valves. Seeds dark-brown, somewhat shiny, rectangular-oblong, flat, 8 mm. long and 5 mm. wide.

TYPE LOCALITY:

LOCAL RANGE: Growing here and there in the drier districts <sup>chiefly</sup> near sea level, and on the Island of Hawaii on the aa lava flows to an elevation of about 2000 feet. It seems resistant to a higher salt content in the soil than most plants. According to J. F. Rock the plants near Puuwaawaa and Huehue, Island of Hawaii, are "covered with a soft greenish-yellow pubescence"; while those growing back of the old Gibson homestead on the island of Lanai "are quite glabrous and larger in every respect", and bear flowers possessing a slight pinkish tinge.

EXTRA RANGE: Said to occur also on the precipices of the valley of Papaeva and Punaruu, Tahiti. *(Illustrated on following page)*

\*Many botanists incorrectly cite 1841 as the date of publication for all species first described in this work. Bot. Beech. was published in 10 separate parts, only the last one appearing in 1841. The following gives the exact limit of each part and the date of its publication:



PART	PAGES	PLATES	YEAR
1	1 - 48	1 - 10	1830
2	49 - 96	11 - 20	1832
3	97 - 144	21 - 29	1832
4	145 - 192	30 - 39	1833
5	193 - 240	40 - 49	1836
6	241 - 288	50 - 59	1836
7	289 - 336	60 - 69	1838
8	337 - 384	70 - 79	1838
9	385 - 432	80 - 89	1840
10	433 - 485	90 - 99	1841

*Small print*

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~~(Illustrations are following page)~~

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FAMILY: 221  
GENUS: Therapsia

THUENBERG: Soland.: Correal, Ann. Mus. Paris 9 : 290. 1807.

Trees or shrubs. Leaves alternate, entire to angulately lobed, usually cordate, petiolate. Flowers perfect, showy, large, usually yellow, having 3 - 5 free narrow invaginal bracts which are small or deciduous. Calyx truncate or nearly so, persistent. Corolla of 5 petals. Staminal column ending in a 5-toothed apex, antheriferous outside. Ovary 5-celled, sessile, with a few ovules in each cell, styles 5, connate with 5 longitudinal grooves or rarely distinct and clavate, stigmas decurrent on the styles. Capsule woody-cariousous, indehiscent or very tardily loculicidally dehiscent by 5 valves. Seeds large, obovoid, pubescent, cotyledons plaited, enclosing the short erect radicle, black-punctate.

NAME derived from the Greek for divine, possibly because of the show, or the

TYPE SPECIES: Hibiscus populneus L.

About 8 species, native to tropical Africa, Asia and the islands of the Pacific.

FAMILY: 221  
GENUS : *Trospesia*  
SPECIES: *Populnea*

THESPESIA POPULNEA (L.) Soland.  
PORTIA-TREE; locally called by the Hawaiian name WILLO

*Hibiscus populneus* L. Sp. Pl. 694. 1753.  
*Thespesia populnea* Soland.; Correa in Ann. Mus. Paris 9: 290. 1807.  
*Thespesia macrophylla* Blume Bijdr. 73. 106. 1825.  
 ? *Thespesia tilifolia* St. Hil. " J.E. Forbes in Occas. Pap. Bishop Mus. 1: 107. 1913. (nom. nud.)

Small erect trees producing dense shade, usually 5-10 meters high but occasional attaining a height of 20 meters, having a straight trunk up to 6 cm. in diameter which possesses an outer gray shallowly fissured bark and an inner fibrous bark, having stout twigs scurfy with pellate scales when young. Leaves shiny, glabrous, firm in texture and somewhat fleshy, ovate-oblongular, acuminate at apex cordate at base, with margin entire to undulate, with blade 9-15 cm. long and 8-12 cm. wide and having midrib somewhat flattened below on under side and more or less punctate, with thick terete punctate petioles about two-thirds as long as the blade. Flowers yellow. axillary on stiff spreading peduncles shorter than the petioles; involueral bracts 3, subcoriaceous, 7-12 mm. long, reddish-punctate, lan-  
golate, soon deciduous. Calyx cup-shaped, subtruncate, minutely 5-toothed, 5 mm. long and 4.8 mm. wide, coriaceous, flattening and enlarging in fruit. Corolla wrinkled-complicate, ~~streaked with green~~ ~~streaked with green~~ scarious with-  
out, pale yellow with reddish eye, toward evening becoming orange and fall-  
ing; petals very obliquely obovate-oblong, about 6 cm. long. Staminal column 2-3 cm. long, yellow, densely bearded 5 mm. from base to apex with spreading  
yellow filaments; filaments yellow, near base of column 5 mm. long and to-  
ward apex 4 mm. long; anthers darker yellow. Ovary 7/8 mm. long; style  
clavate, pale yellow, longitudinally 3-grooved and twisted, 3 cm. long;  
stigma 5 mm. long and 3 mm. wide, 5-grooved, yellow. Capsule depressed-glo-  
bose, obscurely 5-angled, leathery-corky, 3.5-4.5 cm. wide and 1.5-2  
cm. long, dull, ~~dark~~ dark brown, somewhat scarious, practically indehiscent,  
held upright to horizontal on stiff peduncle. Seeds grayish brown, villous  
especially at base and angles, longitudinally grooved, obovoid-~~angular~~.  
about 12 mm. long and 7 mm. wide.

LOCAL RANGE: A typical littoral tree now occasionally planted in the lowlands, especially by the Hawaiians. It grows, probably as an escape from aboriginal planting, here and there along the shore and the borders of brackish marshes throughout the Islands. It appears to be wild in Puna, Hawaii. There it grows in abundance on the spring-fed lava flows that frequently permit of the seepage of salt water from the sea. This tree was probably not as common in the Islands formerly as some writers assert. Horace Mann Jr., in his "Enumeration of Hawaiian Plants" published in 1867, fails to mention it. This work was based on the collections and publications of previous botanists as well as on extensive collections made jointly by W.T. Brigham and Mann, himself. Hillebrand in his Flora, published in 1888, states that the tree is found "alone the sea-coast in and near villages," and that a number of trees surrounded the house of Kamehameha I at Waikiki. From this last fact he infers that it was held in high esteem. As the mile is of value to the Polynesians, especially in some of the more southern islands, it is not unlikely that its wide distribution throughout the tropics is due to the agency of man as well as to ~~its~~ the character of its fruit and seed, both of which can float for long periods in sea water. The plant flowers from early spring to late summer, produces dense shade, and thrives in the drier coastal regions where most other plants would die. Here it matures abundant fruit, while in wetter districts the amount is often negligible. It is not particularly ornamental and is somewhat troublesome in the garden when shedding its numerous leaves. Its wood is heavy, having a specific gravity of 0.8. This is hard

brown, and takes on a beautiful polish. It was used by the Hawaiians for making calabashes, though not favored as much as that of the koa. Its seeds were used as a cathartic, and the inner bark for binding material when the preferred hau bark was not available.

EXTRA RANGE: A tropical species probably originating in the Old World, but distributed since prehistoric times in the islands of the Pacific, in North Australia, in Indo-Malaya, on both coasts of Africa and in the West Indies. It probably reached the latter region in the form of seed carried from West Africa by the Main Equatorial Current. Such transport is possible. The seed, after floating a year in sea water, can germinate and develop into a new plant as H.B. Guppy has shown by experiment.

'Illustrated on following page'

FLORA HAWAIIENSIS

FAMILY: 307

GENUS: *Perispermum*

CONVOLVULACEAE  
MORNING-GLORY FAMILY

Degener  
gen. nov.

plaited and not

Coarse woody slow-growing vines without milky juice. Leaves simple, entire glabrous to tomentose. Flowers contorted in the bud, single or very rarely 2 on axillary jointed bibracteolate peduncles. Calyx lobes 5, subequal, the outer 2 the larger, persistent. Corolla funnelform, stiff and somewhat thick with 5-angled notched limb. Stamens slightly shorter than corolla; filaments filiform, neither enlarged nor hairy at base, with lower third adnate to corolla tube; anthers sagittate, versatile. Disk ~~annular~~. Ovary 2-celled, with 2 or (by abortion) 1 seed in each cell; styles 2, filiform, connate at base; stigmas ~~capitate~~ capitate. Capsule ~~indehiscent~~ indehiscent, 4-seeded or (by abortion) to 2-seeded, ovoid, apiculate, non-separate when mature, thin, brittle-chartaceous, only partly filled with the ~~seed~~ seed. Seed with leathery testa uniformly and completely covered with dry-fleshy perisperm and containing thick inferior radicle and corrugate-pli-cate cotyledons surrounded by sparse transparent cartilaginous endosperm.

~~NAME is from the Latin carnosus, meaning fleshy, and from sperma, meaning seed, in reference to the presence of perisperm in this genus.~~

TYPE SPECIES: *Perispermum albiflorum* Degener

A genus endemic to the Hawaiian Islands.

not

NAME dependent upon the characteristic presence of ~~perisperm~~ <sup>peri</sup>isperm around the ~~seed~~.

New copy

O.K.P.  
over

FLORA HAWAIIENSIS

FAMILY: 307 *Per*

GENUS: *Per* ~~Dispermum~~

SPECIES: ~~albiflorum~~

CONVOLVULACEAE  
MORNING-GLORY FAMILY

KEY TO SPECIES OF *Per* ~~DISPERMUM~~:

Corolla yellowish-brown to greenish; testa crimson - - - *P.* Menziesii

Corolla white; testa yellowish-brown - - - - - *P.* ~~albiflorum~~

*black  
: not italic*

*mt*

*OK  
D*

*New copy*

*over*



FAMILY: 51  
 GENUS: *Xanthosoma*  
 SPECIES: *Robustum*  
 VARIETY: *Brownii*

ARACEAE 51  
 ARUM FAMILY

*XANTHOSOMA ROBUSTUM* var. *BROWNII* Degener  
 BROWNS GIANT MALANGA

*Alocasia macrorrhiza* var.? Neal & Metzger, In Hon. Gard. 56. 1928.  
*Xanthosoma robustum* var. *Brownii* var. nov.

Giant somewhat ill-smelling glabrous herb with acrid watery-milky juice and thick cylindric erect ~~XXXXXXXXXXXX~~ short stem. Leaves with petiole attaining 2 meters in length and blade 13 dm. in length and 10 dm. in width; petiole glaucous except for inner side of prominent basal winged groove; blade glaucous and very pale beneath, dark green and dull above, saggitate-auriculate, with intramarginal vein almost equally distant from the undulate margin at all points, acute toward tip but with ultimate apex acuminate-mucronate, with basal lobes each having blade along apex of prominent vein obtuse and toward base ~~XXXXXXXXXX~~ of vein incised for 3 - 6 cm. About 6 spathes in the axil of a single leaf, each spathe subtended by a spongy linear acuminate 4-winged bract about as long as the spathe with its scape; scape about 3 - 4 cm. in width toward top. Spathes ovate, cream-colored with pink tinge above and below greenish, glaucous, cuspidate, about 3 dm. long and when unrolled 15 cm. wide. Spadix included, sessile, about 27 cm. long. ~~SPADIXXXXXXXXXXXXX~~ Staminate part of spadix white, about 18 cm. long and 2 cm. in diameter, somewhat laterally compressed; stamens cubical, with their exposed surface 3 mm. long and 2 mm. wide; pollen white. Neutral part of spadix pink, about 5 cm. long, enlarged to about 2.5 cm. in diameter toward base, consisting of cubical to oblong-cubical aborted stamens ~~XXXXXX~~ 2 - 6 mm. long. Pistillate part of spadix about 4 cm. long and at top 2 cm. in diameter and at oblique base about 2.5 cm. in diameter, consisting of 4 mm. long pistils having brownish stigmas about 2 mm. in diameter and exuding copious yellow resinous-glutinous juice.

TYPE LOCALITY: Garden in Honolulu, Oahu.

LOCAL RANGE: First critically studied by Dr. and Mrs. F. B. H. Brown, authors of the Flora of South-East Polynesia, and by them considered of hybrid origin. According to Neal & Metzger, who first recorded this plant for the Islands in 1928, it "is said to come from Japan." This hybrid, ~~may well have~~ originated in that country even though the genus *Xanthosoma* is native to tropical America. By 1930 this foliage plant was coming into favor in Honolulu gardens, the most conspicuous specimens growing at the Academy of Arts.

EXTRA RANGE: Not definitely known.

TYPE SPECIMEN: Degener No. 4112. Garden in Honolulu, Oahu.

possible  
 → flowers throughout most of the year.

(Illustrated on following page)

Ok. p

FLORA HAWAIIENSIS

FAMILY: 339

GENUS: Trematolobelia

LOBELIACEAE  
LOBELIA FAMILY

KEY TO SPECIES OF TREMATOLOBELIA:

1. Leaves wider than 4 cm., apex acute to obtuse; calyx about 24 mm. long; corolla white, obscurely S-shaped (Kohala only) - - T. grandifolia
1. Leaves narrower than 4 cm., apex acuminate; calyx less than 15 mm. long; corolla pink to purplish red:
  2. Leaves lanceolate, 25 - 30 cm. long; corolla pink, 5 - 6 cm. long, more or less curved (Oahu, Molokai, Maui, Lanai, Hawaii excepting Kohala) W - - - - - T. sandwicensis
  2. Leaves linear-lanceolate to oblong, commonly 16 cm. long; corolla scarlet to deep purplish red, smaller, strongly arched into semi-circle (Kauai only) W - - - - - T. macrostachys

FLORA HAWAIIENSIS

FAMILY: 339

GENUS: Trematolobelia

LOBELIACEAE  
LOBELIA FAMILY

TREMATOLOBELIA Zahlbr.

Trematocarpus Zahlbr. in Annal. Naturh. Hofmus. Wien. 6 : 430. 1891.  
 Not Trematocarpus Kuetzing, Phycologia Generalis . 1843. (Almophy)  
Trematolobelia Zahlbr.; Rock in Coll. Haw. Publ. Bull. 2 : 45. 1913.

Simple erect shrubs 1 - 4 meters high with single hollow stem closely beset with leaf scars; ~~milky juice~~ plants dying after flowering. Leaves clustered alternately in compact terminal tuft, entire to crenate, simple, glabrous, linear-lanceolate to obovate-oblong. Inflorescence of 5 - 20 more or less terminal and horizontal racemes; flowers proterandrous. Calyx tube adnate to ovary, subglobose, with 5-parted limb. Corolla more or less curved, white to scarlet or purplish-red, deciduous, fleshy, thick, 5-lobed, dorsally split to near base and with 3 central lobes connate to form a tridentate lip while the 2 lateral lobes are about half the length of the corolla. Staminal tube free from corolla and much longer than corolla, almost straight; anthers 5, subequal, the 2 lower apically penicillate while the 3 ~~XXXXX~~ upper are glabrous. Ovary inferior, 2-celled; style thick; stigma conical with basal ring of hair. Capsule persistent, inferior, subglobose, with depressed umbonate top, indehiscent but finally liberating its seeds by the deliquescence and decay of soft outer layer to leave woody longitudinally ridged structure fenestrated with oval to circular holes between the ridges for seed-dispersal. Seeds small, margined, with radicle next to hilum.

NAME derived from the Greek for hole and ~~XXXXXX~~ from lobelia because of the fenestrated capsule of the plants.

TYPE SPECIES: Lobelia macrostachys Hook. & Arn. Trematocarpus macrostachys Zahlbr.  
 endemic

Three species, all ~~XXXXXX~~ to the Hawaiian Islands where they grow characteristically on ~~the~~ fog-swept mountain slopes.



FLORA HAWAIIENSIS

RHAMNACEAE

BUCKTHORN FAMILY

COLUBRINA OPPOSITIFOLIA Brongn.

Hawaiian Colubrina; ~~KAHILI~~

FAMILY: 215

GENUS: Colubrina

SPECIES: Oppositifolia

Colubrina oppositifolia Brongn.; Mann in Proc. Am. Acad. 7: 161. 1867, at Fl. Haw. Isl. in Essex Inst. 5: 173. 1867.

Small glabrous tree becoming 10 - 12 m. high. Leaves opposite, glabrous, ovate to oblong, 6 - 12 cm. long, 2 - 5 cm. wide, thin chartaceous, entire, abruptly contracted toward petuse apex, rounded at base, with prominent gland at base of each nerve and with a few glands near margin, on petioles 1.5 - 3 cm. long. Flowers on about 5 mm. long pedicels having minute ovate bracts at base, borne in umbellate cymes having common peduncle about 5 mm. long. Calyx thick, almost 7 mm. in diameter, parted to middle into acute deltoid lobes which are often long persistent. Corolla with obovate concave thin petals 2 mm. long. Stamens slightly longer than petals, inserted at disk indentations; filaments flattened linear-lanceolate from wide base; anthers cordate. Ovary topped by circular 3 mm. wide yellow nectar-secreting intrastaminal disk; style short, 3-lobed. Fruit a capsule on enlarged peduncle and pedicel, dull

grayish-brown, trilobular, 3-keeled, about 1 cm. high, depressed-globose, immersed in the prominent ridged disk for less than one third of height, with epicarp hard and imperfectly separating from woody endocarp which suddenly separates into 3 one-seeded cocci having dissepiments thin-transparent on lower inner side. Seeds somewhat shiny, smooth, reddish-brown changing to almost black when fully mature, 4 - 8 mm. long, 4 mm. wide, with 2 flat sides and rounded back somewhat keeled at base; embryo with short radicle and with thick fleshy obovate-oblong slightly curved cotyledons nearly as long and broad as the thin endosperm.

TYPE LOCALITY: Hawaiian Islands.

LOCAL RANGE: Quite common in the hot, dry lava fields near Punawaawaa, Hawaii, but quite rare in other localities on that island. Hillebrand reports it as growing on the south-west slope of Kaala, Oahu, and as probably found on Kauai as well. Due to the gradual contraction of the curved face of the endocarp on drying, the fruit with a loud report suddenly springs apart, while hurling its seed, into the three cocci. The only part remaining on the pedicel is little more than the base of the endocarp. This is the hardest native wood in the Islands. It has a close grain and is dark red in color. It took the place of metal in the economy of the ancient Hawaiians and was greatly valued by them. Kapa beaters, spears and other weapons, and ~~kahili~~ *kahili* were fashioned from it.

EXTRA RANGE: Endemic to the Hawaiian Islands.

OK  
P



RHIZOPHORACEAE ~~Swartz~~

Mangrove Family

*and often stilt-like roots.*

Shrubs or trees with terete branches sometimes swollen at the nodes. Leaves simple, usually glabrous, usually opposite, leathery, almost always with interpetiolar caducous stipules. Flowers usually perfect, solitary or in few-flowered cymes ~~axillary clusters~~. Calyx-tube adnate to the ovary, of 3-4 or ~~very rarely~~ more valvate lobes. Petals as many as the sepals, 2-~~left~~ or lacerate, usually small, convolute or inflexed in the bud. Stamens twice or four times as many as the petals or rarely of the same number, inserted at ~~the~~ base of disk; filaments short to long; anthers 2- to many-celled, introrse, longitudinally dehiscent. Ovary inferior or partly so, usually 2- to 6-celled or rarely 1-celled, with 2 or rarely 4 or more pendulous ovules in each cell; styles usually united; stigmas sometimes lobed. Fruit leathery, crowned with the calyx, indehiscent or tardily septiciidal, usually 1-seeded. Seeds with terete or connate often green cotyledons, with or without fleshy endosperm, often germinating while still attached to the plant and then falling with or without

*for dispersal**P. P.*

the cotyledons, ~~are~~ ~~disseminate~~.

About 17 genera and 60 species, all ~~existent~~ native to tropical and subtropical regions, especially of the Old World.

FLORA HAWAIIENSIS

FAMILY: 269

~~GENUS~~

> RHIZOPHORACEAE  
MANGROVE FAMILY

KEY TO LOCAL GENERA:

Calyx lobes 4; germinated seed falling with fruit from tree  
----- BRUGUIERIA

Calyx lobes 8 - 14; germinated seed falling without fruit  
from tree ----- RHIZOPHORA

~~RHIZOPHORACEAE~~

FLORA HAWAIIENSIS

FAMILY: 215

RHAMNACEAE  
BUCKTHORN FAMILY

KEY TO LOCAL GENERA:

1. Fruit globose:
  2. Fruit 3-celled, dry:
    3. Fruit grooveless, with calyx cup extending to near the middle, almost indehiscent; unarmed trees - - - - - ALPHITONIA
    3. Fruit 3-grooved at apex, with calyx cup not extending beyond the base, dehiscent; unarmed trees or shrubs - - - - - COLUBRINA
  2. Fruit 2-celled; more or less fleshy; armed or unarmed tree - - - - - ZIZYPHUS
1. Fruit 2- to 3-winged, crowned with the calyx; unarmed shrubs or woody vines with or without tendrils - - - - - GOUANIA

FLORA HAWAIIENSIS

FAMILY: 215

RHAMNACEAE  
BUCKTHORN FAMILY

OK, P

Upright or climbing shrubs or small trees with often thorny branches. Leaves mostly alternate, simple, often 3- to 5-nerved, with minute, caducous stipules or with spiny stipules. Flowers small, regular, sometimes apetalous, perfect or sometimes polygamous or dioecious, usually cymose or panicle. Sepals valvate, 4 - 5. Petals when present alternate with sepals and folded inward in the bud, hooded or concave, inserted with the stamens into the edge of the fleshy disk which lines the short tube of the calyx and sometimes unites it to the lower part of the 2- to 5-celled ovary. Stamens as many as the sepals and alternate with them, perigynous, with short, versatile anthers. ~~STAMENS~~ Ovary free or partly immersed in disk, 2- to 5-celled, and with 1 ovule in each cell; stigmas 2 - 5. Fruit usually a drupe or capsule, often edible or poisonous, with single erect seed in each cell. Seed with large embryo having broad usually greenish endosperm, or exendospermous.

This family, consisting of about 50 genera, is found practically throughout the world.

OK, P and



RUBIACEAE  
MADDER FAMILYKADUA KAMAPUA Degener  
KAMAPUA or FIG-GOD KADUAKadua kamapua sp. nov.

Long straggling glabrous shrub with terete solid branches having internodes about 6 cm. long; when bruised emitting an odor more foetid than in most species. Leaves ovate-lanceolate, shiny, not glaucous, commonly 12 cm. long and 4.5 cm. wide, with petiole usually 7 mm. long, rounded at base and acuminate at apex; stipules 6 mm. high, curved-annular, cuspidate. Flowers cymose in the axils of the upper unmodified leaves, pure white, conspicuously foetid, usually 3 or rarely less on 3 - 4 cm. long pale quadrangular pedicels borne on reddish 2 mm. long flattened-terete peduncle having annular apex sparingly denticulate; only outer pedicels near base having single punctiform bract. Calyx-tube quadrangular 4 mm. high, with about 17 mm. long subequal herbaceous pale green lanceolate somewhat acuminate lobes having on each side of sinus 3 minute dark brown subulate glands. ~~XXXX~~ Corolla pure white, with cylindric tube 25 - 30 mm. long and 2 mm. wide but at base slightly wider, with spreading 15 - 17 mm. long and 5 - ~~XXXX~~ 9 mm. wide obovate-oblong lobes with shortly caudate apex inflexed in the bud. Anthers 3 mm. long, with apex about 2 mm. below throat, partly adnate to corolla tube; pollen yellow. Style puberulent, white; stigmas greenish, at least 5 mm. long, glabrous, ~~XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX~~ linear-subulate, convex without and flat within, with age partly exserted and spreading. Capsule and ~~seeds~~ unknown.

TYPE LOCALITY: Pig-God or Kamapua Trail, Punaluu Valley, Oahu.

LOCAL RANGE: Known only from the rain forest along the Pig-God Trail on the western slope of Punaluu Valley, Oahu. A very conspicuous species because of its large, white flowers. Though quite a number of flowering specimens were observed between August and October, none were found fruiting.

EXTRA RANGE: Not known elsewhere.

TYPE SPECIMEN: Degener & Park ~~at Kadua~~

(Illustrated are following P. Reg.)

FLORA HAWAIIENSIS

FAMILY: 190

GENUS: Ricinus

EUPHORBIACEAE

SPURGE FAMILY

RICINUS L. Sp. Pl. 1007. 1753.

Coarse annual or perennial glabrous and somewhat glaucous fast-growing herb with watery juice and stems hollow except at base. Leaves alternate, large, obliquely peltate, palmately 5- to 11-lobed, with hollow petioles bearing conspicuous glands. Flowers monoecious, numerous, small, greenish, in terminal panicle bearing the staminate flowers below the pistillate ones. Staminate flowers: calyx 3- to 5-parted, with valvate segments; corolla none; stamens numerous, crowded, with repeatedly branched filament; pistil none. Pistillate flowers: calyx caducous; corolla none; stamens none; ovary 3-celled with 3 ovules in each cell; styles 3, dark red; stigmas plumose. Fruit a subglobose to oval spiny capsule dehiscing elastically into 3 two-valved cocci. Seeds glabrous, large, with fleshy and oily endosperm surrounding the broad flat cotyledons. *compactly carunculate.*

NAME derived from the classical Latin name of this plant.

TYPE SPECIES: Ricinus communis L.

*specific of many varieties and forms:*  
A monotypic genus, probably native to Africa.

OK  
-R P

LOBELIACEAE  
LOBELIA FAMILY

TREMATOLOBELIA SANDWICENSIS *DeGaulle*  
*Hawaiiensis*

Lobelia macrostachys Hook. & Arn. in Bot. Beech. Nov. 88. 1832.  
Delissea (?) macrostachys Presl. Prodr. Monogr. Lobel. 47. 1836.  
Not Trematocarpus macrostachys Zahlbr. in Annal. Naturh. Hofmus. Wien. 6 : 432. 1891.

Not Trematolobelia macrostachys Zahlbr.: Rock in Coll. Haw. Publ. Bull. 2 : 45. 1913.

Trematolobelia *sandwichensis* nom. nov.

Plant 15 - 40 meters high. the woody hollow dull greenish stem erect, 2.5 - 3.5 cm. thick, dividing at apex candelabra-like into 5 - 22 stiff horizontal-ascending racemes which when young are densely pubescent but finally become glabrous and 3 dm. to rarely 10 dm. long. Leaves glabrous, membranous, lanceolate, 25 - 30 cm. long and 2 - 2.5 cm. wide, acuminate, faintly crenate in the upper portion with a small gland under each crenature, gradually narrowing into margined petiole. Pedicels attached to upper half or third of leafy racemes on all sides but those which lie on under side of the horizontal-ascending raceme are abruptly curved and twisted to be in more vertical position, obcompressed, about 2 mm. thick and 2 - 3 cm. long, bibracteolate in the lower third with 2 - 3 mm. long oblong obtuse bractlets and in axil of backward-ascending straight commonly 2 ~~3~~ 2 cm. long and 2 - 3 mm. wide leafy bract. Calyx glabrous, coriaceous, with light green tube about 8 mm. long and 9 mm. wide, with obscure longitudinal ridges one leading to each lobe and signis lobes 5 (or exceptionall 6), equal or nearly so, 4 - 5 mm. long and 2 mm. wide, ovate-lanceolate, somewhat spreading. Corolla glabrous, pink and sometimes with lighter areas, slender, 5 - 6 cm. long and about 5 mm. wide, suberect before anthesis, more or less curved when open, the 2 upper lobes spreading recurved, about equal in length to tube and 2 or more mm. wide, acute, lower lip about 3 or. long and 7 mm. wide, with 3 acuminate lobes about 6 mm. long; corolla toward end of anthesis strongly contorted and deciduous. Staminal column sparingly pubescent (to ~~filament~~ glabrous?) and with small hairy patch at base of each anther on each side of thick connective, 4.5 cm. long and 3 mm. wide, longitudinally sulcate and flattened on under surface; anthers 1 cm. long, only the 2 lower penicillate, pale bluish-purple. Style greenish; stigma dark green, 1 mm. long, with stigmatic hairs annular; pistil longer persistent than corolla. Capsule before seed dispersal: greenish, outwardly somewhat thin-fleshy, flattened-sub-lobose, about 10 mm. high and 10 mm. broad and 7 mm. wide, longitudinally 10-ridged, with persistent calyx lobes and stylar base; capsule when scattering seed: devoid of fleshy covering, strongly ligneous, stramineous, with broad umbonate indehiscent flattened fenestrated apex having definite rim beyond which the 10 lateral longitudinal ridges project, with sides pierced by numerous oblong holes which have a thickened periphery and are between the unbroken ridges or more rarely interrupted by the ridges. Seeds yellow, flattened-ovoid, almost 1 mm. long, marginally winged.

TYPE LOCALITY: Oahu, "Sandwich Islands."

LOCAL RANGE: Typical of fog-swept cliffs and steep, exposed mountain slopes above 2000 feet; rarely elsewhere. Found on both the Koolau and Waianae Ranges of Oahu, especially north of Honolulu and at the top of the Pig-Head



Trail, Punaluu. It also grows, though rare, on the high cliffs above Waikolu Valley and Pukoo, Molokai; on Puu Kukui and Mt. Eke on West Maui, as well as along the Olinda pipe-line trail and Waikamoi Gulch on East Maui; on Lanai; and in the open forest of Maalehu, on the southern slope of Mauna Loa, and in the Fern Forest at Kilauea on Hawaii. The plant flowers from late April to October, producing a few flowers at the end of the racemes occasionally as late as December. Its lower flowers begin to fruit around July, while the youngest mature their fruit in January or even later. EXTRA RANGE: Not known elsewhere. Closely related to *T. grandifolia* of the Kohala Mountains, Island of Hawaii; and to *T. macrostachys* of Kauai.

(Illustrated on following page)

OKP

mlp

RANUNCULACEAE  
CROWFOOT FAMILY

RANUNCULUS L. Sp. Pl. 548. 1753.

chiefly basal,  
Annual or perennial herbs, erect to creeping, glabrous to pubescent, with thick roots. Leaves alternate, varying in form from simple to dissected. Flowers usually solitary, yellow or rarely white or red, regular. Sepals deciduous, usually 5 but seldom less than 3, imbricate in the bud. Petals of same number as sepals or more numerous, minute or conspicuous, with nectariferous pit and scale at base. Stamens many. Carpels many, 1-ovuled; style elongate or obscure; stigma small. Achenes many, in capitate or spicate arrangement, usually flattened, with smooth or variously sculptured faces, tipped by minute or elongate persistent style.

NAME derived from the Latin for little frog; first used by Pliny to designate these plants because they commonly grow in marshes frequented by frogs.

TYPE SPECIES: Ranunculus auricomus L.

Over 500 species found in the cool mountainous regions of the tropics and throughout temperate and cold regions.

mr OK

POINSETTIA CYATHOPHORA (Murr.) Kl. & Garcke  
FIDDLE-LEAVED POINSETTIA

- Euphorbia cyathophora Murr. Comm. Goett. 7: 81. 1786.  
Euphorbia heterophylla var. cyathophora Griseb. Fl. Br. W. I. 54. 1859.  
Poinsettia cyathophora Kl. & Garcke. Monats. Akad. Berlin 1859: 253. 1859.  
Euphorbia heterophylla ~~XXXXXX~~ Hilleb. Fl. Haw. Isl. 396. 1888.  
Euphorbia heterophylla Rock, Orn. Trees Haw. 131. 1917.  
Euphorbia heterophylla Neal & Metzger, in Hon. Gard. 183. 1928.  
Euphorbia heterophylla ~~ope~~ Wayside Fl. Haw. 129. 1929.  
Not Euphorbia heterophylla L. Sp. Pl. 453. 1753.

Quick-growing annual or perennial erect leafy herb 3 to rarely 8 dm. high, with simple or branched stout hollow stem solid near base. Leaves somewhat clustered at the ends of the stems, 4 - 7 cm. long and 1.5 - 3 cm. wide, ovate to obovate in outline, characteristically panduriform with 4 acute lobes or rarely some of the basal leaves ovate, acute or acuminate at base and apex, entire or more often obscurely serrate with callous teeth, green, thin, glabrous above, brown-fibrillose beneath especially on usually 5 mm. long slender petiole. Leaves subtending inflorescences conspicuously blotched with red on lower half or two-thirds. Involucres small, broad, with 1 or 2 glands, with lobes ovate to oblong and laciniate, in dense clusters. Capsule 3 mm. long and 4 mm. wide, glabrous, with valves sometimes with elevated margins. Seeds dark brown, tuberculate, obovoid with flattened base and somewhat conic apex, 2 mm. long and 1.5 mm. wide.

TYPE LOCALITY:

LOCAL RANGE: A pretty weed, probably an escape from cultivation for its colorful bracts, now naturalized in dry, waste places near sea level on Oahu. Hillebrand, who left the Islands in 1871 after a stay of twenty years, collected this plant "many years ago in the upper parts of Nuuanu" Valley and had not met with it since. Rock in 1917 records it as "frequently cultivated but much less so than the Poinsettia." Since 1926 it has been observed in abundance at Waimea; since 1928, here and there in Honolulu; and since 1931, near Waialae.

EXTRA RANGE: Native to tropical America but frequently naturalized in warm regions and there usually confused with the closely related P. heterophylla (L.) Kl. & Garcke. In a large series of plants collected in the Hawaiian Islands and heretofore called Euphorbia heterophylla L., the leaves are almost uniformly pandurate and never linear. These Hawaiian plants agree closely with specimens of P. cyathophora, and are very different from specimens of P. heterophylla collected by the writer in Bermuda in 1921.

(Illustrated on following page)

G.K. Over  
MP



FLORA HAWAIIENSIS

FAMILY: 190

GENUS: Poinsettia

EUPHORBIACEAE  
SPURGE FAMILY

KEY TO LOCAL SPECIES OF POINSETTIA:

1. Herbs, usually annual; capsule about 5 mm. long; leaves subtending inflorescences green or blotched at base with red or yellow:
  2. Leaves subtending inflorescences with conspicuous reddish blotch at base - - - - - *P. cyathophora*
  2. Leaves subtending inflorescences green or obscurely yellowish at base - - - - - *P. geniculata*
1. Shrub, perennial; capsule about 15 mm. long; leaves subtending inflorescences conspicuously red or yellow throughout - - - *P. pulcherrima*

black; no  
italics

mp

6K.  
D

over

FLORA HAWAIIENSIS

FAMILY: 344

GENUS : Vernonia

COMPOSITAE

COMPOSITE FAMILY

VERNONIA Schreb. Gen. 2 : 541. 1791.

Erect branching herbs or vines or shrubs, usually perennial. Leaves alternate or very rarely opposite. Heads discoid, cymose-paniculate. Involucre hemispheric or campanulate or oblong-cylindric; bracts imbricate in several or many series. Receptacle flat; naked. Florets with purple to pink or white tubular 5-lobed regular corolla. Anthers sagittate at base, not caudate. Style branches subulate, hispidulous for their entire length. Achenes 8- to 10-ribbed, truncate. Pappus in 2 series of which the inner consists of numerous roughened capillary bristles and the outer of much shorter small scales or stout bristles.

NAMED in honor of William Vernon, English botanist, who traveled in North America in the 18th Century.

TYPE SPECIES: *Serratula noveboracensis* L.

At least 500 species, widely distributed; most abundant in South America.

FLORA HAWAIIENSIS

FAMILY: 344

GENUS : Vernonia

SPECIES: Cinerea

COMPOSITAE

COMPOSITE FAMILY

VERNONIA CINEREA ~~LESS~~ (L.) Less.

LITTLE IRONWEED

*Gonyza cinerea* L. Sp. Pl. 862. 1753.

*Vernonia cinerea* Less, in *Linnaea* 4 : 291. 1829.

Simple or little-branched 2 - 4 dm. high annual usually somewhat grayish because of fine appressed pubescence. Leaves alternate, flaccid, often hispidulous, ovate to oblong or lanceolate, irregularly toothed to sinuate or entire, acute or obtuse at apex, the lower 3 - 7 cm. long and with winged petiole while the upper are much smaller fewer narrower and sessile. Heads about 20, small, slender-peduncled, in terminal compound almost leafless cymes. Involucre about 3.5 mm. high, oblong-cylindric, of 2 - 3 rows of pubescent bracts; outer bracts minute; inner bracts 3 mm. long, narrowly lanceolate, sharply acuminate with tip usually purplish. Florets lavender, about 20, exceeding bracts by 1 mm. in length. Achenes obovoid-cylindric, 1.5 mm. long, scarcely striate. Pappus white, the outer row very short

and sometimes reduced to a few bristles and the inner 3 mm. long and obscurely plumose.

TYPE LOCALITY: "Habitat in India." *India*

LOCAL RANGE: A weed considered of late introduction in Hillebrand's time (1888). Now common on all the larger Islands, including Niihau, where it grows in waste and cultivated grounds at lower elevations.

EXTRA RANGE: Native of the Old World tropics but now a naturalized weed throughout tropical America as far north as Mexico and southern Florida, beside other regions.

(Illustrated on following page)

*OK P*  
*mc*

*OK 12*



FLORA HAWAIIENSIS

FAMILY: 169 b  
GENUS : Cassia  
SPECIES: Javanica

LEGUMINOSAE  
PEA FAMILY

CASSIA JAVANICA L.  
PINK-AND-WHITE SHOWER, JOINTWOOD, JAVANESE CASSIA

Cassia javanica L. Sp. Pl. 379. 1753.  
Cassia nodosa Hamilt.; Roxb. Hort. Beng. 31. 1814.

A tree becoming 6 (or in its native country even 15) meters high, with smooth gray trunk and brown widely spreading somewhat drooping obscurely zigzag branches bearing leafy 1 year old green downy-puberulent twigs up to 15 or more dm. long. Leaves ditichous, somewhat deciduous during the winter, commonly 3 dm. long, having 6 - 15 pairs of mostly opposite leaflets and 1 - 2 cm. long petiole which like terete rachis is downy-puberulent; leaflets elliptic-oblong, the basal ones the smallest and widest, 25 - 50 mm. long and 15 - 25 mm. wide, subcoriaceous, somewhat shiny and glabrate above, pale and silky-puberulent beneath, at apex usually obscurely mucronate and either acute or more often rounded and retuse, at base rounded, on about 2 mm. long petiolule; stipules falcate, 15 mm. long and 5 mm. wide, acute and mucronate. Flowers bright pink or reddish but fading somewhat with age, fragrant, in the axils of silky persistent lanceolate bracts on about 4 cm. long pedicels borne in dense lateral usually less than 15 cm. long racemes. Stamens 10, glabrate, with yellow filaments, the 3 lower stamens with longer filaments and larger anthers. Pistil 3 mm. long, pubescent, rapidly elongating; stigma capular. Pod very dark brown, 3 - 6 dm. long and 15 mm. wide, with 5 mm. thick ~~disk-like~~ disk-like partitions each containing a single seed and separated by thin diaphragm. Seeds obovoid-globose, shiny, reddish brown, about 8 mm. long.

TYPE LOCALITY: "Habitat in India."

LOCAL RANGE: A favorite shade tree introduced ~~probably~~ probably before 1870 because of its beautiful flower clusters. These are in their prime in May and June though flowers often may be seen from March until September. The large pendent pods begin to ripen in January. Their seeds are occasionally used in the making of leis. David Haughton, former Forester, has crossed this species with the Golden Shower, Cassia fistula L., producing some gorgeous flowering trees. Many are grown in Honolulu, probably the most beautiful of these being a specimen growing in Kamanele Park near the University of Hawaii. This resembles most closely Cassia fistula L. Though producing an abundance of pods, the seeds of this tree are deformed.

EXTRA RANGE: Hillebrand in his flora records both Cassia javanica and C. nodosa as growing in the Hawaiian Islands. He was in error. These two scientific names do not apply to two distinct species: C. nodosa is a synonym of C. javanica or, more likely, is the incorrect name of a plant that should be called Cassia javanica var. nodosa. This last is said to bear leaflets having usually a rounded or retuse apex, while typical C. javanica seems to have mostly acute to acuminate leaflets. The Pink-and-White Shower of the Hawaiian Islands has usually the former shape of leaflet. Its precise native home is not known. It is somewhere between Eastern Bengal and Malaya.

(Illustrated on following page)  
(New Copy)

CACTACEAE  
CACTUS FAMILY*HYLOCEREUS UNDATUS* (Haw.) Britton & Rose  
NIGHT-BLOOMING CEREUS

*Cereus undatus* Haw. Phil. Mag. 7: 110. 1830.  
*Cereus triangularis* Hillieb. Fl. Haw. Isl. 141. 1888.  
*Cereus triangularis* Wilder. Fruits Haw. Isl. 220. 1911.  
*Cereus triangularis* Rock, Orn. Trees Haw. 160. 1917.  
 Not *Cereus triangularis* Haw. Syn. Fl. Sacc. 120. 1912.  
*Hylocereus undatus* Britton & Rose - -

Stems light green, long, climbing over banks or rocks or up trees with about 6 dm. long joints bearing 2 - 6 cm. wide narrow wings. Wings with margins yellow-horny, undulate and with resultant depressions spaced 3 - 4 cm. apart. Single areole situated in each depression, sparingly felted around 1 - 2 spreading rigid brown 2 - 4 mm. long spines. Flowers fragrant, blooming for one night only, single, campanulate, about 35 cm. long and 15 cm. wide, slightly curved at base, almost horizontal. Bracts surrounding ovary green, ovate-deltoid, 1 - 2 cm. long; outer perianth segments above ovary greenish-yellow, connate to form about 2 cm. wide and 15 cm. long tube bearing free reflexed linear-lanceolate segments about 11 cm. long and 1 - 1.5 cm. wide in about 2 rows; inner perianth segments usually 20, white, erect, commonly 10 cm. long and 2 - 4 cm. wide, oblong-lanceolate with mucronate apex. Stamens very numerous, cream-colored, inserted at various heights from near base to top of perianth tube and projecting for about 7 cm. to form graceful curving fringe around pistil; filaments filiform; anthers flat, 2 mm. long and 1 mm. wide, basifixed. Ovary about 2 cm. long, containing numerous ovules attached by long funicles; style cream-colored, about 22 cm. long and 7 mm. thick, hollow; stigma with about 24 spreading 2 mm. long cream-colored glandular lobes connate at base. Fruit oblong, usually 8 cm. long and 2 cm. thick, somewhat shiny, crimson, sparingly covered with fleshy bases of scales about 1.5 cm. wide, within crimson for about 2 mm. near periphery, the remaining part white translucent, sweet, not mealy, containing seeds spaced about 7 mm. apart. Seeds 2 mm. long, 2 mm. wide, 1 mm. thick, partly hollow, with crustaceous black testa surrounded by mucilage; embryo fusiform, yellow, almost 2 mm. long.

## TYPE LOCALITY:

LOCAL RANGE: Around 1830 the night-blooming cereus and a number of other plants were put on the brig *Ivanhoe* while that vessel was stopping at a Mexican port on her way from Boston to Canton. Most of these plants, however, died before the vessel reached the Hawaiian Islands, as they were being thrown away Captain Charles Brewer, then first officer, rescued the night-blooming cereus because it still showed ~~some~~ signs of life. This specimen was planted in Honolulu and flourished. Cuttings from the original importation were early planted in Wailuku, Island of Maui, and elsewhere. Now the plant is a common ornamental ~~and~~ growing over rocks and walls in the drier districts at lower elevations. The cereus-covered stone wall around Punahou School, Honolulu, is probably the most famous hedge in the Islands. It was planted by Mrs. Miram Bingham, grandmother of Senator Bingham of Connecticut, previous to 1840. The plants bloom between June and November usually producing sporadically, according to the weather, 4 or 5 magnificent floral displays interspersed by smaller ones. Because of the beauty of the flowers, a law has been passed prohibiting their picking until after 10 o'clock at night, thus giving everyone opportunity to see the plants at the height of their glory - a sight that should not be missed. By placing the opening flowers in a refrigerator early in the evening, its blooming can be arrested

C. K. P.



so that it will remain open part of the following day even when removed from the cold. Although flowering profusely, the night-blooming cereus seldom sets fruit in the Islands, possibly because the local plants are clones. ~~The fruit is edible and in Mexico is commonly eaten out of hand, or made into sherbets and preserves.~~  
EXTRA RANGE: Native to Mexico but planted as an ornamental in most tropical and subtropical regions.

(Illustrated on following page)

FLORA HAWAIIENSIS

FAMILY: 169a

GENUS: Pithecellobium

LEGUMINOSAE

PEA FAMILY

PITHECELLOBIUM Mart. Hort. Monac. 188. 1829.  
Pithecellobium Mart. in Flora 20: 1837.

Shrubs or trees. Leaves bipinnate with few or many leaflets; stipules often spinescent. Flowers white to pink, perfect, regular, in clustered or solitary heads or spikes. Calyx tubular to funneliform, 5-toothed. Corolla tubular to funneliform, the petals being ~~XXXXXX~~ connate to above the middle. Stamens numerous, long-exserted; filaments ~~XXXXX~~ connate below into a tube; anthers very small; pollen grains agglomerate. Ovary sessile or stipitate, many-ovuled; style filiform; stigma small. Pod compressed or subterete, curved or coiled, the coriaceous valves twisting after dehiscence. Seeds flat, ovate to orbicular, often with fleshy aril.

NAME derived from the Greek for monkey's ear, in reference to the twist-~~XXXX~~ ed pods.

TYPE SPECIES: Pithecellobium unguis-cati (L.) Mart.

At least 20 species, most of them native to tropical America.

FLORA HAWAIIENSIS

FAMILY: 169a

GENUS: Pithecellobium

LEGUMINOSAE  
PEA FAMILY

KEY TO LOCAL SPECIES OF PITHECELLOBIUM:

- |  |                |
|--|----------------|
| Flowers white; aril white -----          | P. dulce       |
| Flowers white and purple; aril red ----- | P. unguis-cati |

Black as in  
key on  
gallery page 30  
no italics



FLORA HAWAIIENSIS

FAMILY: 72  
GENUS : Tacca  
SPECIES: Hawaiiensis

TACCACEAE  
TACCA FAMILY

TACCA HAWAIIENSIS Limpricht f.

HAWAIIAN ARROWROOT

Tacca oceanica Nutt., in Am. Journ. Pharm. 9 : 305 - 308. 1838. et Nutt.;  
Seem. Journ. Bot. 4 : 261. 1866. (Only in respect to plants from "Wahoo  
[Oahu], Owhyhee [Hawaii], and Atovi [Kauai]", Hawaiian Islands.)  
Tacca pinnatifida Hilleb. Fl. Haw. Isl. 437 - 438. 1888. (As to footnote  
only.)

Not Tacca pinnatifida Forst. Char. Gen. 69. 1776.

Tacca pinnatifida var. minor Limpricht f. in Beitr. Kennt. Taccac. Diss.  
Breslau. 54. 1902.

Not Tacca minor Ridley in Mat. Fl. Mal. Penins. 2 ; 78. 1907.

Tacca hawaiiensis Limpricht f. in Engler, ~~Arch~~ Pflanzenreich. 4. 42:30. 1928.

Glabrous herb with depressed-globose light yellowish brown about 5 cm.  
high and 8 cm. wide thin-skinned smooth tuber near surface of ground from  
which a few leaves and usually a single scape quickly develop and which is  
replaced during the year by a new main tuber which arises from a downward-  
growing thick rhizome at a lower level and remains in dormant condition  
after yearly death of aerial vegetative part of plant; secondary smaller  
tubers also forming from adventitious buds above old tuber and spreading  
downward; tubers white within, starchy, somewhat juicy; roots arising from  
top of old tuber, spreading, 2 mm. thick, with smaller lateral roots. Leaves  
3 1/2 - 9 1/2 in. in diameter, palmately 3-divided with rachises winged on upper  
surface except in most cases for posterior side between petiole and main  
segment of lateral lobes, thin, very shiny beneath, with main veins im-  
pressed above and with main veins conspicuously raised and yellowish be-  
neath; the 5 main segments obovate-cuneate in outline, with lower half or  
third 1-partite into usually 2 - 3 pairs of lanceolate lobes, rest of main  
segments twice 3-partite or 3-cleft; all segments lanceolate, undulate to  
subentire, acuminate, downward curved; petiole erect, <sup>erect</sup> ~~erect~~, longitudinally  
grooved, 6 - 8 in. long; blade horizontal. Scape <sup>erect</sup> ~~erect~~, <sup>13 cm.</sup> ~~erect~~,  
conspicuously longitudinally grooved above, fistulose, becoming slender above,  
stiff, shiny, naked, bearing at apex 6 - 12 involucre bracts in 2 series  
with the outer series of 2, or rarely 3 bracts; bracts conspicuously parallel-  
nerved, 5 - 7 cm. long and 2 - 3 cm. wide, the lower ones the larger and  
usually drooping and the upper ones usually erect-spreading, entire, with  
upper half deltoid and lower part somewhat cuneate, entire, acute; above the  
foliaceous bracts about 50 filiform spreading-pendent bracts up to 1 cm. <sup>23</sup> ~~cm.~~  
long which are green and upper surface sulcate and often <sup>the</sup> anterior half  
purplish. Flowers about 35, a few developing at a time over a long season,  
one or a few flowering each night for single night only, when flowering  
then on erect <sup>1 cm.</sup> ~~1 cm.~~ long pedicel and with erect perianth lobes but following  
morning drooping and with perianth lobes closely pressed together. Per-  
ianth light green <sup>dull</sup> ~~dull~~, moderately fleshy with purple <sup>entire</sup> ~~entire~~ margins  
with broadly hemispheric tube 5 mm. high and having longitudinal grooves be-  
low each lobe sinus and with triangular base, with the narrower lobes ex-  
ternal before and after flowering; narrower lobes 5 mm. long and 6 mm.  
wide, ovate, obtuse and sometimes retuse, persistent; wider lobes 6 mm.

long and 5 mm. wide, broadly ovate, obtuse and usually retuse, persistent.  
Stamens waxy, subequal, somewhat shiny, opposite perianth lobes and adnate  
to perianth tube, whitish except for prominent lateral longitudinal purple  
projecting fold, with terminal white hood about 2 mm. high and 2.5 mm.  
broad and 1.5 mm. wide having purplish margins; staminal hoods opposite the  
3 wider perianth lobes somewhat smaller than others; anthers less than 1  
mm. long; pollen yellow. Ovary unilocular, containing many parietal ovules,

4 mm. long and 3 mm. wide, with thick raised waxy white top bearing wide ring of of pale purplish erect obscurely capitate hairs; ~~xxxxxxxxxxxx~~ stylar column waxy, 1 mm. high, with top waxy white shiny peltate with 3 cordate lobes having only inner side on level with top of stamens, with lobes opposite the larger ~~xxxxxxxx~~ perianth ~~xxxxxx~~ segments ~~xxxxxx~~ slightly smaller. Berry and seed ~~xxxxxxxxxxxx~~ rarely formed.

TYPE LOCALITY: Hawaiian ~~xxxxxx~~ Islands.

LOCAL RANGE: A rare plant growing on probably all the larger Islands in the lowlands in open woods and grassy localities. It seems nowhere ~~xxx~~ wild but merely persistent after limited aboriginal cultivation for its tubers, which were eaten by the Hawaiians in time of famine. It has been collected on Hawaii near Hilo and Kapoho, ~~xxxxxxxx~~ on Molokai at Kamalo and in Napulehu and Waialau Valleys, on Oahu, and has been recorded by Hillebrand as occurring principally on Kauai. The plants collected by the writer at Kamalo and Kapoho were being grown by aged Hawaiians, while those ~~xxxxxx~~ found at Hilo and Waialau were certainly escapes from cultivation. *Reintroduced from June 16, 1904*  
EXTRA RANGE: Endemic to the Hawaiian Islands; possibly originally introduced by the progenitors of the Hawaiian race at an early date and stimulated under cultivation to variation.

(Illustrated on following page)

Flora Hawaiianis.

COMPOSITAE

Composite Family

HESPEROMANNIA ARBORESCENS

Lanai Hesperomannia

Family: 347

Genus: Hesperomannia

Species: Arborescens

~~Hesperomannia arborescens Hook~~  
Hesperomannia arborescens Gray, in Proc. Am. Acad. 6 : 554.

~~Hesperomannia arborescens Hook, f. Lindl. - Tree Ham.~~

Tree 3 - 6 m. high, with spreading rough branches and 12 - 15 cm. thick trunk. Leaves lanceolate to obovate-ovate, 12 - 15 cm. long and 4 - 6 cm. wide, crenate-dentate and almost entire, bluntly acuminate at apex, glabrous, dark on both faces, thin chartaceous, gradually contracting into a 1.5 - 2.5 cm. long petiole. Heads 5 - 6.5 cm. high, 4 - 7 in a terminal cluster on thick peduncles about 1.5 cm. long. Involucre 2.5 - 4 cm. high, glabrous, with bracts in 4 - 7 rows. Corolla 25 - 30 mm. long, cleft about to middle, bright yellow. Anthers 8 - 10 mm. long. Style 4 cm. long. Achenes linear-oblong, 12 - 15 mm. long and about 2 mm. wide, glabrous. Pappus tawny to reddish, 25 - 30 mm. long.

T.L.:

L.R.: A single tree was discovered on the highest ridge of Lanai by H. Mann in 18 . Four years later W. Hillebrand saw eight. Around 1903 (?) R.C.L. Perkins saw only two trees



In 1931 Munz and Keckate rediscovered  
this species <sup>in the garden of the Hawaiian Botanical Garden.</sup>  
while in 1910 J.F. Rock failed to find a single one though he botanized  
on that small island for several months. ~~Now probably extinct.~~  
E.R.: Found only on Lanai 3 erroneous by  
reports from Oahu.

(Illustrated on following page)

~~THIS SPECIES IS NOW EXTINCT~~

~~ATLANTA~~

SANTALACEAE  
Sandalwood Family

copied

Corolla

Trees, shrubs or herbs, entirely or partially parasitic on branches or roots. Leaves alternate or opposite, entire, sometimes reduced to scales, estipulate. Flowers often greenish or red, usually small, perfect or unisexual, regular, in spikes or racemes or heads. Calyx green or petaloid, often somewhat fleshy, adnate to ovary, with 3 - 6 lobes valvate or slightly imbricate in the bud. Petals wanting. Stamens of the same number as calyx-lobes and opposite them; filaments usually short; anthers 2-celled, dehiscing lengthwise. Disk perigynous or epigynous, sometimes lobed. Ovary inferior to almost superior, 1-celled; style more or less simple; ovules 1 - 5, pendulous from basal placenta. Fruit indehiscent, nut-like or drupe-like, sometimes with fleshy torus, always 1-seeded. Seed with copious fleshy endosperm and no testa; embryo often oblique, straight, with cotyledons mostly terete.

About 27 genera and over 250 species of wide distribution in tropical and temperate countries, especially in the drier regions.

OK

Family: 344  
Genus: *Hesperomannia*  
Species: *Arbuscula*  
COMPOSITAE  
Maui Hesperomannia

*Hesperomannia arbuscula* Millb. Fl. Haw. Isls. 232. 1888.

A weak shrub with long and slender branches which extend over the ground or lean for support on neighboring shrubs. Leaves ovate to ovate-oblong or suborbicular, 10 - 15 cm. long and 6 - 9 cm. wide, sharply and closely serrate, rounded at base, pale puberulous beneath, quite thin, on 2.5 - 3.5 cm. long petioles. Heads 5 cm. or less high, single or 2 or 3 together at the end of a branch on short peduncles. Involucre 2.5 cm. long. Corolla 2.5 cm. long. Achenes cuneiform, 8 - 10 mm. long. Pappus 2.5 cm. long.

T.L.: "W. Maui about 1200 ft. above Lahaina."  
L.R.: An exceedingly rare plant probably only known from the type specimen which was collected by the late Mr. E. Bishop before 1888.

E.R.: Not known elsewhere.  
Though the writer botanized in 1927 in the general region where this plant has been found, he failed to rediscover it. It may be extinct. O.K.



LEGUMINOSAE  
PEA FAMILY

## GUILANDINA L.

*Guilandina* L. Gen. ed. 1. 124. 1737.  
*Guilandina* L. Sp. Pl. 381. 1753.

Non-twining woody vines with stems and branches usually beset with stout recurved prickles. Leaves large, petioled, abruptly pinnate, with petiole and rachis often beset with recurved prickles and with leaflets often punctate; stipules prominent or obscure. Flowers yellow, racemose or paniculate, ~~XXXXXXXXXXXXXXXXXXXX~~ not papilionaceous, with narrow deciduous bracts. Calyx with 5 imbricate lobes longer than the tube. Petals 5, subequal, spreading. Stamens 10; filaments pubescent below; anthers longitudinally dehiscent. Pods oval to elliptic, not much longer than wide, subcoriaceous, compressed, usually prickly, dehiscent by both valves. Seeds few, very hard, globose to ovoid, gray or yellow or black, smooth, barely flattened.

NAMED in honor of the 16th Century Prussian botanist and traveler, Melchior Guilandinus, who became professor at Padua after being captured by pirates and ~~XXXXXXXXXX~~ then liberated in Italy.

TYPE SPECIES: *Guilandina bonduc* L.

At least 10 species, chiefly native from tropical and subtropical America to Australia.

OK

over 8

LEGUMINOSAE

PEA FAMILY

## KEY TO LOCAL SPECIES OF GUILANDINA:

Leaves with usually foliaceous stipules; seeds gray or lead-colored - - -  
G. orista

Leaves without foliaceous stipules; seeds yellow ---- G. bonduc.

OK p  
over

## FLORA HAWAIIENSIS

FAMILY: 100

SANTALACEAE  
SANDALWOOD FAMILY

Trees or shrubs or herbs, entirely or partly parasitic on branches or roots. Leaves alternate or opposite, entire, sometimes reduced to scales, estipulate. Flowers often greenish or red, usually small, perfect or unisexual, regular, in spikes or racemes or cymes or heads. Calyx green or petaloid, often somewhat fleshy, adnate to ovary, with 3 - 6 lobes valvate or slightly imbricate in the bud. Corolla none. Stamens of the same number as calyx lobes and opposite them; filaments usually short; anthers 2-celled, ~~longitudinally~~ ~~longitudinally~~ dehiscent. Ovary inferior to almost superior, 1-celled, ~~longitudinally~~ ~~longitudinally~~ with 1 - 5 ovules which are pendulous from basal placenta; disk perigynous or epigynous, sometimes lobed; style more or less simple; stigma usually minute. Fruit indehiscent, nut-like or drupe-like, sometimes with fleshy torus, always 1-seeded. Seed with copious fleshy endosperm and no testa; embryo often oblique, straight, with cotyledons mostly terete.

About 27 genera and over 250 species of wide distribution in tropical and temperate countries; especially abundant in the drier regions. ✓

## FLORA HAWAIIENSIS

FAMILY: 100

SANTALACEAE  
SANDALWOOD FAMILY

Drupe connate with calyx; leaves all ~~perfect and flat~~ <sup>foliaceous</sup> - - - - - SANTALUM ✓

Drupe connate with calyx at base only; leaves mostly rudimentary and denticiform to linear, or (in one Kauai species) all ~~perfect and flat~~ - - - - - EXOCARPUS ✓

## FLORA HAWAIIENSIS

FAMILY: 100

GENUS: Exocarpus

SANTALACEAE  
SANDALWOOD FAMILY

EXOCARPUS Labill.  
(Exocarpos Labill. Voy. 1. 155. pl. 14. 1798.)

Trees or shrubs with nodose branches. Leaves alternate or rarely opposite, either rudimentary and scale-like or foliaceous entire simple and often caducous. Flowers perfect or unisexual by abortion, small, sessile or nearly so in axillary spikes or clusters. Calyx with 4 - 5 lobes somewhat concave at apex. Stamens inserted at base of calyx lobes; filaments very short and wide; anthers exceeding connective, 2-celled with each cell bearing 2 separated sacs that dehisce introrsely by longitudinal slits. Ovary fleshy and somewhat conical, more or less sunken in flat thickish 4- to 5-lobed disk; stigma almost sessile, small, 2-lobed. Fruit a drupe or nut with thickened fleshy torus, only 1 or 2 developing from each inflorescence. Seed with small embryo in upper part of endosperm; cotyledons minute and radicle larger.

NAME derived from the Latin for external and fruit in reference to the drupe or nut which is external to the fruit-like torus.

TYPE SPECIES: Exocarpus cupressiformis Labill.

About 16 species, native chiefly to Australia.

✓  
over P



FLORA HAWAIIENSIS

FAMILY: 100  
GENUS : Exocarpus

SANTALACEAE  
SANDALWOOD FAMILY

*mis. of leaf  
not in leaf*

KEY TO LOCAL SPECIES OF EXOCARPUS:

1. All leaves foliaceous; spikes about 35 mm. long - - E. luteolus
1. Most leaves rudimentary, minute:
  2. Spikes about 6 - 12 mm. long; all leaves rudimentary or a few leaves foliaceous and 1- to 3-~~nerve~~<sup>veined</sup> - - - - - E. Gaudichaudii
  2. Spikes about 4 mm. long; most leaves rudimentary but ~~XXXXXXXXXXXX~~ always a few leaves foliaceous and 5- to 9-~~nerve~~<sup>veined</sup> - - E. sandwichensis

FLORA HAWAIIENSIS

FAMILY: 100  
GENUS : Exocarpus  
SPECIES: Luteolus

EXOCARPUS LUTEOLUS C.N. Forbes  
LEAFY EXOCARPUS; HEAU

*Exocarpus luteolus C.N. Forbes in Occas. Papers Bishop Mus. 4: 296, 1910.*

Shrub 6 - 18 dm. high. Leaves alternate, foliaceous and not scale-like, cuneate to oblong-lanceolate, often somewhat falcate, thick coriaceous, subsessile, yellowish-green, 2.5 - 5.5 cm. long and 1.5 - 2 cm. wide, with about 5 obscure veins. Flowers 4 - 9 toward end of 38 mm. long spike bearing many empty bracts below them. Calyx greenish, of 5 - 6 acute about 1 mm. long lobes. Fruit oblong-cylindric, about 1 cm. long, pointed at apex with 4 indentations and having 5- to 6-dentate torus.

TYPE LOCALITY: "wet places in and ~~XXXXXX~~ bordering the Wahiawa swamp, ~~XXXXXX~~ Kauai."

LOCAL RANGE: Known only from the type locality.

EXTRA RANGE: A close relative of E. sandwichensis and E. Gaudichaudii, and more primitive than both of these.

(Illustrated on following page)

*OK.*

*over*

FAMILY: 267  
GENUS: Punica  
SPECIES: Granatum

PUNICACEAE  
POMEGRANATE FAMILY

PUNICA GRANATUM L.  
POMEGRANATE

Punica granatum L. Sp. Pl. 472. 1753.

Freely branching shrub or even tree up to 6 m. high, partly deciduous, with the smaller branches often hardening and becoming spinelike at tip. Leaves glabrous, with blades somewhat coriaceous, oval to elliptic or oblong, 1 - 8 cm. long, obtuse or acute or rarely retuse at apex, short-petioled. Peduncles 1- to several-flowered and often becoming thickened as fruit matures. Calyx tube at first turbinate but later subglobose, with triangular to triangular-lanceolate tardily deciduous lobes. Petals scarlet to rarely yellowish (or in exceptional cases even white), short-clawed with suborbicular to orbicular-ovate lobes, almost 25 mm. long. ~~XXXX~~ Stamens about 5 mm. long, yellow. Ovary with numerous ovules superposed in a series. Fruit subglobose, 6 - 14 cm. in diameter, brownish-yellow to red. Seed reddish, juicy.

TYPE LOCALITY: "Habitat in Hispania, Italia, Mauritania solo cretaceo."  
LOCAL RANGE: Recorded by Hillebrand as cultivated in the Islands. It is grown in gardens to some extent for its ~~XXXX~~ palatable fruit and its ornamental flowers, and thrives in spite of seasonal drought. A double-flowered form also occurs here. The plants persist after cultivation but fail to become naturalized.

EXTRA RANGE: Native from western Asia to northwestern India. Introduced because of its ~~XXXXXXXX~~ edible fruit in prehistoric times throughout the Mediterranean countries, where it has long been naturalized. As early a writer as Pliny reported that the Carthaginians had developed several horticultural forms. Now planted and naturalized in most tropical and subtropical countries. In the Orient the roots, rind and seeds, all rich in tannin, are used medicinally. Granadine, a sirup, is prepared from the fruit.

(Illustrated on following page)

FLORA MAWATTENSIS

FAMILY: 344  
GENUS: Bidens  
SPECIES: Graciloides

COMPOSITAE  
COMPOSITE FAMILY

BIDENS GRACILOIDES Sherff  
AUNALVA BIDENS; KOKOOLAU

Bidens graciloides Sherff in Bot. Gaz. 76 : 159. 1923.

Glabrous erect shrubby herb commonly 5 <sup>to</sup> 6 dm. high and either branched or simple below. Leaves ~~XXXXXX~~ 3 - 5 cm. long, on slender 1 - 2.5 cm. long petioles, pinnate with 2 - 2 leaflets; leaflets ovate to ovate-lanceolate, renate-serrate, 4 - 1.2 cm. wide, with obtuse or acute apex. Heads loosely subglobose, on slender peduncles up to 6 cm. long, radiate, when flowering 1 - 1.5 mm. wide and 5 - 7 mm. high. Involucre with 4 - 6 linear to oblong-linear hispid to nearly glabrous 2 - 3 mm. long outer bracts having obtuse or acute apices and with lanceolate inner bracts half again ~~XXXXXX~~ longer. Ray florets about 2, yellow, with elliptic dentate ligule 2 - 7 mm. long; pappus more or less curved, flat, not actually winged, linear, 6 - 7 mm. long and 0.6 - 1 mm. wide, with the margins and often the median ridges sparsely setose, without awns.

OVER

TYPE LOCALITY: "Waiālae Iki, ridge, righthand side, Oahu".

LOCAL RANGE: On the comparatively dry, grassy slopes and on the fog-swept cliffs from Waiālae Ridge to the ridge opposite Koko Head, southern side of the Koolau Range of eastern Oahu. In an isolated, dry area on the eastern ~~XXXXXXXXXXXXXXXXXXXX~~ side of Kulikou Valley, the plants are conspicuously slender and lie prostrate in the grass.

EXTRA RANGE: Not known elsewhere.

(Illustrated on following page)

OK  
S

map



## SANTALACEAE

copied

only 1 of  
2 developing  
from each  
infructescence

EXOCARPOS Labill. Voy. 1. 155. t. 14. 1798.

Trees or shrubs with nodose jointed branches. Leaves alternate or rarely opposite, either ~~all~~ reduced scale-like or ~~some~~ foliaceous entire simple and often caducous. Flowers small, sessile or nearly so in axillary spikes or clusters. Perfect or unisexual by abortion. Calyx with 4 - 5 lobes somewhat concave at tip. Stamens inserted at base of calyx-lobes; filaments very short and wide; anthers exceeding connective, 2-celled with each cell ~~having~~ bearing 2 separated loculi that dehisce introrsely by longitudinal slits. Ovary fleshy and somewhat conical, more or less sunken in flat thickish 4- or 5-lobed disk. Stigma almost sessile, small, 2-lobed. Fruit a drupe or nut with thickened fleshy torus. Embryo in upper part of endosperm; cotyledons minute and radicle larger. (Name derived from the Latin for external and fruit in reference to the fruit which is external to the fruit-like torus.) Type species:

About 15 species, found chiefly in Australia.

are within what? B.K. 1  
primaries

FLORA HAWAIIENSIS

FAMILY: 215  
GENUS: Colubrina

RHAMNACEAE  
BUCKTHORN FAMILY

COLUBRINA L.C.Rich.; Brongn. in Ann. Sc. Nat. 1. 10: 368. 1827.

Unarmed trees or shrubs. Leaves opposite or alternate, 3-nerved to pinnately 3-nerved, cordate to elongate, with minute stipules. Flowers perfect, usually in axillary short peduncled cymes. ~~XXXXXXXXXXXXXX~~ Sepals 5. Petals 5, folded inward when young to embrace stamens. Stamens 5; ~~XXXXXXXXXXXXXX~~ filaments short, slender. Ovary practically immersed in disk at flowering time, 3-celled; styles 3, united below; stigmas blunt. Fruit composed of disk and more or less sunken ovary, with somewhat fleshy exocarp or dry, with endocarp finally splitting septicidally to form 3 cocci each dehiscent along the inner edge to expel its single seed. Seed with thick smooth testa, endospermous, occasionally with small aril.

NAME derived from the Latin coluber, meaning serpent.

TYPE SPECIES: Colubrina ferruginosa Brongn.

About 15 species, 2 of them Asiatic or Polynesian and the others of tropical America.

FLORA HAWAIIENSIS

FAMILY: 215  
GENUS: Colubrina

RHAMNACEAE  
BUCKTHORN FAMILY

KEY TO LOCAL SPECIES OF COLUBRINA:

- Straggling shrub with leaves alternate - - - - C. asiatica  
Tree with leaves opposite - - - - - C. oppositifolia

FLORA HAWAIIENSIS

FAMILY: 215  
GENUS: Colubrina  
SPECIES: Asiatica

RHAMNACEAE  
BUCKTHORN FAMILY

COLUBRINA ASIATICA (L.) Brongn.  
Asiatic or Shrubby Colubrina

Ceanothus asiaticus L. Sp. Pl. 196. 1753.

Colubrina asiatica Brongn. in Ann. Sci. Nat. I. 10: 369. 1827.

Rambling shrub, 15 - 30 dm. high, with ultimate branches green and usually about 5 dm. long. Leaves alternate, glabrate, ovate, dentate, acuminate, 4 - 8 cm. long and 2 - 4 cm. wide, on 1 cm. petioles. Flowers perfect, rotate, greenish, 4 mm. in diam., on 3 mm. pedicels subtended by minute bracts, in small axillary clusters on common peduncle about 2 mm. long. Sepals 3-nerved, acute. Petals hooded, equal to sepals in length, before anthesis folded inward to enclose stamens, later explanate. Stamens less than 1 mm. long; anthers minute. Ovary topped by circular, 3 mm. wide, yellow, nectar-secreting intrastaminal disk; style short, bifid. Fruit a brown, trilocular, 3-grooved, about 8 mm. high, depressed globose capsule immersed in the prominent, ridged disk for one third of height. Seeds dark brown, almost 5 mm. long, subglobose with 1 hemispheric and 2 plane sides; embryo large, yellow, surrounded by small amount of white endosperm.

TYPE LOCALITY:

~~LOCAL RANGE:~~ "Habitat in Zeylona."

LOCAL RANGE: Found possibly on all the islands in arid places near the coast. On Oahu it is quite common along the road between Waialua and Laie, where it was collected in 1927. In 1930 it grew in Kamanele Park, Honolulu. On Molokai it was collected along the road east of Ualapue in Oct. 1927. At that time it was in full flower. The plant is very poisonous and was therefore frequently employed by the ancient Hawaiians to narcotize fish to facilitate their capture.

EXTRA RANGE: A plant of wide distribution, probably due to the ability of its seeds to float. It is found in India, Africa, Malaya, Australia and Polynesia; doubtedly reported from Bermuda.

(Illustrated on following page)



CAPPARIDACEAE  
CAPER FAMILYCLEOME ~~XXXXXX~~ GYNANDRA L.  
AFRICAN SPIDER FLOWERCleome gynandra L. Sp. Pl. 671. 1753.  
Cleome pentaphylla L. Sp. Pl. ed. 2. 938. 1763.  
Gynandropsis pentaphylla DC. Prodr. 1 : 238. 1824.

Glandular-pubescent 3 - 9 dm. high erect annual sparsely beset on stem and petioles with translucent coarse hair less than 2 mm. long. Leaves 4- or usually 5-foliolate, with penetrating odor; leaflets elliptic to oval or obovate, 2 - 6 cm. long and 1.5 - 3.5 cm. broad, those nearest the stem the shortest, obtuse to short-acuminate at apex, narrowly or broadly cuneate at base, with entire or minutely denticulate often purplish margin, on 2 - 3 mm. long sulcate petiolule. Flowers on 15 - 25 mm. long pedicels in the axils of short-petioled trifoliolate bracts borne on 1 - 4 dm. long racemes, nocturnal; flower buds with purplish anthers visible between sepals. Calyx of 4 glandular-pubescent deciduous free lanceolate sepals about 5 mm. long. Corolla of 4 subequal white glabrous spatulate petals about 12 mm. long and 6 mm. wide having blade often longer than claw. Stamens 6, subequal, stiff and somewhat spreading, inserted on 1 cm. long slender glabrous androgynophore; filaments purplish, filiform, 13 - 17 mm. long, subequal; anthers 2 mm. long, light greenish purple; pollen dark yellow. Ovary 3 - 4 mm. long, shortly glandular-pubescent, greenish, on short gynophore, with sessile purplish capitate stigma apically depressed. Silique linear, compressed-terete, glandular-pubescent, 10 cm. or less long. Seeds dark brown, somewhat concentrically heavily rugose and muricate, compressed-globose, less than 2 mm. broad.

TYPE LOCALITY: "Habitat in Asiae, Africae, Americae calidissimis."

LOCAL RANGE: A weed or arid localities and waste places first observed in 1827; naturalized on probably all the larger islands. Definitely reported or collected on Oahu and Kauai before about 1871, and on Hawaii near Kawaihae in 1926.

EXTRA RANGE: Native of the Old World but now widely naturalized and practically cosmopolitan in the tropics.

(Illustrated on following page)

## FLORA HAWAIIENSIS

FAMILY: 115

## PHYTOLACCACEAE

## POKEWEED FAMILY

Herbs or vines or shrubs or even trees, with usually glabrous branches which are rounded or angular and erect or procumbent or prostrate. Leaves alternate, entire, petiolate or sessile, usually without stipules or these minute. Flowers regular, perfect or polygamous or monoecious, with minute bractlets or these rarely wanting, placed in terminal or axillary racemes which may be simple or compound. Calyx herbaceous or membranaceous or even coriaceous, 4- to 5-parted or with 4 - 5 sepals which are imbricated in the bud. ~~XXXXXXXXXX~~  
~~XXXXXXXXXX~~ Corolla none or very rarely of 5 membranaceous deciduous petals. Stamens usually as many as calyx segments and alternate with them or more numerous than segments; filaments distinct or somewhat united at base, often persistent on the usually hypogynous disk; anthers 2-celled, with sacs longitudinally dehiscent and often nearly separated. Ovary superior (except in the Mexican genus Agdestis), composed of 1 to usually several free or connate carpels each containing a single ovule; styles wanting or short and as many as the carpels; stigmas capitate or penicillate. Fruit usually berry-like or capsular or samaroid, with each carpel bearing a single erect subglobose lenticular to reniform rarely elongate but often compressed seed with membranaceous or crustaceous testa and usually mealy or fleshy endosperm.

About 25 genera and 125 species, widely distributed but especially numerous in the warmer parts of America and in South Africa.

## FLORA HAWAIIENSIS

FAMILY: 115

## PHYTOLACCACEAE

## POKEWEED FAMILY

## KEY TO LOCAL GENERA:

Ovary of 5 - 20 distinct or united carpels - - - - - PHYTOLACCA

Ovary of 1 carpel - - - - - RIVINA

RIVINA HUMILIS L.  
Rouge Plant.

Rivina humilis L. Sp. Pl. 121. 1753.

Rivina humilis var. condensens L. Sp. Pl. 122. 1753.

Rivina humilis var. glabra L. Sp. Pl. 122. 1753.

Rivina laevis L. Mant. 1: 41. 1767.

long Erect 2 - 8 dm. high, woody herb often pubescent when young and becoming glabrate to glabrous with age. Leaves with 2 - 7 cm. and 1 - 3.5 cm. wide ovate to oblong-lanceolate undulate or entire blades with abruptly narrowed apex and subtruncate base on 5 - 30 mm. petioles. Racemes about 3 cm. long at anthesis and elongating to usually about 7 cm. at maturity of fruit, with about 30 flowers each on slender 2 mm. long pedicels subtended by small subulate caducous bracts. Calyx subtended by a pair of minute persistent bracts, with 1.5 mm. long, narrow sepals that at anthesis are white with usually pink tips and reflexed, at development of fruit are green and somewhat enlarged to surround it, and at maturity of fruit again reflexed. Stamens spreading, shorter than sepals, white; filaments persistent and reflexed in

OK in R

over



fruit; anthers caducous. Ovary as long as filament, white; style filiform, shorter than ovary; stigma capitate. Berry subglobose, faintly grooved, about 3 mm. in diameter, bright red, shiny, juicy, topped by persistent curved style. Seed lenticular, almost 2 mm. in diameter, dark brown, pubescent.

*Jalisco*

*the locality*  
H.L.: ~~Habitat in Caribaeis, Jamaica, Barbados, & ~~Spain~~.~~

*the fruit*  
L.R.: First noticed as a weed in gardens shortly before 1888. It is now sparingly planted in Honolulu and probably in other places ~~because of its taste~~ *because of its taste* ~~bright red berries~~.

*the fruit*  
E.R.: Native to tropical continental America and the West Indies but naturalized in many other warm countries as in the Philippines.

*(Illustrated on following page)*

*OK. 8*

Flora Hawaiian Islands  
PHYTOLACCACEAE ~~Ham.~~ PHYTOLACCACEAE  
PORTWEEED FAMILY

Family: 115

> branches which are ~~and~~  
Herbs, vines, shrubs or trees with rounded or angular, erect, procumbent or prostrate, usually glabrous branches. Leaves alternate, entire, petiolate or sessile, usually without stipules or these minute. Flowers regular, perfect, polygamous or monoecious, with minute bractlets or these rarely wanting, placed in terminal or axillary, simple or compound racemes. Calyx herbaceous, membranaceous or coriaceous, 4- to 5-parted or with 4 - 5 sepals which are imbricated in the bud. Petals usually none, but very rarely 5 which are membranaceous and deciduous. Stamens usually as many as the calyx-segments and alternate with them, or more numerous; filaments distinct or somewhat united at base, often persistent on the usually hypogynous disk; anthers 2-celled, the sacs longitudinally dehiscent, and often nearly separated. Ovary superior, composed of several to rarely 1 closed, free or connate, carpels, each containing a single ovule; styles wanting, or short and as many as the carpels; stigmas capitate or penicillate. Fruit usually berry-like, capsular, or samaroid, each carpel bearing a single erect, subglobose, lenticular, or reniform, rarely elongate but often compressed seed with mem-

(except in *Phytolacca*  
*genus* *Adiantum*)

branaceous or crustaceous testa and usually mealy or fleshy endosperm.

About 25 genera and 125 species, widely distributed but especially numerous in warmer parts of America and in South Africa.



*Margaralla Dick, Clombia 12.9.1890 (Duff Schuyler)*  
RHAMNACEAE

*Colubrina* L.C. Rich.; Brongn. in Ann. Sc. Nat. I. 10: 368. 1827.

Unarmed trees or shrubs. Leaves opposite or alternate, 3-nerved to penninerved, cordate to elongate, with minute stipules. Flowers perfect, usually in axillary short peduncled cymes. Sepals 5. Petals 5, folded inward when young to embrace stamens. Stamens 5, with short, slender filament. Ovary practically immersed in disk at flowering time, 3-celled; styles 3, united below; stigmas blunt. Fruit composed of disk and more or less sunken ovary, with somewhat fleshy exocarp or dry, with endocarp finally splitting ~~into~~ septically to form 3 cocci. Each dehiscent along the inner edge to expel its single seed. Seed with thick smooth testa, endospermous, occasionally with small aril. <sup>7</sup> Name derived from the Latin *coluber*, meaning serpent. ~~Type~~ <sup>7</sup> Type Species: *Colubrina ferruginosa* Brongn.

About 15 species; 2 of them Asiatic or Polynesian, the others of tropical America.

\* over

*Q. 8*

~~Buttler new Calceolaria but could be  
not have made it since saw  
Andros plates:~~

~~Calceolaria Rich.; Brongn. in Ann.  
de Nat. I. 10: 365. 1827~~

~~Marcocella Neck. Elem. 3: 122. 1790~~

~~Tubanthura Comm.; DC. Prodr.  
2: 30. 1825~~

~~Tubanthura katapa Rafin.~~

~~Sylv. Tellur. 154: C. asiatica~~

~~Marcocella Calceolaria Rafin.~~

~~Sylv. Tellur. 31: C. ferruginea~~

\* "Tubanthura Comm.; DC. Prodr.  
2: 30. 1825" is correct generic name  
provided DC. actually made a species  
change into that new genus. He  
does mention as synonym "Ceanothus  
Auratus (Comm. Spec. 284)" but does  
he actually transfer a species to Tubanthura  
if so then Calceolaria must be replaced by  
Tubanthura and then C. asiatica becomes  
Tubanthura asiatica (R.) comb. nov.

910  
CLEOME GYNANDRA L.  
Spider Flower African

CAPPARIDACEAE

Capes Family } *Aspid-*

Family 1142  
with penetrating  
odor?

Cleome gynandra L. Sp. Pl. 671. 1753.  
Cleome pentaphylla L. Sp. Pl. ed. 2. 938. 1763.  
Gynandropsis pentaphylla DC. Prodr. 1 : 238. 1824.

Glandular-pubescent 3 - 9 dm. high erect annual, sparsely beset on stem and petioles with translucent coarse hairless than 2 mm. long. Leaves 4- or usually 5-foliolate; leaflets elliptic to oval or obovate, 2 - 6 cm. long and 1.5 - 3.5 cm. broad, those nearest the stem the shortest, obtuse to short-acuminate at apex, narrowly or broadly cuneate at base, entire or minutely denticulate on often purplish margin, on 2 - 3 mm. long sulcate petiolule. Flowers in 1 - 4 dm. long racemes on 1.5 - 2.5 cm. long pedicels in the axils of short-petioled trifoliate bracts; flower buds with purplish anthers visible between sepals. Flowers on 1.5 - 2.5 cm. long pedicels in the axils of short-petioled trifoliate bracts borne on 1 - 4 dm. long racemes. Calyx of 4 glandular-pubescent deciduous free lanceolate sepals about 5 mm. long. Corolla of 4

~~hermaphrodite~~ ~~nocturnal~~



subequal white glabrous spatulate petals about 12 mm. long and 6 mm. wide having blade often longer than claw. Stamens 6, subequal, stiff and somewhat spreading, inserted on 1 cm. long slender glabrous androgynophore; filaments purplish, filiform, 13 - 17 mm. long, subequal; anthers 2 mm. long, light greenish-purple; pollen dark yellow. Ovary 3 - 4 mm. long, shortly glandular-pubescent, greenish, on short gynophore, with sessile purplish capitate stigma apically depressed. Silique linear, compressed-terete, glandular-pubescent, 10 cm. or less long. Seeds dark-brown, somewhat concentrically ~~XXXXXX~~ heavily rugose and muricate, compressed-globose, less than 2 mm. broad.

*Volcan*  
T.L.: "Habitat in Asiae, Africae, Americae calidissimis."

L.R.: A weed of arid localities first observed in 1857; naturalized on probably all islands. Definitely reported or collected on Oahu and Kauai before 1858, and on Hawaii near Kawaihau in 1926 (- D.S.W. 3543).

E.R.: Native of the Old World but now widely naturalized and practically cosmopolitan in the tropics.

OK

NEW COPY

LOBELIA HAWAIIENSIS

FAMILY: Lobeliaceae

GENUS: Cyanea

SPECIES: Truncata

LOBELIACEAE  
LOBELIA FAMILY

CYANEA TRUNCATA Rock

~~XXXXXXXXXXXXXXXXXXXX~~

PUNALUU CYANEA

*Rollandia truncata* Rock in *Holl. Haw. Publ. Bull.* 2 : 44. 1913.

*Cyanea Juddii* Forbes in *Occas. Pap. B.P. Bishop Mus.* 6.3: 68. ~~XXXXXXXX~~ 1916.

*Cyanea truncata* Rock in *Torrey Bot. Cl. Bull.* 44 : 234, pl. 15. 1917.

A plant 3 - 18 dm. high, with fleshy densely muricate (especially when young) to almost smooth stem. Leaves large, chartaceous, broadly obovate-oblong, acute at apex, obtuse or sometimes decidedly truncate at base with perhaps slight indication of becoming subcordate, pale green, glabrous above except for a few minute conical to curved spines which are scattered especially on the veins, 35 - 45 cm. long and 14 - 20 cm. wide, puberulous and pale beneath, with margin undulate to coarsely dentate especially toward base, and with muricate to spiny petioles 8 - 14 cm. long. Flowers on long slender 18 - 26 mm. long pubescent pedicels which are single in the axil of a bract and are bibracteolate at or below the middle; racemes axillary, slender, about 55 mm. long, bracteate from the base, hispidulous, the number of bracts increasing toward the apex so that the entire inflorescence is rather broadly contracted and bears mature flowers below while the apical ones yet occur as minute buds. Calyx 10 mm. long, with ovarian portion obconic and about 5 mm. long, and with subequal lobes about 2 mm. long and broadly obtuse but the 2 lateral lobes slightly narrower than the others. Corolla pale purplish-pink, slender, sparingly puberulous in the bud and glabrous to glabrate later, slightly curved or almost straight, with dorsal slit extending to the middle, 32 mm. long and 5 mm. wide, almost of even width, the lobes conspicuously white (even while very immature) and the 3 lower lobes 5 - 7 mm. long. Staminal column glabrous, free, pale; anthers bluish-purple, glabrous, the 2 lower bearded.

TYPE LOCALITY: "Mountains of Punaluu, valley trail, elevation 1000 feet" Oahu.

LOCAL RANGE: In the mountains of Punaluu and Waihole, Oahu. An interesting species superficially resembling a *Rollandia*. The specific name *truncata* is unfortunate as the leaf base of the plant is not typically truncate. The habit sketch on the following plate depicts a plant bearing an almost smooth stem. The section of muricate stem, shown below it, came from another specimen growing in the same locality.

EXTRA RANGE: Not known elsewhere.

(Illustrated on following page)

mp

60k  
P

POLYPODIACEAE  
FERN FAMILY

FAMILY: 17  
GENUS : Blechnum  
SPECIES: Occidentale

BLECHNUM OCCIDENTALE L.  
OCCIDENTAL BLECHNUM

*sphalm;*  
Blechnum orientale L. Sp. Pl. 1077. 1753. (~~an~~ oversight for B. occidentale.)  
Not Blechnum occidentale L. Sp. Pl. 1077. 1753. (~~an~~ oversight for B. orientale)  
Blechnum occidentale L. Sp. Pl. Ed. 2 : 1534. 1763. *sphalm;*

Coarse tufted fern with erect to curved-ascending rootstock up to 12 cm. long and 2 cm. thick covered with tawny-ferruginous scales and producing extensively creeping stolons. Fronds ascending, stiff, pale, usually 3 - 6 dm. long, with stipes of fertile fronds usually about as long as the blades and those of sterile fronds usually somewhat shorter; stipes stramineous, usually sulcate, lower part sparingly bearing tawny-ferruginous linear-lanceolate scales 5 mm. or less long; Blades oblong-lanceolate in outline, ~~XXXXXX~~ subcoriaceous, pinnate at base and often for entire lower half but above pinnatifid and toward apex subcaudate, usually 2 - 5 cm. long and 6 - 10 cm. broad. Pinnae slightly falcate, subentire, about 1 cm. wide, with scabrous minutely cartilaginous-serrulate margins, glabrous above and usually glabrous or nearly so beneath; basal pinnae usually subopposite, more distant, somewhat shorter, often slightly deflexed, usually shortly stipitate and somewhat auricled; upper pinnae usually alternate, narrowly joined. Sori not quite reaching tip of pinnae, continuous, with indusia at first meeting at midrib but later reflexed and overlaid by the sporangia. Veins close, usually ~~XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX~~ forking 1 or 2 times.

TYPE LOCALITY:

LOCAL RANGE: Introduced probably accidentally and first noticed naturalized on Oahu at Makaleha Valley around 1923. Between that date and 1930 it has

*msP* *over* *OK*



been collected on Oahu chiefly by D.L. Topping and the writer along the old  
fire-break trail at the base of Kalena, and along the Waihole-Vaikane Water  
trail. It was found by the same collectors in 1927 south of Mt. Eke, Maui;  
in 1928 it was found in Mapulehu Valley, Molokai. This fern is spreading  
very rapidly along ~~XXX~~ dry, partly shaded embankments.

EXTRA RANGE: A very common fern native to tropical America.

(Illustrated on following page)

m. B.

OK. J.

MYRTACEAE  
MYRTLE FAMILY

*EUGENIA WAIANENSIS* Degener

*WAIANAE EUGENIA* ; NIHOI

*Eugenia variflora* var. *parvifolia* Hilleb. Fl. Haw. Isl. 129. 1888.

Not *Eugenia parvifolia* DC. Prod. 3: 266. 1828.

*Eugenia waianensis* sp. nov.

commonly 3

Tree 3 meters high with numerous rough reddish brown branches and small twigs fulvous-tomentose when young. Leaves fragrant when bruised, glabrous, shiny on both surfaces, dark green and densely punctate with minute whitish dots above, pale green and scattered-punctate with minute dark dots beneath, entire, thin-coriaceous, oblanceolate-elliptic to obovate-elliptic, 12-20 mm. wide and 2-4 cm. long, obtuse at apex, acute at base into 2-4 mm. long petiole. Flowers with a pair of 1 mm. long subulate fulvous-tomentose bracts below calyx tube, and 3-8 mm. long slender peduncles in the axils of fulvous-tomentose bracts always in pairs (only by injury reduced to 1), each on 3-8 mm. long slender peduncle in the axil of fulvous-tomentose bractlet which is borne decussate in the axil of unmodified leaf; terminal bud between peduncles.

Calyx tube puberulous, subconical, 2 mm. long, its 4 imbricate green broadly ovate lobes unequal in length and on lower side punctate with yellowish dots, one pair of lobes being 2 mm. and the other 3 mm. long. Petals broadly ovate to orbicular, 6-7 mm. long and about 5 mm. wide, spreading, concave, white with often greenish tinge toward apex. Stamens about 150; filaments free, white, 3-5 mm. long, anthers white. Ovary 2-celled, with about 8 ovules in each cell; style 4 mm. long, linear-clavate, glabrous, white; stigma minute. Berry obovoid, light orange, about 15 mm. long and 10 mm. wide, with somewhat succulent flesh 1.5-2 mm. thick, crowned by persistent calyx lobes. Seed single, yellowish, subglobose, with seed-coat about 0.5 mm. thick.

TYPE LOCALITY: Northern slope of Kaala, Oahu.

LOCAL RANGE: A rare tree growing on the drier foothills of Mt. Kaala, western Oahu; for example on the southern slope of Makua Valley, in Kahanahakai Valley, and in the Mokuiaia region.

EXTRA RANGE: Not known elsewhere; closely related to *Eugenia hawaiiensis* from which it differs chiefly in its smaller leaves.

(Illustrates on following page)

## COMPOSITAE

## COMPOSITE FAMILY

BIDENS ASYMMETRICA (Lavl.) Sherff  
ASYMMETRICAL BIDENS; KOKOLAU

*Bidens gracilis* Nutt., Trans Amer. Phil. Soc. Ser. 2. 7 : 368. 1841.  
Not *Bidens gracilis* Torr. Ann. Lye. N. Y. 2 : 215. 1828.  
*Campylotricha gracilis* Walp. Repert. Bot. Syst. 2 : 618. 1843.  
*Lipochaeta asymmetrica* Lavl. in Fedde Repert. Sp. Nov. 10 : 122. 1912.  
*Bidens asymmetrica* Sherff in Bot. Gaz. 81 : 49. 1926.

Slender glabrous probably 6 - 9 dm. high shrub with often reddish branches. Leaves serrate or even laciniate-dentate, acuminate; sometimes simple and ovate to lanceolate, 3 - 13 cm. long and 1 - 3.5 cm. wide; sometimes tripartite with terminal leaflet lanceolate and 4 - 5 cm. long and 1 - 1.5 cm. wide while lateral leaflets are also lanceolate but only about half the size; petioles slender, 1 - 6 cm. long. Heads small, trichotomously paniculate, ligulate, when flowering about 1 - 2 cm. wide and 3 - 7 mm. high, on slender pedicels 2 - 25 mm. long. Involucre with outer bracts linear and spreading and above more or less glandular, and with the inner bracts (sometimes even doubly) longer ~~XXX~~ and not spreading. Ray florets usually 4, widely oblong-ob lanceolate, yellow, 3 - 11 mm. long, often obscurely 2- to 2-denticulate. Achenes commonly more or less twisted, linear, with body 6 - 14 mm. long, ~~XX~~ with faces and margins glabrous or very sparsely hispid, with apex setulose-ciliate, sometimes very shortly 2-toothed with the teeth 0.3 - 0.8 mm. long and glabrous or toward apex retrorsely hispidulose, or with achenes sometimes 1-toothed or even without any teeth; in a single head often all achenes of the same kind.  
TYPE LOCALITY: Kalihi, Oahu.  
LOCAL RANGE: ~~XXXXXXXXXX~~ On the comparatively dry, grassy slopes of ~~XXXXXX~~ ~~XXXXXXXXXXXXXXXXXXXXXXXXXXXX~~ Kahauiki and probably Kalihi Ridges, Oahu.  
EXTRA RANGE: Not known elsewhere.

(Illustrated on following page)

OK.  
-8

mnp



## LEGUMINOSAE

## PEA FAMILY

*PITHECOLLOBIUM DULCE* (Roxb.) Benth.  
QUAMACHIL (MADRAS THORN; INCA, MANILA TAMARIND); locally called by the Hawaiian name OPIHULA

*Mimosa dulcis* Roxb. Pl. Corom. 1: 67. pl. 39. 1795.  
*Pithecollobium dulce* Benth. in Hook. Lond. Journ. Bot. 3: 199. 1844.  
*Pithecollobium dulce* Benth.; Britton & Wilson in Sc. Surv. Porto Rico & Virg. Isl. 5: 349. 1924. [primus?] ]

A quick-growing tree becoming 18 meters high but commonly much smaller, with smooth light gray bark and slender glabrate drooping branches green toward their ends and punctate with many small yellowish lenticels. Leaves and leaflets 1-pinnate, pale green, thin-coriaceous, prominently veined, glabrate; petioles up to 4 cm. long, flattened and grooved on upper side, bearing small stipitate gland toward apex; petiolules 12 mm. long or less, with small stipitate gland toward apex; leaflets subsessile, obovate to oblong, 5 cm. long or less, very oblique, usually obtuse; stipular thorns straight, usually soft and small but with age often enlarging and becoming woody. Flowers yellowish-white, in axil of small bract, about 20 together to form short-peduncled to sessile heads which are arranged in long drooping panicle racemes. Calyx funnelform, 2 mm. long, puberulent, obscurely toothed. Corolla funnelform, greenish, 4 mm. long, puberulent, with acute lobes. Stamens about ~~XXXX~~ 50; filaments connate one-fourth their length, 1 cm. long, yellowish; anthers conspicuously 2-celled, yellow. Ovary stipitate, 4 mm. long, yellowish, densely pubescent; style glabrous, 1 cm. long, often reddish. Fruit linear, turgid, light red on ripening, spirally twisted, 10 - 13 cm. long and 1 - 1.5 cm. broad, containing 6 - 10 seeds. Seeds shiny, black, flat and irregularly circular, about 7 mm. in diameter, with funicle dilated at apex into a fleshy white aril.

TYPE LOCALITY: "This is not a native of the Coast of Coromandel, probably not of India; it has been introduced from the Philippine Islands, for the sake of the pulp which fills the legumes." Benth, fifty years later, corrects the implication that the plant is a native of the Philippines. He states that it originated "In the hot regions of Mexico, and introduced from thence to the Philippine Islands, and from those islands into East India."

LOCAL RANGE: Introduced probably around 1870. First recorded by Hillebrand, who prophesied that the plant "promises to become generally spread." It is sometimes cultivated in the Islands as a shade tree, suitable especially for drier regions ~~XXXX~~ at lower elevations. The spongy, sweetish aril contained in the pods, ripening from April to June, is eaten by cattle and is greatly relished by the false myna bird. Thus the seeds become scattered, and hence the tree may be found occasionally naturalized in pastures and waste places. In Mexico the beans are used as fodder for cattle, while the pulp is sold for human food and is said to be made into a beverage similar to lemonade. The bark contains about 25% tannin and is therefore of considerable economic importance. In some countries, the young trees are grown and clipped into hedges. In the Hawaiian ~~XXXXXX~~ Islands the black seeds are made into leis.

EXTRA RANGE: Native to Central America; ~~XXX~~ naturalized in the tropics of the Old World several centuries ago.

(Illustrated on following page)

Shrub about 8 dm. high with glabrous stem and subquadrangular somewhat purplish glabrous branches having their internodes much shorter than the leaves. Leaves trifoliate, glabrous, membranous, 7 - 13 cm. long, with slender petioles 1.5 - 3.5 cm. long; leaflets with ~~outer two-thirds of margin~~ strongly toothed or in the case of the upper leaves sometimes ~~also~~ entire, acuminate, the sessile or sparingly petiolulate lateral leaflets lanceolate with very oblique base and 4 - 6 cm. long and 1.5 - 2.5 cm. wide, the terminal leaflet often ovate-lanceolate and conspicuously petiolulate with blade 5 - 7 cm. long and up to 4 cm. wide. Heads on persistently pubescent ~~often~~? - 4 mm. long pedicels, extremely numerous in corymbose panicle, radiate, when flowering about 7 - 10 mm. wide and 3.5 - 5.5 mm. high. Involucre pubescent, with 4 or 5 exterior bracts up to about 1.5 mm. long and having apices often subobtusate, and with inner bracts lanceolate and about 2.5 - 3 mm. long. Ray florets 5 or rarely 6, yellow, with obovate to somewhat cuneate 3 - 4 mm. long ligule having apex moderately or often deeply and conspicuously cut into 2 or 3 lobes of which the apex is more or less acute. Maturing achenes linear, 7 - 8 mm. long and about 1.2 mm. wide, flat, dark brown, glabrous, shallowly few-striate, with margins often beset with 1 - 3 elongate erect up-growing setae and with top beset just below or almost at apex with 2 teeth which are naked or armed with 1 - 3 retrorse bristles. Chaff glabrous, slightly longer <sup>only</sup> than achenes.

TYPE LOCALITY: "near Huchue, Island of Hawaii".

LOCAL RANGE: Growing among the old lava flows near Huchue, District of Kona, Hawaii.

EXTRA RANGE: Known only from the type locality. Closely related to Bidens micrantha Gaud.

Degener & Sherff 11/1/22

*Illustrated in following page*

FLORA HAWAIIENSIS

FAMILY: 344

GENUS: Bidens

SPECIES: Obtusiloba

COMPOSITAE

COMPOSITE FAMILY

BIDENS OBUSILOBA Sherff

OBUSELY-LOBED BIDENS; KOKOOLAU

usually

all dissected into obtuse and apically minute cuspidate lobes on teeth.

commonly

Bidens obtusiloba Sherff in Bot. Gaz. 88: 289. 1929.

Glabrous shrub about 6 dm. high, with quadrangular branches and with the lower internodes much shorter than the leaves. Leaves up to 8 cm. long, membranous, ~~obtusely~~ ciliate, bipinnately (or sometimes biternately) parted or divided; primary segments oblong-ovate to often deltoid in outline, 1.5 - 3.5 cm. long and a little narrower, the lateral ones short-petiolulate. Heads not numerous, more or less corymbose, radiate, when flowering 10 - 15 mm. wide and 5 - 7 mm. high, on slender pedicels up to 18 mm. long. Involucre glabrous or at base pubescent, with 4 or 5 linear outer ~~bracts~~ bracts about 2 mm. long having subacute apex and with lanceolate inner bracts about half twice as long. Ray florets about 4 or 5, yellow, more or less 5 mm. long, narrowly obovate, 2- or 3-dentate. Achenes linear, dark brown, with ~~bracts~~ strongly obcompressed 6 - 7.5 mm. long and about 1 mm. wide body having one side about 8-striate and ~~both sides~~ merely setose toward top while the margins are setose with erect hairs, apex without teeth but hispid with erect hairs.

TYPE LOCALITY: "Niu Ridge, Island of Oahu".

LOCAL RANGE: Found along the moderately dry, grassy and partly shrubby slopes of Niu Ridge, eastern Oahu.

EXTRA RANGE: Not known elsewhere. Apparently closely related to Bidens pulchella (Less.) Schz. Bip.

Degener & Sherff 11/1/22

FLORA HAWAIIENSIS

FAMILY: 344

GENUS: Bidens

SPECIES: Gracililoba

COMPOSITAE

COMPOSITE FAMILY

each than 10 K.



FLORA HAWAIIENSIS

FAMILY: 344  
GENUS: Bidens  
SPECIES: Salicoides

COMPOSITAE  
COMPOSITE FAMILY

BIDENS SALICOIDES Sherff  
WILLOW-LEAVED BIDENS; KOKOOLAU

Bidens salicoides Sherff in Bot. Gaz. 86 : 437. 1928.

Erect glabrous branched shrubby perennial becoming about 6 dm. high, with stem and branches more or less quadrangular. Leaves becoming about 15 cm. long, the principal ones irregularly 2- to 5-pinnate or often 2- to 5-parted, membranous, having narrow petiole 5 cm. long or less; segments lanceolate to broadly linear, with margins entire or occasionally with a few coarse teeth and often obscurely revolute, with the terminal segment up to 8 cm. long and 12 mm. wide but with lateral ones smaller and sessile or subsessile; upper leaves usually ternate or even simple. Heads subcorymbose, radiate, when flowering about 15 mm. wide and 6 - 8 mm. high, on slender 1 - 4 cm. long pedicels. Involucre glabrate, of usually 6 - 7 narrowly linear about 3 - 4 mm. long outer bracts having black central vein projecting into subacute coriaceous apex, and with inner bracts lanceolate-ovate and a little shorter. Ray florets 3 or 4 or perhaps even 5. Yellow, linear-elliptic, 1.2 - 1.4 cm. long, with apex obscurely denticulate. Achenes linear, flat, bluish-black, not winged, straight or moderately curved, mostly glabrous, ~~XXXXXX~~ with about 16 ~~XXXXXXXXXXXX~~ longitudinal obscure grooves, with body 7 - 10 mm. long and apex bearing 1 or 2 naked <sup>awns</sup> teeth 1 mm. long or less or <sup>perhaps</sup> teeth absent.

TYPE LOCALITY: "Arid region, East Oahu, Isl. Molokai."

LOCAL RANGE: Known only from a single plant growing on a mountain slope, in central Molokai.

EXTRA RANGE: Not known elsewhere.

Degener & Sherff 11/ / 31.

FLORA HAWAIIENSIS

FAMILY: 344  
GENUS: Bidens  
SPECIES: Populifolia

cap. → Compositae  
COMPOSITE FAMILY  
BIDENS POPULIFOLIA Sherff  
POPLAR-LEAVED BIDENS; KOKOOLAU

Bidens populifolia Sherff in Bot. Gaz. 86 : 438. 1928.

Annual or possibly perennial glabrous more or less simple or <sup>even</sup> also much branched herb becoming 8 dm. high, with ~~XXXX~~ quadrangular stem. Leaves almost always simple, membranous, quite pale, scarcely ciliate, with slender petioles 1.5 cm. to even 10 cm. long, <sup>and</sup> with mostly undivided ovate-cordate to deltoid-cordate 3 - 10 cm. long blades having margins serrate with rounded obtuse teeth and with base often subcordate or also obliquely truncate and with apex subobtuse to acute or rarely more or less subacuminate; leaves very rarely 2- to 3-partite, more or less irregularly so, with terminal leaflet broadly rhomboid-lanceolate or ovate-lanceolate or orbicular, with lateral ones oblique and rhomboid-ovate. Heads not numerous, borne in corymbose open clusters, radiate, on slender pedicels 5 cm. long or less, when flowering about 3 cm. wide and 7 - 9 mm. high. Involucral bracts subequal, up to 2 dm. long (including

TYPE LOCALITY: "Grassy slope back of small Hawaiian church on east side of Kahana Valley, Isl. Oahu."



LOCAL RANGE: Locally common on the slopes of Kahana Valley, Oahu.  
EXTRA RANGE: Not known elsewhere.

Degener & Sherff 11/1/31

5 - 7 on outside, spreading-reflexed, glabrous, sometimes oblong-linear to spatulate-obovate with obtuse to rounded apex, 1.5 - 3.5 mm. long; inner bracts lanceolate, minutely pubescent toward apex, 5 - 6.5 mm. long, straight. Ray florets, 4 - 6 or rarely 5, yellow, with oblong-linear to oblanceolate 12 - 15 mm. long ligules having apex usually 3-dentate. Chaff red toward apex. Achenes narrowly linear, straight, wingless, almost black, obcompressed, with one face obscurely about 8-striate, with margins sparsely ciliate with erect hair, with body 7 - 12 mm. long and 0.8 - 1.1 mm. wide, with apex usually biaristate with slender teeth 1 mm. long or less bearing retrorse hair.

FLORA HAWAIIENSIS  
FAMILY: 344  
GENUS: Bidens  
SPECIES: Wiebkei

COMPOSITAE  
COMPOSITE FAMILY

BIDENS WIEBKEI Sherff  
WIEBKE'S BIDENS; KOKOOLAU

Bidens Wiebkei Sherff in Bot. Gaz. 86 : 435. 1928.

sharply

Erect glabrous herb attaining 1 meter in height, woody at base, with branches conspicuously quadrangular and often somewhat purplish. Leaves membranous, up to 13 cm. long, with slender petioles usually 2 - 4.5 cm. long and with 3- or 5-parted blade having lanceolate, ~~conspicuously~~ serrate segments the terminal one being the larger and moderately acuminate while the lower ones are often shortly petiolulate. Heads radiate, numerous in corymbose clusters, on very slender glabrate pedicels, when flowering 1 - 2 cm. wide and about 4.5 - 6 mm. high. Involucral bracts on outside 4 - 6, spreading to suberect, linear, with somewhat obtuse apex, on outer surface often hispidulous, 2 - 3 mm. long; inner ones lanceolate, mostly 3 - 4.5 mm. long. Ray florets 4 - 6, yellow, with oblong to broadly oblanceolate-elliptic ligule, 5 - 9 mm. long, with apex usually 3-toothed. ~~XXXXX~~ Achenes 6 - 8 mm. long and 0.9 - 1.2 mm. wide, finally becoming black, shiny, much obcompressed, curved or often even twisted through 1 - 2.5 revolutions, margined or winged, with sides of body glabrous or sparsely erect-setose and with margins glabrous or very sparsely erect-setose, at apex with 1 or 2 filiform teeth 1.5 mm. long or these ~~teeth~~ <sup>teeth</sup> ~~often~~ wanting. <sup>or much below</sup>  
TYPE LOCALITY: "in scrub vegetation, upper part of Halawaiki Gulch, Isl. Molokai."

LOCAL RANGE: Growing here and there in the open forest and grassy plateau between Halawaiki Gulch and Kaunupahu, Molokai. <sup>Named in honor of the western efficient Hawaiian collector.</sup>  
EXTRA RANGE: Not known elsewhere.

Degener & Sherff 11/1/31

FLORA HAWAIIENSIS  
FAMILY: 344  
GENUS: Bidens  
SPECIES: Schizoglossa

COMPOSITAE  
COMPOSITE FAMILY

BIDENS SCHIZOGLOSSA Sherff  
HUEHUE BIDENS; KOKOOLAU

Bidens schizoglossa Sherff in Bot. Gaz. 88 : 288. 1929.

OK-8

BIDENS GRACILOIDES Sherff  
WAIALAE BIDENS; KOKOOLAU

again longer.

Bidens graciloides Sherff in Bot. Gaz. 76 : 159. 1923.

Glabrous erect shrubby herb commonly about 5 or 6 dm. high and either branched or simple below. Leaves 3 - 5 cm. long, on slender 1 - 2.5 cm. long petioles, pinnate with 3 or 5 leaflets; leaflets ovate to ovate-lanceolate, orenate-serrate, 4 - 1.2 cm. wide, with obtuse or acute apex. Heads loosely subgymbose, on slender peduncles up to 6 cm. long, radiate, when flowering 11 - 15 mm. wide and 5 - 7 mm. high. Involucre with 4 - 6 linear to oblong-linear hispid to nearly glabrous 2 - 3 mm. long outer bracts having obtuse or acute apices and with lanceolate inner bracts half as long. Ray florets about 5, yellow, with elliptic dentate ligule 5 - 7 mm. long. Achenes more or less curved, flat not actually winged, linear, 6 - 7 mm. long and 0.6 - 1 mm. wide, with the margins and often the median ridges sparsely setose, without teeth.

TYPE LOCALITY: "Waiale Iki, ridge, righthand side, Oahu".

LOCAL RANGE: On the comparatively dry, grassy ~~Waiale Ridge~~, eastern Oahu.

EXTRA RANGE: Not known elsewhere.

slopes from Kilauea to Waialeae

Degener & Sherff 11/ - 131

FLORA HAWAIIENSIS

FAMILY: 344

GENUS: Bidens

SPECIES: Asymmetrica

awns  
commonly more or less

COMPOSITAE  
COMPOSITE FAMILY

BIDENS ASYMMETRICA (Lévl.) Sherff  
ASYMMETRICAL BIDENS; KOKOOLAU

widely oblong-oblanesolate  
more often 4

Bidens gracilis Nutt., Trans. Amer. Phil. Soc. Ser. 2 : 7 : 368. 1841.

Not Bidens gracilis Torr. Ann. Lyc. N. Y. 2 : 215. 1828.

Campylotheca gracilis Walp. Repert. Bot. Syst. 2 : 618. 1843.

Lipochaeta asymmetrica [Sphalm.] Lévl. in Fiedt Repert. Sp. Nov. 10 : 122. 1912.

Bidens asymmetrica Sherff in Bot. Gaz. 88 : 2. 1924.

Slender glabrous probably 6 - 9 dm. high shrub with reddish branches. Leaves serrate or also lacinate-dentate, acuminate; sometimes simple and ovate to lanceolate, 3 - 5 cm. long and 1 - 3.5 cm. wide; sometimes tripartite with terminal leaflet lanceolate and 4 - 5 cm. long and 1 - 1.5 cm. wide while lateral leaflets are also lanceolate but only about half the size; petioles slender, 1 - 6 cm. long. Heads small, trichotomously paniculate, ligulate, when flowering about 10 mm. wide and 5 - 7 mm. high, on slender pedicels 5 - 25 mm. long. Involucre with outer bracts linear and spreading and above more or less glandular, and with the inner bracts lanceolate, yellow, half the size and not spreading. Ray florets about 5, lanceolate, yellow, 3 - 10 mm. long, dentate. Achenes twisted, linear, with body about 6 mm. long, with faces and margins glabrous or very sparsely hispid, with apex setulose-bilicate, sometimes very shortly 2-toothed with the teeth 0.3 - 0.8 mm. long and glabrous or toward apex retrorsely hispidulose, or with achenes sometimes 1-toothed or even without any teeth; in a single head often all achenes of the same kind.

TYPE LOCALITY: ~~Waiale Iki, ridge, righthand side, Oahu~~

LOCAL RANGE:

EXTRA RANGE:

What is the exact range?  
often obscurely 2-3-denticulate

(sometimes even doubly longer)  
D. L. L.

Bidens sandwicensis Gray in Proc. Amer. Acad. 5 : 128. 1862.  
Not Bidens sandwicensis Less. in Linnaea 6 : 508. 1831.

asymetrica

Gray's *B. sandwicensis* belonged here only in  
so far as it included *B. gracilis* Nutt. It really  
was a hodge-podge, including even *B. paniculata*  
H. & A. (= *B. australis* Spreng.), a very different  
species of the <sup>more</sup> southern Pacific region.

Exact range hard to say. But you have it from  
Fort Shafter (<sup>your</sup> #2096) and Forbes 11840 comes from  
Moanalua Valley. Anyway it is known only from  
Oahu.

and in fact implies that they should be made.  
→ Oct 57 of Botany. Also (Warming) plants collected at same  
place.



## CACTACEAE

*Cactus family*

HYLOCEREUS UNDATUS (Haw.) Britton &amp; Rose

Night-Blooming Cereus

Cereus undatus Haw. Phil. Mag. 7 : 110. 1850.Cereus triangularis Hbd. Fl. Haw. Isls. 141. 1888.Cereus triangularis Wilder, Fruits Haw. Isls. 220. 1911.Cereus triangularis Rock, Orn. Trees Haw. 160. 1917.Not Cereus triangularis Haw. Syn. Fl. Succ. 180. 1812.Hylocereus undatus Britton & Rose

Stems light green, long, climbing over banks, rocks or up trees with about 6 dm. long joints bearing 2 - 6 cm. wide narrow wings. Wings with margins yellow-horny, undulate, with resulting depressions spaced 3 - 4 cm. apart. Single areole situated in each depression, sparingly felted around 1 - 5 spreading rigid brown 2 - 4 mm. long spines. Flowers fragrant, blooming for one night only, single, campanulate, about 3.5 dm. long and 1.5 dm. wide, slightly curved at base, almost horizontal. Bracts surrounding ovary green, ovate-deltoid, 1 - 5 cm. long; outer perianth segments above ovary greenish-yellow, connate to form about 3 cm. wide and 15 cm. long tube bearing free reflexed linear-lanceolate segments about 11 cm.

long and 1 - 1.5 cm. wide <sup>commonly</sup> in about 3 rows; inner perianth segments usually 20, white erect, ~~about~~ 10 cm. long and 3 - 4 cm. wide, oblong-lanceolate with mucronate apex. Stamens very numerous, cream-colored, inserted at various heights from near base to top of perianth tube and projecting for about 7 cm. to form graceful curving fringe around pistil; filaments filiform; anthers flat, 5 mm. long and 1 mm. wide, basifixed. Ovary about 3 cm. long, containing numerous minute ovules attached to long funicles; style cream-colored, about 22 cm. long and 7 mm. thick, hollow; stigma with about 24 spreading 25 mm. long cream-colored glandular lobes connate at base. Fruit oblong, <sup>about</sup> 8 cm. long and 5 cm. thick, somewhat shiny, crimson, sparingly covered with fleshy bases of scales about 1.5 cm. wide, within crimson for about 3 mm. near periphery, the remaining part white translucent, sweet, not mealy, containing seeds spaced about ~~XXXXXX~~ 7 mm. apart. Seeds 3 mm. long, 2 mm. wide, 1 mm. thick, with crustaceous black testa ~~surrounded~~ by mucilage; partly hollow.

12  
New York  
T.L.:

L.R.: Of early introduction on probably all <sup>the</sup> islands; found occasionally escaping. The fruit, which seldom matures in these islands, is edible. The Cereus-covered stone-wall around Puna'hou School, Honolulu is a magnificent sight in the evening during the short summer flowering season. Because of the beauty of the flowers, a law was passed in 19-- forbidding

MYRTACEAE  
MYRTLE FAMILY*EUGENIA KAIPAPAUENSIS* Degener  
KAIPAPAU *EUGENIA*; NIOI*Eugenia kaipapauensis* sp. nov.

Tree about 5 meters high or less with yellowish-brown bark scaling off in darker patches and with numerous rough reddish brown erect branches bearing many small ~~XXXXX~~ grayish twigs. Leaves fragrant when bruised, above ~~XXXXXX~~ glabrous and dull-shiny or fulvous-tomentulose especially near midrib and veins, below ~~XXXXXX~~ strigose-tomentulose with fulvous to whitish hair and pale and dull-shiny, thin-coriaceous, conspicuously rugose and shallowly impressed along midrib and the 4 or 5 pairs of veins, with margins entire but more or less strongly revolute sometimes to such an extent to almost meet, obovate-elliptic, 3 to rarely 8 cm. long and 1.5 to rarely 4 cm. wide, with rounded to obscurely short-cuspidate apex, ~~XXXXXX~~ somewhat acute at base to 3 - 5 mm. long petiole. Flowers with a

pair of persistent 1 mm. long subulate fulvous-tomentose bracts below calyx tube, always in pairs (only by injury reduced to 1), each on 2 - 6 mm. or very rarely even to 10 mm. long peduncle in the axil of fulvous-tomentose bractlet which is borne decussate in the axil of unmodified leaf; terminal bud between peduncles. Calyx tube ~~XXXXXX~~, subconical, 2 mm. long, its 4 green broadly ovate to oblong lobes unequal in length and on lower side pubescent and punctate with yellowish dots, one pair of lobes being 3 mm. and the other 4 mm. long. Petals broadly obovate, about 7 mm. long and about 6 mm. wide, spreading, concave, white with often greenish tinge toward apex, on under side punctate with yellowish dots, fulvous-tomentose. Stamens about 140; filaments free, white, 3 - 6 mm. long; anthers white. Ovary 2-celled, with about 8 ovules in each cell, upper surface tomentulose; style almost 3 mm. long, linear, glabrous, white; stigma minute. Berry somewhat erect, obovoid, light orange, shiny, sparingly fulvous-strigose, about 15 mm. long and 12 mm. wide, with somewhat succulent yellowish acid flesh 2 mm. thick, crowned by persistent calyx lobes. Seeds single, yellowish, subglobose, 7 mm. in diameter.

TYPE LOCALITY: Northern slope of Kaipapau Valley, Oahu.

LOCAL RANGE: A rare tree known from the drier, open, forested slopes of Kaipapau Valley, near Hauula, Oahu. Probably to be found in the neighboring valleys as well.

EXTRA RANGE: Not known elsewhere. Closely related to *Eugenia*

6K 8



LILIACEAE

DRACAENA Waianaeensis Degener (sp. nov. from Kawaihapai)

SMALL-LEAVED DRACAENA; HALAPEPE

Dracaena sp. degeneri, Blanchet Hawaii Nat. Parks 75, 1900.

Dracaena waianaeensis Sp. Nov.

Glabrous 5 meter high tree with smooth grayish bark and upright yellowish 15 mm. thick stems conspicuously ridged with leaf scars particularly toward the end. Leaves linear, about 45 cm. long and 1 cm. or less wide, pale green, thick especially along center of under side, with partly clasping scarious-margined base about 2 cm. wide. Flowers glabrous, on 1 cm. long pedicel, in compact recurved panicle usually 2 - 3 dm. long. Perianth narrowly campanulate, greenish-yellow, somewhat glaucous and partly translucent, with tube 3.5 - 4 cm. long and 1 cm. wide; lobes subequal, about 10 - 15 mm. long and together with marginal wings 5 mm. wide, linear-lanceolate, slightly keeled toward top. Stamens inserted at or slightly above base of corolla lobes, as wide as the lobes at the base and as long as the lobes, complanate-subulate; anthers sagittate, greenish-yellow, 5 mm. long; pollen yellow. Ovary obconic, longitudinally trisulcate, 5 mm. long and 3 mm. wide, yellow; style 3 cm. long, thick, greenish-yellow; stigma entire, trigonal. Fruit breaking laterally through marcescent perianth, 1-seeded and 10 mm. in diameter to 2-seeded and bisulcate or rarely 3-seeded and trisulcate and 15 mm. in diameter, on ripening first juicy and dark brown and then bright red and juicy and finally long persistent as ~~WRINKLED~~ wrinkled dried red drupe having thin chartaceous endocarp. Seeds globose, spherical, white, 7 - 9 mm. in diameter.

T.L.: Hills near Kawaihapai, Oahu.

L.R.: Dry hills of the Waianae Range near Kawaihapai, Oahu.

E.R.: Probably endemic to the Waianae Range. J. F. Rock reports a small-leaved Dracaena from the lava fields of Auahi, southern slope of Haleakala, Maui. The Kawaihapai plants and those growing in Maui are probably not directly related to each other but evolved independently and somewhat in a parallel way from the common Dracaena aurea.

Not uncommon in the dry hills of the northern and western sides.

*[Handwritten signature]*

(Illustrated on following page)

MALVACEAE

URENA [Dill.] <sup>L.</sup> Sp. Pl. 692. 1753.

Annual or perennial pubescent to tomentose shrubs or herbs, woody ~~XXXXXX~~ toward base. Leaves variable, petiolate, palmately nerved with the midrib and sometimes its 2 adjoining veins each bearing an oblong nectary on under side at base, with margin entire to serrate or even lobed or cleft; stipules small. Flowers involucrate, pink to purple, usually solitary and axillary or few together in axillary cymose clusters. Involucre campanulate, 5-cleft, with strict lobes. Calyx deeply 5-cleft. Petals obovate or subtruncate, cuneate to obovate. Staminal column about as long as the petals, the upper half bearing short-stalked anthers. Ovary depressed-globose, tubercled, 5-celled; ovules 1 in each ~~SAVLY~~ cavity, ascending; style 10-cleft; stigmas discoid. Carpels 5, the outer surfaces beset with sparingly glochidiate spines, when ripe falling and remaining indehiscent.

NAME derived from uren, the Malabar name.

Probably 3 species and many ill-defined varieties and forms, native to many warm and tropical regions. *Due to their abundant mucilage, some of these plants have been used medicinally.*

TYPE SPECIES: Urena lobata L.

OK  
P

Flora Hawaiianis

LILIACEAE

Rily Family

Family: Liliaceae

Genus: Dracaena

BRACAEA Vand. Diss. 1762; L. Mant. 1 : 63. 1767.

Shrubs or trees with few stems usually branching dichotomously. Leaves mostly crowded at the ends of the branches, usually linear to lanceolate, sessile or petiolate. Flowers many, small, greenish or whitish to yellow, mostly in small clusters or fascicles arranged in panicles. Perianth funnel-form or narrowly campanulate, with tube long or short, and with 6 spreading or reflexed segments alike or nearly so. Stamens 6, inserted on tube or throat; filaments various; anthers versatile. Ovary sessile to subsessile; 3-celled, with 1 ovule in each cell; style slender; stigma capitate or somewhat lobed. Fruit a globose berry with 1 - 3 seeds. Seeds large, ~~white~~ to brown or black, with copious horny endosperm and small basal embryo. Name derived from the Greek for dragon because the blood-red juice of D. Draco was thought to resemble dragon's blood. Type Species: Dracaena draco L.

About 50 species, all but the Hawaiian plants native to the tropics of the Old World.

OK-P.



# Key to <sup>native</sup> ~~some~~ species of *Diapocis*  
1. Ultimate branches about 2 cm. thick <sup>and</sup> leaves  
about 1 cm. wide (Most <sup>of</sup> *Diapocis* <sup>are</sup> *Diapocis*)  
2. Ultimate branches about 3 cm. thick <sup>and</sup> leaves  
about ~~1~~ <sub>2</sub> cm. wide *Diapocis*

FAMILY: 321  
GENUS: Urena  
SPECIES: LOBATA

FLORA HAWAIIENSIS

*Mahoeaceae*  
*Mallow Family*

URENA LOBATA L.  
URENA

Urena lobata L. Sp. Pl. 692. 1753.  
Urena sinuata L. Sp. Pl. 692. 1753.  
~~Urena sinuata L. Sp. Pl. 692. 1753.~~  
Urena americana L. f. Suppl. 308. 1781.  
Urena reticulata Cav. Diss. 6 : 335. 1788.  
Urena viminea Cav. Diss. 6 : 335. 1788.  
Urena scabruscula DC. Prodr. 1 : 441. 1824.  
Urena multifida Cav. Diss. 6 : 336. 1788. f. 2. 1785 - 90.  
Favonia rubiformis Thunz. in Bull. Soc. Nat. Mosc. 31 : 189. 1858.  
Urena lobata var. scabruscula A. Gray Bot. U.S. Expl. Exped.  
169. 1854.

~~Urena lobata var. scabruscula A. Gray Bot. U.S. Expl. Exped. 169. 1854.~~  
~~Urena lobata var. scabruscula A. Gray Bot. U.S. Expl. Exped. 169. 1854.~~

Urena lobata var. pertomentosa O. Kuntze Rev. Gen. Fl. 94. 1871.  
Urena lobata var. rubiformis Guerke in Engl. Bot. Jahrb. 16 :  
373. 1893.

Urena lobata var. tomentosa Moench. in Ann. Conserv. Jard. Bot.  
Gen. 5 : 139. 1901.

~~Urena lobata var. tomentosa Moench. in Ann. Conserv. Jard. Bot. Gen. 5 : 139. 1901.~~

at base

terminal involucral when  
very young

Erect branching 5 - 20 dm. high stellate-pubescent shrub with often reddish branches. Leaves suborbicular, usually somewhat broader than long, palmately 5-veined with 3 central veins having basal linear nectaries, green and tomentulose above, whitish-tomentose beneath, with base cordate, with margins angulately lobed and dentate and often purplish, with blade 9 cm. or less long and 10 cm. or less wide, with petiole 6 cm. or less long; stipules 3 mm. long, subulate, deciduous. Flowers on 4 mm. long peduncles, first singly in the leaf axils and later in short leafy cymose clusters. Involucral bracts linear-subulate, 4 - 5 mm. long and 1 mm. wide, dark green, pubescent. Sepals lanceolate, 4 mm. long and 1.5 mm. wide, pale green, pubescent, inflated at base and with median longitudinal ridge, somewhat enlarging in fruit. Petals pink ~~and~~ red at base, membranous, with about 8 longitudinal veins, glabrous within, sparingly stellate pubescent without, 15 mm. long and 8 mm. wide, obliquely obovate. Staminal column glabrous, pink, somewhat depressed; free part of filament pink, less than 1 mm. long; anthers about 20, pink, almost 1 mm. long; pollen larger, white. Pistil 1

OK

cm. long, with 10 linear-clavate pink 1.5 mm. long glabrous pink lobes pubescent toward ends; ovary 1 mm. long and 2 mm. wide. Carpels tomentose, 4 mm. long, brownish, with ~~XXXX~~ about ~~50~~ ~~XXXXXX~~ ~~XXXXXX~~ ~~XXXXXX~~ fifty 1 mm. long spines bearing minute 4 - 5 spreading recurved hooks. Seeds triangular-globose, 3 mm. long, brownish with lighter longitudinal markings.

Type Locality:

LOCAL RANGE: Hillebrand, who returned to Germany in 1871, mentioned this species as "appearing in the neighborhood of Honolulu, having been accidentally introduced with foreign plants from China." Although the present writer has collected extensively in the Islands, he never observed this plant except in Punaluu Valley, Oahu, in 1931, ~~on the eastern side of the Punaluu Valley between Punaluu and Kaneohe, Oahu, in 1931.~~

EXTRA RANGE: A very variable weed found in waste places in many tropical countries. Its bast furnishes the jute-like aramina fiber and hence the plant was cultivated in Brazil, Madagascar, Cuba and elsewhere.

(Illustrated on following page)

in Punaluu Valley and vicinity,  
Oahu in 1931. When not in flower,  
it may be easily taken for a species of  
Triumfetta.

OK.  
P



5 to 7

FLORA HAWAIIENSIS

FAMILY: 162  
GENUS: Vachellia

①

LEGUMINOSAE  
PEA FAMILY

Vachellia Wright & Arn. Prodr. 272. 1834.

Shrubs or small trees. Leaves bipinnate, with ~~many~~ numerous small pinnules; stipular spinescent. Flowers polygamous; small, in peduncled globose heads, regular and not papilionaceous. Calyx 5-toothed. Corolla tubular-funneliform, 5-toothed, the petals being united nearly to their tips. Stamens numerous; filaments distinct, exserted; anthers minute. Ovary sessile, several- to many-ovuled; style filiform; stigma minute. Pod nearly terete, pulpy within, the valves coriaceous, very tardily dehiscent. Seeds in 2 separate rows.

~~NAMED in honor of Rev. G. H. Vachell, a missionary and collector of plants in China in the 19th Century.~~

TYPE SPECIES: *Mimosa farnesiana* L.

A few species, native to the tropics.

NAME "in honour of the Rev. G. H. Vachell, who has lately contributed largely, by means of specimens, to make the botany of China better known to Europeans."

OK.

LEGUMINOSAE  
PEA FAMILY.

DELONIX-REGIA (Bojer) Raf.  
ROYAL POINCIANA, FLAMBOYANT, FLAME TREE, PEACOCK FLOWER

Poinciana regia Bojer; Hook. Bot. Mag. pl. 2884. 1829.  
Delonix regia Raf. Fl. Tell. 2: 92. 1836.

Broadly branching often gnarled ~~se~~ deciduous rapidly growing tree commonly 12 meters high but sometimes attaining a height of 20 meters and a trunk diameter of 9 dm.; twigs somewhat pubescent, with prominent lenticels; wood nearly white, soft and weak, light; trunk with thin grayish-brown bark ~~XXXXXX~~, with age often developing buttresses and roots partly projecting above surface of ground. Leaves 2 - 5 dm. long, obovate-oblong in outline, with 15 - 25 pairs of paired pinnae; petiole 7 - 14 cm. long, stout, green to yellowish or reddish, shiny and glabrous to puberulent, sulcate above, with large pulvinus; rachis sulcate above, puberulent; pinnae sparingly silky-strigose on both sides, pale beneath, linear-oblong, 5 - 10 cm. long, on 3 mm. long petiolule, bearing about 25 pairs of paired pinnae; pinnae 4 - 8 mm. long, 3 - 4 mm. wide, oblong, inequilateral, rounded at both ends, with midrib conspicuously thickened beneath, on very short petiolules. Flowers ~~XXXXXX~~ variable in color on different trees, scarlet to orange, on stout 4 - 10 cm. long pedicels jointed at base and apex and having at top a cordate 4 mm. long acuminate bract which is deciduous while the flower buds are yet minute. Sepals 4 cm. long and 8 mm. wide, thick, glabrous, red within, yellow on margin, greenish without, spreading. Petals 5 - 7 cm. long, spatulate because of 2 cm. long ciliolate claw, orange to scarlet and toward center mottled, with age becoming reflexed between ~~XXXXXX~~ sepals and finally deciduous by abscission layer.; upper petal differing in being more cuneate, wrinkled, on inner surface red-streaked with basal half yellow and outer half white tinged with pink but with age the white color changing to ~~XXXXXX~~ yellow. Stamens unequal in length, about 3 - 6 cm. long, up-curved; filaments thicker and villous below, glabrous above, red; anthers 5 mm. long, yellow beneath, red-spotted above; pollen orange. Ovary 13 mm. long and 2 mm. wide, yellowish, strigose; style 3 - 4 cm. long, upper surface red; stigma minute, greenish, truncate, ciliolate. Pod 3 - 6 dm. long, 3 - 5 cm. wide, dark reddish-brown, flat and strap-shaped, somewhat curved, long-persistent on the thickened pedicel, woody, indurated, loosely enclosing the seeds. Seeds hard, smooth, oblong, yellowish with brownish mottling, about 15 mm. long and 7 mm. wide.

TYPE LOCALITY:

LOCAL RANGE: A gorgeous ornamental tree which according to J.F. Rock was been in these islands since about 1855, when it was introduced probably by Dr. Hillebrand. "It will grow throughout the islands at lower elevations in both dry and moist districts. The trees drop their leaves usually between January and April. Then beginning with early summer, many blaze forth with flowers before the new leaves appear, while others produce new flowers and leaves at the same time. The height of the flowering season lasts until August, but trees may be found here and there producing occasional flowers throughout the entire year. One of the main drawbacks to planting the poinciana along narrow roads is its habit of producing buttresses and roots which often heave up and displace pavements from their proper posi-

OK. P

tion.

EXTRA RANGE: Native to Madagascar; now widely planted in tropical and subtropical countries.



FLORA HAWAIIENSIS

FAMILY: 68  
GENUS : Dianella  
SPECIES: Sandwicensis  
VARIETY: Multipedicellata

LILIACEAE  
LILY FAMILY

DIANELLA SANDWICENSIS var. MULTIPEDICELLATA ~~XXXX~~ Degener  
~~XXXX~~ MANY-PEDICELLED DIANELLA

Dianella sandwicensis var. multipedicellata var. nov.

Stem with panicle attaining 12 dm. Leaves sometimes 1 meter long and 4 cm. wide. Panicle differing from that of the species in having indeterminate flower clusters conspicuously and compactly multipedicellate. Sepals ~~XXXXXX~~ 6 mm. long and 2.5 mm. wide, obscurely 5-nerved, oblong-~~XXXXXX~~ ovate, acute, ~~XXXXXX~~ pale blue and greenish along center on under side, with upper margins somewhat involute. Petals slightly shorter than sepals, 2 mm. wide, oblong, subtruncate, 3-nerved and with 2 faint nerves, pale blue. Stamens 4 mm. long; filament slender, whitish, 2 mm. long; lower part of anther orange and turgid; fertile part yellow; pollen yellow. Ovary ovoid, green, longitudinally 3-grooved; style white, subulate; stigma minute. Fruit unknown.

TYPE LOCALITY: Crest of mountain near Palikea, Waianae Range, Oahu.  
LOCAL RANGE: A large clump of rather uniform plants known only from the locality.

EXTRA RANGE: ~~XXXXXX~~ All the plants seen may have originated vegetatively from a single mutating seed produced by the typical species growing in the neighborhood. Hence this new dianella is hardly worthy of more than varietal rank.

TYPE SPECIMEN: Degener, Park & ~~XXXXXX~~ Kruse No. *Palikea, Oahu* 1, Sept. 1931.

*Small*  
*fruit* → (Illustrated on following page)

FLORA HAWAIIENSIS

FAMILY: 68  
GENUS : Dianella

LILIACEAE  
LILY FAMILY

KEY TO LOCAL SPECIES OF DIANELLA:

Panicle always shorter than leaves; berry depressed-globose, sky blue;  
Islands of Hawaii and Maui - - - - - D. lavarum

Panicle long; berry obovoid, often irregularly so, dark blue - - -  
D. sandwicensis

*OK*

*black type*

FAMILY: 68  
GENUS : Dianella  
SPECIES ~~LAVARUM~~ : Lavarum

LILIACEAE  
LILY FAMILY

DIANELLA LAVARUM Degener  
LAVA DIANELLA; UKIUKI

*Dianella* sp. Degener, Plants Haw. <sup>Nat.</sup> Park 93. 1930.  
*Dianella lavarum* sp. nov.

Stem, with about 6 crowded leaves at one time; rhizome about 1 cm. thick and creeping near surface of ground. Leaves linear-lanceolate, stiff, waxy above, dull beneath, closely and conspicuously veined, about 3 - 7 dm. long and commonly 1.5 cm. wide, pale, below reddish and folded and with the two sides adnate near midrib and becoming progressively gradually more adnate until completely so for short distance after which sides become gradually ~~more~~ less adnate but immediately patent, the midrib being keeled. Panicle 1.5 - 5 dm. long, much shorter than the leaves, with usually 8 ascending usually twice-divided branches drooping at the ends into short indeterminate clusters of stiff 4 - 10 mm. long pedicels. Perianth pale blue on inner surface, pale purplish-blue and especially the sepals red-punctate on outer surface, with veins on both surfaces light green. Sepals 5 mm. long and 2 mm. wide, obovate-lanceolate, with upper margins somewhat involute and the extreme apex with papillae which are turned inward, with 5 longitudinal veins of which the two outer do not reach apex. Petals slightly papillose, with 3 longitudinal veins. Broadly elliptic, with apex slightly papillose, with 3 longitudinal veins. Filaments slender, white, 1 mm. long; anther pale yellow throughout, almost 2 mm. long, the lower part which is slightly less than half in length being somewhat turgid; pollen pale yellow. Ovary green, slightly 3-grooved longitudinally, 1.5 mm. long and a little more than 1 mm. wide; style white, 2 mm. long; stigma minute. Berry depressed-globose, sky blue, about 7 mm. long, with marcescent perianth bases, and with 2 - 3 or very rarely 4 seeds per cell. Seeds shiny, black, 3 mm. long and 2 mm. wide, flattened, broadly angular-elliptic, margined, with crustose testa.

TYPE LOCALITY: Kau Desert, ~~HAWAIIAN~~ Island of Hawaii.  
LOCAL RANGE: Usually in clumps of bushes on the ash ejected in explosive eruptions of Kilauea, particularly in the Kau Desert; and ~~XXXXXX~~ to a lesser extent in Kaupo Gap within Haleakala Crater, Maui. This plant was collected also in the mountains in back of Lahaina, Maui, with *D. sandwicensis*. Apparent hybrids between these two species occurred in the neighborhood. Berries used by the Hawaiians as a blue dye for their kapa. Flowering in spring and fruiting in summer.

EXTRA RANGE: Not known elsewhere.  
TYPE SPECIES: Degener ~~sp.~~

*Dianella odorata* Hilleb. Fl. Haw. Isl. 445. 1938. (in part.)  
Not *Dianella odorata* ~~XXXXXXX~~ Blum. Enum. Pl. Jav. 1 : 13. 1830.

(Illustrated on following page)

6K.  
8

over

STORA HATHAYIDES

FAMILY: 169c  
GENUS :Phaseolus  
SPECIES:Lathyroides

LEGUMINOSAE

PEA FAMILY

PHASEOLUS LATHYROIDES L.  
WILD BUSH BEAN

Phaseolus lathyroides L. Sp. Pl. ed. 2, 1018. 1763.  
Phaseolus semierectus L. Mant. 100. 1767.

Erect or ascending suffrutescent simple or branched herb 3 - 15 dm. high with glabrate to longitudinally minutely scabrous light green branches often flexuous and especially in wet ground occasionally twining toward the ends. Leaves pinnately trifoliate, light green, membranous, glabrous above, shiny and usually glabrate ~~XXXXXX~~ below, with slender 3 - 6 cm. long petioles sulcate above; leaflets obovate-oblong, 2.5 - 6 cm. long, the terminal one usually being slightly larger than the lateral leaflets, obtuse or more often acute and obscurely mucronate at apex, usually rounded at ~~XXXXXX~~ base, on 2 - 3 mm. long petiolules bearing green subulate stipels about half as long; stipules lanceolate, acuminate, 4 - 10 mm. long. Flowers about 2.5 cm. long, dark red to almost black, opening fully toward the afternoon, in axils of linear-subulate caducous bracts, horizontal on partly twisted very short pedicels to form several- to many-flowered elongate erect racemes which in fruit are 1 - 3 dm. long. Calyx green with often reddish mottling, 4 - 6 mm. long, 5-toothed, the teeth subtending the standard ovate, the other teeth lanceolate and acuminate, persistent in fruit. Standard sideways, contorted to hide upper part of keel, 16 mm. long, about 12 mm. wide, dull, pale red except toward greenish base; 1 wing concave with obliquely obovate erect blade dark red ~~XXXXXXXXXXXX~~ about 16 mm. long and 12 mm. wide slightly wrinkled; other wing convex with obliquely obovate horizontal blade of similar color and shape; keel on 7 mm. long pale horizontal claws and with upper part slightly longer pale purplish red and S-shaped. Ovary silky. Stamens linear, with yellow linear anthers; pollen yellow. Pod narrowly linear, subterete, reflexed-spreading, 7 - 12 cm. long, about 3 mm. in diameter, appressed-pubescent, light brown, with their cartilaginous valves strongly twisting to expose about 25 closely packed seeds. Seeds oblong to angular, 2 - 4 mm. long, about 2 mm. wide, yellowish green with brownish mottling and a few black irregular blotches or streaks, with short oblong hilum.

TYPE LOCALITY:

LOCAL RANGE: A common weed found throughout the Islands at lower elevations in pastures, along roadsides and occasionally in cultivated fields. It is obviously of early introduction, though hardly "of aboriginal introduction" as surmised by Mann & Bigham who collected it in 1864. It is relished by cattle.

EXTRA RANGE: Native to tropical America but widely naturalized in warm and tropical regions throughout the World.

(Illustrated on following page)

OK.  
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over



FLORA HAWAIIENSIS

FAMILY: 162a

GENUS: Indigofera

LEGUMINOSAE

PEA FAMILY

INDIGOFEA L. Sp. Pl. 751. 1753.

Herbs or rarely shrubs, often canescent with hairs affixed by the middle. Leaves imparipinnate or tripinnate or very rarely unifoliate; leaflets entire; stipules small or obscure. Flowers papilionaceous, usually small, white to pink or purplish, in axillary pedunculate spikes or racemes. Calyx small, campanulate to tubular, with teeth oblique and nearly equal or the lower ~~tooth~~ the longest. Standard obovate to orbicular, sessile or short-stalked; wings oblong, slightly adherent to keel; keel erect, somewhat gibbous or spurred on each side at base, obtuse. Stamens 10; filaments monadelphous; anthers equal, with glandular or penicillate connective. Ovary sessile or short-stipitate, with 1 to usually many ovules; style slender, short; stigma capitate, often penicillate. Pod linear, 4-angled to subterete, curved or straight, septate between the seeds. Seeds usually cylindrical.

NAME derived from the Latin for indigo and bearing, in reference to the former derivation of that dye from some of the species. The word indigo, in turn, was derived from indicum, the name of the dye; the name indicum is related to the word India from which the dye was first imported into Europe.

TYPE SPECIES: Indigofera tinctoria L.

About 300 species, native to temperate and warm regions throughout most of the world.



MELIACEAE  
MAHOGANY FAMILY

FAMILY: 172.  
GENUS: Swietenia  
SPECIES: Mahagoni

A  
SWIETENIA MAHAGONI Jacq.  
WEST-INDIAN MAHOGANY

Swietenia mahagoni Jacq. Enum. 20. 1760.

Swietenia macrophylla Neal & Metzger, In Hon. Gardens 175. 1928.

Not Swietenia macrophylla King, in Hook. & Arn. Bot. Beech. Pl. 16. t. 1550. 1886.

A large to medium size tree having compact ovoid crown and developing with age buttresses at base, with reddish scaly bark and many angular smooth branches. Leaves deciduous before flowering time, leathery, shiny, glabrous and dark green above, glabrous ~~XXXXXXXXXX~~ to sparingly pubescent and lighter green below, pinnate, 10 - 15 cm. or more long of which the slender petiole is about 4 cm. long and enlarged toward base; leaflets 6 - 10, paired excepting the lowest which are sometimes subopposite, ovate-lanceolate, 4 - 8 cm. long, 1.5 - 3 cm. wide, inequilateral so that inner side is about half the width of outer side, at apex acuminate to finely caudate, at base oblique so that upper half of rounded blade is attached to 2 - 5 mm. long terete petiolule 1 - 4 mm. lower than is remaining part of blade. Flowers on usually 2 mm. long pedicels borne in supra-axillary slender panicles 6 - 15 cm. long. Petals pale greenish-yellow, obovate-spatulate, 3 - 4 mm. long, retuse, obscurely fimbriate. Stamen tube glabrous, 5 mm. high, greenish-yellow; anthers brownish. Ovary ovoid; nectaries conspicuously orange; style erect; stigma 5-rayed and thick-peltate. Fruit an ovoid to pear-shaped grayish brown capsule 6 - 10 cm. long. Seeds numerous, 5 - 6 cm. long and about 1.5 cm. wide, very light, corky below and thin above, light brown, with 15 mm. long and 8 mm. wide embryo.

TYPE LOCALITY:

LOCAL RANGE: The true mahogany of commerce, one of the most valuable woods used for fine furniture and cabinet work. Around 1917 a row of these trees was set out in Kalakaua Ave., Honolulu, while before that time only a few trees were to be found scattered in gardens here and there in the Territory.

EXTRA RANGE: Native to tropical America.

(Illustrated on following page)

OK 8



## COMPOSITAE

## COMPOSITE FAMILY

PLUCHEA Cass. Bull. Soc. Philom. 1817 : 31. 1817.

Pubescent to glabrous annual or perennial herbs or small shrubs, often somewhat glandular and usually emitting aromatic odor when bruised. Leaves alternate, dentate. Heads purplish, small, of many florets all of which are tubular, in terminal corymbose cymes. Involucre ovoid or campanulate or nearly hemispheric, with appressed herbaceous bracts imbricated in several rows. Receptacle flat, naked. Outer florets of head pistillate, their corollas filiform and 3-cleft or dentate at apex. Central florets of head perfect but usually sterile, few, their corollas 5-cleft. Anthers sagittate at base, with caudate auricles. Style of perfect flowers 2-cleft or undivided. Achenes 4- to 5-angled, grooved. Pappus a single series of capillary scabrous bristles.

NAMED in honor of Abbé N. A. Pluche, Parisian naturalist of the early 18th Century.

TYPE SPECIES: Conyza marilandica Michx.

About 35 species, of wide distribution in temperate and warm regions.

6K

ERUMINOSAE  
PAPA FAMILIA

GENUS: Vachellia  
SPECIES: Farnesiana

VACHELLIA FARNESIANA (L.) Wight & Arn. Prodr. 372. 1834.

ARGENT. SILENE ACACIA, VACHELLIA, ELU (Hawaiian corruption for clue in reference to the sticky gum)

Mimosa farnesiana L. Sp. Pl. 524. 1753.

Acacia farnesiana Willd. Sp. Pl. 4. 1808. 1808.

Acacia acicularis Willd. Enum. 1050. 1809.

A much-branched shrub usually not over 4 meters high with somewhat glaucous to glabrate twigs bearing ascending ~~XXXXXX~~ pairs of stipular spines which persist after the fall of the leaf and become distinct sharp straight 3 - 35 mm. long; later leaves fasciated in the axils of the primary stipular spines and bearing small acicular stipules; bark of the primary stipular spines and bearing small acicular stipules which become whitish brownish-grey, smooth, covered with reddish lenticels which become whitish with age. Leaves 3 - 8 cm. long, obovate-oblong in outline, with small purplish gland on petiole, with 3 - 6 pairs of opposite pinnae; pinnules 1 - 2 cm. long, bearing 8 - 20 pairs of glaucous subcoriaceous pinnules; pinnules linear to linear-oblong, obtuse, 3 - 6 mm. long; petioles and rachis angular and usually pubescent. Flowers bright yellow, very fragrant, densely crowded in all-hispanic heads about 12 mm. in diameter on slender sub-erect 2 - 4 cm. long peduncles which are borne singly or 2 or 3 together in the contracted leafy shoots; bracts between flowers minute, glabrous spatulate.

Calyx pale, 1.5 mm. long, dentate. Corolla greenish yellow, 5 mm. long, unevenly lobed. Stamens numerous; in staminate flowers 6 mm. long or less and in perfect flowers usually 7 mm. long or less; anthers darker yellow. Petal straight, filiform, with minute stigma.

Pod on woody thickened but not lengthened petiole, subterete, 3 or few per peduncle, subterete, turrid, straight or somewhat curved, glabrous, 7 cm. long and 1 - 1.5 cm. wide, dark reddish-brown, filled with a gum which separates the seeds which lie transversely in 2 rows. Seeds oblong-globose, somewhat flattened, 6 mm. long, 5 mm. wide, 3 mm. thick, smooth, brown.

TYPE SPECIES: "Habitat in Dominica."

Italy

LOCAL RANGE: A troublesome weed probably purposely introduced in the early part of the 19th Century. It was collected by Vann & Brigham ~~XXXXXX~~ around 1865. The plant ~~XXXXXX~~ now may be found practically everywhere below 700 feet in the drier regions, and often forms impenetrable thickets with the lanterns and spines. As the flowers are very fragrant a company was once formed in an attempt to derive perfume from them ~~XXXXXX~~ commercially. Plants were even cultivated by the company. Pickers were offered 20 cents per pound for the dried ~~XXXXXX~~ flower clusters. But because of the spinescence of the plant, the hot region where it thrives and the light weight of its flowers, few flower-pickers could be found. The enterprise therefore soon failed for lack of raw material. A century or so ago, the flowers were used by the Hawaiians to perfume their kapa.

EXTRA RANGE: Native to tropical America but now naturalized everywhere in tropical countries. The plant was first described from a specimen collected around 1750 in the Farnesian Garden, Rome, and hence bears that name scientifically. By the Spaniards it is called flor aroma. It is cultivated in southern France for its flowers, nicknamed onion flowers, which are distilled into a perfume. In various countries the gum exuding from the trunk is used like gum arabic in the arts and medicine. The pods and bark are used as an astringent, and the seeds are said to have been exported to Germany for the preparation of medicine for horses.

Mr. Pereira: This is  
entirely with-up must  
of course go on a  
single page - is too long, why  
not use somewhat smaller  
print for "Type Species",  
"Local Range",  
"Extra Range"?

FLORA HAWAIIENSIS

FAMILY: 169c  
GENUS: Indigofera  
SPECIES: Saffruticosa

LEGUMINOSAE  
PEA FAMILY

INDIGOFERA SAFFRUTICOSA Mill.

WILD INDIGO; HAKOA (Hawaiian corruption of the English name)

Indigofera saffruticosa Mill. Gard. Dict. ed. 8, no. 2, 1768.

Indigofera anil L. Mant. 2: 272, 1771.

Not Indigofera anil Mann in Proc. Am. Acad. 7: 163, 1867.

Indigofera cruxillensis H. B. K. Nov. Gen. 6: 456, 1823.

A much-branched shrub 10 - 15 dm. high with erect leafy slender brittle pale branches which when young are longitudinally grooved and whitish with appressed-pubescent and pithy in center. Leaves 5 - 13 cm. long, obovate-oblong in outline with 7 - 15 leaflets on petiole and rachis which are appressed pubescent and above flattened; leaflets with about 2 mm. long petiolules, thin, oblong to oblong-obovate, 3 cm. long or less, obtuse or somewhat acute, mucronate, mostly narrowed toward base, pale green especially beneath, appressed-pubescent on both sides or glabrous to glabrate above, minutely stellate, darkening on drying; stipules filiform-setaceous, often obscure. Flowers on spreading pedicels about 1 mm. long in axils of small caducous bracts which form few to many-flowered narrow erect 2 - 5 cm. long racemes which are shorter than the subtending leaves. Flowers opening elastically and readily dropping petals; standard 4 mm. long, 3 mm. wide, obovate, sessile, greenish with brown appressed-pubescent on outer surface, glabrous and with reddish tinge except for yellowish eye on inner surface; wings obliquely oblong, glabrous or nearly so, red, 4 mm. long and 1.5 mm. wide; keel spurred on each side toward base, 5 mm. long, greenish with red tinge, glabrous except for brown appressed-pubescent on outer surface, obovate. Stamens with green filaments unequal in length; anthers yellowish. Pistil abruptly up-curved near top; stigma glabrous. Ovary 1 mm. long, shallowly-campanulate, with broad acute teeth, appressed-pubescent without. Pod on deflexed pedicel, horizontally upward fal-cate, appressed-pubescent when young and glabrous when old, 8 - 15 mm. long and about 2 mm. thick, brown, ridged and thickened on the sutures, 3- to 8-seeded. Seeds

TYPE LOCALITY: None given.

LOCAL RANGE: A naturalized weed found below 3000 feet on all the Islands in pastures, waste places and open woods, especially if not too wet. It is uncertain when this plant was first introduced into the Hawaiian Islands. Most of the early writers did not specify whether they referred to Indigofera saffruticosa or to I. tinctoria L., while some others confused these two related plants in their determinations. Hillebrand, for example, states that I. anil, a synonym for I. saffruticosa, was introduced in 1836 from Java by a Dr. Serriere, who is said to have manufactured a good quality of indigo from it. According to Rock this same species "was introduced into Hawaii by the Royal Hawaiian Agricultural Society in the early



factors for the purpose of growing it on a commercial scale as an "indigo" plant." In 1864 - 65 Mann and Brigham botanized extensively in the Hawaiian Islands, and the former shortly after published an enumeration of the plants collected there. In that list, he records the occurrence of "Indigofera Anil" suffruticosa with a discriptical sign indicating that he considered it introduced. In an interleaved copy of Mann's Enumeration of Hawaiian Plants now in the writer's possession and formerly belonging to Director Brigham, stands among Brigham's other notations in script "Indigofera Anil; introduced by Rev. Wm. P. Alexander". In this instance it is impossible to discover whether Dr. Brigham's reference should not actually be ascribed to I. tinctoria XXXXX as Mann & Brigham's specimen deposited in the Bishop Museum in Honolulu is not I. anil suffruticosa at all but actually I. tinctoria! Curiously enough, I. tinctoria has not persisted in the Islands and is apparently locally extinct while I. suffruticosa is almost everywhere. Yet Mann mentions but one species. Other references to indigo, without stating unfortunately the exact species, are worth noting: According to Wilkes (U.S. Expl. Exped. 4 : 71. 1849.), the Halealea district, Kauai, where XXXX Rev. Alexander was active, was suitable for the production of indigo. Describing the Island of Hawaii, the same author (p.214) states "Indigo might be made a profitable culture for it grows wild in many parts of the island, and in great luxuriance. It is naturalized at Hilo, where I learned that some experiments had been made, which leave little doubt that if it were cultivated, it would be found to be equally valuable with that of the West Indies." S.S. Mill who arrived in the Islands in 1847 reported that at Lahaina, Maui, indigo which had been sown by the missionaries, had ~~not~~ spread and threatened to stifle all other growths. According to Manley Hopkins, "Hawaiian Consul-General" and author of "The Sandwich Islands" 1862, "Indigo grows freely, and some specimens or samples of the dye have been sent to Hamburg; but the quality was too inferior to encourage its manufacture" (p.38). Later (p.36) he remarks that "The Indigo plant - - - - - exists as a troublesome and ineradicable weed over the islands - - - - -". To be sure, Hopkins never visited the Hawaiian Islands but he undoubtedly derived information about them from his brother, long resident here, and from his many correspondents. The plant has never been XXXX of importance in the Islands. Stock avoid it. Its only redeeming quality is its ability with the aid of nitrogen-fixing bacteria to gain a large amount of this element from the atmosphere. Ill-mannered XXXX country children sometimes rub XXXXXXXX indigo leaves between the palms of their hands. Though XXXXXXXX they thus rub off into their hands the minute, sharp prickles, they feel no inconvenience because of the thickness of their skin. Then they pass their palms across the thinner skin of their playmates thereby causing an uncomfortable rash. EXTRA RANGE: Native to the West Indies but purposely introduced into many countries before the method of making ~~synthetic~~ indigo was discovered; now naturalized in most tropical regions. (See under Indigofera tinctoria in L.)

Mr. Pereira: This lane -  
 minded artist must go  
 on 1 page. 21  
 necessary, cut size  
 1/4" from  
 "Type locality"  
 down.  
 C.D.

OK. synthetically  
 P

FLORA HAWAIIENSIS

FAMILY: 318

GENUS: Brugmansia

SOLANACEAE

NIGHTSHADE or POTATO FAMILY

BRUGMANZIA Pers. Syn. 1: 216. 1805.

Coarse glabrous to pubescent soft-wooded shrubs or trees, usually with forking branches. Leaves large, soft, petioled, alternate but often approximated in pairs with one leaf sometimes much smaller than the other. Flowers very large, white to yellowish or red, solitary and pendulous on curved peduncles. Calyx angular, spathe-like or 5-cleft, persistent. Corolla long-funneliform, cylindric below and campanulate above, with limb bearing 5 acuminate lobes. Stamens 5, inserted usually near middle of corolla-tube, included; filaments filiform; anthers longitudinally dehiscent. Ovary 2-celled; ovules many; style filiform; stigma 2-lobed. Fruit an unarmed spindle-shaped leathery to slightly fleshy berry dryish within. Seeds flattened.

NAMED in honor of Sebald J. Brugmans, 1763 - 1819, professor in Leyden.

TYPE SPECIES: Brugmansia candida Pers.

A few species native to Mexico and South America.

FLORA HAWAIIENSIS

FAMILY: 318

GENUS: Brugmansia

SOLANACEAE

NIGHTSHADE or POTATO FAMILY

KEY TO LOCAL SPECIES OF BRUGMANZIA:

Plant densely pubescent; calyx cleft - - - - - B. arborea

Plant glabrous or nearly so; calyx 5-cleft - - - - - B. suaveolans

Black type

OK  
8

Mr. P. This page is to go in shed since I have no plate to go on back.

INDIGO MALEICACON

FAMILY: 163  
GENUS: Indigofera  
SPECIES: tinctoria

OKP  
4

INDIGOFA TINCTORIA L.  
TRUE INDIGO

Indigofera tinctoria L. Sp. Pl. 791. 1753.  
Indigofera anil Mann in Proc. Am. Acad. 7: 163. 1867.  
not Indigofera anil L. Mant. 2: 272. 1771.

Slender shrub attaining height of 2 meters and bearing minutely appressed-pubescent twigs. Leaves 6 - 10 cm. long, with 7 - 13 leaflets; leaflets oblong to obovate-oblong, 1 - 2 cm. long, glabrous or nearly so above, appressed-conspicuous beneath, with rounded mucronulate apex and narrowed to obtuse base, sometimes on drying; stipules minute. Flowers on pedicels not longer than calyx to form several- to many-flowered racemes 2 - 7 cm. long. Calyx pubescent. Corolla 5 - 6 mm. long, reddish to purplish. Pod on de-flexed pedicel, linear, straight or nearly so, glabrous when old, 25 - 35 mm. long and 1 cm. wide, 8 - to 15-seeded.

TYPE LOCALITY: "Habitat in India."

Notes

LOCAL SOURCE: Purportedly introduced, possibly by Rev. Wm. B. Alexander (see under I. suffruticosa Willd.). First collected by Mann & Brigham between 1840-45, Hillebrand, who left the Islands in 1871, definitely states that this species "has been introduced and may possibly still be found in the country." It apparently did not persist here.

EXTRA RANGE: Native to Asia but, like I. suffruticosa and a few other species, of great importance as a producer of indigo dye and therefore, purposely introduced into most warm countries. The substance indigo (C<sub>16</sub>H<sub>9</sub>N<sub>2</sub>O<sub>2</sub>) is never found in the plant as such. It is obtained from a glucoside, called indican (C<sub>16</sub>H<sub>17</sub>O<sub>6</sub>N), especially abundant in the leaves, by decomposition with an enzyme followed by atmospheric oxidation. In the natural process of making the dye commercially, indigo seeds are sown in rows. In about three months the plants begin to flower and at that time are cut in the morning a few inches above ground. The crowns sprout again and thus two or even as many as four successive crops may be harvested per year. The freshly cut plants are placed in tanks, weighted with planks of bamboo, and covered with water to which lime has been added. Here they remain for 6 to 15 hours, by which time the leaves have turned pale and the water gained a greenish color. This liquid is lead into a second tank, where it is kept in constant agitation for one to three hours either by mechanical means or by walking on it with the feet. During this process the dye settles as a bluish paste or mud. This is an excellent source of indigo. The water, pressed, dried, and made into a refining into the finished blue dye. By this method one acre planted to indigo will produce about 500 pounds of paste. Indigo has exported from India into southern Europe as early as the time of Alexander the Great. Then around the 16th Century it gradually came into use in central Europe. Here it XXXX competed with the dye made of identical composition to indigo but derived from a European cruciferous plant. Word growers in England, Germany and France therefore discouraged the use of this cheaper and actually superior asiatic product, calling it devil's dye and devil's food. During the 17th Century they induced their governments to legislate against it; Henry IV of France even punished indigo importers and users with death. By 1737, however, the last restrictions against the use of indigo were repealed, and indigo finally displaced wool entirely. Indigo plantations sprang up throughout the tropics, and flourished. The end of this indigo-growing industry was heralded by Baeyer who discovered in 1882 how to make the identical dye synthetically from toluene. His method was not commercially practicable and hence did not harm the growers of the plant. But it stimulated further chemical research. Then in 1891 Heumann discovered a cheaper method of making indigo synthetically. His process was so inexpensive and the dye so pure that the demand for the natural product ~~XXXXXXXX~~ quickly waned. As a result, the indigo plantations failed in most countries and today survive practically in India and Java alone.

"Indigofera Douma Hamilt. and a var. glaucescens of that species were introduced" by J. P. Rock "from the Lloyd Botanic Gardens, Darjeeling, British India. Their cultivation was, however, abandoned; one or two specimens are still growing on the College of Hawaii grounds." Rock, Leguminous Plants Haw. 149. 1920. This plant is probably the Himalayan Indigo correctly called Indigofera Gerardiana Grah. Though the present writer spent the school year of 1922 - 23 on the University of Hawaii campus, he failed to find either I. Douma or I. Gerardiana. The species is evidently no longer to be found in the Islands.

OKP

INDIGOFA HENDICAPHYLLA Jacq.

Indigofera hendecaphylla Jacq. Coll. 2: 259. 1788.  
Indigofera unguis Lem. Synop. 3: 243. 1789.  
Indigofera undecaphylla Jacq. In. Bar. t. 570. 1786 - 83.

This red-flowered species is now found in tropical and southern Africa; in India and in southern China. According to Pope, Wayside Plants Haw. 36. 1929, it was introduced and is under trial at the Hawaii Experiment Station.



[illegible]

FLORA HAWAIIENSIS

FAMILY: 314

GENUS: *Cochranea*

BORAGINACEAE  
BORAGE FAMILY

(8)

COCHRANEA Miers

*Cochranea* Miers, Trav. Chile 2 : 522. 1826. nom. nud.  
*Cochranea* Miers, Ann. & Mag. Nat. Hist. Ser. 4 : 2: 125. 1868.

Perennial more or less shrubby plants with branching stems. Leaves alternate, usually narrow, undulate to subdentate. Flowers in terminal scorpioid cymes or disposed spikes. Calyx of 2 narrow lobes. Corolla with cylindric tube and short lobes. Stamens 2, included; anthers narrow. Ovary 4-celled, style with apical swelling; stigma usually 2-lobed. Fruit dry or nearly so, with 2 hard 2-celled and 2-seeded nutlets or by abortion actually of 2 hard 1-celled and 1-seeded nutlets. Seeds usually with copious endosperm.

NAMED presumably after a collector.

TYPE SPECIES:

all  
About 6 species, native to South America.

OK  
18

Species

Flora Hawaiiana

LILIACEAE

Family

Family: 68  
Genus: Dianella

DIANELLA Lam. Encyc. 2: 276. 1786.

(6)

Perennial leafy herbs, sometimes woody at base, with short branching rhizomes. Leaves equitant, ~~2-ranked~~ linear. Flowers perfect, usually bluish, pendant in loose strict terminal panicles, the pedicels jointed below the flower. Perianth segments 6, free, in 2 series, 3- to 7-nerved, almost equal, spreading. Stamens 6; filaments short, variously thickened; anthers basifixed, dehiscing by apical pores which later become longitudinal slits. Ovary 3-celled, with few to many ovules in each cell; style long; stigma small, entire. Fruit a globose to obovoid- oblong bluish berry. Seeds black, shiny, ovoid to compressed.

Name the diminutive of Diana. Type species: Dianella nemorosa Lam.

15  
About 15 species, native to Asia, Australia, and many islands of the Pacific.

Very like and just out by it  
is called Dianella.

OKP



## SOLANACEAE

NIGHTSHADE or POTATO FAMILY

LYCIUM SANDWICENSE A. Gray  
HAWAIIAN LYCIUM; ARAE or HIBLO KAI

(9)

Lycium sandwicense A. Gray, Proc. Am. Acad. 6 : 44. 1863.

Unarmed, sprawling glabrous ~~1-8~~ <sup>branches</sup> dm. high shrub with yellowish gray bark and stiff branches somewhat sharp at tips and usually rooting on touching the ground; side ~~climber~~ <sup>often</sup> subglobose. Leaves mostly clustered, fleshy, pale, ~~obovate-spatulate~~ <sup>obovate-spatulate</sup>, subsessile, commonly 2.5 cm. long and 8 mm. wide, rounded at apex, veins not visible and midrib faint. Flowers single, on about 7 mm. long slender horizontal peduncle. Calyx glabrous, with tube 4 mm. long and with 4 fleshy 2 mm. long acute lobes. Corolla glabrous, whitish to pale lavender, its tube scarcely exceeding the calyx; lobes 4, ovate-oblong, 3 mm. wide, and almost 5 mm. long, somewhat spreading, with midrib slightly sulcate above and with obscure reticulate venation. Stamens 4, inserted below middle of corolla tube, 6 mm. long; filaments glabrous, white, slightly curved; anthers greenish, with ages spreading at base; pollen pale yellow. Ovary 2.5 mm. long, pale green; style 5 mm. long, glabrous, pale; stigma green, somewhat laterally compressed, capitate. Berry red, obovoid-globose, about 12 mm. long, shiny, somewhat juicy, salty, many-seeded. Seeds yellowish, subreniform to subquadrangular, flat, about 1.5 mm. long, slightly sticky.

TYPE LOCALITY: "Sandwich Islands, on Diamond Hill, Oahu, near Honolulu."

LOCAL RANGE: Endemic to the Hawaiian Archipelago; a typical halophyte found on limestone or lava rock in arid regions always near the sea or within occasional reach of the ocean spray. Occasionally eaten by livestock, especially during times of drought, but ~~the plant is not common enough to be of any real importance.~~ The slightly salty berry is edible but not very palatable. Fruiting throughout the year but most abundantly in fall.

EXTRA RANGE: Not known elsewhere.

OK,  
P

Nickerson, Gray Nickerson  
LEGUMINOSAE  
Bea Fournier  
GUILLANDINA CRISTA (L.) Small  
KAKALAIWA

Flora Hawaiiana

Legume: 169 b

prickles  
Guilandina  
Species: Crista

Caesalpinia crista L. Sp. Pl. 380. 1753.  
Caesalpinia bonducella Fleming in As. Res. 11 : 159. 1810.  
Guilandina crista Small, Fl. SE. U. S. 591. 1903.

16

Not Caesalpinia crista L. Sp. Pl. 380. 1753. Hance pl. 55. 1929.

Large straggling shrub having its young green longitudinally ridged branches fulvus-tomentose and armed with yellowish prickles. Leaves fulvus-tomentose below and glabrate to glabrous above, 3 - 6 dm. long; petiole and rachises fulvus-tomentose and with upper surface of basal part of petiole armed with straight spines while lower surface of whole petiole and of rachises are armed with scattered spreading sharply recurved yellowish prickles; pinnae 8 - 16, paired, 1 - 2 dm. long; leaflets 12 - 20, paired, 1 - 2 dm. long; leaflets 12 - 20, paired, short-petiololed, about 5 cm. long and 3 cm. wide, oblong to ovate, usually mucronulate, shiny especially above, somewhat truncate at base; stipules cut into large more or less orbicular segments. Flowers on 2 mm. long pedicels in the axils of linear-elliptic acuminate reflexed caducous about 1 cm. long bracts to form crowded supra-axillary racemes 8 - 20 cm. long that are frequently once or twice branched near base. Calyx greenish-yellow, fulvus-tomentose especially beneath, deeply parted into 5 subequal 5 - 6 mm. long and 2 mm. wide obovate-oblong lobes of which the 2 lower are connate higher up than the others. Petals yellow but with age becoming brownish yellow, subequal, obovate to subpatulate, 1 cm. long or less and about 3 mm. wide, ciliolate. Stamens 10, about 5 cm. long, alternate ones slightly shorter; filaments pale, lower two-thirds densely villous; anthers dark brown, almost 1 mm. long; pollen yellow. Ovary stipitate, 4-ovuled, covered with stiff hair; style erect; stigma truncate. Pods few to a raceme, coriaceous, apine with moderately soft straight prickles, obliquely obovate-oblong, 4 - 7 cm. long and 3 - 4 cm. wide, 2- to 3-seeded, on thickened and lengthened pedicel. Seeds lead-colored, obovoid, 10 - 15 mm. in diameter, with basal punctiform hilum.

TYPE LOCALITY: Habitat in Seyloria

LOCAL RANGE: Indigenous to all the larger islands at lower elevations especially in arid districts where it trails over rocks and low vegetation; not common. The marble-like seeds are locally used in the making of leis.

EXTRA RANGE: Found throughout the tropics in both hemispheres, probably due to its seeds which can float almost indefinitely in the ocean.

lots  
pico  
1929

K.  
P

Agave

Flora Hawaiensis

the Philippines but differs in having smaller flowers and bracts less leaf-like.

LILIACEAE  
Early Family

cont. from reverse

DIANELLA SANDWICENSIS Hook. & Arn.  
Dianella; ʻŌki of the Hawaiians

Family: 68  
Genus: Dianella  
Species: Sandwicensis

Dianella ensifolia Sinclair, Indig. Fl. Haw. Isls. pl. 20. 1885.  
Not Dianella ensifolia [DC. in] Red. Lil. t. 1. 1802.  
Dianella sandwicensis Hook. & Arn. Bot. Beech. 97. 1832.  
Dianella odorata Hb. Fl. Haw. Isls. 445. 1888.  
Not Dianella odorata Blum. Enum. Fl. Jav. 1: 13. 1830.

(7)

Stem with about 6 crowded leaves at one time of which second pair is usually longest, rhizome about 1.5 cm. thick and creeping near surface of ground to produce 1 - 2 mm. thick brittle roots. Leaves linear-lanceolate, stiff, waxy above, dull beneath, closely and conspicuously veined, 3 - 10 dm. long and 2 - 3 cm. wide, below folded and with the two sides adnate near midrib and becoming progressively gradually more adnate until completely so for short distance after which sides become gradually less adnate but immediately patent, the midrib being keeled but unarmed throughout and the margins being entire or rarely with a very few

Dianella nemorosa Wiegmann, Pa. Hava. Kap. 152. 1771.  
Not Dianella nemorosa Lam. Encyc. 2: 276. 1792.

C.B.R.



scattered minute spines. Panicle usually much longer than leaves or very rarely even shorter, with lowest bract usually leafy and subsequent ones quickly decreasing in size and becoming scarious, with 6 - 12 ascending twice-divided branches drooping at the ends into short indeterminate clusters of stiff 3 - 8 mm. long pedicels bearing flower with partly reflexed perianth. Sepals valvate in the bud, 6 mm. long and 3 mm. wide, 5-nerved, oblong-ovate, acute, bluish and with back often purplish, slightly woolly at tip and with upper margins somewhat involute. Petals slightly smaller than sepals and less acute at apex, bluish, plainly 3-nerved and often with 2 fainter nerves. Stamens about 4 mm. long; filament with lower half filiform and white, and upper half wide and light orange; anther almost 2 mm. long, yellow. Ovary long, subulate; stigma minute. Berry obovoid, very dark blue, often 1 cm. long and 7 mm. thick, with marcescent perianth bases, and with 2-3 seeds per cell. Seeds shiny, black, 3 - 4 mm. long, outer half hemispheric, inner half angular and with single crest; testa crustose.

T.E.: Apparently Oahu.

L.R.: Common on exposed ridges and slopes from 2000 - 6000 feet on Oahu, ~~Molokai~~ and Kauai. In 1927 it was found growing on the mountains in back of Lahaina, Maui, with *D. sandwicensis* var. *laxum*. Numerous specimens with transitional characteristics were found there also. *Barrie* was by the Hawaiians as a dye for kapa.

E.R.: Probably endemic. Closely related to *D. ensifolia* (L.) DC. of

(6)

RUBIACEAE  
MADDER FAMILY

GARDENIA REMYI Mann  
REMY'S GARDENIA; MANU, less often MAU

~~XXXXXXXXXXXX~~  
Gardenia Remyi in Proc. Am. Acad. 7: 171, 1867.

Tree 5 - 10 meters high, bearing spreading leafy branches having the young leaves and terminal square buds glutinous and thickly varnished. Leaves decussate, chartaceous, light green, obovate-oblong, 7 - 20 cm. long and 5 - 10 cm. wide, shortly acuminate at apex and contracted at base, with prominent yellowish midrib and veins on under side finely yellow-papillose along their margins; petioles about 5 mm. long; stipules connate to form truncate persistent sheath about 3 mm. high above petiole bases. Flowers terminal; single, sessile, fragrant. Calyx tube angular, obconic, 1 - 2 cm. long, with 4 - 6 more or less obovate lobes about 25 mm. long and 12 mm. wide which are erect and have lower half of inner margin straight and outer margin curved. Corolla yellowish-white, salverform, thick, with tube 20 - 25 mm. long and with the 7 - 9 obovate-oblong suberect to recurved lobes about 15 - 20 mm. long and 6 - 10 mm. wide and narrowed at base, dextrorsely contorted in the bud. Stamens as many as corolla-lobes; filaments ~~XXXXXXXXXX~~ ~~XXXXXXXXXX~~ adnate to corolla-tube for half its length; anthers subsessile, versatile, 11 - 12 mm. long. Ovary 1-celled with 4 - 6 parietal placentas; cup-shaped nectariferous disk about 1 mm. deep surrounding base of style; style 6 mm. long; stigmas 4 - 6, subequal, incompletely connate for about 10 mm. so as to leave yellow stigmatic grooves and free for about 2 mm. Fruit leathery, somewhat pyriform and angular, 4 - 6 cm. long and 2.5 - 3 cm. wide, ribbed, surmounted by calyx disk 3 mm. high and 6 - 8 mm. in diameter and by enlarged persistent falcate calyx-lobes; when immature green to orange with orange pulp but later containing black pulp with numerous closely packed seeds. Seeds black, flattish, 2 mm. long and 1.5 mm. wide.

TYPE LOCALITY: "Woods on the windward side of Kauai, and on the mountains above Honolulu, Oahu."

LOCAL RANGE: Growing chiefly in the rain forests at medium elevations; not common. Found on Kauai (Kealia and Hanalei according to Hillebrand and Rock); not uncommon on the Koolau Range of Oahu, as for example at Wahiawa and Waipio-Wahiawa; on east Molokai at Kaluaaha; and on the northern slope of Haleakala, Maui (Waikamoi and Honomahu according to Rock).

EXTRA RANGE: Endemic to the Hawaiian Islands.

The orange fruit-pulp of this Gardenia, as well as that of the ~~XXXX~~ other native species, was used by the early Hawaiians as a yellow dye for their kapa cloth.

GOODENIACEAE

*Goodenia* Family

SCAEOVOLA MOLLIS Hook. & Arn.  
PURPLE-FLOWERED SCAEOVOLA; ~~or~~ NAUFAKA

Family: 340  
Genus: *Scaevola*  
Species: *Mollis*  
(From Kahana Ditch trail March 1931)

*Scaevola mollis* Hook. & Arn. Bot. Beech. 87. 1832.  
*Tamminokia mollis* De Vriese in Nederl. Kruidk. Arch. 2. 1: 147. 1851.

Shrub attaining about 1.5 meters, with its younger branches gray- to yellowish-tomentose. Leaves chartaceous to coriaceous, narrowly oblong-elliptic, ~~XXXXX~~ becoming 12 cm. long and 3.5 cm. wide, conspicuously veined, shortly pubescent above, densely gray-to rarely yellowish-tomentose beneath, shallowly denticulate with callous teeth to almost entire, acute to acuminate at apex and acute at base; petiole 2 cm. long or less and bearing tuft of long silvery hair in its axil. Flowers lavender, subtended by 2 persistent curved linear-subulate ~~XXXXX~~ bracts, on usually 5 mm. long peduncle forming 3- to 5-flowered tomentose cyme shorter than the petioles. Calyx tomentose, less than 1 mm. high, consisting of a border which is subtruncate or more often with 5 usually somewhat spreading ciliate rounded lobes. Corolla tube 15 mm. long and when spread out flat 6 mm. wide, tomentulose and brownish-green without, silky-pubescent with whitish hairs within; corolla lobes about 12 mm. long and 5 mm. wide, prominently winged and cuspidate, glabrous and lavender within especially along three longitudinal veins, on outer surface greenish and tomentulose except for wings which are lavender and glabrous. Stamens glabrous, about 13 mm. long filaments filiform; anthers connate, spatulate, almost 3 mm. long. Ovary inferior, ~~XXXXX~~ tomentose, 4 - 5 mm. long and 3 mm. wide, 2-celled; style ~~XXXXX~~ 15 to 20 mm. long, greenish, pubescent except for upper part; stigma 2 - 3 mm. broad. Fruit black, dull and gray-tomentulose, subspheric to ellipsoidal, about 8 mm. long and 6 mm. wide, with purplish juice; endocarp almost 5 mm. long and 3 mm. wide, somewhat compressed, smooth except for single roundish 3-grooved area on each face, containing 2 seed-cavities one of which is sometimes hollow.

T.L.:

L.R.: Peculiar to Oahu where it is found on both mountain ranges in open woods above 700 feet. Not common except in a few localities as in Pa-uoa Flats between Mt. Tantalus and Nuuanu Valley. Probably the most ornamental species in the islands.

E.R.: Not known elsewhere.



Legum.

Flora Hawaiiana  
PLUMBAGINACEAE  
Plumbago Family

Family : 272  
Genus : Plumbago  
Species : Auriculata

PLUMBAGO AURICULATA Lam.  
Blue Plumbago caps.

Plumbago auriculata Lam. Encyc. 2 : 270. 1786.  
Plumbago capensis Thunb. Prodr. Fl. Cap. 33. 1794.

(8)

Slender half-climbing shrub 1 - 2 m. or more high, with lax greenish terete and longitudinally grooved leafy branches which are glabrous excepting near the inflorescences. Leaves oblong to oblong-spatulate, 2 - 7 cm. long, dull above except near veins, white-granular and very scabrous beneath, thin, entire to somewhat undulate, obtuse at apex, tapering at base, with reniform auricles 2 - 3 mm. wide. Flowers lavender, ascending, in 4 - 7 cm. long puberulent terminal raceme often branching once or twice below, subsessile in axil of linear-lanceolate 15 mm. or less long bract which has 2 smaller and broader bracts on either side above it. Calyx about 13 mm. long, narrowly cylindric, with 5 green ribs bearing in upper half viscid glands on 1 mm. long stalks, scarious and glandless between the ribs, with 5 teeth 1 - 2 mm. long. Corolla-tube slender, glabrous, regular, 3.5 cm. long, with 5

OK.

obovate obtuse to truncate blades 13 mm. long having darker midrib. Stamens slightly longer than corolla-tube; filaments with minute dilated yellow nectariferous base but above lavender and filiform; anthers 1.5 mm. long, bluish; pollen pale yellow. Ovary sessile; style 3 cm. long, connate, with five 1 mm. long stigmatic branches. Fruit

Seed.

T.L.:

L.R.: Introduced before 18<sup>71</sup> and now one of the common ornamental shrubs of gardens.

E.R.: Native of Africa but commonly cultivated throughout the tropics because of its showy flower clusters.

*According to Hilkebrand there is also a form of R. coccinea & R. coccinea to West. p. 548 there is a whole flower cluster and also a fruit.*

OK. P

OPHIOGLOSSACEAE

FAMILY : 1  
Genus: OPHIODERMA  
SPECIES: Falcatum

OPHIODERMA FALCATUM Degener  
(SICKLE-SHAPED OPHIODERMA; LAUKAHI, PUAPUANO)

*Ophioglossum pendulum* Hillsb. Fl. Haw. Isl. 640. 1888.  
*Ophioderma pendulum* W.J. Robinson ~~XXXXXX~~ in Bul. Torr. Bot. Club  
39: 235. 1912.  
Not *Ophioglossum pendulum* L. Sp. Pl. ed. 2. 2. 1518. 1763.  
Not *Ophioderma pendulum* Presl, Suppl. Tent. Pterid. 56. 1845.

Epiphytic perennial herb bearing 2 - 6 leaves from the subterranean rhizome. Leaves fleshy and leathery, oblanceolate, falcate, very rarely with tendency to become lobed, 20 to rarely 40 cm. long, 2 - 3 cm. wide near the obtuse apex, gradually narrowing to the yellowish subterranean base, opaque, without midrib but with indistinct anastomosing veins forming large elongate areoles lacking free veinlets; if fertile then differing by the addition of 1 green 4 - 10 cm. long and 5 mm. wide flattened spike borne on pendent peduncle about 15 mm. long which is attached to the median face of the sterile division at or slightly above its ~~XXXX~~ middle. Sporangia 1 mm. wide, yellow at maturity, each ~~estimated to contain~~ upward of 15,000 spores ~~XXXXXX~~ which is probably the greatest output known for a similar structure among all ferns.

TYPE LOCALITY: *Tantalus, Oahu* (probably containing)  
LOCAL RANGE: Among decayed moss on trees or fallen logs at middle elevations. Comparatively rare excepting on Tantalus mountain near Honolulu. Besides Oahu, the plant has been collected on Kauai, Maui, and near Keanakakoi Crater on Hawaii. It grows probably on the other large islands as well. The Hawaiians, according to Hillebrand, employed an infusion of this fern as a remedy against cough.  
EXTRA RANGE: ~~XXXXXXXXXXXXXXXXXXXXXXXXXXXX~~ Also found elsewhere in Polynesia.

*Ophioglossum pendulum* Hook. & Arn. Bot. Beech. 102. 1841.  
*Ophioglossum pendulum* Brack. Fil. U. S. Expl. Exp. 317. t. 44. 1854.



STERCULIACEAE

WALTHERIA AMERICANA L.

Waltheria; hialoa, (less commonly uhaloa, hihialou and alaalapuloa).

Waltheria americana L. Sp. Pl. 673. 1753.

Waltheria Fauriei Levl. in Fedde Repert. 10 : 120. 1911.

Densely tomentose to softly villous perennial with prostrate or 3 - 12 dm. high branches woody at base. Leaves opposite, ovate-oblong, 3 - 12 cm. long and 1.5 - 7 cm. wide densely tomentose to softly villous, obtuse at apex, truncate to rounded at base, coarsely dentate, penninerved with veins impressed above, with 3 - 30 mm. long petiole and with deciduous 5 mm. long subulate stipules. Flowers in dense, bracteate, axillary clusters on 3 - 10 mm. long peduncle. Calyx campanulate, yellowish green, tomentose, persistent, with tube 3 mm. long and linear-lanceolate acute lobes 2 mm. long. Corolla yellow, with oblong-spatulate petals 4 mm. long. Stamens 5, united at base; filaments 2 mm. long; anthers yellow, 1 mm. long. Ovary green, strigose above, 1 mm. long; style slender, 2 mm. long, pubescent; stigma yellow, fastigiate, 1 mm. long. Fruit a 2-valved, yellowish cuneate-globose 1-seeded capsule 2 mm. long and 1.5 mm. wide. Seed black, conical, 2 mm. long.

T.L.: "in Bahama, Barbiches, Surinamo."

L.R.: One of the commonest weeds found throughout the Islands in arid regions chiefly at lower elevations. The plant was collected as early as 1838 - 42 in the Puna District of Hawaii by the United States Exploring Expedition. By Mann and Brigham, who botanized extensively in 1864, it was considered of aboriginal introduction. The plant's wide

*by the Hawaiians*  
distribution in the Islands even in the early days and its many uses to the  
Hawaiians, tends to substantiate its existence here before the coming of  
Captain Cook. The pounded leaves were used in filling cracks and seams of  
their dugout canoes to prevent leaking. The pounded leaves were ~~used also~~ *used*  
as a poultice, while the bark stripped from the root furnished a remedy  
for sore throat and for the fungus disease called sa or thrush. The flower  
clusters were used for sa likewise.  
Dist.: Found in most islands of the Pacific and in the tropics of both the  
Old and the New World.

*the Range:*

OK  
P

DOODIA KUNTHIANA Gaud.

Hawaiian Doodia: *Okupukupu*; *Pamoho*

Doodia Kunthiana Gaud. Bot. Freyc. 491: 1829. (Pl. 14. 1826.)

Doodia media Hilleb. Fl. Haw. 1-1. 584. 1888.

Not Doodia media R. Br. Prod. N. Holl. 151. 1810.

Doodia media var. C. Chr. Ind. Fil. 242. 1905.

Roostock short, ascending, becoming 1.5 cm. thick. Fronds stiff, dark-green when old and often red near top when young, 20 - 50 cm. long and about 4 cm. wide, linear-lanceolate, pinnate except for top which has pinnatifid segments that become confluent to form subentire apex - 2 cm. long. Pinnae 40 - 80, spreading, linear-lanceolate, often somewhat falcate, bluntish, spinulose-dentate especially near pinna apex; lower pinnae distant, short stipitate, rounded at base or often obliquely auriculate, the lower auricle being smaller and dwindling away first; upper pinnae with sessile base often 5 mm. wide, approximated so pinnae margins of one side of frond usually lie opposite pinnae midribs of other; stipe dull, almost black near base and gradually becoming stramineous toward apex, upper surface sulcate and lighter than lower, clothed especially near base with dark deltoid to linear, denticulate ramentum almost 5 mm. long. Sori in 1 complete or rarely 2 complete rows on each side of pinna midrib from which they are about 1 mm. distant, usually almost 1 mm. long and often less than 1 mm. apart. Veins between margin and midrib forming 1 - 2 rows of areolae.

TYPE LOCALITY: Hawaiian Islands.

LOCAL RANGE: Found on all the larger islands; not common but sometimes almost gregarious at lower and middle elevations, especially in shaded, rocky ravines exposed to occasional drying.

EXTRA RANGE: Endemic. Closely related to *D. media* R. Br., of Australia and New Zealand.

Specimens collected by C. N. Forbes in rocky ledges along the main Waikawa, Kauai and labelled by him *D. kunthiana* var. *depauperata* are probably merely dwarf ecoforms.



Family: 329

~~MYOPORACMAE~~ Lindl.

~~Myoporum~~ Lindl. *Family*

About 5 genera and 100 species, most of which are native to Australia.

~~See letter~~  
~~and meeting~~  
~~in same~~  
~~instance~~  
J. B.

to ~~OK.~~

BRYOPHYLLUM Salisb. Par. Lond. pl. 3. 1805.

Erect fleshy perennial herbs often somewhat woody at ~~base~~ base, with thick nodose stems. Leaves fleshy, opposite, simple or imparipinnate with leaflets mostly crenate-dentate. Flowers regular, perfect, often showy, pale-green to reddish, nodding, in large cymose or paniculate inflorescence. Calyx chartaceous, 4-toothed, inflated. Corolla with more or less campanulate limb and 4 spreading lobes partly or wholly covered by calyx. Stamens 8, in 2 series, adnate to almost middle of corollatube; filaments filiform; ~~anthers~~ anthers mostly exserted. Receptacle with scale at base of each carpel. Carpels 4, free or somewhat connate at base; Ovules numerous; style filiform; stigma subcapitate. Fruit of 4 many-seeded follicles. ~~Name~~ Name derived from the Greek for sprouting and leaf in allusion to the ease with which adventitious buds arise from the fallen leaves and develop into new plants. ~~Type~~ Type species: *Cotyledon pinnata* Lam.

Only 4 species of which 2 are peculiar to Madagascar and the others to Asia and South Africa.

OK: P (5)

Coarse glabrous to pubescent soft-wooded shrubs or trees, usually with forking branches. Leaves large, membranous, petioled, alternate but often approximated in pairs with one leaf sometimes much smaller than the other. Flowers very large, white to yellowish or red, solitary and pendulous on curved peduncles. Calyx angular, spathe-like or 5-lobed, persistent. Corolla long-funneliform, cylindric below and campanulate above, with limb bearing 5 acuminate lobes. Stamens ~~5~~ 5, inserted, usually near middle of corolla-tube, included; filaments filiform; anthers longitudinally dehiscent. Ovary 2-celled; ovules many; style filiform; stigma 2-lobed. Fruit ~~is~~ unarmed, spindle-shaped. Seeds flattened. (flattening to slightly fleshy berry drisical within)  
 Named in honor of S.J. Brugmans, professor in Leyden.  
 Type species: Brugmansia candida Pers.

A few species native to Mexico and South America.

Key to species ~~in the Solanaceae~~:

1. Plant densely pubescent, calyx cleft. -- B. arborea
2. Plant glabrous or nearly so, calyx 5-lobed. -- B. suaveolens



GRASSULACEAE DC.  
ORPINE FAMILY

Family: 153

Herbaceous or somewhat shrubby perennials or rarely annuals, usually with thick fleshy stems that are often glaucous and usually glabrous. Leaves usually fleshy, opposite or alternate or whorled, estipulate. Flowers regular or symmetrical, usually perfect, cymose or rarely solitary, greenish-yellow to red, ~~free from the~~ or ~~more ovaries~~. Calyx persistent, of 3 to 30 but usually 4 - 5 sepals which are free or united into a tube or very rarely wanting. Corolla of 3 to 30 but usually 4 - 5 petals which are free or variously united. Stamens somewhat perigynous, usually free, twice as many as the petals or as many as the petals and then alternate with them; filaments mostly free; anthers longitudinally dehiscent, 2-celled, introrse. Receptacle almost always with a scale at base of each carpel. Carpels equal in number to the petals, superior, free or united below; ovules numerous, arranged in 2 rows along the ventral suture or very rarely solitary; style subulate or filiform; stigma inconspicuous or rarely capitate. Fruit follicular, membranous to leathery, often surrounded by the persistent corolla, dehiscing by ventral sutures. Seeds minute; embryo terete

over

OK.P

(6)

with short cotyledons usually in fleshy endosperm.

Possibly 50 genera and ~~about 1000~~ over 600 species of wide distribution with the exception of Polynesia, Australia and South America where they are almost entirely absent.

Family: 290  
Genus: *Passiflora*  
Species: *Quadrangularis*

*Passifloraceae*

*PASSIFLORA QUADRANGULARIS* L.  
*GIANT GRANADILLA*

*Passiflora quadrangularis* L. Syst. ed. 10. 1248. 1759.

Large quick-growing glabrous vine woody toward base, with older branches purplish and with younger branches green and obliquely tetragonal and prominently 4-winged, arising from more or less swollen fleshy root. Leaves alternately, with ovate to suborbicular blade 15 cm. or less long, shallowly cordate at base, short-acuminate at apex, entire or nearly so, with thick sulcate winged petiole about 3 cm. long bearing on upper margins 3 pairs of green sessile nectaries; stipules membranous, broadly ovate, acute at apex, truncate at base, about 3 cm. long. Flowers fragrant, about 13 cm. in diameter, on jointed 3-bracteate peduncle about 2 cm. long which is inserted in deep depression of receptacle. Sepals green without, partly pink within, somewhat fleshy, about 45 mm. long and unequal in width. Petals light pink without, pink within, somewhat fleshy, 22 mm. wide and shorter than sepals. Corona of 2 rows of purplish-blue filaments about 120 in number which are transversely striped and marked with white toward base, exceeding the perianth in length. Stamens 5; anthers thin, pale yellow, about 1 cm. long. ~~XXXX~~ Ovary oblong, 1 cm. long, on 2 cm. long gynophore; styles 1 cm. long; stigmas broadly capitate, 1 ~~XXXX~~ cm. wide and 4 mm. broad. Fruit ovate-elliptic, up to 2 dm. long, greenish-yellow, with pale rind 2 - 4 cm. thick containing sweet-acid purplish pulp 3 cm. long. Seeds flattened, light purplish brown, angular-cordate, 9 mm. long and 7 mm. wide.

TYPE LOCALITY:

LOCAL RANGE: Reported by Hillebrand in 1885 as cultivated in the Islands. It was presumably not found naturalized at that time. In 1931 it was found wild, though rare, in the wetter woods of Kona, Island of Hawaii, and probably may be found as an escape from cultivation elsewhere as well.

EXTRA RANGE: Native of tropical America but now planted throughout the tropics for its edible fruit which attains the largest size of any in the genus. While the fruit is unripe, its thick rind may be boiled and eaten like squash or may be made into a fritter; in the ripe state its fleshy contents may be eaten raw and made into a sherbert. The swollen roots are edible after baking. The name *granadilla* is a diminutive of the Spanish name *granada*, meaning pomegranate. 18



ARISTOLOCHIA ELEGANS Mast.

CALICO-FLOWER, ELEGANT DUTCHMAN'S PIPE

Long slender and somewhat glaucous climber with thick rhizome. Leaves thin, broadly reniform-cordate, entire, glaucous beneath, at apex rounded to emarginate, the blade becoming 7 cm. long and 10 cm. wide, on slender petiole becoming about 6 cm. long. Flowers axillary and solitary, borne on young short shoot having single falcately reniform to almost orbicular usually 1 cm. wide stipule-like bract, pendent from slender usually 6 cm. long peduncle. Calyx tube pale greenish-yellow, longitudinally striate, turgid, 3 cm. long and 15 mm. wide to base of bend and 25 mm. long and 5 mm. wide beyond it; limb about 7 cm. in diameter, nearly circular, shallowly dish-shaped, cordate at base and emarginate at apex, entire, on outer surface whitish with red-brown venation, within with rich purplish-brown eye surrounding yellowish center and elsewhere ~~XXXXXX~~ somewhat rugose and whitish with large irregular rich purplish-brown blotches. Stamens 6, in 1 row around the 8 mm. long stylar column; pollen yellow. Ovary 6-celled; style 6-lobed; stigmas puberulent. Capsule dark brown, 6-grooved and -ridged, about 5 cm. long and 15 mm. in diameter, incompletely dehiscent from base toward apex to show stramineous septa. Seeds brown, very thin, 6 mm. long and 4 mm. wide, medianly ridged, slightly light-punctate, cuneate-obovate.

Type locality: Brazil.

Local Range: Sparingly grown in the Islands because of its odd flowers and fruit. Probably introduced after 1710; first definitely listed from here by M.D. Frear in 1929.

Extra Range: Grown as an ornamental in many warm countries.

*Aristolochia elegans* Mast. in Gard. Chron. 2: 301. 1885.

O.K.  
P.

①

PASSIFLORACEAE Duroi.  
Passion-Flower Family

Herbs or shrubs climbing with usually axillary simple tendrils, or very rarely erect herbs or shrubs or even trees without tendrils. Leaves almost always alternate, usually with petiole often bearing extra-floral nectaries, simple or lobed or digitate or very rarely pinnate, with small or conspicuous stipules. Flowers regular, perfect or unisexual, small or conspicuous, sometimes surrounded by prominent bracts, 1 or more together in axillary inflorescences. Receptacle usually well-developed, in lower part on inner side sometimes a nectariferous disk or rarely 5 free scales which lie opposite the sepals. Sepals 3 - 5 usually, ovoid or oblong or lanceolate to linear, leathery or membranous, in bud imbricate, usually persistent. Petals very rarely none or usually as many as the sepals and alternate with them, inserted in receptacle usually at the same level as the sepals, oval to linear, in bud usually imbricate. Corona (a development of the receptacle on the inner side) very conspicuous, in single or often multiple rows as a crown of threads or funnels that may or may not be more or less cut or divided; corone very rarely wanting. Stamens usually as many as the sepals and opposite

~~them~~ them or rarely 3 - 10; filaments free from gynophore and then usually fastened to base or rarely to rim of receptacle, or more or less adnate to gynophore and then becoming free from below base of ovary; anthers 2-celled, longitudinally dehiscent, versatile or basifixed and first introrse but later often ~~XXXXXX~~ turning to appear extrorse; sometimes equal number of short staminodia alternating with the stamens. Ovary often on well developed gynophore, 1-celled with usually 3 parietal placentas bearing several to many anatropous ovules in 2 or more longitudinal rows; style 3 - 5, free or more or less connate, or style entirely wanting; stigma usually capitate or reniform, or rarely solitary and very broad and sessile or subsessile on ovary. Fruit a loculicidal capsule or berry. Seeds ~~XXXX~~ 1 to many with bag-like fleshy or membranous aril and usually pitted or ridged seedcoat containing embryo in fleshy endosperm.

About 18 genera and at least 600 species native throughout the tropics and subtropics, especially of the New World.

OK.  
(8) 8

FAMILY: 318  
GENUS: Brugmansia  
SPECIES: Arborea

SOLANACEAE

BRUGMANSIA ARBorea (L.) Steud.  
ANGEL'S TRUMPET, CORNUCOPIA, HORN OF PLENTY

Datura arborea L. Sp. Pl: 179. 1753.  
Brugmansia arborea Steud. Nom. ed. 2. 1 : 230. 1840.

Pubescent tree 3 to rarely 6 dm. high with smooth yellowish bark and thick soft greenish twigs. Leaves alternate but approximated in pairs with one leaf one- to two-thirds larger than the other, ovate to lanceolate, entire or nearly so, acute at apex, unevenly cordate to truncate at base, pubescent especially on under side, with blades 25 cm. or less long and 12 cm. or less wide on thick petioles 10 cm. or less long. Flowers usually numerous, solitary on 2 - 4 cm. long thick pedicels. Calyx tubular, about 1 dm. long, not cleft into lobes but spathe-like with ~~XXXX~~ sinus extending one-third of calyx length, membranous, green, puberulent. Corolla about 25 cm. long, almost white, with 15 greenish nerves, somewhat clammy-pubescent without and glabrous within, with ~~XXXXXXXXXXXX~~ caudate lobes. Stamens about 16 cm. long; filaments united with ~~XXXX~~ corolla tube for two-thirds their length and there flattened and channeled and clavate with copious pubescent near swollen part but above glabrous and filiform; anthers about 2 cm. long, grayish. Ovary oblong-conical, 1 cm. long; style about 15 cm. long, glabrous; stigma 5 mm. long. Fruit velvety, dark olive-green, about 11 cm. long and 18 mm. long, with pulpy exocarp 3 mm. thick and with membranous endocarp enclosing about 35 seeds; fruit leathery on drying. Seeds flattened, angular, rugose, brown, commonly 1 cm. long and 6 mm. wide and 3 mm. thick.

TYPE LOCALITY: "Habitat in Peru."

LOCAL RANGE: Probably of early introduction as an ornamental and occasionally grown in gardens. Usually long persistent as along the road from Hilo to Kilauea, Hawaii; ~~but~~ rarely found fruiting.

EXTRA RANGE: Native of South America but now extensively cultivated in warmer regions.

(Illustrated on following page.)

W. Degenes - 1-1/31

OK 23  
P



NYCTAGINACEAE Lindl.  
FOUR-O'CLOCK FAMILY

Herbs, shrubs, trees, or rarely vines, with usually swollen nodes and sometimes thorn-like branches. Leaves entire, simple, stipulate, alternate or usually opposite, those of each pair sometimes unequal. Flowers regular, in clusters frequently subtended by an involucre of separate or united bracts, perfect or rarely unisexual by partial abortion. Calyx inferior, with 4- to 5-lobed or -toothed limb, usually corolla-like, delicate or leathery to woody, campanulate to tubular or salverform, persistent after flowering to envelop or become part of fruit. Corolla none but calyx frequently simulating one, and the cup-like involucre of each flower frequently simulating a calyx. Stamens hypogynous, 1 to many, free or united at base, involute in the bud; filaments filiform, often unequal; anthers 2-celled, dehiscent by lateral slits. Ovary enclosed by indurated tube of perianth, 1-celled; ovules 1, campylotropous; style usually long and simple; stigma capitate. Fruit a ribbed, grooved, winged or sticky achene-like anthocarp containing embryo usually coiled around outside of mealy

*Stip once*

endosperm with 2 broad foliaceous cotyledons or ~~only~~ one cotyledon much smaller or even wanting by abortion in western North American genus Abronia.

About 22 genera and 350 species of wide distribution in warmer regions, especially numerous in America.

Ch. Seeger - 1-1-31

PASSIFLORA QUADRANGULARIS L.  
GIANT GRANADILLAPassiflora quadrangularis L. Syst. ed. 10. 1248. ~~XXXXXXX~~ 1759.

Large quick-growing glabrous vine woody toward base, with older branches purplish and with younger branches green and obliquely tetragonal and prominently 4-winged, arising from more or less swollen fleshy root. Leaves alternate, with ovate to suborbicular blade 15 cm. or less long, shallowly cordate at base, short-acuminate at apex, entire or nearly so, with thick sulcate petiole about 3 cm. long bearing on upper margins 3 pairs of green sessile nectaries; stipules membranous, broadly ovate, acute at apex, truncate at base, about 3 cm. long. Flowers fragrant, on jointed 3-bracteate peduncle about 2 cm. long which is inserted in deep depression of receptacle. Sepals green without, partly pink within, somewhat fleshy, about 45 mm. long. ~~Petals white to pink without, pink within, somewhat fleshy, about 22 mm. long.~~ <sup>about 15 mm. long</sup> Petals ~~white to pink without, pink within, somewhat fleshy, about 22 mm. long.~~ <sup>about 15 mm. long</sup> ~~Corona of 2 rows of white filaments, transversely striped with reddish-purple, the outer series exceeding the perianth in length.~~ <sup>about 15 mm. long</sup> Stamens 5; anthers thin, pale yellow, about 1 cm. long. Ovary oblong, 1 cm. long, on 2 cm. long gynophore; styles 1 cm. long; stigmas broadly capitate. Fruit ovate-elliptic, up to 2 dm. long, greenish-yellow, with pale green rind 2 - 4 cm. thick containing sweet-acid purplish pulp 3 cm. long. Seeds flattened, light purplish brown, angular-cordate, 9 mm. long and 7 mm. wide.

*as an escape from cultivation*

## TYPE LOCALITY:

LOCAL RANGE: Reported by Hillebrand in 1885 as cultivated in the Islands. It was presumably not found naturalized at that time. In 1931 it was found wild, though rare, in the wetter woods of Kona, Island of Hawaii, and probably may be found elsewhere as well.

EXTRA RANGE: Native of tropical America but now planted throughout the tropics ~~XXXXXXX~~ for its edible fruit which attains the largest size of any in the genus. While the fruit is unripe, its thick rind may be boiled and eaten like squash; ~~while~~ in the ripe state its fleshy contents may be eaten raw and made into a sherbert. The swollen roots are edible after baking. The name granadilla is a diminutive of the Spanish name granada, meaning pomegranate.



*Sage*  
EUPATORIUM L. Sp. Pl. 836. 1753.

FAMILY: 344  
GENUS: Eupatorium

Herbs or shrubs or rarely trees, usually perennial. Leaves opposite or whorled or rarely alternate, often punctate with bitten resinous dots. Heads rayless, mostly in dense flat-topped or rounded clusters or sometimes in open panicles. Involucre cylindrical to hemispheric, of more than 4 bracts in 1 to 3 or more overlapping series. Receptacle naked, flat or conical. Florets ~~many~~ perfect, usually 5 or more or very rarely 1 - 4 in each head, white or pink or purple or rarely bluish but never yellow. Corolla regular, 5-toothed, its tube slender and its limb 5-lobed or 5-toothed. Anthers obtuse and entire at base. Style-branches long; thread-like or club-shaped, far-exserted beyond corolla-tube. Achenes 5-angled, truncate, crowned with 1 row of well-developed pappus of capillary usually scabrous mostly white bristles.

NAMED after Mithridates Eupater (eupator = of a noble father), King of Pontus from 132 to 63 B.C.; said by Pliny to have employed one of this group of plants as medicine for diseases of the liver.

TYPE SPECIES: Eupatorium cannabinum L.

At least 600 species native to ~~XXXX~~ the warmer regions of the New World, especially Mexico.

## APOCYNACEAE

Euphorbia Family

CHINA GRANDIFLORA E. Meyer  
TAL FIRM, CARISSAFamily: 305  
Genus: *Ardisia* 4  
Species: *grandiflora*  
*Carissa caudata*

*Ardisia grandiflora* E. Meyer Comm. Pl. Afr. 190. 1835 - 37.  
*Carissa grandiflora* A. DC. Prod. 8 : 335. 1844.  
*Carissa carandas* Rock. Ornamental Trees Haw. 175. 1917.  
*Carissa carandas* Linn. Mant. 52. 1767.  
*Carissa* sp., Neal & Metzger, In Honolulu Gardens 251. 1928.

Fruit, *Carissa*  
 Bot. Tree 130. 1929.

Glabrous shrub becoming about 4 meters high, with spreading light-green branches having brownish-annular nodes and being armed usually at every second to fourth node with sharp once to twice bifurcating spines less than 1 cm. long. Leaves ovate to broadly lanceolate, thick, dark green and shiny above, pale below, with thick yellowish midrib, acute and cuspidate to mucronate at apex, rounded to somewhat acute at base, with thick 5 mm. long petiole and with 3.5 - 7 cm. long and about 2.5 cm. wide blade. Flowers white, fragrant both day and night, in subsessile about 1 cm. long cymes. Calyx glabrous; lobes spreading, unequal especially in width, linear-lanceolate broadly oblanceolate, 7 - 10 mm. long and 2 - 5 mm. wide, acute to cuspidate at apex, obscurely glandular at base. Corolla ~~XXXXXX~~ tube yellowish, persistent within and glabrous without, about 15 mm. long; lobes subequal, obliquely obovate, 2 - 2.5 cm. long and 1 - 1.5 cm. wide, glabrous, white above and white with often faint tinge of pink below where exposed while yet in the bud; lobes while in bud sinistrorsely imbricate and puberulent to glabrous without. Stamens inserted in tube about 8 mm. above its base; anthers subsessile, yellowish, 2 mm. long. Ovary elliptic, glabrous, 2 mm. long; style 10 mm. long, glabrous, light green; stigma dark green, penicillate near top of lobes. Berry ovoid, pointed, red, 2.5 - 5 cm. long, with reddish acid pulp surrounding several seeds. Seeds globose, papery.

OKup over

R.: Natal.  
R.: Introduced previous to 1917 and occasionally grown as a very effective and ornamental hedge plant whose spines are sure to repulse intruders. A shrub of this kind should not be tolerated in the Islands because of the danger of its escaping into the open, devastating pastures and becoming a nuisance in general. So far, its sharp thorns have been the cause of one fatality in the Territory. Adapted to dry, rocky localities at lower elevations. Its fruit is edible and can be made into tasty jellies and preserves.  
R.: Native to Natal and sparingly grown in tropical regions.

OKD



*Solanaceae*  
*Nightshade or Potato Family*  
DATURA METEL forma PLENIFLORA Degener  
TRIPLE-FLOWERED HINDU DATURA; KIKANIA

Datura fastuosa [aphalm.] Neal & Metzger. In Hon. Gard. 279. 1928.  
Not Datura fastuosa Linn. Syst. ed. 10. 932. 1759  
Datura metel forma pleniflora forma nov.

Coarse puberulent suffrutescent herb or shrub 4 - 10 dm. high. Leaves puberulent or glabrate, thick, pale, entire to sinuate-dentate, obliquely rounded at base, acute at apex, with obliquely ovate blade 6 - 12 cm. long and 3 - 8 cm. wide and with thick petiole 2 - 5 cm. long. Flowers fragrant, pale yellow, on jointed 5 mm. long peduncle not elongating in fruit. Calyx puberulent, slightly inflated, with 5 cm. long tube and 15 mm. long ovate-lanceolate acute lobes. Corolla not single but consisting of mostly 3 encircling corollas of which the outer layer is about 15 cm. long, with each lobe having 3 greenish veins of which the central one projects into the curved 1 cm. long caudate apex. Stamens usually partly aborted, with 1 cm. long anthers. Ovary 6 mm. long, longitudinally grooved and warty; style 1 dm. long; stigma somewhat laterally flattened. Capsule stramineous, about 5 cm. long and 5 cm. wide, muricate-spiny, ~~striate~~ with wall somewhat fleshy within. Seeds flattened-obovoid, 4 mm. long and 3 mm. broad, yellowish, dull, wrinkled at end.

TYPE LOCALITY: Honolulu, Oahu.

LOCAL RANGE: A form of horticultural origin introduced apparently since 1900 as an ornamental and soon escaping to roadsides and waste places in the drier regions at lower elevations. When first observed by the writer at Kealahakua, Hawaii in 1922, and between Kamalo and Halawa, Molokai in 1928 it was already quite common locally. Also collected on Maui in 1927 and found here and there in Honolulu, Oahu in 1928.

EXTRA RANGE: Native to tropical America.

TYPE: Degener & Hirai 4072, roadside, Honolulu, Oahu, Feb. 10, 1934.

Probably

OK  
P

LANGUAS SPECIOSA (Wendl.) Small.  
SHELLFLOWER

Zorumbat speciosum Wal. Bert. Mann. 4 : 3. 1798;  
Gloeba nutans Redoute, Lillias. 1 : pl. 60. 1802.  
Not Gloeba nutans L. Mant. 2: 170. 1771.  
Bencalnia nutans Andr. Bot. Rep. 5 : pl. 360. 1802 - 3.  
Alpinia nutans Rose.; Smith. Exot. Fl. 2 : 93. 1805;  
Alpinia speciosa K. Schum. Fl. Kaiser-Wilhelmal. 29. 1887.  
Languas speciosa J.K. Small, Fl. SE. U.S. 307. 1375. 1913.  
Languas speciosa Merrill, Baum. Phil. Fl. 1 : 234. 1923.

Herb with yellowish fragrant branching rhizome about 3 cm. in diameter which are pink when young and with 7 mm. thick roots and with only one kind of stem which is leafy and becomes 2.5 meters or more high. Leaves somewhat glaucous, on lower third of stem bladeless; free part of leaf on upper part of stem subsessile to shortly petioled, with conspicuous obtuse 1 - 2 cm. long ligule more or less hirsute with spreading stramineous hirsutulose hair; blade oblong to oblong-lanceolate, 3 - 7 cm. long and 6 - 15 cm. wide, with margin usually conspicuously hirsutulose-ciliate, with caudate deciduous apex. Flowers sessile in groups of 2 or 3 on 1 - 2 cm. long shiny yellow hirsutulose peduncle and enclosed by 2 - 3 cm. long deciduous bracts that are white with pink tinge especially toward apex; inflorescence a drooping raceme-like panicle about 4 cm. long with stout rachis often densely pubescent. Calyx subcampanulate, 2.5 cm. long or less, 3-lobed and split on lower side to within about 5 mm. of base, white with pink tinge especially toward apex. Corolla tube shorter than calyx, white with pink apex, with upper 3 cm. long lobe obovate-oblong and irregularly 3-toothed at apex, and with two lower lobes oblong-elliptic 2.5 cm. long and 13 mm. wide. Two lateral staminodia claw-like, red; lip 4 cm. long and 4 cm. wide, incurved, broadly ovate with upper third abruptly narrowed and with truncate tip cleft to depth of 6 mm., margins yellow and center red variegated especially toward tip with yellow.

Ovary silky-pubescent, 5 mm. long and 4 mm. wide, with 2 yellowish 2 mm. long nectaries at top; style filiform, glabrous, white tinged with pink toward base, 3 cm. long; stigma whitish, cup-shaped, pubescent. Fruit a subglobose capsule about 2 cm. in diameter tardily dehiscent. Seeds gray, subglobose, 3 mm. in diameter.

**TYPE: LOCALITY:**

**LOCAL RANGE:** Probably the earliest unmistakable reference to the occurrence of this plant in the Islands was made by Isabella Bird. She records as growing in Hilo in 1874 "a ginger-plant with drooping flower-stalk with a great number of blossoms, which when not fully developed have a singular XXXXX resemblance to very pure porcelain tinted with pink at the extremities of the buds". In 1922 it was growing on most of the larger islands as an ornamental; and in Kohala, Island of Hawaii, as a windbreak for cane.

**EXTRA RANGE:** Native to eastern Asia and occasionally planted as an ornamental in tropical countries.

6K.  
P

ACANTHACEAE

*Thunbergia*

copied

ACANTHUS sp. from Mrs. Lowrey's garden - possibly near *A. fragrans*

Scabrous <sup>climbing</sup> vine with angular stems. Leaves thick, with angular usually 15 mm. long petioles and with hastate-ovate 4 cm. long blade having cuspidate apex and 2- to 6-dentate-sinuate margin. Flowers white, usually 2 in the axil of a leaf each on 2.5 cm. long pedicel that greatly thickens toward maturity; bracts ovate-deltoid, 17 mm. long and 13 mm. wide, somewhat keeled. Calyx pale, pubescent, 3 mm. long, with about 15 subequal subulate teeth that persist and become scarious in fruit. Corolla white, salverform; tube 2.5 cm. long, somewhat compressed laterally, constricted 4 mm. above base, sparingly pubescent without; lobes 2.5 cm. long and 2.5 cm. wide, broadly ob-ovate-cuneate, ~~attached to limb about 5 mm. in diameter~~, sparingly pubescent beneath toward base and glabrous above. Stamens attached to villous-pubescent constriction of corolla tube; staminodia none; free part of filaments of longer stamens 5 mm. long and that of shorter stamens 2 mm. long; anthers pale, almost 4 mm. long, with sacs subequal in length. Ovary ovoid, longitudinally grooved and slightly compressed; style ~~glabrous~~, white, 2 cm. long; stigma ~~glabrous, whitish, 2 mm. wide~~, funnelform. Capsule grayish-brown, pubescent, with 12 mm. wide and 10 mm. thick and 6 mm. high base and 17 mm. long flattened beak. Seeds dark brown, sparingly shallowly tuberculate, globose with large opening to central cavity which is surrounded by exendospermous fleshy embryo.

ACANTHACEAE

det. *griseb.*



GARDENIA REMYI Mann

Remy's Gardenia;

~~Gardenia Remyi Mann, Enum. Haw. Pl. 76/80 non nud.?~~  
Gardenia Remyi Mann in Proc. Am. Acad. 7: 171. 1867.

Tree 5 - 10 meters high, bearing spreading leafy branches having the young leaves and terminal square buds glutinous and varnished. Leaves decussate, chartaceous, light green, obovate-oblong, 7 - 20 cm. long and 5 - 10 cm. wide, shortly acuminate at apex and contracted at base, with prominent yellowish midrib and veins on under side finely yellow-papillose along their margins; petioles about 5 mm. long; stipules connate to form truncate persistent sheath about 5 mm. high above petiole bases. Flowers terminal, single, sessile, fragrant. Calyx-tube angular, obconic, 1 - 2 cm. long, with 4 - 6 more or less obovate lobes about 25 mm. long and 12 mm. wide which are erect and have lower half of inner margin straight and outer margin curved. Corolla white, salverform, with tube 25 mm. long and with the 7 - 8 obovate-oblong suberect lobes about 2 cm. long.

yellowish-?

thick,

recurved

15-20 mm. long  
and 5 mm. wide

and narrowed at base, dextrorsely contorted in the bud. Stamens with anthers enclosed.

Ovary 1-celled with 4 - 6 parietal placentas; style

stigma 4-lobed, subequal, unim, slightly connate for about 10 mm.

Fruit leathery, somewhat pyriform and angular, 4 - 6 cm. long and 2.5 - 3 cm. wide, ribbed, surmounted by disk 3 mm. high and 6 - 8 mm. in diameter and by enlarged persistent falcate calyx-lobes; containing black pulp with numerous closely packed seeds. Seeds black, flattish, 2 mm. long and 1.5 mm. wide.

T.L.: "Woods on the windward side of Kauai, just on the mountain above the mountains above."

L.R.: Growing chiefly in the rainforests at medium elevations, but not common. Found on KAUAI (Kealia and Hanalei according to Hillebrand and Rock), not uncommon on the Koolau Range of OAHU (Waiawa, D.&W. 3245, 1926; Waipio-Waiawa, Degener & Shear 3244, 1928), on East MOLOKAI (Kaluaaha, D.&W. XXXX 3247, 1928), and on northern slope of Haleakala, MAUI (Waikamoi & Honomanu according to Rock).

E.R.: Endemic.

It may be that the Hawaiian specimens are of a different form. The fruit is black within and the pulp is black. The present specimen shows brown but may be due to decay or injury.

SAPINDACEAE

*Sapberry Family*

CARDIOSPERMUM MICROCARPUM H. B. & K.  
Balloon-Vine

Family: 210

Genus: *Cardiospermum*

Species: *Microcarpum*

*Cardiospermum microcarpum* H.B.&K. Nov. Gen. et Sp. 5: 104. 1824

*Cardiospermum halicacabum* Hillebr. F. Haw. Isls. 85. 1888.

~~Not~~ *Cardiospermum halicacabum* L. Sp. Pl. 366. 1753.

Puberulent quickly growing slender vine with grooved stem and branches. Leaves thin, glabrous above, somewhat puberulent below especially on veins and margins, biternately compound, usually about 10 cm. long and somewhat broader, on slender petiole commonly 3 cm. long; leaflets with petiolules somewhat winged and with ultimate segments ovate to lanceolate in outline and closely lobed or cleft or incised. Flowers white, on slender jointed pedicels 2 - 3 mm. long to form several-flowered corymbs borne on stiff green peduncles usually almost as long as the leaves; tendrils subtended by minute lanceolate bracts, occasionally floriferous. Calyx apparently 4 sepals; outer pair ovate, greenish, somewhat puberulent without, 1.5 mm. long; inner pair obovate-oblong, upper part greenish, glabrous, 3 mm. long. Corolla white, spreading; upper

petals over 3 mm. long, obovate; with prominent somewhat hooded ~~xxx~~ partly tomentose appendage 3 mm. long white at base and bright yellow at apex covering stamens in staminate flowers; lower petals over 3 mm. long, obovate, with obliquely obovate white appendage 3 mm. long flanking stamens in staminate or pistil in pistillate flowers. Stamens in staminate flower grouped at lower side of ~~flower~~ ~~XXXXX~~ ~~wer~~ with or without rudimentary pistil between; filaments of upper stamens shorter than those of lower, 1.5 to almost 3 mm. long, slightly curved upward, sparsely pubescent; anthers and pollen yellowish white. Disk white, 2-lobed on upper side. Pistil in pistillate flower surrounded by 1 mm. long abortive stamens, with 3-angled green ovary 2 mm. long puberulent especially along angles and with style and finely plumose stigmas white and almost 1 mm. long. Capsule subglobose, depressed at top and bottom, 3-lobed with winged angles, brown, pubescent, thin, prominently reticulate, with delicate dissepiments. Seeds black, globose, 4 - 6 mm. in diameter, with very large whitish cordate hilum. *halic*

TYPE LOCALITY: "in humidis prope S. Fernando de Atabapo (Misiones las Orinoco)." *halic*

LOCAL RANGE: An introduced plant found in waste places at low elevations; not common. Collected as early as 1864 - 65 by Mann and Brigham and reported in 1888 by Hillebrand as found on all the islands. In 1897 it was definitely collected in Manapepe Valley, Kauai by ~~XXXXX~~ A.A.Heller, while in 1913 it was reported on Niian by C.N.Forbes. It is known from Manoa Valley.

EXTRA RANGE: Native of South America; possibly not specifically distinct from *C. halicacabum* L. *OK-P.*



Water-leaf family

Synonymy: 312  
Genus: Marilaunidium  
Species: sandwicenseNama sandwicensis Gray in Proc. Am. Ac. 5: 338. 1861.Marilaunidium sandwicense Kuntze Rev. Gen. Pl. 434. 1891.~~Marilaunidium sandwicense (A. Gray) Kuntze Rev. Gen. Pl. 434. 1891.~~Conanthus sandwicensis Heller in Minn. Bot. St. 9: 879. 1897.

Low divaricately branching perennial forming mats becoming 2 dm. in diameter and less than 8 cm. high, densely hispid with short grayish hair, with the older stems woody and dark brown and beset with persistent dead leaves. Leaves subsessile, spatulate, becoming 1 cm. long and 4 mm. wide, obtuse, entire, rather thick, densely hispidulous, with prominent midrib and recurved margins. Flowers single on 1 mm. or less long bractless peduncle which is at first terminal but soon becomes lateral. Calyx with tube 1 mm. long; lobes linear-spatulate, 4 mm. long and 1 mm. wide, foliaceous, hispidulous on both sides, in fruit persistent and doubling in length. Corolla 7 mm. wide, tubular-campanulate; tube 5 mm. long, yellowish at base especially, with upper part pubescent on outer side, glabrous within; lobes spreading, subequal, 2 mm. long and a little wider, pubescent toward base on outer side, glabrous within, obtuse at apex, pink with purplish tinge.

Marilaunidium sandwicense (continued)

Stamens 5, inserted on corolla almost 1 mm. above base, glabrous, yellow; filaments unequal in length, 1 and 2 mm. long; anthers subequal, pale yellow, almost 1 mm. long. Ovary pale green, puberulent, 2 mm. long and 1 mm. wide; disk annular, somewhat lobed; styles pale green, glabrous; 2 mm. long, free to base, appressed except toward apex; stigma dark, minute. Capsule cartilaginous, ovoid-elongate, 3 mm. long, yellowish. Seeds minute, almost smooth, subspheric, shallowly pitted, yellowish.

T.L.: "Sandwich Islands: Oahu, Macrae, Nuttall, Remy, no. 425. Sand-hills of Maui, Dr. Pickering and Mr. Breckenridge. Kauai, Nuttall."

L.R.: Found chiefly on coastal dunes, though not common, on all the islands and on the aeolian sand deposits near Wailuku, Maui. In the latter locality the plants are not prostrate as commonly observed but somewhat assurgent.

E.R.: Endemic to the Hawaiian Islands and represented on the Island of Laysan by a doubtfully distinct variety cited below:

MARILAUNIDIUM SANDWICENSE var. LAYSANICUM (Brand) Degener  
LAYSAN MARILAUNIDIUM

Nama sandwicense var. laysanicum Brand in Engler Pflanzenreich 59. Heft 4. 251: 152. 1913.

Marilaunidium sandwicense var. laysanicum comb. nov.

T.L.: ~~Same~~ "Island Laysan"

L.R.: Known only from type locality.

OK

## CHENOPODIACEAE

Goosefoot Family

Family: III

Genus: *Atriplex*Species: *semibaccata**ATRIPLEX SEMIBACCATA* R. Br.  
*SEMI-BACCATE SALT BUSH**Atriplex semibaccata* R. Br. Prodr. 406. 1810.*Atriplex denticulata* Moq. in DC. Prodr. 13. 2: 97. 1849.*Atriplex flagellaris* Wootton & Standley in Contr. U. S. Nat. Herb. 16: 119. 1913.

Prostrate whitish and sparsely scurfy to glabrate much branches perennial with suffrutescent base and slender terete yellowish branches 3-10 dm. long and with long yellowish tap root. Leaves alternate, thick, salty, scurfy especially beneath, short-petioled and with oblong to obovate-oblong blades 1-3.5 cm. long and 2-9 mm. wide, obtuse or acute at apex and cuneate to attenuate at base, irregularly and remotely repand-dentate or ~~XXXX~~ sometimes entire. Flowers monoecious, solitary or in small clusters in the axils, the staminate clusters being usually in terminal glomerules. Staminate flowers: sepals 5, reddish, herbaceous; stamens 5; filaments white; anthers yellow. Pistillate flowers: surrounded by 2 closely pressed bracts less than 1 mm. long ~~XXXXXX~~ between which 2 ~~XXXX~~ subulate stigmas extend. Fruiting bracts sessile, rhombic, about 6 mm. long, connate at base, compressed, the margins centrally denticulate, finally becoming red and watery-fleshy at maturity with sweetish salty juice. Achene light yellow, subspheric, compressed, smooth, 2 mm. in diameter.

Type Locality: Vicinity of Port Jackson, Australia.

Local Range: A shrub thriving in arid, saline regions primarily near the sea on probably all islands. According to Willis Pope in his "Manual of Wayside Plants of Hawaii", it "is said to have been introduced from Australia for trial as forage on the Island of Lanai about 1895". On Oahu in 1923 it was observed sparingly naturalized on the arid plain near Makapuu Point, and a few years later it was extremely common there as well as at Waianae and elsewhere. On Molokai in 1928 it was very common on the dried salt marshes around Kaunakakai and less common at an elevation of 700 feet near Kalae. Because of its ability to grow in regions unfavorable for most other plants, the saltbush is of considerable value as a supplementary feed for livestock.

Extra Range: Native to Australia but now naturalized in southern California, Arizona, and southern New Mexico.

OK  
P.



*Flora Hawaiiana*  
LEGUMINOSAE  
*Pea family*

Family: 169a  
Genus: *Leucaena*  
Species: *glauca*

LEUCAENA GLAUCA (L.) Benth.  
False koa, leucaena; koa hiale, lili-koo, eko

Mimosa glauca L. Sp. Pl. 520. 1753.  
Acacia glauca Willd. Sp. Pl. 4: 1075. 1806.  
Leucaena glauca Benth. in Hook. Journ. Bot. 4: 416. 1842.

A slender-branched quick-growing shrub or small tree ~~often~~ becoming 20 meters high, with young twigs puberulent. Leaves 1 - 2.5 dm. long; petiole 3 - 6 cm. long with or without sessile gland between lowest pair of pinnae; rachis pubescent; pinnae 3 - 10 pairs, 4 - 10 cm. long, the upper ones little shorter than the lower; leaflets 10 - 20 pairs to each pinna, oblong to lanceolate, thin, 7 - 14 mm. long, inequilateral, acute at apex, obliquely narrowed at base, light green above and paler beneath, glabrous. Flowers in globular ~~racemes~~ mostly clustered 15 - 30 mm. thick heads on stout puberulent to pubescent 2 - 4 cm. long peduncles which are axillary or terminal and which thicken but do not lengthen in fruit; flowers interspersed with linear peltate bracts slightly shorter than calyx. Calyx obconic, about 3 mm. long, greenish, puberulent, with short blunt teeth. Petals linear-spatulate, pubescent, greenish. Stamens about 3 times as long as petals; filaments white; anthers whitish, sparingly pilose. Ovary pubescent. Pods several to ~~many~~ numerous from each peduncle, linear, 10 - 18 cm. long,

about 14 - 20 mm. wide, abruptly acute or mucronate at apex and tapering at base, with thin valves having raised margins, containing 15 - 25 seeds. Seeds elliptic, compressed, shining, brown, 7 mm. long and 4 mm. wide.

T.L.: "Habitat in America."

L.R.: A very common weed now found throughout the Islands at lower elevations, growing especially in the drier regions and usually gregarious. Not known in 1864 but reported as "frequent" twenty years later. Locally the plant rarely attains a height of 10 meters. It is slightly poisonous to horses and mules, these animals losing the hair from their manes and tails if allowed to browse too freely on its leaves and pods. Cattle are not affected. The seeds, softened by boiling, are strung on threads and made into hat bands, necklaces and similar curios for the tourist trade. In the Philippines

E.R.: Native to tropical America but now naturalized in the southern United States and in many other warm regions. In the Philippines it is planted on grassy hillsides for reforestation and often cut after 7 - 10 years for firewood and charcoal. The young green pods are there boiled and eaten as a vegetable, while the ripe seed are occasionally used as a substitute for coffee. In Java it is used as a green manure in tea and coffee plantations, the young plants being cut before they reach a height of 2 feet.

OK



## LEGUMINOSAE

## PEA FAMILY

LEUCAENA Benth. in Hook. Journ. Bot. 4 : 416. 1842.

GENUS : Leucaena

Unarmed trees or shrubs. Flowers regular, mostly perfect, white, sessile in heads borne on axillary peduncles and these peduncles toward the ends of branches in naked racemes. Calyx tubular-campylulate, 5-toothed. Petals 5, distinct, valvate. Stamens 10, exserted; filaments distinct; anthers glandless, often pilose. Ovary ~~stipitate~~ stipitate; ovules numerous; style filiform; stigma minute. Pod stipitate, broadly linear, flat, stiff-membranous, completely 2-valved, practically non-septate, containing seeds transversely. Seeds ovate to obovate, flat.

NAME derived from the Greek for white in reference to the color of the flower clusters.

TYPE SPECIES: Mimosa glauca L.

About 10 species, chiefly native to the warmer regions of western America.

OK  
P

DOODIA

R. Br. Prod. Fl. N. Holl. 151. 1810.

Medium to small ferns with short oblique rootstocks. Fronds tufted, pinnate or pinnatifid, sometimes slightly dimorphic, not jointed with rootstock, spinulose-dentate, harsh. Venation between midrib and margin of pinna of 1 or 2 rows of areolae. Sori oblong, often somewhat curved, superficial, not sunken, arranged serially in 1 to several rows on veins parallel with and between midrib and margin of pinna. Indusium flat, membranous, same shape as sorus, attached by outer margin and opening toward midrib of pinna.

NAMED in honor of Samuel Doody, London apothecary of the 19th ~~Century~~ Century.

TYPE SPECIES: ~~Doodia~~ aspera R. Br.

About 6 species, native to Australia and the islands of the Pacific.

OK j

Degener

PROTEACEAE

Jan 1: 98 16  
Genus: Stylurus  
Species: Banksii

STYLURUS BANKSII (R. Br.) Degener

*Stylurus Banksii* R. Br. in Trans. Linn. Soc. 10: 176. 1810.  
*Stylurus Banksii* Comb. nov.

A small tree, partly deciduous, with heavy to rusty-tomentose young branches. Leaves 10 - 20 cm. long, with petiole less than 3 cm. long, the blade obovate to oblanceolate, with revolute margins, pinnate with usually 3 - 16 lanceolate often cuspidate pinnae, pubescent to glabrate above and caespitose below. Flowers showy, zygomorphic, borne in pairs in the axils of deciduous small bracts, in strict 5 - 10 cm. long racemes which are single or several together. Pedicels 5 mm. long, tomentose with glandular hair. Calyx tube over 1 cm. long, red especially above base, glandular-pubescent without and glabrous within, with outer fourth recurved, splitting open on upper side by growth of pistil. Stamens with anthers 1 mm. long; pollen yellow, mostly adhering to stigma as it becomes free from calyx. Ovary sessile, pubescent, green, with fimbriate yellow disk on posterior half; style 3 - 4 cm. long, red; stigma somewhat conical, yellow; pistil finally somewhat curved. Fruit brown, leathery, glandular densely pubescent, follicle 15 - 20 mm. long tipped with slender curved style.

Type Locality:

LOCAL RANGE: A cultivated tree recorded by J. F. Rock in 1917 as occurring in Honolulu. In 1930 a few plants were growing along the Hamakua coast of the Island of Hawaii, and in 1931 some old trees were still growing in upper Manoa Valley, Oahu. Other specimens are likely to be found elsewhere in the Islands. This species and the white-flowered form mentioned below are very ornamental because of their compact flower clusters. A very few instances are on record in which people have been poisoned, as ~~XXXXXXXXXXXXXXXXXX~~ if by poison ivy or mango, ~~XXXXXXXXXX~~ after handling the plant. Those susceptible to ivy poisoning, however, are not necessarily poisoned by this ~~plant~~ *Stylurus*.  
EXTRA RANGE: Native to Queensland, Australia.

STYLURUS BANKSII forma ALBIFLORA Degener  
White-flowered Form of Banks' Stylurus

Stylurus Banksii forma albiflora forma nov.

Identical with the species excepting for the flowers, which are ~~XXXXXXXXXX~~ creamy white, the stigma, however, is yellow as in the species. *These*  
*remains*

~~XX~~  
TYPE LOCALITY: Upper Manoa Valley, Oahu.  
LOCAL RANGE: ~~XX~~ Persistent after cultivation in Manoa Valley, Honolulu. *Probably the shrub with whitish yellow*

EXTRA RANGE: A mutant of unknown origin.

(Illustrated on following page.)

→ flowers mentioned by Rock, *Camp. Trees Haw.* 6: 1917



LEGUMINOSAE  
PEA FAMILY

Leguminosae

Trees or shrubs or vines or herbs. Leaves alternate, usually compound, stipulate and often stipellate. Flowers actinomorphic to ~~zygomorphic~~ simply zygomorphic or papilionaceous. Sepals 2 - 6 but usually 5. Petals 2 - 6 but usually 5. Stamens usually either 10 or very numerous, free or variously connate, often diadelphous. Pistil simple; ovary 1-celled, superior; ovules arranged almost always in 2 alternating rows along ventral suture; style terminal; stigma simple. Fruit usually a legume. (Name derived from the characteristic type of fruit, called legume, found in this ~~group~~ of plants. ~~one can find this group a single family. This name is derived from the~~ ~~should be invalid because it is not derived from the name of one of the component genera of this group.~~) The Leguminosae ~~may be~~ divided into the following three closely related ~~subfamilies~~ <sup>main</sup> groups which are commonly many authorities as distinct families:

Mimosaceae (see 169a): Trees or shrubs or very rarely herbs, often spiny. Leaves usually bipinnate or rarely simply pinnate, with stipules various or rarely absent. Flowers small, regular, not papilionaceous, mostly perfect, often with conspicuous stamens, spikeate or racemose or capitate. Calyx 3-6-toothed or -lobed, the segments usually valvate or very rarely imbricate in the bud. Corolla of as many distinct or united petals as calyx segments, usually hypogynous, valvate in the bud. Stamens equal in number to petals or more numerous or indefinite, free or monadelphous or variously united, often exserted; anthers small, 2-celled, longitudinally dehiscent, often with deciduous gland at apex. Fruit a legume. Seeds with fleshy cotyledons, exendospermous or nearly so. About 40 genera and 1500 species, chiefly tropical.

Salpiniaceae (see 169b): Trees or shrubs or rarely herbs, sometimes spiny. Leaves pinnate or bipinnate or rarely simple or unifoliate, with stipules present and usually with stipels wanting. Flowers usually perfect sometimes monoecious or dioecious or polygamous, large and showy or small and inconspicuous, zygomorphic or rarely almost regular, not papilionaceous, spikeate or racemose or rarely cymose. Calyx with 5 - 4 sepals which are usually free or the upper 2 sometimes more or less united, imbricate or rarely valvate.

OK - P

Logan

FLORA HAWAIIENSIS

FAMILY: 128  
GENUS : Magnolia  
SPECIES: Grandiflora

MAGNOLIA GRANDIFLORA L.  
SOUTHERN or LARGE-FLOWERED MAGNOLIA

Magnolia grandiflora L. Syst. ed. 10 : 1082.

Evergreen tree becoming 25 meters or more high, with grayish-pubescent branches bearing prominent annular stipular scars. Leaves coriaceous, elliptic, 12 - 18 cm. long, 4 - 7 cm. wide, obtuse at apex and base, entire, shiny above, rusty-tomentose below especially when young, with 2 - 4 cm. long petioles; stipules very large, clasping, deciduous. Flowers yellowish-white, fragrant, 15 - 20 cm. in diameter, on 2.5 cm. long thick canescent peduncles. Calyx of petaloid sepals. Corolla of 6 - 12 obovate petals about 11 cm. long and 8 cm. wide. Stamens yellowish; filaments 2 mm. long; anthers 3 cm. wide, with sterile acute apex 2 mm. long. Carpels forming prominent cone about XXX 3.5 cm. long, densely silky pubescent; style none; stigma 5 mm. long, linear, recurved. Fruit cylindric, 6 - 12 cm. long, densely tomentose. Seeds 13 mm. long and 8 mm. wide and 4 mm. thick, with cartilaginous-fleshy red shiny aril surrounding woody yellowish testa which is 9 mm. long and 6 mm. wide.

TYPE LOCALITY:

LOCAL RANGE: Grown sparingly on XXXX Hawaii, Maui, Oahu and Kauai as an ornamental but thriving only at higher elevations. Though native to America, the first magnolia grown in the Islands came from Kew Gardens, England, where this species was cultivated for its beauty. This young tree was brought, carefully preserved under glass from cold, around Cape Horn by Thomas Brown early in the 19th Century and planted at Hanalei, Kauai. This is thought to be the parent of all the large-flowered magnolias now grown locally. A magnolia, species not stated, was "growing at Hilo" around 1876.

EXTRA RANGE: Native from North Carolina to Florida and Texas but cultivated in many other regions.

Flora of Hawaii  
CONVOLVULACEAE  
Morning-glory family  
Ipomoea stolonifera (Cyrill.) Poir.  
WHITE-FLOWERED BEACH MORNING-GLORY; HAWAII

Family: 1207

Genus: 3

Species: 1

Locality: meaning sea - found in Hawaii

Ipomoea  
littoralis Boiss.  
fl. Annot. 4:  
112, 1879

Convolvulus littoralis L. Syst. ed. 10, 924, 1759.  
Not Ipomoea littoralis Blume Bijdr. 713, 1826.  
Convolvulus stoloniferus Cyrill. Fl. Rar. Neap. 1: 14, 1788.  
Ipomoea stolonifera Poir. in Lam. Encycl. 6: 20, 1864.  
Convolvulus acetosaeifolius Vahl, Botog. 1: 18, 1796.  
Ipomoea acetosaeifolia R. & S. Syst. 4: 247, 1819.  
Batatas acetosaeifolia Choisy, Conv. Rar. 124, 1838.

Glabrous perennial with prostrate creeping subterranean stems. Leaves ovate-oblong to linear-oblong, entire to sinuate or often lyrate, fleshy, mucronate to obtusate, with petiole 1 - 7 cm. long and usually subterranean, and blade 2 - 8 cm. long and 1.5 - 5 cm. wide. Flowers usually single, on peduncle 1.5 - 3 cm. long and bracteolate near base. Calyx with 2 outer sepals 10 mm. long, 5 mm. wide, broadly elliptic, mucronate and with 3 inner sepals about 13 mm. long, 6 mm. wide, broadly lanceolate, acuminate. Corolla 4 - 5 cm. long, with narrowly campanulate tube bright yellow within and

OK. P  
2/1/2



yellowish with, and with white somewhat angular macronulate limb 5 cm. wide. Stamens subequal, arachnoid below their insertion to corolla 5 mm. above its base; filaments white, glabrous above, 6 - 12 mm. long; anthers pale yellow, 4 mm. long. Ovary on annular disk, 1 mm. long, 1 mm. wide, usually 5-celled with 1 ovule in each cell; style filiform, about 17 mm. long; stigma with 2 divergent capitate lobes. Fruit on large peduncle, laterally compressed, 15 mm. wide; 8 mm. thick, 10 mm. long, with 1 or usually with 2 opposed seeds. Seeds ovoid, 8 mm. long, thickly covered with tomy hair often 5 mm. or more long (~~not glabrous as stated by others~~).

T.L.: Antilles.

L.R.: On coastal dunes, especially just beyond reach of the waves at highest tide where not even Ipomoea pes-caprae will grow. Probably will be found on all islands; rare but where found usually gregarious. Collected on Nihaun by Remy ~~et~~; Halawa Valley, Molokai; between Haleiwa & Kawaihapai, Oahu; Honolulu, West Maui.

E.R.: Cosmopolitan throughout the tropics, growing in such widely isolated places as in the West Indies, Brazil, Florida, Louisiana, Lower California, Philippines, Azores, and along shores of Mediterranean. It is most widely distributed morning-glory known though not necessarily common. It owes its extensive range to its seeds that can float unharmed in the ocean apparently for several years. Test by Guppy show that the seeds will germinate after floating in seawater for 17 months.

OK . P

## LOBELIACEAE

## LOBELIA-FAMILY

*CYANEA ACUMINATA* (Gaud.) Hilleb.  
ACUMINATE-LEAVED CYANEA*Delissen acuminata* Gaud: Bot. Voy. Uranie. 457. pl. 76. 1826.  
*Cyanea acuminata* Hilleb. Fl. Haw. Isl. 254. 1888.

Stem simple and erect or sparingly branched, 13 - 16 dm. high. Leaves broad-oblong, acuminate at both ends, dark green above, ~~XXXX~~ whitish beneath, puberulous on both surfaces especially beneath with the pubescence on lower surface concentrated chiefly along veins and veinlets while on upper surface more evenly scattered, flaccid, thin-chartaceous, entire or faintly denticulate, 14 - 30 cm. long, 4 - 7 cm. wide, on petioles 2 - 7 cm. long. Peduncles numerous along the stem for about 18 cm., in the axils of leaves that have or have not fallen, 2.5 - 6 cm. long, upright at about 45°, often somewhat narrowed at base, puberulous, either naked or covered with knobby scars from the base, bearing from 5 - 20 flowers near the apex; pedicels slender, puberulous, 1 cm. long, with subulate 8 - 12 mm. long bracts and minute deciduous bractlets. Calyx faintly pubescent, greenish, with 4 - 5 mm. long tube and narrow acute lobes 2 - 3 mm. long. Corolla white or sometimes with a slight bluish tinge, puberulous, suberect, about 3 cm. long, 4 mm. broad and 3 mm. wide with dorsal slit extending to near slightly swollen base. Staminal column white, pubescent; anthers blue to purplish red, subequal, about 6 mm. long, hirsute with whitish hair, only the 2 lower bearded. Pistil glabrous; exceeding anthers by 3 - 4 mm.; stigma glabrous, bluntly lobed, greenish. Berry subglobose, truncate, yellow, 9 mm. long and 6 mm. wide. Seeds pale. #

## TYPE LOCALITY:

LOCAL RANGE: In the rainier forests of the Koolau Range, Oahu. Collected in Manoa, Moanalua, Nanuanu, Pauoa and Punaluu Valleys.

EXTRA RANGE: Apparently endemic to the Koolau Range of Oahu. A specimen collected on Mt. Kaala, Oahu and described by Wawra as the variety latifolia evidently is not related to the species. The specimen was in such fragmentary condition when studied by J.M. Rock that its affinity could not be ascertained.

over O.K.O

FLORA HAWAIIENSIS

FAMILY: 328  
GENUS: *Thunbergia*  
SPECIES: *fragrans*

(3)

ACANTHACEAE  
ACANTHUS FAMILY

*fragr. det.*

*THUNBERGIA FRAGRANS* Roxb.  
SWEET CL CKYME, FRAGRANT THUNBERGIA

*Thunbergia fragrans* Roxb. Fl. Borom. 1 : 47. 1795.  
*Thunbergia volubilis* Pers. Syn. 2 : 179. 1806.

Acabrous climbing vine with angular stems. Leaves thick, with angular usually 15 mm. long petioles and with hastate-ovate 4 cm. long blade having cuspidate apex and 2- to 6-dentate-sinuate margin. Flowers white, usually 2 in the axil of a leaf each on 2.5 cm. long pedicel that greatly thickens toward maturity; bracts ovate-deltoid, 17 mm. long and 13 mm. wide, somewhat keeled. Calyx pale, pubescent, 3 mm. long, with about 15 subequal subulate teeth that persist and become scarious in fruit. Corolla white, malverform; tube 2.5 cm. long, somewhat compressed laterally, constricted 4 mm. above base, sparingly pubescent without; lobes 2 cm. long and 2.5 cm. wide, broadly obovate-cuncate, sparingly pubescent beneath toward base and glabrous above. Stamens attached to villous-pubescent constriction of corolla tube; ~~XXXXXXXX~~ staminodia none; free part of filaments of longer stamens 5 mm. long and that of shorter stamens 2 mm. long; anthers pale, almost 4 mm. long ~~XXXXXXXX~~; with sacs subequal in length. Ovary ovoid, longitudinally grooved and slightly compressed, dark green; style glabrous, white, 2 cm. long; stigma glabrous, whitish, 2 mm. wide, funnelform. Capsule grayish-brown, pubescent, with 12 mm. wide and 10 mm. thick and 6 mm. high base and 17 mm. long flattened beak. Seeds dark brown, sparingly shallowly tuberculate, globose with large opening to central cavity which is surrounded by exendospermous fleshy embryo.

TYPE LOCALITY: (by Mrs. F. D. Lowrey)  
LOCAL RANGE : Grown as an ornamental in a Manoa Valley garden, Honolulu in 1930; a plant worthy of more extended culture in the Islands.  
EXTRA RANGE: Native to the Old World tropics but grown in many warm countries.

OK 8



*Alia hawaiiensis*

TERMINALIACEAE

*Terminalia* Family

Family: 272

Genus: *Terminalia*

Species: *Catappa*

TERMINALIA CATAPPA L.

Indian Almond, (False) Kamani of the Hawaiians

*Terminalia Catappa* L. Mant. 1 : 128. 1767.

*Buceras Catappa* Hitchc. Rep. Mo. Bot. Gard. 4 : 85. 1893.

More or less deciduous hard-wooded tree becoming 25 m. high with whorled horizontal branches and stout glabrate twigs. Leaves clustered at the ends of branches, on under surface with nectaries in axils made by midrib and main veins and by union of main veins with one another; when young purplish and yellowish-silky below; when mature obovate to cuneate-oblongate, 1 - 2.5 dm. long, rounded or abruptly acuminate at apex and cuneate at base, on upper surface dark-green and shiny, on lower surface pale-green and glabrous excepting along midrib and in axils of main veins; petiole about 1 cm. long, thick, with prominent joint at which abscission layer develops from which leaf falls after turning bright red. Flowers slightly foetid, the upper staminate and a few of the lower pistillate, greenish-white, on 3 mm. long hoary-pubescent pedicels borne on slender 5 - 15 cm. long <sup>axillary</sup> spikes. Calyx 8 mm. in

→ sessile but appearing as if borne

diameter, the acute deltoid lobes 2 - 3 mm. long. Petals none. Stamens 10; filaments 3 mm. long; anthers versatile. Disk brown, grayish-arachnoid. Ovary thin in staminate and thickened toward base in pistillate flower; style wanting in staminate and 5 mm. long in pistillate flower. Fruit a greenish to reddish drupe which is ~~size of~~ <sup>in</sup> glabrous ellipsoid compressed pointed 4 - 7 cm. long, often 3 cm. wide and 2 cm. thick; chiefly corky in texture, at germination dehiscing by the splitting away of usually one longitudinal third. Seed 3 - 4 cm. long and 3 - 5 mm. thick, oblong elliptic, edible.

T.L.:

L.R.: Of early introduction and now completely naturalized especially not far from shore. The tree produces abundant shade, is especially ornamental when its leaves turn red, <sup>and</sup> has an ~~almond-~~ <sup>flavored</sup> palatable seed.

E.R.: A typical littoral tree whose fruit is adapted to dissemination by ocean currents; native of the East Indies but now widely planted in tropical countries.

*Flowering at Honolulu March 1929*

*Diagnos*

*Flora Hawaiianis*

COMPOSITAE

Composit. Family

~~Family~~ Family: 344

Genus: *Sigesbeckia*

Species: *Orientalis*

⑦

*SIGESBECKIA ORIENTALIS* L.  
Asiatic *Sigesbeckia*

*Sigesbeckia orientalis* L. Sp. Pl. 900. 1753.  
*Sigesbeckia orientalis* Hbd. Fl. Haw. Isls. 204. 1888.  
*Minyranthes heterophylla* Turcz. in Bull. Soc. Nat. Mosc. 24. 1 :  
181. 1851.

Upright stiff herb 2 - 6 dm. high, with spreading; often symmetrical branches pubescent with hairs curved upward. Leaves opposite but the upper alternate, dull, thin, finely strigose-pubescent especially on veins; blade ovate-triangular to lanceolate, 3 - 9 cm. long, 1 - 5 cm. wide, coarsely serrate-dentate to entire, acute at apex, somewhat cuneate at base and abruptly decurrent along the 5 - 40 mm. long petiole. Heads on 1 - 3 cm. long persistent pedicels. Involucre of 5 glandular-hispid spreading clavate bracts 4 - 8 mm. long. Chaff of glandular-hispid green 4 mm. long bracts each of which encloses all but the inner concave side of the achene. Ray florets 5; ovary 3 mm. long, curved; corolla-tube arising from purplish ring, almost 1 mm. long, green,

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Glandular-puberulent without, having a yellow disk composed of broadly cuneate-obovate 5-dentate 1.5 mm. long ligula and a minute tooth opposite it; style and stigma 2 mm. long, yellow. Disk filaments about 10; corolla 1.5 mm. long; Stamens with projecting connectives; style and stigma 2 mm. long, yellow. Anthers 3 mm. long, turgid, angular curved-above, with apical raised ring, shiny, black, finely longitudinally lined and punctate, partly enclosed by the sticky bract.

T.L.: Habitat in China, Media ad pagos."

E.R.: An introduced weed in gardens and waste places at lower elevations. First noticed in the neighborhood of Honolulu and reported from there in 1888 as a late arrival. By 1922 it had spread probably throughout the island, having been collected at Waimanalo and Kailua. In 1922 it was seen near Kealahou, Hawaii. Probably growing on the other islands as well but no reliable record of its occurrence is known.

E.R.: Native of Asia.

and in 1928  
it was common in  
the pineapple fields  
of west Molokai

especially common in  
pineapple fields and also found  
in

(Illustrated on following page)

Small type

PASSIFLORACEAE

PASSIFLORA EDULIS Sims

PURPLE GRANADILLA, but locally called LILIKOI (after the district of that name near Makawao, Maui where it was first observed by the Hawaiians).

~~XXXXXX~~ Large glabrous woody climber with grooved branches. Leaves deeply 3-lobed, shiny, 6 - 12 cm. long, cuneate to cordate at base, irregularly serrate, with lobes acute and with petioles having 2 opposite sessile neoteries at apex; stipules linear-lanceolate, about 8 mm. long. Flowers axillary, about 5 cm. in diameter, on tribracteate jointed peduncle about 2 cm. long which toward fruiting time increases greatly in length; bracts rhomboidal, 15 mm. long and 10 mm. wide; with nectary near center of margin and dividing the upper serrate half from the lower half which is entire, ~~XXXXXX~~ one bract usually caducous. Sepals thick and spongy, 3 cm. long and 1 cm. long, on outer surface green and with longitudinal keel projecting into 5 mm. long apical tooth, on inner surface white. Petals oblong-elliptic, 2 cm. long and 9 mm. wide, on outer surface whitish with single green midrib, on inner surface white. Corona of 2 series each of which contains about 75 almost 3 cm. long "projections" greenish at base and pale purple toward middle and white toward apex. Androgynophore and filaments green with pale purple spots; filaments spreading, 8 mm. long; anthers yellowish green, flattened, 1 cm. long and almost 5 mm. wide. Ovary obocoid, 8 mm. long, pale green; style pale green, flattened-clavate; stigmas 6 mm. wide. Fruit oblong-obovate, ~~XXXXXX~~ about 5 cm. long, dull brownish purple when ripe, with 3 mm. thick hard rind and about 200 seeds. Seeds with edible sweet-acid yellowish slimy aril about 1 cm. long enclosing shiny black flattened obovate crustose testa almost 6 mm. long.

TYPE LOCALITY: Native of Brazil, but the original description is said to have been made from specimens grown from seeds received from Portugal.

LOCAL RANGE: Of early introduction because of its edible fruit, and by 1930 naturalized here and there in the drier shrubby or sparingly wooded areas on most of the Islands. According to Hillebrand in 1828 this plant "has already escaped into the woods of East Maui." According to Heller in

1897, it appeared to be naturalized on Kauai. In 1926 it was observed common at Kokee, Kauai; in 1927 near Makawao, Maui; and in 1931 it was found growing in abundance on the eastern slope of Kamao of the Waianae Range, Oahu. The pulp of the fruit may be eaten as it is, or may be made into a beverage by beating it up in a glass of water with sugar and a pinch of bicarbonate of soda. Fruit ~~in~~ in summer.

EXTRA RANGE: ~~XX~~  
Cultivated in tropical and warm regions throughout the world; slightly resistant

to frost.



(4)

COMPOSITAE  
COMPOSITE FAMILY

ACANTHOSPERMUM Schrank Fl. Rar. Hort. Monac. pl. 53. 1813.

Sparingly pubescent, leafy, much-branched usually decumbent annuals. Leaves opposite, dentate to lobed. Heads small, short-peduncled in the forks of branches, sometimes appearing as though axillary. Involucre of flat herbaceous bracts. Each bract of chaff modified to enclose a single fertile ray-achene to form a more or less burr-like fruit. Pappus none. Ray-florets few, in one series, fertile, yellow, with usually 3-dentate ligule. Disk-florets with campanulate, perfect but sterile, yellow 5-toothed corolla. Achenes thick, slightly curved, armed.

NAME derived from the Greek for thorn and seed, because of the achene which is enclosed in its spiny bract.

TYPE SPECIES: Acanthospermum brasilum Schrank.

About 8 species, natives of tropical America.

OK  
P

FLORA HAWAIIENSIS

~~XXXXXXXXXX~~

FAMILY: 163  
GENUS: HERPETICA  
SPECIES: ALATA

LEGUMINOSAE

PEA FAMILY

Herpetica Raf. Sylva Tell. 123. 1838.

Large unnamed soft-wooded shrub. Leaves glandless, pinnate with terminal leaflet almost completely aborted, stipulate. Flowers not papilionaceous, in the axils of large deciduous bracts to form showy yellow erect racemes which are terminal or in the axils of the upper branches. Calyx of 5 subequal obovate sepals. Petals 5; subequal. Stamens 7; staminodia 3. Pods elongated, chartaceous, longitudinally 4-winged and longitudinally dehiscent by the upper valve to shed the numerous seeds which lie at right angles to length of pod

and with their flat sides parallel to its dissepiments. Seeds flat, somewhat quadrangular.

NAME derived from the Greek ~~HERPES~~ in reference either to the plant's reputed value as an antidote for snake poison or to its value as a remedy for skin diseases.

TYPE SPECIES: Cassia alata L.

A monotypic genus.

OK  
J.

*Sapindus oahuensis* Hilleb.

OAHU SOABERRY; AIEU or KAUAI on Oahu and LOMONA on Kauai.

*Sapindus oahuensis* Hilleb., in Radlk. in Sitzb. Math.-Phys. Acad. München. 3: 41. 1878.

Tree becoming 10 meters high, with grayish bark and fulvous tomentose twigs. Leaves ovate, acute at apex, rounded or truncate at base and slightly often inequilaterally decurrent, subentire, thick chartaceous, pale with yellow midrib, the blade 8 - 16 cm. long and 3 - 7 cm. wide and petiole 1 - 6 cm. long. Flowers on 2 mm. long bracteolate peduncles in fulvous tomentose 5 - 15 cm. long panicles of which 1 to several are borne in the axils of the upper reduced leaves. Calyx with 5 subequal broadly orbicular thickish sepals 4 mm. wide and 3 mm. long, slightly connate at base, fuscous tomentose without, glabrous within, ciliate. Corolla with 5 equal ovate-deltoid 4 mm. long and 2.5 mm. wide petals, yellowish-white, thin, pubescent without and glabrous within, ciliate. Stamens 5, inserted on inner thick margin of pentagonal grooved glabrous disk; filaments linear-subulate, 4 mm. or less long, lower half villous; anthers small. Ovary glabrous, longitudinally 3- to 2-ridged, fusiform-club-

shaped, 1 mm. long; stigma subsessile with minute coherent rounded lobes. Fruit consisting of a single compressed-obovoid oococ about 3 dm. long and 2 dm. wide bearing laterally at the base 1 or rarely 2 wart-like aborted oococ, or fruit consisting rarely of 2 oococ connate for one-third to one-fourth of their length and diverging above; pericarp leathery, shiny; endocarp pale, villous when young. Seed obovoid, 20 mm. long and 12 mm. wide, black, stony, rugose, with a broad truncate rather carunculate base; embryo green, with very large folded cotyledons.

TYPE LOCALITY:

LOCAL RANGE: A tree of the drier regions below 1,000 feet elevation. Known only from Oahu (Makaha and Makaleha Valleys; ~~XXX~~ near Kawaihapai; and in Waialupe and Kalihi Valleys, where it may now be extinct) and on Kauai (Makaweli and Wainae); rare but as at Kawaihapai sometimes gregarious. ~~XXXXXXXXXXXXXXXXXXXXXXXXXXXX~~ Plants with slightly different leaves have been reported from Niu Valley, Oahu. These may prove to be a distinct variety or form.

(Species illustrated on following page.)

OK-f  
Small print