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

Preliminary Pages to a

FLORA HAWAIIENSIS or ILLUSTRATED FLORA OF THE HAWAIIAN ISLANDS

Otto Degener

Schedule III F

OFFICIAL RECEIPT

Territory of Hawaii

UNIVERSITY OF HAWAII

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UNIVERSITY OF HAWAII,

By E. K. Thomas

Preliminary Pages to a
FLORA HAWAIIENSIS or ILLUSTRATED FLORA OF THE HAWAIIAN ISLANDS
Otto Degener

The present work has a three-fold purpose: First, to stimulate to greater effort students taking the course in Systematic Botany at the University of Hawaii, Second, to provide them with a description of at least a part of the local flora. Third, to constitute a rough draft of a complete FLORA HAWAIIENSIS, or ILLUSTRATED FLORA OF HAWAII.

In 1922 the writer entered the University of Hawaii as Graduate Student with the purpose of becoming acquainted with the flora of these islands. Finding no comprehensive manual to help him in his studies, he collected as many plants as time permitted and identified them according to the literature then available. Later he took his small herbarium to the New York Botanical Garden where he continued his studies under the able guidance of Director Nathaniel Lord Britton, Dr. Per Axel Rydberg, Dr. John Hendley Barnhart, and other members of the staff. This, therefore, will be but a continuation of the writer's plan aided, from now on, by the observations and collections of his friends and especially his students during their course of study.

Much contained in the following descriptions will be little more than a compilation from the labors of previous writers. This will be true especially in regard to Hawaiian plants now extinct and of which no herbarium specimens are at hand. It is hoped, however, that in a few years the gradual accumulation of new observations may widen the range of usefulness of these descriptive notes not only for students taking courses in the Department of Botany but for professional botanists as well.

Three separate paragraphs will follow the technical description of these species. After the caption T.L., the type locality of the species will be quoted or described. After L.R., the local range and the type of habitat of the plant will be described as far as the larger islands of the group are involved. After E.R., on the other hand, the extra range, or range outside the Hawaiian Islands, will be given.

In order to conserve space, no enumeration will be made of the specimens studied. Instead, most of the herbarium specimens consulted will bear on their sheets the note that they have been examined for the FLORA HAWAIIENSIS. Those plants will be found deposited chiefly in the herbaria of the Bishop Museum, of the University of Hawaii, and of the New York Botanical Garden.

This series of preliminary pages on the local flora will be bound in a loose-leaf notebook so that additional descriptions of plants may be intercalated later according to taxonomic sequence rather than chronological order of publication.

Department of Botany
University of Hawaii
September 1926.

O.D. 12/20/26.

SAGITTARIA L. Sp. Pl. 993. 1753.

Marsh or aquatic mostly perennial stoloniferous or tuber-bearing herbs with milky juice. Leaves with sagittate or lanceolate blades or especially the earliest bladeless, the bases of the long petioles sheathing the scapes at base. Scapes bearing membranous bracted, monoecious, or more rarely dioecious, flowers arranged in verticels of threes with the upper staminate and the lower, which sometimes bear imperfect stamens, pistillate. Sepals loosely spreading or reflexed in fruit. Petals white. Stamens numerous and inserted on the convex to globose receptacle. Carpels distinct but numerous and crowded in a spherical or somewhat triangular depressed head on the receptacle, and in fruit becoming compressed achenes, often membranaceous winged. (Name from the Latin sagitta, an arrow, in reference to the prevalent shape of the leaves of many species.) Type species: Sagittaria sagittifolia L.

About 40 species, chiefly of tropical and temperate regions.

O.D. 12/20/26.

CALADIUM Vent. Mag. Encyc. 6 . 4 : 463. 1801.
Colocasia Schott. Melet. 1 : 18. 1832.
Not Colocasia Link Diss. Bot. Sverin 77. 1795.

Coarse perennial herbs usually with starchy tuberous base from which commonly a crown of leaves is produced. Leaves with stout fleshy petioles and ovate-cordate to sagittate-cordate blades peltately petioled near base. Spathes borne at the same time as the leaves, stoutly peduncled, erect, with tube constricted at the mouth and persisting but with elongated limb deciduous. Spadix included in the spathe, the staminate flowers above the pistillate and separated from them by flat neutral flowers. Stamens 3 - 5. Ovary ovoid and 1-celled but containing many orthotropous ovules; stigma sessile or subsessile and depressed-capitate. Berries small, obconic to oblong, each containing a sulcate seed with much endosperm. (Derived from kale, the East Indian name for the edible rhizome of some species.) Type species: Arum esculentum L.

About 7 species, chiefly native to tropical Asia.

O.D. 12/20/26.

LEMNACEAE Dumort.
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 disc-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.

O.D. 12/20/26.

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.

SPIRODELA Schleid. in Linnaea 13 : 391. 1839.

Thallus disc-shaped, 5- to 15-nerved, and with several rootlets each one containing a single fibrovascular bundle. The ovary produces 2 anatropous ovules. (Name from the Greek in allusion to the conspicuous fibrovascular bundles in the rootlets.) Type species : Spirodela polyrhiza (L.) Schleid.

Only 2 species known.

O.D. 12/20/26.

LEMNA L. Sp. Pl. 970. 1753.

Thallus disc-shaped, usually with one main nerve and often 2 - 4 secondary nerves, and provided with a single rootlet lacking fibro-vascular bundle. The ovary produces 1 - 7 orthotropous, amphitropous or anatropous ovules. (Name from the Greek probably in allusion to marsh where the plants are often found.) Type species: Lemna trisulca L.

About 8 species of temperate and tropical regions.

O.D. 12/20/2[illegible]

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.

O.D. 12/20/26.

TRADESCANTIA (Rupp.) L. Sp. Pl. 288. 1753.

Erect or procumbent, branching, more or less succulent perennial herbs, frequently rooting at the nodes. Leaves short-petioled, sometimes appearing sessile because of basal sheaths. Flowers regular and ephemeral, borne in terminal or terminal and axillary umbel-like cymes subtended by leaf-like or scarious bracts. Sepals 3, herbaceous, all alike. Petals 3, sessile, all alike. Stamens 6, all alike or those opposite the petals slightly shorter; usually lower part of filament bearded. Capsule 3-celled and loculicidally dehiscent. (Name dedicated to Tradescant, gardener to Charles I of England.) Type Species: Tradescantia virginiana L.

About 35 species, all native to temperate and tropical America but many now extensively naturalized in other countries.

O.D. 12/20/26.

COMMELINA (Plum.) L. Sp. Pl. 40. 1753.

Erect or procumbent, branching, more or less succulent herbs, frequently rooting at the nodes. Leaves short-petioled, sometimes appearing sessile because of basal sheaths. Flowers irregular, usually blue and ephemeral, and more or less protected by a spathe. The two lateral sepals usually slightly united, the third free and smaller. The two lateral petals clawed, the third smaller. Usually 3 of the 6 stamens perfect, one of these incurved and bearing commonly a larger anther. Sterile stamens smaller and bearing usually conspicuous cross-shaped anthers. Capsule 3-celled with 1 or 2 seeds in each cavity. (Name dedicated to the Dutch botanist Commelin.) Type species: Commelina communis L.

About 100 species growing in temperate and tropical regions throughout the world.

O.D. 12/20/26.

CYPERUS (Tourn.) L. Sp. Pl. 44. 1753.

Annual or perennial sedges with mostly triangular and simple culms which are usually leafy at the base, and with 1 or more leaves at the summit forming an involucre to the simple or compound, umbellate or capitate inflorescence. Rays of the inflorescence sheathed at the base, usually very unequal. One or more heads or spikes usually sessile. Spikelets many- or few-flowered, flat or subterete, the scales falling away from the rachis upon maturing, or the scales persistent and the entire spikelets with the scales attached falling away from the axis of the head or spike. Scales concave, all flower-bearing or the lower empty, 2-ranked. Flowers perfect. Perianth none. Stamens 1 - 3. Styles 2- to 3-cleft and finally deciduous from the summit of the lenticular or triangular achene. (The ancient Greek name.) Type species: Cyperus esculentus L.

Over 500 species, common in all but cold countries.

O.D. 12/20/26.

DIOSCOREACEAE Lindl.
YAM FAMILY.

Perennial herbaceous or somewhat woody, or very rarely shrubby, usually climbinb vines frequently with tubers arising from subterranean stems. Leaves alternate or opposite, petiolate, usually cordate, entire or palmately 3- to 9-lobed or -foliolate, and digitately 3- to 13-nerved and reticulately veined. Flowers 6-merous, usually dioecious or monoecious, perfect, small, sessile or pedicillate, usually in spikes or racemes which are commonly axillary or by the abortion of the leaves paniculate. Staminate flowers with explanate, campanulate or rarely tubular perianth of 6 subaequal lobes; stamens either all 6 perfect, or 3 perfect and 3 reduced to staminodia, or only 3 perfect ones present, free at base or united; ovary rudimentary or wanting. Pistillate flowers with more or less 6-parted persistent perianth; staminodia minute, 6, 3, or wanting; ovary inferior, linear to oblong, 3-angled and trilocular with usually 2 hanging and superposed ovules in each loculus, and with 3 very short distinct or connate styles ending in 3 short entire or bifid stigmas. Fruit capsular, 3-valved or

O.D. 12/20/26.

DIOSCOREACEAE Lindl.
YAM FAMILY. (Continued)

rarely by abortion becoming monocarpic, usually capsular or samaroid, and containing compressed or globose seeds with fleshy or cartilaginous endosperm enclosing the small embryo.

9 genera known consisting of over 500 species; found almost solely in tropical countries.

O.D. 12/20/26.

DIOSCOREA (Plum.) L. Sp. Pl. 1032. 1753.

Twining vines with stems occasionally armed with prickles at base, and usually with large edible tuberous rootstocks. Leaves alternate, opposite or whorled and often bearing axillary bulbs. Flowers in axillary spikes, racemes or panicles; dioecious or monoecious with staminate and pistillate flowers usually on different parts of plant. Staminate flowers with rudimentary or no pistil, and with 6 stamens of which the 3 inner are often sterile or even entirely lacking. Capsule loculicidally 3-valved by splitting through the winged angles. Seeds flat and membranaceously winged. (Named in honor of Dioscorides, the famous Greek physician and naturalist of the first and second century.) Type species: Dioscorea sativa L.

From 400 - 500 species, all but a few found in tropical regions. The pistillate plants of many are still unknown.

O.D. 12/20/26.

ATRIPLEX (Tourn.) L. Sp. Pl. 1052. 1753.

Annual or perennial, usually mealy or scurfy, herbs or low shrubs. Leaves alternate or opposite, sessile or petiolate. Flowers small and greenish, monoecious or dioecious, solitary or usually glomerate with the glomerules axillary, terminal, or in simple or paniculate spikes. Staminate flowers bractless; the calyx 3- to 5-parted into obovate or oblong, obtuse segments; stamens 3 to 5 with filaments separate or united at base; a rudimentary ovary sometimes present. Pistillate flowers subtended by 2 bractlets which are free or usually more or less united, and which enlarge in fruit; perianth usually none; stigmas 2, subulate or filiform, and connate at base; ovule oblique or erect on a short funicle, or inverted and subtended from the elongate funicle. Utricle completely or partially enclosed by the fruiting bactlets. Seed erect, inverted, or rarely horizontal, containing an annular embryo surrounding the mealy endosperm. (Possibly the ancient Latin name.) Type species: Atriplex hortensis L.

About 150 species of wide geographic distribution.

O.D. 12/20/26.

ATRIPLEX semibaccata R. Br. Prodr. 406. 1810.

Atriplex semibaccata R. Br. Prodr. 406. 1810.
Atriplex denticulata Moq. in DC. Prodr. 13. 2 : 97. 1849.
Atriplex flagillaris Wooton & Standley in Contr. U. S. Nat. Herb. 16 : 119. 1913.

Prostrate, whitish and sparsely scurfy to glabrate, much branched perennial with suffrutescent base and slender terete branches 3 - 10 dm. long. Leaves alternate, short-petioled and with oblong to obovate-oblong blades 1 - 3.5 cm. long and 2 - 9 mm. wide, obtuse or acute at apex and cuneate to attenuate at base, irregularly and remotely repand-dentate or more commonly entire. Flowers monoecious, solitary or in small clusters in the axils, the staminate clusters being usually in terminal glomerules. Fruiting bracts sessile, rhombic, about 5 mm. long, united at base, compressed, the margins denticulate or entire and the sides strongly nerved, and finally becoming red and somewhat fleshy at maturity. Seed 2 mm. long and dark-brown.

T.L.: Vicinity of Port Jackson, Australia.

O.D. 12/20/26.

ATRIPLEX semibaccata R. Br. Prodr. 406. 1810.
(Continued)

L.R.: First collected in 1923 on the arid plain near Makapuu Point, Oahu, where it is now naturalized and extremely common.
E.R.: Native of Australia but now naturalized in southern California, Arizona, and southern New Mexico.

O.D. 12/20/26.

CENTROSTACHYS Wall. in Roxb. Fl. Ind. 2 : 497. 1824. **

Herbaceous or shrubby annuals or perennials with glabrous or pubescent, opposite, petiolate, entire leaves. Inflorescence usually a slender, elongated terminal spike bearing small, greenish or scarious, sessile, bracteate and bibracteolate flowers that deflex in age. Perianth 4- or 5-parted, the segments subequal, narrow to acuminate or aristate, glabrous or pubescent, nerved, and indurate in age. Stamens 5, rarely 2 or 4, with subulate filaments united at base. Pseudostaminodia alternating with stamens, quadrate, erose, lacerate, or entire, often cristate dorsally. Ovary 1-celled, oblong, subcompressed, glabrous, with filiform style and capitate stigma. Utricle thin-walled, indehiscent, included in the perianth. Seed with annular embryo, farinaceous endosperm, and erect radicle. (Name from the Greek, meaning prickly or "pungent inflorescence.") Type species: Centrostachys aquatica Wall.

About 15 species of tropical and subtropical regions.

** For reason for using see P.C.Standley on "The Generic Name Achyranthes" in Journ.Wash.Acad.Sc. 5 : 72. 1915.

O.D. 12/20/26.

CENTROSTACHYS INDICA (L.) Standley
Blunt-leaved Centrostachys

Achyranthes aspera var. indica L. Sp. Pl. 204. 1753.
Achyranthes indica Mill. Gard. Dict. ed. 8. no. 2. 1768.
Achyranthes aspera Hbd. Fl. Haw. Isls. 370. 1888.
Not Achyranthes aspera L. Sp. Pl. 204. 1753.
Centrostachys indica Standley in Journ. Wash. Acad. Sci. 5 : 75. 1915.

Herbaceous, erect or ascending, usually much branched annual 5 - 20 dm. high, with commonly spreading or ascending, terete or obscurely quadrangular, cinereous branches. Leaves thin, pubescent on both surfaces or glabrate above; petioles 2 - 10 mm. long; blades rhombic-orbicular to obovate-orbicular, 2 - 7.5 cm. long, with rounded and usually abruptly acute apex and rounded to cuneate base. Spikes 5 - 30 cm. long, about 6 mm. thick, with pilose or villous rhachis bearing greenish flowers about 4 mm. long, densely arranged near top and scattered frequently in pairs toward base of spike. Bracts ovate to orbicular, the midrib extending into a rigid spine at least as long as the body of the bract. Bractlets ovate, long-aristate and shorter than the deflexed calyx. Sepals

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CENTROSTACHYS INDICA (L.) Standley (Continued)

lanceolate, acuminate, somewhat scarious but not nerved. Pseudostaminodia subquadrilateral, with apex erose-dentate and dorsal surface produced into a deeply laciniate crest. Style slender, and longer than stamens. Utricle oblong, glabrous, truncate above and containing a single oblong, 1.5 - 2 mm. long, dull fuscus seed.

T.L.: "Habitat in Sicilia, Zeylona, Jamaica."
L.R.: Accidentally introduced into the Hawaiian Islands previous to 1888. A weed of arid fields and waste places.
E.R.: Native home not definitely known. Now a weed of almost all tropical and subtropical regions.

O.D. 12/20/26.

BATIDACEAE Dammer.
Saltworth Family.

Low fleshy much-branched maritime shrubs. Leaves opposite, semiterete, linear or club-shaped, entire, sessile, estipulate. Flowers dioecious, small, in axillary spikes. Staminate spikes with many persistent imbricated scales, each subtending a flower with 2-lobed calyx and 4 or 5 stamens each with stout filaments alternating with staminodia, and introrse anthers. Pistillate spikes with 4 - 12 deciduous scales, each subtending a flower with calyx, corolla, stamens and staminodia wanting but with 4-celled sessile ovary and sessile somewhat 2-lobed stigma. Ovule erect, anatropous, one in each cavity. Pistillate inflorescence becoming a fleshy aggregate fruit with about 4 club-shaped seeds having membranous testa and large cotyledons but no endosperm.

Only the following genus exists.

O.D. 12/20/26.

BATIS (P.Browne) L. Syst. ed. 10, 1289 & 1380. 1759.

Characters of the family. (Name from the Greek because of the fancied resemblance of the fruit to a blackberry.) A monotypic genus of which the type species is Batis maritima L.

12. O.D. 12/20/26.

BATIS MARITIMA L.
Saltwort.

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

A glabrous pale-green, strong-scented shrub usually less than 5 dm. high, with rather stout spreading, prostrate or ascending stems and nearly erect, angular branches. Leaves 1 - 2.5 cm. long, curved, somewhat acute. Spikes avoid or oblong, 5 - 10 mm. long, the staminate sessile and longer than the short-peduncled pistillate. Stamens exserted and longer than the staminodia. Fruit drooping, 1 - 2 cm. long, often bicornute at the tip because of the abortion of the 2 upper ovaries.

T.L.: Probably Jamaica.
L.R.: First discovered in the islands in 1859 near Honolulu, Oahu. By 1926 it had become naturalized on almost all islands in saline marshes and drying ground near the coast.
E.R.: Found along the coast from North Carolina and California to northern South America: also in the West Indies.

O.D. 12/20/26.

PHYTOLACCA (Tourn.) L. Sp. Pl. 441. 1753.

Usually tall perennial herbs with subterete to angular branches. Leaves alternate, petiolate or rarely almost sessile, without stipules, entire, and ovate, elliptic to lanceolate, with acuminate to acute apex. Inflorescence usually a terminal raceme which becomes lateral and opposite a leaf by the further growth of the stem. Flowers perfect or dioecious, on pedicels bracted at base and often 1- to 3-bracted above. Calyx of 5 persistent, rounded, petal-like sepals. Stamens 5 - 33, inserted at the base of the calyx often in 2 series. Ovary of 5 - 20, verticillate, distinct or somewhat united carpels. Fruit a depressed-globose 5- to 20-celled fleshy berry, with 1 seed for each cell. Seeds erect, compressed, subreniform, black, with crustaceous testa and annular embryo in mealy endosperm. (Name derived from the Greek for plant and from the French for the pigment lake, because of the crimson juice of the berries which was formerly used for coloring port-wine, etc.) Type species: Phytolacca americana L.

About 25 species, chiefly found in the tropics and subtropics of America; a few in Africa, eastern Asia and Asia Minor.

O.D. 12/20/26.

PHYTOLACCA BRACHYSTACHYS Moq.
Hawaiian Pokeweed

Phytolacca abyssinica Hook. & Arn. Bot. Beech. Voy. 94. 1832.
Not Phytolacca abyssinica Hoffm. in Comm. Gotting. 12 : 27. 1796.
Phytolacca brachystachys Moq. in DC. Prodr. 13 . 2 : 31. 1849.
Phytolacca bogotensis Mann. in Proc. Am. Acad. 7 : 198. 1867.
Not Phytolacca bogotensis H.B.K. Nov. Gen. et Sp. 2 : 183. 1817.

Erect, fleshy, 8 - 14 dm. high herb with angular, minutely dotted branches which are green when young and somewhat brownish-yellow when old. Leaves with oblong-elliptic to ovate blades 6 - 15 cm. long, entire or somewhat undulate, membranaceous, covered with very minute scabrous whitish hairs especially on underside, acuminate or acute at apex and decurrent at base into the 10 - 25 mm. long, channeled petiole. Inflorescence in terminal, suberect, 5 - 15 cm. long, many-flowered, angular racemes. Flowers perfect, on bracted pedicels 3 - 5 mm. long having 1 - 2 more bracts near the flower. Sepals oblong-elliptic, concave, about 3.5 mm. long and 1.5 mm. wide, membranaceous, covered with

O.D. 12/20/26.

PHYTOLACCA BRACHYSTACHYS Moq. (Continued)
Hawaiian Pokeweed

minute whitish dots. Stamens 5 - 10, with filiform filaments and deeply parted anthers. Ovary subglobose, 5- to 7-carpellate, each carpel with a filiform style which is stigmatose on the inner surface. Fruit a dark purple 5- to 7-celled berry, each cell containing a single subreniform seed about 3 mm long.

T.L.: "In ins. Oahu Sandwicensium." Moq.
L.R.: On all islands in open forests at the lower elevations.
E.R.: Endemic.

O.D. 12/20/26.

PISONIA (Plum.) L. Sp. Pl. 1026. 1753.

Glabrous or pubescent trees, shrubs, or even woody vines, some species armed with spines. Leaves mostly opposite, with entire blades, and usually petioled. Flowers dioecious, small, reddish- or yellowish-green, 2- to 3-bracteolate, and in sessile or pedunculate cymes. Staminate perianth obconic-campanulate and with limb bearing 5 short teeth. Stamens 5 to 30 but usually 6 - 10, with exserted anthers and unequal filiform filaments which are connate below to form a tube or ring around the rudimentary ovary. Pistillate perianth tubular and with limb bearing 5 short teeth and usually staminodia. Ovary sessile and attenuate to a slender short-exserted style with a fringed capitate stigma. Anthocarp coriaceous, oblong or clavate, terete, costate or 5-angled, and with viscid glands. Utricle elongate, coriaceous or membranaceous. Seed with a hyaline testa adherent to the pericarp. Embryo straight. (Name in memory of William Piso, a physician of Leyden, who travelled in Brazil and died in 1648.) Type species: Pisonia aculeata L.

About 30 species, many of them extremely variable, of tropical and subtropical countries.

12/20/26. O.D.

PORTULACA (Tourn.) L. Sp. Pl. 445. 1753.

Diffuse or ascending, glabrous or pubescent fleshy herbs with mostly scattered leaves, the uppermost usually forming an involucre around the whitish, yellow or purplish flowers. Calyx 2-cleft, the tube partly cohering with the ovary. Petals 4 - 6 but usually 5, fugacious, inserted with the 7 - 20 or more stamens on the calyx. Style short and usually deeply 3- to 9-cleft or parted. Capsule 1-celled, many-seeded, globular, membranous, dehiscent by a lid which also bears the upper part of the calyx. (Name from the Latin, meaning little door, in allusion to the purging qualitiesof some species.) Type Species: Portulaca oleracea L.

About 25 species of the tropics and subtropics chiefly native to America and Australia.

O.D. 12/20/26.

PORTULACA OLERACEA L.
Common Purslane.

Portulaca oleracea L. Sp. Pl. 445. 1753.

Prostrate smooth annual with branches 10 - 25 cm. long from a deep central root. Leaves alternate and clustered at the ends of the branches, obovate to cuneate, 5 - 20 mm. long, fleshy, with rounded apex. Flower-bud flat and acute, solitary and sessile, opening only on sunny mornings. Sepals broad, keeled and somewhat acute. Petals pale yellow, scarcely exceeding the sepals. Stamens 7 - 12. Style deeply 4- to 6-parted. Capsule 6 - 10 mm. long, containing finely rugose seeds.

T.L.: "Habitat in Europa australi, India, Ins. Ascensionis, America."
L.R.: Of early introduction. Now common on all islands as a weed of dry sunny situations.
E.R.: Native of Europe and possibly southwestern America. Now a common weed of almost all tropical and temperate countries. Occasionally used as a potherb.

O.D. 12/20/26.

RANUNCULUS (Tourn.) Linn. Sp. Pl. 548. 1753.

Annuals or perennials with alternate stem-leaves varying in form from simple to dissected. Flowers usually solitary; yellow or rarely white. Sepals deciduous, usually 5 but rarely less than 3. petals numerically the same or more, minute or conspicuous. Achenes many, in capitate or spicate arrangement, usually flattened, with smooth or variously sculptured faces and a minute or elongated style. (Name from the Latin for little frog; first used by Pliny to designate these plants because they commonly grow in marshes frequented by frogs.) Type species: Ranunculus auricomus L.

Over 300 species found in the cool mountainous regions of the tropics and throughout temperate and cold regions.

O.D. 12/20/26.

Key to species of RANUNCULUS:

1. Achenes smooth:

   2. Petals about 1 cm. long; plant extensively creeping and rooting at the nodes- R. repens.

   2. Petals smaller:

      3. Plant spreading; leaves trisected- R. mauiensis.

      3. Plant erect; leaves twice trisected- R. hawaiensis.

1. Achenes prickly:

   2. Petals not longer than calyx; sides of achene densely papillose- R. parviflorus.

   2. Petals exceeding the calyx; sides of achene spiny-tuberculate- R. muricatus.

O.D. 12/20/26.

RANUNCULUS REPENS L.
Creeping Buttercup.

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

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

T.L.: "Habitat in Europae cultis."
L.R.: First collected in 1922 in a wet pasture near Glenwood, Hawaii, and subsequently collected on the same island four years later in the cattle ranges between Waimea and Hawi. This weed is fully naturalized and will probably become a permanent element in pastures at medium elevations.
E.R.: Widely scattered throughout temperate regions in many perplexing forms and varieties.
.D. 12/20/26.

RANUNCULUS HAWAIENSIS Gray
Hawaiian Buttercup

Ranunculus hawaiensis Gray in Bot. U.S. Expl. Exped. 15.1:10. 1854.
Ranunculus hawaiiensis Hbd. Fl. Haw. Isls. 6. 1888.

Stout, erect, 2.5 - 10 dm. high herb, densely hirsute with yellow to brown hair, Lower leaves with petioles usually more than 15 cm. long and 3 long-stalked leaflets, each trisected into stalked irregularly cut and toothed cuneate segments. Upper leaves shorter petioled and simpler. Flowers numerous, large, the sepals about half the length of the petals. Heads of fruit globose, with conical torus and with achenes having smooth sides and a surrounding margin ending in a stout curved beak.

T.L.: "Hawaii, Sandwich Islands, in water runs."
L.R.: Hawaii and East Maui, in damp places at higher elevations.
E.R.: Endemic.

O.D. 12/20/26.

RANUNCULUS PARVIFLORUS L.
Small-flowered Buttercup.

Ranunculus parviflorus L. Sp. Pl. Ed. 2, 780. 1763.

Slender and diffuse, 2.5 - 5 dm. high hirsute herb branching from the base. Basal leaves petioled, with reniform to cordate-orbicular, coarsely cut and toothed and frequently 3-cleft blade 4 cm. or less broad. Upper leaves short-petioled to almost sessile and 3- to 5-parted into linear-oblong lobes. Flowers less than 5 mm. wide, the sepals not exceeding the petals in length. Head of fruit globose. Achenes margined, densely papillose with minutely hooked papillae on sides, and tipped with a short recurved beak.

T.L.:
L.R.: An introduced weed first collected in 1911 in the District of Kona, Hawaii, and not yet found elsewhere.
E.R.: Native to Europe but now widely naturalized in America.

O.D. 12/20/26.

RANUNCULUS MURICATUS L.
Spiny-fruited Buttercup or Crowfoot.

Ranunculus muricatus L. Sp. Pl. 555. 1753.

Erect, 2 or more dm. high, often branching from near the base, nearly glabrous. Lower leaves with wide sheathing petioles, the blades reniform to cordate-orbicular, 3-lobed or -cleft and coarsely crenate; the upper leaves shorter petioled or even sessile with 3-lobed cuneate blades. Corolla exceeding the calyx. Maturing achenes flat and conspicuously spiny on both sides, but with a surrounding smooth margin ending in a prominent beak.

T.L.: "Habitat in Europae australis fossis et humentibus."
L.R.: This previously unrecorded plant was collected in 1922 in a pasture between Glenwood and Kilauea, Hawaii. The seed was probably introduced with cattle-feed.
E.R.: Native to Europe and Asia but now widely naturalized in South America, as well as in the south-eastern and south-western United States.

O.D. 12/20/26.

ARGEMONE L. Sp. Pl. 508. 1753.

Erect glaucous annuals or perennials with spiny-toothed leaves, yellow sap, and large showy flowers on short peduncles. Sepals 2 - 3, petals 4 - 6, stamens many, stigmas 3- to 6-radiate and almost sessile. Capsule ellipsoid, prickly, with 4 - 6 many-ovuled placentae, and dehiscing by 3 - 6 valves at the top. (Name from the Greek for an eye disease for which the juice of a plant of the same name was a reputed remedy.) Type species: Argemone mexicane L.

About 15 species variously distributed throughout the warmer and drier regions of America, and one species probably endemic to the Hawaiian Islands.

O.D. 12/20/26.

CLEOME L. Sp. Pl. 671. 1753.

Annual or perennial usually branching herbs or low shrubs with digitately 3- to 7- foliolate or rarely simple leaves. Flowers usually in bracteate racemes. Calyx of 4 frequently persistent sepals united at the base or free. Petals 4, nearly equal in size and more or less clawed. Stamens usually 6, rarely 4, inserted on the receptacle which is slightly prolonged beyond the petal-bases. Ovary on a usually prominent stalk with a gland at base. Capsule a many-seeded silique. (Name of uncertain derivation.) Type species: Cleome gynandra L.

About 75 species partial to warm and tropical regions; found in greatest numbers in South America and in Arabia and Egypt.

O.D. 12/20/26.

FRAGARIA (Tourn.) L. Syst. 147. 1737.

Acaulescent perennials propagating by runners, with trifoliolate long-petioled basal leaves having usually hairy sheathing membranous stipules. Leaflets ovate to cuneate and dentate to serrate except near the base. Inflorescence corymbose on erect scapes with pedicels usually recurving in fruit. Flowers more or less polygamo-dioecious with flat deeply 5-cleft calyx and as many bracteoles as the sinuses, thus appearing 10-cleft. Petals 5, white, obovate and short clawed. Stamens about 20 and in 3 series on the margin of the calycine disc. Carpels many, with lateral style, inserted on a glabrous convex or elongated receptacle which becomes scarlet and pulpy in fruit, thus bearing the minute achenes scattered over its surface. (Name from the Latin plural for strawberry, probably originally given because of the fragrance of the fruit.) Type species: Fragaria vesca L.

About 35 species found chiefly in the temperate regions or at high elevations in the tropics.

O.D. 12/20/26.

Key to species of FRAGARIA:

1. Mature leaves thin and sparingly silky-tomentulose:

   2. Flowers usually over 2 cm. in diameter; achenes set in shallow pits- F. grandiflora.

   2. Flowers usually 1.0 - 1.5 cm. in diameter; achenes superficial- F. vesca.

1. Mature leaves thick and coriaceous; densely villous beneath and strongly reticulate- F. chiloensis.

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FRAGARIA GRANDIFLORA Ehrh.
Pine Strawberry.

Fragaria Ananassa Duchesne Hist. Nat. Frais. 190. 1766. (in part).
Fragaria vesca var. Ananas Ait., Hort. Kew 2 : 212. 1789.
Fragaria grandiflora Ehrh. Beitr. 7 : 25. 1792.

Short rootstock giving off stout runners. Leaves rather firm, very dark green, glabrate and somewhat shining above, paler beneath and silky on the veins. Petioles stout, 1 - 3 dm. long, with spreading hairs. Leaflets 4 - 15 cm. long, broadly obovate, coarsely toothed, usually rounded at the apex, all petiolulate. Inflorescence 1 - 2 dm. high, usually shorter than the leaves, covered with long spreading hairs, the pedicels 2 - 5 cm. long. Flowers over 2 cm. in diameter, with lanceolate bractlets which are about as long as the ovate acuminate sepals. Bractlets and sepals often more than 10. Petals rounded-obovate, over 1 cm. long. Fruit 2 - 3 cm. in diameter, often somewhat acute at apex, sometimes laterally flattened or irregular in outline, and with achenes sunken in shallow pits.

T.L.: Surinam.
L.R.: Commonly cultivated on the islands.
E.R.: Native to South America but now extensively cultivated and occasionally escaping.
O.D. 12/20/26.

FRAGARIA VESCA L.
European Wood Strawberry.

Fragaria Vesca L. Sp. Pl.494. 1753.

Short thick rootstock giving off slender runners. Leaves rather thin, short, silky when young but glabrate on both sides and somewhat glaucous beneath when old. Petioles silky with spreading hairs; leaflets 2 - 10 cm. long, rhombic-obovate, mostly acutish, strongly veined above, coarsely serrate, the terminal leaflet usually short-petiolulate and cuneate at base while the basal leaflets are less or not at all petiolulate but inequalateral at base. Inflorescence often higher than the leaves, several-flowered, usually bearing a leaflet-shaped bract. Peduncle silky with spreading hairs and pedicels with appressed hairs. Flowers 1 - 1.5 cm. in diameter with sepals and bractlets about 6 mm. long, which are ovate to lanceolate, acute, slightly silky. Fruit 1 - 1.5 cm. in diameter, usually subspheric, and with superficial achenes.

T.L.: "Habitat in Europae borealis sterilibus, duris, apricis."
L.R.: Commonly cultivated on the islands with the preceding species, and especially near Glenwood, Hawaii. From the

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FRAGARIA VESCA L.
European Wood Strawberry (Continued)

latter locality it has spread extensively into the Tree-fern Forest in the vicinity of Kilauea.

E.R.: Native of Europe and probably Asia. Extensively cultivated from early times and thus ~~became~~ widely naturalized. This species has given rise to the many horticultural varieties known as "Alpine Strawberries".

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FRAGARIA CHILOENSIS (L.) Duchesne
Chili Strawberry:

Fragaria vesca var. chiloensis L. Sp. Pl. 495. 1753.
Fragaria chiloensis Duchesne, Hist. Nat. Frais. 165. 1766.
Fragaria chilensis Molina, Sagg, Chile. 134. 1782.
Fragaria chilensis Ehrh. according to Hbd. Fl. Haw. Isls. 118. 1888.

Short thick rootstock giving off strong but usually short runners. Leaves numerous, very thick and coriaceous, on upper surface slightly silky when young but becoming perfectly glabrous and brownish when old, on lower surface densely silky-strigose and finely tomentulose. Stipules scarious, brown and 1 - 2 cm. long. Petioles 2 - 20 cm. long, stout, brownish, and rather densely silky with ascending hairs which become spreading in age. Leaflets, the lateral slightly the smaller and with less evident petiolules and with very oblique bases, 2 - 5 cm. long, strongly nerved and reticulate, broadly obovate, truncate, subobcordate or sometimes rounded at the apex and crenate above the middle and with the terminal tooth generally the smallest. Inflorescence usually low and less than 1 dm. high, 1- to few-flowered, and with pinkish, more or less

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FRAGARIA CHILOENSIS (L.) Duchesne
Chili Strawberry (Continued)

scarious bracts. Peduncle and pedicels always densely silky-strigose. Flowers usually 2 - 3.5 cm. in diameter with sepals and bractlets oblong or lanceolate, acute or mucronate, silky-strigose and two-thirds the length of the broadly obovate petals. Fruit 1.5 - 2 cm. in diameter, hemispheric, quite hairy, and with achenes that are set in very shallow pits.

T.L.: Reported as introduced into France from Chili in 1716 by Frezier.
L.R.: At elevations of 4000 to 6000 ft. on Hawaii and East Maui.
E.R.: Native from Alaska to California, from Peru to Patagonia, and also in the Hawaiian Islands. Now extensively cultivated in many horticultural varieties.

O.D. 12/20/26.

RUBUS (Tourn.) L. Sp. Pl. 492. 1753.

Perennial usually pricly herbs, shrubs or trailing vines, leaves with stipules adnate to the petiole and simple, lobed or usually 3- to 7-foliolate blades. Flowers terminal or axillary, solitary, racemose or paniculed, white, pink or sometimes even purple, perfect or sometimes dioecious. Calyx persistent, deeply 5-parted or rarely 3- to 7-parted, always without bractlets. Petals 5, deciduous. Stamens numerous and inserted on the calyx. Carpels usually many, inserted on a convex or elongated spongy or succulent receptacle, ripening into druplets and forming an aggregate usually edible fruit. Each carpel containing 2 pendulous ovules of which 1 aborts, and with slender subterminal style. (The ancient Latin name for the bramble, probably derived from ruber, red, because of the color of the fruit of many species.) Type species: Rubus fruticosus L.

About 250 species, many including innumerable varieties and forms which freely hybridize, found throughout almost all countries except in the hottest regions.

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RUBUS ROSAEFOLIUS Smith
Thimbleberry.

Rubus rosaefolius Smith Pl. Ic. Ined. pl. 60. 1791.
Rubus Commersoni Poir. in Lam. Encyc. 6 : 240. 1804.
Rubus rosaefolius var. coronarius Sims Bot. Mag. pl. 1783. 1816.
Rubus coronarius Sweet Hort. Brit. 144. 1826.
Rubus jamaicensis of Hawaiian authors.

Stems perennial, erect and about 1 m. high or less, often with recurved branches which like the petiole and rachis are pilose to glabrate and sparingly armed with small usually recurved prickles. Leaves pinnately usually 5- or 7-foliolate but sometimes even 3- and 15-foliolate, with petioles commonly 2 - 3 cm. long, and with lateral leaflets sessile or very short-petioluled, lanceolate to ovate, 1.5 - 7 cm. long and 0.5 - 3 cm. broad, doubly serrate, sparingly pilose to glabrate on both sides, and with terminal leaflet similar but long-petioluled and somewhat larger. Flowers solitary or in a few-flowered cyme, and terminal. Sepals lanceolate, long-acuminate, finely tomentose and whitish on inner surface. Petals white, obovate, 1 - 2 cm. long. Fruit thimble-shaped, 2 - 3.5 cm. long, bright red to nearly orange, edible.

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RUBUS ROSAEFOLIUS Smith
Thimbleberry. (Continued)

not on Molokai in 1918

T.L.: "Island of Mauritius."
L.R.: This introduced shrub now grows in the cooler regions of probably all islands. It is very common on Tantalus Mountain in back of Honolulu and in the vicinity of the Treefern Forest near Kilauea where it has already begun to displace the remarkable native flora. It is deplorable that this pest has been allowed to gain a foothold in the National Park at Kilauea. There is still time to control or even to exterminate this plant from a region whose botanical features could be made to emulate its geological spectacle.
E.R.: Native of southern and eastern Asia, but now widely distributed in the tropics.

O.D. 12/20/26.

CHAMAECRISTA Moench Meth. 272. 1794.

Herbs or low shrubs, with evenly pinnate leaves, often sensitive to the touch and mostly persistent strongly nerved stipules. Flowers yellow, in small axillary clusters or solitary in the axils. Galyx-lobes acuminate. Corolla somewhat irregular, three of the five petals smaller than the others. Stamens 5 - 10, all usually with perfect anthers opening by terminal pores. Pods linear, flat, more or less elastically dehiscent and with valves twisting at maturity. (The old scientific name for a certain tree was derived from the Greek words meaning peacock's crest because of a fanciful resemblance of the long stamens to the crest of feathers on the peacock's head. The name Chamaecrista given to this genus means low crest not in allusion to the height of the stamens but because the plants are herbs or low shrubs, not trees. To shorten the name, the Greek word for peacock was omitted.) Type species: Chamaecrista nictitans (L.) Moench.

About 100 species, widely distributed in temperate and tropical regions.

O.D. 12/20/26.

CROTALARIA (Dill.) L. Sp. Pl. 714. 1753.

Herbs, sometimes slightly woody, with unifoliolate or palmately 3-foliolate and in a few species 5- to 7-foliolate leaves. Inflorescence racemose, the flowers yellow or rarely blue to purple. Calyx 5-cleft and scarcely 2-lipped. Standard orbicular or ovate, wings oblong or obovate, and keel curved. Stamens monadelphous but deeply cleft on upper side, with 5 smaller roundish versatile anthers alternating with 5 longer basifixed anthers. Ovary sessile or short-stalked with more or less curved style. Pod oblong to globose, inflated, coriaceous to membranous, 2- to many-seeded, the seeds loose at maturity. (Name from the Greek meaning a rattle, in allusion to the loose seeds usually rattling in the inflated pod.) Type species: Crota laria lotifolia L.

At least 250 species, chiefly of the tropics and subtropics of both hemispheres.

O.D. 12/20/26.

CROTALARIA INCANA L.
Velvety Rattle-Box.

Crotalaria incana L. Sp. Pl. 716. 1753.

Erect annual or biennial 12 dm. or less high, pubescent, and usually branched. Leaves trifoliolate with obovate, oval or obovate-orbicular leaflets 1.5 - 5 cm. long and 1.5 - 3 cm. wide, glabrate above and pubescent below, with obtuse and often mucronulate apex and obtuse or narrowed short-petioluled base on pubescent 2 - 8 cm. long petiole with or without 5 mm. long deciduous subulate stipules. Racemes terminal and lateral, 5 - 20 cm. long with minute bracts and 2-20 yellow or greenish-yellow flowers. Calyx about 1 cm. long with lanceolate, acuminate segments. Corolla 10 - 13 mm. long. Pod oblong, pubescent, pendant, 2 - 3.5 cm. long and about 1 cm. thick.

T.L.: "Habitat in Jamaica & Caribaeis."
L.R.: First collected in the Hawaiian Islands in 1895, when it had already become quite common in the vicinity of Honolulu, Oahu.
E.R.: Native to tropical America but now widely naturalized in Africa, India, and the Philippines.

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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 unifoliolate, 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.

MELIACEAE Vent.
MAHOGANY FAMILY

Trees, or rarely shrubs or even herbs, with hard, colored, odorous wood. Leaves alternate or rarely opposite, without stipules, pinnately or digitately compound, or sometimes unifoliolate or simple. Inflorescence axillary or terminal, paniculate, racemose, spicate, corymbose, or rarely umbelliform. Flowers regular and perfect or rarely polygamo-dioecious. Calyx with usually 4 or 5 lobes or sepals (in Melia 5 or 6). Petals usually 4 or 5 (in Melia 5 or 6), free or occasionally adnate to the lower part of the staminal tube, and sometimes keeled below the middle on the inner face. Stamens usually 8 - 10 with filaments united into an entire to lobed tube or rarely free, and with 2-celled anthers 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, and with elongate style having a disk-like, capitate, simple, or grooved stigma. Fruit a septicidally or loculicidally dehiscing capsule, or a drupe or berry. Seeds solitary or many in each cavity,

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MELIACEAE Vent.
MAHOGANY FAMILY (Continued)

or sometimes imbricate downward in 2 rows in each cavity and samaroid.

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

O.D. 12/20/26.

MELIA L. Sp. Pl. 384. 1753.

Trees. Leaves alternate with pinnate or pinnately compound, often numerous, entire or toothed leaflets. Flowers perfect, in axillary panicles. Sepals 5 or 6. Petals 5 or 6, distinct, contorted, spreading, and imbricated in the bud. Staminal tube cylindric, with 10 or 12 simple or split teeth at apex, and with 10 or 12 anthers inserted within near the apex of the tube. Ovary 3- to 8-celled and with 2 superposed ovules in each cell, style slender, columnar, nearly as long as the tube, and stigma more or less 3- to 6-lobed. Fruit a drupe with hard woody endocarp containing usually 1 or sometimes 2 seeds in each cavity. Seed with crustaceous testa and fleshy or thick endosperm. (Name from the Greek for ash because the leaves of both plants are similar. The name of the ash in turn is derived from the Greek word for honey, because several species of ash possess a sweet sap.) Type species: Melia Azedarach L.

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MELIA AZEDARACH L.
Pride-of-India.

Melia Azedarach L. Sp. Pl. 384. 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 inciso-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.

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MELIA AZEDARACH L.
Pride-of-India. (Continued)

T.L.: "Habitat in Syria."
L.R.: Of early introduction as an ornamental shade tree and now found sparingly as an escape on all islands at the lower elevations.
E.R.: Native of southeastern Asia but widely planted and often spontaneous or even naturalized in most tropical countries.

O.D. 12/20/26.

PHYLLANTHUS L. Sp. Pl. 981. 1753.

Annual or biennial herbs. Leaves alternate, entire, distichous, often so arranged as to appear like the leaflets of a pinnate leaf. Flowers monoecious or dioecious, a staminate and a pistillate one often together in the same axil, calyx usually 5- to 6-parted, imbricated in the bud. Petals none. Stamens usually 3. Ovules 2 in each cavity; styles 3, each of which is usually 2-cleft. Capsule usually depressed, each carpel 2-valved and 2-seeded. (Name from the Latin in allusion to some species in which the flowers are borne on flattened leaf-like branches.) Type species: Phyllanthus Niruri L.

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PHYLLANTHUS NIRURI L.
Gale-of-Wind, Niruri.

Phyllanthus Niruri L. Sp. Pl. 981. 1753.

Slender, usually erect, branched, glabrous annual 1 - 6 dm. high with branchlets distichously arranged. Leaves subsessile, 5 - 15 mm. long, obovate-oblong, obtuse or mucronate at apex, pale beneath, with small subulate stipules. Flowers axillary, whitish to pale green, small, on pedicels that are exceeded by the leaft 1 - 6 times. Calyx with ovate segments which are green with a white margin. Anthers globose, and sessile on the staminal column. Styles short and included. Capsule depressed-globose to globose, smooth, 1.5 to 2 mm. in diameter, containing seeds evenly striated on the back.

T.L.: "Habitat in Indiis."
L.R.: A garden weed probably introduced from China the latter half of the 19th century.
E.R.: Naturalized throughout the tropics.

O.D. 12/20/26.

MANIHOT (Tourn.) Adans. Fam. Pl. 2 : 356. 1763.

Glabrous herbs, shrubs or small trees, with milky sap, growing vigorously often from fleshy roots. Leaves alternate, often glaucous, with entire or palmately 3- to 11-lobed blades, having membranaceous or leathery, entire or lobed segments. Flowers monoecious in racemes, cymes or panicles. Staminate flowers with usually colored, campanulate, 5-lobed calyx; petals wanting; stamens 10, in 2 series, with the slender filaments of the inner series attached to the lobes of the disk. Pistillate flowers with calyx similar to that of the staminate except that the tube is often slightly shorter; petals wanting; ovary consisting of 3 single-ovuled cells and having 3 styles slightly united at base. Capsule composed of 3 two-valved cocci, each containing a single seed. (Name derived from the Brazilian name of some species.) Type species: Manihot Manihot (L.) Cockerell.

About 125 species, most of them native to Brazil.

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MANIHOT MANIHOT (L.) Cockerell
Cassava, Tapioca Plant

Jatropha Manihot L. Sp. Pl. 1007. 1753.
Manihot utilissima Pohl Pl. Bras. Ic. Descr. 1 : 32. 1827.
Manihot Manihot Cockerell in Bull. Torr. Club 19 : 95. 1892.

An erect, more or less branched, suffrutescent or shrubby plant 1 - 3 m. high arising from stout fleshy roots. Leaves 1 - 2 dm. long, palmately parted into 3 - 7 segments which are linear to oblong-oblanceolate, acute to acuminate, entire, pale beneath, with petioles about as long as the blades or longer; some of the upper leaves sometimes simple. Inflorescence axillary, few-flowered, lax, bearing flowers on pedicels which are longer than their subtending bracts, Calyx campanulate, 6 - 10 mm. long, with ovate, obtuse lobes about as long as the tube. Capsules ovoid, about 1.5 cm. long and narrowly 6-winged longitudinally.

T.L.: "Habitat in America australi."

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MANIHOT MANIHOT (L.) Cockerell
Cassava, Tapioca Plant (Continued)

L.R.: Of early introduction on probably all islands, and occasionally escaping.

E.R.: Native of Brazil but cultivated by the Indians from prehistoric times throughout tropical America. Now planted extensively in tropical and subtropical countries because of its starchy roots which furnish the tapioca or Brazilian Arrowroot of commerce.

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FOERSTERIA Scop.

Foersteria Scop. Introd. 98. 1777.
Breynia Forst. Char. Gen. 145. t. 73. 1776. hyponym.
Not Breynia L. Sp. Pl. 503. 1753.
Forsteria Steud. Nom. ed. 1 : 344. 1821.
Not Forsteria Linn. f. in Bov. Act. Soc. Sc. 3 : 184. t. 9. 1780.
Not Forsteria Neck. Elem. 3 : 134. 1790.

Erect shrubs or small trees. Leaves simple, entire, alternate and often distichous. Flowers monoecious, axillary, small. Staminate flowers with turbinate or hemispheric, truncate calyx, the rim sometimes much thickened and lobulate; stamens 3, the filaments united in a column; rudimentary ovary none. Pistillate flowers with hemispheric to rotate, shortly or shallowly 6-lobed calyx which enlarges in fruit; staminodia none; ovary globose, 3-celled and with usually 2 ovules in each cell, surmounted by 3 bifid or bilobed styles. Fruit few-seeded, fleshy, globose, indehiscent, and seated on the enlarged and persistent calyx. (Named probably after J.R.Foerster and possibly his son J.G.A.Foerster, both of whom accompanied Capt. Cook on his voyages in 1772 to 1775.) Type species:

About 15 species of tropical Africa, Asia and Polynesia.

FOERSTERIA NIVOSA (Bull) Degener
Snow-Bush.

Phyllanthus nivosus Bull, Cat. 9. 1873.
Phyllanthus nivosus W.G.Smith in Floral Magazine pl. 120. 1874.
Breynia nivosa Small in Bull. Torr. Club 37 : 516. 1910.
Breynhia Nivosa Britton & Wilson Porto Rico & Virg.Isls.506.1924.

Erect shrub becoming 2 m. high, with lax, irregular glabrous branches with pink, red, or brown bark on twigs. Leaves glabrous, persistent, spreading, short-petioled, with thinnish, oval to ovate or obovate blades usually 2 - 5 cm. long, obtuse or rounded at apex and abruptly narrowed or rounded at base, dark-green or green blotched with white or often mainly white, pink or red, and with stipules at first triangular to lanceolate and acute to acuminate but becoming broader and scarious-margined with age. Flowers nodding on slender, green or sometimes whitish pedicels borne in the axils of leaf-like bracts. Staminate flowers long-pedicelled, singly or sometimes several in an axil, with turbinate calyx-tube six-lobed; stamens erect and with filaments united in a column. Pistillate flowers shorter pedicelled, solitary, much

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FOERSTERIA NIVOSA (Bull)
Snow-Bush (Continued)

longer than the staminate, with short but broad calyx-tube and 6 broad reniform imbricated lobes which are minutely pointed; ovary 3-celled, not surrounded by a disc. Fruit about 12 mm. wide, somewhat depressed.

T.L.: This is a deciduous stove shrub from the South Sea Islands ------".
L.R.: Planted throughout the islands as a hedge plant.
E.R.: Planted in many tropical countries as an ornamental.

O.D. 12/20/26.

SAPINDACEAE R. Br.
SOAPBERRY FAMILY

Trees, shrubs, woody or more rarely herbaceous climbers, with watery sap. Leaves mostly alternate, without stipules, usually pinnate or decompound. Flowers polygamo-dioecious, regular or slightly irregular. Sepals or calyx-lobes 4 or 5, usually imbricated. Petals 3 to 5. Stamens 5 to 10, or rarely fewer or more, generally inserted on a fleshy, usually prominent disk. Ovary 1, 2- to 4-lobed or entire, 2- to 4-celled and with 1 or more ovules in each cell. Fruit various. Seeds globose or compressed and containing a usually more or less convolute embryo without endosperm.

About 125 genera, including over 1000 species, chiefly of tropical and warm regions.

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SAPINDUS (Tourn.) L. Sp. Pl. 367. 1753.
Soapberry.

Trees or shrubs. Leaves alternate, usually odd-pinnate but in one local species simple. Flowers regular, small, and racemose or paniculate. Sepals 4 or 5 and imbricated in 2 rows. Petals 4 or 5 and each with a scale at base. 8 - 10 stamens, with versatile anthers, and inserted on annular disk. Ovary usually 3-lobed and usually 3-celled, each cell containing a single ovule; style slender and stigma 2- to 4-lobed. Fruit a globose or lobed berry containing 1 - 3 crustaceous, globose seeds. (Name a contraction of sapo indicus, Indian soap, so called in reference to the soap-like qualities of the fruit.) Type species: Sapindus saponaria L.

About 10 species, natives of warm and tropical Asia and America.

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SAPINDUS SAPONARIA L.
Soapberry; Manele.

Sapindus saponaria L. Sp. Pl. 367. 1753.
Sapindus inaequalis DC. Prodr. 1 : 608. 1824.
Sapindus stenopterus DC. Prodr. 1 ; 608. 1824.
Sapindus Thurstonii Rock Bull. Haw. Bd. Agr. & For. 1 : 6. 1911.

A tree occasionally becoming 20 m. or more high but usually smaller, with thick gray bark separating in thin scales, and with young puberulent twigs becoming glabrous in age. Leaves 2 - 4 dm. long, somewhat pubescent when young, with stoutish petioles 8 cm. long or less, and with 2 - 6 pairs of chartaceous, more or less opposite leaflets, 3 - 15 cm. long, oblong to lanceolate, often falcate, sessile or short-stalked, acute, acuminate, or obtuse, with the rachis wing-margined or wingless between the leaflets. Panicles usually large, many-flowered, puberulent, often as long as the leaves or longer, bearing white 5 - 6 mm. broad flowers. Fruit globular, 1 - 2 cm. in diameter, brownish, shining, with thin translucent saponifying pulp.

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SAPINDUS SAPONARIA L.
Soapberry; Manele. (Continued)

T.L.: "Habitat in Brasilia, Jamaica."
L.R.: Indigenous to a few regions on the Island of Hawaii.
Also introduced from other countries and planted as a shade tree in gardens.
E.R.: Native to tropical America in many different forms.

O.D. 12/20/26.

CASSYTHA L. Sp. Pl. 35. 1753.

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 one, 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. (Derived from the Greek word of the Cuscuta.) Type species: Cassytha filiformis L.

At least 15 species of tropical regions.

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PUNICACEAE Horan
POMEGRANATE FAMILY

Shrubs or small trees with young branches first somewhat 4-winged but soon permanently terete and often finally becoming thorny at tip. Leaves more or less opposite and entire. Flowers perfect, short-peduncled, showy, solitary or clustered in the axils. Calyx 5- to 8-lobed, long persistent and leathery, turbinate, adnate to the ovary. Corolla of 5 - 8 wrinkled petals inserted at the throat of the calyx-tube and alternate with calyx-lobes. Stamens many and in many series on the calyx-tube, the slender filaments with versatile anthers. Styles united and appearing as one but with slightly lobed stigma. Ovary inferior, several-celled, many-ovuled, maturing into a leathery-coated several-celled berry-like fruit with membranous septa containing angled seeds with leathery tegmen surrounded by a watery testa.

Only the following genus exists.

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PUNICA L. Sp. Pl. 472. 1753.

Characters of the family. (Name from the Latin Punica, which was the classical Roman name for Carthage, the city at which the fruit was then obtained.) Type species: Punica Granatum L.

Probably a monotypic genus, although another species of doubtful distinction has been described from the island of Sokotra.

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PUNICA GRANATUM L.
Pomegranate.

Punica Granatum L. Sp. Pl. 472. 1753.

Shrub to freely branching tree 6 m. high, the smaller branches often hardening and becoming spinelike at tip. Leaves glabrous, with blades somewhat coriaceous, oval, elliptic to oblong, 1 - 8 cm. long, obtuse, acute, or rarely retuse, on short petioles. Peduncles 1- to several-flowered and often becoming thickened as fruit matures. Calyx-tube at first turbinate but later subglobose, with triangular to triangular-lanceolate tardily deciduous lobes. Petals scarlet to rarely yellowish or even white, short-clawed with suborbicular to orbicular-obovate lobes, almost 25 mm. long. Ovary with numerous ovules superposed in 2 series. Fruit subglobose, 6 - 14 cm. in diameter, edible and palatable.

T.L.: "Habitat in Hispania, Italia, Mauritania solo cretaceo."
L.R.: Of early introduction on probably all islands.
E.R.: Native of western Asia to northwestern India. Introduced because of its edible fruit in prehistoric times throughout

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PUNICA GRANATUM L.
Pomegranate. (Continued)

the Mediterranean countries, where it has long been naturalized. As early a writer as Pliny reports that the Carthaginians had developed several horticultural varieties. Planted and naturalized in most tropical and subtropical countries.

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HYDROCOTYLE (Tourn.) L. Sp. Pl. 234. 1753.
Water Pennywort.

Perennial prostrate herbs with slender creeping stems that usually root at the nodes. Leaves palmately veined and peltate or reniform with scale-like stipules. Small inconspicuous white flowers in simple or proliferous umbels. Calyx-teeth minute and petals entire. Fruit laterally compressed and orbicular or broader than high. Carpels with 2 of their 5 primary ribs enlarged and often forming a thickened margin; without oil canals but with an oil bearing tissue beneath the epidermis. (Name from the Greek for water and cup, probably in reference to the leaves of some species which are peltate and slightly cup-shaped.) Type species: Hydrocotyle vulgaris L.

More than 75 species, found commonly in marshes.

O.D. 12/20/26.

CENTELLA L. Pl. Rar. Apr. 28, 1760.

Perennial prostrate herbs (in North America and Hawaii) 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. Leaves not peltate but with sheathing petiole-bases. Small inconspicuous white flowers, often almost sessile, without calyx-teeth. Fruit laterally compressed, orbicular, reniform or obcordate. Carpels prominently marked with 7 - 9 ribs, and somewhat reticulate; without oil canals. (Derivation of name uncertain.) Type species: Centella villosa L.

About 20 species, found chiefly in the southern hemisphere; some in South Africa shrubby.

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CENTELLA ASIATICA (L.) Urban
Ovate-Leaved Marsh-Pennywort.

Hydrocotyle asiatica L. Sp. Pl. 234. 1753
Centella asiatica Urban in Mart. Fl. Bras. 11 : 287. 1879.

Leaves very variable. Petioles from 1.5 cm. long bearing thickish blades to petioles 20 cm. long bearing thinner blades. Petioles occasionally sparingly villous. Blades ovate, rounded and often crenulate toward the apex and repand dentate toward the broadly cordate base. Inflorescence shorter than the leaves, the 2- to 4-flowered capitate secondary umbels subtended by 2 ovate bracts. Flowers almost sessile.

T.L.: "Habitat in India."
L.R.: First noticed in the islands a little before 1888 and now naturalized.
E.R.: Widely scattered throughout the tropics of the Old and New World.

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ANAGALLIS (Tourn.) 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.

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ANAGALLIS ARVENSIS L.
Scarlet Pimpernel, Shepherd's Weather-Glass.

Anagallis arvensis L. Sp. Pl. 148. 1753.

Diffuse annual with square branches and ovate, sessile to clasping leaves that are 5 - 12 mm. long and black-dotted beneath. Peduncles filiform, 1 - 4 cm. long and recurving in fruit. Calyx-lobes keeled and slightly shorter than the obovate glandular-ciliate petals. Flowers rarely white or blue but chiefly scarlet often with a darker center; opening only on bright days and quickly closing at the approach of bad weather.

T.L.: "Habitat in Europae arvis."
L.R.: In 1895 this plant was first reported from the islands. At that time it grew only on the grassy slopes of the Nuuanu Pali, Oahu. In 1923 it was not uncommon throughout Oahu in dry, sandy pastures.
E.R.: Native of Europe but extensively naturalized in America.

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GENTIANACEAE Dumort.
GENTIAN FAMILY

Usually glabrous herbs with colorless bitter juice. Leaves usually opposite, entire, sessile, without stipules. Flowers regular, perfect, in clusters or solitary at the ends of branches. Calyx persistent, inferior, 4- to 12-lobed, -toothed, or-divided. Corolla withering but persistent, 4- to 12-lobed or -parted. Stamens as many as the lobes of corolla, alternate with them, and inserted on the tube. Ovary usually superior, 1-celled or partly 2-celled; stigma entire, 2-lobed or 2-cleft. Capsule mostly septicidally dehiscent, usually containing many seeds having fleshy endosperm.

About 75 genera, of wide geographical distribution.

O.D. 12/20/26.

CENTAURIUM Hill, Brit. Herbal 62. 1756.

Annuals or biennials with opposite leaves and cymose pink, white or yellow flowers. Calyx tubular, 4- to 5-lobed or -divided with narrow keeled segments. Corolla salverform, 4- to 5-lobed. Stamens 4 or 5, with short filiform filaments and linear to oblong or ovate anthers becoming spirally twisted. Ovary 1-celled, with sometimes intruded placentae; style filiform; stigma 2-lobed. Seeds reticulate. (Name derived from the Latin, centum and aurum, meaning 100 gold-pieces, in allusion to its supposed priceless medicinal value.) Type species: Gentiana Centaurium L.

At least 25 species, found in the Old and New World.

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CENTAURIUM SEBAEOIDES (Griseb.) Degener
Hawaiian Centaury.

Schenkia sebaeoides Griseb. in Bonplandia 1: 226. 1853.
Erythraea sabaeoides A. Gray in Proc. Am. Ac. 6 : 41. 1862.

A fleshy yellowish-green erect annual, 10 - 20 cm. high. Leaves prominently 3- to 5-veined, broadly ovate, 1 - 2 cm. long, with obtuse to shortly acuminate apex. Flowers pale pink, in terminal cymes. Calyx about 5 mm. long, the lobes unequal in length. Corolla almost 1 cm. long, slightly constricted at throat, with about 3 mm. long oblong-ovate lobes. Stamens with ovate anthers. Style united to base of subreniform, usually cohering stigmatic lobes. Capsule spindle-shaped, as long as the calyx, and containing many spherical dark-brown seeds.

T.L.: "In pratis ins. Sandwichense 'Oahu'".
L.R.: On dry coastal plains on Oahu, Molokai, Maui and possibly other islands.
E.R.: Endemic.

O.D. 12/20/26.

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 macrocarpus L. 1759).

About 20 species, found in tropical countries.

O.D. 12/20/26.

HELIOTROPIUM (Tourn.) L. Sp. Pl. 130. 1753.

Pubescent or glabrous herbs or shrubs with alternate mostly entire leaves and small white to blue flowers in scorpioid spikes or scattered. Calyx-lobes or sepals ovate, lanceolate, or linear. Corolla salverform to funnelform, more or less plaited, with cylindric tube and with lobes imbricate, plicate or induplicate in the bud. Stamens included, with short or no filaments. Style short and with conic or annular stigma. Fruit separating usually into 4 one-seeded nutlets. (Name from the Greek meaning sun and turn, so called either because the flowers were supposed to turn toward the sun, or because they appear at the summer solstice.) Type species: Heliotropium europaeum L.

About 150 species widely distributed chiefly in warm and tropical countries.

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HELIOTROPIUM CURASSAVICUM L.
Seaside Heliotrope.

Heliotropium curassavicum L. Sp. Pl. 130. 1753.

Diffuse, fleshy, glabrous and more or less glaucous annual with ascending stems 1 - 4.5 dm. long. Leaves entire, obscurely veined, short-petioled or the upper sessile, with linear to linear-oblong or spatulate 2 - 5 cm. long and 3 - 6 mm. wide blades which are obtuse at apex and narrowed at base. Inflorescence consisting of usually paired, dense, bractless, one-sided scorpioid spikes which are terminal or lateral. Calyx segments acute. Corolla white with a yellow spot, or becoming bluish. Anthers acuminate and subsessile near the base of tube. Fruit subglobose.

T.L.: "Habitat in Americae calidioris maritimis."
L.R.: Indigenous to probably all islands of the group where it grows typically along sandy seashores and in salt marshes.
E.R.: Along sandy seashores, in coastal marshes, and in saline regions from Delaware and California to Chili; also in the West Indies, and in Australia.

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VERBENACEAE J. St. Hil.
VERVAIN FAMILY.

Herbs, shrubs, vines or trees. Leaves opposite, verticillate or rarely alternate. Inflorescence in spikes, racemes, cymes or panicles. Flowers perfect and more or less 2-lipped or irregular. Calyx inferior, mostly persistent, usually 4- or 5-lobed or 4- or 5-cleft. Corolla-tube cylindric with 4- or 5-cleft limb. Stamens 4, didynamous, rarely only 2, or as many as the corolla-lobes, inserted on the corolla and alternate with its lobes, and bearing 2-celled anthers with longitudinally dehiscent anther-sacs. Ovary superior, 2- to 4-celled or rarely 8- to 10-celled, composed of 2 carpels each containing 2 anatropous or amphitropous ovules. Style terminal, with 1 or 2 stigmas. Fruit either dry and separating into 2 to 4 nutlets or a fleshy drupe containing the 2 to 4 nutlets. Seeds usually with little or no endosperm, and with straight embryo.

About 75 genera consisting of almost 1500 species, most of them of tropical and subtropical regions.

O.D. 12/20/26.

VERBENA (Tourn.) L. Sp. Pl. 18. 1753.

Herbs or shrubs with mostly opposite leaves and bracted usually sessile flowers in terminal spikes. Calyx usually tubular, 5-angled and 5-toothed, one of the teeth often shorter than the others. Corolla salverform to funnelform and often curved, with spreading somewhat unequally 5-cleft limb. Stamens included, the upper pair occasionally without anthers. Ovary containing one ovule in each of its 4 cells. Style slender and bearing usually a 2-lobed stigma with one lobe not receptive. Fruit mostly enclosed by the calyx but finally splitting into 4 1-seeded linear to linear-oblong crustaceous nutlets. (Name derived from the Latin.) Type species: Verbena officinalis L.

Over 100 species native to America.

O.D. 12/20/26.

VERBENA BONARIENSIS L.
South American Vervain

Verbena bonariensis L. Sp. Pl. 20. 1753.

Erect 6 - 15 dm. high annual or perennial, branching and villous-hirsute above. Leaves scabrous, oblong to oblong-lanceolate, 4 - 10 cm. long, somewhat clasping, with margin serrate throughout or only toward upper half of leaf. Spikes stout, usually 2 - 3 cm. long and about 5 mm. thick, and arranged in compact cymes. Calyx finely pubescent, with acute lobes, and becoming 3 - 4 mm. long. Corolla purplish, pubescent, the tube almost twice as long as the calyx. Fruits overlapping each other and containing glabrous nutlets about 2 mm. long.

T.L.: "Habitat in agro Bonariensi."
L.R.: A weed of early introduction now found naturalized in waste places on all islands, including Niihau. Occasional at the coast but often making pasture lands at higher elevations almost worthless for grazing by its abundance.
E.R.: Native of South America but widely naturalized in warmer regions.

O.D. 12/20/26.

CLERODENDRUM (Burm.) L. Sp. Pl. 637. 1753.
(Clerodendron Burm. Thes. Zeyl. 66. 1737.)

Perennial shrubs, herbs, or rarely vines, with opposite usually entire leaves. Inflorescence a terminal or axillary cyme or panicle. Calyx 5-toothed or 5-lobed. Corolla salverform or funnelform, the tube mostly larger than the limb. Corolla 5-lobed (usually filled or double in C. fragrans), the lobes usually almost equal. Stamens 4, subequal, exserted, borne on corolla tube. Stigma 2-lobed, and ovary bicarpellate but 4-celled. Fruit a drupe usually partially enclosed by the enlarging calyx, and containing 4 one-seeded nutlets. (Name from the Greek meaning tree of fortune.) Type species: Clerodendrum infortunatum L.

Probably more than 100 species, most of them native to the tropics of the Old World.

O.D. 12/20/26.

LAMIACEAE Lindl.
MINT FAMILY:

All herbs or shrubs except a few arborescent species, with usually square stems. Leaves simple, opposite, without stipules, and usually dotted with small glands containing a volatile oil which accounts for the aromatic qualities so well known in many species. Flowers usually axillary and chiefly in cymose clusters which are often aggregated into terminal spikes or racemes. Calyx inferior, persistent, 5-toothed or 5-lobed and in exceptional cases 4-toothed, mostly nerved. Corolla with a short or long tube, the limb 4- to 5-lobed, mostly 2-lipped but regular in a few genera, the upper lip 2-lobed or sometimes entire, and the lower lip mostly 3-lobed. Stamens borne on the corolla-tube, typically didynamous though sometimes only 2 and equal; filaments separate and alternate with the corolla-lobes; anthers 2-celled, introrse or confluently 1-celled, or sometimes of a single sac. Fleshy disc usually present. Ovary superior, deeply 4-lobed, forming at maturity 4 seed-like nutlets which surround the base of the single 2-lobed style in the bottom of the persistent calyx. Seed erect, with little or no endosperm, and with mostly a straight embryo having a short inferior radicle.

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LAMIACEAE Lindl.
MINT FAMILY. (Continued)

About 160 genera consisting of at least 3200 species throughout the world.

O.D. 12/20/26.

PRUNELLA L. Sp. Pl. 600. 1753.

Low, simple or branched perennial herbs with petioled leaves and clustered flowers in the axils of bracts, forming a dense capitate spike. Calyx tubular, reticulate-veined, about 10-nerved, deeply 2-lipped; upper lip broad and 3-dentate; lower lip 2-cleft with lanceolate teeth. Corolla-tube 2-lipped, inflated and slightly narrowed at the mouth; upper lip entire and arched; lower lip 3-cleft and spreading. Stamens 4, didynamous, appressed to upper lip of corolla; filaments of the two longer and lower stamens 2-dentate at the apex, the upper tooth sterile and the lower fertile; anthers 2-celled, their sacs divergent. Calyx enclosing the deeply 4-parted ovary containing smooth ovoid nutlets. (Name possibly derived from the Latin diminutive for pruna, meaning live coal, in allusion to some reputed medicinal quality.) Type species: Prunella vulgaris L.

About 5 species, of wide geographical distribution.

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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. long in flower and much elongating in fruit; bracts ovate-orbicular, cuspidate, usually ciliate. Corolla violet to rarely almost white, slightly less than twice as long as the purplish to green, usually ciliate calyx.

T.L.: "Habitat in Europae pascuis."
L.R.: An accidentally introduced weed first collected in 1909 on Haleakala, Maui, and up to 1926 not found on any other island.
E.R.: Native of Europe but now widely naturalized in other countries.

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TECOMA stans (L.) H.B.K.
Trumpet-Flower.

Bignonia stans L. Sp. Pl. Ed. 2: 871. 1763
Tecoma stans H.B.K. Nov. Gen. 3 : 112. 1819.

Erect, branched, pubescent to glabrate shrub or small tree 2 - 6 m. high. Leaves opposite, 15 - 25 cm. long, long-petioled, odd-pinnate with 5, 7 or 9 lanceolate to oblong-lanceolate sharply serrate leaflets which are 6 - 13 cm. long and have a long, slenderly acuminate apex. Flowers bright yellow, in terminal racemes. Calyx-tube greenish, about 3 mm. long and with lobes 2 mm. longer. Corolla 4 - 5 cm. long, with tube inflated upward. Stamens filiform, over 2 cm. long, with versatile anthers. Style filiform, with lobed and thickened stigma. Capsules linear, compressed, about 15 cm. long and 8 mm. wide.

T.L.: "Habitat in America."
L.R.: Planted as an ornamental on probably all islands because of

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TECOMA stans (L.) H.B.K.
Trumpet-Flower. (Continued)

its showy flowers. A few plants were found naturalized on the slopes of Round Top, near Honolulu, in 1922.

E.R.: Native of tropical America but now extensively planted in gardens throughout the tropics.

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SPATHODEA Beauv. Fl. Owar. 1 : 46. 1804.

Trees with younger branches somewhat pubescent. Leaves large, odd-pinnate, opposite. Flowers in short terminal racemes. Calyx curved, acuminate, densely tomentose, spathe-like by being split to the base on one side at flowering time. Corolla reddish, oblique, with tube contracted at the base, broadly ventricose-campanulate above, with large 5-lobed limb. Stamens prominent, 4 inserted at the base of the corolla in 2 pairs. Ovary sessile, containing many ovules. Capsule oblong-lanceolate, loculicidally dehiscent, compressed parallel to the septum. Seeds compressed, surrounded by a hyaline wing. (Name from the Greek meaning spathe-like, in allusion to the shape of the calyx.) Type species:

A genus comprising about 3 species, all native to tropical Africa.

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SPATHODEA campanulata Beauv.
Spathodea.

Spathodea campanulata Beauv. Fl. Owar. 1 : 47. 1804.

-Medium sized trees. Leaves 2 - 4 dm. long, long-petioled, with 7 - 17 elliptic-oblong, slightly acuminate, almost entire, short-petioluled leaflets 5 - 12 cm. long, the upper ones longer than those nearer base of rachis. Racemes terminal, the flower-buds at first containing a copious amount of fluid which is enclosed by the unopened calyx. Calyx spathe-like, strongly curved, acuminate, split longitudinally nearly to the base on one side, covered with fine fulvous pubescence as are the pedicels and young branches. Corolla about 10 cm. long, 5-lobed, curved, bright orange-red with fine golden-yellow margin.

T.L.: "Je l'ai trouve a trois lieues au nord de Chama." Africa.
L.R.: Only a few trees were growing in Honolulu gardens previous to 1915. Since that time, however, they have been planted quite extensively throughout the islands.

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SPATHODEA campanulata Beauv.
Spathodea. (Continued)

E.R.: Native of tropical Africa; now cultivated in many warm and tropical regions as an ornamental because of its striking flower clusters.

O.D. 12/20/26.

RUBIACEAE B. Juss.
MADDER FAMILY.

Trees, shrubs, vines, or herbs. Leaves simple, opposite or sometimes verticillate, and having at base interpetiolar stipules. Flowers perfect, dioecious or polygamous by abortion, regular and nearly symmetrical, often dimorphous or trimorphous. Calyx-tube adnate to the ovary, its limb various. Corolla funnelform, club-shaped, campanulate, or rotate, and usually 4- to 5-lobed. Stamens as many as the corolla-lobes and alternate with them, and inserted on the corolla tube or throat. Ovary 1- to 10-celled, each cell containing 1 to many ovules; the style usually simple or lobed. Fruit a capsule, berry, or drupe. Seeds various but possessing a membranous or crustaceous testa, and usually containing endosperm which is fleshy or horny.

About 350 genera consisting of almost 5000 species, most of them native to tropical and warm regions.

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BIDENS PILOSA L.
Spanish Needle.

Bidens pilosa L. Sp. Pl. 832. 1753.

Erect, glabrous or slightly hispid annual, 2 - 10 dm. high and usually somewhat branched. Leaves of smaller plants usually simple, ovate to lanceolate, acute to acuminate, serrate, with blades 2.5 - 7 cm. long on usually shorter petioles. Leaves of larger plants similar except that they are mostly trisect to trifoliolate and larger. Inflorescence a foliose cyme or corymb of few heads on 1 - 10 cm. long peduncles. Involucre campanulate, about 5 mm. high, with green linear-oblong outer bracts with ciliolate margins and usually a dark central vein. Inner bracts longer, scarious margined. Rays when present few in number, whitish, 2- to 3-lobed. Disc-florets 10 - 20. Achenes straight, fusiform, unequal in length but the inner longer than the involucre, with 2 - 4 prominent yellow downwardly barbed awns.

T.L.: "Habitat in America."
L.R.: A very common troublesome weed on all islands, including Niihau. Of early introduction from America. The plants

O.D. 12/20/26.

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.