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The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, portraits and data files, and provides publications and other modes of information service. The Institute meets the reference needs of botanists, biologists, historians, conservationists, librarians, bibliographers and the public at large, especially those concerned with any aspect of the North American flora.

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.

LEGUMINOSAE  
PEA FAMILY.

*HERPETICA ALATA* (L.) Raf.

RINGWORM ~~XXXXX~~ BUSH; CANDIDLABRA BUSH, ~~aka~~ ACACULCO

*Cassia alata* L. Sp. Pl. 378. 1753

*Herpetica alata* Raf. Sylva Tell. 123. 1838.

A coarse shrub attaining a height of 4 meters, with young branches and leaves usually puberulent. Leaves 4 - 10 dm. long, with about 1.5 - 4 cm. long petiole having prominent yellowish pulvinus and having glabrate rachis above flattened and obscurely winged; leaflets 6 - 14 pairs, 6 - 15 cm. long, distinctly pinnately veined, chartaceous, puberulent on both sides and somewhat glaucous on lower side, obliquely obtuse at base, rounded and often mucronate at ~~XXXX~~ apex, the lower pairs broadly oblong and toward apex of leaf the pairs gradually increasing in size and becoming obovate, on very short orange petiolules; single terminal leaflet deflexed, sessile, jointed, cordate, 3 mm. long, subcoriaceous; stipules obliquely lanceolate, acute, about 12 mm. long. Flowers yellow, about 4 cm. in diameter, on very short pedicels, concealed while in the bud by thin yellow imbricate ovate-orbicular obtuse 1.5 - 3 cm. long concave bracts which fall as the flowers open; racemes large, 1 - 5 dm. long. Sepals about 1 cm. long, rounded, thin. Petals obovate, clawed, 2 cm. long or less. Upper 3 stamens reduced to staminodia, lateral stamens small; 2 lower stamens with large anthers. ~~XXXX~~ Pod stiff, horizontal, linear, straight or nearly so, many-septate, 10 - 15 cm. long, 1.5 - 2 cm. wide, brownish-black, shining, with chartaceous valves each having broad crenulate longitudinal wing extending its entire length except for persistent 5 mm. long style. Seeds 50 - 60 per pod; rounded-quadrangular, olive-brown, 6 mm. long, 5 mm. wide, 1.5 mm. thick.

TYPE LOCALITY:

1920

LOCAL RANGE: Introduced shortly before ~~1920~~ and grown purely as an ornamental. Flowering in summer.

EXTRA RANGE: Native to tropical America. Introduced into the Old World tropics at such an early date and so commonly grown there that many authors fall into the error of thinking it is native to India. Because of its high content of chrysophanic acid, the juice of the leaves is used as a remedy for skin diseases. The plant is also of repute as an antidote for snake poison, while the seeds are said to be vermifugal.

OK 8

*Flora Hawaiianis*  
NYCTAGINACEAE

Family: 113

Genus: *Mirabilis*

MIRABILIS L. Sp. Pl. 177. 1753.

Perennial pubescent to glabrate unarmed herbs often flowering during the first year, with large tuberous roots and forking stems having swollen nodes. Leaves opposite, somewhat fleshy, petioled or the upper leaves sessile. Flowers single to cymose, chiefly nocturnal. Involucre simulating a calyx, 5-lobed. Calyx simulating a corolla, colored, somewhat constricted above ovary, with elongate tube and with expanded limb becoming deciduous. Corolla none. Stamens 5-6, unequal; filaments filiform, slender, incurved, united into a fleshy cup at base. Style filiform, slightly exserted; stigma capitate. Fruit ribbed, leathery. Seed filling the pericarp to which the testa adheres; endosperm mealy. ~~Name~~ Name derived from the Latin for beautiful, in reference to the fragrant, nocturnal, ~~flowers~~ conspicuous flowers. ~~Type~~ species: *Mirabilis jalapa* L.

At least 20 species, all native to America.

MEIBOMIA Adans. Fam. Pl. 2 : 509. 1763.

Erect, ascending or trailing usually perennial herbs, sometimes woody at base. Leaves usually trifoliolate, rarely 1- or 5-foliolate, always stipellate except in *M. triflora*, and with usually scarious stipules. Inflorescence of usually small purple or purplish flowers in terminal or axillary compound or simple racemes or panicles. Calyx-tube short, its 2 upper teeth usually more united than its acute or attenuate 3 lower teeth. Standard oblong, ovate or orbicular, narrowed or rarely clawed at the base. Wings obliquely oblong and adhering to the nearly straight, obtuse or truncate keel by a minute transverse appendage on each side of the latter. Stamens monadelphous or diadelphous and with anthers alike. Ovary sessile or stalked and usually developing into a flat, coriaceous, muricate or pubescent loment which readily separates into indehiscent or rarely partially dehiscent joints. (Named after Dr. Brandus Meibom who died in 1740). Type species: Meibomia canadensis (L.) Kuntze.

About 175 species chiefly of tropical and temperate countries.

O.D. 12/20/26.





COMMELINACEAE Reichenb.  
SPIDERWORT FAMILY

Perennial or annual succulent herbs with fibrous or thickened roots, and jointed and often branching leafy stems. Leaves alternate, entire, ovate-lanceolate to linear, often clasping stem with sheathing base. Flowers perfect, regular or irregular, occasionally cleistogamous, often showy, blue, red or white, in cymes or umbels, commonly subtended by spathe-like or leafy bracts. Sepals 3, persistent, usually herbaceous. Petals 3, usually deciduous or fugaceous, membranous. Stamens 6 or very rarely less, hypogynous, all similar and perfect or 2 - 3 different from the others and sterile; filaments filiform or somewhat flattened, often hairy; anthers 2-celled, the cells often widely separated, mostly longitudinally dehiscent. Ovary superior, 2- or 3-celled; ovules solitary or several in each cell, orthotropous; style simple; stigmas terminal, entire or obscurely 2- or 3-lobed. Fruit indehiscent or a 2- to 3-celled capsule loculicidally 2- to 3-valved. Seeds with small embryo and copious endosperm.

About 30 genera and 400 species of wide distribution in the tropics and subtropics.

Family 2 169c  
 Genus: Dolichopus  
 Species: labialis

Hyacinth-Bean, locally called by the Hawaiian name papaya

*Dolichos benghalensis* Jacq. Hort. Vind. 2 : 57. 1772.

*Leblab oultratus* DC. Prodr. 2 : 402. 1825.

A very variable sparingly pubescent to glabrate climbing or trailing perennial becoming 7 mm. long and fruiting as early as the first year. Leaves 8 - 25 cm. long, velvety-tomentulose especially beneath; petiole sulcate above, about as long as the terminal leaflet; leaflets triangular-ovate, rather abruptly slender-acuminate to rarely obtuse at apex, more or less truncate and cuneate at base, the terminal leaflet equilateral and long-petioluled but the lateral ones oblique and short-petioluled; stipules 5 mm. long, persistent; stipels 3 - 4 mm. long, persistent. Flowers 15 - 20 mm. broad, with short pedicels having 2 oblong 5 mm. long bracts at apex, 2 - 5 at a node, in erect axillary racemes longer than the leaves. Calyx tube 5 mm. long, with its ~~XXXXXX~~ 3 lower teeth 2 - 4 mm. long. Corolla white to purple; standard 15 - 20 mm. broad; wings 13 mm. long and 10 mm wide; keel about as long as high. Stamens: single ~~highly broad and flattened, curved~~ toward base laterally upcurved and broad; 9 lower stamens connate for half the length of pistil. Ovary containing several ovules; ~~highly flattened~~ ~~XXXXXX~~ ~~XXXXXX~~ laterally compressed style bearded on inner surface. Pod up to 10 cm. long and 2.5 cm. wide, with margins warty dentate and with upper edge nearly straight but lower edge curved. Seeds somewhat compressed, oblong with rounded ends, about 1 cm. long, with white linear raphe, ~~white~~ in white-flowered forms and black in purple-flowered forms. *yellowish*

Type Locality: --

yellowish

over

*Phaseolus*  
L.H.: ~~Phaseolus~~ A plant introduced for cultivation because of its edible beans probably within 50 years of the discovery of the Islands. It was collected as early as 1864 by Mann and Brigham and has long become naturalized. It may be found here and there throughout the Islands at lower elevations in thickets, pastures and waste places. Though the species is said to be very variable, the local plants seem quite uniform and have white flowers sometimes faintly tinged with purple.

~~Phaseolus~~  
L.H.: Probably native to Africa but long cultivated in many different forms, one of which is dwarfed and shrubby, throughout the tropics for food and ornament. The purple beans in a few cases have been found to contain the poison, prussic acid.

Extra Range

OK P  
Oth. Degeuer -1-/'31



## APOCYNACEAE

Family: 305

Genus: *Arduina*

at or above

ARDUINA Mill. Ic. 2: t. 300. 1759.  
 (Not *Arduina* Adams. Fam. 2: 499. 1763.)  
 (*Arduina* Mill.; Linn. Mant. 1. 7. 1767.)  
 (*Carissa* L. Mant. 1. 7. 1767.)

Much branched glabrous or pubescent shrubs with strong simple or forked thorns. Leaves opposite, leathery, entire, with minute stipules. Flowers mostly white or pink, usually in few-flowered terminal branching peduncled cymes. Calyx deeply 5-lobed with acute imbricate lobes, at base ~~glandular~~ glandless or rarely with many glands. Corolla salverform, with cylindric narrow tube scaleless at throat but enlarged at place of insertion of stamens; lobes imbricated either dextrorsely or sinistrorsely. Stamens inserted below top of corolla tube, lanceolate, obtuse or acute. Disk none; ovary 2-celled, with 1 to several ovules in each cell; style filiform; stigma shortly 2-lobed. Fruit globose to elliptic ~~marcescent~~, baccate, 2- or by abortion 1-celled. Seeds with fleshy endosperm, neither winged nor tufted. (Named in honor of A. P. Arduino, professor in Padua in the Eighteenth Century.) Type species:

About 30 species, native to the tropics of Australia, Asia and Africa.

Ch. Degener - 1-1-31

O.K.  
 78  
 P.



STERCULIACEAE

WALTHERIA L. Sp. Pl. 673. 1753.

Family: 223  
Genus: Waltheria

Herbs to large shrubs, with stellate pubescence interspersed with simple hair. Leaves simple, dentate; stipules narrow, deciduous. Flowers small, with involucre of 3 deciduous bracts, perfect, usually in ~~axillary~~ axillary clusters or small cymes. Sepals 5, connate at base into turbinate 10-nerved tube. Petals 5, spatulate to obovate, convolute, marcescent. Stamens 5; filaments long or short, connate below; anthers with parallel sacs; staminodia none. Ovary 1-celled, sessile; style simple, excentric; stigma clavate to plumose; ovules superposed, erect, 2 in each cell. Fruit a 2-valved follicle. Seeds solitary, with straight embryo in side of fleshy endosperm. (Named in honor of August F. Walther, professor in Leipzig during the Eighteenth Century.) Type species: Waltheria americana L.

About 35 species, almost all native to the New World.

Det. Degener 1/1/31

OK  
34

OPHIOGLOSSACEAE) - 14 206  
ADDER'S TONGUE FAMILY) 1064

Family: 1

Somewhat fleshy and xerophytic, terrestrial or epiphytic perennial herbs having short upright or rarely creeping rhizomes bearing 1 to several leaves and fibrous often fleshy roots frequently producing adventitious buds. Leaves arising from subterranean buds protected by stipular outgrowths, erect or pendent, with open or reticulate venation, consisting of a simple or compound, sessile or petioled blade; if fertile, differing by the addition of 1 to several peduncled spikes or panicles bearing sporangia; vernation erect or bent and not circinate as in the true Ferns. Sporangia large, marginal, naked, isolated or fused and sunken, lacking annulus but dehiscing by transverse or longitudinal slit to liberate numerous yellow tetragonal spores. Gametophyte saprophytic, subterranean, usually without chlorophyll.

Three genera, comprising about 80 species, of wide distribution.

distinct

Off. Dec. 11, - 1/31

1

KEY TO LOCAL GENERA:

Family: *Polypodiaceae*

Venation free, sporangia globose, distinct - *Botrychium*

Venation reticulate, sporangia firmly united into two rows - *Ophioglossum*

1. Usually terrestrial, fronds usually erect and stipitate

1. Usually epiphytic, fronds usually pendent and sessile

1. Terrestrial; venation free; sporangia globose, distinct - *BOTRYCHIUM*

1. Terrestrial or epiphytic; venation reticulate; sporangia firmly united into two marginal rows

2. Usually terrestrial; spike usually erect and attached to petiole - *OPHIOGLOSSUM*

2. Usually epiphytic; spike usually pendent and attached near middle of blade of sessile or subsessile leaf - *OPHIODERMA*

MISSOURI BOTANICAL GARDEN

✓

12

*Horn Hamaticensis*  
ANACARDIACEAE

)-14

Family: 136  
Genus: *Schinus*

1624  
160  
SCHINUS L. Sp. Pl. 388. 1753.

Molle Miller Gard. Dist. Abridg. Pl. 4. 1754.

Usually small trees with acrid resinous sap. Leaves alternate, simple or imparipinnate, the rachis often winged. Flowers usually dioecious, regular, small, whitish, in terminal or axillary panicles. Calyx of usually 4 - 5 ovate imbricate lobes. Corolla of usually 4 - 5 oblong to elliptic, imbricated lobes, ~~twice as~~ long. Stamens twice as many as corolla-lobes, often unequal in length, inserted at base of prominent annular disk. Ovary 1-celled; styles usually 3. Fruit an oily globose drupe. Seeds somewhat lenticular. Name derived from the Greek name of the mastic tree, *Pistacia lentiscus* L., because of the reputed similarity of the resin of the typical species to mastic.

Type Species:

About 15 species, chiefly native to South America.

OK  
B  
Oth. Steyer - 1-1/31



*Flora Hawaiianis*

ANACARDIACEAE

~~Captain~~

Family: 196

Genus: *Schinus*

Species: *Molle*

194c  
*SCHINUS MOLLE* L.

California Peppertree

*Schinus molle* L. Sp. Pl. 388. 1753.

Small tree with drooping branches and slender green pendulous twigs. Leaves thick, leathery, glabrous to puberulent, with midrib and veins raised above, and 10 - 25 cm. long with 3 - 5 cm. long petiole and usually 15 - 30 sessile leaflets becoming gradually smaller toward tip, on flat slightly winged rachis; leaflets slightly falcate, acute, entire or sometimes sparingly and irregularly dentate near apex, 1 - 5 cm. long and 3 - 5 mm. wide. Flowers on short often red pedicels forming 20 - 25 cm. long glabrate much-branched small-bracted loose terminal and axillary panicles. Staminate flowers with calyx over 1 mm. wide: corolla-lobes usually 5, oblong-ovate, 2 mm. long: stamens inserted opposite slight depressions in thick yellow annular disk; filaments opposite corolla-lobes ~~smaller~~ than lobes; anthers bright yellow; ovary aborted, minute; stigmas brown, faintly 3-lobed. Pistillate flowers with calyx over 1 mm. wide: corolla-lobes usually 5, ovate, 2 mm. long; stamens

→ and those alternate with corolla-lobes longer than lobes;

aborted, inserted opposite slight depressions in thick annular disk; filaments much shorter than corolla-lobes, those opposite lobes being the shorter; anthers small, white; ovary seated on disk, almost 1 mm. long; styles 3, distally swollen into capitate often red-tinged stigmas. Fruit rose color, shiny, 5 - 6 mm. in diameter, spherical, with persistent black style and with chartaceous exocarp enclosing shrunken slightly sticky pitted globose mesocarp containing oil vesicles impressed into crustaceous endocarp enclosing yellow reniform seed.

H.B.: "Habitat in Peru."

Int.: Introduced before 1888 <sup>6 into</sup> the islands where it is extensively grown as an ornamental along streets and in gardens.

Ext.: Native of South America but now cultivated in many tropical and subtropical countries. The resin is occasionally employed as a purgative, the leaves as a dye, and the berries for the making of a syrup, a vinegar, and a beverage.

Local Range

Extra Range

OKP

W. DeSmet - 1-131

*Flora Hawaiianis*  
SOLANACEAE

Family: 318  
Genus: *Lycium*

LYCIUM L. Sp. Pl. 191. 1753.

Shrubs or woody vines, often spiny. Leaves small, entire, often fleshy, usually pale, short-petioled, alternate, often clustered. Flowers solitary or clustered in the axils of leaves or at the old nodes, greenish or yellow or white to pink or purple. Calyx campanulate, 3- to 5-lobed or -toothed, persistent, not enlarging in fruit. Corolla with tube short or slender, and with limb bearing 5 or rarely 4 obtuse lobes that are imbricate in the bud. Stamens 5 or rarely 4, inserted at or below middle of corolla-tube, included or exserted; filaments filiform, sometimes dilated at base; anthers dehiscent longitudinally. Ovary 2-celled; ovules many or few; style filiform; stigma capitate or 2-lobed. Berry fleshy, usually scarlet, globose to ovoid or oblong, with many to rarely a single seed per cell. Seeds flat, reniform. (Name derived from the country Lycia.) Type species: *Lycium afrum* L.

About 75 species of temperate and tropical countries, many of arid or saline regions.

*W. D. Greener 1-131*

*OK. S*

25. *Ipomoea Pes-caprae* (L.) Sweet.  
Seaside Morning Glory; Eohuehue.

Family: 307  
Genus: *Ipomoea*  
Species: *Pes-caprae*

*Convolvulus Pes caprae* L. Sp. Pl. 159. 1753.  
*Convolvulus Pes caprae* Willd. Sp. Pl. 876. 1798.  
*Ipomoea Pes-caprae* Sweet Hort. Sub. Lond. 35. 1818.  
*Ipomoea Pes Caprae* Roth Nov. Pl. Sp. 109. 1821.  
(*Schovanna Adamboe* Rheed mal. 11 : 117. t. 57. 1692.)

~~*Ipomoea Pes-caprae* Comb. nov.~~

Glabrous succulent perennial with prostrate creeping, never twining, stems often 10 meters long, rooting and occasionally branching from the nodes. Leaves with 3 - 8 cm. long petioles. Blades usually slightly longer than petioles, suborbicular, commonly notched at apex and rounded to cordate at base, and bearing nearly parallel oblique veins, the lowest 3 - 6 converging at the base which frequently bears 1 - 2 glands. Peduncles stout, 2.5 - 7 cm. long, bearing 1 to few slightly thinner pedicels 1.5 - 4.5 cm. long. Sepals oval to suborbicular, the inner slightly larger and about 1 cm. long. Corolla purplish, about 4.5 cm. long, with broadly funnelform tube, and undulately-lobed limb 5 - 7 cm. wide. Capsule ovoid, about 1 cm. long, its 2 cells containing

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*Pres.*

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each about 2 seeds. Seeds dark-brown, velvety-pubescent, 6 mm. long.

TYPE LOCALITY: "Habitat in India."

LOCAL RANGE: Native to all the Islands. Typical of coastal dunes just beyond reach of the waves. The Hawaiians in the early days used this plant when fishing, twisting it into coils for the purpose of driving the fish into the nets. They also used its seeds as a medicine. During times of famine the roots and stems were cooked and used as food although if eaten exclusively for any length of time, they cause diarrhoea. Stock are similarly affected.

EXTRA RANGE: A littoral plant of common occurrence in the tropics from India and Ceylon to continental America and the West Indies.

*Cathartus*

2A

*Flora Hawaiianensis*

ANACARDIACEAE

Family: 196

*Schinus terebinthifolius* Raddi

Christmas Berry Tree; Brazilian Pepper Tree

Genus: *Schinus*  
Species: *terebinthifolius*

*Schinus terebinthifolius* Raddi in Mem. Mod. 18. Fis. 399. 1820.

Small spreading tree with horizontal to upright branches. Leaves leathery, dark green above and lighter below, glabrate to puberulent especially beneath, often about 1 dm. long with 1 - 2 cm. long petiole and 7 imparipinnate leaflets on slightly winged rachis; leaflets entire to rarely slightly serrate, lanceolate to elliptic, the lower pair often short-petioled and 3 - 4 cm. long, the upper pairs subsessile to sessile and longer, the terminal leaflet about 5 - 7 cm. long. Flowers short-pedicelled, small bracted, in often 1 dm. long puberulent much-branched compact panicles which are in the axils of usually 3- or 5-foliate leaves. Staminate flowers with calyx over 1 mm. wide; corolla-lobes usually 5, ovate, almost 2 mm. long; stamens inserted opposite slight depressions in thick orange annular disk; filaments opposite corolla-lobes shorter than lobes and those alternate with corolla-lobes longer than lobes;

anthers small, bright yellow; ovary aborted, minute; stigmas brown, slightly projecting beyond disk; faintly 3-lobed. Petiolate flowers with calyx 2 mm. wide; corolla-lobes usually 5, ovate, 2 mm. long; stamens aborted, inserted opposite slight depressions in thick yellow annular disk; filaments shorter than corolla-lobes, those opposite lobes being the shorter; anthers small, white; ovary seated on disk, almost 1 mm. long; styles 3, short; stigmas capitate. Fruit bright red, shiny, 4 - 5 mm. in diameter, spherical, with persistent black style and chartaceous <sup>endocarp</sup> enclosing shrunken sticky sweet lenticular-globose ~~seed~~ containing large oil vesicles impressed into crustaceous endocarp enclosing yellow reniform seed.

Type Locality: 1-16

1-16 Local Range: Introduced before 1917 in Honolulu and now commonly planted throughout the islands as an ornamental tree because of its bright red berries. It has escaped widely in the dry lantana and guava wastes of the southern end of the Island of Hawaii and it is occasionally found escaping in waste land on other islands.

1-16 Extra Range: Native to tropical South America; where the fruit is sometimes used medicinally.

1-16 Extra Range *Alb. Degener* - 1-13 OKP

VITEX L. Sp. Pl. 638. 1753.

Trees or shrubs, sometimes decumbent. Leaves oppositely digitately compound or rarely unifoliate. Flowers usually white to blue, in panicle cymes. Calyx small, mostly campanulate and 5-toothed. Corolla with tube cylindric and spreading straight to slightly oblique limb somewhat 2-lipped and 5-cleft. Stamens 4, didynamous, of-ten exserted. Ovary usually 4-celled with 1 ovule in each cell; style 2-cleft. Fruit a small drupe with 4-celled stone and with persistent calyx at base or partly surrounding. Name derived from the ancient Latin for a plant thought to belong to this genus.

Type species: *Vitex agnus-castus* L.

About 75 species, mostly native to tropical and subtropical regions.

R. H. Degener 1-1/31

A.P.  
D.



*Thra Hawaiian*

FAMILY: 182  
GENUS: SWIETENIA  
~~SWEETENIA~~

MELIACEAE  
MAHOAGANY FAMILY

SWIETENIA Jacq. Enum. 4, 20. 1760.

Large trees with hard reddish-brown wood. Leaves pinnate, glabrous, shiny; leaflets opposite, obliquely ovate to lanceolate, long-acuminate, ~~SEIAXXX~~ petioluled. Flowers small, in axillary and terminal panicles. Calyx small, 5- or rarely 4-cleft, its lobes imbricate in the bud. Petals 5 or rarely 4, free, narrowly obovate, spreading. Stamens united into an urn-shaped tube which is 10-toothed at top; anthers 10, inserted on inner side of tube between its lobes. Ovary sessile on top of annular disk which is fluted on the ~~XXXX~~ outside and marginally crenate, 5-celled with many pendulous ovules in each cell; stigma discoid, 5-rayed. Fruit a large woody capsule dehiscent from base to apex by 5 thick valves surrounding the persistent 5-winged axis to which many seeds by their top adhered imbricated in 2 series. Seeds samaroid above.

NAMED in honor of Gerard van Swieten, 1700 - 1772, physician to Empress Maria Theresa

Three or four species native to the tropics of the New World.

TYPE SPECIES: Swietenia mahagoni Jacq.

*Ch. Dyer - 1-1-31*

OK.  
r p

*Flora Hawaiianis*  
LEGUMINOSAE

Family: 169C  
Genus: *Dolichos*

DOLICHOS L. Sp. Pl. 725. 1753.

Climbing or trailing annual or perennial herbs often somewhat shrubby. Leaves 3-foliolate, with small stipules and with stipels. Flowers papilionaceous, white to purple, variously clustered or rarely solitary, with small or caducous bracts, usually in racemes. Calyx campanulate, with its 2 upper teeth connate. Standard suborbicular, auricled at base; wings obovate, curved, adnate to keel; keel narrow, bent inward and upward at right angles. Stamens grouped in 9 and 1; filament of single stamen thickened or appendaged at base; anthers equal. Ovary sessile, containing several to many ovules; style often compressed, bearded or penicillate below the terminal stigma. Pod flat, mostly somewhat curved, beaked. Seeds subglobose to flattened, with linear fleshy aril. (Name derived from the Greek for some related plant having a long pod.) Type species: *Dolichos lablab* L.

About 40 species of tropical distribution chiefly in the Old World.

*W. D. S. - 1-1-31*

*OK*  
*Dr*

*RESTANTHERA FRAGRANS* (Lindl.) Degener  
*Rectanthera*

*Spirocnema fragrans* Lindl. in Bot. Reg. t. 47. 1840.  
*Rectanthera fragrans* Comb. Nov.

Light green extensively creeping perennial with 15 mm. thick assurgent stems attaining a height of 5 dm. and producing long runners about 5 mm. thick. Leaves forming rosette toward end of stem and scattered below, lanceolate, becoming 25 cm. long and 4 cm. wide, with prominently-veined clasping ciliate base 2 cm. long, often striped with purple. Flowers in compact cymes subtended by 3-toothed 10 - 15 mm. long bracts, borne in 6 dm. long panicles. Sepals scarious, white-transparent, lanceolate, 5 - 6 mm. long and 2 mm. wide, with median green pubescent vein purplish toward acute apex. Petals shiny, white-transparent, thin, wilting by noon, squarrose, 6 mm. long and 3 mm. wide, ovate-lanceolate, acute, somewhat erose. Stamens white, 10 mm. long; filaments linear, glabrous; anthers with wrinkled almost square 2 mm. wide connective bearing small pale-yellow sacs toward base. Ovary light green, glabrate, triangular-ovoid, 1.5 mm. long; style white, glabrous, 4 mm. long; stigma white, 1.5 mm. in diameter, comose.

*Locality:* Mexico.

*Notes:* Of recent introduction and by 1925 grown sparingly in Honolulu gardens and possibly elsewhere; an escape from cultivation in Kaimuki in 1928. Grows

Family: 62  
 Genus: 1: *Rectanthera*  
 Species: 1: *Fragrans*



MEIBOMIA Adans. Fam. Pl. 2 : 509. 1763.

Erect, ascending or trailing usually perennial herbs, sometimes woody at base. Leaves usually trifoliate, rarely 1- or 5-foliate, always stipellate except in M. triflora, and with usually scarious stipules. Inflorescence of usually small purple or purplish flowers in terminal or axillary compound or simple racemes or panicles. Calyx-tube short, its 2 upper teeth usually more united than its acute or attenuate 3 lower teeth. Standard oblong, ovate or orbicular, narrowed or rarely clawed at the base. Wings obliquely oblong and adhering to the nearly straight, obtuse or truncate keel by a minute transverse appendage on each side of the latter. Stamens monadelphous or diadelphous and with anthers alike. Ovary sessile or stalked and usually developing into a flat, coriaceous, muricate or pubescent loment which readily separates into indehiscent or rarely partially dehiscent joints. (Named after Dr. Brandus Meibom who died in 1740). Type species: Meibomia canadensis (L.) Kuntze.

About 175 species chiefly of tropical and temperate countries.

O.D. 12/20/26.



Flora Hawaiianis

Family: 182

Genus: Melia

Species: Azedarach

MELIA AZEDARACH L.

Map. Pride-of-India, Chinaberry.

Melia Azedarach L. Sp. Pl. 584. 1753.

Melia sempervirens Sw. Prodr. 67. 1788.

A tree occasionally becoming 20 m. high and having a trunk 2 m. in diameter but usually much smaller, with bitter astringent reddish-brown bark becoming furrowed in age, and with spreading branches. Leaves deciduous, petioled, thin and bright-green, bipinnate or very rarely tripinnate, 2 - 8 or more dm. long, under surface glabrate in age, with numerous leaflets which are petioluled or subsessile, 3 - 7 cm. long, ovate to elliptic, with acute to long-acuminate apex and rounded or narrowed base, nearly entire or incise-serrate or even somewhat lobed. Panicles axillary, peduncled, 1 - 3 dm. long, the fragrant purplish to rarely whitish flowers on slender pedicels 4 - 10 mm. long. Sepals lanceolate to elliptic, acute, 2 - 3 mm. long. Petals oblanceolate to oblong, obtuse, 8 - 12 mm. long. Staminal tube of same color as petals, and pubescent within. Ovary glabrous. Drupe subglobose, 1.3 - 2 cm. in diameter, smooth, yellow, usually long-persistent.

C.D. 12/20/26.

, lavender.

with 10 teeth 2 mm. long which open at night to insure pollination.

greenish.

fragrant  
pleasant at night

very dark purple

Type Locality: "Habitat in Syria."

Local Range: Reported to have been introduced by Dr. G. P. Judd in 1850  
as an ornamental shade tree ~~XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX~~  
~~XX~~  
~~XXXX~~. The tree is common in the Islands at lower elevations  
and frequently escapes from cultivation.

Extra Range: Native to southeastern Asia but widely planted and often spon-  
taneous or even naturalized in most tropical countries.

(Illustrated on following page.)

Otto Degener X / '31

OK  
-P

CONVOLVULACEAE

*Ipomoea reptans* (L.) Poir.  
CREeping SWAMP MORNING-GLORY

Wayside 307  
Genus: *Ipomoea*  
Species: *Reptans*

*Convolvulus reptans* L. Sp. Pl. 158. 1753.  
*Ipomoea aquatica* Forsk. Fl. Aeg.-Arab. 44. 1775.  
*Ipomoea reptans* Poir. in Lam. Encycl. Suppl. 3: 460. 1814.  
Not *Ipomoea reptans* Pope, Wayside Pl. Haw. Pl. 97. 1929.  
*Ipomoea reptans* Pope, Wayside Pl. Haw. 175, 177. 1929. in part.

Creeping glabrous light-green coarse herb with hollow stems rooting in damp ground or floating on still water. Leaves ovate-cordate to usually lanceolate, entire, cuspidate to mucronate at apex, sagittate or with somewhat rounded or acute auricles at base, the blade 5 - 15 cm. long and 2 - 5 cm. wide and the thick sulcate petiole 1.5 - 10 cm. long. Flowers on 1 - 3 cm. long pedicels in 2- to 5-flowered cymes having peduncle commonly 5 cm. or less long. ~~SEPALIA LANCEOLATE, WHITE, 1.5 - 2.5 mm. long, 1 - 2 mm. wide.~~ Calyx with subequal, broadly ovate lobes 8 mm. long and 6 mm. wide. Corolla often 4 cm. long, glabrous, with funnelliform tube and somewhat angular mucronulate limb often 5 cm. in diameter. Stamens attached to corolla 2 mm. above its base; filaments ~~filamentous~~ white, arachnoid for 3 mm. above their insertion to corolla and glabrous above; free part of 3 filaments about 5 mm. long and free part of 2 about 10 mm. long; anthers white, 4 mm. long. Ovary pale yellow, conical, 2 mm. long, with annular nectary around base; style 15 mm. long, white; stigma with 2 divergent white wrinkled-capitate lobes each 1.5 mm. long. Fruit when young with persistent green sepals and white 12 mm. wide ovary slightly conical toward apex; when old, brown, smaller, thin-leathery, indehiscent, containing 4 or more seeds. Seeds brown, silky-tomentulose, 7 mm. long and 5 mm. wide.

C.A.P.

*Mint*  
P.L.: *Patipat in India.*  
L.R.: Introduced, probably by the Chinese as a pot-herb, in the 19<sup>th</sup> Century.  
First reported from the Islands by Hillebrand in 1888 as growing "in  
old taro ponds round Honolulu" and in Pauoa Valley, Oahu. In 1923 it  
was found growing in Manoa Valley and near Kailua, Oahu; in 1927, near  
Haiku, Maui. No doubt found elsewhere as well.  
E.R.: Grown throughout the tropics of the Old World and extensively culti-  
vated as a vegetable in China.

Type Locality!

Local Range

Extra Range

Ch. DeGeneres - 1-1-'31



CRACCA PURPUREA L.  
AUNUHU, AUNOLA or HOLA

*Cracca*  
Family: 169c  
Genus: *Cracca*  
Species: *Purpurea*

~~Cracca purpurea L. Sp. Pl. 752. 1753.~~

~~Galaga purpurea L. Sp. Pl. 1172. 1753.~~

~~Galaga piscatoria Ait. Hort. Kew. 3: 71. 1789.~~

~~Tephrosia purpurea Pers. Syn. Pl. 2: 329. 1807.~~

~~Tephrosia piscatoria Pers. Syn. Pl. 2: 329. 1807.~~

~~Tephrosia toxicaria ~~XXXXXX~~ Gaud. in Bot. Uranis~~

~~Not Tephrosia toxicaria Pers. Syn. Pl. 2: 329. 1807.~~

Perennial 3 - 6 dm. high herb woody at base, with slender erect angular stems silky-pubescent especially when young. Leaves 4 - 8 cm. long with petiole 5 - 25 mm. long and petiole and rachis sulcate above and with 9 - 13 leaflets; leaflets obovate-oblong, 2 cm. long or less and 5 mm. wide or less, glabrous above, silky-pubescent below, truncate to emarginate at apex, mucronate, not or less acute at base, with 1 mm. long gray petiolule; stipules subulate, 3 mm. long or less. Flowers purplish to white, on 3 to 6 mm. long pedicels in distant clusters of 4 - 2 or even single to 6

*OK 10.*

form 1-3 dm. long racemes which are terminal or opposite the leaves. Calyx pubescent, with tube 2 mm. long and lower teeth 2 mm. long and upper teeth wider and shorter. Corolla: standard expanded, 10 mm. wide and 10 mm. long of which claw is 2 mm. long; wings 8 mm. long and 3 mm. wide; keel 6 mm. long and 3 mm. wide. Stamens diadelphous, the single filament constricted at base. Pistil 7 mm. long, with silky ovary containing several ovules and with stigma minutely tufted. Pod about 3.5 cm. long and 4 mm. wide, up-curved toward end, containing 4-8 seeds. Seeds flat, 4 mm. long and 2 mm. wide, angular reniform, light brown with darker mottling.

T.L.: Ceylon.

L.R.: Native to dry, rocky or clay ground near shore or further inland on all islands. Because of the presence of a narcotic, this plant was formerly crushed by the Hawaiians and then placed in tidal pools and in similar situations to stupefy fish to enable them to be caught with ease. This did not render them noxious as food. Other plants were similarly employed but the anubhu proved by far the most effective.

E.R.: Found in several forms from India and southern China to Malaya, tropical Australia and Polynesia. The Hawaiian plants have white flowers with keel and wings sometimes tinged with pale purple.

(Illustrated on following page.)

Att. Degeuer. -1-1-31

LEGUMINOSAE

VIGNA MARINA (Burm.) Merrill  
PULLIHILHI, NANEAE

Phaseolus marinus Burm. Index Universalis Herb. Amb. 7 : 17. 1755.

Dolichos luteus Sw. Prodr. 105. 1788.

Vigna lutea A. Gray Bot. U. S. Expl. Exped. 472. 1854.

Vigna marina Merrill Interpret. Herb. Amb. 285. 1917.

Creeping or very sparingly twining glabrate vine with branches becoming 2 meters or more long and often purplish-~~XXXX~~ striped. Leaves light green, thick, entirely pubescent when young but when old glabrate except for pubescent 2 - 5 cm. long thick sulcate petiole and 4 mm. long petiolules; leaflets triplinerved, ovate to elliptic or suborbicular, mucronate at apex as well as obtuse and rounded or emarginate, somewhat cuneate to rounded base, 4 - 10 cm. long and 2.5 - 5 cm. wide; stipules triangular-lanceolate, acuminate, 3 - 5 mm. long, apparently persistent (and not soon caducous as stated by Hillebrand); stipels 2 - 3 mm. long. Flowers yellow, on 3 mm. long pedicels, corymbosely or racemosely few-to several-flowered at the upper fourth of elongated retrorsely pubescent thick 6 - 15 cm. long scarcely nodose erect peduncles. Calyx campanulate, about 4 mm. long, with 3 triangular-ovate teeth below and 2 teeth above almost completely connate. Standard reflexed, 2 cm. wide and 1.5 cm. high, cordate at apex, unappendaged; wings broadly elliptic, auriculate, 16 mm. long and 8 mm. wide; keel 12 mm. long and 8 mm. high, with broad beak. Ovary glabrous, 5 mm. long; style curved at right angles and slightly twisted, upper half pubescent; stigma green, curved, glabrous except for posterior tuft of hair. Pod linear, nodding, about 7 cm. long and 6 mm. thick, glabrous when old, slightly compressed and torulose, straight, the thick valves not twisting after opening. Seeds 4 - 9, globose-oblong, grayish-brown, 5 mm. long and 4 mm. wide, with oblong white 3 mm. long raphe and prominent yellowish caruncle.

*over. 380*

Mr. O Degener  
2230 University Ave.  
Honolulu T H  
R 12 M 2QA

~~Honolulu T H  
R 12 M 20A~~

POLYMER LETTERS

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regi  
Kocak Range

Extra Range

~~Atto Degener - 7/13/~~

[illegible]



## SOLANACEAE

SWARTZIA Gmel. Syst. 2 : 360. 1791  
 (Solandra Sw. Vet. Akad. Handl. 8 : 300. 1787.)  
 (Not Solandra L. Syst. ed. 10 : 1369.)

Family: 312  
 Genus: Swartzia

Climbing woody usually glabrous vines. Leaves alternate, entire, leathery, glossy. Flowers very large, solitary, terminal, white to yellow. Calyx long-tubular, membranous, 2- to 5-cleft and often 2- to 5-angled. Corolla funnellform, with tube cylindric below and with oblique expanded limb bearing 5 broad imbricate spreading lobes. Stamens 5, borne at base of corolla, declined; filaments filiform; anthers oblong. Ovary 2-celled; style filiform; stigma more or less capitate; ovules many. Fruit a large globose to elongate pulpy berry more or less included in persistent calyx. Seeds large, smooth. (Named in honor of Olaf Swartz, 1760 - 1817, Swedish botanist and professor in Stockholm.) Type species: Swartzia grandiflora Gmel.

About 6 species, all native to the tropics of the New World.

Decimus 1/1 '31

OK.  
 P

31

Flora Hawaiiana ~~August 1882~~ <sup>usually</sup> ~~January 1882~~  
MELIACEAE Vent.  
MANGOANY FAMILY

~~fragrant~~ Trees or rarely shrubs or even herbs, with hard colored ~~ocean~~  
~~wood~~. Leaves alternate or rarely opposite, ~~estipulate~~, pinnat  
ely or digitately compound, or sometimes unifoliolate or simple.  
Flowers regular and perfect or rarely polygamo-dioecious, axillar  
y or terminal, ~~XXXXXX~~ paniculate or racemose or spicate or corym  
ose or rarely umbelliform. Calyx with usually 4 or 5 or rarely 6  
lobes or sepals. Petals usually 4 or 5 or rarely 6, free or oc  
asionally adnate to the lower part of the staminal tube, ~~somex~~  
times keeled below the middle on the inner face, contorted or  
imbricate in the bud. Stamens usually 8 - 10; filaments united ~~XX~~  
into an entire to lobed tube or rarely free; anthers 2-celled,  
either sessile or stipitate and inserted within the mouth of the  
tube or above on the edge of the annular or columnar disk. Ovary  
usually 2- to 5-celled, with commonly 2 or more ovules in each  
cell; ~~XXXXXXXXXXXX~~ style elongate; stigma disk-like or capi  
tate or simple or grooved. Fruit a septicoidally or loculicidally  
dehiscing capsule, or a drupe or berry, often with large central  
axis. Seeds solitary or many in each cavity, or sometimes im  
bricate downward in 2 rows in each cavity and samaroid, endo  
spermous or exendospermous.

About 50 genera consisting of about 700 species, almost all  
limited to tropical regions.

OK.  
P  
12

W. D. Sargent - 1-1/21

Mirabilis jalapa (continued)

L.R.: Naturalized and now found in waste ground at lower elevations on all Islands. The commonest color form locally has white flowers with red stamens and pistil; ~~a~~ less common form is red-flowered while a yellow-flowered one has been collected only near Puuwaawaa, Hawaii at least up to 1922. The species was probably introduced during the latter part of the 19 Century. It was not collected by Mann & Brigham in 1864, but Hillebrand in 1885 states that it grows "along roadsides here and there, an escape from gardens." The specific name was given to the plant because of the erroneous belief that jalap, a Mexican purgative, was derived from it. This, however, is gained from the tuberous root of a morning-glory relative growing near the town of Jalap. The seeds and roots are poisonous. The mealy endosperm of the seeds was used in Korea as face powder. The plant is still occasionally used by the Hawaiians as a medicine, and the fruits are employed in making necklaces.

B.R.: Native of Mexico though widely naturalized in tropical and warm countries; even grown in temperate countries where it thrives as an annual.

, Mexico

Extra Page:

Atth Degeus -1-1/31

O.K. P.

MEIBOMIA Adans. Fam. Pl. 2 : 509. 1763.

Erect, ascending or trailing usually perennial herbs, sometimes woody at base. Leaves usually trifoliolate, rarely 1- or 5-foliolate, always stipellate except in *M. triflora*, and with usually scarious stipules. Inflorescence of usually small purple or purplish flowers in terminal or axillary compound or simple racemes or panicles. Calyx-tube short, its 2 upper teeth usually more united than its acute or attenuate 3 lower teeth. Standard oblong, ovate or orbicular, narrowed or rarely clawed at the base. Wings obliquely oblong and adhering to the nearly straight, obtuse or truncate keel by a minute transverse appendage on each side of the latter. Stamens monadelphous or diadelphous and with anthers alike. Ovary sessile or stalked and usually developing into a flat, coriaceous, muricate or pubescent loment which readily separates into indehiscent or rarely partially dehiscent joints. (Named after Dr. Brandus Meibom who died in 1740). Type species: Meibomia canadensis (L.) Kuntze.

About 175 species chiefly of tropical and temperate countries.

O.D. 12/20/26.



CRACCA L. Sp. Pl. 753. 1753.

Tephrosia Pers. Syn. Pl. 2 : 328. 1807.)

~~acacia~~  
Family: 169c  
Genus: *Cracca*  
Jth

Herb, sometimes slightly shrubby. Leaves imparipinnate, punctate, with entire usually opposite leaflets and small stipules. Flowers papilionaceous, purple to red or white, in racemes or short clusters. Calyx with subequal teeth or the lower usually the longer. Corolla with all petals clawed; standard orbicular to broadly ovate; wings obliquely obovate or oblong, slightly adnate to keel; keel curved, obtuse. Stamens monadelphous or diadelphous; anthers equal. Ovary sessile, with several to many or rarely only 2 ovules; style incurved, usually flat, hairy to glabrous; stigma terminal, usually with tuft of hair. Pod linear, flat, 2-valved, usually several-seeded, without partitions between the seeds, the valves strongly twisted at dehiscence. ~~Name~~ of uncertain derivation; possibly from the Latin name of a similar plant or originally from the Greek word for scrambling because the plant is food for noisy birds. ~~Type~~ species: *Cracca villosa* L.

About 150 species, chiefly native of warm and tropical regions.

150

*Cracca villosa* L. (150) *Cracca villosa* L. 11 12

RECTANTHERA ~~Witt.~~ Degener nom. nov.

(Spironema Lindl. in Bot. Reg. t. 47. 1840.)

(Not Spironema Rafin. Fl. Tellur. 4 : 92. 1836.)

(Not Spironema Hochst. in Flora 25 : 226. 1842.)

~~Rectanthera~~ *Spironema* nom. nov.

Coarse glabrate perennial herb with thickened roots and leafy branches frequently rooting at the nodes. Leaves fleshy, brittle, lanceolate, clasping stem with sheathing base. Flowers regular, white, inflorescences subtended by scarious bracts borne in naked panicles; bracts not spathe-like. Sepals somewhat scarious, free. Petals fugaceous, little longer than the sepals, free. Stamens 6, all similar and perfect; filaments filiform, glabrous; anthers widely separated by flattened almost rectangular connective. Ovary 3-celled, with 2 ovules in each cell; style filiform; stigma comose. Fruit a 3-celled loculicidally dehiscent capsule. Seeds small. (Name alluding to the rectangular anthers.)

Type species: Spironema fragrans Lindl.

One or possibly two species native to tropical America.

MEIBOMIA Adans. Fam. Pl. 2 : 509. 1763.

Erect, ascending or trailing usually perennial herbs, sometimes woody at base. Leaves usually trifoliolate, rarely 1- or 5-foliolate, always stipellate except in M. triflora, and with usually scarious stipules. Inflorescence of usually small purple or purplish flowers in terminal or axillary compound or simple racemes or panicles. Calyx-tube short, its 2 upper teeth usually more united than its acute or attenuate 3 lower teeth. Standard oblong, ovate or orbicular, narrowed or rarely clawed at the base. Wings obliquely oblong and adhering to the nearly straight, obtuse or truncate keel by a minute transverse appendage on each side of the latter. Stamens monadelphous or diadelphous and with anthers alike. Ovary sessile or stalked and usually developing into a flat, coriaceous, muricate or pubescent loment which readily separates into indehiscent or rarely partially dehiscent joints. (Named after Dr. Brandus Meibom who died in 1740). Type species: Meibomia canadensis (L.) Kuntze.

About 175 species chiefly of tropical and temperate countries.

O.D. 12/20/26.

## COMPOSITAE

MONTANOIA Cerv. in La Llave & Lex. Nov. Veg. Desc. fasc. 2 : 11. 1925.  
(Eriocoma H. B. & K. Nov. Gen. et Sp. 4 : 267. t. 396. 1820.)  
(Not Eriocoma Nutt. Gen. Am. 1 : 40. 1818.)

Soft-wooded shrubs or small trees with prominent lenticels and watery juice. Leaves opposite. Heads small to medium size, panicled, bearing disk and ray florets. Involucre of a few series of bracts. Receptacle hemispheric beset with chaff that enlarges and loosely encloses the ripening fruit. Pappus obsolete. Ray florets neutral with conspicuous entire to 3-toothed ligule. Disk florets perfect, fertile, with tubular-campanulate 5-toothed yellow corollas. ~~Stamens 5, partly included in corolla tube, with connectives projecting.~~ Style branches somewhat flattened. Achenes loosely invested with chaff except at top. (Named in honor of Montano, a Mexican statesman.) Type species:

About 25 species, most of them native to Mexico.

OK.P.  
17

*Atth. Dugues 1/3*



INDIGOFERA TINCTORIA L.  
Indigo.

Indigofera tinctoria L. Sp. Pl. 751. 1753.

Can be distinguished from *I. suffruticosa* by its nearly straight pods which are over 2 cm. long.

T.D.: "Habitat in India."

L.R.: According to Hillebrand this species has been introduced in the islands. If introduced, it has apparently not persisted.

E.R.: Native of Asia but now widely spread throughout warmer countries.

O.D. 11/20/26.

## HYDROPHYLLACEAE

*Water-leaf Family*MARILAUDIDUM Kuntze Rev. Gen. Pl. 434. 1891.

Branching pubescent annual or perennial herbs ~~MARILAUDIDUM~~ sometimes slightly woody at base, erect or prostrate. Leaves alternate, entire, petiolate or sessile. Flowers solitary, axillary, usually white to red or purplish. Calyx 5-cleft, with lobes usually linear to spatulate. Corolla funnelform to salverform, 5-lobed, the lobes imbricate in the bud. Stamens mostly included, all inserted in corolla tube at equal distance from its base. Ovary 1-celled or incompletely 2-celled; ovules many; styles free to base or nearly so; stigmas capitate. Fruit a 2-valved membranous to leathery capsule tardily dehiscent or even indehiscent. Seeds small, not smooth.

~~XXXXXXXXXX~~

Name in honor of Prof. Anton Kerner, Knight of Marilaun, 1831 - 1898.

Type species: Nema jamaicense L. Syst. ed. 10. 950. 1759.

About 20 species, native to America and to the Hawaiian Archipelago.

*CROTALARIA RETZII* Hitchc.  
Retzius' Rattle-Box.

*Crotalaria sericea* Retz. Obs. Bot. 5 : 26. 1789.  
Not *Crotalaria sericea* Burm. f. Fl. Ind. 156. 1768.  
Not *Crotalaria spectabilis* Roth Nov. Pl. Sp. 341. 1821.  
*Crotalaria Retzii* Hitchcock in Rep. Mis. Bot. Gard. 74. 1893.

Erect, 1 - 1.5 meters high, glaucous undershrub. Leaves unifoliate, almost sessile, oblong to broadly spatulate-oblong, 6 - 12 cm. long, mucronulate, with rounded to subacute apex and cuneate base, moderately firm in texture, glabrous above and finely silky below, with persistent foliaceous stipules. Racemes long, many-flowered, bearing prominent sessile foliaceous ovate-acuminate bracts about 1 cm. long. Flowers yellow, on 1 cm. long pedicels. Calyx about 15 mm. long, with campanulate tube 2-lipped, the lanceolate lobes about 8 mm. long. Corolla about 2 cm. long. Pod 3 - 5 cm. long, oblong, prominently stalked, glabrous.

T.L.: None given - presumably India.

L.R.: Said to have been naturalized before 1865 on Oahu. Now found on Oahu, Kauai and Molokai.

E.R.: Apparently native to southern India. Sparingly naturalized in Cuba.

O.D. 12/20/26.

Hemiparasitic shrubs containing chlorophyll and growing on branches of woody plants from which they absorb sap as food by means of greatly modified roots termed haustoria; very rarely terrestrial and devoid of chlorophyll; branches terete or angled or flattened and often jointed at the nodes. Leaves mostly opposite or whorled, simple, entire, usually fleshy, often reduced to scales or entirely wanting; stipules none. Flowers very brightly colored or very inconspicuous, regular or nearly so, perfect or monoecious or dioecious, in axillary or terminal spikes or racemes or panicles, or flowers solitary. Perianth of 1 or 2 series of 2 or 3 parts, the inner free or united into a tube which is often split longitudinally on one side. Stamens 2 - 6, more or less adnate with perianth lobes; anthers 2-celled or sometimes 1-celled by the confluence of the cells or sometimes falsely many-celled, dehiscent by longitudinal or transverse slits or by terminal pores. Ovary solitary, inferior, 1-celled, often present in rudimentary state in staminate flowers; disk present or absent; ovules mostly not distinct, usually single; style simple or none; stigma terminal. Fruit baccate or drupaceous, viscid within, actually submerged in the receptacle to which it is united, containing a solitary seed. Seeds devoid of testa, usually with copious endosperm and with terete or angled embryo having 2 or 3 or even 6 cotyledons.

About 25 genera and 900 species found chiefly in the tropics. What appears to be the calyx is often merely part of the receptacle in which the true flower is ~~xxxxxxx~~ firmly embedded. *Some species are the smallest dicots*

*→ Ladanum plants known.*



PLUMBAGINACEAE Lindl.  
PLUMBAGO or LEADWORT FAMILY

copied  
Family 293  
293

*Perennial herbs, shrubs or climbers. Leaves basal or cauline, alternate, often bearing epidermal glands for the excretion of water and salts, with or without stipules. Flowers perfect, regular, clustered. Calyx inferior, 4- to 5-toothed, usually plaited at the sinuses 5 - 15 times, often covered with glandular hairs, sometimes scarious and colored, arising from axil of 1 or 3 bracts. Corolla of 4 - 5 hypogynous clawed segments connate at base, or united into a tube, often persistent. Stamens 4 - 5, opposite the corolla-segments, hypogynous, free or more or less adnate to corolla-tube; anthers 2-celled, attached dorsally to the filaments, with sacs longitudinally dehiscent. Disk none. Ovary superior, 1-celled, usually sessile; Ovule solitary, anatropous, pendulous from a basal funicle; styles 5, free or variously connate. Fruit a 1-seeded utricle or achene usually enclosed by persistent calyx, rarely a dehiscent capsule. Seed with membranous testa, with straight embryo, and with or without mealy endosperm.*

About 10 genera and 300 species of wide distribution, many especially adapted to growth in saline regions.



14

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 split ~~XXXXXXXXXXXX~~ extending one-third of its length, membranous, green, puberulent. Corolla about 2.5 dm. 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 corolla-tube for

two-thirds their length and there flattened and channelled and clavate with copious pubescence near swollen part but above glabrous and filiform; anthers about 2 cm. long, grayish. Ovary oblong-conical, 1 cm. long; style about 1.5 dm. long, glabrous; stigma 5 mm. long. Fruit <sup>more</sup> velvety, <sup>dark</sup> olive-green, <sup>about</sup> 11 cm. long and 18 mm. long, with pulpy exocarps 3 mm. thick and with <sup>occasionally</sup> ~~no~~ <sup>membranous</sup> endocarps enclosing about 35 seeds. Seed flattened, angular, rugose, brown, commonly 1 cm. long and 6 mm. wide and 3 mm. thick.

T.L.: "Habitat in Peru."

L.R.: Probably of early introduction as an ornamental and commonly grown in gardens, especially near Hilo, Hawaii; usually long persistent as along the road from Hilo to Kilauea, but ~~there~~ rarely ~~is~~ ever found fruiting.

E.R.: Native of South America but now extensively cultivated in warmer regions.

Verify that faint actually belongs to the volcanic species.

Annual or perennial herbs, sometimes partly woody at base, usually with prostrate branches. Leaves opposite or sometimes alternate, pinnate with more or less oblique leaflets of which the terminal one is greatly reduced or entirely absent. Flowers yellow, on long peduncles. Calyx of 5 or rarely 4 persistent sepals. Corolla of 5 or rarely 4 deciduous petals. Stamens twice as many as petals, those opposite petals somewhat larger and those opposite sepals sometimes sterile; filaments filiform, those opposite the petals sometimes slightly united with them and those alternate to them subtended by glands; anthers oblong, longitudinally dehiscent. Ovary sessile, covered with erect hairs, 5- to 4-lobed and 5- to 4-celled, the individual cells with 1 - 10 pendulous superposed ovules between which later false septa arise; disk 10- or 8-lobed, thin; style short; stigma 5- to 4-ridged. Fruit 5- or 4-angled, spiny, separating into 5 or 4 three- to 6-seeded hairy and tuberculate often woody segments. Seeds ovate, with thin seed coat and straight embryo. ~~Name derived from the Greek for three-pronged, hence caltrop~~, because the fruit resembles that instrument of war which had points so arranged that when it was lying on the ground at least one point projected upward and thus impeded cavalry advance. ~~type~~

✓ 4 ones



species: Tribulus terrestris L.

7 About 15 species of warm and tropical regions.

*Stylurus robusta* (A. Cunn.)

PROTEACEAE

GREVILLEA ROBUSTA A. Cunn.

Silk-Oak

Family: 98  
Genus: Stylurus  
Species: Robusta

*Grevillea robusta* A. Cunn. in R. Br. Prot. Nov. 24, 1830.

A robust <sup>partly deciduous</sup> tree becoming 20 - 40 or more meters high, with hoary or rusty-tomentose young branches. Leaves 20 - 30 cm. long, with 5 cm. petiole, the blade elliptic to ovate-lanceolate, with revolute margins, pinnate, the 11 - 21 pinnae 1 - 3 times lanceolate pinnatifid usually along anterior half, glabrate above and canescent below. Flowers showy, slightly zygomorphic, in horizontal 8 - 12 cm. long racemes which are single or several together on short leafless branches of the old wood. Pedicels 10 - 15 mm. long, red, first diverging in all directions from axis but toward flowering and fruiting becoming horizontal to upright. Calyx about 1 cm. long, red at base and yellowish-green toward tip, caducous. Ovary glabrous, with disk on anterior half, green; style 15 mm. long, yellow; stigma conical. Ovules 2. Fruit a brown leathery follicle 15 - 20 mm. long, bent horizontally toward stem, and tipped with slender recurved 2 cm. long style. Seed brown, flat, elliptic, almost 15 mm. long, and with lighter winged margin.

Stylurus robusta  
A. Cunn.  
in R. Br. Prot.  
Nov. 24, 1830

over OK 8/12

T.L.:  
L.R.: Introduced after 1890 and now not uncommon as a shade tree  
in gardens and along streets on probably all islands. On  
Haleakala, Maui the trees can grow at an elevation of  
4000 feet. The plant is a quick grower, hardy, and well  
adapted to planting in semiarid districts.  
E.R.: Native of Australia but now extensively planted in tropical  
and subtropical countries.

17A

OK

KEY TO GENERA OF COMMELINACEAE:

Fertile stamens 2 or 3; sterile stamens 1 - 4 - - - - - Commelina

Fertile stamens 1 - 6; sterile stamens 0:

Petals partly connate into a tube, - - - - - Zebrina

Petals distinct or nearly so:

Ovarial cavities 1-ovuled; stamens pubescent - - - Rhoeo

Ovarial cavities 2-ovuled; stamens pubescent or glabrous: - -

Connective almost quadrangular; stamens glabrous - - Rectanthera

Connective broad, sometimes folded but not quadrangular;  
stamens pubescent or glabrous - - - - - Tradescantia

Otto Degener -1-/31

OK  
B

date of publication later



*Stylurus Salisb.* PROTEACEAE

for synonym, see one

~~*Anadenia R. Br.*~~

~~GREVILLEA R. Br. in Trans. Linn. Soc. 10: 167. 1810. (see my~~

~~Trees or shrubs. Leaves alternate, various. Flowers perfect, regular or slightly zygomorphic, borne usually in pairs in the axils of deciduous bracts to form usually racemes that are sometimes umbel-like. Calyx-tube straight or bent, usually splitting open by growth of pistil, the lobes recurving. Stamens 4, with filaments adnate to calyx-lobes. Ovary raised on gynophore, with or without partial or complete annular disk; style long, the median portion bending to protrude through slit in calyx before liberation of swollen stigma; pistil finally straight or more or less bent. Ovules 1 or 2, not separated by septum. Fruit usually a leathery follicle. Seeds flat, orbicular to oblong, usually winged. (Name derived from the Greek for style and tail in reference to the length of the style).~~

~~*Grevillea pumila*~~

) Type species:

*Stylurus buxifolia* Knight

copied

*Anadenia* R. Br. in Trans. Linn. Soc.  
10: 166. read in Jan. 17, 1809 and printed  
in 1810. \*

*Grevillea* R. Br. in Trans. Linn.  
Soc. 10: 167. read in Jan 17, 1809 and  
printed in 1810.

*Stylurus salicif.* in Knight, Bot.  
115. 1809.

*Rysanthe salicif.* in Knight, Bot.  
116. 1809

Not *Stylurus Rafin.* L.  
Rudov. 27. 1817

*Stylurus salicif.* in Knight, Bot. 115. 1809

Not *Stylurus Rafin.* L. Rudov. 27. 1817.

*Rysanthe salicif.* in Knight, Bot. 116. 1809

*Anadenia* R. Br. in Trans. Linn. Soc.  
10: 166. 1810 (but read on Jan. 17, 1809.)

*Grevillea* R. Br. in Trans. Linn. Soc.  
10: 167. 1810 (but read on Jan. 17, 1809)

P.K.  
C.S.

HYDROPHYLLACEAE Lindl.  
WATER-LEAF FAMILY

*Hydrophyllaceae* *Caprifoliaceae* Family 3/13  
71

Annual or perennial herbs sometimes woody at base, rarely glabrous. Leaves alternate or basal or rarely opposite, entire to pinnately or palmately lobed, estipulate. Flowers small or conspicuous, perfect, regular, ~~hemispherical~~ in scorpioid cymes, spikes or racemes, or rarely solitary. Calyx inferior, deeply cleft or divided into usually 5 segments. Corolla gamopetalous, rotate to campanulate or funnelform, usually 5-lobed with the lobes in the bud imbricate or contorted, often with appendages between the lobes. Stamens 5 or rarely 4, inserted on the corolla and alternate with its lobes; filaments filiform, equal or unequal; anthers usually versatile, 2-celled, introrsely longitudinally dehiscent. Disk annular and hypogynous or none. Ovary 2-celled or 1-celled with 2 placentas; ovules anatropous or amphitropous, often numerous; styles 1 or usually 2, separate or partly connate; stigmas small, terminal usually capitate. Fruit a 1- to 2-celled capsule mostly loculicidally 2-valved. Seeds usually pitted or rugose or reticulate, with fleshy or cartilaginous endosperm and small embryo having half-terete or plano-convex cotyledons.

About 18 genera containing at least 200 species, mostly native to western America.

✓ 9

CROTALARIA RETZII Hitchc.  
Retzius' Rattle-Box.

Crotalaria sericea Retz. Obs. Bot. 5 : 26. 1789.  
Not Crotalaria sericea Burm. f. Fl. Ind. 156. 1768.  
Not Crotalaria spectabilis Roth Nov. Pl. Sp. 341. 1821.  
Crotalaria Retzii Hitchcock in Rep. Mis. Bot. Gard. 74. 1893.

Erect, 1 - 1.5 meters high, glaucous undershrub. Leaves uni-foliolate, almost sessile, oblong to broadly spatulate-oblong, 6 - 12 cm. long, mucronulate, with rounded to subacute apex and cuneate base, moderately firm in texture, glabrous above and finely silky below, with persistent foliaceous stipules. Racemes long, many-flowered, bearing prominent sessile foliaceous ovate-acuminate bracts about 1 cm. long. Flowers yellow, on 1 cm. long pedicels. Calyx about 15 mm. long, with campanulate tube 2-lipped, the lanceolate lobes about 8 mm. long. Corolla about 2 cm. long. Pod 3 - 5 cm. long, oblong, prominently stalked, glabrous.

T.L.: None given - presumably India.

L.R.: Said to have been naturalized before 1865 on Oahu. Now found on Oahu, Kauai and Molokai.

E.R.: Apparently native to southern India. Sparingly naturalized in Cuba.

O.D. 12/20/26.



*Vitex trifolia* var. *ovata* (Thunb.) Makino  
*Vitex trifolia* L. var. *unifoliolata* Schauer in DC. Prod. 11: 683. 1848.  
*Vitex trifolia* var. *unifoliolata* Hbd. Fl. Haw. Isl. 342. 1888.  
*Vitex ovata* Thunb. Fl. Jap. 257. 1784.  
*Vitex trifolia* var. *ovata* Makino in Bot. Mag. Tokyo 17:  
NAME: 92. 1903

This plant, which is found widely distributed throughout Polynesia on coastal dunes, seems to be but an ecological variety of *V. trifolia* L. Only the variety, characterized chiefly by being a gregarious straggling shrub rarely over 2dm. high with simple leaves, is found on the islands all the islands of the Hawaiian group. But in other regions, notably in the Philippines, the typical plant is found as well. This is a small shrub or tree with trifoliolate leaves. There is some evidence that the variety when grown inland will develop into the typical species. According to Ridley (Fl. Malay Pen. p. 631) speaking of *V. trifolia* and *V. trifolia* var. *repens* (really var. *unifoliolata* ?), "The two forms look so utterly unlike that they might be easily taken for two species, but the sea-shore form taken inland soon becomes the tree form."

T.L.: Crescit in insula Mauritiis et in littoribus arenosis  
Lusitaniae ad Cavite, in China ad promont. Syng-moon et circa  
Cantonem, in Japonia, in oris marit. Nov. Holl. trop., in  
ins. Oweehe.

L.R.: On all islands, including Nihoa, where it forms a large part of the coastal vegetation.

E.R.: Throughout Polynesia.

S.E.: Degener No. H "Waimanalo, Oahu", April 1923.  
Degener No. H "Haleiwa, Oahu", Aug. 1922.  
U.S. Expl. Exped. No. - "Sandwich Islands", 1838-42.  
A.A. Heller No. 2731 "Mana," Kauai, Aug. 1895.

## COMPOSITAE

REICHARDIA Roth.

and hollow *Composite Family*  
 Oct. Abh. 35, 1787.  
 with milky sap *genus: Reichardia*  
*Decurves* 345  
 Glabrous annual or perennial herbs. Leaves basal, alternate, dentate to pinnatifid. Heads solitary to several, on long peduncles swollen toward apex. Florets ligulate, yellow. Involucre campanulate, of bracts imbricate in several series, the outer bracts ovate and scarious-margined, the inner bracts lanceolate and longer. Chaff none. Florets with truncate 5-toothed ligule and sagittate anthers. Achenes subequal, oblong, subterete, 3- to 5- but usually 4-ribbed and transversely rugose. Pappus of many soft simple white bristles that fall off together. Named in honor of Christian Reichard, 1685 - 1775, a German amateur botanist. Type species: Reichardia tingitana (L.) Roth.

About 10 species, native chiefly of the Mediterranean region.

Shrubs or sometimes herbs woody at the base, or very rarely trees, usually perennial. Leaves opposite or rarely alternate, peripinnate or imperipinnate or very rarely simple, devoid of pellucid dots, with persistent stipules. Flowers perfect, regular, peduncled, terminal ~~XXXXX~~ but appearing axillary by their divergence and the vigorous growth of the side branch. Calyx with 5 or rarely 4 free or basally connate sepals, in the bud imbricate or rarely valvate, ~~XXXXXXXXXXXXXXXXXXXX~~. Corolla of 5 or rarely 4 petals; in the bud imbricate or rarely valvate, or petals sometimes none. Stamens twice or rarely thrice as many as petals, inserted on base of pistil, those opposite petals often ~~XXXXXX~~ the longer; filaments often bearing small scales at their base or near the middle; anthers versatile, longitudinally dehiscent. Ovary superior, rarely stipitate, 2- to 12-celled but usually 4- to 8-celled, with 1 to several pendulous or ascending ovules in each cell; hypogynous disk usually present; style simple and short or wanting; stigma usually simple. Fruit drupaceous or usually a loculicidal or septicidal capsule or sometimes splitting into 4- to several-seeded segments. Seeds with or without endosperm, and straight or slightly curved embryo.

✓ ones 10



OPHIOGLOSSACEAE

1444 = Chitt

Degeuer

Lam  
Guss

OPHIODERMA Endl. Gen. Pl. 66. 1836.

Small fleshy epiphytic or rarely terrestrial herbs having short rootstocks bearing 1 to several fronds per season and with roots that always contain a mycorrhiza at their maturity. Fronds ~~usually~~ pendent or erect, consisting of a simple or lobed usually sessile blade; if fertile, differing by the addition of 1 or rarely more, flattened, pendent or erect spikes borne near middle of sterile division; in 1 exotic species the blade is reduced to a single fertile spike. Sporangia fused and sunken in 2 marginal rows, transversely dehiscent. Venation reticulate.

Name derived from the Greek for snake and skin.

Type Species: Ophioglossum pendulum L.

At least 5 species of tropical regions. These differ anatomically from Ophioglossum in having the fibro-vascular bundles of the leaf free, not connate, at ~~the~~ base.

BIDENS PILOSA L.  
Spanish Needle.

(Continued)

growing in the less arid localities more frequently bear  
radiate flowers.

E.R.: Native of America but now widely disseminated in the tropics.

O.D. 12/20/26.

GOODENIACEAE Dumort.  
GOODENIA ~~Family~~ FAMILY

*Seeger* *Sp. Pl.* 341  
*Family*

Herbs or shrubs or very rarely small trees, with watery and never milky sap. Leaves alternate or rarely opposite; simple, entire to very rarely pinnatifid, estipulate, sometimes fleshy. Flowers solitary to paniculate, ~~xxx~~ perfect, zygomorphic. Calyx tubular, ~~adnate~~ to ovary or rarely free, with usually 5 lobes or these obsolete, or with calyx truncate. Corolla gamopetalous, split on one side, with 5 lobes often membranously-winged, valvate and often induplicate in the bud. Stamens 5, alternate with the corolla lobes; filaments free or very rarely shortly adnate to corolla tube; anthers free or connivent around style, 2-celled, longitudinally introrsely dehiscent to shed before the petals open the powdery pollen near the end of the style into a collecting cup which has a narrow opening covered with hair and through which opening the pollen is pushed into the open by the lengthening pistil. Ovary usually inferior, 1- or 2- or rarely 4-celled; ovules 1 or more in each cell, mostly erect or ascending; style usually simple; stigma various, indusiate at apex. Fruit drupaceous or nut-like or capsular, bearing usually 1 seed in each cell. Seeds small, flat, with straight embryo surrounded by copious endosperm.

About 15 genera and 250 species, most numerous in Australia. The family is closely related to the Lobeliaceae from which it primarily differs in the absence of milky juice, in certain anatomical stem features, in often having drupaceous fruit, and in the specialized pollination mechanism.

WOLFFIA Horkel; Schleid. in Linnaea 13 : 389. 1839.

Thallus globose to ovoid-oblong, nerveless, and rootless. In vegetative reproduction, the new thallus is practically sessile and soon becomes detached. The ovary produces 1 orthotropous ovule. The smallest flowering plants and the simplest through degeneration. (Named probably in honor of Johann Friedrich Wolff who wrote on Lemna in 1801.) Type species: *Lemna hyalina* Delile.

About 5 species, chiefly of warmer regions.

C.D. 12/20/26.



VIGNA Savi, Mem. Phas. 3: 7. 1826.

Annual or rarely perennial herbs, usually twining or sometimes creeping <sup>nodose</sup> or even erect, rarely somewhat woody at base: Leaves ~~XXXXXX~~ pinnately trifoliate, stipulate, with broad leaflets. Flowers whitish, yellowish or purplish, usually in alternate pairs on the ends of very long ~~knobby~~ peduncles, often falling soon after opening, with caducous bracts and bractlets and usually with cushion-like nectaries between the flowers. Calyx campanulate to somewhat tubular, 4- to 5-toothed, the upper 2 segments often connate. Standard suborbicular, with imbricate auricles; wings curved, obovate, shorter than standard; keel incurved, as long as the wings, neither beaked nor ~~boiled~~. Stamens 10, diadelphous with single upper stamen free. Ovary sessile, many-ovuled; style filiform or thickened in the upper part or membranously dilated, ~~comose~~ on inner side; stigma incurved, very oblique. Pod linear, straight, terete, sometimes slightly inflated, 2-valved. Seeds small, ~~not~~ broad nor flat. (Named in honor of Dominicus Vigna, Italian scientist of the Seventeenth Century and commentator on Theophrastus.) Type species: Dolichos luteolus Jacq.

About 30 species, native to warm and tropical regions. These can be readily distinguished from three related genera represented in the Islands as follows: Vigna has usually few flowers and these are more or less close together while the keel is arched or curved inward; Phaseolus has usually flowers in open racemes while the keel is coiled; Dolichos has the keel narrow and bent inward and upward at right angles.

W. H. Sauer 1/13/31

OK.  
Q.

33

OSWALD WEIGEL  
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AUKTIONS-INSTITUT  
(gegründet 1797)

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Leipzig, den 3. 8. 28.  
3. Mo.

Herrn Otto Degener,  
Kaunakakai, Molokai, T.  
Hawaii, U.S.A.

Hochgeehrter Herr!

Aus Ihre geschätzten Zuschrift vom 21. Juli, für welche ich Ihnen bestenfalls danke, habe ich leider ersehen müssen, dass Sie mir einen Auftrag geschickt hatten, der indessen nicht zu meinen Händen gekommen ist. Ich liess Ihnen unter eingeschriebenem Kreuzband die

*Index*  
Picta of the Hawaiian Islands  
zugehen und bestätige Ihnen, dass die Übersendung meines Anzeigers für Botanik und Zoologie und der Listen No. 113 und 114. Ich würde Ihnen zu Dank verpflichtet sein, wenn Sie die Neuerscheinungslisten, welche ich hier einlege, befreundeten Interessenten zugänglich machen wollten, wie ich denn überhaupt für gütige Weiterempfehlung meiner alten Firma dankbar sein werde.

Mit vorzüglicher Hochachtung

Oswald Weigel  
O. A. Weigel

## VERBENACEAE

VITEX TRIFOLIA var. OVATA (Thunb.) Makino  
BRASH VINE; KOLONOLO KAHAKAI, POLOANALINA

Family: 315  
Genus: Vitex  
Species: Trifolia  
Variety: Ovata

Vitex ovata Thunb. Fl. Jap. 257. 1784.

Vitex trifolia var. unifoliolata Schauer in DC. Prodr. 11: 683. 1828.

Vitex trifolia var. unifoliolata Gillet. Fl. Haw. Isl. 342. 1888.

Vitex trifolia var. ovata Makino in Bot. Mag. Tokyo 17: 92. 1903.

Decumbent and creeping shrub 1 - 5 dm. high with young branches silky tomentose. Leaves simple, obovate to oval, silky tomentose below and silky tomentulose above, 3 - 6 cm. long, on 2 - 4 mm. long petiole. Flowers sessile bracteate opposite axes to form a simple 1 - 3 cm. long terminal panicle. Calyx 5 mm. long, silky tomentulose within and glabrous without, with ~~XXXXXX~~ 5 ridges terminating in each of the 5 subequal short teeth. Corolla purplish-blue, silky tomentulose without, with tube 7 mm. long above and 10 mm. long below and tomentose within below; upper lobes glabrous within, subequal, 2 - 3 mm. long; lower lobes glabrous within, 4 - 5 mm. long, the central lobe the largest. Stamens inserted 3 mm. above base of corolla, filaments 7 mm. long, pale blue, gla-

over OK (11)

bracts above; anthers dark blue; pollen white. Ovary pulverulent, green; style 1 cm. long, glabrous, pale purple; stigma acutely 2- to very rarely 3-lobed. Fruit a reddish to black spherical ~~infruct~~ <sup>fruit</sup> ~~5 mm.~~ <sup>10 mm.</sup> ~~long~~ <sup>long</sup> ~~on a stalk 1/2 to 1 mm. long~~ <sup>on a stalk 1/2 to 1 mm. long</sup> ~~or more of its height with persistent calyx~~ <sup>or more of its height with persistent calyx</sup>.  
L.R.: "Crescent in insula Mauritii et in littoribus arenosis Lac-  
oniae ad Savite, in China ad promont. Syng-moon et circa Canton-  
em, in Japonia, in oris marit. Nov. Holl. trop., in ins. Oweche."  
L.R.: A shrub forming a large part of the coastal vegetation of all  
the Islands.

L.R.: Widely distributed throughout Polynesia and as far as Japan and  
India on coastal dunes. Notably in the Philippines *Vitex trifolia*  
L., a trifoliolate shrub or small tree, grows inland; the unifolio-  
late variety grows along the shore. There is some evidence that the  
latter when grown inland will develop into the typical species, and  
hence but an ecovariety. According to Ridley Fl. Malay Pen. p.  
631, speaking of *V. trifolia* and *V. trifolia* var. *repens* (Vratis?),  
"The two forms look so utterly unlike that they might be easily  
taken for two species, but the sea-shore form taken inland soon be-  
comes the tree form." Whether this statement also applies to the  
Hawaiian plant is worth investigating. A single clump growing some  
distance from the coast near Kamalo, Molokai, were essentially  
the same as those growing nearer shore.

OK EIIIA



GRASSULACEAE

BRYOPHYLLUM PINNATUM (Lam.) Kurz  
Air-Plant or Life-Plant

Family: 153  
Genus: *Bryophyllum*  
Species: *Pinnatum*

*Cotyledon pinnata* Lam. Encycl. 2 : 141. 1786.  
*Bryophyllum calycinum* Salisb. Par. Lond. pl. 3. 1805.  
*Bryophyllum pinnatum* Kurz in Journ. Asiat. Soc. Beng. 40 . 2 :  
52. 1871.

Wright

Glabrous and more or less glaucous perennial herb somewhat woody at base, quickly becoming 4 - 15 dm. high toward flowering time by the production of a solid branching quadrangular to terete light-green to reddish 1 - 4 dm. long panicle marked with pale-green longitudinal streaks. Flowers in showy panicles bearing spreading about 4 cm. long peduncles from under whose axis often arises a single 1.5 cm. long pedicel. Calyx pale-green, irregularly streaked with purplish-red at base, with inflated narrowly campanulate tube about 5 cm. long having deltoid teeth about 1 cm. longer. Leaves 7 - 21 cm. long, on 2 - 8 cm. long brittle often purplish and white-spotted petioles, flat, fleshy to leathery, usually

from

slightly sour.  
(10)

OK

simple below and with 3 to rarely 5 leaflets above, with coarsely  
serrate-dentate margin in whose often purplish angles frequently  
arise adventitious plants especially after the leaf has fallen; leaf-  
lets oval to oblong or elliptic, obtuse at apex, the terminal by far  
the longest and with longest petiolule while the lateral are 5 - 10  
cm. long and have oblique base and 1 cm. long petiolule. Corolla  
5 cm. long, with grooved spherical green base 1 cm. long which is  
glabrous within and yellow-glandular-pubescent without, with rest  
of tube narrow-campanulate and progressively more flesh-colored  
toward the lanceolate to narrowly ovate 12 mm. long acute lobes  
which are slightly recurved. Stamens adnate to top of spherical  
part of corolla-tube; filaments green, one series 3 cm. long and  
other slightly longer; anthers purplish, partly exserted; pollen  
white. Receptacle with spreading yellowish flat ~~quadrangular~~ square  
scales 2 mm. long producing abundant nectar. Ovary bright-green,  
8 mm. long, barely connate at ~~base~~ base; style filiform, longer  
than corolla-tube but shorter than stamens; stigma small, oblique,  
depressed. Fruit of four 15 cm. long follicles surrounded by inflat-  
ed yellowish calyx and marcescent corolla. Seeds

T.L.:  
L.K.: Probably naturalized on most islands at lower elevations in  
sunny and especially in extremely shaded rocky situations. First  
reported from the lava-fields of Kau, Hawaii in 1888 as "of recent  
roduction." It was not reported from Oahu in 1897 though by 1920 it  
is very common in the vicinity of Honolulu. In 1920 it was already  
very common near Lahaina, Maui. *The plant in the Islands is pollinated*

largely by sphinx moths. It flowers around March. Two other  
species were grown by the late Dr. F. C. Newcombe in Honolulu  
in 1924 but it is doubtful that any of these plants still re-  
main in the Territory. *white*

EXTRA RANGE: Native probably of the East Indies but now widely  
naturalized throughout the tropics.

## ASARACEAE

ARISTOLOCHIA L. Sp. Pl. 90. 1753.

Family: 107

Genus: *Aristolochia*

Perennial herbs or twining woody vines, usually with rhizomes. Leaves alternate, mostly petiolate, entire or 3- to 7-lobed, often cordate or auriculate, palmately nerved. Flowers irregularly diverse, ~~XXXXXX~~ axillary and solitary or in axillary fascicles or short racemes. Calyx abruptly bent, with tube usually inflated around the style and contracted at the throat, with limb spreading or reflexed and entire or 3- to 6-lobed or appendaged. Stamens mostly 6, in 1 row around the ~~XXXXXX~~ styler column and adnate to it; anthers adnate to the short style or stigma, 2-celled, with sacs longitudinally and extrorsely dehiscent. Ovary inferior, mostly 6-celled with 6 parietal placentas; style 3- to 6-lobed. Capsule naked, septically 6-valved and hanging like an inverted parachute. Seeds very numerous, horizontal, compressed.

Type species: *Aristolochia rotunda* L.

Name derived from the Greek in reference to supposed medicinal value during childbirth. <sup>a</sup> <sub>1</sub> of the plant <sub>1</sub>

About 180 species, native to warm and tropical regions.

OK  
148



## MAGNOLIACEAE

MAGNOLIA GRANDIFLORA L.

*Saunder's or large-flowered Magnolia*Magnolia grandiflora L. *Syst. ed. 10: 1082.**date 12*

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 mm. wide, with sterile acute apex 2 mm. long. Carpels forming prominent cone about 3.5 cm. long, densely silky pubescent; style none, stigma 5 mm. long, linear, recurved. Fruit cylindric, 6 - 12 cm. long, densely pubescent.

*Seeds 13 mm. long, 8 mm. wide, 4 mm. thick, with a fleshy red shiny aril surrounding on 1/2 of the seed.*



T.L.:

L.R.: ~~grown sparingly on Kauai, Oahu, Maui and Hawaii~~  
~~as an ornamental but thriving only at higher elevations. Though~~  
~~native to America, the first magnolia introduced to the Islands came~~  
~~from Kew Gardens, England when this species~~  
~~this species was brought.~~

- E.R.: Native from North Carolina to Florida and Texas but widely  
cultivated in many other countries ~~as an ornamental.~~

~~carefully preserved under glass from cold,~~  
~~around Cape Horn by Thomas Brown early in~~  
~~the Nineteenth 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. O.K. P~~

Family: 344  
Genus: *Richardia*  
Species: *Purpurea*  
*Picridium tinctorum* Pope, Wagn.  
Blute Hous. 258. 1929.  
787. *Picridium tinctorum* Pers.  
Fl. Atlant. 2: 220. 1778-1800.  
Stem simple or branched at base.

*Scorzonera picroides* L. Sp. Pl. 792. 1753.  
*Reichardia picroides* Roth, Bot. Abh. 35. 1787.

of outer florets XXXIX  
ts; pappus 10 - 15 mm.  
grayish-yellow, oblong,  
and drab, with faintly  
und naturalized in arid  
in 1923, at Waimanalo  
en when first observed,  
hat they must have been  
e observed to be very  
not been seen a few

L.L.: None given.  
L.R.: Of accidental introduction. On Oahu first found naturalized in arid rocky or sandy localities near the sea at Koko Head in 1923, at Waimanalo in 1928, at Laie in 1931 and at Haleiwa in 1923. Even when first observed, the plants were not uncommon. This would indicate that they must have been introduced several years before. In 1929 plants were observed to be very common at Kawaihapai, Oahu, a region where they had not been seen a few

BLECHNUM L. Sp. Pl. 1077. 1753.

Terrestrial ferns with fronds usually tufted and with scale-covered rootstocks which are erect and occasionally stout or creeping and often stoloniferous. Fronds small to large, not jointed to rootstock, with blades simple and entire to 1-pinnate (or in very exceptional cases 2-pinnate); pinnae jointed to rachis or not jointed, nearly uniform or the fertile narrower than the sterile. Sori elongate-linear, usually continuous, borne in 2 lines one on each side of the costa and near or against it upon an elongate vein which is parallel to the costa and connected transversely with the main veins arising from it. Indusia narrowly linear, continuous, facing the costa and though near it never part of it. Veins forked and in sterile pinnae completely free and parallel.

104 [ Name derived from the Greek name for some fern.

note [ Type species: Blechnum occidentale L.

About 35 species of wide distribution. Phylogenetically, of the frond the indusium is the true margin, the tissues now beyond it ~~XXXXX~~ constituting a highly developed secondary outgrowth from the upper surface of the frond.



OPHIOGLOSSACEAE

*Ophioderma falcatum* sp. nov.  
~~OPHIOGLOSSUM pendulum?~~  
 hook-shaped *Ophioderma*; Laukehi, Paapua

*Ophioglossum pendulum* Hillb. H. Haw. Isl. 640, 1888.  
*Ophioderma pendulum* D. Don

~~Not *Ophioglossum pendulum* sp. Pl. 1753~~  
~~Not *Ophioderma pendulum* D. Don, Suppl. Bot. Hort. 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 - 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, 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 face of the sterile division at or slightly above its middle. Sporangia 1 mm. wide, yellow at maturity.

T.L.: *known from a small leaf structure among all forms*



L.R.: 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, and Maui. It grows probably on the other islands as well. ~~The~~ and near Maunakapoi Crater on Hawaii.

E.R.:

Seems different from the fig of *C. pendula* in English plants. See letter to Dr. R. B. Rydberg.

Hawaiians, according to Hillebrand, employed an infusion of this for a remedy against cough.

NYCTAGINACEAE

MIRABILIS JALAPA L.

Common four-o'clock or marvel-of-Peru

Mirabilis jalapa L. Sp. Pl. 177. 1753.

Mirabilis odorata L. Gent. Pl. 1 : 7. 1755.

Mirabilis dichotoma L. Sp. Pl. ed. 2 : 252. 1762.

Mirabilis jalapa var. odorata L.; Heimerl, Bot. Jahrb. 21 : 616. 1896.

Coarse glabrate to sparingly pubescent quick-growing perennial 3 - 7 dm. high herb flowering as early as the first year, with very large fusiform erect almost black root white within. Leaves ovate, entire, becoming 14 cm. long, glabrate to sparingly ciliolate and sometimes puberulent on upper surface with erect hair, abruptly narrowed into somewhat acute apex, truncate to cordate at base, with petioles about half as long as the blades. Flowers fragrant, subsessile except on cloudy days opening late in afternoon and closing very early next morning. Involucre campanulate, ciliolate, with 2 mm. long tube and 5 mm. long ovate-lanceolate acute lobes, persistent. Calyx salverform, sparingly pubescent, with 4 - 5 cm. long tube and 3 cm. wide notched limb, white to deep red or purple or yellow or sometimes somewhat blotched. Stamens 6 - 7 cm. long. Fruit ovoid, black, hard, 8 - 10 mm. long and 7 mm. wide; constricted toward base, wrinkled-tuberculate and longitudinally 5-ribbed.

Top: Locality: - - -

Family: 113  
Genus: Talapa  
Species: Mirabilis

Pistil lobes as long as stamens; fruit  
fimbriate-capitate.

MEIBOMIA Adans.-Fam. Pl. 2 : 509. 1763.

Erect, ascending or trailing usually perennial herbs, sometimes woody at base. Leaves usually trifoliate, rarely 1- or 5-foliate, always stipellate except in M. triflora, and with usually scarious stipules. Inflorescence of usually small purple or purplish flowers in terminal or axillary compound or simple racemes or panicles. Calyx-tube short, its 2 upper teeth usually more united than its acute or attenuate 3 lower teeth. Standard oblong, ovate or orbicular, narrowed or rarely clawed at the base. Wings obliquely oblong and adhering to the nearly straight, obtuse or truncate keel by a minute transverse appendage on each side of the latter. Stamens monadelphous or diadelphous and with anthers alike. Ovary sessile or stalked and usually developing into a flat, coriaceous, muricate or pubescent loment which readily separates into indehiscent or rarely partially dehiscent joints. (Named after Dr. Brandus Meibom who died in 1740). Type species: Meibomia canadensis (L.) Kuntze.

About 175 species chiefly of tropical and temperate countries.

O.D. 12/20/26.



CYANEA SELACHICAUDA Degener  
SHARKS TAIL CYANEA*Cyanea selachicauda* sp. nov. <sup>insert</sup>~~apex of leaf not significant~~  
~~mucronate~~

Erect unbranched or branching sparingly only from near base, 8 - 24 dm. high, with fleshy smooth to sparingly muricate stem. Leaves obovate-oblong in outline, the upper two-thirds cleft into 4 - 8 sub-opposite divisions of which usually one side bears one more than the other, with the upper divisions longer than the lower, 3.5 - 6 dm. long, 3.5 - 8 cm. wide between the divisions and 8 - 23 cm. wide across the division from their tips, green shiny glabrous smooth above, light green faintly puberulent prominently veined below, the margins irregularly and bluntly dentate to undulate and with yellow callous streaks; petiole green to purplish green, about 4 cm. long and 5 mm. wide, usually sparsely muricate in 2 lines above which represent prolongation of blade, with apex of leaf and apices of divisions obtuse ~~but~~ but mucronate, with base more or less acute; the larger leaves having upper side of midrib and main veins very sparsely armed with forward-pointing sharp-triangular isolated prickles. Peduncles ascending slightly upward, green to purplish, glabrate, about 4 cm. long, lower half naked but nodose, upper half about 10-flowered; pedicels slender, commonly 1 - 1.5 cm. long, green to purplish, puberulent, with broadly deltoid about 2 mm. long bract at base and 2 subopposite subulate bractlets near lower third or half. ~~XXXXX~~ Calyx light green, puberulent; tube 10 mm. long, 8 mm. wide, with triangular 3 mm. long lobes having spreading darker green coriaceous margins. Corolla puberulent without and finely puberulent within, white with greenish tinge, with 5 more or less noticeable purplish longitudinal streaks on nerves near base, about 4.5 mm. long and 6 mm. wide and 8 mm. broad. Staminal column almost white, glabrous except for ~~XXXXXX~~ the 5 ~~XXXXXX~~ connate margins of the filaments which are ciliate from base for about 5 mm; anthers purple, only the 2 lower bearded. ~~XXXXXX~~ Upper part of ovary purplish pink, shiny; style ~~XXXXXX~~ light green.

TYPE LOCALITY: Small valley southeast of Puu Hapapa, Oahu.

LOCAL RANGE: Only about ten plants were found, all growing on the shaded, damp sides of a seasonally dry stream. Flowering in August.

EXTRA RANGE: A rare species known only from the type locality.

TYPE SPECIMEN: Degener &amp; Bush No.

<sup>insert</sup>  
Frutex 8 - 24 dm.; foliis 4- ad 8-fissis, 3.5 - 6 dm. longis et 8 - 23 cm. latis; pedunculis 4 cm. longis; circa 10-floribus; pedicellis 1 - 1.5 cm. longis; lobis calycis triangularis, 3 mm. longis; corolla alba, 45 mm. longa.

<sup>insert</sup>  
Shrub 8-24 dm. high; leaves 4-8 cleft, 3.5-6 dm. long and 8-23 cm. wide; peduncles 4 cm. long, about 10-flowered; pedicels 1-1.5 cm. long; calyx lobes triangular, 3 mm. long; corolla white, 45 mm. long.

→ The specific name of this plant alludes to the fancied resemblance of the upper part of the leaf to the tail of a shark's tail.



Fruit  
around base  
on 1 page!

FLORA HAWAIIENSIS

FAMILY: 339  
GENUS: Cyanea  
SPECIES: Grimesiana

ROSELIACEAE  
LORENTIA FAMILY

CYANEA GRIMESIANA Gaud.  
GRIMES CYANEA

according to Hunt

in Trunc. Voy. Bot. 458

Cyanea Grimesiana Gaud. Bot. Voy. Uranie, 457, pl. 75. 1826. <sup>inf</sup>

A stout erect shrub which is unbranched or sparsely branched from near base, 10 to rarely 33 dm. high. ~~xxxxxxxxxxxxxxxxxxxx~~, with hollow or solid stem acuminate toward base. Leaves broadly oblong to obovate in outline, 20 - 30 cm. wide, 35 - 75 cm. long of which the petiole measures 7.5 - 20 cm. imparipinnate, membranous, glabrous, shiny especially beneath, pinnate below, pinnatisect toward apex, with 18 - 24 ~~subpinnate~~ <sup>segments</sup> segments of which the lower diminish to mere auricles; segments commonly 3 cm. wide, linear-lanceolate, entire to sinuate, mucronate, broadly and obliquely sessile at base, often separated by small auricle-like lobes; petiole mucronate or prickly except for prominent area corresponding to downward extension of upper surface of midrib; rachis on lower surface sparsely mucronate or prickly. Racemes 5 - 15 cm. long, spreading-upright, bracteate from near base, with upper half or four-fifths 6- to 12-flowered; pedicels 2.5 - 6 cm. long, smooth or obscurely mucronate, arising from ~~axils~~ axils of lanceolate about 12 - 14 mm. long undulate persistent mucronate bracts. Calyx glabrous, shiny, green or when young somewhat reddish; tube narrow-obconical, 12 - 17 mm. long and about 9 mm. wide, deeply longitudinally 10-grooved; lobes lanceolate, more or less crisp and brittle, ~~36~~ 36 mm. long, 8 - 12 mm. wide, foliaceous, many-nerved, undulate, very acute, with prominent midrib. Corolla falciform, upper side 7.5 cm. long, 12 mm. wide, whitish or light purple to lilac, with area along the 5 midribs more intensely colored, glabrous but the lobes sometimes warty. Staminal column glabrous, similarly colored, with anthers purplish and all 5 tufted at apex with long stiff hair. Style greenish toward tip. Berry obconic, 25 - 37 mm. in diameter, orange, crowned with calyx lobes. #

with nerves armed or not

TYPE LOCALITY:

LOCAL RANGE: Found in wet, dark forests of the Koolau Range of Oahu as, for example, on Konahuanui, Tantalus, and Pauoa and Niu Valleys. Hillebrand recorded it from Mt. Kaala off the Waianae Range, adding the the specimens from there bore "lobules between the pinnae." This condition, as the following plate shows, exists in the plants collected by the writer in Niu Valley. J.F. Rock, in his excellent monograph, states that he observed this species "without flower or fruit" in Wailau Valley, Molokai. The writer believes that when the Molokai plant becomes better known, it will very likely prove to be a distinct variety. Flowers as early as January and as late as October; noticed fruiting in April.

EXTRA RANGE: Probably endemic to Oahu only.

1. CYANEA GRIMESIANA var. LYDGATEI Rock

Cyanea Grimesiana var. Y Hilleb. Fl. Haw. Isl. 258. 1888.

Pinnae sinuately notched, contracted at base. Calyx with 8 mm. long cylindrical tube and 12 - 16 mm. long lobes.

TYPE LOCALITY: "Hamakua", East Maui.

LOCAL RANGE: Known only from the type specimen which was collected by Lydgate near Makawao, Maui.

2. CYANEA GRIMESIANA var. MAUIENSIS Rock

Cyanea Grimesiana var. B Hilleb. Fl. Haw. Isl. 258. 1888.

Pinnae larger and broader than in the species, lacinate, decurrent along rachis. Calyx with cylindrical tube half as long as the 24 - 36 mm. long lobes. Corolla almost white.

TYPE LOCALITY: "Oloalu", West Maui.

LOCAL RANGE: A rare variety collected ~~xxxxxxxx~~ on West Maui by Hillebrand at Oloalu in 1870, by Rock in Waikapu Valley in 1910; on Lanai by A. S. Hitchcock in a mountain ravine in 1916.

#Rock's description amended to include Degener, Park & Yamamoto No. 4209, Niu Valley, Oahu, Aug. 21, 1932.

(Species illustrated on following page)

(Otto Degener, / 1932)

1 small type

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 Hartman, C. *Annotationes de plantis Scandinavici Herbarii Linnaeanae*  
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 are lacking. \$2  
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 1910. E. \$1.75  
 Jepson, W. L. *Erythraea*, a journal of Botany West American and General  
 vols. 4-7. rare. \$10  
 Illick, J. S. *Pennsylvania trees*. 1915. 231p. ill. \$2  
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 G. Schmidt, 415 Woodland Ave. Leonia, N. J.

FLORA HAWAIIENSIS

FAMILY: 221

GENUS : Hibiscadelphus

SPECIES: Bombycinus

MALVACEAE

MALLOW FAMILY

HIBISCADELPHUS BOMBYCINUS Forbes

KAWAIIAE HIBISCADELPHUS; HAU KUAHIWI

Hibiscadelphus bombycinus Forbes in Occas. Pap. B. P. Bishop Mus. 7 :  
3. 1920.

Probably a tree of medium size. Leaves reniform or somewhat orbicular in outline, palmately 7-nerved, obscurely 5-angled, deeply cordate and with the basal lobes overlapping, rounded at apex, stellate pubescent on both sides but especially so below, with blade 7 - 9 cm. long and 6.5 - 8 cm. wide, with pubescent petiole commonly 4 - 5 cm. long. Flowers single, on pedicels 2 - 3 cm. long. Involucral bracts strap-shaped, 9 mm. long and 2 - 3 mm. wide, rounded at apex, stellate pubescent. Calyx cup-shaped, ~~12 mm. long~~ 12 mm. long, 6-toothed or -lobed, stellate pubescent without. Corolla slightly downwardly curved, densely stellate pubescent, 3.5 cm. long, with prominent nerves. Staminal column scarcely exerted. Capsule woody, about 3 cm. long, spherical to obovoid, densely stellate ~~pubescent~~ hirsute. Seeds covered with yellowish hair.

TYPE LOCALITY: "collected at Kawaihae-uka, (inland) Hawaii, T.H."

LOCAL RANGE: Dr. William Hillebrand collected the type specimen at Kawaihae previous to 1868, and sent some, if not all, of his material to Horace Mann. The plant remained unrecorded in the Mann and Brigham collection until Charles N. Forbes, shortly before his death, described it in 1920. As the native dry forest at Kawaihae has been displaced by algaroba, cactus, grasses and introduced weeds, this species is probably extinct.

EXTRA RANGE: Not known elsewhere.

(Illustrated on following page)

*Parasitic*



*Boiss. & Heldr.*  
FLORA HAWAIIENSIS

FAMILY: 221

GENUS : Hibiscadelphus

MALVACEAE

MALLOW FAMILY

HIBISCADELPHUS Rock in Haw. Board Agric. & For., Bot. Bull. 1 : 8.1911.

Stellate tomentose trees of medium size. Leaves alternate, petiolate, suborbicular to reniform, unevenly 3- to 5-pointed or -rounded, entire, obtuse at apex and cordate at base. Flowers zygomorphic, single or several in the axils of leaves borne toward the ends of the branches. Involucral bracts 5 - 7, ~~linear~~ dentiform or very narrowly linear to strap-shaped and free. Calyx deeply and unevenly 2- to 6-cleft or -lobed, deciduous before maturing of fruit. Corolla magenta to yellowish or green or gray, downwardly curved, of 5 lobes permanently convolute so that only the apex opens slightly to enable ~~xxxxxxxx~~ the exertion of the staminal column and stigmas. Ovary 5-celled, with 1 - 3 ovules in each cell; stylar branches 5, suberect with capitate reddish stigmas. Fruit a woody to coriaceous usually tardily dehiscent 5-valved spherical to obovoid capsule having detached chartaceous endocarp. Seeds reniform, covered with light gray tomentum.

Name derived from Hibiscus and the Greek word for brother in allusion to the close relationship of this genus to Hibiscus.

TYPE SPECIES: Hibiscadelphus Giffardianus Rock.

Four very rare species, all peculiar to the Hawaiian Islands.

*Paradise*



NEW ILLUSTRATED FLORA OF THE HAWAIIAN ISLANDS

FAMILY: 221

GENUS: Hibiscadelphus

MALVACEAE

MALLOW FAMILY

KEY TO ~~XXXXXX~~ SPECIES OF HIBISCADELPHUS:

Involucral bracts less than 1 cm. long:

Bracts 9 mm. long, strap-shaped; basal halves of leaves overlapping - - - - - (H. bombycinus)

Bracts 1 mm. long, dentiform; basal halves of leaves not overlapping; flowers 2.5 - 3 cm. long - - - (H. hualalaiensis)

Involucral bracts about 2 cm. long; flowers 5 - 6 cm. long:

Bracts filiform (Hawaii) - - - - - (H. Giffardianus)

Bracts linear-spatulate (Maui) - - - - - (H. Wilderianus)

Grout

FLORA HAWAIIENSIS

FAMILY: 52

LEMNACEAE  
DUCKWEED FAMILY

Minute perennial plants floating free at the surface of the water, devoid of distinct stem or leaves, the plant body consisting of a disk-shaped elongated or irregular thallus which in some species bears several, in others one or even no rootlets. The inflorescence consists of one or a few naked monoecious flowers borne on a slight lateral prominence on the edge or upper surface of the plant. A flower usually consists of a single stamen or of a single flask-shaped pistil that finally develops into a 1-to 7-seeded utricle. The plants flower and fruit rarely, the fruit in many species even being unknown. The common method of propagation is by the growth of a new thallus from a cleft in the edge or base of the old one, the slender connecting stalk usually soon breaking apart. Minute resting bulbs are sometimes formed that sink in the water to remain at the bottom during unfavorable seasons. They rise and form new thalli when conditions again become favorable.

This family, which may be regarded as reduced Araceae, consists of 4 genera and about 30 species, many of wide distribution. It contains the simplest and the smallest of the flowering plants.  
(Otto Degener, 8/5/'32)

Boek

NEW ILLUSTRATED FLORA OF THE HAWAIIAN ISLANDS

FAMILY: 52

LEMNACEAE  
DUCKWEED FAMILY

KEY TO LOCAL GENERA:

Plant with one or more roots; plant more than 1.5 mm. long:

Thallus with about 8 prominent nerves and a cluster of several ~~XXXX~~ rootlets - - - - - SPIRODELA

Thallus with about 3 obscure nerves and a single rootlet ~~LEMNACEAE~~ LEMNACEAE

Plant without roots; plant less than 1.5 mm. long - - - - - WOLFFIA

(Otto Degener, 8/5/'32)

*mp*

Frank

3

~~*Volkameria fragrans* Vent. Jard. Malm. pl. 70. 1804.~~  
~~*Clerodendrum fragrans* Willd. Enum. Hort. Berol. 659. 1809.~~  
~~*Clerodendron fragrans* of previous Hawaiian writers.~~

5

italics

(Illustrated on following page)



*Flora Hawaiianis*

CASSYTHACEAE

Love-Vine Family

Family: 138

Genus: *Cassytha*

Species: *Filiformis*

CASSYTHA FILIFORMIS L.

Love-Vine; KAUNOA PEHU

*Cassytha filiformis* L. Sp. Pl. 35. 1753.

*Cassytha americana* Nees, Syst. Laur. 664. 1836.

~~Not *Cassytha filiformis* Tuck. Sel. Amer. 115. 1763.~~

Wiry slender branched yellowish-green vine often 5 m. or more long with about 2 mm. thick glabrous to puberulent branches which twine around and attach themselves by means of small protruding haustoria to their host. Leaves few, distant, reduced to ovate or lanceolate acute scales about 1 mm. long. Flowers white, distant, subtended by 3 ovate almost 1 mm. long bracts, subsessile in peduncled spikes 1 - 3.5 cm. long. Calyx with 3 outer lobes almost 1 mm. long and similar to adjacent bracts, ciliate; 3 inner lobes ovate, 2 mm. long and longer than calyx-tube. Three outer stamens largest, 2 mm. long, somewhat petaloid; 3 stamens opposite them slightly shorter, with upper two-thirds deltoid and lower part filiform but bearing 1 globose gland on each side near base; 3 stamens alternate with them subsessile, deltoid, about half as long. Pistil 1.5 mm. long; stigma capitate. Fruit

a crustaceous globose brownish-black dull ovary 5 mm. in diameter having shiny conical apex and being surrounded entirely by enlarged whitish fleshy calyx base bearing persistent lobes.

TYPE LOCALITY: "Habitat in India."

LOCAL RANGE: Probably found on all the islands at lower elevations, especially in hot, dry districts. ~~XXXX~~ Parasitic on grasses, *Osteomeles*, guava, *Scaevola*, *Prosopis*, lantana, *Sapindus*, *Osmanthus*, etc., and frequently forming dense matted masses over trees. Superficially resembles *Cuscuta*, but can be distinguished from it at a distance by its greenish-yellow instead of orange-yellow color.

EXTRA RANGE: Cosmopolitan in the tropics.

(Illustrated on following page)

(Att. Degener 8/5/32)

Put Plate 41 of previous book  
opposite



*Fruct* ~~LOVE-VINE~~ CASSYTHACEAE  
~~CASSYTHA FAMILY~~

Parasitic vines. Leaves reduced to scales or entirely wanting. Flowers perfect, small, sessile or nearly so, regular, spicate or racemose or capitate. Calyx 6-cleft with imbricate lobes in 2 series of which the outer is the shorter. Corolla none. Stamens 9; ~~XXXXXXXXXXXXXXXXXXXX~~ anthers 2-celled, dehiscing by means of 2 uplifting valves; staminodia 3. Pistil simple: ovary with 1 ovule; style simple: stigma small, usually capitate. At maturity the single ovary has become enclosed by the enlarging calyx base to form a fleshy berry-like fruit. Seed large.

A family closely related to the Lauraceae; only the following genus exists:

(Otto Degener, 8/5/'32)

*Back* ~~cap~~ New Illustrated Flora of the Hawaiian Islands

FAMILY: 138

GENUS : Cassytha

*Love-Vine* CASSYTHACEAE  
~~CASSYTHA FAMILY~~

CASSYTHA L. Sp. Pl. 35. 1753.

Characters of the family/

NAME derived from the Greek word of the Cuscuta.

TYPE SPECIES: Cassytha filiformis L.

At least 15 species of tropical regions.

(Otto Degener, 8/5/'32)

LILIACEAE  
LILY FAMILY

*Pleomele aurea* (H. Mann) N.E. Brown  
GOLDEN DRACAENA; HALAPEPE

*Dracaena aurea* H. Mann in Proc. Acad. 7: 207. 1867.

*Dracaena aurea* C. E. Rev. Gen. Pl. 2: 710. 1891. (in part)

*Pleomele aurea* N.E. Brown in Kew Bull. 277. 1914. (in part)

*Dracaena aurea* of Hawaiian writers (as to Kauai and Oahu specimens only).

Glabrous 8 - 12 meters or more high tree with soft whitish wood and smooth grayish bark and upright yellowish 3.5 cm. thick branches conspicuously ridged with leaf scars particularly toward the end; older aerial stems where branching sometimes forming functionless roots. Leaves crowded at the ends of branches, linear-lanceolate, entire, coriaceous, green, ~~XXXXXX~~ longitudinally densely striate but without midrib, about 45 cm. long and 3.5 cm. wide, rather uniformly thick, with partly clasping base about 3.5 cm. wide, with acuminate acicular slightly plicate apex having margins connate. Flowers pendent, on 1 cm. long pedicel, in compact ~~XXXXXX~~ recurved panicle up to 6 dm. long having a woody rachis and more or less foliaceous bracts. Perianth narrowly campanulate, greenish-yellow to orange, somewhat glaucous and partly translucent, persistent, with tube 3.5 - 4.5 cm. long and 1 cm. wide; lobes ~~XXXXXX~~ subequal, about 15 mm. long and together with marginal wings 4 mm. wide, linear-lanceolate, slightly keeled toward top. Stamens inserted slightly above base of lobes, slightly narrower than lobes at the base and slightly longer than lobes; campanu- ~~late~~ late-subulate; anthers sagittate, greenish-yellow, ~~XXXX~~ mm. long; pollen pale yellow. Ovary obovoid, longitudinally faintly trisulcate, 6 mm. long and 4 mm. wide, greenish; style becoming 6 cm. long, thick, greenish-yellow; stigma ~~XXXX~~ entire, truncate, barely trigonal. Fruit breaking laterally through marcescent perianth, 1- to rarely 3-seeded, on ripening first juicy and dark brown and then bright red and juicy and finally long persistent as wrinkled dried red drupe having thin chartaceous endocarp. Seeds globose, spherical, white, about 8 mm. in diameter.

TYPE LOCALITY: "Not uncommon throughout the [Hawaiian] islands." The exact locality, not cited, is probably the Koolau Range of Oahu.

LOCAL RANGE: Growing on Kauai and chiefly on the Koolau Range of Oahu below 2,000 feet. On the Waihae Range of the latter island it may be found growing with *P. Forbesii* in the hills east of Kawaihapai. On the islands east of Oahu, these closely related long-flowered species are represented by two short-flowered ones, namely *P. hawaiiensis* of the Islands of Hawaii and apparently Molokai, and *P. lanaiensis* of Lanai. *P. aurea* may be found occasionally among the ledges of the arrier hills near Honolulu. In the Pupukea-Kahuku region, on the other hand, it is quite common in the forest. Here it reaches its best development. It flowers from April to June. The native halapepe were formerly carved into idols by the Hawaiians. They were also much used in decorating the kuahu or altar.

EXTRA RANGE: Endemic to the Hawaiian Islands.

(Illustrated on following page)

(Otho Seeger, 8/5/32)

Print. 1  
side only

FLORA HAWAIIENSIS

FAMILY: 307

GENUS : Cressa

CONVOLVULACEAE

MORNING-GLORY FAMILY

CRESSA L. Sp. Pl. 223. 1753.

Dwarf erect or diffuse gray-pubescent woody perennials with long tap root; leaves small, usually sessile. Flowers small, short-pedicelled to subsessile in the axils of the upper leaves, sometimes in terminal clusters or spikes. Calyx of 5 equal sepals, persistent and not enlarging in fruit. Corolla small, funnelform, white to pink, with 5 lobes which are more or less imbricated but never plaited in the bud. Stamens exserted, with filiform filaments. Ovary more or less 2-celled and 4-ovuled; styles 2, filiform; stigmas capitate. Capsule 2- to 4-valved and 1- or rarely 2-seeded. Seeds glabrous, shiny, with linear plicate cotyledons.

NAME derived from ~~xxxxx~~ a modification of the Greek word for Crete, the island on which the type species was found.

TYPE SPECIES: Cressa cretica L.

About 15 species native to the tropics; especially common in southwestern North America.



*Flora Hawaiianis.*

COMPOSITAE

Composite Family

Family: 344 ✓

Genus: *Verbesina*

Species: *Alba*

*VERBESINA ALBA* L.

White Verbesina

*Verbesina Alba* L. Sp. Pl. 902. 1753.

*Calista procera* L. Mant. 2: 386. 1771.

*Calista alba* Lessk. Fl. Jay. Rar. 528. 1848.

Erect or diffuse 1 - 10 dm. high annual rough with appressed hairs pointing upward on stem, with upper part of internodes usually somewhat swollen. Leaves sparingly hirsute on both sides, either lanceolate, oblong-lanceolate or oblanceolate, usually 2 - 8 cm. long and 3 - 30 mm. wide, entire or somewhat serrate, acute to acuminate at apex, narrowed to a sessile base or the lower leaves short-petioled. Heads usually numerous per plant and single or in pairs in axil of leaf, the heads of each pair being of unequal age and length of peduncle; heads usually about 7 mm. wide and 4 mm. high, on slender persistent 3 - 20 mm. long peduncles. Involucre broadly campanulate with about 4 mm. long persistent bracts. Receptacle slightly convex, with persistent filiform puberulent chaff as long as or slightly shorter than ovary. Pappus of green crown of minute teeth united at base. Ray-florets with linear whitish recurv.

O.K.P. m

(Gru.)



ed 2 mm. long ray often notched at apex; stamens wanting; pistil white, 1 mm. long. Disk-florets with whitish corolla puberulent without; stamens with grayish-brown anthers. Achenes almost 2 mm. long, oblong, dull black, finely verrucose, with upper truncate end often puberulent and usually topped by persistent pappus teeth.

*Locality*  
*Notes*  
Habitat in Virginia, Surinam.

*Notes*  
This weed was of recent introduction in 1888 and at that time grew in the vicinity of Honolulu. Now it is found throughout Oahu at lower elevations, especially along streams and in marshes though not common anywhere. It was collected on leeward Molokai in 1928, and is probably found on the other islands as well.

*Notes*  
E. R.: Native to warm and tropical regions of America but now widely naturalized in other countries.

(Illustrated on following page)

OK: p

*Flores Hawaiianis*

Family: 344

3.

COMPOSITAE

Composite Family

Genus: *Verbesina*

Species: *Alba*

VERBESINA L. Sp. Pl. 961. 1753.

Erect or diffuse, branching, pubescent or hirsute annual or perennial herbs. Leaves opposite, entire or toothed. Heads small, peduncled, terminal and axillary, with white corollas and brown anthers. Involucre hemispheric or broadly campanulate, its 10-12 bracts leaf-like, ovate-lanceolate, imbricated in about 2 series, nearly equal or the outer longer. Receptacle flat or convex, with awn-like persistent chaff subtending the achenes. Ray-florets reduced to a row of minute teeth or these wanting. Ray-florets pistillate, fertile. Disk-florets perfect, usually fertile, with 4-toothed or rarely 5-toothed tubular corolla. Achenes short and thick, those of ray-florets 5- to 4-sided, those of disk-florets laterally compressed. ~~Name~~ modified from the word *Verbena*, probably to draw attention to the similar appearance of the leaves in some species. ~~Type Species: *Verbesina alba* L.~~

*to that of the Verbena*

About 4 species, most of them native to tropical and subtropical America.

mrP

OK  
P

## LOBELIACEAE

## LOBELIA FAMILY

ROLLANDIA HUMBERTIANA Gaud.  
HUMBOLDT'S ROLLANDIA

Rollandia Humboldtiana Gaud. Bot. Voy. Bonité pl. 76. 1839 - 52. *quint. det. 2000 title*  
Delissea racemosa Mann in Proc. Am. Acad. 7: 181. 1868.  
Rollandia pedunculosa Wawra in Flora od. Allgem. Bot. Zeit. 31: 46. 1873.  
Rollandia racemosa Hillob. Fl. Haw. Isl. 246. 1888.

Stem 1 - 2 meters high, dark green above. Leaves thick-chartaceous, obovate-oblong, 25 - 40 cm. long and 8 - 16 cm. wide, at apex shortly acuminate and mucronate, at base abruptly decurrent into a slightly margined 3 - 4 cm. long petiole, above glabrous and dark green, below densely puberulent and pale but with veins darker, with margins crenulate-dentate. Flowers in axillary 8 - 40 cm. long somewhat horizontal to usually drooping puberulent loosely bracteate racemes floriferous in the upper third; pedicels 10 - 15 mm. long, borne in the axils of persistent subulate bracts 7 mm. long or less and bearing a pair of about 2 mm. long subulate bractlets below the middle. Calyx puberulent, with cylindric to ovate tube 1 cm. long and with subequal acute to truncate lobes 3 - 10 mm. long. Corolla white or purple, 6.5 - 7.5 cm. long, strongly falcate and laterally compressed, puberulent below to glabrate above, with upper pair of lobes having median slit 25 mm. long and lower slit 15 mm. long. Staminal column adnate to corolla for about 3 cm., glabrous; anthers 7 - 9 mm. long, pale reddish purple even in white flowered forms, glabrous, only the 2 lower bearded. Fruit ovate to obovate, pale orange.

## TYPE LOCALITY:

LOCAL RANGE: A rare plant known from the rain forest between Puu Lanipo and Konahuanui, and twice collected XXX in the mountains of Punaluu, Oahu. Its flowering season seems to be during October and November. The specimen collected on Lanipo was the white-flowered form.  
 EXTRA RANGE: Not known elsewhere.

(Illustrated on following page)

FLORA HAWAIIENSIS

FAMILY: 344

GENUS: *Acanthospermum*

SPECIES: *Australe*

COMPOSITAE

COMPOSITE FAMILY

*ACANTHOSPERMUM AUSTRALE* (Loefl.) Kuntze  
PARAGUAY BOR

*Melampodium australe* Loefl. Iter Hisp. 268. 1758.  
*Acanthospermum brasiliense* Schrank, Pl. Rar. Hort. Monac. 2 : 53. 1819.  
*Acanthospermum xanthioides* DC. Prodr. 5 : 521. 1836.  
*Acanthospermum hirsutum* DC. Prodr. 5 : 522. 1836.  
*Acanthospermum australe* Kuntze, Rev. Gen. Pl. 1 : 303. 1891.  
*Acanthospermum ~~hispidum~~ hispidum* Blake in Contr. U.S. Nat. Herb. 20.  
10 : 388. 1921. (as to Hawaiian specimens only.)  
Not *Acanthospermum hispidum* DC. Prodr. 5 : 522. 1836.

Herb forming loose mats by means of its numerous readily rooting hispid-pubescent decumbent to creeping 1 to rarely 3 dm. long slender branches. Leaves ovate to obovate, bright green, glabrate, densely punctate on both sides with minute oil glands, about 2 cm. long, 3-nerved, coarsely toothed above the middle and cuneate at the entire base to a short slender petiole. Heads radiate but minutely so, on peduncles about 8 mm. long. Involucral bracts of 2 kinds: outer 5 ovate, 3-nerved, 4 mm. long and 2 mm. wide, foliaceous; inner 5 persistent, each firmly surrounding the ovary of single radiate floret. Florets 2 mm. long, dull white. Disk florets about 7. Ray florets 5, pistillate, at maturity forming around the marcescent disk florets a star-like cluster of fruits. Fruits brown, dry, 8 - 10 mm. long, beset with several longitudinal ridges of numerous weak 1 mm. long hooked prickles.

TYPE LOCALITY: Sub "Species plantarum observatae in itinere a Cumana die 17 Decembr. 1754, ad fluvium Orinoco, per Barcellonam & Las Missiones de Piritu."

LOCAL RANGE: An introduced weed found at lower elevations, especially in arid waste places and abandoned pineapple fields. This plant was observed on the Islands by such early collectors as Remy, Wawra, and the botanists of the U. S. Exploring Expedition. The specimen cited by Blake as from "Hawaii, 1851 - 55, Remy 256 (G)" is not *A. hispidum*, but this species. In this case the locality "Hawaii" applies ~~probably to the Islands as a whole rather than to the Island of Hawaii.~~ *A. australe* apparently was first accidentally introduced on Kauai. In 1895 it was collected in Nuuanu Valley, Oahu, by Kuntze, and in 1913 on Lanai and Lanai.

EXTRA RANGE: Native to South America but now widely disseminated by means of its prickly fruits in warmer regions of North America, in India, and in some of the Bahama Islands.

(Illustrated on following page)



*Black*  
*Notes*  
8 pt.  
~~missed~~  
EUGENIA KOOLAUENSIS var. glabra Degener

Eugenia koolauensis var. glabra var. nov. *a* specie differt foliis glabra.

Differs from the species in being glabrous and in bearing its flowers sometimes in 2 approximated pairs.

TYPE LOCALITY: Half a mile southeast of Pohakea Pass, Oahu.

LOCAL RANGE: Known only from a single dying tree, about 8 feet high, growing on a dry grass- and lantana-covered slope.

TYPE SPECIMEN: Degener & Bush No. 4194.

*mr*

MEIBOMIA Adans. Fam. Pl. 2 : 509. 1763.

Erect, ascending or trailing usually perennial herbs, sometimes woody at base. Leaves usually trifoliate, rarely 1- or 5-foliate, always stipellate except in M. triflora, and with usually scarious stipules. Inflorescence of usually small purple or purplish flowers in terminal or axillary compound or simple racemes or panicles. Calyx-tube short, its 2 upper teeth usually more united than its acute or attenuate 3 lower teeth. Standard oblong, ovate or orbicular, narrowed or rarely clawed at the base. Wings obliquely oblong and adhering to the nearly straight, obtuse or truncate keel by a minute transverse appendage on each side of the latter. Stamens monadelphous or diadelphous and with anthers alike. Ovary sessile or stalked and usually developing into a flat, coriaceous, muricate or pubescent loment which readily separates into indehiscent or rarely partially dehiscent joints. (Named after Dr. Brandus Meibom who died in 1740). Type species: Meibomia canadensis (L.) Kuntze.

About 175 species chiefly of tropical and temperate countries.

O.D. 12/20/26.

FLORA HAWAIIENSIS

FAMILY: ~~XXXX~~ 291

GENUS : Anagallis

PRIMULACEAE

PRIMROSE FAMILY

ANAGALLIS L. Sp. Pl. 148. 1753.

Low spreading or procumbent usually annual herbs. Leaves opposite or verticillate, sessile or short-petioled, usually entire. Flowers solitary, small, on axillary peduncles. Calyx 5-parted with lanceolate to subulate persistent lobes. Corolla larger than calyx, white to pink or red or blue, deeply 5-parted with entire or erose segments. Stamens 5; filaments pubescent or puberulent, distinct or united at base into a narrow ring. Ovary globose, with numerous ovules and a single obtuse stigma. Capsule globose and membranous, finally circumscissile to free the seeds. Seeds minute.

NAME ~~XXXXXXXXXX~~ of Greek derivation.

TYPE SPECIES: Anagallis arvensis L.

About 15 species, chiefly native to Europe, Asia and Africa.

FLORA HAWAIIENSIS

FAMILY: 169a

GENUS: Mimosa

LEGUMINOSAE

~~XXXXXX~~ PEA FAMILY

MIMOSA L. Sp. Pl. 516. 1753.

Herbs or shrubs or rarely trees. Leaves usually bipinnate and often surprisingly sensitive to touch. Flowers small, regular, usually 4- or 5-parted, perfect or sometimes polygamous, in axillary peduncled heads or spikes. Calyx small, its teeth short. Petals hypogynous, connate below, valvate. Stamens as many as the petals or twice as many, distinct, exserted; filaments usually filiform; anthers small, glandless. Ovary 2- to many-ovuled; style slender or filiform; stigma terminal, small. Pod linear to oblong, usually flat, often transversely jointed, 2-valved with the continuous margins persistent. Seeds compressed.

NAME derived from the Greek in reference to the sensitive leaves of some species.

TYPE SPECIES: Mimosa sensitiva L.

At least 300 species, natives of warm and tropical regions.

FLORA HAWAIIENSIS

FAMILY: 221

Genus: *Abortopetalum* <sup>um</sup>

122

MALVACEAE  
MALLOW FAMILY

ABORTOPETALUM Degener

*Abortopetalum* gen. nov.*Autex*; *folia petiolata, cordata* - - - -

Tomentose coarse shrub with weak white wood and light colored smooth strong bark. Leaves alternate, cordate, ~~seriate~~ <sup>thin</sup>, estipulate. Flowers perfect, pendent, proterogynous, large, on jointed peduncles singly together with a dormant bud in the axils of the terminal unmodified leaves. Calyx campanulate, 5-cleft, without involucels, valvate in the bud and marcescent in fruit. Petals linear-spatulate, about as long as the pistil. Staminal column longitudinally 5-grooved, with outer fourth bearing numerous free spreading filaments; anthers reniform. Ovary 10-celled; styles 10, connate below but free and linear and glabrous above; stigmas minute. Fruit an erect loculicidally dehiscent 10-celled capsule consisting of 10 two-valved persistent rostrate woody several-seeded carpels. Seeds obliquely reniform.

NAME referring to the character of the petals. (Though this appropriate name is somewhat long, it begins with the same two letters as does *Abutilon* and hence stands near that related genus in the Flora.)

TYPE SPECIES: *Abortopetalum* <sup>um</sup> ~~sandwicense~~ <sup>e</sup> Degener

A monotypic genus known only from Oahu.

(Type illustrated on following page)

(Ch. Degener, 7/15/32)

m?



CASSIETHACEAE Dumort.  
CASSIETHA FAMILY

Parasitic vines. Leaves reduced to scales or entirely wanting. Flowers perfect, small, sessile, regular, and spicate, racemose or capitate. Calyx 6-cleft with imbricated lobes in 2 series, of which the outer is the shorter. Corolla none. Nine perfect stamens with 2-celled anthers, and 3 staminodia. Pistil ~~XXXX~~ 1; ovary 1-ovuled; style simple and with small usually capitate stigma. The single ovary becoming enclosed by the enlarging calyx-base to form a fleshy berry-like fruit. (

At least 15 species of tropical regions.

~~Calycis lobes 6, imbricati, 2 seriebus, exterioribus brevioribus.~~

A small family, consisting of only the following genus, closely related to the Lauraceae.

VERBENACEAE

~~not Clusianus fragrans~~ Family  
Clerodendrum fragrans (Vent.) Willd.  
Fragrant Clerodendron.

Family: 315

Volkameria fragrans Vent. Jard. Malm. pl. 70. 1804.  
Clerodendrum fragrans Willd. Enum. Hort. Berol. 659. 1809.  
Clerodendron fragrans Hbd. Fl. Haw. Isls. 343. 1888.

Near Metzer 274.

Pubescent somewhat shrubby 5 - 15 dm. high plant, with the older branches somewhat angular, freely propagating by subterranean runners. Leaves 8 - 25 cm. long, the blades longer than the petioles, broadly ovate, repand-dentate, shortly acuminate at apex and subcordate to nearly truncate at base. ~~Inflorescence~~ <sup>Flowers</sup> terminal contracted subsessile cyme. Calyx with 5 lanceolate acuminate lobes. Corolla white to faintly pink, filled or double in all local specimens examined, about 2.5 cm. wide. ~~Harbors acid~~ <sup>Flowers somewhat larger</sup> ~~pistil wanting~~.

T.L.: "Arbrisseau croissant naturellement à Java" ---

L.R.: Early introduced as an ornamental on all islands; now spontaneous about old dwellings and growing naturalized in waste places ~~in Hawaii and Manoa Valleys, Oahu.~~

E.R.: Native of southern Asia, but now naturalized in most other tropical regions in several forms.

(S.E. Begener 1913 "Round Top, Honolulu, Oahu", Oct. 1912.)

(Illustrated on following page)

Key to genera of LEMNACEAE:

1. Plant with one or more roots; more than 1.5 mm. long:
2. Thallus with about 8 prominent nerves and a cluster of several rootlets- SPIRODELA.
2. Thallus with about 3 obscure nerves and a single rootlet- LEMNA.
1. Plant without roots; less than 1.5 mm. long- WOLFFIA.

O.D. 12/20/26

CASSYTHACEAE

*Copied*

CASSYTHA L. Sp. Pl. 35. 1753.

Characters of the family. (Name derived from the Greek word of the Cuscuta.) Type species: Cassytha filiformis L.

At least 15 species of tropical regions.

O.D. 12/20/26, \_\_\_\_\_

121

## LOBELIACEAE

## LOBELIA FAMILY

ROLLANDIA PURPURELLIFOLIA Rock

PURPLE-LEAVED ROLLANDIA

Rollandia purpurellifolia Rock in Coll. Hawaii Publ. Bull. 2 : 44. 1913.

Stem 2 - 5 dm. high, unbranched, unarmed, glabrous. Leaves 12 - 35 cm. long, 3 - 6.5 cm. wide, linear-oblong to oblanceolate, somewhat rounded to shortly acute at apex, subsessile ~~XXXXXXXXXXXXXXXXXXXX~~ or with somewhat margined petiole up to 8 mm. long, above deep green dull to shiny glabrous, beneath deep purple shiny glabrous or slightly hirtellous on the nerves only, with margin minutely denticulate except for lower fourth or third which is entire. Flowers up to about 6 in axillary thick dark purplish-red glabrous suberect loosely subulate-bracted racemes ~~XXXXXXXXXX~~ which are floriferous in the upper third or fourth; peduncles 5 - 25 mm. long, ~~XXXXXXXXXX~~ bibracteate usually toward apex; pedicels up to 8 mm. long, bearing a pair of subulate bractlets usually above the middle. Calyx so dark reddish-purple to appear almost black, 8 - 10 mm. long, uniformly 4 mm. thick, consisting of 4 - 5 mm. long tube and 2 lips; upper lip 5 - 7 mm. long with three 1.5 - 3 mm. long acute deltoid lobes of which central one is the largest and widest; lower lip about 2 mm. shorter, of two

1.5 - 2 mm. long acute deltoid lobes; calyx tube because of thickness of corolla usually with 1 split to its base which arises from sinus separating lips or more rarely from sinus between lobes of lower lip. Corolla dark purplish-red, about 6 cm. long, strongly falcate, laterally compressed, glabrous, with upper pair of lobes having median slit about 20 mm. long and lower slit about 13 mm. long. Staminal column adnate to corolla for 3 cm., glabrous, purplish red, longitudinally 5-grooved; anthers 7 - 9 mm. long, bluish-purple, the 2 lower bearded. Ovary slender-pyriform, of same color as calyx, 10 mm. long and 5 mm. wide. Fruit dark purple to black, obovoid, 15 - 18 mm. long, crowned by the calyx lobes.

TYPE LOCALITY: "Oahu: dense forests of Punaluu Mts., at the summit ridge above Hauula in dense shade with Lysimachia longisepala and numerous ferns, etc."

LOCAL RANGE: A little-known species as yet collected only in dense, wet forests above 1,000 feet in and around Kaluanui Valley, Hauula, Oahu. Found flowering in June and fruiting in August.  
EXTRA RANGE: Not known elsewhere.

Rock's

# Description emended to include Degener, Park & Nitta No. 4171.

(Illustrated on following page)

(Otto Degener, 7/30/32)

Pal 7a



ANAGALLIS ~~12/20/26~~ L. Sp. Pl. 148. 1753.

Low spreading or procumbent usually annual herbs with opposite or verticillate sessile or short-petioled commonly entire leaves. Flowers solitary, small, on axillary peduncles. Calyx 5-parted with lanceolate or subulate persistent lobes. Corolla larger than calyx, white, pink, red or blue, deeply 5-parted with entire or erose segments. Stamens 5, with pubescent or puberulent filaments that are distinct or united at base into a narrow ring. Ovary globose, with numerous ovules and a single obtuse stigma. Capsule globose and membranaceous, at length circumscissile to free the minute seeds. (Name of Greek derivation.) Type Species: Anagallis arvensis L.

About 15 species, chiefly native to Europe, Asia and Africa.

O.D. 12/20/26.



FLORA HAWAIIENSIS

FAMILY: 344  
GENUS : Hesperomannia  
SPECIES: Arborescens

119

COMPOSITAE  
COMPOSITE FAMILY

HESPEROMANNIA ARBORESCENS A Gray  
LANAI HESPEROMANNIA

Hesperomannia arborescens A. Gray in Proc. Am. Acad. 6 : 554. 1866.  
Hesperomannia arborescens Rock, Indig. Trees Haw. 507. 1913. (as to Lanai specimen only.)  
Not Hesperomannia arborescens Rock, Indig. Trees Haw. pl. 215. 1913.

Tree 3 - 6 meters 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, xxxxxx 12 - 15 mm. long and about 2 mm. wide, glabrous. Pappus tawny to reddish, 25 - 30 mm. long.

TYPE LOCALITY: Lanai.

LOCAL RANGE: A single tree was discovered on the highest ridge of Lanai by Horace Mann in 18 . Four years later William Hillebrand saw eight . Around 1903 (?) R.C.L. Perkins saw only two trees, while in 1910 J.F. Rock failed to find a single one though he botanized on that small island for several months. In 1931 Munro and Westgate rediscovered this rare species by finding one living plant.

EXTRA RANGE: Known only from Lanai; erroneously reported from Oahu.

(Illustrated on following page)

(Otto Degener, 2/15/32)

mr

FAMILY: 3A2  
GENUS: Labordia  
SPECIES: Hypoleuca

120

LABORDIA *Hypoleuca* Degener  
Pala Labordia; Kamakahala

*Labordia hypoleuca* sp. nov.

the without but sparingly and  
minutely yellowish within  
is also the median part of  
each lobe on inner surface.

Relatively flat-topped shrub 7 - 15 dm. high with thick pale branches when young flattened-terete and puberulent with whitish hair. Leaves crowded at the ends of the branches, thick, shiny, glabrous above, pale below and covered with white short more or less curved hair; blade obovate or broadly elliptic to oval, 9 - 15 cm. long and 6 - 10 cm. wide, entire, at apex abruptly acuminate to somewhat cuspidate; at base cuneate to somewhat decurrent ~~XXXXXX~~ on 15 - 35 mm. long and 6 mm. thick puberulent; petiole; stipules sheathing, truncate, about 5 mm. long. ~~Flowers about 15 mm. long~~  
~~contracted cyme arising from leafless node about 3 mm. above leafy one, with~~  
~~central branch more or less erect and (if uninjured, which seems rare) 3-~~  
~~15-flowered, arising from leafless node about 3 mm. above leafy one, with~~  
central branch more or less erect and (if uninjured, which seems rare) 3-  
flowered, with the 2 lateral branches reflexed; pedicels 7 mm. long; bract-  
lets subulate, persistent, 3 mm. long. Sepals subequal, linear-lanceolate,  
thick, acuminate, puberulent without and glabrous within, 7 - 9 mm. long  
and 4 mm. wide. Corolla pale yellow, thick, glabrous, with tube 20 mm. long  
and at base 5 mm. wide but toward apex 4 mm. wide, with linear-lanceolate  
spreading acuminate lobes 12 mm. long and 2 mm. wide. <sup>2</sup> Anthers sessile  
, attached just below sinuses of corolla lobes, darker yellow, 1 mm. wide  
and almost 3 mm. long. Ovary 2-celled, fusiform with lower end only slight-  
ly narrowed, 10 mm. long, 3 mm. broad and not quite as wide, lower third  
glabrous and light green but rest white with pubescence; style glabrate,  
thickening with age, 8 - 10 mm. long, white; stigma flattened-clavate,  
light green, 5 mm. long and 2 mm. wide, notched. Fruit a 2-celled capsule  
about 35 mm. long and 15 mm. broad and 8 mm. wide, with woody valves  
rounded and not carinate.

TYPE LOCALITY: In the rain forest along the Pig-God Trail between the northwest side of Punaluu Valley and Kaluahui Stream, Oahu.

LOCAL RANGE: As yet known only from the type locality; not as common as the other *Labordia* growing in the same general region. When collected in June 1932, the plants bore flowers and young capsules only.

EXTRA RANGE: Closely related to plants found on some of the other islands.

TYPE SPECIMEN: Degener, Park & Nitta No. 4174, June 1932.

(Illustrated on opposite page)

(*Off. Degener*, 7/15/32)

MP  
Pal 7a

8  
BORAGINACEAE

Family: ~~Boraginaceae~~ 3/4  
Genus: ~~Cochranea~~  
Species: ~~Anchusaefolia~~

COCHRANEA ANCHUSAEFOLIA (Poir.) Guerke

*Cochranea*

*Heliotropium anchusaefolium* Poir. Ence. Suppl. 3: 23. 1813.

*Tournefortia heliotropioides* Hook. Bot. Mag. t. 3096.

*Cochranea anchusaefolia* Guerke in Engler & Prantl Natuerl. Pflanzenfam. 4. 3a: 97. 1894.

Hirsute decumbent spreading perennial herb somewhat woody toward base. Leaves oblong to oblong-lanceolate, 2 - 6 cm. long and 4 - 20 mm. wide, rugose, entire but with conspicuously vertically repand margin, subsessile, acute at apex. Flowers in scorpioid spikes 4 - 8 cm. long of which 2 - 5 are borne close together on 2 - 6 cm. long naked peduncle. Calyx with linear-lanceolate subequal lobes about 3 mm. long, hirsute and glandular-pubescent. Corolla broadly salverform, violet-blue with yellow eye, 6 mm. wide, pubescent without, pubescent with white antrorse hair in tube. Stamens with bluish anthers 1 mm. long sessile on corolla tube 1 mm. from base. Style annular with constriction above ovary; stigma thick, conical, pubescent. Fruit almost 2 mm. long, tuberculate, longitudinal when dry.

*OK Rorer*

(4)



inally constricted, somewhat laterally compressed. *Seed brown.*

TYPE LOCALITY: "Cette plante croît à Buenos-Ayres."

LOCAL RANGE: Introduced before 1885 as an ornamental and since then not uncommonly planted in rock gardens and similar localities whence it escapes into dry fields and waste places at lower elevations. Common as a naturalized plant in Kohala, Hawai'i in 1926; in the vicinity of Honolulu, Oahu in 1922; and at Pukoo, Molokai in 1926. Probably found naturalized on the other islands as well.

EXTRA RANGE: Native to South America.

4-A

as a seedling



KOKOOLAU, THE HAWAIIAN TEA  
with a key to all species of Bidens known from the Hawaiian Islands and  
with descriptions of a few representative kinds

Otto Degener, B.S., M.S.

Long before the haole or white man visited the Hawaiian Islands, the natives brewed several kinds of tea of their own. The choicest, still drunk by many a Hawaiian to this day, was made from various species of Bidens, herbs known in the vernacular as kookoolau.

----- koolau -----  
# The correct spelling; incorrectly given as kokolau and kookoolau in some publications.  
-----

The Hawaiians in gathering their supply of tea generally tried to injure the kookoolau plant as little as possible. They were careful not to uproot it, but merely ~~XXXX~~ plucked its leaves and possibly a few of the young shoots. These were then allowed to dry until crisp, and stored away for future use.

To make their tea, the ancient Hawaiians were obliged to follow a novel procedure. As they possessed neither earthenware nor metal receptacles but only calabashes laboriously hollowed out from wood, or fashioned out of coconuts or ripened gourds, they were unable to boil their tea by the simple method of placing it in a vessel over a fire. Instead, they partly filled their calabash with water and added the correct amount of dried kookoolau to it. Then they took a clean, white stone, called cahi, which had been heated in the fire, and dropped this into the liquid to bring it to a boil. After the tea had simmered for the proper length of time it was strained, if necessary, through a sieve of coconut husk or fiber before serving. It was drunk plain or sweetened with the juice of the native, white-stemmed sugar cane, ko-kea. It has a pleasing flavor, and by the Hawaiians is considered a valuable tonic.

The Hawaiians knew of several different kinds of kookoolau, but they never realized that at least 50 species would be recognized and carefully described by the haole. Three of these species, of which the Spanish Needle or Beggar-Ticks (Bidens pilosa L.) is by far the commonest, were introduced accidentally from foreign shores since the coming of Captain Cook. The others are pe-

Degener

culiar to these islands, not a single one being found elsewhere. One (B. Hillebrandiana (Drake del Cast.) Degener) grows along the shore where the ocean spray may reach it on stormy days, most of the species (B. graciloides Sherff) grow on the drier foothills of our mountain ranges, while one (B. campylothea var. pentamera (B. ~~xxxxxxxxxxxxxxxx~~ Sherff) grows to an elevation of 8000 feet or more. Some kinds (B. Menziesii (Gray) Sherff) are found on two islands of this group, while the great majority are limited to a single island, or even to a single valley (B. populifolia Sherff) or mountain (B. personans Degener & Sherff). Some (B. sandwicensis Less.) are very common, while others (B. salicoides Sherff) are extremely rare or (B. cuneata Sherff) have already become extinct.

The following pages, extracted from the manuscript of the writer's Flora Hawaiensis or "New Illustrated Flora of the Hawaiian Islands", give the characteristics of the genus Bidens to which all kokoolau belong, give a key by which all kokoolau known from the Islands can be identified,<sup>#</sup> and describe and figure a few typical kinds. We owe this knowledge largely to the careful researches of Prof. Earl E. Sherff of the Field Museum, Chicago.

#Continued diligent search in the Islands will undoubtedly bring additional species of Bidens to light. The writer will greatly appreciate receiving any specimens that do not conform to the present key. P.O. Box 1133, Honolulu.

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To plates add legend!

Run species alphabetically after

key

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(2)



FLORA HAWAIIENSIS

FAMILY: 169c  
GENUS : Erythrina  
SPECIES: Monosperma

LEGUMINOSAE  
PEA FAMILY

ERYTHRINA MONOSPERMA Gaud.

; WILLIWI

Erythrina monosperma Gaud. Voy. Freyc. Bot. 486. 1833.  
Erythrina montana Forst. in Pancher, Herb., et in Cuzent, Tahiti, 240. 1860.  
Erythrina tahitensis Badaud, Enum. ~~no. 499. 1875.~~ Pl. Tahiti, 80. 1873.  
Corallodendron monospermum Kuntze, Rev. Gen. Pl. 173. 1891.

Deciduous 5 - 10 meter high tree with extremely light wood, sometimes sparingly beset with short spines, with thin yellowish bark and glabrous gnarled almost horizontal branches green and fulvous-tomentose toward ends; leaves fulvous-tomentose below and glabrate above, with petioles 8 - 20 cm. or more ~~XXXXXX~~ long bearing lateral leaflets 2 - 5 cm. from their ends; stipules linear-lanceolate, 3 mm. long, somewhat caducous; leaflets ovate-deltoid, 5 - 7 cm. long and 6.5 - 8 cm. wide, entire to unulate, obtuse to retuse at apex, truncate to subcordate at base; petiolules swollen, 1 cm. or less long; ~~XXXXXXXXXXXXXXXXXXXX~~ stipels glanular, 1 below each lateral leaflet and 2 below terminal leaflet. Flowers on 5 - 8 mm. long pedicels, single or clustered in twos or threes in upper third of horizontal 5 - 20 cm. long racemes which are borne in the axils of the upper 1 - 4 fallen leaves; bracts triangular to linear, 2 mm. long or less, 1 at base of pedicel and 2 at base of calyx. Calyx spathe-like, obscurely 5-toothed, 15 - 20 mm. long, densely fulvous-tomentose without, glabrous within. Standard subsessile, orange, to rarely yellow or even white, about 3 cm. wide and 4 cm. long, strongly curved; wings greenish yellow, oblong-obtuse, curved, about 15 mm. long and 1 cm. wide; keel greenish yellow, of separate petals similar to wings but about 12 mm. long. Stamens diadelphous, usually orange-red, 9 connate for about 3 cm. and with free part of outer stamens about 15 mm. long while those alternating with them having free part about 1 cm. long; anthers pointed, similar. Ovary tomentose, stipitate, 3- to 5-ovuled, narrowed to a slender straight or curved glabrous orange-red style 15 - 20 mm. long. Legume on enlarged peduncle, terulose, tomentose, acuminate at both ends, woody-coriaceous, dehiscing to expose the usually 1 to 2 or rarely even 5 persistent seeds. Seeds bright red, 12 - 15 mm. long, shiny.

TYPE LOCALITY: "In insulis Sandwichensibus (Alt. 350 - 400 hex.)."

LOCAL RANGE: Found ~~positive~~ at lower elevations on probably all the Islands in arid regions, especially on old lava flows. It has been definitely recorded from Kauai, Oahu, Molokai, Maui, Lanai, Hawaii and Kahoolawe. Specimens with pale yellow flowers were recorded by Rock from Lanai and Hawaii, while plants having the same type of flower were collected by the writer on most of the dry hills of eastern Molokai and near Barber's Point on Oahu. These yellow-flowered forms are no more closely related to one another than to the typical plant bearing orange-red flowers. The tendency to produce pale flowers is merely exhibited independently on these four ~~XXXXXXXXXX~~ separate islands. In the Kau District of Hawaii, where water is scarce, the false myna bird has learned to drink the copious nectar collected in the cup formed by the wings and keel petals. The wood, being almost as light as cork, was formerly used by the Hawaiians for the outriggers of their canoes. The custom, according to a native informant from Kona, was later abandoned because of the belief that sharks followed such canoes. Hau wood was then substituted for the williwi. The bright red seeds were strung into leis by the early Hawaiians.

EXTRA RANGE: ~~Enderbury to the Hawaiian Islands.~~

Not Erythrina monosperma Lam. encyc. 2: 391. 1786.  
Not Erythrina montana Bore & Standley in Contrib. U.S. Nat. Herb. 20: 179. 1919.

especially in Hawaii & Tahiti. seedling of here? not the blackish seedling of here?

The ancient Hawaiians sometimes fashioned the wood, which when dry is almost as light as cork, into fish net floats. It is, however, not very durable and therefore the slightly heavier hau wood was ~~xxxxxxxx~~ often preferred. Williwili wood was often employed for the outriggers of canoes. According to the writer's informant in 1930, a native fisherman of Kona, this practice was no longer followed by any of his Hawaiian friends because of the belief that sharks followed such canoes. Hau wood was therefore substituted for the williwili. Ellis states it was made into the carved stools which were placed under the canoes when these were drawn upon the beach or laid ~~xxx~~ up in their houses. Its branches, because of their readiness to ~~xxxx~~ root when inserted in the ground, were much used in erecting fences. Prized surf boards were made of this wood. They were generally 5 or 6 feet long and a little more than a foot wide, and sometimes flat or more frequently convex on both sides. They were stained black. After using, they were placed in the sun until dry and then rubbed with coconut oil before being set away, often wrapped in kapa, in the house until wanted. According to Sinclair the natives maintain that the trees bearing orange-red flowers possess more durable wood than do trees bearing lighter flowers. The ~~early~~ Hawaiians often strung the bright red beans into leis.

*williwili wood*

EXTRA RANGE:

(Illustrated on following page)

Excellent outrigger canoes were made from the trunks of these trees by the natives of the Kona District of Hawaii but, because of the belief that sharks followed such ~~canoes~~ <sup>wood</sup>, this practice was abandoned.



FLORA HAWAIIENSIS

FAMILY: 269

GENUS: Bruguiera

SPECIES: *Sexangula*

RHIZOPHORACEAE  
MANGROVE FAMILY

BRUGUIERA *SEXANGULA* (Lour.) Poir.

Rhizophora sexangula Lour. Fl. Cochinch. 297. 1790.

Bruguiera sexangula Poir. Encyc. Suppl. 4 : 262.

Bruguiera eriopetala Wight & Arn. in Ann. Nat. Hist. 1 : 368. 1838.

Tree becoming 18 - 23 meters high, but beginning to flower when 5 meters high, with young thick green nodose branches. Leaves shiny, dark above and pale beneath, up to 15 cm. long and 5 cm. wide, somewhat abruptly acuminate at apex, ~~more~~ more or less rounded and shortly decurrent at base into petiole 3 cm. long or less. Flowers axillary; single, waxy, inodorous, nodding on stiff obcompressed thick curved 1 cm. long yellowish-green peduncle. Receptacle orange-red, with longitudinal ridges leading to sinuses between calyx lobes, shiny, 10 mm. long to top of ovary and 5 mm. long beyond, 9 mm. wide. Calyx lobes 10 - 11, linear-lanceolate, about 18 mm. long and 2.5 mm. wide, stiff, acuminate, not spreading, orange-red and shiny without, yellow and with obscure longitudinal ridges within. Petals 10 - 11, thin-horny, at base tubular but not connate, orange-yellow, 14 mm. long, split for about 7 mm. into strap-shaped lobes, having central 4 mm. long erect filamentous appendage between them, glabrate except for forward-pointing white fringe of almost 1 mm. long bristles on outer margin. Stamens 20 - 22; filaments filiform, glabrous, pale, about 1 cm. long; anthers narrow, 4 - 5 mm. long, light brownish; pollen whitish. Ovary 3- to 4-celled; style glabrous, stiff, about 18 mm. long, slender above; stigmas 3 - 4, minute.

Fruit with brownish green calyx tube about 2 cm. long and 1.5 cm. wide and with yellow or red-tinged persistent calyx lobes. Seed with hypocotyl which after germination and while yet attached to tree has 2 mm. long greenish cotyledons and greenish brown about 10 cm. long and 1.5 cm. wide hypocotyl which is reddish where enclosed by calyx tube.

TYPE LOCALITY:

LOCAL RANGE: Introduced by the Hawaiian Sugar Planters' Association in August 1922 and ten years later growing ~~XXXXX~~ naturalized in the salt marshes near Heaia, Oahu, ~~and~~

Flowering around February and fruiting around September.

(Illustrated in following page)

(O. S. Sauer, 1/1/32)

*Parakee*

BILLBERGIA SAUNDERSII Bull.  
SAUNDERS. BILLBERGIA

Billbergia Saundersii Bull., Gard. Chron. 2. 1 : 78. 1874.

Short-stemmed about 4.5 dm. high perennial herb forming new plants from base with age, and having closely set distichous leaves with margins tightly curved against stem to form receptacle for catching and holding rainwater. Leaves stiff and leathery, spotted with yellowish markings, with basal part purplish especially on inner side; lower leaves oblong-lanceolate, short; upper leaves longer, almost linear, about 30 - 40 cm. long and about 6 cm. wide, acuminate, with margin entire toward base and gradually becoming more spinulose-serrate toward tip. Spike about as long as leaves, pink, white-puberulent, having lower third naked and middle third beset with about 9 dark pink usually 7 - 8 cm. long pulverulent bracts while upper third bears 10 - 15 subsessile flowers. Calyx densely pulverulent, with purplish-green ovarian part about 12 mm. long, with green to pink oblong-lanceolate lobes about 2.5 cm. long and bluish toward tip, the 2 upper lobes partly overlapping. Petals light green with margin and upper part light blue, attached to calyx tube, about 4 - 5 cm. long and especially the lower one partly reflexed at anthesis, the 2 upper petals partly overlapping. Stamens 3.5 - 4 cm. long, each ~~xxxxxx~~ with hyaline projection at base; filaments glabrous, whitish but greenish toward top, 3.5 cm. long; anthers 5 mm. long, orange; pollen orange. Style glabrous, whitish but green toward top, 4 cm. long; stigmas 3, green, coiled together, glutinous.

## TYPE LOCALITY:

*It comes from Bahia.*

LOCAL RANGE: A very beautiful plant when in flower, grown occasionally in ~~xxxxxx~~ rockeries. According to Hillebrand "several species of Billbergia - - - are not uncommon in gardens." Probably this plant was one of them.

EXTRA RANGE: *A tropical American plant grown as an ornamental in some warm countries and in green houses in cooler countries.*

(Illustrated on following page)

(Otto Degener, / / '32)

Canadian  
Forest  
Abundant in  
North.

in seedlings  
much larger.

CACTACEAE  
CACTUS FAMILY

Paradise  
Front; blank  
on reverse

FAMILY: 340  
GENUS : Camphusia

GOODENIACEAE  
GOODENIA FAMILY

NAME ?

Glabrous shrub or small tree, leaves alternate and opposite, usually crowded at the ends of the branches, dentate to entire, leathery, with axillary tufts of hair. Flowers without bracts at base, axillary and solitary or very rarely in 2-flowered axillary cymes, bright yellow, fleshy. Calyx 5-lobed, Corolla strongly curved, leathery; ~~XXXXXX~~ tube glabrate within, with subequal lobes having uppermost dividing suture somewhat deeper than the others. Stamens epigynous; filaments remaining herbaceous as long as corolla but anthers soon marcescent. Ovary inferior, 2-celled; ovules erect, 1 in each cavity; style sharply bent downward toward stigmatic end, exserted; stigma surrounded by ciliate indusium. Fruit arupaceous, with very thin fleshy exocarp and large woody endocarp. Seeds greatly compressed.

NAME ?

Scaevola

TYPE SPECIES: ~~XXXXXXXXXX~~ glabra Hook. & Arn. ~~✓~~

Only one species known.

containing several varieties or forms.



FLORA HAWAIIENSIS

FAMILY: 344

GENUS : *Adenostemma*

COMPOSITAE  
COMPOSITE FAMILY

*Adenostemma* Forst. Char. Gen. 89. 1776.

(*Adenostema* Desport. in Dict. Sc. Nat. 1 : 256. 1816.)

✓ Glabrous to viscid-pubescent annual or perennial herb. Leaves petiolate, usually triplinerved. Heads corymbose, rather small, discoid. Involucre broadly campanulate to hemispheric, with its herbaceous imbricate bracts in about 2 series. Receptacle nearly flat, naked. Florets all tubular, white. Corolla regular, with 5-toothed limb. Anthers obtuse at base, unappendaged. Achenes 5-ribbed and ~~XXXXXXXXXXXX~~ tuberculate, obtuse, bearing pappus of a few short stiff often clavate gland-like sticky bristles.

NAME derived from the Greek for glandular and crown in reference to the sticky pappus.

TYPE SPECIES: *Adenostemma viscosa* Forst.

At least 10 species, all native to tropical regions.



IRIDACEAE

SISYRINCHIUM ACRE, Mann  
Hawaiian Sisyrinchium

MAU-ULA-ILI

Family: 74  
Genus: Sisyrinchium  
Species: Acre

*Sisyrinchium acre* H. Mann in Proc. Am. Acad. 7: 206. 1867.

Glabrous somewhat glaucous upright herb 1.5 to rarely 6 dm. high. Leaves linear-ensiform, 7 - 40 cm. long, 3 - 4 mm. wide, longitudinally 5- to 10-nerved, light green, conduplicate below for more than one-half their length and above connate. Scapes 1 to several; about one-third longer than the leaves, compressed, almost winged. Flowers yellow, on quickly elongating slender usually 2 cm. long erect pedicels, 4 - 6 but blooming singly, each in the axil of conduplicate lanceolate bracts of which the inner are hyaline and the outer two green and unequal and spathe-like and almost as long as the pedicels. Perianth spreading, yellow; lobes ovate, almost 1 cm. long and 4 mm. wide, with obtuse apex not aristulate, the outer lobes 7-nerved and inner lobes 5-nerved. Stamens 6 mm. long; filaments yellow, connate for about one-third their length; anthers orange, 3 mm. long, sagittate; pollen orange. Ovary greenish, longitudinally 6-nerved, obovoid, 4 mm. long; ovules many, horizontally and biseriate in each cell; style 5 mm. long, cleft into 3 branches to within 1.5 mm. of base; stigmas small. Capsule obovoid, somewhat angular, 6 + 8 mm. long, about 5 mm. wide, dark, thin, containing

sometimes as many as 65 seeds (*Kilauea specimen*). Seeds 1 mm. in diameter, almost spherical, black with minute shallow depressions, on long funicles.

T.L.: *"Common near Kilauea, Hawaii, and on the mountains of that and other islands, in the Hawaiian Islands."*

L.R.: Known only from Hawaii and East Maui where it grows in open, often boggy, localities from 3500 to almost 7000 feet elevation. It may be found along the trail between Olinda and the Haleakala Rest House, Maui. Very tall plants may be found growing among the grass along the road about 4 miles below the Volcano House, Hawaii. Hillebrand in 1898 stated that "The natives use the acid juice to give a blue stain to their tattoo-marks."

E.R.: Endemic to the Hawaiian Islands but with closest relatives in South America.

*This plant was used by the early Hawaiians as a dye in tattooing (cf. Seeger, Plants Hawaii Nat. Park, 102-103, 1930.)*

*(Illustrated on following page)*

*Flora Hawaiensis*

Family: 318

SOLANACEAE

*Wipitakade or Potato*

Genus: *Physalis*

PHYSALIS PERUVIANA L.

Species: *Peruviana*

Cape Gooseberry; ~~at~~ Poha of the Hawaiians.

*Physalis peruviana* L. Sp. Pl. ed. 2: 1670. 1763.

Hoary-pubescent straggling somewhat woody perennial herb becoming 2 - 10 dm. high, with thick often purplish longitudinally ridged usually widely diverging branches. Leaves rugose, softly pubescent on both sides, ovate, broad, often inequilateral, acute to acuminate at apex, cordate at base, sinuately toothed or almost entire, 6 - 15 cm. long, 4 - 10 cm. wide, with thick petiole about one-third as long as the blade. Flowers single, axillary, nodding on about 1 cm. long peduncle. Calyx pubescent without and glabrous within, purplish-green, campanulate, 1 cm. long and 5-cleft into acute 1-nerved lobes when in flower. Corolla nearly 1.5 cm. long, opening to become about 2 cm. in diameter; tube short, dull yellow, densely arachnoid within; limb yellow, with 5 large brownish blotches near base, ciliate, pubescent on veins without and glabrous within. Stamens inserted on corolla 2 mm. from base; fila-

ments purple, 5 mm. long; anthers purplish-blue, 4 mm. long; pollen grayish-green. Ovary yellow, 2 mm. long; style 8 mm. long, straight; purple below but gradually changing to blue above; stigma brownish. Fruit a yellow shiny globose berry almost 2 cm. in diameter enclosed by the greatly enlarged reticulately veined inflated obovoid calyx-tube bearing the slightly enlarged lobes at apex. Seeds yellowish, lenticular, 2 mm. in diameter.

T.L.: "Habitat Limae."

L.R.: Of early introduction and now naturalized on probably all islands usually at middle and higher elevations; Not uncommon on open mountain slopes and in clearings. The edible berries are frequently made into "poha jam".

E.R.: Native of South America but extensively naturalized in the warmer regions of the world.

locally common  
within Haka kala  
Crater.



FLORA HAWAIIENSIS

FAMILY: 344  
GENUS: Adenostemma  
SPECIES: Lavenia

COMPOSITAE  
COMPOSITE FAMILY

ADENOSTEMMA LAVENIA (L.) Kuntze  
COMMON ADENOSTEMMA ; KAMAHANALANA

Verbesina lavenia L. Sp. Pl. 902. 1753.  
Adenostemma viscosum Forst. Char. Gen. 90. 1776.  
Adenostemma lavenia Kuntze, Rev. Gen. Pl. 304. 1891.  
Lavenia glutinosa Gaud. Voy. Freyc. Bot. 471. 1833.

Stem erect or ascending, 2.5 - 6 dm. high, rooting at base, reddish brown, thick, ~~XXXXXX~~ relatively soft and watery, finely glandular-pubescent to glabrate. Leaves triplinerved, 10 - 20 cm. long and 4 - 8 cm. wide, ovate to elliptoid or rhomboidal, thin, coarsely dentate with callous teeth to almost repand except for cuneate entire base which is recurved on slender petiole, more or less scabrous to papillose-hispid with brownish hair on both surfaces or upper surface glabrate. Heads hemispherical, grayish white, about 5 mm. in diameter, on 1 - 3 cm. long slender pedicels having up to 5 mm. long filiform bracts at base and forming loosely spreading several times trichotomous terminal panicle or rarely this panicle also arising from the axils of the upper unmodified leaves. Involucral bracts oblong, 4 mm. long, longitudinally veined, glabrous within, pubescent without. Florets about 50; corolla tubular-campylulate, 1.5 mm. long, 2- to 4-lobed, with upper part tomentose and hence tangling the florets together, grayish white; ~~XXXXXXXXXX~~ every brownish, faintly tuberculate, with thickened crown beset with 3 - 4 curved erect clavate pappus scales; stigmas yellow. Achenes light brown, densely muricate only when ripe, longitudinally angled, 3 mm. long, at narrowed base yellowish and smooth, at apex with rim bearing 3 - 4 glutinous clavate pappus scales.

TYPE LOCALITY: "Habitat in Zeylona."

LOCAL RANGE: Native to all the larger Islands <sup>growing</sup> where it may be found in very wet, dark woods or along shaded streams from an elevation of 500 to about 4,000 feet; According to Hillebrand an infusion of the leaves of this plant was used ~~XXXXXXXXXXXXXXX~~ by the Hawaiians as a remedy in fevers.

EXTRA RANGE: Found throughout the tropics.

(Illustrated on following page)

rather rare.

*Paradise*

CACTACEAE  
CACTUS FAMILY

*NOPELEA COCHINILLIFERA* (L.) Salm-Dyck  
COCHINEAL CACTUS

*Cactus cochinillifera* L. Sp. Pl. 468. 1753.  
*Opuntia cochinillifera* Mill. ~~Gar.~~ Dict. ed. 8. No. 6. 1768.  
*Nepalea cochinillifera* Salm-Dyck, Cact. Hort. Dyck. 1849 : 64. 1850.  
? *Opuntia tomentosa* Hilleb. Fl. Haw. Isl. 141. 1888. (nom. nud.)  
Not *Opuntia tomentosa* Salm-Dyck, Obs. Bot. 8. 1822.

Often becoming 3 - 4 meters high and with trunk 2 cm. thick; branches of ascending or spreading oblong joints up to 5 cm. long which are bright green when young and darker later. Areoles with numerous caudaceous glochidia but otherwise unarmed except in age when sometimes minute spines develop. Leaves small, awl-shaped, soon deciduous. Flowers usually several to many on upper segment on its upper rim or less often below rim, about 8 cm. long and 2.5 cm. wide. Ovary bright green, narrow-obovoid, 3.5 cm. long and 2.5 cm. wide, often slightly oblique, coarsely reticulate-impressed and bearing at upper end of each raised area an oblong 1 - 4 mm. long light gray areole very sparsely beset with glochidia or these glochidia absent. Perianth segments imbricate in about 7 rows; the outer row subulate, thick, about 5 mm. long, acute, red; those farther in progressively more spatulate, longer, thinner, pinker, less acute, up to 2.5 cm. long, slightly spreading; the 2 inner rows equal in length, not spreading but compressed around the stamens, spatulate, 2.5 cm. long and 11 mm. wide except for lower thicker part which is 4 mm. wide, pink except for inner lower surface which is darker. Stamens about 300, attached to inner surface of perianth tube from top of ovary to perianth rim 1 cm. above; filaments filamentous, the peripheral ones thicker, slightly flattened longitudinally, 3.5 - 4 cm. long, glabrous, bright pink with purplish tinge except for whitish base; anther narrow, 1.5 mm. long, pink; pollen yellow. Ovarial cavity obovoid, 7 mm. long and 5 mm. wide; style 5 cm. long, with very narrow base swollen to 7 mm. in width and 4 mm. in height immediately above cup-shaped nectary, otherwise 3 mm. wide at bottom and toward top 2 mm. wide, whitish below and pale pink above; stigma with 6 - 7 thick spreading greenish lobes 5 mm. long. Fruit dark purplish red within and without, about 5 cm. long, almost smooth with age, sweetish, juicy, edible. Seeds about 5 mm. long and 3 mm. wide, with thickened edge.

TYPE LOCALITY: "Habitat in Jamaica & America calidiora." ← *Habes*  
LOCAL RANGE: Sparingly cultivated as an ornamental and to be found in waste places particularly in the Kaimuki ~~XXXXXX~~ section of Honolulu. This is almost certainly the cactus "without strong spines, - - - also a cochineal-feeder," which Hillebrand recorded in 1886 as occurring "here and there" in the Islands. Flowering profusely in ~~XXXXXX~~ and ~~XXXXXX~~ fruiting in ~~XXXXXX~~. Only a few flowers, however, set fruit in the Islands.

EXTRA RANGE: ~~XXXXXX~~ Its original home unknown but cultivated since prehistoric times in tropical America. This plant, as the specific name indicates, was one of the cacti from which the scarlet dye cochineal was derived. When the Spaniards conquered Mexico in 1519, they found the cochineal industry well established among the natives. In 1523 Cortez was ordered to

procure as much cochineal as possible to send to Spain, and during the colonial period this dye was one of the chief articles of tribute. The cochineal industry spread rapidly, plantations called *nopaleras*, arising in such diverse regions as southern Spain, India, Algeria, South Africa, Jamaica and in particular in the Canary Islands. Some of these plantations contained 50,000 plants set out in rows 4 feet apart. The records of the Canary Islands give an indication of the phenomenal growth of this industry. In 1831 this region exported only 8 pounds of cochineal; ~~XXXXXX~~ while in 1869 more than 6,000,000 pounds value at \$4,000,000 were produced, most of this going to England.

Originally cochineal was supposed to be a vegetable product, by some thought to be a seed or to be the "grain of *Quercus coccifera*", and even. But in 1703 by the aid of the microscope, it was definitely determined to be of insect origin. The insects, of which only the females are of economic importance, are scaled *Tiliatid* to the plant lice. In the *nopaleras* they were placed on the joints of the cactus and allowed to multiply. Then every four to six months they were collected by brushing them into a basket or bag. Enough escaped this process to produce the next harvest. If they were then killed and dried in stoves, their natural white powdery covering was retained, and silver-gray cochineal resulted. If, however, they were killed by steam or hot water, this covering was lost, and black cochineal was formed. As in the case of the insect industry, the cochineal industry collapsed with the introduction of aniline dyes. The cochineal insect also ~~XXXXXX~~ on several ~~XXXXXX~~ other species of *Nopal*, but as these ~~XXXXXX~~ they were never used commercially.

*Cactylifera*  
(Coccid)



OSTEOMELES ANTHYLLIDIFOLIA (Smith) Lindl.

; UULEI (LULEI)

description from  
Hillebrand, Hawaii  
Plant

Pyrus anthyllidifolia Smith in Rees Cycl. 29, No. 29. 1814. 28  
 Osteomeles anthyllidifolia Lindl. in Trans. Linn. Soc. 13 : 182. 1822.  
 Osteomeles anthyllifolia Sieb. & Zucc. in Abh. Akad. Muench. 4. 2 : 131. 1843.

A much branched shrub usually trailing over the ground but occasionally 3 meters high, with stiff grayish drooping branches tomentose when young. Leaves 5 - 8 cm. long, on 5 - 7 mm. long petiole, with subulate-lanceolate caducous stipules less than 8 mm. long, with slightly winged grooved rachis and 7 - 10 pairs of imparipinnate leaflets; leaflet obovate-oblong, 1 - 2 cm. long and about 5 mm. wide, coriaceous, sessile, entire, cuspidate at apex, somewhat cuneate at base, dark green shiny glabrate above and strigose-pubescent below with silvery hair. Flowers in caespitose subcorymbose panicles with the lower peduncles in the axils of unmodified leaves and usually 3-flowered and the upper peduncles in the axils of subulate bracts and usually 2- to 1-flowered. Calyx densely tomentose without, glabrous within, subtended by 1 - 2 subulate 3 - 5 mm. long bracts or bractless, campanulate with tube 3 mm. long and lanceolate acute lobes slightly shorter and becoming reflexed at flowering. Petals white, clawed, emarginate, glabrous, 11 mm. long and 6 mm. wide. Stamens 15 - 25, the inner shorter than the outer, 5 - 7 mm. long; filaments white (reddish according to Hillebrand); anthers white, becoming brownish with age, small, ovoid, ~~XXXXXX~~ versatile. Pistil persistent; styles subequal, about 6 mm. long, arachnoid below; stigmas yellowish, oblique, capitate and minutely ~~XXXXXX~~ emarginate. Fruit <sup>about 1 cm.</sup> ~~3-5 mm.~~ long and <sup>with egg</sup> ~~5 mm.~~ wide, tomentose, subglobose, white with white to purplish sweetish flesh surrounding the 5 angular-convex woody cohering endocarps which are <sup>5 mm. long</sup> ~~light brown and 5 mm. long~~ and 3 mm. wide and have <sup>flat sides and the third side</sup> ~~flat sides and the third side~~ rounded. Seed yellowish, 1.5 mm. in diameter.

TYPE LOCALITY: "Gathered in the Sandwich Islands, by Mri Menzies" - - -

3,500  
 LOCAL RANGE: Native to all the Islands and not uncommon at elevations of 500 to 3,000 feet where it usually grows on arid ridges or on old lava flows. In the Kau and Kona Districts of Hawaii it is in its prime, <sup>now</sup> developing into a small tree. The wood being very hard, the Hawaiians made it into the oo, an implement used in cultivating the ground. This was sharpened and flattened at one end. Of course, after the introduction of iron, that metal took the place of the uulei and other hard woods. The long, slender branches of the uulei, being strong and pliant, were made into hoops for fishnets. The fruit, though sweetish, is scarcely edible. That of related American species, however, is said to be quite palatable.

EXTRA RANGE: Native to the Hawaiian Islands, Bonin Islands, Luchu Islands, and possibly to southern Japan. It is hardly distinct from O. Schwerinae C.K. Schn., of southern China. Smith, who first published the description of the Hawaiian plant, named it the "Kianey-etch-leaved Service-tree", a name that fortunately has not come into general use.

(Illustrated on following page)

Flora Hawaiana

COMPOSITAE

Composite Family

Family: 344

Genus: Centaurea

CENTAUREA L. Sp. Pl. 909. 1753.

Erect annual or perennial herbs. Leaves alternate, entire to pinnatifid. Heads many-flowered with yellow, white, blue or purple flowers. Involucre ovoid or globose; bracts imbricated in several series, appressed, fimbriate to spiny; receptacle flat, bristly. All florets tubular, the marginal either equal to the central ones or sterile and larger. Corolla-tube slender, 3- to 5-cleft or -lobed, the segments of the marginal flowers sometimes ray-like. Anthers sagittate at base; filaments glabrous and united into a tube. Style branches short, somewhat connate, obtuse. Achenes compressed or obtusely 4-angled, obliquely attached to receptacle. Pappus of several series of bristles or rarely none. Name obscurely connected with Chiron, the Centaur. Type species: Centaurea Centaurium L.

Almost 500 species, mostly of warmer regions of Europe, Asia, and Africa.

~~Dec 7/11/27~~

(Oth Degener, 1/1'32)



*Paradise*  
FLORA HAWAIIENSIS

FAMILY: 167  
GENUS: Osteomeles

ROSACEAE  
ROSE FAMILY

OSTEOMELES Lindl. in Trans. Linn. Soc. 13 : 98, pl. 8. 1821.

Small evergreen trees or shrubs. Leaves imparipinnate or simple, alternate, with small linear stipules. Flowers white, all perfect or some perfect and others purely staminate, in open cymose bracteolate clusters at the ends of leafy shoots. Calyx tube adnate to the carpels, with small acute persistent lobes. Petals 5, oblong. Stamens 10 to many, inserted in throat of calyx. Ovary of 5 carpels which are inserted and adnate to the calyx tube and connate with one another except on ventral side, each containing a single erect ovule; style 5, distinct, with thickened truncate stigmas. Fruit a small drupe with 5 hard usually stony endocarps. Seeds compressed, with membranous testa and large cotyledons.

NAME derived from the Greek for bony and apple in reference to the fruit with its hard endocarps.

TYPE SPECIES: Osteomeles - *Smith Bartram 10/16/32 for superfluous*

About 20 species native to the islands of the Pacific, to China, and chiefly to the Andean region from Columbia to Peru.

*Deschdel*

*Flora Hawaiianensis*  
POLYPODIACEAE  
Fern Family

PELLAEA TERNIFOLIA (Cav.) Link

Family: 17  
Genus: Pellaea  
Species: Ternifolia

Pteris ternifolia Cav. Desc. Fl. Dem. 266. 1802.  
Pteris peruviana Poir. in Lam. Encyc. 5 : 718. 1804.  
Pteris subverticillata Sw. Syn. Fil. 103. 1806.  
Pellaea ternifolia Link. Fil. Sp. 59. 1841.  
Allosorus ternifolius Kunze; Klotzsch, Linnaea 20 : 339. 1847.  
Chailanthes ternifolia Moore, Ind. Fil. 255. 1861.  
Nothochlaena ternifolia Keyserl. Polyp. Cyath. Herb. Bung. 30. 1873.  
Pellaea ternifolia See according to Hillebr. Fl. Haw. Isl. 633. 1888.  
Pellaea ternifolia See according to Mann, Mem. Haw. Fl. in Proc. Amer. Acad. 7 : 213. 1867.

Fern with thick branching suberect rootstock about 1 cm. high covered with tawny somewhat falcate linear-lanceolate stiff scales which are 8 mm. long or less and consist of a thick black rib having narrow tawny-transparent entire margin. Fronds tufted, 9 to rarely 40 cm. long, erect, long-persistent; stipes 2.5 - 20 cm. long, with scales at base but otherwise like rhachis which is subterete glabrous shiny dark purplish-brown and somewhat glaucous when young; blade 5 - 25 cm. long, linear-lanceolate in outline,

*only*

with 8 - 16 pairs of mostly nearly opposite pinnae; pinnae sub-  
sessile, coriaceous, rigid, glabrous, pale bluish-green, cleft  
to base into 3 subequal linear-elliptic mucronate segments which  
are 5 - 25 mm. long and have their margins strongly revolute;  
uppermost pairs of pinnae sometimes 2-cleft and terminal pinna  
usually simple. Midrib of pinnae conspicuous but veins obscure  
and simple or once-forking. Indusium revolute over sori until  
full maturity. Sperangia sessile, with annulus of 18 - 24 cells.

TYPE LOCALITY: Peru.

LOCAL RANGE: Typical of dry, sunny, rocky regions usually above 4,000  
feet. Found on Hawaii, especially in the Kau Desert west of Kilauea; on  
Molokai in Kawela Valley (Dagener No. 3977); on Maui within Haleakala  
Crater and elsewhere; on Kauai as, for instance, along the dry slopes of  
Waimea Canyon; and on the Waianae Range of Oahu in - - -

at an elevation of about 1,000 ~~XXXX~~ feet.

EXTRA RANGE: ~~XXXXXXXXXXXXXXX~~ Specimens from the Hawaiian Islands are very  
similar if not identical with those growing in the mountains from Texas to  
Chili.

(Illustrated on following page)

FLORA HAWAIIENSIS

FAMILY: ~~341xxxx~~ 344

GENUS : Centaurea

SPECIES: Melitensis

COMPOSITAE

COMPOSITE FAMILY

CENTAUREA MELITENSIS L.

YELLOW STAR-THISTLE

Centaurea melitensis L. Sp. Pl. 917. 1753.

Scabrous heavy erect annual 1.5 - 10 dm. high, usually with spreading branches bearing fine deciduous wool on young leaves and heads. Basal leaves petiolate and lyrate with obtuse lobes; stem leaves 1.5 - 5 cm. long, linear-lanceolate, decurrent, few-lobed or more commonly entire with or without a few teeth, ~~XXXXXXXXXXXXXX~~ Heads solitary, subsessile to short-peduncled, leafy-bracted at base. Involucre tomentose, almost 1 cm. wide, with each main bract tipped with a slender weak purplish divergent spine about 4 mm. long having pinnately arranged smaller spines near base. All flerets similar, yellow. Pappus with unequal barbed bristles ~~XXXXXXXXXXXXXX~~ ~~XXXXXXXXXXXXXX~~ most of which are shorter than the smooth yellow achene.

TYPE LOCALITY: "Habitat in Melita."

LOCAL RANGE: ~~XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX~~ Of early accidental introduction on Maui and Oahu; collected in 1911 on Hawaii, in 1913 on Lanai, in 1926 on Kauai, in 1927 actually within the Crater of Haleakala on Maui, and in 1928 on Molekai. A weed to be found occasionally in arid waste places, abandoned fields and pastures from sea level to 8,000 feet.

EXTRA RANGE: Native to Europe but now widely naturalized throughout warmer regions of America.

(Illustrated on Following page)



Paradise

Flora Hawaiianus

BROMELIACEAE

*Arundinacea* Family

Family: 61  
Genus: *Dendropogon*  
Species: *usneoides*

*DENDROPOGON USNEOIDES* (L.) Raf.

Spanish Moss (sometimes incorrectly called Air-Plant).

*Renealmia usneoides* L. Sp. Pl. 287. 1753.

*Tillandsia usneoides* L. Sp. Pl. ed. 2. 411. 1762.

*Dendropogon usneoides* Raf. Neogenyt. 3. 1825.

Stems loosely intertwined and hanging (in its native habitat) in 1 - 8 m. long gray canescent scurfy clusters from the branches of trees. Leaves usually 2' - 4 cm. long and almost 1 mm. thick, enlarged and sheathing at base, separated by 2 - 3 cm. long curved internodes. Flowers sessile, solitary or very rarely 2 together in axil of leaves. Sepals about 6 mm. long, pale green. Petals longer, recurved toward apex, yellow. Stamens about as long as calyx. Ovary about as long as style; stigmas slightly capitate. Capsule linear, 1.5 - 2.5 cm. long, cartilaginous, splitting into 3 linear mucronate valves. Seeds numerous, 1 - 2 mm. long, linear, pointed, brown, with almost 2 cm. long funicle ~~sheathed up~~ into silky white

*tuft of hair*

*split*

*Locality:* Habitat in Virginiae, Jamaicae, Brasiliae arboribus.

LOCAL RANGE: Not reported from the islands in 1888 but, at least since 1920, grown occasionally in gardens as a curiosity usually suspended from a barrel-hoop. This plant has not become naturalized. The scurf, composed of peltate hairs, readily absorbs moisture and acts as a reserve for water, thus enabling the plant to continue growth during periods of dryness.

EXTRA RANGE: Native to continental America from Virginia to Argentina and to some of the West Indies. A rare seeder, distributed from tree to tree chiefly by wind-blown fragments and by birds which occasionally gather parts of the plant for living nesting material. The woody strands remaining after the artificial decay of the plant are often used as a substitute for horse hair in stuffing mattresses, automobile cushions, etc.

(Illustrated on following page)

## LOBELIACEAE

*ISOTOMA LONGIFLORA* (L.) Presl.  
Star-of-Bethlehem

*Lobelia longiflora* L. Sp. Pl. 930. 1753.

*Isotoma longiflora* Presl, Prodr. Monog. Lobel. 42. 1836.

Simple or sparingly branched, pubescent, leafy, 3 - 7 dm. high perennial. Leaves oblong-ob lanceolate, 5 - 15 cm. long, erect, sessile, with usually 14 - 20 large irregular teeth and about 4 times as many small teeth, with tapering base and acute apex. Flowers numerous, solitary in the axils of unmodified leaves, short-peduncled. Calyx-tube oblong-cylindric, 7 mm. long, with 5 ribs that project to form 10 - 12 mm. long, linear, sparingly serrulate calyx-lobes. Corolla-tube greenish-white, 7 - 9 cm. long, with 1.5 cm. long, linear-lanceolate, spreading, brilliant white lobes. Stamens borne near top of corolla-tube; filaments free at base, united toward tip; anthers united into a short curved tube with apical hairs. Capsule nodding, about 1.5 cm. long, containing cylindric, about 0.5 mm. long, slightly reticulate, brown seeds.

T.L.: "Habitat in Jamaica ad ripas."

E.R.: Common near Hanalei, Kauai where it was first collected in 1913, and near Hilo, Hawaii where it was first collected in 1915. A conspicuous weed of roadsides and fields at lower elevations where the rainfall is moderately heavy. This plant is extremely poisonous and therefore should be eradicated as soon as possible.

E.R.: Native of tropical America, but now widely disseminated.

C.D. 511/22

## LOBELIACEAE

ISOTOMA Lindl. Bot. Reg. pl. 964. 1826.

*with capious milky juice*  
Herbs. Leaves entire to pinnately parted. Flowers large, axillary or in terminal racemes. Calyx-tube with 5 narrow segments. Corolla with long cylindric tube and 5 spreading, almost equal lobes. Stamens borne above the middle of corolla-tube; filaments connivent; 3 upper anthers larger and more curved than the 2 lower. Ovary 2-celled; stigma 2-lobed. Capsule oblong to cylindric, loculicidally 2-valved, containing numerous minute seeds. (Name from the Greek for equal and division, in allusion to the almost-equal corolla-lobes.) Type species: Isotoma axillaris Lindl.  
*lobes of the corolla*

About 8 species, almost all Australasian.

G.S. 5/1/27

PRUNELLA VULGARIS L.  
Heal-All.

Prunella vulgaris L. Sp. Pl. 600. 1753.

Pubescent to glabrous, slender-stemmed, procumbent to erect, usually simple herb. Leaves ovate to oblong-lanceolate, with obtuse apex and usually narrowed base, with entire to dentate margin. Spike terminal, sessile to short-peduncled, very dense, 1 - 3 cm.



CONVOLVULACEAE  
MORNING-GLORY FAMILY

CONVOLVULUS ARVENSIS L.  
FIELD BINDWEED

Convolvulus arvensis L. Sp. Pl. 153. 1753.

Glabrous to glabrate perennial with trailing or decumbent very slender 2.5 - 10 dm. long simple or branching stems arising in often radiating clusters from the slender pale ~~XXXXXXXXXX~~ extensively creeping subterranean rootstock. Leaves ovate to oblong, entire, more or less obtuse and mucronate or somewhat acute at apex, sagittate to somewhat hastate at base, with the basal lobes spreading and acute to obtuse, with blade ~~XXX~~ ~~EX~~ 2.5 - 4.5 cm. long and borne on slender petiole. Flowers erect, 1 to rarely 4 on a common peduncle which is shorter than the leaves and ~~XXX~~ ~~XXX~~ 1- to 3-bracteate at summit; ~~XXXXXXX~~ ~~XXXXXXX~~ one of the pedicels ~~#####~~ ~~XXXXXXX~~ in case of ~~xxx~~ a cluster often bearing a bractlet. Sepals not bracteate at base, subequal, about 4 mm. long and 2 - 3 mm. wide, oblong, obtuse to truncate, mucronate, ciliolate. Corolla funnel-form, 2 cm. long and almost 3 cm. in diameter, nearly pink or (in local specimens) white within except toward greenish base and white without except for greenish to faintly reddish plaits which are ciliolate along margins and at retuse apex. Stamens pubescent toward base; filaments greenish white, subequal, 5 - 7 mm. long; anthers 2 mm. long, white. Ovary small, with prominent orange disk at base; style 1 cm. long, white, glabrous; stigmas 4 mm. long, white, minutely granular, narrowly oblong. Capsule nodding at maturity, subglobose, 2-celled, containing 2 - 4 seeds. Seeds about 4 mm. long, dark brown, tuberculate.

TYPE LOCALITY: "Habitat in Europae agris." *italica*

LOCAL RANGE: A weed of accidental introduction that may become very troublesome in dry places and cultivated fields. It was first observed around 1927 and by 1931 was growing sparingly in the Kula District of Maui and along the railroad track between Waipahu and Brown's, Oahu.

EXTRA RANGE: A very variable plant native to Eurasia but naturalized from Nova Scotia to California and elsewhere; often a very serious pest in cultivated ground.

(Illustrated on following page)

(C) Otto Degener, / '32

FLORA HAWAIIENSIS

FAMILY: 339

GENUS: *Isetoma*

LOBELIACEAE  
LOBELIA FAMILY

*ISOTOMA* Lindl. Bot. Reg. pl. 964. 1826.

Herbs with copious milky juice. Leaves entire to pinnately parted. Flowers large, axillary or in terminal racemes. Calyx tube with 5 narrow segments. Corolla with long cylindric tube and 5 spreading almost equal lobes. Stamens borne above the middle of corolla tube; filaments connivent; 3 upper anthers larger and more curved than the 2 lower. Ovary 2-celled; style linear; stigma 2-lobed. ~~XXXXXX~~ Fruit an oblong to cylindric loculicidally many-seeded 2-valved capsule. Seeds minute, not winged.

Name derived from the Greek for equal and division, in allusion to the almost equal lobes of the corolla.

TYPE SPECIES: *Isetoma axillaris* Lindl.

About 8 species, almost all Australasian.

(Otto Degener, / / '32)

FLORA HAWAIIENSIS

FAMILY: 339

GENUS: *Isetoma*

SPECIES: *longiflora*

LOBELIACEAE  
LOBELIA FAMILY

*ISOTOMA LONGIFLORA* (L.) Presl  
STAR-OF-BETHLEHEM

~~XXXXXXXX~~ *Lobelia longiflora* L. Sp. Pl. 930. 1753.  
*Isetoma longiflora* Presl, Prodr. Monog. Lobel. 42. 1836.

Simple or sparingly branched pubescent leafy 3 - 7 dm. high perennial. Leaves oblong-oblancoate, 5 - 15 cm. long, erect, sessile, with usually 14 - 20 large irregular teeth and about 4 times as many small teeth, with tapering base and acute apex. Flowers numerous, solitary in the axils of unmodified leaves, short-peduncled. Calyx tube oblong-cylindric, 7 mm. long, with 5 longitudinal ribs that project to form 10 - 12 mm. long linear sparingly serrulate calyx lobes. Corolla tube greenish white, 7 - 9 cm. long, with 1.5 cm. long linear-lanceolate spreading brilliant white lobes. Stamens borne near top of corolla tube; filaments free at base, united toward tip; anthers united into a short curved tube with apical hairs. Capsule nodding, about 1.5 cm. long. ~~XXXXXX~~ seeds cylindric, about .5 mm. long, slightly reticulate, brown.

TYPE LOCALITY: "Habitat in Jamaica ad ripas."

LOCAL RANGE: Common near Hanalei, Kauai where it was first collected in 1913, and near Hilo, Hawaii where it was first collected ~~xxxxxx~~ two years later. Locally it is a conspicuous weed of roadsides and fields at lower elevations where the rainfall is moderately heavy. This plant is extremely poisonous and therefore should be eradicated as soon as possible. In doing so, great care must be exercised lest the milky juice get in the eye, a drop ~~xxxx~~ being sufficient to cause blindness.

EXTRA RANGE: Native to tropical America, but now widely disseminated.

(Illustrated on following page)

(Otto Degener, -1-1 '32)

(Extract generic part of description)  
~~AGAVEACEAE - agaveifolia (Benth. & Don) Agave~~

A much branched shrub usually trailing over the ground but occasionally 3 meters high, with stiff grayish creeping branches tomentose when young. Leaves 2 - 3 dm. long, on 5 - 7 mm. long petioles, with subulate-lanceolate caducous stipules less than 8 mm. long, with slightly winged, grooved rachis and 7 - 10 pairs of impari-pinnate leaflets; leaflets obovate-oblong, 1 - 2 cm. long and about 5 mm. wide, coriaceous, scabrid, entire, cuspidate at apex, somewhat cuneate at base, dark green shiny-glabrate above and striate-pubescent below with silvery hair. Flowers in terminal sub-gomphose panicles with the lower peduncles in the axils of unassisted leaves and usually three-flowered and the upper peduncles in the axils of subulate bracts and usually 2- to 1-flowered. Calyx densely tomentose without, glabrous within, subtended by 1 - 2 subulate 3 - 5 mm. long bracts or bractlets, campanulate with tubulate lobes long and lanceolate acute lobes slightly shorter and becoming reflexed at flowering. Petals white, clawed, emarginate, glabrous, 11 mm. long and 6 mm. wide. Stamens 15 - 25, ~~filamentous~~ 5 - 7 mm. long, the inner being shorter than the outer; filaments reddish according to Hb. but white

GOODENIACEAE

CAMPUSIA De Vriese, in Nederl. Kruidk. Arch. 2 : 148. 1850.

Glabrous shrub or small tree. Leaves opposite, <sup>alternating</sup> ~~toothed~~ <sup>usually crowded</sup> at the ends of the branches, dentate to entire, leathery, with axillary tufts of hair. Flowers ~~irregular~~ <sup>axillary</sup>, without bracts at base, solitary ~~bright~~ yellow. Calyx 5-lobed. Corolla strongly curved, leathery; tube glabrate within, with subequal lobes having uppermost dividing suture somewhat deeper than the others. Stamens epigynous; filaments herbaceous ~~XXXXXX~~ as long as corolla but anthers ~~XXXXXX~~ soon marcescent. Ovary inferior, 2-celled; ovules erect, 1 in each cavity; style sharply bent downward toward stigmatic end, exserted; stigma surrounded by ciliate indusium. Fruit drupaceous, with fleshy exocarp and woody endocarp. <sup>greatly compressed</sup> seeds

Name

*Scaevola*

Type Species: *Campusia glabra* Hook. & Arn. De Vriese

Only one species known.

late 281, *tracyanum coronatum*



*Handwritten:*  
Tandia  
Opposite side  
about

FLORA HAWAIIENSIS

FAMILY: 73

DIOSCOREACEAE  
YAM FAMILY

Perennial herbaceous or somewhat woody or very rarely shrubby usually climbing vines frequently with tubers arising from subterranean stems or in the axils of the leaves. Leaves alternate or opposite, petiolate, usually cordate, entire or palmately 3- to 9-lobed or -fidelate, and digitately 3- to 13-nerved and reticulately veined. Flowers 6-merous, usually dioecious or monoecious, perfect, small, sessile ~~for~~ pedicellate, usually in spikes or racemes which are commonly axillary or by ~~XXXXXX~~ the abortion of the leaves paniculate. Staminate flowers with rotate or campanulate or rarely tubular perianth of 6 subequal lobes; stamens free at base or connate, either all 6 perfect, or 3 perfect and 3 reduced to staminodia, or only 3 perfect ones present; ovary rudimentary or wanting. Pistillate flowers with more or less 6-parted persistent perianth; staminodia minute, 6 or 3 or none; ovary inferior, linear to oblong, 3-angled and trilobular with usually 2 hanging and superposed ovules in each ~~XXXXXX~~ cell; styles 3, very short, distinct or connate, ending in 3 short entire or bifid stigmas. Fruit capsular, 3-valved or rarely by abortion becoming monocarpic, usually capsular or samaroid. Seeds compressed or globose, with fleshy or cartilaginous endosperm enclosing the small embryo.

Nine genera known; found almost solely in tropical countries.



dance pale flowers is merely exhibited independently in Medesopara island  
the tendency for *Mitrasideros* to have pale flowers also for *Mitrasideros* is  
pubescence. are similar examples that must be carefully noted as with *Mitrasideros*  
ERYTHRINA MONOSPERMA Gaud. <sup>originally on high islands or isolated</sup>  
Williwili <sup>E. R.: also found in - - - -</sup>

*Erythrina monosperma* Gaud. Bot. Copied  
*Erythrina montana* Forst. in Pancher, Herb., et in Cuzent, Tahiti,  
240, 1860.  
*Erythrina tahitensis* Nadeaud, Enum. no. 499, 1873.  
*Coralledendron monospermum* O. Ktze. Rev. Gen. Pl. ~~1~~ 173, 1891.

Deciduous 5 - 10 meter high tree, sometimes sparingly beset with  
short spines, with thin yellowish bark and glabrous gnarled almost  
horizontal branches green and fulvous-tomentose toward ends.  
Leaves fulvous-tomentose below and glabrate above, with petioles  
8 - 20 or more cm. long bearing lateral leaflets 2 - 5 cm. from  
their ends; stipules linear-lanceolate; 3 mm. long, somewhat cadu-  
cous; leaflets ovate-deltoid, 5 - 7 cm. long and 6.5 - 8 cm. wide,  
entire to undulate, obtuse to retuse at apex, truncate to subcordate  
at base; petiolules swollen, 1 cm. or less long; stipels glandular,  
1 below each lateral leaflet and 2 below terminal leaflet. Flowers  
on 5 - 8 mm. long pedicels, single or clustered in twos or threes in

*In Hawaii, many birds drink the copious nectar from the flowers  
in the crop for food. The birds and small beetles. Flowers are much light  
and some are very small. The flowers are very small and the leaves are very small.*

upper third of horizontal 5 - 20 cm. long racemes which are borne in the axils of the upper 1 - 4 fallen leaves; bracts triangular to linear, 2 mm. long or less, 1 at base of pedicel and 2 at base of calyx. Calyx spathe-like, obscurely 5-toothed, 15 - 20 mm. long, densely fulvous-tomentose without, glabrous within. Standard subsessile, orange to rarely yellow or even white, about 3 cm. wide and 4 cm. long, strongly curved; wings greenish-yellow, oblong-obtusate, curved, about 15 mm. long and 1 cm. wide; keel greenish-yellow, of separate petals similar to wings but about 12 mm. long. Stamens diadelphous, usually orange-red, 9 connate for about 3 cm. and with free part of outer stamens about 15 mm. long while those alternating with them having free part about 1 cm. long; anthers pointed, versatile. Ovary tomentose, stipitate, 3- to 5-ovuled, narrowed to a slender straight or curved glabrous orange-red style 15 - 20 mm. long. Legume on enlarged peduncle, terulose, tomentose, acuminate at both ends, woody-coriaceous, dehiscing to expose the usually 1 to 2 or rarely even 5 persistent seeds. Seeds bright red, 12 - 15 mm. long. T.L.:

L.R.: Found native at lower elevations on probably all islands in arid regions, especially on old lava flows. It has been definitely reported from Kauai, Oahu, Molokai, Maui, Lanai, Hawaii and Kahoolawe. Specimens with pale yellow flowers were recorded by Rock from Lanai and Hawaii, while plants having the same type of flower were collected (Sieg. & W. No. 1) on Molokai. These yellow-flowered forms are probably no more closely related with each other than with the typical plants bearing orange-red flowers. The tendency to pro-

Barbier

Flora Hawaiianis

BROMELIACEAE

Bromelia Family

Family: 61  
Genus: Dendroflagellum

DENDROPOGON Raf. Neogenyt. 3. 1825.

Pendulous, thickly scurfy, canescent epiphytic herbs with poorly developed marcescent roots and copiously branching almost filiform stems which gradually decay at base to leave persistent woody strands. Leaves alternate, dry, almost filiform, entire, not crowded. Flowers rarely formed, perfect, regular, not conspicuously bracted, solitary or in pairs, yellow to greenish. Sepals free or nearly so. Petals free. Stamens long, the 3 inner borne on base of petals; filaments filiform; anthers linear. Ovary superior; style columnar; stigmas short. Fruit a septicidally 3-valved capsule. Seeds numerous, erect, narrow, supported on long funicle that splits into fine silky threads. Name from the Greek for tree and beard in allusion to the fanciful gray pendant appearance of the typical species. ~~At~~ Type species: Renealmia nanaoides L.

A few species native to the New World from Virginia to Argentina.

because of hairs



TACCACEAE  
TACCA FAMILY

Coarse perennial herbs with tubers or rhizomes. Leaves ~~xxxxx~~ basal, large, either simple and entire or pedately parted or bipinnatifid, with reticulate venation, with petioles often ~~xxxxx~~ grooved at base. Flowers ~~xxxxx~~ perfect, 3-merous, few or many, diurnal or nocturnal, green or yellow or brown to dark purplish, appearing umbellately clustered in 1 - 3 radical erect leafless terete to angular scapes bearing 4 - 12 foliaceous involucral bracts in 2 series and few to many filiform bractlets; exterior bracts 2 or more rarely 3, sessile, recurved or spreading, entire or 2- to 3-fid, herbaceous, green or more or less conspicuously colored; interior bracts sessile or more or less petiolate, erect or flaccid; filiform bractlets very long, often pendulous, either yellow ~~xxxxxxx~~ or brown to dark purplish. Perianth with cylindric tube adnate to ovary and with more or less biseriate persistent lobes of which ~~xxxxxxx~~ those of inner series are wider and often larger. Stamens 6, inserted on perianth lobes; filaments often petaloid and with ~~xxx~~ concave to hood-shaped; anthers <sup>upper part</sup> 2-celled, introrse, longitudinally dehiscent. Ovary inferior, 1-celled or incompletely 3-celled, with 3 parietal placentas bearing numerous anatropous or almost amphitropous ovules; stylar column short, thick, 3-grooved, at top orbicular or much depressed-capitate, with 3 lobes emarginate and bifid and stigmatic on lower surface. Fruit a 1- or incompletely 3-celled berry or capsule containing many seeds. Seeds reniform to compressed-ellipsoidal, longitudinally striate, with coriaceous testa and cartilaginous or almost granular endosperm surrounding the minute ovoid embryo.

A strange family comprising only the genera Schizocapsa, having 2 species in China and Siam; and Tacca, having about 30 species, 6 of which are native to America and Africa and the rest to Asia and the islands of the Pacific. The Taccaceae at various times have been grouped near the Aristolochiaceae, Araceae, Iridaceae, Burmanniaceae and Orchidaceae. Of late years most authorities have placed them after the Velloziaceae and before the Dioscoreaceae.

(Att. Legner, 1/32)



NEW ILLUSTRATED FLORA OF THE HAWAIIAN ISLANDS

FAMILY: 72

GENUS: Tacca

TACCACEAE

TACCA FAMILY

TACCA Forst. Chr. Gen. 69. 1776.

Glabrous to sparsely and minutely pilose herbs bearing subconic to subglobose tubers and bearing roots of almost uniform thickness. Leaves all basal, petiolate, simple or pedately cut or pinnatifid, with petioles grooved at base. Flowers few or many, pedicellate, usually diurnal, green or yellow or brown to dark purplish, in several greatly contracted cymose clusters, each of which is sessile and bears foliaceous bract at base and ~~each~~ <sup>most</sup> flower of cluster bearing curious filiform bractlet or these bractlets rarely wanting; scape basal, undivided, as long as leaf or longer, permanently erect or becoming pendent at maturity of fruit. Perianth with cylindric tube adnate to ovary and with 6 subequal persistent lobes. Stamens 6, inserted on perianth lobes; filaments wide, with upper part concave or hooded; anthers 2-celled, introrse, longitudinally dehiscent, with the cells separated by connective. Ovary 1-celled or incompletely 3-celled, with 3 parietal placentas bearing numerous anatropous or almost amphitropous ovules; stylar column short, thick, 3-grooved, at top orbicular or much depressed-capitate, stellately 6-radiate with emarginate lobes. Fruit a many-seeded 1- or incompletely 3-celled berry. Seeds reniform to compressed-ellipsoidal, with coriaceous striate dark brown testa and very small embryo surrounded by endosperm and near or distant from hilum.

TYPE SPECIES: Tacca pinnatifida Forst.

NAME said to be derived from ta-a, the native name for the species growing in Amboina.

3

About 30 species; 3 in tropical America, 3 in Africa, and the rest XX in Asia and the islands of the Pacific.

(Oth. Seeger, 1/32)

FLORA HAWAIIENSIS

FAMILY: 72  
GENUS: Tacca  
SPECIES: Hawaiiensis

TACCACEAE  
TACCA FAMILY

TACCA HAWAIIENSIS Limpricht f.  
HAWAIIAN ARROW-ROOT; PIA

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. 1868. (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. Peninsula. 2: 78. 1907.

Tacca hawaiiensis Limpricht f. in Engler, 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 ~~xxxxxx~~ 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 after yearly  
death of aerial part of plant; secondary smaller tubers also forming from  
~~xxxxxxxxxx~~ buds above old tuber and spreading downward; tubers white with-  
in, starchy, somewhat juicy; roots arising from top of old tuber, spreading,  
2 mm. thick, with smaller lateral roots. Leaves 3 - 9 dm. in diameter, pal-  
mately 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 impressed above and with main veins con-  
spicuously raised and yellowish beneath; the 5 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; pet-  
iole erect, fistular, grooved, 6 - 8 dm. long; blade horizontal. Scape common-  
ly 9 - 13 dm. long, erect, conspicuously longitudinally grooved above,  
fistular, 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 half  
somewhat cuneate, acute; above the foliaceous bracts ~~xxx~~ 50 - 85 filiform  
spreading-pendent bractlets up to 23 cm. long which are green and have up-  
per surface sulcate and have often the anterior half purplish. Flowers  
about 35 - 50, 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  
often 2 cm. long pedicel and with erect perianth lobes but following morn-  
ing drooping and with perianth lobes closely compressed. Perianth light green,  
dull, moderately fleshy, with purple entire margins, with broadly hemispheric  
tube 5 mm. high and having longitudinal grooves between each lobe sinus and  
with triangular base, with the narrower lobes external before and after  
flowering; narrower lobes 5 mm. long and 4 mm. wide, ovate, obtuse and  
sometimes retuse, persistent; wider lobes 6 mm. long and 5 mm. wide, broadly  
ovate and usually retuse, persistent. Stamens waxy, somewhat shiny, opposite  
perianth lobes and adnate to <sup>2/3</sup> perianth tube, whitish except for prominent lat-  
eral 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; stamin-  
al 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, 3 mm. wide, with thick raised waxy white top bearing wide ring of pale purplish erect obscurely capitate hairs; 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 perianth segments slightly smaller. Berry and seeds rarely formed.

TYPE LOCALITY: Hawaiian 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 wild but merely persistent after limited aboriginal cultivation for its tubers which, after cooking, were eaten by the Hawaiians chiefly in time of famine. It has been collected on Hawaii near Hilo and Kapoho, on Molokai at Kamalo and in Mapulehu and Wailau Valleys, on Oahu, and has been recorded by Hil-lebrand as occurring principally on Kauai. The plants collected by the writer at Kamalo and Kapoho were being grown by aged Hawaiians, while those found at Hilo and Wailau were certainly escapes from cultivation. The complex inflorescence appears built up of an outer whorl of 2 or 3 bracts and an inner whorl of 4 - 10 bracts each bearing apparently a contracted scorpioid inflorescence with its youngest flowers near the bract. Within these 4 - 10 inflorescences are about 2 additional inflorescences devoid of subtending bracts. Chiefly below each of the 4 - 10 scorpioid inflorescences arise the filiform bractlets. Flowering from June to October.

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)



PEORA HAWAIIENSIS

FAMILY: 76

GENUS : Languas

SPECIES: Mutica

ZINGIBERACEAE  
GINGER FAMILY

(Roxb.)

LANGUAS MUTICA, Degener

Alpinia mutica Roxb. in Asiatic. Research. 11 : 354. 1810.  
Not Alpinia mutica K. Schum. in Engler's Bot. Jahrb. 27 : 281. 1899.  
Renealmia mutica Salisb. in Trans. Hort. Soc. 1 : 280. 1812.  
Languas mutica comb. nov.

Perennial herb with pale fragrant branching rhizomes about 1.5 cm. in diameter and with only one kind of stem which is leafy and becomes 1 - 2 meters high. Leaves on lower part of stem almost bladeless; free part on upper part of stem with 2 cm. long obscurely puberulent to glabrous petiole, with conspicuous obtuse 5 mm. long ciliolate to glabrous ligule; blade lanceolate, 2 - 5 dm. long and 6 cm. wide, with margin entire and apex acuminate to caudate. Flowers single on thick 2 - 3 mm. long hirsutulous pedicel; inflorescence an almost erect raceme-like panicle about 6 - 18 cm. long with stout puberulent rachis, bracts and bractlets small, white, usually less than 1 cm. long, early deciduous. Calyx subcampanulate, about 1.5 cm. long, 3-dentate and on lower side split to within about 5 mm. of base, white. Corolla tube shorter than calyx, white, with upper 2.5 cm. long lobe ovate-oblong and irregularly 3-toothed at apex; and with two lower lobes oblong-elliptic about 2.5 cm. long and 1 cm. wide. Lip about 33 mm. long and 35 mm. wide, laterally incurved, broadly roundish-tetragonal with upper third abruptly narrowed and with subtruncate tip emarginate and wrinkled, entire surface on upper side yellow with red dots except for anterior margins and for anterior third which is longitudinally red-veined, under surface yellow. Stamen with 2 cm. long flattened filament and 1 - 1.5 cm. long pale yellow unappendaged anther. Ovary silky-pubescent, green, about 5 mm. long and 4 mm. wide, with 2 yellow 2 mm. long nectaries at top; style filiform, glabrous, white, almost 4 cm. long; stigma white, capitate, cup-shaped, pubescent. Fruit a red puberulent somewhat depressed-globose 15 - 18 mm. wide capsule with red 3 mm. thick flesh, tardily dehiscent by 3 valves. Seeds with numerous blunt angles; dark brown, 4 mm. long and 3 mm. wide, with thin silvery white aril.

TYPE LOCALITY: Prince of Wales Island, Malacca.

LOCAL RANGE: First observed by the writer in 1930 sparingly cultivated as an ornamental in Hilo and Honolulu.

EXTRA RANGE: Native to Malaya but ~~introduced~~ early introduced by Roxburgh into India and now sparsely cultivated for its wax-like flowers in a few tropical countries.

(Illustrated on following page)

Otto Degener, / / 1932



FLORA HAWAIIENSIS

FAMILY: 269

GENUS : Bruguiera

RHIZOPHORACEAE

MANGROVE FAMILY

BRUGUIERA Lam. Encyc. 4: 696. 1796:

Not Bruguiera Thou: Gen. Nov. Madag. 21. 1806.

Not Bruguiera Rich. ; DC. Prod. 3 : 173. 1828.

Glabrous trees with slender trunk and numerous adventitious stilt-like roots and pneumatophores. Leaves opposite, leathery, entire, with large protecting interpetiolar caducous stipules. Flowers small or of medium size, axillary and single or axillary and terminal in few-flowered cymes. Receptacle funnelform, above ovary tubular, usually as long as or longer than calyx or very rarely slightly shorter than calyx. Calyx lobes 8 - 14, leathery. Petals 8 - 14, pubescent, 2-lobed, with filamentous appendages. Stamens 16 - 28, those opposite the sepals strongly twisted at base toward the right so as to stand opposite the petals. Disk faintly lobed; ovary inferior, 2- to 4-celled with 2 ovules in each cell; style 1; stigma faintly 2- to 4-lobed. Fruit baccate, 1-seeded, penetrated by seedling while yet on tree. Seeds with 2 - 4 cotyledons connate at base and with hypocotyl which at time of germination penetrates the fruit while yet hanging on tree and falls with fruit.

NAMED in honor of Jean G. Bruguières, 1750 - 1799, French naturalist who traveled in South America in 1773 and in Persia in 1792.

TYPE SPECIES:

About 10 littoral trees, chiefly of tropical Asia but a few also found in Australia and East Africa.

(Att. Segner, 1/1/32)

LEGUMINOSAE  
PEA FAMILY

FAMILY: 169c  
GENUS : Erythrina  
SPECIES: Sandwicensis

ERYTHRINA SANDWICENSIS Degener  
HAWAIIAN ERYTHRINA, HAWAIIAN CORAL TREE; WID DWILI

Erythrina monosperma Gaud. Voy. Freyc. Bot. 486. 1833.  
Not Erythrina monosperma Lam. Encyc. 2 : 391. 1786.  
Not Erythrina montana Cuzent, Tahiti, 230. 1860. (nom. nud.)  
Not Erythrina montana Rose & Standley in Contr. U. S. Nat. Herb. 20 :  
179. 1919.  
Not Erythrina tahitensis Nadeaud, Bhum. Pl. Tahiti 80. 1873.  
Erythrina monosperma Hook & Arn. Bot. Beech. 81. 1832.  
Erythrina monosperma Hilleb. Pl. Haw. Isl. 99. 1888.  
Erythrina monosperma of other Hawaiian authors.  
Corallodendron monospermum Kuntze, Rev. Gen. Pl. 173. 1891.  
Erythrina sandwicensis nom. nov.

[illegible]

four separate islands. In the Kau District of Hawaii, where water is scarce, the false myna bird has learned to drink the copious ~~nectar~~ nectar collected in the cup formed by the wings and keel petals. The ancient Hawaiians sometimes fashioned the wood, which when dry is almost as light as cork, into fish net floats. It is, however, not very durable and therefore the slightly heavier hau wood was often preferred. Wiliwili wood was often employed for the outriggers of canoes. According to the writer's informant in 1930, a native fisherman of Kona, this practice was no longer followed by any of his Hawaiian friends because of the belief that sharks followed such canoes. ~~Excellent outrigger canoes were made from the trunks of these trees by the natives of the Kau District of Hawaii but, because of the same belief, this practice was abandoned. Ellis states that wiliwili wood was made into the carved stools which were placed under the canoes when these were drawn upon the beach or laid up in their houses. Its branches, because of their readiness to root when inserted in the ground, were much used in erecting fences. Prized surf boards were made of this wood. They were generally 5 or 6 feet long and a little more than a foot wide, and sometimes flat or more frequently convex on both sides. They were stained black. After using, they were placed in the sun until dry and then rubbed with coconut oil before being set away, often wrapped in kapa, in the house until wanted. According to Sinclair, the natives maintain that the trees bearing orange-red flowers possess more durable wood than do trees bearing lighter flowers. The Hawaiians often strung the bright red beans into leis.~~  
EXTRA RANGE: Apparently endemic to the Hawaiian Islands, but with a

close relative in Tahiti.

(Illustrated on following page)



## APOCYNACEAE

copied

over

CATHARANTHUS G. Don, Gen. Syst. 4 : 95. 1838.

Herbs or low shrubs. Leaves opposite. Calyx 5-cleft into narrow segments. Corolla large, salverform, with tube slightly enlarged above and with 5 broad and sinistorse lobes. Stamens inserted on tube in throat, included; filaments minute; anthers sagittate, connivent above stigma with connective not prolonged at apex. Ovary with 2 large nectar-bearing glands, superior, of 2 distinct carpels; ovules many, in 2 rows in each carpel; style filiform; stigma thick, pilose. Fruit of 2 narrowly cylindric follicles with many small unappendaged seeds. (Name derived from the Greek for pure and flower.) Type species: *Catharanthus roseus* (L.) Don.

A genus consisting of 3 species; one native of India, one of Madagascar, and one of tropical America.



# *Catharanthus* G. Don, Syst. 4 : 99. 1838.  
*Lochnera* Reichb. Consp. 134. 1828. (Homonym)  
Not *Lochneria* Scop. Introd. 271. 1777.  
*Ammocallis* Small, Fl. SE. U. S. 935. 1903.

PORTULACACEAE  
PURSLANE FAMILY

PORTULACA LUTEA Soland.

NATIVE YELLOW PORTULACA; IHI

Portulaca lutea Soland.; Forst. f. Pl. Escul. 72. 1786.Portulaca lutea Soland.; Seem. Fl. Vit. 9. 1865 - 68.

Coarse thick-fleshy perennial with a few thick often shallow roots up to 3 dm. long and numerous prostrate (or very rarely erect) ~~XXXXXX~~ brownish- to reddish-green branches which with age become gray and somewhat woody and gnarled and easily break from the main stem. Leaves crowded at the ends of the branches, obovate-cuneate with rounded apex, about 2 cm. long and 1.5 cm. wide, glabrous, with slimy salty juice, on flat 2 mm. long petiole.

with some doubt by  
Seemann in 1865-68 and?

persistent and finally  
marcescent in fruit.

Flowers sessile or nearly so at the leafy ends of the branches, with 2 fleshy about 3 mm. long bracts at base, first solitary but after maturation of ~~first~~ capsule usually ~~xxxx~~ followed by a second flower at the capsule's side. Sepals 2, subequal, 4 - 6 mm. long and 4 - 6 mm. wide, green, fleshy, keeled, cup-like, mucronate, with hyaline margins. Petals 5, fugacious and shriveling by middle of day, bright yellow and very thin except for greenish thicker base, about 1 cm. wide and 1 cm. long, obovate-cuneate, with cordate yet cuspidate apex. Stamens about 35, arising from rugose base in ring around ovary; filaments bright yellow, glabrous, smooth, 4 mm. long; anthers bright yellow, less than 1 mm. long; pollen bright yellow. Ovary greenish, conical, 2 mm. long; style glabrous, bright yellow, 6 mm. long, slender but thicker above; stigmas about 5, bright yellow, spreading, smooth, 3 mm. long. Capsule 3 - 4 mm. wide and about 7 mm. long with persistent marcescent perianth containing about 60 seeds on slender persistent erect long funicles; Lower part of capsule 2 - 3 mm. high and dehiscent cap shapely conical and about 4 mm. long. Seeds shiny, black with yellowish hilum, almost 1 mm. long, globular-reniform, very shallowly ornamented with minute round areas having radiating markings.

TYPE LOCALITY: Island of Huahine

LOCAL RANGE: A rare native strand plant growing among bare rocks or in sun-baked clay usually within reach of the ocean spray during storms. It was first recorded from the Islands by Hillebrand, who knew it from Kailua and Kaena.

Point. On Oahu it has been noticed by the writer growing here and there between Keawaula Valley, Kaena Point and Mokuleia; on Laie Point; and between Makapuu Point and Koko Crater. On Molokai it is quite common from Ka Ilio Point south. On Hawaii it is very common at South Point, while at Niuli it grows in a few small areas hit by the spray. There the adjoining sun-baked clay is free of ~~these~~ plants. Forbes recorded this species from Molokini and EXTRA RANGE: Common in many low Pacific islands; found, for example, in Tahiti, ~~XXXXXXXXXXXX~~ in Rose Atoll, and in Fanning, Christmas, Jarvis, Howland and Baker Islands. The Hawaiian Archipelago is apparently a little too far north to enable this species to thrive.

(Illustrated on following page)

at Kailua

FLORA HAWAIIENSIS

FAMILY: 221  
GENUS : *Kokia*  
SPECIES: *Cookei*

MAIVACTACEAE  
MARIOW FAMILY

*KOKIA COOKEI* Degener  
*COOKE KOKIO*; *KOKIO*

*Gossypium dryanarioides* Hilleb. Fl. Haw. Isl. 51. 1888. (except for footnote regarding Seeman's specimen.)

Not *Gossypium dryanarioides* Seem. Fl. Vit. 22. 1865.

Not *Gossypium dryanarioides* var. b Hilleb. Fl. Haw. Isl. 51. 1888.

Not *Gossypium dryanarioides* Rock in Haw. Board Agric. & For., Bot. Bull. 1: 71. 1916. /

~~Not~~ *Hibiscus dryanarioides* [sic] Kuntze, Rev. Gen. Pl. 1: 68. 1891. (du part)

*Kokia dryanarioides* Rock, Indig. Trees Haw. 307. 1913.

*Kokia dryanarioides* Rock in Haw. Board Agric. & For., Bot. Bull. 6: 1919.

*Kokia dryanarioides* Degener, Plants Hawaii Nat. Park 211. 1930.

*Kokia Cookei* nom. nov.

Tree probably 3.5 - 4.5 meters high, sometimes flowering as early as the fourth year, with thick trunk and thick grayish brown branches being woody to the tip and bearing wide pale leaf scars and prominent pale lenticels. Leaves thin-leathery, reddish and stiff when young, pale green, reddish-punctate on nerves and elsewhere minutely either black-punctate or simply punctate, glabrous except for under surface where tuft of brownish hair occurs on each angle made by juncture of ribs, broadly orbicular in outline, 9 - 13 cm. in diameter, with 7 - 5 nerves and the same number of broadly deltoid lobes about 2 - 4 cm. deep having more or less blunt apices, cordate with basal sinus usually quite open; petioles thick, dark-punctate, 5 - 9 cm. long; stipules subulate, 1 mm. long, caducous. Flowers single in the axils of the upper leaves, on stout suberect 3 - 7 cm. long peduncle which bears at or above middle a broadly sessile obliquely clasping leathery stiff persistent up to 15 mm. long bract having 2 rounded lateral lobes and a central lanceolate lobe facing away from stem. Involucral bracts broadly ovate to subcordate, 2.5 - 3.5 cm. long and about 2.5 cm. wide, entirely glabrous, thin-leathery, obtuse, 7- to 13-nerved, with 3 - 5 shallow rounded lobes, punctate, clasping bud and loosening when flowering and still later in fruit slightly enlarged and looser and marcescent. Calyx distinctly dark-punctate, after abscission of lobes urceolate truncate thin-scarious about 1 cm. long and 1 cm. wide, enlarging in fruit. Corolla orange-red; petals strongly reflexed and at base sinistrorsely overlapping, obliquely obovate-cuneate, about 8 cm. long and 6 cm. wide, entire, with apex of longer side rounded and with outer side of petal rounded-truncate, on inner surface glabrous and shiny except for outer part which is silky-glabrate, outer surface especially toward outer part silky-pubescent so as to appear as if glaucous, with longitudinal nerve-  
s and plainly reticulate and dark-punctate in each areole on both surfaces. Staminal column slightly darker red-orange than corolla, glabrous, shiny, 4 mm. thick and about 6.5 cm. long, strongly curved, antheriferous for its upper 3 cm. but bare below, at apex 5-toothed; free part of filaments obscurely S-shaped and pointed toward base of flower, glabrous, darker red-orange; anthers large, (apparently) red. Ovary conical, 8 mm. long and 5 mm. wide, gray, 5-celled with 1 ascending ovule in each cell; style shortly exserted, with 5 short clavate branches, dark-punctate. Capsule depressed-globose to globose and slightly pointed, 3 cm. in diameter, thick-woody, tardily dehiscent near apex, with persistent involucre lobes slightly shorter or slightly longer than capsule and more or less pointed forward to surround it. Seeds obovoid, covered with a short reddish-brown tomentum.



TYPE LOCALITY: "on the western end of Molokai".

LOCAL RANGE: Endemic to the arid, western end of Molokai. Previous to 1871 R. Meyer discovered this species, finding three trees. Though Hillebrand and others later searched for this species, it was not seen again until Rock in April, 1910, found a single living tree and a dead one "in a lonely, dry canyon at the extreme west end of Molokai back of Mahana." These were possibly the same trees Meyer had discovered years before. In June, 1915, Rock revisited the last remaining tree and found it dying, only one or two branches still bearing foliage. Luckily he found some seeds on the ground which he distributed for planting. As a result, two trees are growing on Molokai, one on the property of C.C. Conradt of Pukoo and the other in the garden of Mr. and Mrs. George P. Cooke at Kalae; the third, at least up to 1919, was growing in the Bureau of Plant Industry gardens at Buena Vista, near Miami, Florida. In 1918 Rock found the last remaining wild tree dead. We must thank Rock for his foresight in gathering seeds of this unique tree in 1915, and Mr. and Mrs. Cooke for carefully growing the seedling to maturity and yearly distributing its seeds for propagation. It is a pleasure to be able to name this rare species in honor of Mr. and Mrs. Cooke who have materially aided in its preservation, have enabled the writer to redescribe and illustrate it, and have offered the writer various facilities to increase the value of his botanizing on Molokai during five months in 1928.

EXTRA RANGE: Endemic to Molokai. The specimens collected by Meyer were sent to Hillebrand. The latter, confused by Seeman's imperfect description of *Gossypium drynarioides* Seem. (*Kokia Rockii* Lewt.) collected by Nelson on Hawaii, did not realize that he had a new species before him. He, therefore, amplified Seeman's description of *Kokia Rockii* Lewt., by adding to it one of K. Cookei. As Seeman's description was very brief, Hillebrand's composite one practically consists of a complete description of the Molokai plant. When Rock rediscovered Seeman's species on Hawaii, Lewton made the error of publishing it as new under the name of K. Rockii. Instead, he should have described and named the Molokai plant as new. (See discussion under K. Rockii Lewt.)

(Illustrated on following page)



DIORHA MACALAIENSIS

FAMILY: 339  
GENUS: Cyanea  
SPECIES: Grimesiana

LOBELIACEAE  
LOBELIA FAMILY

CYANEA GRIMESIANA Gaud.  
GRIMES CYANEA

Cyanea Grimesiana Gaud. Bot. Voy. Uranie, 457, pl. 75. 1826.

A stout erect shrub which is unbranched or sparsely branched from near base, 10 to rarely 33 dm. high, with hollow or solid stem acute to toward base. Leaves broadly oblong to obovate in outline, 20 - 30 cm. wide, 35 - 75 cm. long of which the petiole measures 7.5 - 20 cm., imparipinnate, membranous, glabrous, shiny especially beneath, pinnate below, pinnatisect toward apex, with 18 - 24 alternate to opposite segments of which the lower diminish to mere auricles; segments commonly 3 cm. wide, linear-lanceolate, entire to sinuate, mucronate, broadly and obliquely sessile at base, often separated by small auricle-like lobes, with nerves armed or not; petiole mucronate or prickly except for prominent area corresponding to downward extension of upper surface of midrib; rachis on lower surface sparsely mucronate or prickly. Racemes 5 - 15 cm. long, spreading-upright, bracteate from near base, with upper half or four-fifths 6- to 12-flowered; pedicels 2.5 - 6 cm. long, smooth or obscurely mucronate, arising from axils of lanceolate about 12 - 14 mm. long undulate persistent mucronate bracts. Calyx glabrous, shiny, green or when young somewhat reddish; tube narrow-obconical, 12 - 17 mm. long and about 9 mm. wide, deeply longitudinally 10-grooved; lobes lanceolate, more or less crisp and brittle, 10 - 36 mm. long, 8 - 12 mm. wide, foliaceous, many-nerved, undulate, very acute, with prominent midrib. Corolla falciiform, upper side 7.5 cm. long, 12 mm. wide, whitish or light purple to lilac, with area along the 5 midribs more intensely colored, glabrous but the lobes sometimes warty. Staminal column glabrous, similarly colored, with anthers purplish and all 5 tufted at apex with long stiff hair. Style greenish toward tip. Berry obconic, 25 - 37 mm. in diameter, orange, crowned with calyx lobes. #

~~XXXXXX~~ TYPE LOCALITY:

LOCAL RANGE: Found in wet, dark forests of the Koolau Range of Oahu as, for example, on Ko'ohau and Tantalus; in Pauoa, Miu and Punaluu Valleys; along the Waikane-Giahole Trail; and near Wahiawa. Hillebrand recorded it from Mt. Maala of the Waianae Range, adding that the specimens from there bore "lobules between the pinnae." This condition, as the following plate shows, exists in the plants collected by the writer in Miu Valley. J.F. Rock, in his excellent monograph, states that he observed this species "without flower or fruit" in Waiala Valley, Molokai. The writer believes that when the Molokai plant becomes better known, it will very likely prove to be a distinct variety. Observed flowering from August to January and found fruiting in February and April.

EXTRA RANGE: Probably endemic to Oahu only.

1. CYANEA GRIMESIANA var. ~~INDICA~~ Rock

Cyanea Grimesiana var. ~~Y~~ Hilleb. Fl. Haw. Isl. 258. 1888.

Pinnae sinuately notched, contracted at base. Calyx with 8 mm. long cylindrical tube and 12 - 16 mm. long lobes.

TYPE LOCALITY: "Hamakua", East Maui.

LOCAL RANGE: Known only from the type specimen which was collected by Lydgate near Makawao, Maui.

2. CYANEA GRIMESIANA var. MAUENSIS Rock

Cyanea Grimesiana var. ~~B~~ Hilleb. Fl. Haw. Isl. 258. 1888.

Pinnae larger and broader than in the species, laciniate, decurrent along rachis. Calyx with cylindrical tube half as long as the 24 - 36 mm. long lobes. Corolla almost white.

TYPE LOCALITY: "Olonu", West Maui.

LOCAL RANGE: A rare variety collected on West Maui, by Hillebrand ~~at Olon~~ in 1870, (by Rock in ~~Waikapu~~ Valley) in 1910; on Lanai by A.S. Hitchcock in a mountain ravine in 1916.

# Rock's description amended to include Degener, Park & Yasamoto No. 4209, Miu Valley, Oahu, Aug. 21, 1932.

(Species illustrated on following page)

(Otto Degener, / 132)

HELEBAN  
MAROGANY FAMILY

TOONA SURENII (Blume) Merr.  
TOONA

Swistenia surenii Blume, Cat. Gew. Buitenz. 72. 1823.  
Cadrela febrifuga Blume, Bijl. 180. 1825.  
Cadrela febrifuga Forsten, Diss. Cadrel. 16. 1836.  
Toona febrifuga H. Roem. Syn. Hasper. 139. 1846.  
Toona febrifuga Rock, Orn. Trees Haw. 121. 1917.  
Neal & Metzger, In Hon. Gard.

Quick-growing tree becoming ~~10~~ meters high, with very thick fibrous pale bark. Leaves deciduous, narrowly oblanceolate in outline, mucronate, pinnate with 7 - 12 pairs of subopposite leaflets of which the lower pair is often one-half to one-third as long as the middle pairs, 3 to rarely 6 dm. long, on 5 - 8 cm. long petiole which like rachis is subterete; leaflets thin, shiny, above glabrous, below lighter and glabrate with hairs in axil made by midrib and main veins, ovate-lanceolate, usually about 9 cm. long and 3.5 cm. wide, inequilateral so that inner side is narrower than the outer, at apex acuminate to caudate, at base on outer side of midrib more rounded and with longer petiolule than inner side, with margin undulate, and with ~~petiolule~~ petiolule commonly 8 mm. long. Flowers on short jointed pedicels in terminal and axillary panicles up to 5 dm. long. Calyx of 5 spreading greenish ciliate ovate-aeltoid persistent lobes less than 1 mm. long. Corolla campanulate, of 5 free imbricate whitish petals sufficiently translucent to appear orange-tinted at base due to enclosed disk; petals ciliolate, oblongovate, 5 mm. long and 3 mm. wide, keeled at base on inner side. Stamens 5; filaments white, pubescent, 2 mm. long; anthers pale yellow; staminodia none. Ovary minute, partly immersed in cushion-like orange-red pubescent almost 1 mm. high disk; style pale yellowish green, glabrous; stigma exerted, bright green, almost 1 mm. wide. Fruit ~~xxx~~ a long-persistent capsule with 5 thin woody spreading elliptic 20 mm. long 5 mm. wide valves reddish brown with lighter spots without and stramineous within surrounding the strongly 5-grooved stramineous central column to which several seeds are attached. Seeds samaroid, commonly 12 mm. long and 3 mm. wide, very thin-papery, reddish brown, shiny.

TYPE LOCALITY: Mountains of Java.

LOCAL RANGE: Introduced apparently by Hillebrand because a tree of this species long has been growing in his garden in Nuuanu Valley, Honolulu. Another old tree is known from Kauai. Since about 1910, seeds gathered from the Hillebrand tree have been widely planted in the Forest Reserve and elsewhere in the Islands. Flowering for a short period in May, and fruit-

EXTRE RANGE: Native from India to Java, and planted in many tropical countries.

(Illustrated on following page)

ing in late summer.

CONVOLVULACEAE  
MORNING-GLORY FAMILYOPERCULINA AEGYPTIA (L.) House  
~~XXXXXXXXX~~ OPERCULINA

- Ipomoea aegyptia L. Sp. Pl. 162. 1753.  
Convolvulus pentaphyllus L. Sp. Pl. ed. 2 : 233. 1762.  
Ipomoea pentaphylla Jacq. Coll. 2 : 297. 1788.  
Ipomoea pentaphylla Pope, Wayside Pl. Haw. 183. 1929.  
Convolvulus nemorosus Willd. in R. & S. Syst. 4 : 303. 1819.  
Batatas pentaphyllus Choisy, Conv. Cr. 54. 1834.  
Spiranthera pentaphylla Bojer, Hort. Maurit. 226. 1837.  
Operculina aegyptia House in Bull. Torrey Club 33 : 502. 1906.

Long herbaceous twiner with green stem usually red where exposed to direct sun-light and always densely covered with stramineous spreading hirsute up to 5 mm. long hair arising from swollen red base. Leaves in outline suborbicular and 10 - ~~20~~ 25 cm. in diameter, palmately divided into 5 sessile to subsessile leaflets of which the terminal one is the largest and the basal pair the smallest; leaflets rugose, membranous, hirsute on both faces with stramineous forward-pointing hair, commonly 5 - 10 cm. long and 3 - 4.5 cm. ~~narrow~~ wide, obovate to rarely elliptic, shortly acuminate at apex and acuminate to cuneate at base, entire or nearly so; petiole up to about 15 cm. long, hirsute like stem. Inflorescence arising from above dormant bud in axil of leaf, hirsute like stem, usually longer than petiole and in fruit always thickening and greatly elongating, bearing in somewhat dichotomous cymes 3 to rarely 7 flowers borne on about 15 mm. long pedicels having at base lanceolate densely hirsute acuminate bracts up to 6 mm. long; flowers opening early in the morning and wilting early in the afternoon. Sepals unequal, persistent and enlarging in fruit; the 2 outer chartaceous, densely hirsute without but glabrous within, pale green sometimes with pink tinge, ovate-lanceolate, about 18 mm. long and 7 mm. wide, acuminate; the 2 inner scarious, glabrous and shiny, white except at greenish base, ovate, about 11 mm. long and 7 mm. wide, acute; fifth sepal intermediate in character to outer and inner ones. Corolla waxy-white, glabrous, 2 cm. long, with campanulate tube and spreading 2 cm. wide somewhat angular cuspidate limb. Stamens included: filaments white, subequal, 6 - 8 mm. long, only the lower 3 mm. broadly adnate to corolla and ciliate; anthers white, 3 - 4 mm. long, at length recurved; pollen white. Ovary white, glabrous, ovoid, 1.5 mm. long and almost as wide, with whitish annular almost 1 mm. long nectary at base; style white, glabrous, 6 mm. long; stigmas white, wrinkled-capitate, each about 0.7 mm. in diameter. Capsule depressed-globose, about 12 mm. long and 14 mm. wide, spuriously 4-celled, enclosed by marcescent calyx, pendent and septically dehiscent when ripe. Seeds 5 mm. long and 4 mm. wide, glabrous, shiny, light brown, with shallow groove at top, embryo yellowish white.

TYPE LOCALITY: Tropical America.

LOCAL RANGE: An introduced weed growing here and there in arid waste places and along roadsides on probably all the Islands. It was collected here by the U.S. Exploring Expedition as early as 1840, and by Mann and Brigham around 1865. Hillebrand recorded it from the Islands in 1888 as growing "In grassy places and on fallow fields of the lower and middle regions". C.N. Forbes recorded it in 1913 as growing on Niihau and Kahoolawe.

EXTRA RANGE: Growing in many tropical countries.  
(Illustrated on following page)



*Keala Oteralyxia*

Hillebrand collected *Oteralyxia* in "Mauana and Makaleha on Oahu," describing this representative of a new genus as *Vallesia macrocarpa*. The writer believes made one or more collections each in "Mauana and Makaleha on Oahu."

Hillebrand collected *Oteralyxia* in "Mauana and Makaleha on Oahu", the two valleys being valleys on Oahu on Oahu. The one being a valley, the one being the valley in the Koolau Range of Oahu near Hauula on the two on Oahu, the valleys on almost opposite ends of the island and are different on Oahu," describing

Hillebrand collected one or more specimens each of *Oteralyxia* in "Mauana and Makaleha on Oahu", as a new species writing apparently publishing ~~as a full description~~ a complete description of his plants in ~~the~~ his Flora under the name of *Vallesia macrocarpa*.

This description is probably not too reliable. The writer believes that this description was drawn from two different is not ~~so~~ reliable as it appears to have been drawn from two different plants which may easily be different varieties or, one of which might easily be a variety of the other, or even a distinct species. The one, ~~being~~ probably collected in Mauana Valley, has been mentioned by Mann in 1867 in his Enumeration (p. 192) as an *Ocrosea* with oblong-elliptical obtuse coriaceous leaves, and bearing fruit, in Dr. Wm. Hillebrand's collection; but, wanting flowers, they are too imperfect to be identified with any known species, or to warrant describing as new.



CUSCUTACEAE  
DODDER FAMILYCUSCUTA SANDWICHIANA Choisy  
HAWAIIAN DODDER; KAUNOA, POLOLOCuscuta sandwichiana Choisy in Mem. Soc. Phys. Hist. Nat. Geneve 9 :  
280. 1841.Not Cuscuta sandwicensis var. mimosae Hooker in Trans. Linn. Soc.

London 20 : 205. 1848-7

Not Cuscuta sandwicensis Anders. Am. Galap. Veg. 89. 1857. [860?]Not Cuscuta sandwichiana var. mimosae Am. Galap. Veg. 214. 1854

Stems ~~very~~ slender, orange-yellow. Leaves reduced to 2 mm. long lanceolate scales. Flowers often glandular, 3 - 4 or rarely up to 5 mm. long, on bracteate pedicels usually less than 5 mm. long to form compound open cymes on peduncles 1 cm. long or less. Calyx campanulate scarious, shiny, deeply 5-cleft with triangular-ovate somewhat acute to almost obtuse lobes about 1.5 mm. long ~~which~~ which are sometimes medianly thickened to form a slight ridge, marcescent. Corolla urn-shaped, thin, about 4 mm. high, the tube bearing no scales but with 1.5 mm. long, ovate to triangular somewhat acute persistent lobes which are inflected at the top and erect or reflexed but finally appressed to the ripening capsule. Stamens inserted in the sinuses between the lobes and shorter than the lobes; filaments thickish, often subulate; anthers subsessile, oblong, about as long as the filaments. Ovary depressed-obovoid, about 2 mm. high; style ~~exserted~~ distinct, exserted, almost as long as the ovary; stigma capitate. Fruit a depressed-globose to rarely globose indehiscent capsule about 3 mm. high with apical 2-branched cavity projecting into placenta from which divergent marcescent styles arise when these sometimes persist. Seeds light brown, dull, much depressed-globose and almost 2 mm. wide and 1 mm. thick or somewhat angular from pressure, with oblong perpendicular hilum.

TYPE LOCALITY: Hawaiian Islands.

LOCAL RANGE: Growing on probably all the larger islands at lower elevations often along coastal dunes and in arid regions. It is commonly found on Convolvulaceae, Heliotropium ~~and~~ Scaevola. At Hilo, Ila and of Hawaii, a form with fasciated flowers was collected by the writer in 1922. In the "Song of the Lei of the Hawaiian Islands", the dodder is mentioned as being emblematic of the Island of Banai. This plant is sometimes confused with Cassytha filiformis L., one of the Lauraceae. The latter because of its greenish yellow, firm stems and its habit of growing mostly on trees and shrubs can be distinguished easily from the dodder even when both plants are devoid of flowers and fruits.

EXTRA RANGE: Endemic to the Hawaiian Islands. It belongs with five other species to the subsection Californicae, native chiefly to western North America. Cuscuta

CUSCUTA SANDWICHIANA var. KAILUANA Yuncker

Cuscuta sandwichiana var. kailuana Yuncker in Mem. Torrey Bot. Club  
18 : 158. 1932.

Differing from the species in having pedicels often longer than the flower and in bearing short ~~XXXX~~ insignificant yet definite bifid or truncate or triangular scales at base of corolla and alternating with its lobes.

TYPE LOCALITY: "Hawaii, Kailua along beach"

LOCAL RANGE: Thus far recorded only from Kailua, Hawaii; Moomomi, Molokai, and ~~KOOLA~~ Kaena Point, Oahu. At Kailua, where the writer ~~XXXXXX~~ found the type material, Hawaiians were ~~XXXXXXXXXXXXXXXXXX~~ sacking the plant to carry away ~~xxx~~ to their swine as food.

EXTRA RANGE: Endemic to the Hawaiian Islands. This plant is anomalous in being the only member of the subsection Californiceae possessing infrastaminal scales. As the presence of these scales apparently is a primitive feature and their absence due to reduction or simplification, the relationship of the Hawaiian dodders to one another might be better expressed by two nomenclatorial changes. The ~~above~~ plant, now going under a varietal name, rightfully deserves a specific name; while C. sandwichiana Choisy, a more highly evolved derivative in which the infrastaminal scales have been lost, must be relegated to varietal rank. After a larger number of specimens of Hawaiian *Cuscuta* have been collected and studied, these changes may be ~~XXXXXXXX~~ made in a later revision of the present page.

(Variety illustrated on following page)

**SALVIA COCCINEA Juss.**  
**Scarlet Sage**

- Salvia coccinea* Juss.; Murr. in Comm. Goetting. 1 : 86. 1778.  
? *Salvia coccinea* Buchoz; Etling. Salv. 23. 1777.  
*Salvia coccinea* L. Suppl. Fl. 88. 1781.  
*Salvia pseudococcinea* Jacq. Coll. 2 : 302. 1788.  
*Salvia coccinea ciliata* Griseb. Fl. Br. W. I. 490. 1861.

Annual or rarely perennial herb often somewhat woody at base, with 3 - 7 dm. long erect simple or sparingly branched stems which are either softly canescent, or hirsute with spreading hairs about 3 mm. long. Leaves 3 - 8 cm. long with blade as long as the thin petiole or longer; blade ovate to deltoid-ovate, crenate-serrate; obtuse to somewhat acute at apex, truncate to subcordate at base. Flowers on 1 - 5 mm. long slender pedicels in hibracteate clusters of 6 to rarely 20 which are borne on distant nodes to form 5 - 20 cm. long terminal and often also axillary softly canescent racemose inflorescences; bracts caducous, ovate-setaceous, longitudinally nerved, usually shorter than calyx. Calyx softly canescent,



7 - 8 mm. long, with tube longitudinally ribbed; upper lip entire, abruptly pointed; lower lip ovate, with 2 acute teeth. Corolla bright scarlet, puberulent without, about 2.5 cm. long, with tube contracted above base and then gradually enlarging; upper lip

; lower lip mm. broad, merely notched at apex. Stamens 2, exserted 5 - 7 mm. between slightly plicate upper lip; connective about 15 mm. long, with posterior part 5 mm. long filiform and without anther-sac. Style almost 3 cm. long, glabrous; stigma 2-lobed with posterior lobe the longer. Nutlets 2.5 mm. long, slightly variegated.

T.L.:

*Handwritten: America, North America*  
L.R.: Reported by Hillebrand in 1888 as an occasional escape from cultivation; now found on probably all islands here and there in waste places at lower elevations. The earliest herbarium specimens examined were collected on Oahu in 1912, Molokai in 1928 (Degener & Wiebke)

*Handwritten: Hawaii, 1913*  
E.R.: Native of the Southern United States and <sup>Mexico</sup> Mexico. A very variable species, the form with hirsute stem, found in the Hawaiian Islands, being called var. pseudococcinea by some authorities.



*Centaurium umbellatum* Gilib. *H. lifuan.*  
Centaurium Centaurium (L.) W.F. Wight  
European Centaury

1:35. 1781

*Gentiana* Centaurium L. Sp. Pl. 229. 1753.  
Erythraea Centaurium Pers. Syn. 1: 283. 1805.  
Centaurium Centaurium W.F. Wight Contr. Nat. Herb. 11: 449. 1906.

Erect annual, 15 - 30 cm. high, with basal tuft of leaves. Leaves prominently 3- to 5-veined, oblong, 1 - 3.5 cm. long, with obtuse apex and narrowed base. Flowers pink, in dense terminal cymes. Calyx about 5 mm. long. Corolla about 12 mm. long, slightly constricted at throat, with about 3 mm. long oblong-ovate lobes. Stamens with oblong anthers. Stigmatic lobes orbicular to elliptic, the style branches free 0.5 mm. below them. Capsule slender spindle-shaped, more than twice as long as calyx.

T.L.: L.:

L.R.: First collected in Haleiwa, Oahu in 1923

~~Centaurium minus Willd.; Spreng. Syst. 3: 442.~~  
~~Centaurium minus Moench, Meth. 449. 1794.~~  
~~Centaurium minus Garsault, Fig. Pl. Anim. Med.~~  
~~1706. 1764; Desimp. Descr. Pl. Anim. 137. 1767.~~

Gen. dir. I wish to print Antennaria  
umbellata Gilib. in my Haug.  
 flora as this weed is becoming  
 quite common in local  
 pastures. I suspect this  
 plant may be identical  
 with C. minus Garreau,  
 Lig. Pl. Ariz. Med.  
 pl. 206, 1764; Descr.  
 Pl. Ariz. 137, 1767  
 but lack these ~~two~~ <sup>three</sup> ~~books~~  
 to check this up.  
 As I lack these books  
 I would very much  
 appreciate your check.  
 This name in the above  
 publication and I should  
 advise me whether  
umbellata or  
C. minus for my  
 plant.

corolla tube 6-7 mm long - Feb 3-4  
 68  
 9-12

*C. umbellata*

*Antennaria*

MALVACEAE  
MALLOW FAMILY

ABUTILON INCANUM (Link) Sweet

HOARY ABUTILON (called INDIAN MALLOW in Texas); MAO

Sida incana Link, Enum. Hort. Berol. 2 : 204. 1822.Abutilon incanum Sweet, Hort. Brit. ed. 1 : 53. 1827.Abutilon incanum G. Don, Syst. 1 : 501. 1831.Abutilon ~~incanum~~ texense Torr. & Gray, Fl. N. Am. 1 : 231. 1838 - 40.Abutilon incanum Hilleb. Fl. Haw. Isl. 46. 1888.

Erect undershrub 3 - 8 dm. high covered with soft close gray tomentum. Leaves cordate-ovate, acuminate at apex, crenate to serrate, canescent on both sides, gradually decreasing in size upward the lowest having blades usually about 5 cm. long and 4 cm. wide borne on petioles commonly 2.5 - 3.5 cm. long. Flowers axillary and solitary or by reduction of the upper leaves sometimes subracemose, on 1.5 - 4 cm. long pedicels ~~which~~ which are jointed near their ends. Calyx canescent, deeply 5-cleft into subdeltoid caudate medianly-ridged 1.5 mm. long lobes. Petals glabrous, lower third dark purplish red and the remainder pale pink with tendency for veins to be purplish red especially on under side, partly reflexed, obliquely and irregularly obovate, 4 mm. long and 3 mm. wide. Staminal column pubescent, dark purplish red, somewhat conical at base, 2 mm. long; free part of stamens about 1 mm. long and 4 mm. wide, glabrous, dark purplish red; anthers yellow; pollen yellow. Exposed part of style spreading and exerted beyond stamens, greenish white, glabrous; stigmas capitate, small, dark purplish red. Carpels 5, canescent, about 7 mm. long, connate about three-fourths their length into a columnar subtruncate capsule about 8 mm. in diameter dehiscing at apex and along dorsal sutures. Seeds 3 in each carpel, superposed, globose, pubescent, - - -

8

TYPE LOCALITY: "Hab. in insulid Sandwich"

LOCAL RANGE: A typical xerophyte indigenous throughout the Islands chiefly on their leeward side; growing near the coast and often almost gregarious on rocky, clay plains at lower elevations.

EXTRA RANGE: Apparently identical with plants native to Texas.

(Illustrated on following page)



FAMILY: 115  
GENUS : *Phytolacca*  
SPECIES: *Brachystachys*

PHYTOLACCACEAE  
POKEWEEED FAMILY

PHYTOLACCA BRACHYSTACHYS Moq.  
HAWAIIAN POKEBERRY; POPOLO

PHYTOLACCA

*Phytolacca abyssinica* Hook. & Arn. Bot. Beech. 94. 1832.

Not *Phytolacca abyssinica* Hoffm. in Comm. Goetting. 12 : 27. 1796.

*Phytolacca brachystachys* Moq. in DC. Prodr. ~~XXXXXX~~ 13. 2: 31. 1849.

*Phytolacca bogotensis* H. Mann. in Proc. Am. Acad. 7 : 198. 1867.

Not *Phytolacca bogotensis* H.B.K. Nov. Gen. 2 : 183. 1817.

~~XXXXXX~~ Rather fleshy 8 - 14 dm. high erect or sometimes long-trailing herb with angular minutely punctate branches which are usually green when young and somewhat brownish-yellow to brilliant purple when old. Leaves with oblong-elliptic to ovate blades 6 - 15 cm. or more long, entire or somewhat undulate, membranous, glabrous or nearly so, acuminate or acute at apex and decurrent at base into the 10 - 25 mm. long sulcate petiole. Inflorescence in terminal suberect 5 - 15 cm. long many-flowered angular racemes naked ~~XXXX~~ at base for

Flowers perfect, on bracteate pedicels 3 - 5 mm. long having 1 or 2 more bracts near flower. Sepals oblong-elliptic, concave, about 3.5 mm. long and 1.5 mm. wide, white to more rarely deep pink, membranous, covered with minute whitish dots. Stamens 5 - 10, filaments filiform; anthers deeply parted. Ovary subglobose, usually 5- to 7-carpellate, each carpel with filiform style stigmatose on inner surface. Fruit a dark purple usually 5- to 7-celled juicy berry bearing single seed in each cell. Seeds subreniform, black, about 3 mm. long.

TYPE LOCALITY: "In ins. Oahu Sandwicensium." Moquin-Tandon.

LOCAL RANGE: Found on all the larger Islands in open rain forests usually at higher elevations. Not common excepting in certain localities, as in the Kokee region of Kauai. Here, as well as on Maui and Molokai, all the plants collected by the writer were erect. On Oahu the plant is very rare. The few that were found in the Waianae Range, for example in some of the canyons near Puu Hapapa and below the cliffs in Lualualei Valley, were long-trailing specimens easily to be distinguished from the introduced species growing throughout the Schofield Barracks region. ~~XXXXXX~~ Though the native *phytolaccas* eventually may require separation into several varieties or forms, our present knowledge justifies the describing of only the variety ~~XXXXXX~~ given below.

EXTRA RANGE: Endemic to the Hawaiian Islands.

PHYTOLACCA BRACHYSTACHYS var. PUBERULENTA Degener  
PUBERULENT HAWAIIAN POKEBERRY

*Phytolacca brachystachys* var. puberulenta var. nov. Ab specie differt principaliter foliis puberulentis.

Differing from the species in being puberulent, especially on the veins on the under side of the leaves.

TYPE LOCALITY: Southwest of Wailuku, Maui.

LOCAL RANGE: This variety seems to displace the species on West Maui.

EXTRA RANGE: Not known elsewhere.

TYPE SPECIMEN: Degener No. 4399.

(Variety illustrated on following page)

(Otto Degener, / '33)



FLORA HAWAIIENSIS

FAMILY: 98  
GENUS: *Macadamia*  
SPECIES: *Ternifolia*

at times attaining 18 meters

PROTEACEAE  
PROTEA FAMILY

MACADAMIA TERNIFOLIA F. Muell.  
QUEENSLAND NUT, MACADAMIA

*Macadamia ternifolia* F. Muell. in Trans. Phil. Inst. Vict. 2: 72. 1858.

Very closely related to the variety fully described below. It differs ~~markedly~~ from the latter chiefly in its more upright habit and larger size; in bearing leaves that are conspicuously serrate with distant prickly teeth, in often being somewhat truncate at base, and in sometimes attaining a length of 3 dm.; and in having an ~~entocarp~~ <sup>seed</sup> which is usually larger and smoother.

TYPE LOCALITY:

LOCAL RANGE:

~~MACADAMIA~~

MACADAMIA TERNIFOLIA var. INTEGRIFOLIA F. Muell.  
SMOOTH-LEAVED QUEENSLAND NUT, SMOOTH-LEAVED MACADAMIA

*Macadamia ternifolia* var. *integrifolia* F. Muell. in Trans. Phil. Inst. Vict. 2: 72. 1858.

Symmetrical glabrous tree <sup>about 10</sup> meters high with dark trunk and with numerous gray twigs which are sometimes minutely reddish-pubescent. Leaves dense, numerous, opposite and whorled in 3 or 4 on the same tree, oblong-lanceolate to oblanceolate, commonly 12 cm. long and 3 cm. wide, stiff-coriaceous, glabrous, shiny, dark green, very conspicuously undulate, entire or with very few fine or prickly teeth, acuminate at base, to a petiole which is 15 mm. long or less, prickly-cuspidate at apex. Flowers small, yellowish white, numerous, on horizontal slender about 7 mm. long pedicels borne on about 2 cm. long pendent glabrous to minutely pubescent racemes. Perianth 10 mm. long, sparsely reddish-silky-pubescent without and glabrous within, with recurving 1 mm. wide segments. Stamens yellowish white, glabrous; filaments flattened, 5 mm. long; anthers 2 mm. long, with deltoid appendage; pollen pale yellow. Pistil 12 mm. long; ovary and lower part of style villous with white hair; style glabrous above; stigma clavate; nectaries connate into yellow 0.5 mm. high cup. Fruit on thickened peduncle and pedicel, with 3 mm. thick leathery 2-valved brownish exocarp splitting chiefly on 1 side to expose the smooth, shiny, light-brown 3 mm. thick subspheric endocarp which is 2.5 cm. in diameter, kernel white, crisp, oily <sup>with</sup>.

TYPE LOCALITY:

LOCAL RANGE: <sup>for species and variety</sup> Northern New South Wales and parts of Southern Queensland within 100 miles of the coast.

S.R.

(Variety illustrated on following page)

*Solanum nodiflorum* H. John & H. S. P. A.

" *Popo* SOLANACEAE

*Solanum* ok.

often associated  
with only at base

SOLANUM NIGRUM L.

Black Nightshade; ~~Popolo of the Hawaiians.~~

*Solanum nigrum* L. Sp. Pl. 186. 1753.

*Solanum nodiflorum* Dunal Hist. Sol. 151. 1813.

*Solanum nodiflorum* Hilteb. Fl. H-w. Isl. 306. 1888.

*Solanum nodiflorum* Wilder Fruits Haw. Isl. 146. 1911.

Not *Solanum nodiflorum* Jacq. Ic. Pl. Rar. 2 : 288. t. 326. 1788.

*Solanum nodiflorum* var. *macrophyllum* Dunal in DC. Prodr. 13. 1 : 46. 1852.

*Solanum oleraceum* Dunal; Fair. Enyo. Suppl. 3: 750. det.?

Usually erect 3 - 8 dm. high branching annual, glabrous or somewhat pubescent with simple hairs on leaves and simple hairs having swollen base and upcurved tip along usually 3 longitudinal ridges on branches. Leaves ovate-lanceolate, 3 - 10 cm. long, thin, flaccid, more or less acute at apex, entire or with a few rounded sinuate teeth or lobes in the lower half, with rounded or contracted usually inequilateral base shortly decurrent into margined 5 - 30 mm. long petiole. Flowers about 7 mm. wide, 3 - 10 on 5 mm. long drooping pedicels umbellately arranged on spreading about 1.5 cm. long peduncle that appears to arise from the

*near*  
middle of an internode due to its union for that distance with the main stem. Calyx campanulate, with oblong obtuse lobes 1 mm. long, persistent and recurved in fruit. Corolla rotate, with 2.5 mm. long narrow-deltoid ciliolate white lobes yellowish toward base. Stamens 5, about 2.5 mm. long; filaments half as long as the bright yellow-obsolete anthers dehiscing by pore-like slit on inner side near apex. Ovary glabrous; style puberulent, thickened; stigma capitate, slightly exserted beyond stamens. Fruit a globose purplish-black shiny glabrous berry 6 mm. in diameter bearing numerous seeds and falling from calyx. Seeds flattened-obovate, yellowish, 1.5 mm. long and 1 mm. wide.

- Native*  
T.L.: "Habitat in Orbis totius cultis."  
L.R.: Not uncommon in waste places and cultivated grounds or along outskirts of woods probably throughout the islands. In 1867 it was listed as growing in these islands (Mann). In 1897 it was recorded as common in Hanalei Valley and near Waimea, Kauai, as well as occurring on Oahu (Heller). In it was reported from Niihau (Forbes). This plant was long used by the Hawaiians: the berries were eaten, in certain districts in Hawaii where it was difficult to grow taro the leaves and young stems and eaten as a substitute for poi? (see Wise), the juice of the leaves mixed with salt was used as a remedy for eye diseases, and the root was chewed as a remedy for colds.  
B.R.: Found in many races practically throughout temperate and tropical regions, in some of which it is eaten as a pot-herb.



MACADAMIA F. Muell.

Trees or tall shrubs. Leaves whorled, entire or serrate. Flowers perfect, small, pedicellate in pairs, in terminal or axillary racemes, with small caducous bracts. Perianth regular or nearly so. Stamens inserted slightly below limb of perianth; filaments short; anthers linear, with short appendage. Ovary sessile, 2-ovuled; style long, straight, ovoid or clavate at end; stigma small, terminal; hypogynous ~~stamens~~ glands 4, distinct or united into cup or ring around the ovary. Fruit a ~~globular indehiscent drupe~~ with fleshy exocarp and thick stony endocarp. Seeds solitary and spherical or if 2 then hemispherical; cotyledons thick, unequal.

TYPE SPECIES: *Macadamia ternstroemia* F. Muell.

Named in honor of Dr. John Macadam, Secretary of the Philosophical Institute, Victoria, Australia.

A few species, all native to

obliquely  
globose

nectaries  
fleshy  
tardily dehiscent  
pericarp with fleshy exocarp becoming  
leathery on drying, 1-seeded or extremely rarely 2-seeded



The fruit of ~~Macadamia~~ <sup>Macadamia</sup> is essentially the same as that of *Syzygium*. Instead of being a ~~filled~~ follicle containing 2 samaroid seeds, it is formed by abortion a follicle containing by abortion a single seed which is

Both are follicles, the former containing a single seed with extremely hard ~~testa and tegmen~~ testa and tegmen; the latter containing two samaroid seeds with thin testa and tegmen. Botanically, the genus *Macadamia* bears no nuts but simply a nut-like seed.

FLORA HAWAIIENSIS

FAMILY: 340

GENUS : Scaevola

SPECIES: Kilaueae

GOODENIACEAE  
GOODENIA FAMILY

SCAEOVIA KILAUEAE Degener  
KILAUEA SCAEOVOLA; NAUPAKA

Scaevola kilaueae Degener, ~~XXXX~~ Plants Hawaii Nat. Park 294. 1930.  
Scaevola Menziesiana forma Skottsberg in B.P. Bishop Mus. Bull. 43:  
31. 1927.

Low ~~xxxx~~ sparsely branching shrub rarely more than 8 dm. high with thick stem having blackish rough bark. Leaves at least 1 mm. thick, coriaceous, pale, commonly 4 cm. long and 1.5 cm. wide, entire except for upper third which is sparsely dentate, ~~xxxxxxxxxxxxxxxxxxxx~~ acute at apex, cuneate to sessile or subsessile base, glabrous except when young when covered with coarse yellowish bloom or scurf. Inflorescence usually a 3-flowered cyme with central flower sessile or more rarely 1-flowered; peduncles 1.5 - 3 cm. long, with pair of thick subulate 2 mm. long bracts at apex; pedicels about 5 mm. long. Calyx tube less than 0.5 mm. long, subtruncate, somewhat yellow-scurfy. Corolla with tube over 2 cm. long and with spreading lobes 8 mm. long and 4 mm. wide of which crisped sparingly ciliate margins makes up a little less than two-thirds of width; corolla light brownish yellow with tube pubescent within but glabrous without and like inner border of crisped margins tinged with purplish. Stamens about 15 mm. long; filaments filiform, glabrate; anthers 1.5 mm. long. Ovary 4 mm. long and 2 mm. wide; style densely pubescent, 23 mm. long; stigma 1.5 mm. wide, basally surrounded by white ciliate ring. Drupe black, often slightly longitudinally ridged, 1 cm. long and almost as wide, with endocarp containing 2 seed cavities in one of which the seed is frequently aborted.

TYPE LOCALITY: Known only from the rather dry ash fields southeast of the Grater of Kilauea, Hawaii.

Local range: First collected by Rock in July, 1918 on the 1823 lava flow near Kilauea; subsequently collected by the writer in 1926 and by the writer, Iwasaki and Brumaghin in 1930 apparently in the same general region. ~~XXXXXX~~  
~~XXXXXX~~ This rare xerophyte may be found fairly in some abundance by striking intonthe Kau Desert due south about half a mile from Makaopuhi Grater.

EXTRA RANGE: ~~XXXXXX~~ Not known elsewhere.

THE SPECIMEN: Degener, Iwasaki & Brumaghin No. 4395.

(Illustrated on following page)

MYRTACEAE

MYRTLE FAMILY

JAMBOSA MALACCENSIS (L.) DC.  
MOUNTAIN APPLE; OHIA AI *Ohia*

Eugenia malaccensis L. Sp. Pl. 470. 1753.

Jambosa malaccensis DC. Prodr. 3 : 286. 1828.

Jambos malaccensis Britton, Fl. Bermuda 264. 1918.

Glabrous, slender tree becoming 7 - 15 meters high with horizontal, <sup>smooth</sup> grayish-brown branches. Leaves opposite, elliptic- to ~~XXXXXXXXXXXX~~ obovate-oblong, 14 - 17 cm. long and 6 - 8 cm. wide, shiny, above dark green with paler midrib, beneath paler and obscurely dark punctate, with sinuate nerve distant from margin, more or less acuminate with blunt apex, acute at base to 1 cm. long petiole. Flowers usually abundant, proterandrous, in cymes in the axils of the fallen leaves and on the trunk; cymes about 5 cm. long, with lowest branches 3-flowered and the terminal branch racemose; pedicels short, jointed, gradually enlarging into the calyx. Calyx turbinate, with tube about 1 cm. long, prolonged slightly beyond the ovary, with 4 rounded about 3 mm. long and 7 mm. wide green persistent lobes. Petals 4, obovate-orbicular, crimson, caducous, 8 mm. long and 10 mm. wide, concave, shiny, somewhat fimbriate. Stamens about 125, caducous, erect-spreading, the larger ones peripheral and the smaller ones within and some of the smallest sterile; filaments crimson, 1 - 2 cm. long, thick below but more slender above; anthers almost 1 mm. long, with 2 yellowish cells separated by the crimson connective; pollen pale yellow. Ovary with crimson concave 7 mm. wide shiny disk at top; style darker crimson, with upper third bent downward while in the bud and during opening of flower, later erect, about 2 cm. long; stigma minute, glabrous. Fruit ~~XXXXXX~~ obovoid, about 7 cm. long, pendant, umbilicate at top and crowned by the truncate scar of the calyx lobes, shiny, red to very dark red, with white <sup>crisp</sup> watery sweetish flesh. Seed usually 1, <sup>sub</sup>spherical, with soft <sup>papery</sup> brown <sup>outer</sup> testa, about 2 cm. in diameter with <sup>bitter</sup> green <sup>irregular</sup> thick cotyledons and 4 mm. long radicle and 2 mm. long plumule; seedling with <sup>2</sup> <sup>epigeal</sup> very dark green cotyledons.

TYPE LOCALITY: "Habitat in India."

LOCAL RANGE:







FLORA HAWAIIENSIS

FAMILY: 344

GENUS : Heterotheca

COMPOSITAE  
COMPOSITE FAMILY

HETEROTHECA Cass. Dict. Sci. Nat. 21 : 130. 1821.

Direct hirsute to pubescent branching herbs. Leaves alternate, mostly dentate. Heads moderately large, yellow, usually solitary at the ends of the branches, containing both ray and disk florets. Involucre hemispheric to broadly campanulate, its bracts imbricate in several series and the outer the shorter. Receptacle flat, alveolate. Ray florets pistillate. Disk florets perfect or some only staminate. Style branches flat, with lanceolate to triangular appendages. Achenes of ray florets pubescent, obtuse, thick and often triangular, with obsolete pappus or this consisting of a few caducous bristles. Achenes of disk florets pubescent, obtuse, flattened, with pappus consisting of an inner row of numerous capillary rough bristles surrounded by an outer row of shorter stouter bristles.

NAME derived from the Greek for different and box or case, in reference to the two distinct types of achenes.

~~TYPE SPECIES: *Inula subaxillaris* Lam.~~

TYPE SPECIES: *Inula subaxillaris* Lam.

A few species/ native to the southern United States and Mexico.

FLORA HAWAIIENSIS

FAMILY: 316  
GENUS: SALVIA  
SPECIES: Coccinea

LABIATAS  
MINT FAMILY

SALVIA COCCINEA Juss.  
SCARLET SAGE

*Salvia coccinea* Juss.; Murr. in Comm. Gotting. 1 : 86. 1778.  
? *Salvia coccinea* Buchoz; Etling. Salv. 23. 1777.  
*Salvia coccinea* L. Suppl. Pl. 88. 1781.  
*Salvia pseudococcinea* Jacq. Coll. 2 : 302. 1788.  
*Salvia coccinea* var. *ciliata* Griseb. Fl. Br. W. I. 490. 1861.

Annual or rarely perennial herb often somewhat woody at base, with 3 - 7 dm. long erect simple or sparingly branched stems which are either softly canescent or are hirsute with spreading ~~XXXXXXXXXXXXXXX~~ whitish hairs about 3 mm. long. Leaves 3 - 8 cm. long with blade as long as the thin petiole or longer; blade ovate to deltoid-ovate, crenate-serrate, obtuse to somewhat acute at apex, truncate to subcordate at ~~XXXXX~~ base. Flowers scarlet, on 1 - 5 mm. long slender pedicels in bibracteate clusters of 6 to rarely 20 which are borne on distant nodes to form 5 - 20 cm. long terminal and often also axillary softly canescent racemose inflorescences; bracts caducous, ovate-setaceous, longitudinally nerved, usually shorter than calyx. Calyx softly canescent, 7 - 8 mm. long, with tube longitudinally ribbed; upper lip entire, abruptly pointed; lower lip ovate, with 2 acute teeth. Corolla bright scarlet, puberulent without, about 2.5 cm. long, with tube contracted above base and then gradually enlarging; upper lip ~~about 6 mm. long, broadly~~ *plicate*.

; lower lip ~~about 12 mm. broad, merely~~ notched at apex. Stamens 2, exserted for 5 - 7 mm. between slightly plicate upper lip; connective about 15 mm. long, with posterior part 5 mm. long filiform and without anther sac. Style almost 3 cm. long, glabrous; stigma 2-lobed with posterior lobe the longer. Nutlets 2.5 mm. long, slightly variegated.

TYPE; LOCALITY: North America.

LOCAL RANGE: Reported by Hillebrand in 1888 as an occasional escape from cultivation; an introduced weed now found on probably all the Islands here and there in dry, waste places and rocky pastures at lower elevations. ~~XXXXX~~ Herbarium specimens examined were collected on Hawaii in 1909, Oahu in 1912, Lanai in 1913, Maui in 1920, and Molokai in 1928.

EXTRA RANGE: Native to the southern United States and Mexico. A very variable species, the form with hirsute stem ~~XXXXXXXXXXXXXXXXXXXXXXX~~ being called the variety *pseudococcinea* by some authorities. This is the form found in the Hawaiian Islands.

(Illustrated on following page)

FLORA HAWAIIENSIS

FAMILY: 169c

GENUS : *Crotalaria*

SPECIES: *Saltiana*

LEGUMINOSAE  
PEA FAMILY

*CROTALARIA SALTIANA* Andr.  
SALT RATTLE-BOX

*Crotalaria Saltiana* Andr. Bot Rep. pl. 648. 1811.  
*Crotalaria striata* DC. Prodr. 2 : 131. 1825.

Erect suffrutescent 6 - 15 dm. high perennial with robust sulcate and thinly silky branches. Leaves trifoliolate, with minute setaceous caducous stipules; leaflets obovate-oblong, 2.5 - 6 cm. long, with mucronulate acute to retuse apex and cuneate base, green and glabrous above but pale and obscurely silky beneath, on white tomentulose petiolules. Racemes terminal, 8 - 16 cm. long with minute setaceous bracts. Calyx thinly silky and about 8 mm. long. Corolla glabrous, yellow; standard 10 mm. wide, with thick green 4 mm. long and 3 mm. wide claw and yellow 12 mm. long limb having prominent reddish veins on outer surface; wings with 3 mm. long greenish claw and 10 mm. long and 4 mm. wide limb obscurely veined; keel with long incurved beak and reddish veins on outer surface. Stamens with pale greenish yellow filaments and bright yellow anthers; basifixed anthers 2.5 mm. long. Pod when mature ~~xxxx~~ yellowish, glabrate and slightly granular, firmly twisted about 3 ~~times~~ times upon dehiscence to liberate about ~~xxxxxxx~~ 60 seeds. Seeds -----

TYPE LOCALITY: "introduced by Mr. Salt 1st April (1811) from the distant region of Abyssinia."

LOCAL RANGE: Not recorded by Hillebrand but collected by Mann as early as 1865. A useful fodder plant ~~xxxxxxxx~~ frequently becoming a weed in ~~xxxxxx~~ ~~xxxxxxxx~~ pineapple fields. It is very common throughout the Islands in waste places, particularly those that are somewhat moist, at lower elevations.

EXTRA RANGE: Native of India but now widely naturalized in several varieties or forms in most tropical countries. The local plants, as the accompanying illustrated description shows, constitute one of these forms. Another form, one "with smaller leaves and silkier stems and calyces" according to Rock

(1920) was cultivated at the Hawaiian Sugar Planters' Experiment Station under the name of *C. striata*.

(Illustrated on following page)

*I think you  
still have proofs  
of Crotalaria  
for me to ok.*



FLORA HAWAIIENSIS

FAMILY: 315

GENUS: *Clerodendrum*

SPECIES: *Speciosissimum*

VERVAINACEAE  
VERVAIN FAMILY

*Clerodendrum speciosissimum* Paxt.  
SCARLET CLERODENDRUM

*Clerodendrum speciosissimum* Paxt. Mag. Bot. 3 : 217 et 271. 1837.

*Clerodendrum speciosissimum* Paxt.; Bailey, Man. Cult. 11. 634. 1924.

*Clerodendron fallax* Lindl. Bot. Reg. sub t. 19. 1844.

? *Clerodendron squamatum* Rock, Orn. Trees Haw. 184. 1917.

? *Clerodendron squamatum* Neal & Metzger, In Hon. Gard. 273. 1928.

Not *Clerodendron squamatum* Vahl, Symb. Bot. 2 : 74. 1791.

Not *Clerodendron squamatum* Hallier f. in Meded. Rijks Herb. 37 : 81. 1918.

Sparingly branching 1 - 2 meters high villous-pubescent shrub with the branches somewhat quadrangular. Leaves 12 - 25 cm. long and 8 - 15 cm. wide, sparingly villous above and densely villous below, broadly ovate, obscurely repand-entate to entire, shortly acuminate at apex, cordate at base, with reddish petiole 5 - 12 cm. long. Flowers entirely red, proteranarous, on 2 - 10 mm. long red pedicels in terminal broad spreading flat-topped cymes. Calyx with deltoid lobes 2 mm. long. Corolla funneliform: tube narrow, somewhat curved, about 2 cm. long, with lowest sinus deepest and the 2 upper sinuses shallower than the lateral ones; lobes unequal, about 17 mm. long, spreading and partly recurved, lowest pair 6 mm. wide and oblanceolate and other lobes wider but only the uppermost shallowly hooded. Stamens adnate to corolla tube to its deepest sinus, subequal, glabrous, free for almost 3 cm., extended and slightly diverging in pairs and later strongly curved downward; anthers versatile, parted at base, reddish brown; pollen red. Ovary 2.5 mm. long, green; style filiform but thicker near base, 4.5 - 5 cm. long; stigmas 2, subulate, 2 mm. long. Fruit a purplish-black dull fleshy drupe about 8 mm. thick, with enlarged calyx at base. Seed - -

TYPE LOCALITY:

LOCAL RANGE: An ornamental, first recorded by Hillebrand, grown here and there throughout the Islands. It has a long flowering season, this beginning in April and May.

EXTRA RANGE: Native of Java but cultivated in many tropical countries for its scarlet flower clusters.

(Illustrated on following page)

FLORA HAWAIIENSIS

FAMILY: 307  
GENUS : Operculina  
SPECIES: Aegyptia

CONVOLVULACEAE  
MORNING-GLORY FAMILY

OPERCULINA AEGYPTIA (L.) HOUSE  
EGYPTIAN OPERCULINA

- Ipomoea aegyptia* L. Sp. Pl. 162. 1753.  
*Convolvulus pentaphyllus* L. Sp. Pl. ed. 2 : 233. 1762.  
*Ipomoea pentaphylla* Jacq. Coll. 2 : 297. 1788,  
*Ipomoea pentaphylla* Pope, Wayside Pl. Haw. 183. 1929.  
*Convolvulus nemorosus* Willd. in R. & S. Syst. 4 : 303. 1819.  
*Spiranthera pentaphylla* Bojer, Hort. Maurit. 226. 1837.  
*Batatas pentaphyllus* Choisy, Conv. Or. 54. 1834.  
*Operculina aegyptia* House in Bull. Torrey Club, 33 : 502. 1906.

Long herbaceous twiner with green stem usually red where exposed to direct sun-light and always densely covered with stramineous spreading hirsute up to 5 mm. long hair arising from swollen red base. Leaves in outline suborbicular and 10 - 15 cm. in diameter, palmately divided into 5 sessile to subsessile leaflets of which the terminal one is the largest and the basal pair the smallest; leaflets rugose, membranous, hirsute on both faces with stramineous forward-pointing hair, commonly 5 - 10 cm. long and 3 - 4.5 cm. wide, obovate to rarely elliptic, shortly acuminate at apex and acuminate ~~to cuneate~~ to cuneate at base, entire or nearly so; petiole up to 9 cm. long, hirsute like stem. Inflorescence arising from above dormant bud in axil of leaf, hirsute like stem, usually longer than petiole and in fruit always thickening and greatly elongating, bearing in somewhat dichotomous cymes 3 to rarely 7 flowers borne on about 15 mm. long pedicels having at base lanceolate densely hirsute acuminate bracts up to 6 mm. long; flowers  
Sepals unequal, persistent and enlarging in fruit; ~~the 2~~ the 2 outer chartaceous, densely hirsute without but glabrous within, pale green, ovate-lanceolate, about 18 mm. long and 7 mm. wide, acuminate; the 2 inner scarious, glabrous and shiny, white except at greenish base, ovate, about 11 mm. long and 7 mm. wide, acute; fifth sepal intermediate in character to outer and inner ones. Corolla waxy-white, glabrous, 2 cm. long, with campanulate tube and spreading 2 cm. wide somewhat angular-cuspidate limb.  
*with whitish annular almost 1 mm. thick at length recurved*

Stamens included; ~~subequal, 6-~~ unequal, 6-  
filaments white, 8 mm long, only the lower 3 mm. broadly annate to corolla and ciliate; anthers white, 3 mm. long; pollen white. Ovary white, glabrous, ovoid, 1.5 mm. long and almost as wide. ~~XXXXXX~~  
~~XXXXXX~~ style white, glabrous, 6 mm. long; stigma ~~3~~  
white, wrinkled-capitate, each about 0.7 mm. in diameter.

Capsule depressed-globose, about 12 mm. long and 14 mm. wide, spuriously 4-celled, enclosed by marcescent calyx, <sup>pendent</sup> septically dehiscent when ripe.  
Seeds 4 mm. long and 4 mm. wide, glabrous, shiny, yellowish brown, with shallow groove at top; embryo yellowish white.

TYPE LOCALITY: Tropical America.

LOCAL RANGE: An introduced weed growing in arid waste places, on probably all the Islands. It was collected here by the U. S. Exploring Expedition as early as 1840, and by Mann and Brigham around 1865.

Hillebrand recorded it from the Islands in 1888 as growing "In grassy places and on fallow fields of the lower and middle regions." C. M. Forbes recorded it in 1913 as growing on Ni'ihau and Kahoolawe.  
EXTRA RANGE: Growing in many tropical countries. ~~XXXXXXXXXXXXXXXXXXXX~~

(Illustrated on following page)

Otto Degener, / / '33.)



## FLORA HAWAIIENSIS

FAMILY: 344

GENUS : *Hesperomannia*

SPECIES: Swezeyi

COMPOSITAE  
COMPOSITE FAMILY*HESPEROMANNIA SWEZEYI* Degener  
~~SWEZEY~~ *HESPEROMANNIA**Hesperomannia Swezeyi* sp. nov.

Tree 1.5 - 2 meters high, with usually upright branches having their ends and buds fuscous-puberulent. Leaves obovate-elliptic, 10 - 17 cm. long and 2.5 - 4 cm. wide, entire or sometimes very obscurely crenate-dentate with 1 - 3 pairs of teeth. ~~XXXXXXXXXXXX~~ bluntly acute at apex, acuminate at base, with dark red midrib and veins, on 1 - 2 cm. long glabrate petiole and otherwise glabrous but when young fuscous-puberulent especially on petiole and midrib; leaves of seedling more uniformly serrate-undulate. Heads 2 - 3, upright on 3 mm. thick and persistent 4 - 5 mm. long peduncle bearing scales which are fuscous wooly-pubescent and similar to those forming base of involucre. Involucre 2.5 - 3.5 cm. high; lowest ~~XXXXXX~~ bracts 3 mm. long, deltoid, purplish-red but densely covered with fuscous wooly-pubescent; upper bracts gradually longer, brighter purplish-red, less pubescent or glabrous; highest bracts linear-lanceolate, 2 - 3 cm. long and almost 3 mm. wide, acuminate, scarious, glabrous, light yellow sometimes streaked with purplish-red or entirely purplish-red. Ovary 5 mm. long, annular, finely rugose, yellowish-green. Pappus very pale yellow, 2.5 cm. long, of about 50 bristles. Floret shiny, glabrous; corolla tube 2 cm. long and 2 mm. wide; very pale yellow; corolla lobes light yellow, linear-lanceolate, 18 mm. long and 1.5 mm. wide. Stamens very pale yellow; filaments 3 cm. long, adnate to corolla for about 2 mm. at base; anthers 9 mm. long, free for 2 mm. at apex. Style about twice as thick as filament, becoming 1 cm. long, very pale yellow and glabrous below but toward the upper 5 - 10 mm. gradually more purplish-red and finely antrorsely puberulent; stigma minute, purplish-red. Achene linear-obovate-oblong, 9 mm. long, 2 mm. wide, 1 mm. thick, all but the central ones somewhat curved near base, greenish-brown, punctate with minute resinous globules, longitudinally angled with the ridges glabrous or sparsely antrorsely hispidulous, with truncate apex surmounted by stramineous collar. Pappus

TYPE LOCALITY: On the highest ridge overlooking Kahuku and within 100 yards southeast of the Pupukea-Kahuku Trail, Oahu.

LOCAL RANGE: Named in honor of Otto Swezey, one of the keenest amateur botanists in the Hawaiian Islands, who drew the attention of the writer to this species. It grows scattered over a distance of about half a mile in the wind-swept rain forest on the highest ridge southeast of the Pupukea-Kahuku Trail, Oahu. Because of the necessity of procuring suitable material for the making of the accompanying plate, the 20 - 30 specimens known from the region were repeatedly visited. It can therefore be stated with certainty that this species has a definite flowering season, and that this begins early in March.

EXTRA RANGE: Not known elsewhere. In this case the writer does not agree with Dr. Skottsberg who is inclined to consider all Oahu specimens of *Hesperomannia* as merely varieties of *H. arborescens*, a plant endemic to Lanai. Descriptions and illustrations will probably convince the reader that the plant growing on the Maianae Range is a distinct species deserving

ing the name H. oahuensis, and that it is specifically distinct from  
H. Swezeyi as well as from the specimens growing east of Nuuanu Pali,  
Oahu.

~~Type Specimen: Dejeune~~

Skottsberg in Saertryck ur Med. Geet. Bot. Traed. 2 : 263. 1926.

~~(Illustrated on following page)~~

OPERCULINA S. Manso, Enum. Subst. Bras. 14. 1836

Twining vines with woody or herbaceous perennial stems that are often more or less winged. Leaves with entire or divided blades. Flowers solitary or clustered on often more or less winged peduncles. Calyx large, pear-shaped, constricted above, and with 5 closely imbricated, broad, scarious or chartaceous, often colored sepals which usually become enlarged in fruit. Corolla funelform to campanulate. Stamens included or protruding; the anthers large and spirally twisted. Ovary 2-celled, 4-ovuled and with 2 globose stigmas. Capsule large, 2-celled, usually 4-seeded or partially 4-celled, and commonly differentiated into an upper thicker and a lower thinner portion, or the thin-walled capsule covered by an operculum-like cap which is deciduous at maturity. More rarely the capsule is of uniform texture and valved, and dehisces transversely or irregularly. Seeds large, black or more rarely brown, and usually glabrous. (Name from the Latin in allusion to the operculate capsule.) Type species: Operculina Convolvulus S. Manso (= Convolvulus macrocarus L. 1759).

About 20 species, found in tropical countries.  
O.D. 12/20/26.



FLORA HAWAIIENSIS

FAMILY: 169c

GENUS: Clitoria

LEGUMINOSAE  
PEA FAMILY

O.K.  
for printing  
(print inside  
only)

CLITORIA L. Sp. Pl. 753. 1753.

Perennial woody vines or erect to climbing herbs. Leaves pinnately 5- to 9-foliate; stipules and stipels always present and persistent. Flowers axillary, large and showy. Calyx tubular, 5-toothed with ~~xxxx~~ the teeth never exceeding the tube and with the upper 2 teeth more or less connate. Standard large, erect, retuse, not appendaged, narrowed toward base; wings somewhat adherent to the short keel. Stamens 10, more or less monadelphous; anthers all of one kind. Ovary stipitate; style long and incurved, hairy on inner side. Fruit short-stipitate in the marcescent calyx, compressed, linear to linear-oblong, 2-valved with the valves flat and not ridged. Seeds flat.

NAME derived from the Greek; of no significance.

TYPE SPECIES: Clitoria ~~xxxxxxxx~~ ternatea L.

About 8 species, all native to the tropics of the Old World.

## CUSCUTACEAE

CUSCUTA SANDWICHIANA Choisy  
Hawaiian Dodder K. & N. S.*Cuscuta sandwicensis* Choisy, *Mem. Soc. Phys. Hist. Nat. Genève* 9:

280, 1841.

*McClurea sandwicensis* var. *minor* Hook. & Thoms. *Trans. Linn. Soc. London* 20: 205, 1841.

Stems very slender, orange-yellow. Leaves reduced to 2 mm. long lanceolate scales. Flowers on bracted pedicels 5 mm. or less long to form compound open cymes on peduncles 1 cm. or less long. Calyx campanulate, scarious, shining, deeply 5-cleft with ovate somewhat acute lobes about 1.5 mm. long persistent. Corolla urn-shaped, 4 mm. high, the tube bearing no scales but with 1.5 mm. long somewhat acute persistent lobes which are inflexed at the top and erect or reflexed but finally appressed to the ripening capsule. Stamens inserted in the sinuses between the lobes; anthers subsessile. Ovary depressed-obovoid, about 2 mm. high, styles separate, exserted, almost as long as ovary; stigma capitate. Fruit a depressed-globose indehiscent capsule about 3 mm. high with apical 2-branched hole projecting into placenta. Seeds light-brown, dull, much depressed-globose and almost 2 mm. wide and 1 mm. thick or somewhat angular from pressure.

T.L.:

L.R.: Grows at lower elevations, often along coastal dunes and in arid regions, chiefly on Convolvulaceae, Heliotropium and Scaevola. Found on probably all islands:

KAUAI (according to R. Fl. Haw. Isls. 320, 1888).

OAHU (Kawaihapai, Degener 2072, 1925; Honolulu, D.&W. 3262, 1928; Hauula, Degener 1562, 1925; Kailua, Degener 2000, 1926).

MOLOKAI (Kawela Gulch, D.&W. 3261, 1928; Moomomi, D.&W. 2769, 1928), and

HAWAII (with fasciated flowers, Hilo, Degener, 1639, 1922).

This plant is sometimes confused with Cassipourea filiformis L., one of the Lauraceae, which is greenish-yellow, has firmer stems, and usually grows on trees and shrubs.

E.R.: Endemic. Its closest relative is C. gymnocarpa Engelm. of the Galapagos Islands.

*Because this plant is so much like the other species of the genus, it is not surprising that it is often confused with them. It is, however, a distinct species, and its closest relative is C. gymnocarpa Engelm. of the Galapagos Islands.*



CUSCUTACEAE Dumort.  
Dodder Family

*Confined*  
*practically always devoid of chlorophyll called haustoria*

Yellowish to reddish filiform dextrorsely twining glabrous lax herbaceous plants parasitic by numerous minute suckers on herbs, shrubs and very rarely trees. Leaves reduced to minute alternate scales. Flowers perfect, regular, clustered, whitish to pink. Calyx inferior, 5-lobed or 5-parted or of 5 distinct sepals (rarely 4-lobed or 4-parted or of 4 distinct sepals, or very rarely doubled). Corolla 5-lobed (rarely 4-lobed, or very rarely doubled), the tube bearing as many fimbriate or crenulate scales as there are lobes and these alternate with the lobes or very rarely obsolete; lobes imbricate in the bud. Stamens as many as the corolla-lobes and inserted in the throat or sinuses above the scales, often shortly exserted; anthers short, ovate to oval, obtuse, introrse, 2-celled with sacs longitudinally dehiscent. Ovary 2-celled; ovules 2 in each cavity; styles 2, terminal, separate or rarely united below; stigmas linear to capitate. Fruit a globose or ovoid capsule, circumscissile, irregularly bursting or indehiscent, 3- to 4-seeded. Seeds glabrous; embryo linear, terete, curved or spiral, with apex bearing 1 - 4 minute alternate scales; endosperm fleshy, cotyled-

*near base*, *autotrophic*

ons none or very rarely rudimentary. Seeds germinate in the soil but soon ~~root~~ <sup>and root</sup> and lower part of seedling dies while the upper part attaches itself to its host. From which it henceforth derives ~~all~~ <sup>most</sup> its nutrition, because it lacks chlorophyll completely excepting perhaps in a very few exotic species that exhibit slight greenish tinge in stem.

<sup>rather recently</sup>  
A family, evolved from the Convolvulaceae through parasitism, consisting of only the following genus.:

CUSCUTA Tourn. L. Sp. Pl. 124. 1753.

Characters of the family. (Name supposed to have been derived from the Arabic kushkut.) Type species: Cuscuta europa L.

<sup>158 pp 75</sup>  
Over 100 species of wide distribution, many of economic importance because of their parasitism on tobacco, flax, clover, etc.

*World-wide in distribution but concentrated in the New World.*

*About 160 species and 75 varieties of wide distribution in the New World. Many species are of considerable economic importance because of their parasitism on tobacco, flax, clover, etc.*

FAMILY: 91  
 GENUS: *Batis*  
 SPECIES: *Maritima*

BATIDACEAE  
 SALTWORT FAMILY

*BATIS MARITIMA* L.  
 SALTWORT (locally called PICKLE WEED); AKULIKULI KAI

*Batis maritima* L. Syst. ed. 10. 1289. 1759.

Glabrous pale-green strong-scented shrub usually less than 5 dm. high, with spreading rather stout grayish yellow prostrate or ascending brittle stems and nearly erect light-green angular branches. Leaves 1 - 2.5 cm. long, more or less curved upward, clavate-subterete but with upper surface flat, shiny, brittle, waxy, somewhat acute, with salty juice. Spikes ovoid to oblong, 5 - 10 mm. long, the staminate subsessile and longer than the short-peduncled bibracteolate pistillate ones. Staminate flowers with usually 4 spreading exerted stamens having white 2 mm. long filaments longer than the staminodia; anthers greenish yellow; pollen greenish yellow, powdery. Pistillate flowers with 2-lobed pubescent whitish stigma. Fruit ~~xxxxx~~ somewhat drooping, 1 - 2 cm. long, yellow, often somewhat 2-horned at top because of the abortion of the 2 upper ovaries.

TYPE LOCALITY: Probably Jamaica.

LOCAL RANGE: Ashrub of accidental introduction growing gregariously in salt marshes and drying ~~xxxxxxx~~ clay soil near the coast. It was first discovered in the Islands by Hillebrand in 1859. At that time it was known only from the vicinity of Honolulu, but has been spreading gradually from one favorable place to another ever since. In 1912 it was recorded from Niihau. Pure stands of the plant may be seen near Lahaina, Maui; on the salt marshes and abandoned fish ponds on the leeward shore of Molokai; and in all the salt marshes on Oahu. Around 1930 it was being planted by the Federal Government on the reclaimed land about Pearl Harbor to lay the dust which otherwise would sweep from that region on dry-windy days.

EXTRA RANGE: Found along the coast from North Carolina and California to northern South America, also in the West Indies. The plant is said to be used as a pickle in Jamaica.

(Illustrated on following page)

(O) to Degener, / '33)

III

over



NEW ILLUSTRATED FLORA OF THE HAWAIIAN ISLANDS

FAMILY: 91

GENUS : Batis

SPECIES: Maritima

BATIDACEAE

SALTWORT FAMILY

BATIS MARITIMA L.

(Original)

(Described on preceding page)

(C) Otto Degener, / / '33

over  
[Signature]

112

Family: 252  
Genus: Carica.

CARICA L. Sp. Pl. 1036. 1753.

New Illustrated Flora of the Hawaiian Islands  
CARICACEAE  
Papaya Family

scotipulata

Soft-wooded trees or shrubs, seldom branching. Leaves usually large, simple to palmately many-lobed. Flowers usually axillary, more or less dioecious or monoecious or rarely perfect, the staminate often on long peduncles and the pistillate on very short ones. Calyx usually very small, with 5 triangular to linear teeth. Staminate flowers: corolla funnel-form to tubular, with oblong to linear lobes convolute to valvate in the bud; stamens 10, inserted in throat of corolla, those opposite sepals with short filaments and those opposite petals sessile to subsessile; anthers adnate to filaments, 2-celled, introrsely dehiscent; connective often elongate; ovary abortive, subulate. Pistillate flowers: corolla of linear-oblong petals free or connate at base or rarely above it; stamens none; ovary sessile, ~~XXXXXX~~ 1- to 5-celled; style none or very short; stigmas 5, simple or 2- or more-lobed or with antler-like branching; ovules numerous. Fruit fleshy, juicy, with large empty cavity bearing numerous parietal seeds. Seeds mostly ovoid and somewhat compressed. ~~It~~ Name derived from that of the fig, *Ficus carica*, because of a fancied resemblance of the papaya fruit to the fruiting structure of the fig. ~~It~~ Type species: *Carica papaya* L.

over

9/ About 40 mostly closely related species, all native to tropical and subtropical America.



*Crotalaria Saltiana* Andr.  
Salt's Rattle-Box.

*Leguminosae*

*Crotalaria*

*Crotalaria Saltiana* Andr. Bot. Rep. t. 648. 1811.  
*Crotalaria striata* DC. Prodr. 2 : 131. 1825.

Erect suffrutescent annual 6 - 12 dm. high with robust, sulcate and thinly silky branches. Leaves trifoliate, the stipules with minute setaceous and caducous, leaflets obovate-oblong, 2.5 - 6 cm. long, with mucronulate acute or retuse apex and cuneate base, green and glabrous above but pale and obscurely silky beneath, on white tomentulose petiolules. Racemes terminal, 8 - 16 cm. long with minute setaceous bracts. Calyx thinly silky and about 8 mm. long. Corolla glabrous, the keel with reddish veins and long incurved beak. Pod when mature, yellow, glabrate and slightly granular, and firmly twisted about 3 times upon dehiscence. Seeds

T.L.: "introduced by Mr. Salt last April (1811) from the distant region of Abyssinia."  
L.R.: Not recorded by Nillebrand but collected by Mann as early as 1865. Naturalized in waste places in Oahu, Molokai, and

*A. caerulea* ~~is~~ *neglecta*

Kauai, Lanai

Hawaii

<sup>Mani as well</sup>  
probably on the other islands.  
E.R.: Native of India but now widely naturalized in most tropical countries.

S.E.: Degener

~~The <sup>accompanying description and plate agree</sup> illustration description is taken from Hawaiian plant and does not agree~~

(This determination must be verified at Kew. My description fits my specimen but not the usual description for the species. If the plant is not the above, I must change NAME, T.L., & E.R. only.)

According to Rock (1920),

~~A form with smaller leaves and silicles stems and calyces " was cultivated at the Hawaiian Sugar Planters' Experiment Station under the name of~~  
C. striata.

CARICACEAE  
PAPAYA FAMILY

usually sparsely branching

Watery-milky, small or medium size or rarely tall trees or shrubs which are usually little branched, or very rarely herbs. Leaves usually large, long petioled, simple or more or less lobed or cleft usually palmately, glabrous or rarely pubescent. Flowers usually axillary, by abortion more or less dioecious or monoecious, or rarely perfect. Calyx usually small, rotate to campanulate or tubular, with 5 usually short teeth which are often larger in pistillate flowers. Corolla: in staminate flowers tubular to funnelform, with ovate to linear lobes convolute or valvate in bud; in pistillate flowers with lobes free or shortly united at base or very rarely united higher. Stamens 10 in 2 series, at mouth of corolla-tube, alternately longer and shorter; filaments free or connate at base; anthers 2-celled, introrse, united by entire back, longitudinally dehiscent; connective often projecting beyond anthersacs. Ovary in staminate flowers rudimentary and filiform or entirely wanting; but in other flowers free, 1-celled or usually 5-celled, with numerous anatropous ovules on the parietal or to middle projecting placentas; style short, with 5 simple linear or 2-lobed or more-lobed or irregularly antler-like branching stigma. Fruit a berry,

often large, ovoid to more or less elongate, 1-celled with large empty cavity and numerous parietal seeds, or filled with pulp containing the seeds. Seeds ovoid to elliptic, more or less compressed smooth or warty, with juicy outer seedcoat and hard warty inner coat, with straight embryo bearing its flat cotyledons in midst of soft endosperm.

comprising  
Four genera ~~containing~~ about 50 species; all but 2 African kinds native to tropical and subtropical America.



*Not* *Clatodendron speciosissimum* Hort. Augl.; Schau. in DC. Prodr.

VERBENACEAE

11,672. 1847.

*Clatodendron speciosissimum* Paxt. Mag. Bot. 3: 217 et 271, 1838.  
Scarlet *Clatodendrum*

(OVER FOR SYNONYMY)

Sparingly branching 1 - 2 m. high villous-pubescent shrub with the branches somewhat quadrangular. Leaves 2 - 25 cm. long, 8 - 15 cm. wide, sparingly villous above and densely villous below, broadly ovate, obscurely repand-dentate to entire, shortly acuminate at apex, cordate at base, with petioles 5 - 12 cm. long. Flowers entirely red, on 2 - 10 mm. long red pedicels in terminal broad spreading flat-topped cymes. Calyx with deltoid lobes 2 mm. long. Corolla funneliform; tube narrow, somewhat curved, about 2 cm. long, with lowest sinus deepest and 2 upper sinuses shallower than lateral ones; lobes unequal, about 17 mm. long, spreading and partly recurved, lowest pair 6 mm. wide and oblanceolate and other lobes wider but only the uppermost shallowly hooded. Stamens adnate to corolla tube to its deepest sinus, subequal, free for almost 3 cm., extended and slightly diverging in pairs; anthers versatile, parted at base, reddish brown; pollen red. Ovary 2.5 mm. long, green; style filiform but thicker

and later strongly curved downwards

near base, 4.5 - 5 cm. long; stigmas 2, subulate, 2 mm. long. Fruit  
a purplish-black drupe 8? mm. thick, with enlarged calyx at base.  
~~XXXX~~ Seed

I.L.:

L.R.: Reported as cultivated in the Hawaiian Islands before 1822. It  
is ~~now~~ occasionally planted in ~~Honolulu~~ <sup>new</sup> gardens and probably  
~~as an ornamental.~~ <sup>as an ornamental.</sup>

E.R.: Native of Java but cultivated in many tropical countries as an  
*Clerodendron speciosissimum* Paxt. Mag. Bot. 3 : 217 at 271.  
1827.

*Clerodendron fallax* Lindl. Bot. Reg. sub t. 19. 1844.

? *Clerodendron squamatum* Rock, Orn. Trees Haw. 184. 1917.

? *Clerodendron squamatum* Nees & Metger, In Honolulu Gardens. 273.  
1928.

~~Not~~ *Clerodendron squamatum* Vahl Symb. Bot. 2 : 74. 1791.

Not *Clerodendron squamatum* Haller f. in Meded.

Rijks Herb. 37: 81. # 1918.

FLORA HAWAIIENSIS

FAMILY: 98

GENUS: *Macadamia*

PROTEACEAE

PROTEA FAMILY

*Printed by*  
MACADAMIA F. Muell. in *Trans. Phil. Inst. Vict.* 2:22, 1858.

Trees or tall shrubs. Leaves whorled, entire or serrate. Flowers ~~XXXXXX~~ perfect, small, pedicellate in pairs, in terminal or axillary racemes, with small caducous bracts. Perianth regular or nearly so. Stamens inserted slightly below limb of perianth; filaments short; anthers linear, with short appendage. Ovary sessile, ~~XX~~ 2-ovuled; hypogynous nectaries 4, distinct or united unto a cup or ring around the ovary; style long, straight, ovoid or clavate at end; stigma small, terminal. Fruit a tardily dehiscent fleshy follicle becoming leathery on drying, 1-seeded or extremely rarely 2-seeded. Seeds spherical or if 2 per follicle then hemispherical, having an extremely hard thick shell consisting of combined testa and tegmen; cotyledons thick, unequal, oily.

TYPE SPECIES: *Macadamia ternifolia* F. Muell.

NAMED in honor of Dr. John Macadam, Secretary of the Philosophical Institute, Victoria, Australia.

A few species, all native to *Australia*.

Many authors state that ~~XXXXXXXX~~ *Macadamia* is nut-bearing. The fruit is fundamentally the same as that of *Stylurus*, for example. Both are follicles, ~~XXXXXX~~ ~~XXXXXXXX~~ that of the former genus containing by abortion a single seed with extremely hard testa and tegmen; that of the latter, containing two samaroid seeds with very thin testa and tegmen. The so-called macadamia nut is simply a hard seed which superficially resembles a nut.

(Otto Degener, / /'33)

FLORA HAWAIIENSIS

FAMILY: 282

GENUS: *Centella*

UMBELLIFERAE

~~XXX CARROT FAMILY~~

*CENTELLA* L. Sp. Pl. ed. 2, 1592, 1763.

(*CENTELLA* L. Pl. Rar. Afr. 28, 1760.)

Perennial prostrate herbs with slender creeping stems that usually root at the nodes and produce several leaves and one sessile umbel that proliferates to form 1 - 4 long-rayed secondary umbels subtended by 2 - 4 usually prominent bracts. Leaves simple, not peltate but with sheathing petiole bases. Flowers small, inconspicuous, often almost sessile. Calyx ~~XXXXXXXXXXXX~~ devoid of teeth. Corolla white, <sup>pinkish</sup> disk flat or slightly concave; styles filiform. Fruit laterally compressed, orbicular to reniform or obovate. Carpels prominently marked with 7 - 9 somewhat anastomosing ribs, without oil canals.

NAME of uncertain derivation; possibly the diminutive of the Latin, *centrum*, meaning prickle.

TYPE SPECIES: *Centella villosa* L.

About 20 species, found chiefly in the southern hemisphere.



FLORA HAWAIIENSIS

FAMILY: ~~202xx~~ 305  
GENUS : Catharanthus  
SPECIES: Roseus

APOCYNACEAE  
DOGRANI FAMILY

*Vincarosea* L. Syst. ed. 10. 944. 1759.  
*Lochnera rosea* Rehb. Consp. 134. 1828.  
~~*Amocallis rosea*~~ Small, Fl SE. U.S. 936. 1903.  
*Catharanthus roseus* G. Don, Gen. Syst. 4 : 95. 1838.

CATHARANTHUS ROSEUS (L.) G. Don.  
RED PERIWINKLE

Erect pubescent slightly ridged 2 - 8 dm. high woody herb with sparingly milky juice, usually branching below. Leaves 2.5 - 9 cm. long and 1.5 - 3/5 cm. wide, oblong to oblong-oblongate, rounded and mucronate at apex, narrowed at base into short petiole, puberulent on both sides, with light midrib and with minutely dissected stipules. Flowers 2 to each node, one being in axil of leaf and blooming usually after the other which is to one side of it (it actually belongs to node below but has peduncle adnate to ~~xxxxxxxxxxxx~~ internode of main stem), on 2 mm. long peduncles, purplish pink or white, often with reddish eye; usually only 2 flowers blooming at same time on stem. Calyx pubescent, about 3 mm. long with linear-subulate lobes. Corolla with slender cylindric tube 15 - 30 mm. long, puberulent without and glabrous within except above anthers, with aristulate lobes about two thirds length of tube. Stamens with anthers 2 mm. long. Ovary less than 2 mm. long, slightly exceeded by subulate yellow nectariferous glands; style slightly shorter than corolla tube. Follicles 2 - 3 cm. long, pubescent. Seed -

TYPE LOCALITY: None given.

LOCAL RANGE: Commonly cultivated and frequently escaping. It was naturalized on Hawaii and Maui long before 1888. It is now naturalized at lower elevations on probably all the islands. It grows best in arid, waste places, only there usually maturing seed.

EXTRA RANGE: Probably native to the West Indies but now widely naturalized in the tropics of both the Old and the New World. Though commonly called Madagascar Periwinkle, it is not native to ~~xxxxxxxxxxxx~~ Madagascar.

(Illustrated on following page)

GENTIANACEAE  
GENTIAN FAMILYCENTAURIUM SEBAEOIDES (Griseb.) Druce  
HAWAIIAN CENTAURY, HAWAIIAN GENTIAN; AWIWI, UWIWI,Schenkia sebaeoides Griseb. ~~XXXXX~~ in Bonplandia 1: 226. 1853.Erythraea sebaeoides A. Gray in Proc. Am. Ac. 6: 41. 1862.Centaurium sebaeoides [sic.] Druce in Rep. Bot. Exch. Cl. Brit. Isles 4: 641. 1917.Centaurium sebaeoides Degener, Prel. Pages Fl. Haw. Dec. 20, 1926.

Fleshy yellowish-green erect quick-growing glabrous annual 4 - 20 cm. high with longitudinally ridged stem simple or more often branching only above and with yellowish roots. Leaves sessile, thick, usually almost erect, prominently 3- to 5-veined, broadly ovate to obovate, 1 - 2 cm. long and commonly about 1.5 cm. wide, entire, shiny, with obtuse to shortly acuminate or cuspidate apex and somewhat clasping base. Flowers pale pink to white, in terminal leafy cymes having median flowers sessile on about 1 mm. long pedicels and having each lateral flower on similar pedicel at end of long leafy internode. Calyx 4 - 5 mm. long, divided into 5 or rarely 4 thick subulate unequal lobes the 2 or 3 outer being the longer and keeled. Corolla when closed almost 1 cm. long, with narrow greenish-yellow tube slightly longer than longest sepal and somewhat contracted at throat, with 5 or rarely 4 spreading 3 mm. long and 2 mm. wide rounded oblong-obovate to oblanceolate spreading pale pink to almost white lobes. Stamens adnate to corolla tube for 2 mm. from base; free part of filaments 2.5 mm. long, slender, pale pink to almost white, anthers yellow, ovate, small; pollen yellow. Ovary shiny, light green, 5 mm. long and 1.5 mm. wide, enveloped for more than half its length by light green membrane; stylee slender, united to base of stigmas, 5 mm. long, yellowish; stigmas 0.5 mm. wide, subreniform, greenish, usually first coherent. Capsule narrowly oblong-ovoid, as long as calyx, many-seeded, with valve margins moderately projecting within, stramineous, cartilaginous, ~~recurving~~ recurving to liberate numerous seeds. Seeds dark brown to black, minutely pitted.

TYPE LOCALITY: "In pratis ins. Sandwichense 'Oahu'".

LOCAL RANGE: Rare but, where found, sometimes gregarious. It grows, within reach of the salt air blown from the ocean, on dry coastal plains and in the sand-filled crevices of ancient, exposed reefs. It is native to probably all the larger islands as, for example, at Laie Point, Haleiwa and Moku-leia, on Oahu; Moomomi and (according to Hillebrand) Waikolu, on Molokai; and on the dunes of central Maui. The young plant greatly resembles an immature specimen of Anagallis arvensis L. This may cause confusion as both species are frequently found growing together.

EXTRA RANGE: Not known elsewhere.

(Illustrated on following page)

\* The spelling of the specific name ~~XXXXXX~~ evidently should be sebaeoides, denoting that the plant resembles a species of Sebaea. *This error in spelling was copied from Otto Degener's publications.*

(Otto Degener, / / '33)

CATHARANTHUS ROSEUS (L.) G. Don, Gen. Sys  
Red Periwinkle

Vinca rosea L. Syst. ed. 10. 944. 1759.

Lochnera rosea Rehb. Consp. 134. 1828.

Amocallis rosea Small, Fl. SE. U. S. 936. 1903.

Catharanthus roseus (L.) G. Don, Gen. Syst. 4: 95. 1838.

Direct pubescent slightly ridged 2 - 8 dm. high woody herb  
usually branching below. Leaves 2.5 - 9 cm. long and 1.5 - 3.5  
cm. wide, oblong to oblong-oblancoelate, rounded and mucronate at  
apex, narrowed at base into short petiole, puberulent on both  
sides, with light midrib and with minutely dissected stipules.  
Flowers 2 to each node, one being in axil of leaf and other  
one side of it, on 2 mm. long peduncles, pink-purple or white,  
often with reddish eye. Calyx pubescent, about 3 mm. long with  
linear-subulate lobes, Corolla with slender cylindric tube 15 -  
30 mm. long, puberulent without and glabrous within except above  
anthers, with oblique mucronate lobes about two thirds length of  
tube. Stamens with anthers 2 mm. long. Ovary less than 2 mm.

aristulate



long, slightly exceeded by subulate yellow nectar-bearing glands;  
style slightly shorter than corolla-tube. Follicles 2-3 cm.  
long, pubescent. Seed

*at lower elevations on*

T.L.: None given.

L.R.: Commonly cultivated and frequently escaping. It was natural-  
ized on Hawaii and Maui long before 1888. It is now natural-  
ized probably on all islands, where it grows best in arid  
waste places, *only the usually vegetated areas.*

E.R.: Probably native to the West Indies but now widely natural-  
ized in the tropics of both the Old and the New World. Though  
commonly called Madagascar Periwinkle, it is not native to  
that region.



Plat at  
Star Bull

FLORA HAWAIIENSIS

Family: Solanaceae  
GENUS: Solanum  
SPECIES: Nigrum

LA WAG

SOLANACEAE

NIGHTSHADE or POTATO FAMILY

Solanum nigrum L.  
BLACK NIGHTSHADE; POPOLO

- Solanum nigrum L. Sp. Pl. 186. 1753.  
Solanum nodiflorum Dunal, Hist. Sol. 151. 1813.  
Solanum nodiflorum Milleb. Pl. Haw. Isl. 306. 1888.  
Solanum nodiflorum Wilder, Fruits Haw. Isl. 146. 1911.  
Solanum nodiflorum Popé, Wayside Pl. Haw. 313. 1929.  
Solanum nodiflorum St. John & Hosaka, Woods Pl. Haw. 137. 1932.  
Not Solanum nodiflorum Jacq. Ic. Pl. Rar. 2 : 288. t. 326. 1788.  
Solanum nodiflorum var. macrophyllum Dunal in DC. Prodr. 13. 1 : 46. 1852.  
Solanum oleraceum Dunal; Poir. Encycl. Suppl. 3 : 750. 1814.

Usually erect 3 - 8 dm. high branching annual often slightly woody at base, glabrous or somewhat pubescent with simple hairs on leaves and simple hairs having swollen base and upcurved tip along usually 3 longitudinal ridges on branches. Leaves ovate-lanceolate, 3 - 10 cm. long, thin, glaucous, more or less acute at apex, entire or with a few rounded sinuate teeth or lobes in the lower half, with rounded or contracted usually inequilateral base shortly decurrent into margined 5 - 30 mm. long petiole. Flowers about 7 mm. wide, 3 - 10 on 5 mm. long drooping pedicels umbellately arranged on spreading about 1.5 cm. long peduncle that appears to arise from near middle of an internode due to its union for that distance with the main stem. Calyx campanulate, with oblong obtuse lobes 1 mm. long, persistent and recurved in fruit. Corolla rotate, with 4.5 mm. long narrow-salvifoliate lobes whitish yellowish toward base. Stamens 5, about 2.5 mm. long; filaments half as long as the bright yellow obtuse anthers dehiscing by pore-like slit on inner side near apex. Ovary glabrous; style puberulent, thickened; stigma capitate, slightly exserted beyond stamens. Fruit a globose purplish-black shiny glabrous berry 6 mm. in diameter bearing numerous seeds and falling from calyx. Seeds flattened-obovate, yellowish, 1.5 mm. long and 1 mm. wide.

TYPE LOCALITY: "Habitat in Orbis totius cultis."

LOCAL RANGE: Not uncommon throughout the Islands in dry pastures and especially abandoned pineapple fields, cultivated ground and open forests from sea level to an altitude of about 5,000 feet. The plant described above, as its ~~XXXXXXXXXX~~ many Hawaiian uses would indicate, is most probably native. In the early days the berries were eaten raw, while the leaves and tender stems were eaten cooked as a substitute for poi. The juice of the leaves mixed with salt was used as a remedy for eye diseases, and the root was chewed as a ~~XXXXXX~~ cure for colds. Besides this common plant, a purple-flowered form with repand-sinuate leaves grows here and there along the road between Glenwood and Kilauea Crater, Hawaii. It is probably of accidental introduction.

EXTRA RANGE: Found in many varieties and forms practically throughout temperate and tropical regions, in some of which it is eaten as a potherb while in others it is avoided and considered dangerously poisonous. Until a monographic study has been made of this complex group, the above determination for the Hawaiian plants must suffice.

(Illustrated on following page)

(Otto Degener, / / '33)

LEONURUS SIBIRICUS L.  
Siberian Motherwort.

Leonurus sibiricus L. Sp. Pl. 584. 1753.

Hoary-puberulent to glabrate biennial 5 - 15 dm. high. Leaves 3.5 - 12 cm. long, 3-parted with 2- to 5-cleft divisions or deeply 3- to 7-cleft and incised, contracted at base into 1.5 - 4 cm. long petiole; uppermost leaves usually becoming sessile and linear. Calyx glabrous or minutely puberulent, ~~XXXXXXXXXXXXXXXXXXXX~~ 5 - 7 mm. long including its rigid spiny teeth. Corolla about 1 cm. long, red to purplish, glabrous within, puberulent without except for upper lip which is densely hirsute without. Stamens with anther-sacs divergent. Style about 6 mm. long, filiform. Nutlets brown, 2 mm. long, truncate and somewhat margined at top.

T.L.: "Habitat in Siberia, China."

L.R.: An introduced weed of waste places; <sup>Asia.</sup> Collected first on Maui in 1910, on Oahu in 1915, and on Hawaii in 1926. Probably found on some of the other islands as well. It was not ob-

(cf. Halawa in 1933)

with <sup>fruit</sup> square <sup>retains</sup> hairs at the end

served on Molokai, in 1928.

E.R.: Native of Asia but extensively naturalized throughout warmer countries.

LEONURUS L. SE. PL. 584. 1753.

<sup>small</sup>  
Tall erect herbs. Leaves palmately cleft or parted. Flowers white to pink or purplish, in dense whorls in the axils of the upper leaves. Calyx tubular, 5-nerved and with 5 subequal spiny teeth. Corolla-tube 2-lipped; upper lip erect but arched, pubescent, oblong, entire; lower lip 3-lobed with middle lobe larger than the ~~oblong~~ oblong lateral ones. Stamens 4, exserted beyond corolla-tube, with 2-celled anthers having parallel or divergent sacs. Style-branches equal. Calyx open in fruit. Nutlets almost smooth, oblong, acutely 3-angled, truncate at top. (Name derived from the Greek for lion's tail, because of the fancied resemblance of the leafless plant with its closely set upper whorls of flowers to a lion's tail with its terminal brush.) Type species: Leonurus cardiaca L.

About 10 species, native to chiefly extratropical regions of Eurasia.

O.D. 5/1/27.



FLORA HAWAIIENSIS

FAMILY: 305

GENUS : Pteralyxia

APOCYNACEAE

DOGBANE FAMILY

PTERALYXIA K. Schum. in Engl. & Prantl, Natuerl. Pflanzenfam. 4. 2: 151. 1895.  
large

Glabrous trees with copious milky juice and thick gray branches bearing large lenticels on the young branches and with the buds somewhat varnished by brownish secretion arising from single large scale-like concave gland borne in axil of leaf. Leaves alternate, estipulate, coriaceous, entire or nearly so, with veins perpendicular to the midrib and connected by intramarginal vein. Flowers small, waxy, yellowish, in terminal contracted cymes. Calyx with 5 or very rarely 4 almost free ~~xxx~~ imbricate lobes, glandless. Corolla tubular, with constricted throat scaleless, with 5 short obtuse sinistorse lobes. Stamens included below throat of corolla; filaments free, very short; anthers ovate-lanceolate, free, with connective not appendaged. Ovary superior, of 2 ~~xx~~ distinct carpels united at apex only and bearing 2 pendulous ovules in each cell; disk none; styles connate, filiform; stigmas connate, subglobose, thickened, subcapitate. Fruit consisting of 2 diverging fleshy obliquely obovoid orange to red shiny drupes or one drupe usually aborted; endocarp woody or somewhat fibrous, boat-shaped, with 2 prominent more or less winged and solid or fenestrated lateral angles and on flattish side with 2 or rarely 3 solid or fenestrated ridges or high crests, containing single seed. Seeds almost as large as endocarp, with cylindric embryo surrounded by horny yellowish ruminated endosperm, neither winged nor tufted with hair.

NAME derived from the Greek for winged and from Alyxia, in reference to the endocarp which resembles that of the genus Alyxia excepting for the presence of prominent ridges or wings.

TYPE SPECIES: Vallesia macrocarpa Hilleb.

A peculiar Hawaiian genus consisting of only a few species.

over

NEW ILLUSTRATED FLORA OF THE HAWAIIAN ISLANDS

FAMILY: 305

GENUS: Pteralyxia

*Back*

APOCYNACEAE  
DOGBANE FAMILY

KEY TO SPECIES OF PTERALYXIA:

Endocarp with more or less fibrous fenestrated very prominent wings;  
leaves brittle-coriaceous, with involute margins, oblanceolate-  
elliptic ----- P. *caumiana* *black*

Endocarp with woody obscure wings; leaves coriaceous, almost flat, obovate  
to subtriangular ----- P. *macrocarpa* *black*

*over*

## FLORA HAWAIIENSIS

FAMILY: 305

GENUS: *Pteralyxia*SPECIES: *Caumiana*APOCYNACEAE  
DOGBANE FAMILYPTERALYXIA CAUMIANA Degener  
CAUMS PTERALYXIA; KAULU

*Pteralyxia Caumiana* sp. nov. Arbor 15 m. alta; foliis oblanceolatis-  
 ellipticis; stipulis ± glabris; pseudocarpiis with 4 fenestrated  
 wings often 7-15 mm. high.

Tall tree up to ~~18 meters~~ about 15 meters high with smoothish gray bark and very few prominently lenticled branches which are almost 1 cm. thick at tip but ~~thinner a few centimeters below~~. Leaves dark green and very shiny above, yellowish and less shiny below, thick, almost brittle-coriaceous, with yellowish midrib very thick beneath and deeply impressed above, with parallel irregular veins very conspicuous and yellowish and greatly thickened beneath but conspicuously impressed above, oblanceolate-elliptic, with margin subentire and sharply involute, apex rounded but appearing less so because of involute lateral margins, base cuneate, with blade 15 to rarely 25 cm. long and 6-9 cm. wide, with thick sulcate 2-4.5 cm. long yellowish petiole. Flowers ~~about~~ numerous, on jointed thick up to 5 mm. long pedicels in contracted cymes borne on peduncle about 2 cm. long. Ovary thick, with obtuse ciliolate lobes less than 1 cm. long. Corolla thick, greenish-yellow, with tube 7-9 mm. long and 2-3.5 mm. wide and with obtuse lobes 2 mm. long. Stamens adnate to corolla tube for about 6 mm. from its base; filaments glabrous or nearly so, one-third as long as the narrow acute almost 1 mm. long anthers. Ovaries ovoid-conical, almost 2 mm. long; style 4 mm. long; stigma subcapitate.

Carpel ellipsoidal to obovoid, often slightly obcompressed, on thickened pedicel, about 5 cm. long and 3.5 cm. wide, shiny, obtuse at apex and acute at base, hard and brown when unripe, bright orange to red and fleshy when ripe; carpels more often single with aborted red 3 mm. long carpel at base or more rarely with second carpel of equal size. Endocarp fibrous-woody, with wall less than 1 mm. thick, stramineous, with flatter side about 3 cm. wide, with rounded surface about 10 mm. high, with lateral angles flat or much upcurved to form wings usually 10 mm. high, with ~~thickened~~ flatter side having 2 wings 4-15 mm. apart and 7-15 mm. high and most prominent on outer half, wings prominently fenestrated; endocarp within obscurely ridged by pressure of ruminated endosperm, with about 1 cm. wide projection from central part of flat side penetrating seed.

TYPE LOCALITY: Along Pupukea-Kahuku Trail on Pupukea side, Oahu.  
 LOCAL RANGE: About a dozen of these tall trees are known to the writer. They grow scattered in the dense forest on the extreme northern end of Oahu. Several trees may be seen along the Pupukea-Kahuku Trail. ~~They were still~~  
~~thinning~~ In March, when the trees were beginning to flower, they were still bearing ripening and ripe fruit. The seeds of even the unripe fruit are eaten by the introduced rat. This fact will undoubtedly speed this interesting tree to extinction.  
 EXTRA RANGE: Not known elsewhere.  
 Specimens: *Sagami* 4398 (illustrated on following page)

PTERALYXIA CAUMIANA Degener  
CAUMS PTERALYXIA; KAUAI

Pteralyxia Caumiana sp. nov.

*with smoothish gray bark and*  
Tall tree up to 15 meters high with very few thick *branches with prominent lenticels and*  
*towards the ends and* branches.

Leaves dark green and very shiny above, yellowish and less shiny below, thick, almost brittle-coriaceous, with yellowish midrib very thick beneath and deeply impressed above, with parallel irregular veins very conspicuous and yellowish and greatly thickened beneath but conspicuously impressed above, with margin subentire and sharply involute, apex rounded, base

shape *oblanccolat-elliptic* cm. long and with, with petiole  
*with involute margins*

anthers ovate-lanceolate

Ovary of