

Plantae Hobdyanae Kauaienses
Hawaiian Plant Studies 31¹

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KAUAI is the northernmost and the oldest of the main group of Hawaiian Islands. It has developed deep and well-weathered soils, and the windward and the upper parts are well watered and clothed with a dense rain forest. The rains are especially heavy on the high Alakai Swamp and on the mountain Waialeale where its summit has an average annual rainfall of 486.1 inches.

There are diverse plant habitats, and they support a large flora. It may well be due to the age of the island that in numerous genera more of the endemic species are found only on Kauai than on any of the other Hawaiian Islands.

The following eight new species were all collected on Kauai by Robert W. Hobdy, while assistant forester in the Hawaii Division of Forestry. He has since been transferred to duty on the island of Maui.

CARYOPHYLLACEAE

Schiedea membranacea sp. nov.

Fig. 1

DIAGNOSIS HOLOTYPE: Herba plus 73 cm alta est, ramis ad 3 mm diametro pallide viridibus glabris 4-angulosis, internodis 6-12 cm longis, nodis cum basibus petiolorum connatis cinctis, foliis oppositis fere glabris, petiolis 4-22 mm longis sparse pilosulis, laminis 7.5-11.5 cm longis 4.3-6.8 cm latis late ellipticis ad obovatis membranaceis pallide viridibus et translucenscentibus supra glabra excepta denticulis marginalibus cum apicibus minute puberulis infra remote albi-pilosulis basi cuneata et decurrenti prominente 5-plinervis et cum jugo nervis conspicuis $\frac{1}{4}$ ex basi salienti, inflorescentia 26 cm longa et lata, thyrso soluto cum ramis lateralibus 6-17 cm longis, inter-

nodis 4.5-9.5 cm longis omnino pustulati-glandulosis, bracteis principalibus jugatis, bracteis infimis 22 mm longis 18 mm latis ellipticis subacuminatis foliaceis illis superis 3 mm longis lanceolatis, pedicelis 15-27 mm longis filiformibus, sepalis 2 mm longis 0.7 mm latis lanceolatis hirsutulis cum 3 costis fortibus et midnervo 1 mm salienti demum lamina soluta et solum 3 nervis persistentibus (partibus alteris floris interitis), capsulis 3 mm longis ellipsoideis et in 4 (-5) valvis cartilagineis dehiscentibus.

DIAGNOSIS OF HOLOTYPE: Herb, more than 73 cm tall; stems pale green, 4-angled, glabrous, as much as 3 mm in diameter; internodes 6-12 cm long; nodes distinctly encircled by the connate petiole bases; leaves opposite, nearly glabrous; petioles 4-22 mm long, sparsely pilosulous; blades 7.5-11.5 cm long, 4.3-6.8 cm wide, broadly elliptic to obovate, membranous, pale green and translucent, above glabrous except for the minute puberulous tip of the tiny marginal denticulations, especially towards the acute apex, below remotely white pilosulous, the base cuneate and decurrent, prominently 5-plinerved and with another equally prominent pair of lateral veins arising $\frac{1}{4}$ way from the base; inflorescence 26 cm long and wide, a loose thyrses with lateral branches 6-17 cm long, the internodes 4.5-9.5 cm long, pustulate glandular throughout; the main bracts paired, the lowest pair 22 mm long, 18 mm wide, elliptic, subacuminate, foliaceous, the uppermost ones 3 mm long, lanceolate; pedicels 15-27 mm long, filiform; sepals 2 mm long, 0.7 mm wide, lanceolate, hirsutulous, with 3 strong ribs, and the midrib projecting as a 1 mm apical bristle, at length the herbaceous intervening tissue decays and leaves only the strong ribs; (other flower parts fallen); capsule 3 mm long, ellipsoid, dehiscing into 4 (-5) cartilaginous valves.

HOLOTYPE: Hawaiian Islands, Kauai

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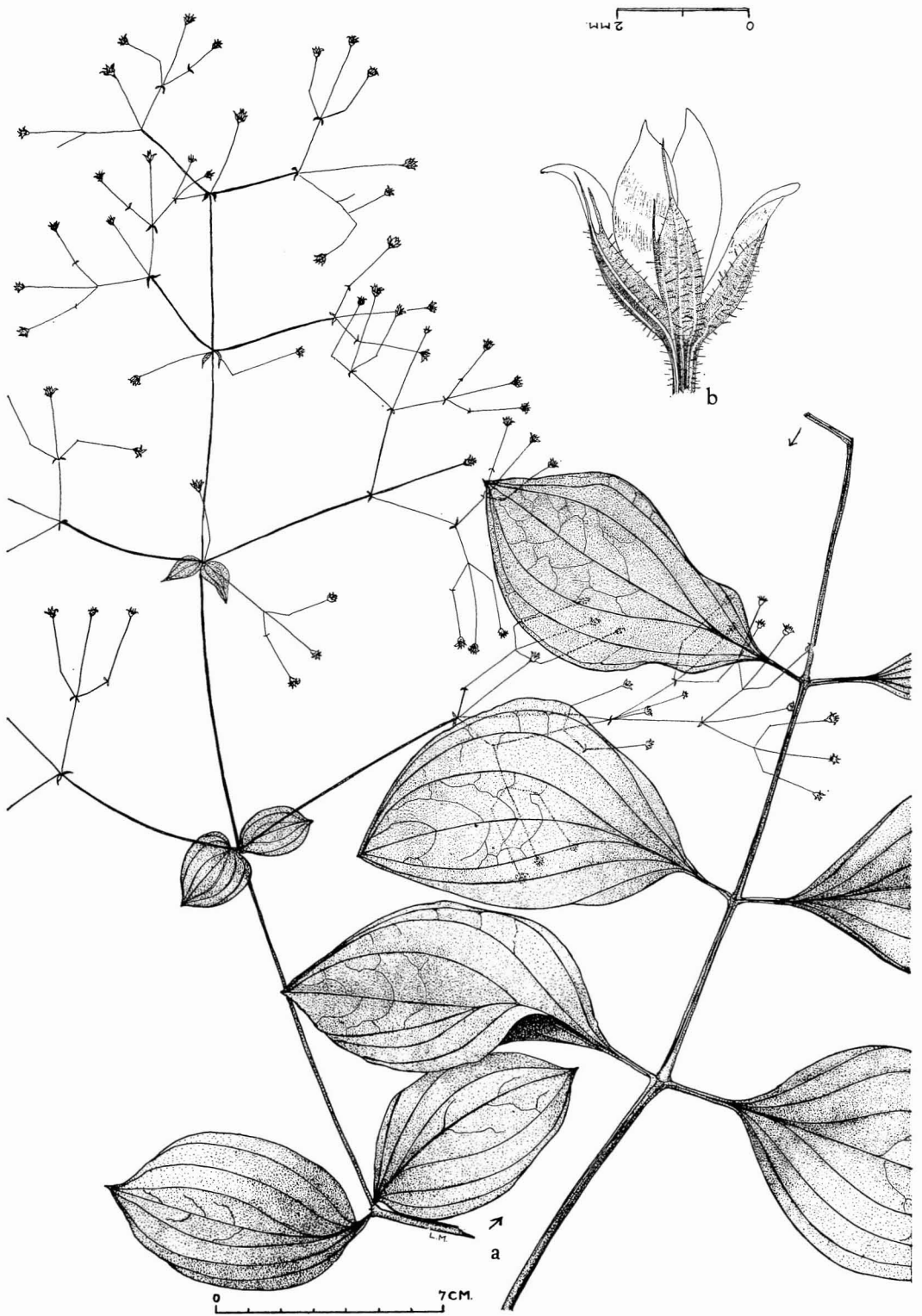


FIG. 1. *Schiedea membranacea* St. John, from holotype. *a*, habit, $\times 1/2$; *b*, calyx and capsule, $\times 10$.

Island, Kuia Valley, west Kauai, 2,000 ft alt, 3 July 1969, *Robert D. Hobdy 130* (BISH).

RUTACEAE

Pelea glabra sp. nov. (sect. *Apocarpa*)

Fig. 2

DISCUSSION: Because of its large broad leaves, this new species has a habitual resemblance to the genus *Alsinodendron*, as enlarged and classified by Sherff. In that genus the most similar species is *A. verticillatum* (F. Br.) Sherff, of Nihoa Island, Hawaiian Leeward Islands, a species with the stems capitate glandular catenulate villous, but at length glabrate below; leaves opposite above, opposite or 3-verticillate below, sessile; inflorescence densely capitate glandular catenulate villous; sepals 7–10 mm long, similarly villous up the middle of the back, the midrib thickened and prominent, not salient at tip, the 7 or 9 others merely visible; capsule 9 mm long, ovoid, 5-valved. *S. membranacea* has the stems glabrous; leaves opposite, petioled; inflorescence pustulate glandular; sepals with body 2 mm long, hirsutulous, lanceolate, the midrib prolonged as a 1 mm bristle, the soft tissue decaying, and leaving only the 3 strong, salient veins; capsule 3 mm long, ellipsoid, 4(–5)-valved.

In floral characters this new species, judged by the sepals and the capsules, has a closer affinity with the genus *Schiedea*, and in that genus with *S. Helleri* Sherff, of Kaholuamonu, Kauai, which species is "perhaps suffrutescens"; with branches up to 15 cm long; blades up to 12 cm long, about 6 cm wide, subnarrowly deltoid ovate, 3-nerved, the base subtruncate, the upper surface glabrate; inflorescence more or less glandular puberulent; sepals oblong or ovate oblong, more or less puberulent and glandular. *S. membranacea* is herbaceous, with stems more than 73 cm long; blades 7.5–11.5 cm long, 4.3–6.8 cm wide, broadly elliptic to obovate, membranous, 5-plinerved, the base cuneate and decurrent, the upper surface glabrous; sepals lanceolate, hirsutulous.

A review of the morphological characters shows that this species (though the specimen lacks complete flowers) evidently is best placed in the genus *Schiedea*.

The new epithet is the Latin adjective *membranacea*, membranous, and it is descriptive of the texture of the blades.

DIAGNOSIS HOLOTYPI: Frutex est, novellis sparse puberulis mox glabratis, internodiis 1–7 cm longis, cortice ramulorum brunneo et cum fissuris longitudinalibus, foliis oppositis, petiolis 1–4 cm longis glabris gracilibus, laminis 6.2–11.5 cm longis 3.8–5.2 cm latis ellipticis apice obtuso basi cuneata (vel rotundata) firme chartaceis glabris supra obscure viridibus lucidis infra pallide viridibus, cymis 2–4-floriferis glabris, pedunculo 2–7 mm longo, pedicelis 4–7 mm longis cum 2 bracteis jugatis 0.5–0.8 mm longis deltoideis ovatis, capsulis 24–26 mm diametro cum 4 folliculis rotatis distinctis eis 11–14 mm longis 7–8 mm altis ellipsoideis obtusis compressis quoque cum 1–2 seminibus, endocarpia glabro, seminibus 6–7 mm longis 4–5 mm latis et crassis latiter ellipsoideis cum testa nigra.

DIAGNOSIS OF HOLOTYPE: Shrub; young shoots sparsely puberulous, early glabrate; internodes 1–7 cm long; bark of twigs brown, longitudinally fissured; leaves opposite; petioles 1–4 cm long, glabrous, slender; blades 6.2–11.5 cm long, 3.8–5.2 cm wide, elliptic, the apex obtuse, the base cuneate (or rounded), firm chartaceous, glabrous, above dark shiny green, below pale green; cymes 2–4-flowered, glabrous; peduncle 2–7 mm long, pedicels 4–7 mm long, bearing paired bracts 0.5–0.8 mm long, deltoid ovate; capsule 24–26 mm in diameter, of 4 distinct rotate follicles, these 11–14 mm long, 7–8 mm high, ellipsoid, obtuse, compressed, each bearing 1–2 seeds; endocarp glabrous; seeds 6–7 mm long, 4–5 mm wide and thick, broadly ellipsoid, the testa shiny black.

SUPPLEMENTARY DESCRIPTION (*Hodby 123*): Young flowering cymes 4–5 mm long; bracts of the pedicels puberulous on back and margins; immature staminate flowers with sepals sparsely puberulous ciliate, 2 mm long, suborbicular, 2 outer, and 2 inner; petals 1 mm long, obovate, cucullate; stamens 8, equal, the anthers 0.4 mm long, oblong ellipsoid; gynoecium minute.

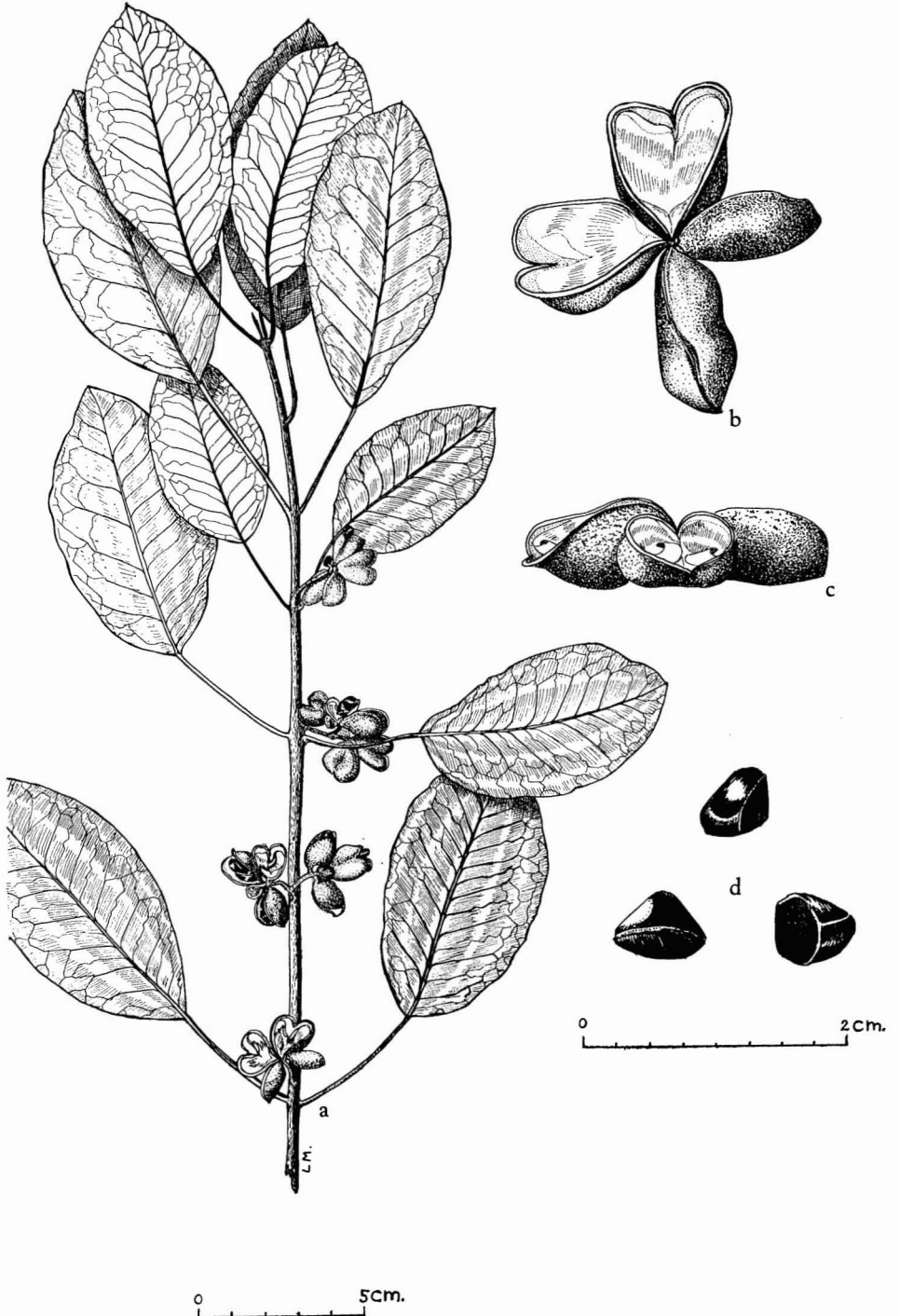


FIG. 2. *Pelea glabra* St. John, from holotype. a, habit, $\times \frac{1}{2}$; b, c, capsule, $\times 2$; d, seeds, $\times 2$.

HOLOTYPE: Hawaiian Islands, Kauai Island, Mahanaloa Valley, western slope of island, Waimea District, 2,000 ft alt, 3 July 1969, *Robert Hobdy 121* (BISH).

SPECIMENS EXAMINED: Hawaiian Islands, Kauai Island, Mahanaloa Valley, 2,000 ft alt, 3 July 1969, *Hobdy 123* (BISH).

DISCUSSION: *Pelea glabra* is a member of the section *Apocarpa*, as is its closest relative, *P. haupuensis* St. John, of the Haupu Range, Kauai, a species with the young shoots, petioles, and cymes appressed puberulous; blades 5–10.2 cm long, 2.7–5.8 cm wide, ovate, the base rounded; cymes 5–7-flowered; sepals and petals appressed puberulous; capsule follicles 9–11 mm long, 6 mm high, the apex acute. *P. glabra* has the young shoots sparsely puberulous; petioles glabrous; blades elliptic, 6.2–11.5 cm long, 3.8–5.2 cm wide, the base subcuneate; cymes glabrous, 2–4-flowered; sepals and petals glabrous; capsule follicles 11–14 mm long, 7–8 mm high, the apex obtuse.

The new epithet is the Latin adjective *glabra*, glabrous or without hairs, and refers to the condition of the leaves.

EUPHORBIACEAE

Antidesma crenatum sp. nov. (sect. *Roxburghiana*)

Fig. 3

DIAGNOSIS HOLOTYPE: Arbor femina 12–14 m alta est, cortice obscure griseo asperato, ligno sucoso pallido, ramis pallide griseis glabratibus cum lenticelis rotundatis brunneis elevatis, ramulis foliosis 2–4 mm diametro teretibus densiter puberulentis albis salientibus et cum lenticelis paucis, internodis 1–5.5 cm longis, foliis alternatis, stipulis 1.5–2 mm longis lanceolatis puberulentis, petiolis 7–13 mm longis 2–2.5 mm crassis subrectis subrubris puberulentis, laminis 7–17 cm longis 4.3–9.5 cm latis late lanceolatis ad ovatis apice subacuminato obtuso basi rotundata vel semielliptica marginibus grosse crenatis textura firma subcoriacea supra laevibus glabris lucidis et midnervo subrubro minute reticulatis infra albi-hirsutulis et in nervis salebrosis nervis lateralibus 5–8 in dimidio quoque adscendentibus arcuatis et cum apicibus incurvatis interconnectis, cymis femi-

nalibus lateralibus axillaribus 3–11-floriferis in flore 10–15 mm longis in fructu ad 25 mm longis, rhachide et pedicelis puberulentis cum pilis albis divergentibus, bracteis 1.5–2 mm longis lancei-ovatis ciliatis, pedicelis in flore 2–3 mm longis in fructu 3–5 mm longis, calycibus 2.5 mm longis cum 4 lobis lancei-ovatis ciliatis, ovario 2–3 mm longo 1-loculato cum 2 ovulis pendulis minute puberulo et in basi cum disco firmo crasso cum margine undulato cincto, 2 stigmatibus 0.7–0.8 mm latis apicalibus cordati-orbicularibus sessilibus centripetalibus, fructibus (immaturis) 6–8 mm longis late ellipsoideis, seminibus (immaturis) 3.5–4 mm longis obovoideis sed in latere axilari compressis obscure brunneis laevibus.

DIAGNOSIS OF HOLOTYPE: Pistillate tree 12–14 m tall; bark dark gray, rough; sapwood light colored; older branchlets light gray, glabrate, with round, brown, elevated lenticels; leafy branchlets 2–4 mm in diameter, terete, densely white spreading puberulent, and with a few white lenticels; internodes 1–5.5 cm long; leaves alternate; stipules 1.5–2 mm long, lanceolate, puberulent; petioles 7–13 mm long, 2–2.5 mm thick, straightish, puberulent; blades 7–17 cm long, 4.3–9.5 cm wide, broadly lanceolate to ovate, the apex subacuminate, obtuse, the base rounded or elliptic, the margins coarsely crenate, the tissue firm and subcoriaceous, above smooth, glabrous, shining, finely reticulate veiny, below white hirsutulous and shaggily so on the veins, lateral secondary veins 5–8, ascending arcuate and interconnected by the inarching tips; cymes lateral, axillary, 3–11-flowered, 10–15 mm long in flower, to 25 mm in fruit; the rhachis and pedicels spreading white puberulent; bracts 1.5–2 mm long, lance-ovate, ciliate; pedicels 2–3 mm long in flower, 3–5 mm long in fruit; calyx 2.5 mm long, the 4 lobes lance-ovate, ciliate; ovary 2–3 mm long, 1-celled, with 2 pendulous ovules, ovoid, the surface minutely puberulous, surrounded at base by a firm, thick, sinuous margined disk; the 2–3 stigmas 0.7–0.8 mm wide, apical, cordate-orbicular, sessile, centripetal; young fruit coriaceous, indehiscent, 6–8 mm long, broadly ellipsoid; seeds (immature) 3.5–4 mm long, obovoid but flattened on the axial side, dark brown, smooth. The calyx lobes are puberulent without.

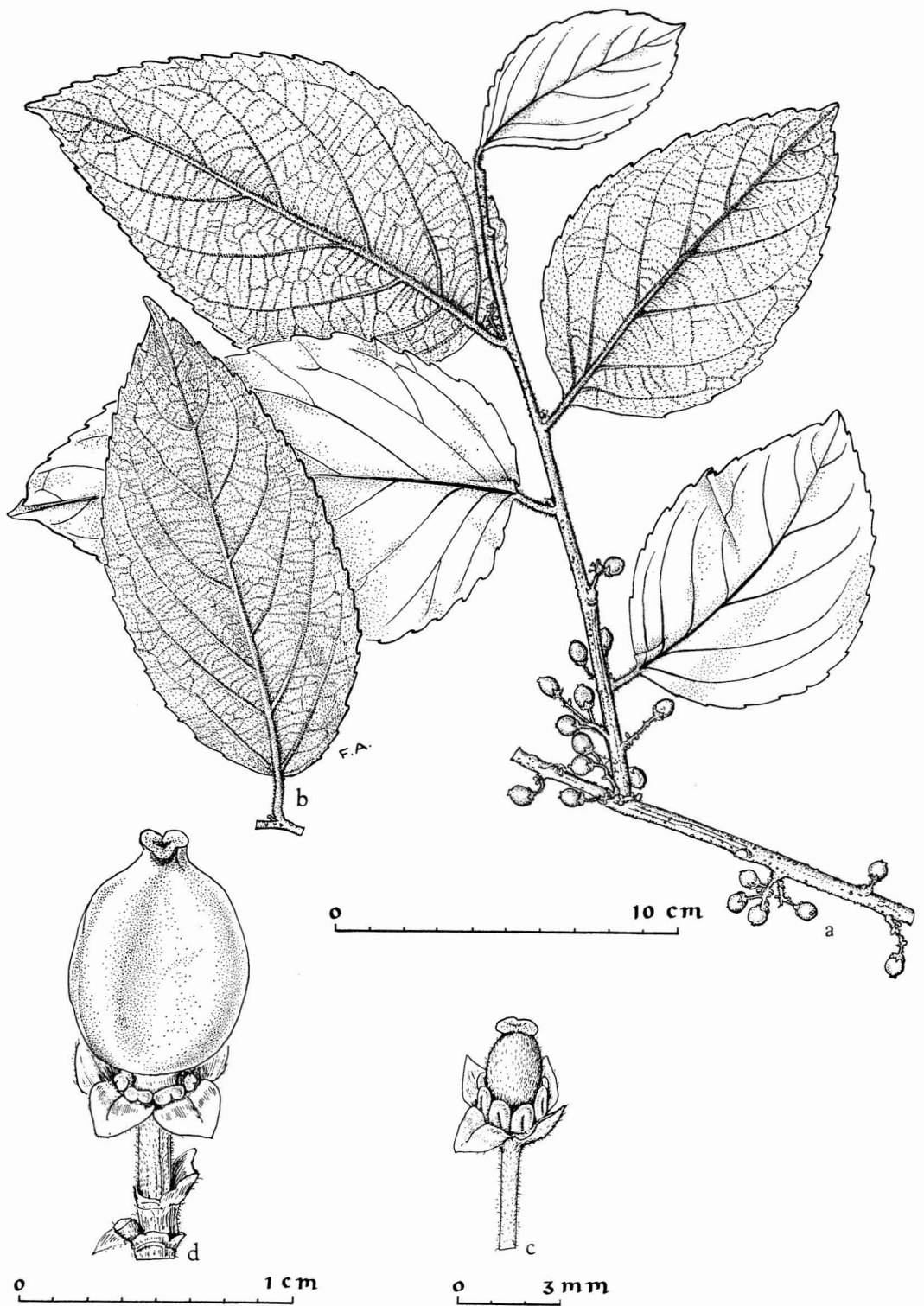


FIG. 3. *Antidesma crenatum* St. John, from holotype. *a*, habit, $\times \frac{1}{2}$; *b*, leaf, $\times \frac{1}{2}$; *c*, pistillate flower, $\times 5$; *d*, fruit, $\times 4$.

HOLOTYPE: Hawaiian Islands, Kauai Island, banks of Mohihi Stream in the fringes of Alakai Swamp, October 1968, *Robert Hobdy* 8 (BISH).

SPECIMENS EXAMINED: Same locality, 17 August 1968, *Hobdy 10* (BISH).

DISCUSSION: This new species is strikingly different in its coarsely crenate blades from the two other Hawaiian species which regularly have all the blades entire. The only exception is a single twig 5 cm long, bearing three leaves, that for data has merely the printed label, "Collected by Dr. William Hillebrand and J. M. Lydgate, ex Herbarium Rev. J. M. Lydgate" (BISH). Its blades are low, apiculate crenate, but they are thin chartaceous, glabrous beneath, except for the brown tufts in the leaf axils, Sherff determined it, and it seems correctly, as *A. pulvinatum* Hbd. Perhaps it is a young sucker shoot of that species. On the same sheet are two other twigs with leaves. They are *A. platyphyllum* Mann, var. *hamakuaense* Fosb. With them is a slip with the determination in Hillebrand's writing as *A. platyphyllum* Mann.

This sheet is one of the set sent by Hillebrand, after he returned to Germany, to Lydgate who as a young man had assisted Hillebrand. Later, over the years, Lydgate sent Hillebrand specimens from other Hawaiian Islands. Very commonly the sheets in this series are mixtures, with specimens from several localities, and even of different species combined, which were sent to Lydgate with a single label and data, or no data other than the binomial. They are genuine Hillebrand collections from the Hawaiian Islands, and often the mixtures can be separated and matched with his known collections with data. Unfortunately, for this one no matching specimen has been found.

The new *A. crenatum* is a member of the section *Roxburghiana*, and its closest relative is *A. pulvinatum* Hbd., a species indigenous to the islands of Kauai, Oahu, Molokai, Maui, and Hawaii, a species with the branchlets ochraceous tomentulose; blades ovate to broadly elliptic, acute, the margins entire, the texture thin chartaceous, glabrous except for the domatia in the vein axils which are brown tufted hirsute; pistillate calyx 4-6-lobed; ovary gla-

brous; drupes apiculate. *A. crenatum* has the branchlets white puberulent; blades broadly lanceolate to ovate, the apex subacuminate, the margins coarsely crenate, the texture firm and subcoriaceous, below white hirsutulous, and shaggily so on the veins; pistillate calyx 4-lobed; ovary minutely puberulous; drupes obtuse.

The new epithet is the Latin adjective *crenatum*, with rounded teeth, and it refers to the toothed leaf margins.

Euphorbia haeleleana Herbst, *Pacif. Sci.* 25: 489-490, Fig. 1, 1971

Fig. 4

DESCRIPTION: Tree, up to 14 m tall, deciduous, like *Plumeria rubra*, but branches more erect; milky sap abundant; branchlet tips 8-12 mm in diameter, glabrous, smooth, reddish, shining, with thick waxy cuticle; leaf scars 5-7 mm wide, transversely elliptic, buff colored, the 5 bundle scars in a shallow concave central line; internodes 3-7 mm long; leaves alternate; stipules absent; petioles 1.5-6.5 cm long, glabrous or occasionally hirsutulous; blades 7-20 cm long, 3.2-8.2 cm wide, elliptic, entire, glabrous, the apex obtuse, the base cuneate, thick and subcoriaceous, above dark green and shining, below pale green, rarely hirsutulous at tip, the venation evident above, conspicuous below, the numerous secondary veins diverging at 60° from the midrib, and 2-7 mm apart, almost parallel; inflorescence a terminal sessile umbel of 5-6 rays or peduncles, these 11-33 mm long, 2.5-3 mm in diameter, simple, ascending, hirsutulous; involucre 3-5 mm high, 7.5-12 mm in diameter, patelliform, densely hirsutulous; glands 8-13, black, 1.5-2.5 mm long, transversely elliptic; staminate flowers very numerous; staminophore 2-3 mm long, at apex bearing many scales 1-1.5 mm long, oblanceolate, deeply fimbriate; filament 2.5 mm long; anther 0.5-0.9 mm long, 0.8 mm wide, oblong elliptic, the base deeply bilobed; pistillate flower solitary in middle of the cyathium; peduncle 3 mm long; ovary 2.3 mm long, narrowly ellipsoid; style 0.5 mm long; the 3 stylar lobes 1.5 mm long, fingerlike, the apex shortly bilobed; around the base of the ovary are numerous scales, each subtending a diminutive

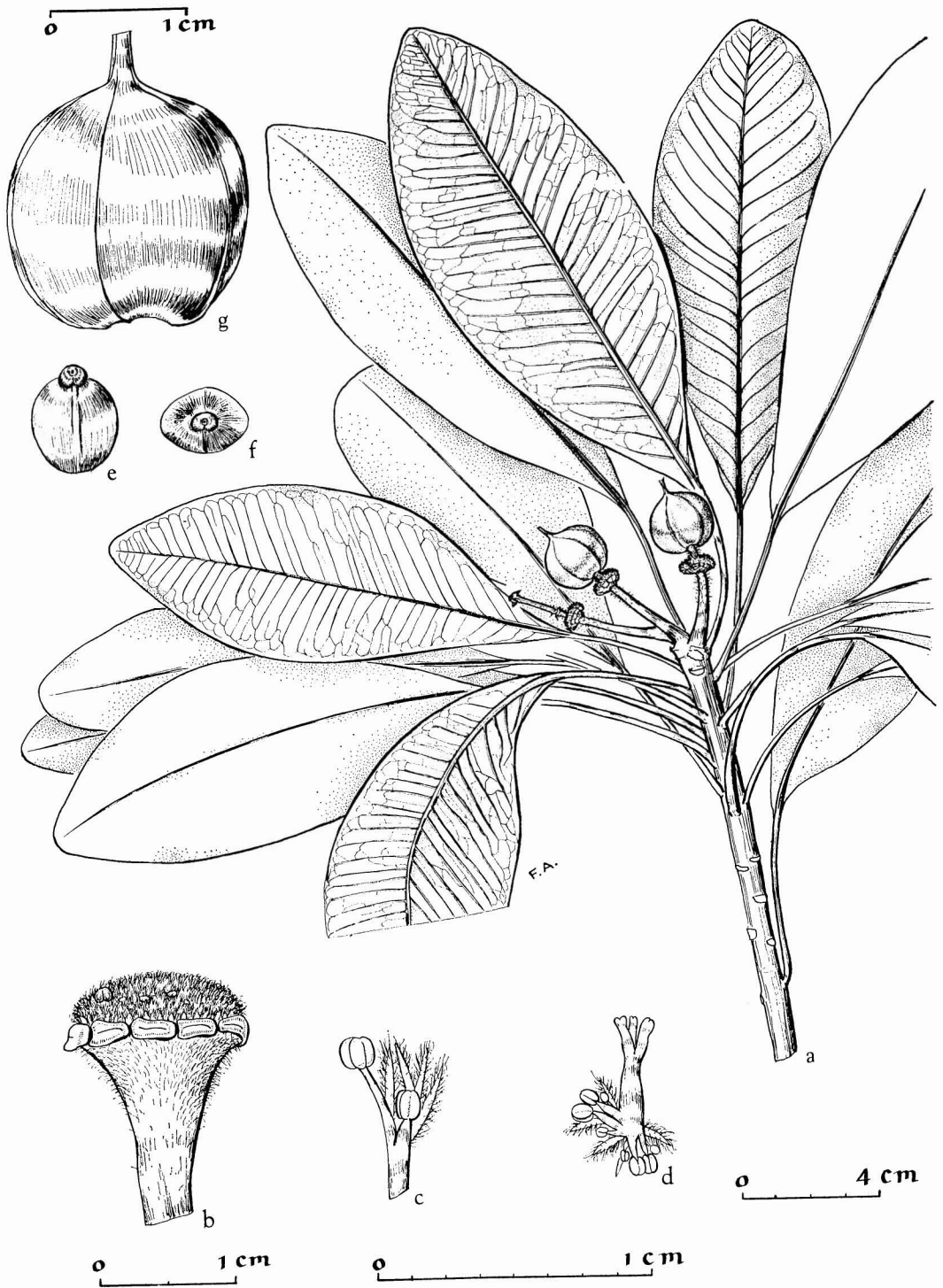


FIG. 4. *Euphorbia baeleeleana* Herbst, from Hobby 120. *a*, habit $\times \frac{1}{2}$; *b*, cyathium, $\times 2$; *c*, staminate flower, $\times 4$; *d*, perfect flower, $\times 4$; *e*, *f*, seed, $\times 2$; *g*, capsule, $\times 2$.

stamen; style 4 mm long, bearing the 3 stigmas 1 mm long, cernuous, linear, bifid; pedicel in fruit 7–8 mm long, stout, erect, densely retrorse hirsutulous; capsule body 11–19 mm long, subglobose, glabrous, pink, finally brown, woody, the walls 1.5 mm thick; seeds 7–8 mm long, 3.5–5.5 mm wide, 3–4.5 mm thick, obovoid, mottled gray and pinkish; caruncle 1–1.5 mm long, white or pale yellowish; embryo straight; plumule 4.5 mm long, flat; endosperm copious.

HOLOTYPE: Hawaiian Islands, Kauai Island, Na Pali Forest Reserve, Mahanaloa Valley, dry, steep n facing slope, 660 m alt, 22 August 1970, *W. Gagné & S. Montgomery 537* (BISH). Isotype (HAW).

SPECIMENS EXAMINED: Hawaiian Islands, Kauai Island, Kuia Gulch, Kōpiwai Forest, between Milolii and Nualolo ridges, small group of trees just above kukui trees, 2,000 ft alt, 11 September 1968, *Robert Hobdy 11* (BISH); Mahanaloa Valley, Kōpiwai, 20 March 1969, *Hobdy 95* (BISH); ditto, 10 September 1969, *Hobdy* (BISH); Mahanaloa Valley, 2,000 ft alt, 3 July 1969, *Hobdy 120* (BISH).

DISCUSSION: Kuia Valley and Mahanaloa Valley are close tributaries of Milolii Valley, in the Waimea District, Kauai.

This species somewhat resembles *E. Rockii* Forbes and *E. clusiaefolia* H. & A., but technically it comes closer to *E. Remyi* Gray, var. *kauaiensis* Deg. & Sherff in Sherff, of Hanapepe Falls, Kauai, a variety which has the leaves opposite; the inflorescence axillary and terminal, several times branched, 1.5–4 cm long, with 3–4 heads; involucre glabrate or the rim hispidulous, 3–4 mm in diameter; capsule 3.5–4 mm long; seeds 2–2.2 mm long, tetragonal and truncate, chestnut colored; shrubs with petioles 5–18 mm long; blades 3–5 cm wide. *E. haeleeleana* has the leaves alternate; umbel terminal, the rays unbranched, 25–33 mm long; involucre hirsutulous, 7.5–12 mm in diameter; capsule 11–19 mm long; seeds 7–8 mm long, obovoid, mottled gray and pinkish; trees with petioles 35–65 mm long; blades 4.6–7 cm wide.

The author had this species in manuscript, ready for publication, when Dr. Herbst published his description and name for it, as *E.*

haeleeleana. His specimen came from the same locality, and without any doubt is the same as the writer's. Since the writer's description and illustration give additional details, it is worthwhile to publish them.

SAPINDACEAE

Sapindus Lonomea sp. nov. (sect. *Sapindastrum*)

Fig. 5, 6

NOM. VERN.: "lonomea" (Hawaiian language).

DIAGNOSIS HOLOTYPI: Arbor 10–15 m alta, trunco erecto 23–27 cm diametro, cortice pallido aspero, corona ellisoidea vel subsphaerica, ramulis densiter subbrunnei-puberulis tum glabratis, ramis griseis glabris sublaevibus sed cum fissuris longitudinalibus, lenticelis multis brunneis elongatis, internodis 1–3 cm longis, cicatricibus 3–3.5 mm latis deltoidei-scutelliformatis griseis cum 3 cicatricibus fasciculis, alabastris axillaribus brunneis puberulis, foliis simplicibus, petiolis 0.8–9.5 cm longis gracilibus glabris excepta in basi incrassata, laminis 7–22 cm longis 3–14.5 cm latis glabris ovatis ad late ellipticis apice subacuto basi abrupte cuneata et inaequaliter breve decurrenti marginibus integris sed subsinuatis subtiliter subcoriaceis supra obscure viridibus lucidis infra pallidore lutei-viridibus, nervulis secundariis 8–12 in latere quoque curvatis adscendentibus, panícula 35 cm longa 18 cm diametro, pedunculo 3.5 cm longo 5 mm diametro eo et rhachidi et ramis densiter adscendenti-puberulis, rhachidi 28 cm longo, pedicelis 2–5 mm longis bibracteolatis, sepalis 5 adpresse adscendenti-sericei-puberulis, eis exterioribus 2–2.5 mm longis suborbicularibus, petalis 5 et 3 mm longis anguste ellipticis lancei-ovatis vel ovatis extra adpresse adscendente albi-pilosulis, marginibus pilosuli-ciliatis, intra parte libera glabra sed in orificie crebre piloso, staminibus 8, filamentis 3 mm longis in tertia infera densiter pilosulis, antheris 0.5–0.6 mm longis oblongi-ellipsoideis, ovario 2-loculatis glabris, stylo 0.3–0.5 mm longo cylindrico, stigmatibus rotundato integro vel subfido, fructu drupa simulanti, cum locula fertili et ad basim cum locula infertili abortiva.

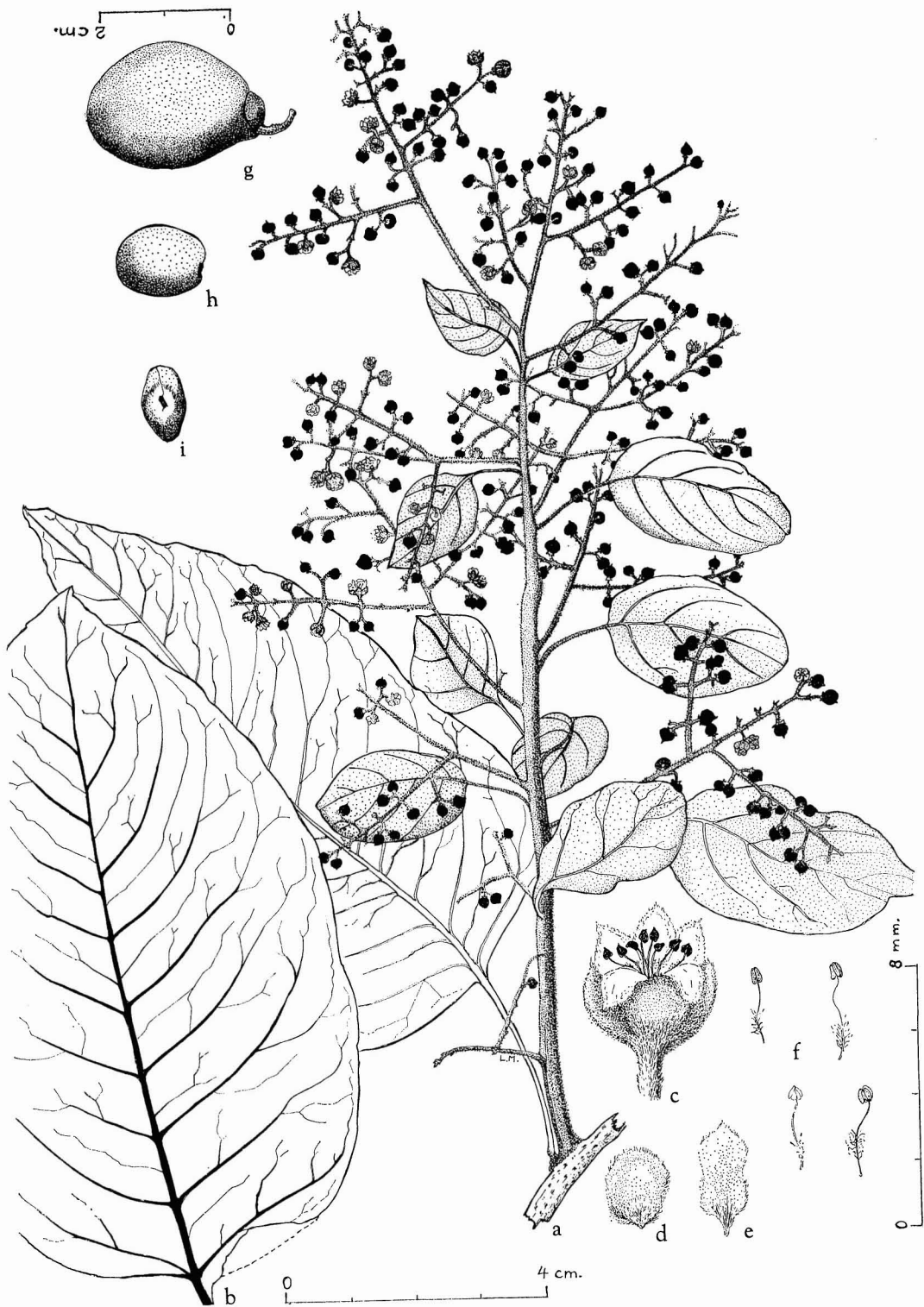


FIG. 5. *Sapindus Lonomea* St. John, from holotype. *a*, habit, $\times 1$; *b*, blade, $\times 1$; *c*, flower, $\times 5$; *d*, sepal, $\times 5$; *e*, petal, $\times 5$; *f*, stamens, $\times 5$. From Degener and Hansen 23,973, *g*, fruit, $\times 1$; *h*, *i*, seed, $\times 1$.

University of Hawaii Outline Maps, No. 1—Island of Kauai

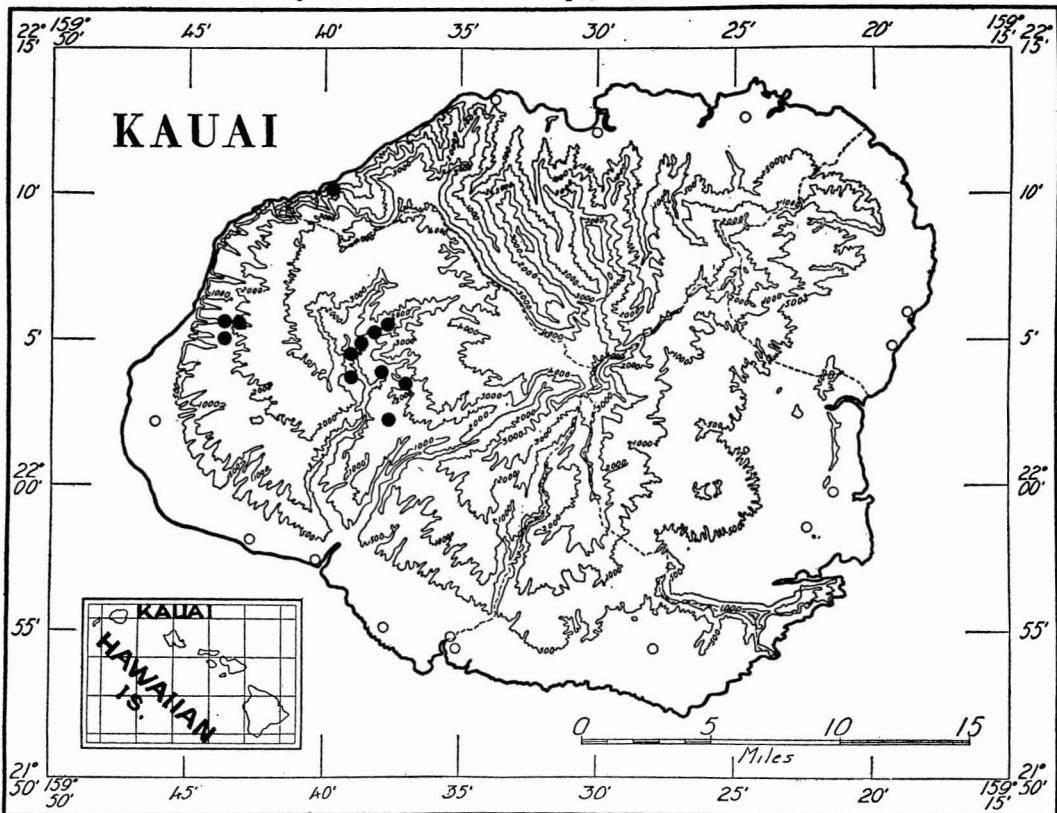


FIG. 6. *Sapindus Lonomea* St. John, distribution map.

DIAGNOSIS OF HOLOTYPE: Tree 10–15 m tall; trunk erect, 23–37 cm in diameter, the bark light colored, fairly rough; crown ellipsoid to subspherical; young branchlets densely brownish puberulous, glabrate; branches gray, glabrous, smoothish, but longitudinally fissured; lenticels numerous, brownish, elongate; internodes 1–3 cm long; leaf scars 3–3.5 mm wide, triangular shield-shaped, gray, with 3 bundle scars; axillary buds brown, puberulous; leaves simple; petioles 0.8–9.5 cm long, slender, glabrous except for a slight puberulence on the swollen base; blades 7–22 cm long, 3–14.5 cm wide, glabrous, ovate to broadly elliptic, the apex subacute, the base abruptly cuneate and unequally shortly decurrent, the margins entire but somewhat wavy, texture thin subcoriaceous, above dark shiny green, below paler yellowish green, secondary veins 8–12 to a side, curved ascending; panicle 35 cm long, 18 cm

in diameter; peduncle 3.5 cm long, 5 mm in diameter, it and the rachis and branches densely ascending puberulent; rhachis 28 cm long; pedicels 2–5 mm long, bibracteolate; sepals 5, appressed ascending sericeous puberulous, the outer ones 2–2.5 mm long, suborbicular; petals 5 and 3 mm long, narrowly elliptic, lance-ovate or ovate, the outer side appressed ascending white pilosulous, the margins pilosulous ciliate, within the free part glabrous but the throat densely pilose; stamens 8; filaments 3 mm long, densely pilosulous on the lower third; anthers 0.5–0.6 mm long, oblong ellipsoid; ovary 2-celled, glabrous; style 0.3–0.5 mm long, cylindrical; stigma rounded, entire or slightly cleft; fruit drupelike, with one fertile and one abortive cell at the base of one side.

EXPANDED DESCRIPTION: Panicle 8–35 cm

long, 3–18 cm in diameter; rhachis 6–28 cm long; fruit drupelike, 24–27 mm long, 18–20 mm wide, 13–17 mm thick, broadly ellipsoid, brown, drying black, somewhat shiny; seed 17–20 mm long, 12–14 mm wide, 9–10 mm thick, broadly obovoid, black, shining, emarginate at the hilum.

HOLOTYPE: Hawaiian Islands, Kauai Island, Waimea Dist., Kaulaula Valley, below falls at Kepapa Spring, with *Diospyros*, *Aleurites*, and *Nototrichium*, 1,800 ft elev., 14 October 1969, *Robert Hobdy 159* (BISH).

SPECIMENS EXAMINED: Hawaiian Islands, all from Kauai Island, Kukui Trail, Waimea Canyon, forest near bottom, 20 September 1955, *O. & I. Degener & H. W. Hansen 23,973* (BISH); Waimea, September 1909, *C. N. Forbes* (BISH); Halfway House, Gay Mountain House, on way back to Waimea, September 1909, *Forbes 448.K* (BISH); December 1911, *J. M. Lydgate* (BISH); Halfway House to Kaholuamano, 10 March 1909, *J. F. Rock 1,753* (BISH), nom. vern. "lonomea"; 1916, *Rock* (BISH).

DISCUSSION: From his field notes Hobdy has furnished the following data on other localities where he has observed this tree: Koaie Valley, 1,000 to 1,400 ft alt, Waimea Canyon; Waialae Valley, 1,200 ft alt, Waimea Canyon; Kaulaula Valley, Puu Ka Pele, 1,800 ft alt, Waimea Canyon; Haelele Valley, 1,200 to 1,800 ft alt, western side of island; Kalalau Valley, above falls, 400 ft alt, northwest side of island. In the several habitats were also the following native plants: *Canthium*, *Erythrina*, *Munroidendron*, *Pisonia*, *Metrosideros*, and *Pleomele*, as well as introduced plants. Hobdy noted that "in the Haelele Valley at from 1,200–1,800 ft. there was the largest patch of the tree, unique in my experience, because the *Sapindus* is concentrated and forms a nearly pure stand in the center. The trees are fairly straight trunked and have a fairly tall narrow crown except where growing in the open. One tree measured 27 inches dbh. by 77 ft. tall."

The closest relative of *S. Lonomea* is *S. oahuensis* Hbd., of Oahu, a species with the outer calyx lobes 3 mm long; petals 3.5 mm

long, suborbicular to broadly ovate; anthers 0.8–0.9 mm long; blades 4–18 cm long. *S. Lonomea* has the outer calyx lobes 2–2.5 mm long; petals 3 mm long, narrowly elliptic, lance-ovate, or ovate; anthers 0.5–0.6 mm long; blades 9–23 cm long.

The new epithet is the Hawaiian vernacular name of the species on Kauai.

MALVACEAE

Hibiscus Roatae sp. nov. (sect. *Ketmia*)

Fig. 7

DIAGNOSIS HOLOTYPE: Arbor cum ramis glabratis est, cortice brunneo et cum fissuris longitudinalibus, internodis 6–20 mm longis, ramulis foliosis 2–3 mm diametro propinquier albi-stellati-puberulentibus, stipulis 6–9 mm longis linearibus acutis deciduis sparse adpresse adscendente albi-hirsutis, petiolis 3–8 mm longis alibi sparse stellati puberulentibus sed in sulco supero dense stellati-puberulentibus, laminis 3.5–9.2 cm longis 1.7–4.7 cm latis ellipticis apice acuto basi semielliptici-rotundata marginibus grosse crenatis sed dentibus minute mucronatis textura firme chartacea supra obscure viridibus lucidis alibi glabris sed ad basem midnervo sparse furcati-hirsutulo infra in nervis et nervulis sparse albi-stellati-pubescentibus, nervis lateralibus 4 in latere cuiusque, pedunculo 17–20 mm longo axillari proxime albi-stellati-puberulenti et capitati-glandulosi-puberulenti, bracteis 8–12 mm longis linearibus acutis cum pilis adscendentibus sparse albi-bifurcati-puberulentibus et proxime capitati-glandulosi-puberulentibus, calyce 2 cm longo 8 mm diametro tubo cylindrico obscuro (licet rubri-brunneo) remote stellati-hirsutulo et densiter capitati-glandulosi-puberulenti nervis non evidentis, lobis 8 mm longis anguste lancei-deltaideis in dorso cum pilis simulantibus sed marginibus lanatis cum pilis albis stellatis puberulentibus, petalis 3.8–4 cm longis 1.3–1.4 cm latis ellipticis cuneatis (licet rubris) extra proxime albi-stellati-puberulentibus intra glabris, columna staminalis 33 mm longa glabra, apicibus liberis filamentis 3.5–4 mm longis multis in parte apicali columnae 1 cm longa congregatis, columna stylaris 3 cm longa ramis 7 mm longis albi-pilosulis, stigmatibus capitatis et puberulentibus.

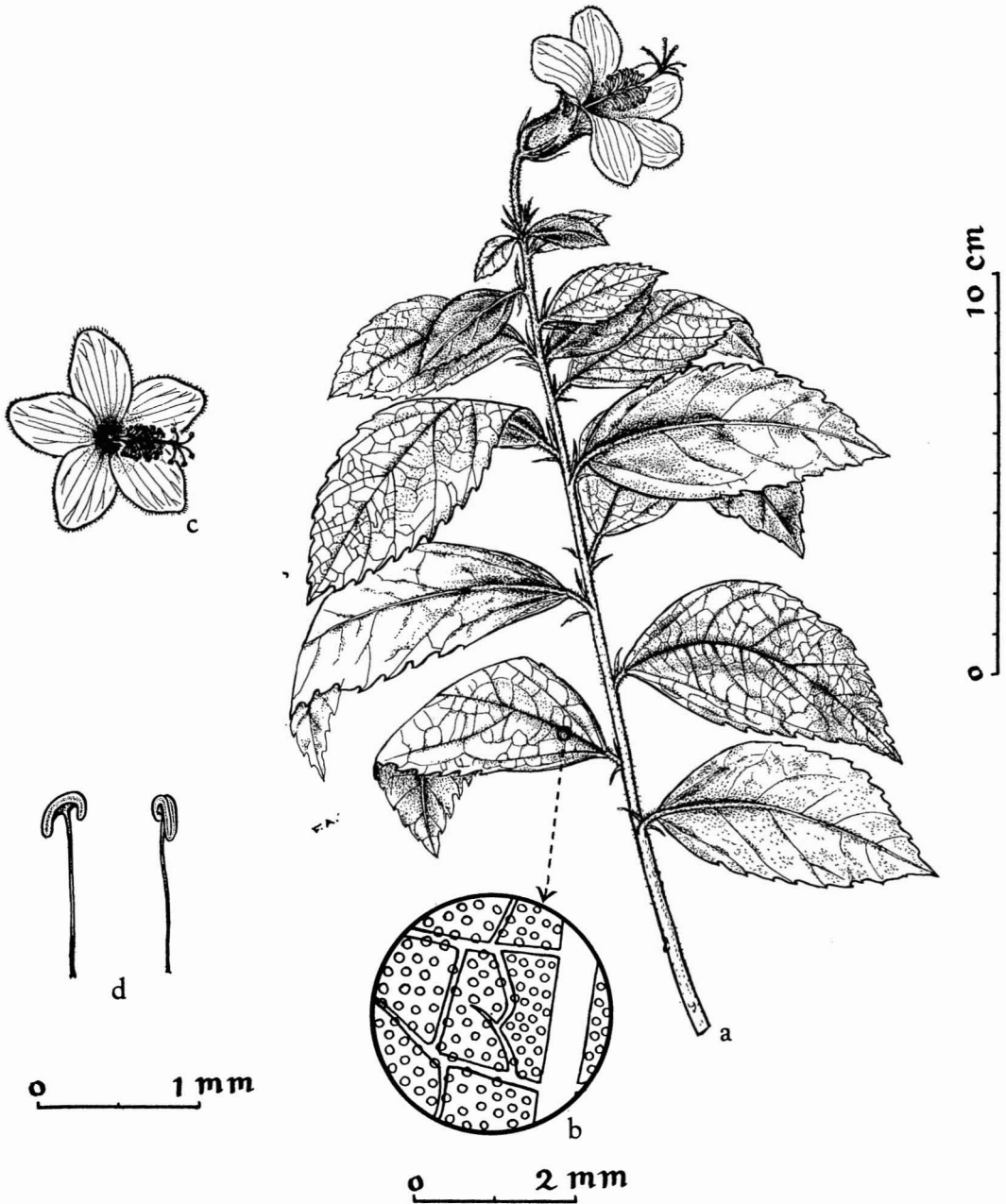


FIG. 7. *Hibiscus Roatae* St. John, from holotype. a, habit, $\times \frac{1}{2}$; b, part of blade showing internal glands, $\times 10$; c, flower, $\times \frac{1}{2}$; d, stamens, $\times 20$.

DIAGNOSIS OF HOLOTYPE: Tree; branches glabrate, the bark brown and longitudinally fissured; internodes 6–20 mm long; leafy branchlets 2–3 mm in diameter, closely white stellate puberulent; stipules 6–9 mm long,

linear, acute, deciduous, sparsely appressed ascending white hirsute; petioles 3–8 mm long, sparsely stellate puberulent elsewhere but densely so in the upper groove; blades 3.5–9.2 cm long, 1.7–4.7 cm wide, elliptic, acute

at the apex, the base semielliptic rounded, the margins coarsely crenate but the teeth minutely mucronate, the texture firm chartaceous, above dark green, shiny, glabrous elsewhere but the midrib sparsely forked hirsutulous near the base, below sparsely white stellate pubescent on veins and veinlets; lateral veins 4 on a side; peduncle 17–20 mm long, axillary, closely white stellate puberulent and capitate glandular puberulous; bracts 8–12 mm long, linear, acute, with ascending hairs, sparsely white bifurcate puberulent and closely capitate glandular puberulous; calyx 2 cm long, 8 mm in diameter, the tube cylindrical, dark (apparently reddish brown), remotely stellate hirsutulous and densely capitate glandular puberulous, the nerves obscure, the lobes 8 mm long, narrowly lance-deltoid, the back with similar pubescence but the margins lanate with white stellate puberulence; petals 3.8–4 cm long, 1.3–1.4 cm wide, elliptic, cuneate (apparently red), closely white stellate puberulent without, glabrous within; staminal column 33 mm long, glabrous; free filament tips 3.5–4 mm long, numerous, crowded on the last 1 cm of the column; anthers 1 mm long, cochleate; style column 3 cm long; style branches 7 mm long, white pilosulous; stigmas capitate and puberulous.

HOLOTYPE: Hawaiian Islands, Kauai Island, Waimea Dist., bottom of short Nualolo Trail, 2,250 ft alt, 30 September 1969, *Robert W. Hobdy 158* (BISH).

DISCUSSION: *H. Roatae* is a member of the section *Ketmia*, as is its closest relative, *H. Newhousei* Roe, of Moloua Forest, northeastern Kauai, a species with the stipules 4–8 mm long; petioles 0.3–1.8 cm long, shaggy pubescent in upper groove, quickly glabrate elsewhere; blades acuminate, glabrous; bracts almost glabrous; calyx lobes broadly deltoid; petals 3.8–4 cm long, clear bright red. *H. Roatae*, of western Kauai, has the stipules 6–9 mm long; petioles 3–8 mm long, sparsely stellate puberulent, and densely so in the upper groove; blades acute, below sparsely white stellate pubescent on veins and veinlets; bracts with ascending pubescence, sparsely white bifurcate puberulent and closely capitate glandu-

lar puberulous; calyx lobes narrowly lance deltoid; petals 5–5.2 cm long (red?).

Later Mr. Hobdy was queried about this *Hibiscus*, and he replied by letter, 15 December 1971: "The *Hibiscus* (#158) you asked about are quite variable. They grow in the lower fringe of the forest on the trail that joins short Nualolo and Awaawapuhi trails. There are many species of native trees growing in the area forming a low canopy with many openings. The *Hibiscus* grows under the trees and in the openings. In the shade it is quite spindly with no distinct form. In the openings it grows more compactly but still loosely branched. The plants are never trees but have several stems sometimes 10 feet tall.

"The flowers show much variety ranging from pale yellow-orange to red. The leaves also show variation in shape and pubescence. I suspect that there is hybridization occurring between the *H. St.-johnianus* and a maroon *Hibiscus* described to me by Hans Hansen. I could not find the maroon plants in three trips into the area, but there does seem to be hybridization. What do you make of it?"

At present, working in the herbarium, one cannot be positive about the occurrence of a wild hybrid population in the area concerned. An indigenous maroon-flowered species is as yet unknown. On field trips the writer has studied most of the known species of *Hibiscus* of the Hawaiian Islands. In no natural area has he observed a population of wild hybrids. Consequently, in view of the several differences, this collection of *Hibiscus* from Kauai is described as a new species. On the other hand it is well known that, by hand pollination of cultivated *Hibiscus*, fertile hybrids can be created, and this has been done in the gardens of Hawaii many hundreds of times.

This new Hawaiian species is named in honor of Sister Margaret James Roe, of the Maryknoll Sisters. She was the author's student for years and, when a graduate, began to study *Hibiscus* and to write her master's thesis on the Hawaiian species. She is now headmistress of a school in Guatemala City. This species is dedicated to her in recognition of her love of nature, her energy and devotion, and her superior personality. The new epithet is formed

from the personal name Roe, and the Latin adjectival suffix, *-atus*, indicating possession of.

GESNERIACEAE

Cyrtandra Hobdyi sp. nov. (sect. *Schizocalyces*)

Fig. 8

DIAGNOSIS HOLOTYPE: Frutex est, cicatricibus 1.5–2 mm altis semiorbiculari-scutelliformatis pallidis, cicatricibus fasciculorum 7, internodis 5–20 mm longis novellis et ramulis foliosis dense adpresse fusci-pilosulis, *foliis* oppositis adscendentibus vel divergentibus separatis et in 3–4 nodis superis productis inaequalibus uno jugo quique $\frac{1}{3}$ majori, petiolis 9–22 mm longis gracilibus densiter adscendente fusci-pilosulis, *laminis* 2.5–7.3 cm longis 11–28 mm latis subtiliter chartaceis ellipticis (vel oblanceolatis) apice acuto basi subito cuneata supra obscure

viridibus et adpresse pilosulis pilis multis sed separatis, midnervo cum pilis simulantibus sed multis et congregatis, infra densiter adpresse adscendente fusci-pilosulis marginibus pilosuliciliatis infra integris sed in parte $\frac{1}{2}$ – $\frac{2}{3}$ apicali minute serrulatis nervis secundariis 7–8 in latere quoque adscendentibus tum ad marginem sursum curvatis, *cymis* 38–45 mm longis reductis et solum 1-floriferis densiter adpresse adscendente fusci-pilosulis, pedunculo 9–15 mm longo divergenti et cum 2 bracteis apicalibus jugatis 3–5 mm longis linearibus, pedicelis 11–15 mm longis, alabastris anguste campanulatis apertis, lobis calycis erectis sed separatis, *calycibus* in flore 16–17 mm longis (in sicco 12–13 mm longis) viridibus vicine adpresse adscendente pilosulis paene ad basim fere aequaliter partitis, tubo 1–2 mm longo anguste campanulato, limbo fere aequaliter 5-lobato, lobis 15–17 mm longis 3 mm latis anguste lineari-oblanceolatis, *corollis* 25–26 mm longis

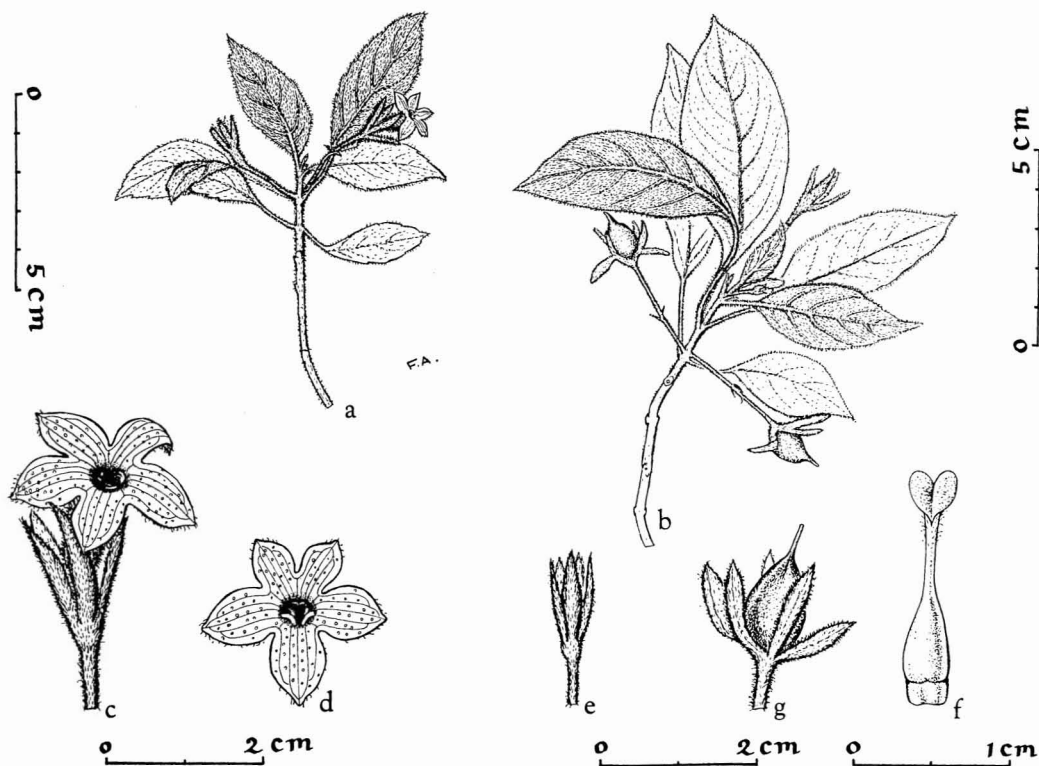


FIG. 8. *Cyrtandra Hobdyi* St. John, from holotype. *a, b*, habit, $\times \frac{1}{2}$; *c, d*, flower, $\times 1$; *e*, bud, $\times 1$; *f*, pistil, $\times 2$; *g*, fruit, $\times 1$.

in flore albis tubo 14 mm longo intra glabro cylindrico in basi 4 mm diametro in medio 5 mm diametro in orificie 7 mm diametro extra parte $\frac{1}{3}$ infera recta glabra tum in 25° deflexa parte $\frac{2}{3}$ supera densiter adpresse pilosula, limbo et in proxima faucem sparse capitate glandulosi-puberulis 2-labiatis 5-lobatis et inter labias 6 mm fidis, 2 lobis superis 7 mm longis 6 mm latis latiter oblongi-ellipticis, lobis lateralibus 8 mm longis 7 mm latis obliquiter ellipticis, loba infera 9 mm longa 7–7.5 mm lata oblongi-elliptica, staminibus 2 fertilibus cum filamentis in tubo ad 5 mm ex orificie adnatis parte libera 1 mm longa crasse subulata, antheris 3.5 mm longis ellipsoideis compressis dimidio imo minori, staminodiis in tubo ad 6 mm ex orificie adnatis parte libera 0.5 mm longa, antheridiis 0.5 mm longis late linearibus albis, lobis stigmatis binis sessilibus 2.8 mm longis late ellipticis obscuris et per $\frac{2}{3}$ in latere proximali connatis, ovario 6 mm longo lanceoloideo glabro in basi cum disco 1.3 mm alto cincto, stylo 5 mm longo in dimidio supero sparse pilosulo, baccis 10–11 mm longis (in sicco) 7 mm diametro ellipsoideo atomifero rostrato, seminibus 0.25–0.3 mm longis 0.2–0.22 mm diametro ellipsoideis mellicoloratis in epidermati grosse hexagonal-reticulatis areolis $\frac{1}{4}$ longis quam seminam.

DIAGNOSIS OF HOLOTYPE: Shrub; leaf scars 1.5–2 mm high, semiorbicular-shield-shaped, pale; bundle scars 7; internodes 5–20 mm long; young shoots and leafy branchlets densely appressed tawny pilosulous; leaves opposite, ascending or diverging, not crowded, borne at the 3–4 upper nodes, unequal, one of each pair about $\frac{1}{3}$ the larger; petioles 9–22 mm long, reddish, slender, and densely appressed ascending tawny pilosulous; blades 2.5–7.3 cm long, 11–28 mm wide, thin chartaceous, elliptic (or oblanceolate), the apex acute, the base abruptly cuneate, above dark green, the surface appressed pilosulous, the hairs numerous but separate, the midrib with similar but dense pilosity, below densely appressed ascending tawny pilosulous, the margins pilosulous ciliate, entire below but in the outer $\frac{1}{2}$ – $\frac{2}{3}$ minutely serrulate, midrib reddish above, the secondary veins 7–8 on each side, ascending, then near the margins upcurved; cymes 38–45 mm long,

axillary, reduced and only 1-flowered, densely appressed ascending tawny pilosulous; peduncle 9–15 mm long, diverging, bearing paired apical bracts 3–5 mm long, linear; pedicels 11–15 mm long; buds narrowly campanulate, open, the calyx lobes erect but separated; calyx in anthesis 16–17 mm long (when dried 12–13 mm long), green, closely appressed ascending pilosulous, nearly equally parted almost to the base, the tube 1–2 mm long, narrowly campanulate, the limb subequally 5-lobed, the lobes 15–17 mm long, 3 mm wide, narrowly linear-oblanceolate; corolla 25–26 mm long when fresh, white, the tube 14 mm long, glabrous within, subcylindric, 4 mm in diameter at base, 5 mm in diameter at the middle, 7 mm at the throat, without the lower $\frac{1}{3}$ glabrous, straight, then gently deflexed at 25° from the axis of the lower tube, the upper $\frac{2}{3}$ densely appressed pilosulous; the limb sparsely capitate glandular puberulous in and near the throat, 2-lipped, 5-lobed, cleft down 6 mm between the lips; the two upper lobes 7 mm long, 6 mm wide, broadly oblong ellipsoid; lateral lobes 8 mm long, 7 mm wide, obliquely elliptic; lower lobe 9 mm long, 7–7.5 mm wide, oblong elliptic; filaments fused to the corolla tube within 5 mm of the throat, the free portion 1 mm long, thick subulate, spirally upcurved; 2 anthers 3.5 mm long, ellipsoid, compressed, one locule much reduced and smaller; the staminodia with their filaments adnate to within 6 mm of the throat, the free portion 0.5 mm long, cuneate, flat, the antheridium 0.5 mm long, broad linear, white; stigmatic lobes 2, sessile, 2.8 mm long, broadly elliptic, dark, connate $\frac{2}{3}$ way up proximal side; ovary 6 mm long, lanceoloid, glabrous, the base surrounded by a glabrous disk 1.3 mm high; style 5 mm long, sparsely pilosulous in the upper half; berry 10–11 mm long (when dried), 7 mm in diameter, ellipsoid, atomiferous, short beaked; seeds 0.25–0.3 mm long, 0.2–0.22 mm in diameter, ellipsoid, amber colored, the surface covered with prominent raised cellular hexagonal reticulations that are $\frac{1}{4}$ as long as the seed.

HOLOTYPE: Hawaiian Islands, Kauai Island, Waimea Dist., Kuia Valley, 2,000 ft alt, 3 July 1969, Robert Hobdy 127 (BISH).

DISCUSSION: *C. Hobdyi* is a member of the

section *Schizocalyces*, as is its closest relative, *C. koolauensis* St. John & Storey, of Oahu, a species with the pedicels 23 mm long; peduncular bracts 9 mm long; calyx sparsely pilosulous without; berry lanceoloid, when dried 14 mm long; branchlets glabrate; bundle scars 5; blades 7–12.5 cm long, 30–52 mm wide, the base long and gradually decurrent, below the intervals almost imperceptibly puberulous. *C. Hobdyi* has the pedicels 11–15 mm long; peduncular bracts 3–5 mm long; calyx closely appressed ascending pilosulous; berry ellipsoid, when dried 10–11 mm long; branchlets densely appressed tawny pilosulous; bundle scars 7; blades 2.5–7.3 cm long, 11–28 mm wide, the base abruptly cuneate, below densely appressed ascending tawny pilosulous.

COMPOSITAE

Lipochaeta deltoidea sp. nov. (sect. *Lipochaeta*)

Fig. 9

DIAGNOSIS HOLOTYPE: Frutex 40 cm vel plus altus licet erectus est, internodis 1.5–9.5 cm longis 4-angulosis adpresse albi-hirsutulis, nodis cum circulo dense hirsutulo, petiolis 10–21 mm longis gracilibus adpresse hirsutulis, laminis 6.3–9 cm longis supra basem subtruncatam anguste deltoideis apice acuminato marginibus duplo serratis dentibus cum basibus rotundatis distentis et apicibus gracilibus argutis textura firme chartacea supra obscure viridibus adpresse hirsutulis sed pilis separatis infra in nervis elevatis crebre pallidi-hirsutulis, inflorescentia terminali cymosa plerumque cum capitibus binis, tegulis plerumque in seriebus binis eis exterioribus 5–6 mm longis lanceolatis herbaceis dense adpresse hirsutuli-canescensibus, illis interioribus 4–5 mm longis et angustioribus, paleis receptaculi 3.5–4 mm longis anguste oblanceolatis cum 15 nervis parallelis et marginibus et apicibus detegentibus viridibus hirsutulis, floribus radiatis interitis, achaeneis radiatis 2.4–2.5 mm longis 2–2.8 mm latis 1.3–1.6 mm crassis obovoideis 3-angulosis latere distali convexo tuberculoso et cum fugo mediali, squamis pappi paucis 0.3–0.5 mm longis dentatis, floribus disci 4 mm longis multis tubo corollae 1.5 mm longo subcylindrico limbo 1.5 mm longo campanulato extra sparse puberulento 5 lobis 1.7

mm longis 0.5 mm latis deltoideis obtusis, filamentis 0.5 mm longis filiformibus, antheris 1.5 mm longis fere nigris thecis in basi caudatis in apice connectivo cum projectione lanceolato pallido subtili ciliato 0.5 mm longo, ovario 1 mm longo prismatico 4-anguloso supra hispidulo sterili, squamis pappi compluribus inaequalibus lineari-oblanceolatis translucensibus eis longioribus 0.3 mm longis.

DIAGNOSIS OF HOLOTYPE: Shrub, more than 40 cm tall, apparently erect; internodes 1.5–9.5 cm long, 4-angled, appressed white hirsutulous; nodes encircled by a densely hirsutulous ring; petioles 10–21 mm long, slender, and appressed hirsutulous; blades 6.3–9 cm long, narrowly deltoid above the subtruncate base, the apex acuminate, the margins doubly serrate, the teeth with slender sharp tips above the rounded expanded bases, the tissue firmly chartaceous, above dark green and appressed hirsutulous with separated hairs, below pale and abundantly hirsutulous on the elevated veins; inflorescence a terminal cyme, mostly of 2 heads; tegules mostly in 2 rows, the outer ones 5–6 mm long, lanceolate, herbaceous, densely appressed hirsutulous canescent; inner tegules 4–5 mm long and more narrowly lanceolate; receptacle conic, chaff 3.5–4 mm long, narrowly oblanceolate, with 15 parallel veins, the margins and the exposed green tip hirsutulous; ray flowers lost; ray achenes 2.4–2.5 mm long, 2–2.8 mm wide, 1.3–1.6 mm thick, obovoid, 3-angled, the distal side convex, tuberculate and with a median rim; the few pappus scales 0.3–0.5 mm long, dentate; disk flowers numerous, 4 mm long; corolla tube 1.5 mm long, subcylindric, the limb 1.5 mm long, campanulate, sparsely puberulent without, the 5 lobes 1.7 mm long, 0.5 mm wide, deltoid, obtuse, filaments 0.5 mm long, filiform; anthers 1.5 mm long, blackish, the sacs caudate at base, and at apex bearing a thin pale lanceolate ciliolate projection of the connective 0.5 mm long; ovary 1 mm long, prismatic, 4-angled, hispidulous above, sterile; pappus of several unequal linear oblanceolate translucent scales, the longest ones 0.3 mm long.

HOLOTYPE: Hawaiian Islands, Kauai Island, lower Hikimoe Valley, 1,800 ft alt, 18 April 1969, *Robert W. Hobdy 102* (BISH).

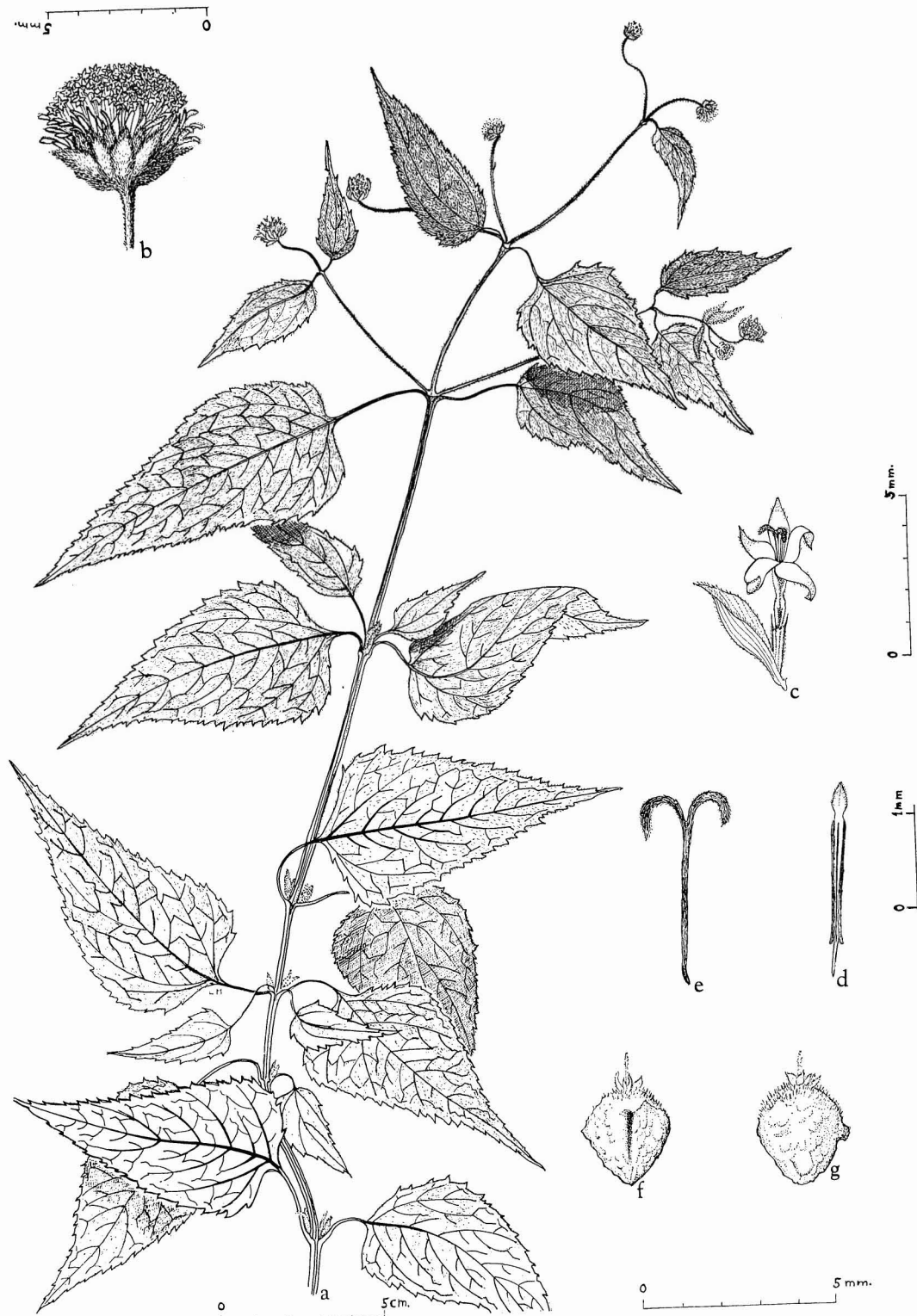


FIG. 9. *Lipochaeta deltoidea* St. John, from holotype. *a*, habit, $\times 1/2$; *b*, head, $\times 5$; *c*, disk flower, $\times 5$; *d*, stamen, $\times 15$; *e*, style and stigmas, $\times 15$; *f*, ray achene, proximal view, $\times 6$; *g*, ray achene, distal view, $\times 6$.

DISCUSSION: *L. deltoidea* is a member of the section *Lipochaeta*, as is its closest relative, *L. subcordata* Gray, var. *populifolia* Sherff, of Lanai, a variety with the outer tegules 4–5 mm long, with elevated veins, rather sparsely appressed puberulent; chaff mucronate; disk corolla lobes 0.5 mm long; principal blades 6–8 cm wide, broadly ovate-cordate or subcordate. *L. deltoidea* has the outer tegules 4–6 mm long, densely appressed hirsutulous canescent, the veins obscure; chaff acute; disk corolla lobes 1.7 mm long; principal blades 3–4.5 cm wide, narrowly deltoid above the subtruncate base.

The new epithet is the Latin adjective *deltoidea*, triangular, derived from the Greek delta, and it is chosen with reference to the shape of the leaves.

Lipochaeta waimeaensis sp. nov. (sect. *Lipochaeta*)

Fig. 10

DIAGNOSIS HOLOTYPI: Frutex licet est, caule 2 mm diametro paullo rubro subquadri-laterato sed cum 6 rugis longitudinalibus rotundatis et adpresse adscendente albi-puberulo tandem glabrato subrubro, internodis 5–8.3 cm longis, nodis principalibus plerumque cum solum cicatricibus linearibus sed nodo uno cum petiolis marcescentibus 8 mm longis, ramulis axillaribus oppositis fortibus dense adpresse adscendente albi-strigosi-puberulis et cum internodis 8–30 mm longis copiose foliosis cum foliis principalibus cum petiolis 5–7 mm longis copiose adpresse albi-strigosi-puberulis, laminis 3–4.7 cm longis 3–4 mm latis anguste ligulatis in basi cuneatis in apice subacutis textura coriacea supra obscure viridibus nervis impressis intra intervallis tholaceis, midnervo adpresse adscendente albi-strigosis et intervallis adpresse adscendente albi-strigosi-puberulentis pilis separatis infra densiter adpresse adscendente albi-hirsutulis, midnervo infra et nervulis principalibus elevatis incrassatis nervulis lateralibus fere 10 in dimidio quoque curvatis adscendentibus tum interconnectis et nerva marginali forti formantibus, marginibus cum serrulis remotis compressis rotundatis axili fere omni cum ramuli brevi cum foliolis minimis congregatis 7–15 mm longis (apex caulis deest), ramulis lateralibus omnibus cum cyma laxa

cum 5–7 capitibus eis terminalibus et remotis, pedunculis 8–30 mm longis nudis, capitibus heterogamis radiatis, involucre in flore 4 mm alto 6 mm diametro in fructu 7 mm diametro, phyllariis in seriebus binis et 3.5–4 mm longis anguste ovatis viridibus firmis subcoriaceis valde adpresse adscendente albi-puberulentibus eis exterioribus plerumque 5 viridibus illis interioribus plerumque 6 supra in parte detegenti viridibus infra stramineis, midnervo ad apicem plus minusve evidenti, floribus radiatis 4–5 marginalibus luteis lamina 4–5 mm longa latiter elliptica emarginata 5–7-nervosa tubo 1 mm longo, squamis pappi compluribus 1–1.2 mm longis lineari-spatulatis puberulis, achaenis radiatis 2 mm longis 0.8 mm latis obovoides triangulos puberulis et ad apicem aculeatis, receptaculo conico, squamis receptaculi 4 mm longis oblanceolatis sulcatis sursum dorsum et proxima apicem obscuram puberulentis, floribus disci multis 5 mm longis, ovario 1 mm longo 4-anguloso cuneati-prismatico, squamis pappi 0.3–0.5 mm longis compluribus linearibus puberulentis, corollis 2.5 mm longis tubo cylindrico limba 1.3 mm longa anguste infundibuliformi lobis 0.5 mm longis ovatis, antheris 1 mm longis fere nigris lobis stigmatis 0.6 mm longis oblanceolati-linearibus, achaenis non visis.

DIAGNOSIS OF HOLOTYPE: Evidently a shrub; stem 2 mm in diameter, reddish, somewhat 4-sided, but with 6 rounded longitudinal ridges and appressed ascending white puberulence, later glabrate, dull reddish; internodes 5–8.3 cm long; the main nodes mostly with only linear leaf scars of the caducous leaves, but one node with dried petioles 8 mm long; branchlets axillary, opposite, well developed, abundantly white appressed ascending strigose puberulous, their internodes 8–30 mm long, abundantly leafy; their principal leaves with petioles 5–7 mm long, abundantly white appressed strigose puberulous; blades 3–4.7 cm long, 3–4 mm wide, narrowly ligulate, the base cuneate, the apex subacute, texture coriaceous, above dark green, the veins impressed between the domelike intervals, midrib appressed ascending white hirsutulous, the intervals white appressed ascending strigose spaced puberulent; below densely white appressed

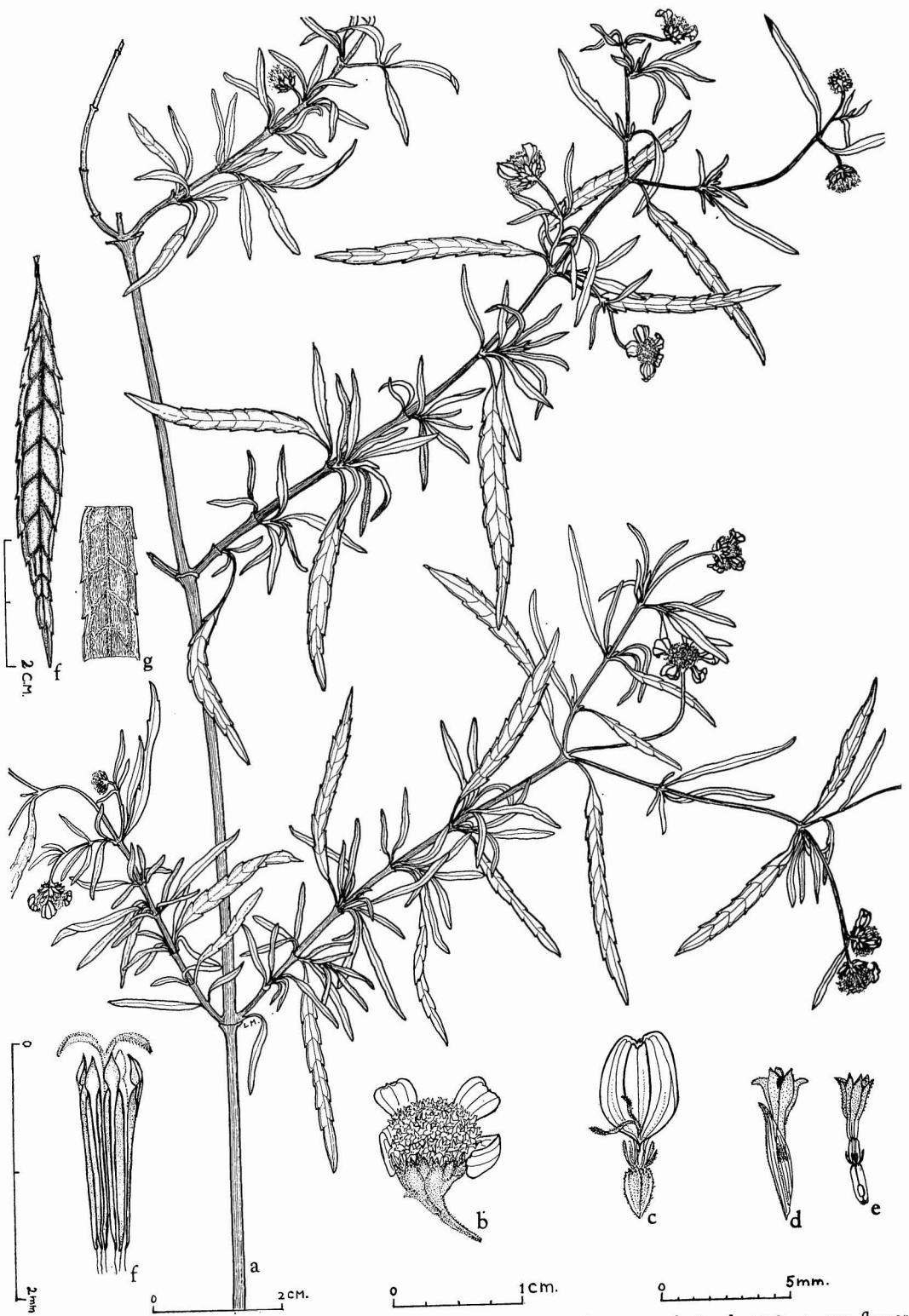


FIG. 10. *Lipochaeta waimeaensis* St. John, from holotype. *a*, habit, $\times 1$; *b*, head, $\times 2$; *c*, ray flower, $\times 4$; *d*, chaff and disk flower, $\times 4$; *e*, disk flower, $\times 4$; *f*, leaf, upper side, $\times 2$; *g*, leaf, underside, $\times 2$.

ascending hirsutulous, the midrib and principal veins raised and thickened, the lateral veins about 10 on each side, curved ascending, then interconnected and forming a strong continuous vein near the margin, the margins with remote compressed rounded serrulations; in nearly every axil is a short shoot with several pairs of crowded tiny leaves 7–15 mm long; tip of the main stem blasted and lost; each lateral branch bearing a loose cyme with 5–7 heads, these terminal and well spaced; peduncles 8–30 mm long, naked; heads heterogamous, radiate; involucre in anthesis 4 mm tall, 6 mm in diameter, in fruit 7 mm in diameter; phyllaries in 2 rows and 3.5–4 mm long, narrowly ovate, green, firm, subcoriaceous, closely appressed ascending white puberulent, the outer ones mostly 5 in number, green, the inner ones mostly 6 in number, green on the exposed upper part, stramineous below, the midrib more or less evident towards the tip; ray flowers 4–5, marginal, yellow, the ray 4–5 mm long, broadly elliptic, emarginate, 5–7-nerved; corolla tube 1 mm long; pappus of several scales 1–1.2 mm long, linear spatulate, puberulous; ray achenes 2 mm long, 0.8 mm wide, obovoid, 3-angled, puberulous, and near the apex also aculeate; receptacle conic; chaff

4 mm long, oblanceolate, channeled, sparsely puberulent up the back and near the dark tip; disk flowers numerous, 5 mm long; ovary 1 mm long, 4-angled, cuneate prismatic; pappus of several linear puberulous scales 0.3–0.5 mm long; corolla 2.5 mm long, the tube cylindric, the limb 1.3 mm long, narrowly funnelform, the lobes 0.5 mm long, ovate; anthers 1 mm long, blackish; stigma lobes 0.6 mm long, oblanceolate linear; achenes not seen.

HOLOTYPE: Hawaiian Islands, Kauai Island, Waimea Canyon, upper slope of west side, 1,200 ft alt, 17 April 1967, *Robert W. Hobdy 101* (BISH).

DISCUSSION: *L. waimeaensis* is a member of the section *Lipochaeta*, as is the related variety, *L. lavarum* (Gaud.) DC., var. *Skottsbergii* Sherff, of Maui, a variety with entire leaves, the principal ones 1.5–3 mm wide, strigose canescent, but its flower structure is unknown. *L. waimeaensis* has the leaf margins remotely compressed rounded serrulate, the principal leaves 3–4.7 mm wide, below densely white appressed ascending hirsutulous.

The new epithet is formed from the geographic name of the type locality, Waimea, and *-ensis*, the Latin adjectival place ending.