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BOARD OF AGRICULTURE AND FORESTRY
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New and Noteworthy Hawaiian Plants

BY

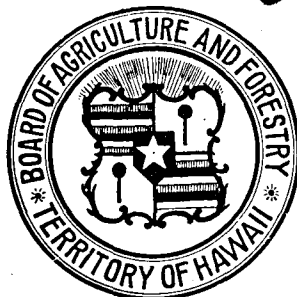
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*From the Division of Forestry, Board of Agriculture and Forestry,
Honolulu, T. H.*

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NEW AND NOTEWORTHY HAWAIIAN PLANTS.

BY DR. L. RADLKOEFER AND J. F. ROCK.

Alectryon macrococcus Radlkofer in Sitzungsber. K. Bayer.

Ac. XX (1890) p. 255 et in Engl. & Pr. Pfl.-Fam. III, 5 (1895) p. 333.—Mahoe, gen. nov.? Hillebr. Fl. Haw. Isl. (1888) p. 86.—*Dodonea* sp. Drake del Cast. III. Fl. Ins. Mar. Pacif. (1890) p. 144 in obs. ad. Dod. visc.—Vulgo *Mahoe* in Molokai teste Hillebr. l. c. (quo nomine in Novo-Zealandia *Melicytus rami-florus* Forest. salutatur t. Kirk in Forest Fl. N.-Zeal., 1889, p. 3).

Arbor mediocris; rami teretes, rubri—fusci, glabrati, juveniles striati, cum foliis novellis tomento adpresso sericeo flavescenticano induti; folia 2—5—juga; foliola magna, opposita, elliptica vel subovata, utrinque obtusa vel apice acuminata (t. Hillebr.), petiolulata, integerrima, undulata, coriaceo-chartacea, nervis lateralibus sat approximatis obliquis subtus ut et nervo mediano valido dilatato supra plano prominentibus, glabra (vel subtus t. Hillebr. laxe tomentosa), utrinque nitidula, sicca e viridi subfusca, epidermide non mucigera paginae superioris hypodermate suffulta; paniculae axillares, basi ramosae, parvae; flores—(ignoti); fructus 1—coccus, adhaerentibus loculis 2 abortivis; coccus evolutus globosus, pro genere maximus, corticosus, glaber, fissuris irregulariter areolatus, intus pilis setaceis singulis adpersus; seminis testa crustacea, brunnea, splendens.

Arbor 7—10 m alta. Folia petiolo ca. 10 cm longo adjecto 40 cm et ultra longa; foliola cum petiolulis 1—1, 5 cm longis ca. 20 cm longa, 9 cm lata. Paniculae 10 cm et ultra longae. Fructus coccus diametro 2, 5 cm et ultra, pericarpio 1, 5 mm crasso.

In archipelagi Sandwicensis insulis Oahu, Molokai et Maui: Hillebrand! ("Oahu, on the S. W. slope of Mount Kaala, left branch of Makaleha;" "Molokai, on the pali of Kalaupapa;" ca. 1870; Hb. Kew.; Berol.); J. F. Rock (Maui, in declivibus montis Haleakala meridiem versus, a. 1910, fl. et fr., ex ipso in litt. m. Jan. 1911; specimina non vidi). 22. II. ii. L. Radlkofer.

The above description was communicated to me by Prof. Dr. L. Radlkofer of Munich for publication. (J. F. Rock.)

Flowering specimens of *Alectryon macrococcus* which until now were unknown, were collected by me, together with young and mature fruits on the southern slope of Mt. Haleakala, Maui, on the lava field of Auahi at an elevation of 2,600 feet, where the tree is not uncommon (see Report of the Board of Agriculture and Forestry for the Biennial Period 1910, p. 81).

Following is a description of the flowers of *A. macrococcus* with additional notes on the fruits:

Inflorescentia paniculata, contracta, axillaris, pilis flavescentibus prorsus induta; flores parvi, in pedicellos 2 mm longos, conferti; calyx 5-lobus 2 mm longus, lobis subacutis, persistens in coccis junioribus; petala nulla; stamina 6-8, inter sinus disci parvi extus inserta, filamentis brevissimis, hirsutis; antherae rubrae, 1 mm longae, ad basin subdidymae; ovarium a lateribus compressum, dense strigosum, 1-2-cellulis; stylus brevis, fere arcuatus, stigmatate 2-fido; fructus 1-2-cocci, juniores pilis fulvis setulosis appressis, cum residuis styli, maturi glabri, fuscati, globosi, 3-6 cm diametro, arillo coccineo, etc.

Inflorescence an axillary contracted panicle, covered throughout with yellowish hairs; flowers small, on pedicels of 2 mm, densely clustered; calyx persistent with the young fruits, 5-lobed 2 mm long, the lobes subacute; petals none; stamens 6-8 inserted externally between the sinuses of the small disc, on very short hirsute filaments, anthers red, 1 mm long, subdidymous at the base; ovary compressed, densely strigose, 1-2 celled; style short almost arcuate, stigma two lobed; fruit consisting of 1-2-cocci, the young ones covered with appressed setulose, yellowish hairs, crowned by the remnants of the style, mature ones glabrous, dark brown, globose, 3-6 cm in diameter. Arillus scarlet, edible, etc.

Flowering and fruiting specimens (No. 8642) collected November 10-20, 1910. The wood is yellowish brown, hard grained and exceedingly tough. The flowers appear to be polygamous, as stamina are present in female flowers.

July 8, 1911, J. F. Rock. Board of Commissioners of Agriculture and Forestry, T. H.

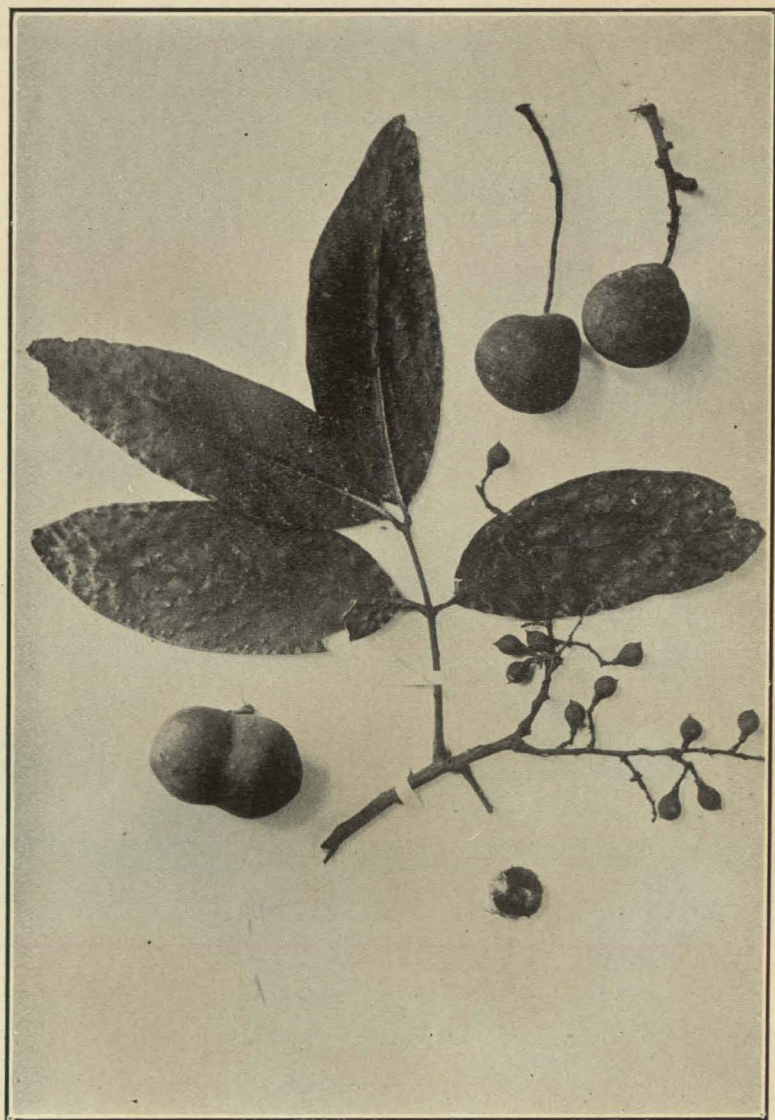


Plate 1. *Alectryon macrococcus* Radlk.

Mahoe. Showing young and mature fruits and seed. Slightly less than one-third natural size.

Sapindus Thurstonii, Rock sp. n.

Vulgo A'e et Manele in Hawaii.

Arbor (decidua?) 10 m—26 m alta, truncus erectus 0.3 m—1.3 m diameter; cortice bruno, desquamante ab arboribus maturis; rami teretes brunei, glabrati; folia alterna abrupte vel imparipinnata, petiolis 4.5 cm—6 cm longis, tomentulosis, rachibus minime marginatis et in folia novella alatis; foliolis suboppositis, minime falcatis, 6 cm—12 cm longis, 2 cm—3.5 cm latis, apice acuminatis, basi rotundis, supra glabris, subtus tomentulosis; nervo mediano valide prominente; paniculae terminales pubescentes circa 12 cm longae; flores—(ignoti); cocci 1—2 globosi 17 mm—20 mm diametro, ad basin connati vel singuli cum rudimentis 1—2 ovulorum abortivorum; pericarpium coriaceum; semina globosa, fuscata vel nigra 10 mm—12 mm diametro; testa ossea sine caespitosa pilositate ad basin.

In archipelagi Hawaiiensis insula Hawaii: J. F. Rock leg. in declivibus montis Hualalai, Puuwaawaa 2700 pedes s.m. Jun. a. 1909 et Mauna Loa orientem versus, 4500 pedes s.m. Aprilis a. 1911.

A. deciduous? tree 10 m-26 m high with a trunk of 0.3 m-1.3 m in diam.; bark light brown falling off in scales from old trees, exposing the smooth inner layers; branchlets terete, light brown and glabrous; leaves alternate abruptly or imparipinnate on a main petiole of 4.5 cm-6 cm, slightly tomentose, the rachis slightly marginate, but winged in the young leaves; leaflets nearly opposite and sessile in 4-6 pairs, chartaceous elliptical—oblong slightly falcate, 6 cm-12 cm x 2 cm-3.5 cm, acuminate at the apex but rounded at the base, glabrous, dark green and somewhat shining above, light green and slightly tomentose underneath with the median nerve very prominent; the pubescent panicles are terminal, about 12 cm long, and branching; flowers unknown; ripe fruits consisting of 1-2 globose cocci 17 mm-20 mm in diam., which are connate at the base, or when single bear the rudiments of two abortive ones; pericarp coriaceous, endocarp pergamenous pale; seeds globose dark reddish brown or black 10 mm-12 mm in diam. with a bony testa bearing no tufts of hair at their base.

The tree is named in honor of Mr. L. A. Thurston of Hono-



Plate 2. *Sapindus Thurstonii* Rock.
A'e and Manele. Showing foliage, fruits and seeds.
About one half natural size.

lulu, who called my attention to its presence on Mauna Loa. The type material (No 8772) was collected when in company with Mr. W. M. Giffard on the eastern slopes of Mauna Loa, at an elevation of 4500 feet, in April, 1911. It is a remarkable tree attaining a height of about 80 ft. with trunks of more than four feet in diameter; it is plentiful in Kipuka Ki and Puauulu on the land of Keauhou about 6-8 miles from the Kilauea Volcano where it grows in company with *Pelea*, *Ochrosia*, *Straussia*, *Zanthoxylum*, etc. One would not suspect to find such trees in that locality as one travels for miles through Ohia (*Metrosideros polymorpha*) forest until all at once one strikes a grove of this remarkable tree which is called A'e by the natives on Mauna Loa, and Manele on Hualalai, North Kona. Unquestionably this tree must have extended farther down the mountain where the Ohia now grows, but was undoubtedly destroyed by the a-a (rough) lava flows from the flanks of the mountain. The few hundred acres on which this tree is found escaped the fiery stream by their elevation, as no lava is visible, the soil being black and rich. The tree seems to be deciduous, as I have observed specimens with the leaves all yellow and dropping, while others had young leaves only, but I have not met with any having the branches entirely bare.

On a subsequent visit (July-August, 1911,) specimens with flower-buds were collected but being badly attacked by a species of caterpillar it was impossible to make out the structure of the flowers.

The writer waited several weeks for the flowers to unfold, but instead the whole inflorescences began to wilt on every tree examined, due to the work of the caterpillar.

Hibiscadelphus Rock gen. nov.

Bracteolae 5-7, angustissimae lineares, liberae; calyx profunde et inaequaliter 2-3-fidus; columna staminea infra apicem 5-dentatum antherifera; ovarium 5-loculare, loculis 1-3 ovulatis; styli rami 5, suberecti, apice in stigmata capitata dilatati; capsula lignea loculide 5-valvis, endocarpio chartaceo solubili; semina reniformia, tomento albescenti-cano induta. Arbores mediocres cum tomento stellato; folia cordata, inaequaliter crenata; flores soli-

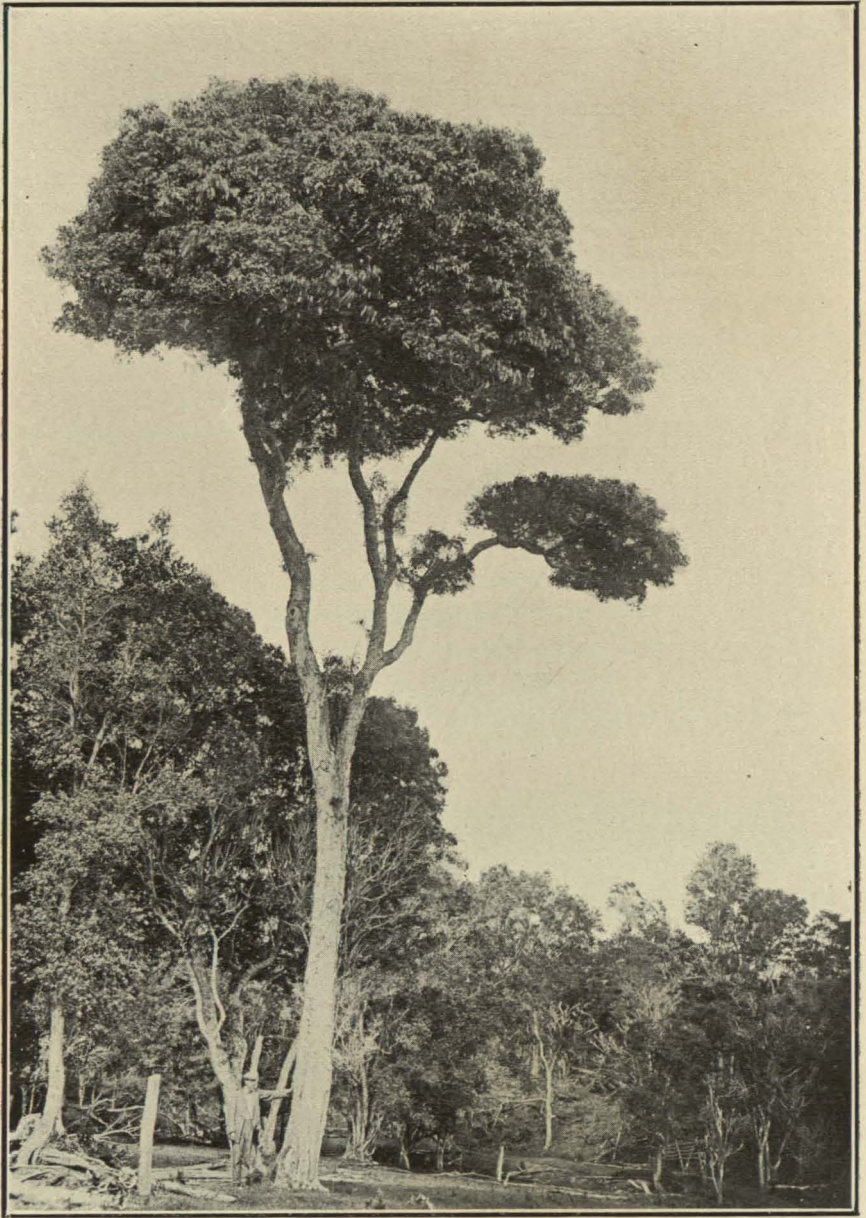


Plate 3. *Sapindus Thurstonii* Rock.
In forest on Mauna Loa, Hawaii.

tarii vel plures ex axillis foliorum; colore rubido obscuro vel luteo; calyx deciduus in fructibus maturis.

This proposed new genus consisting of 3 species peculiar to the dry sections of Hawaii and Maui, is nearest to *Hibiscus* from which it differs in its quite different flowers, deciduous calyx and woody capsule. All three species are exceedingly rare, only solitary trees being found in the various type localities, with exception of *Hibiscadelphus Hualalaiensis* of which several trees were found at Puuwaawaa and Waihou forest, on the western slope of Mt. Hualalai.

***Hibiscadelphus Giffardianus* Rock sp. n.**

Arbor 7 m alta, truncus 0.3 m diam. cortice albino glabrato, ramis robustis teretibus; foliis longe petiolatis, orbiculatis rustice acuminatis basi cordatis, tomento stellato utrinque indutis; palmato—septemnervatis, cum glandibus hispidis in angulis nervorum; stipulis parvis, triangulatis caducis; floribus solitariis vel pluribus, bracteolis 5-7 linearibus liberis; calyce saccato profunde et inaequaliter 2-3-fido, lobis acuminatis, extus pilis stellatis induto, intus glabro; corolla convoluta inflexa dependente in pedicellis 2 cm-3 cm longis; petalis erectis obliquis oblongis, apice acutis 5 cm-6 cm longis, partibus petalorum expositis pilis stellatis dense punctulatis; columna staminea petalis longiore, ad basin hispida, tubo costato tractu longo filamentis longis affixis; ovario glabro; stigmatibus capitatis; capsula lignea 4 cm-5 cm x 2 cm-2.5 cm, pro genere maxima, oblonga, rugosa extus pilis stellatis luteis induta; endocarpio chartaceo splendente tomentuloso, seminibus magnis lanatis.

In archipelagi Hawaiiensis insula Hawaii: J. F. Rock leg. in declivibus montis Mauna Loa orientem versus 4300 pedes s. m. fr. et fl. Aprilis et Jun. a. 1911.

A tree 7 m high with a trunk of 0.3 m in diam., bark smooth fibrous, whitish, branches terete, glabrous covered with leaf scars; leaves on long petioles orbicular—cordate bluntly acute at the apex 12-15 cm each way, unevenly crenate, papery, covered on both sides with a stellate tomentum, palmately 7-nerved, with hispid glands in the angles of ribs and veins on both sides; stipules small, triangular caducous; flowers solitary or several on the axils of the leaves on the ends of the branches; bracteoles 5-7,

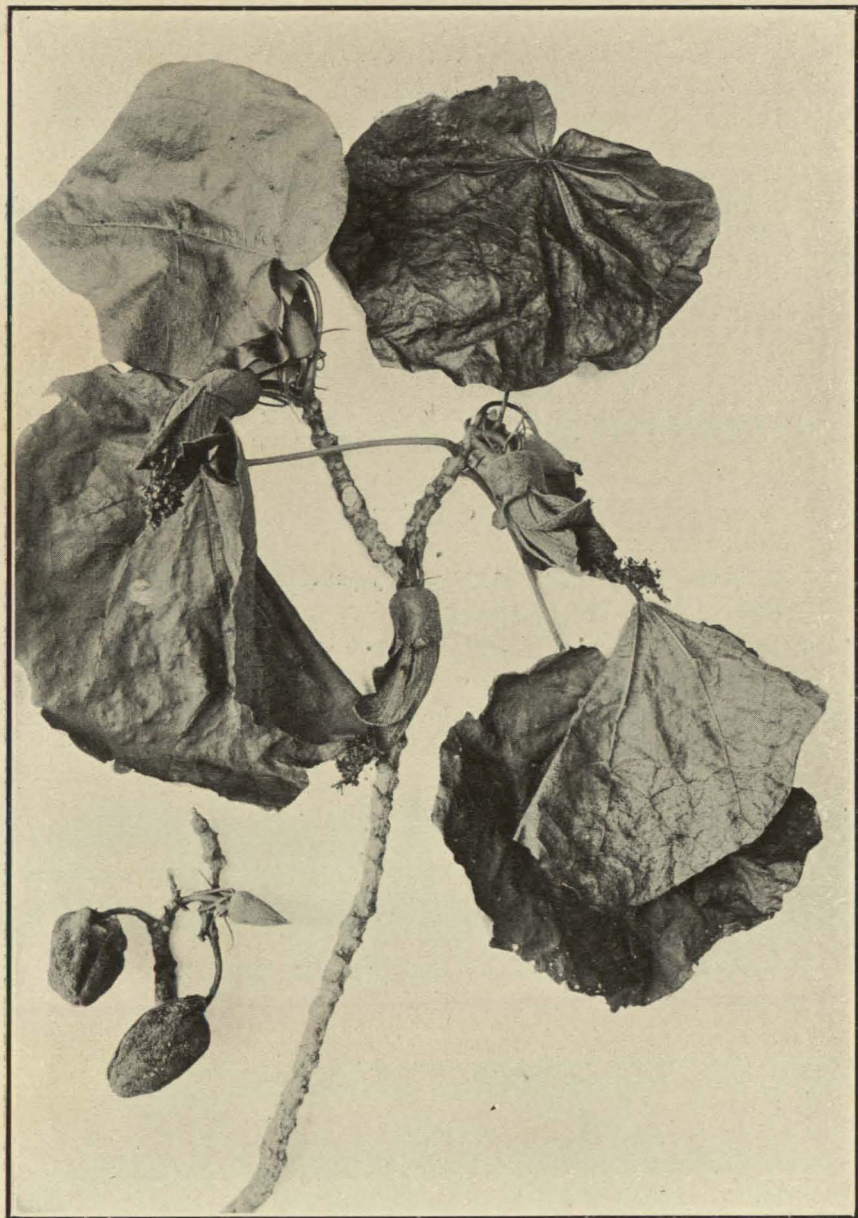


Plate 4. *Hibiscadelphus Giffardianus* Rock
Hau Kuahiwi. Showing open flowers and mature fruits.
About one half natural size.

very narrow, 2 cm long, free; calyx saccate, as long as the bracteoles, deeply and unevenly 2-3 cleft, lobes acuminate, many nerved, yellowish-green outside, with stellate hairs, glabrous inside; corolla convolute, curved, only the very apex slightly opening, not spreading as in *Hibiscus*, dependent on pedicells of 2-3 cm, petals erect 5-6 cm long, acute at the apex, oblique, oblong, deep magenta inside, grey with a stellate hispid tomentum on the exposed parts, especially on the prominent nerves; staminal column one-third longer than the petals, with numerous long filaments on nearly half its length, hispid at the base; style branches sub-erect 5 mm hispid; stigmas flesh-colored; capsule woody oblong 4-5 cm x 2-2.5 cm broadest at the base tapering towards the apex, rugose covered with stellate hispid hairs; the calyx and bracteoles deciduous in mature fruits, endocarp chartaceous shining glabrous; seeds large 7-10 mm reniform covered with a whitish grey wool.

The type material (No. 8773 Herbar. Board of Agriculture and Forestry, T. H.) was collected in April, 1911, in company with Mr. W. M. Giffard of Honolulu, who was the first to introduce many beautiful varieties of *Hibiscus* into the Territory and in whose honor the plant is named. Only one tree was found on the eastern slope of Mauna Loa at Puaulu on the land of Keauhou a few miles from Kilauea Volcano, at an elevation of 4300 feet, within the area of the proposed National Park.

Hibiscadelphus Wilderianus Rock sp. n.

Arbor 5 m, trunco erecto; foliis orbiculatis vel trilobatis cordatis, apice acutis, in petiolis stramineis 7-10 cm longis, palmato-quinque-rarius septemnervatis, supra puberulis subtus pilis minutis stellatis inspersis, nervis prominentibus hispidis; stipulis parvis subulatis puberulis; floribus solitariis in pedicellis 4 cm longis; bracteolis linearis 2 cm longis, uninerviatis liberis; calyce saccato inaequilatero trilobato, extus hirsuto intus puberulo, lobis acuminatis; (flores aperti ignoti). Petalis luteis in gemma; capsula ovoidea 3.5 cm x 3 cm, nigranta tuberculata, stellato-hispida lignosa.

In insula Maui: J. F. Rock leg. in declivibus montis Haleakala meridiem versus Nov. a. 1910.

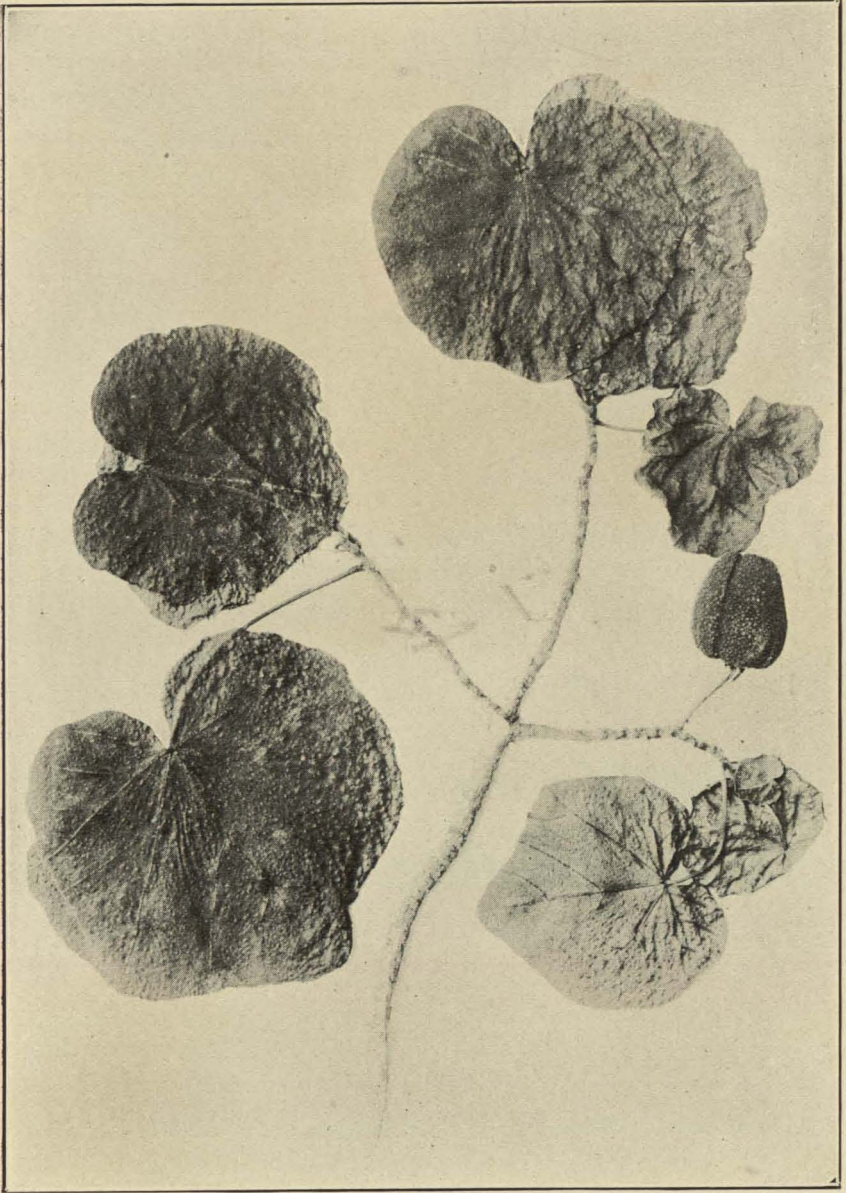


Plate 5. *Hibiscadelphus Wilderianus* Rock.
Showing foliage and fruit. About one half natural size.

Only one tree was observed on the southern slope of Haleakala on the lava fields of Auahi at an elevation of 2600 feet. (Type No. 8663 Herb. Board of Agriculture and Forestry, T. H.). Named in honor of Mr. Gerrit P. Wilder of Honolulu who has shown great interest in growing and producing many varieties of Hibiscus.

Hibiscadelphus Hualalaiensis Rock sp. n.

Arbor 5-7 m alta, trunco erecto, 0.3 m diam. cortice albino, glabrato; rami teretes, cum foliis novellis dense hirsuti, foliis reniformi-cordatis in petiolis 10 cm-16 cm longis, supra pilis stellatis inspersis, subtus tomentosis; (flores ignoti) capsula parva ovata 2 cm x 1.5 cm pilis stellatis flavescens dense induta.

In insula Hawaii: J. F. Rock leg. in declivibus montis Hualalai occidentum versus Jun. a. 1909.

Type material (No. 3915 Herbar. Board of Agriculture and Forestry, T. H.) collected June 18, 1909, at an elevation of 2700 feet on the lava fields of Puuwaawaa and in the forest of Waihou where a number of trees is to be found. The flowers are said to be yellow.

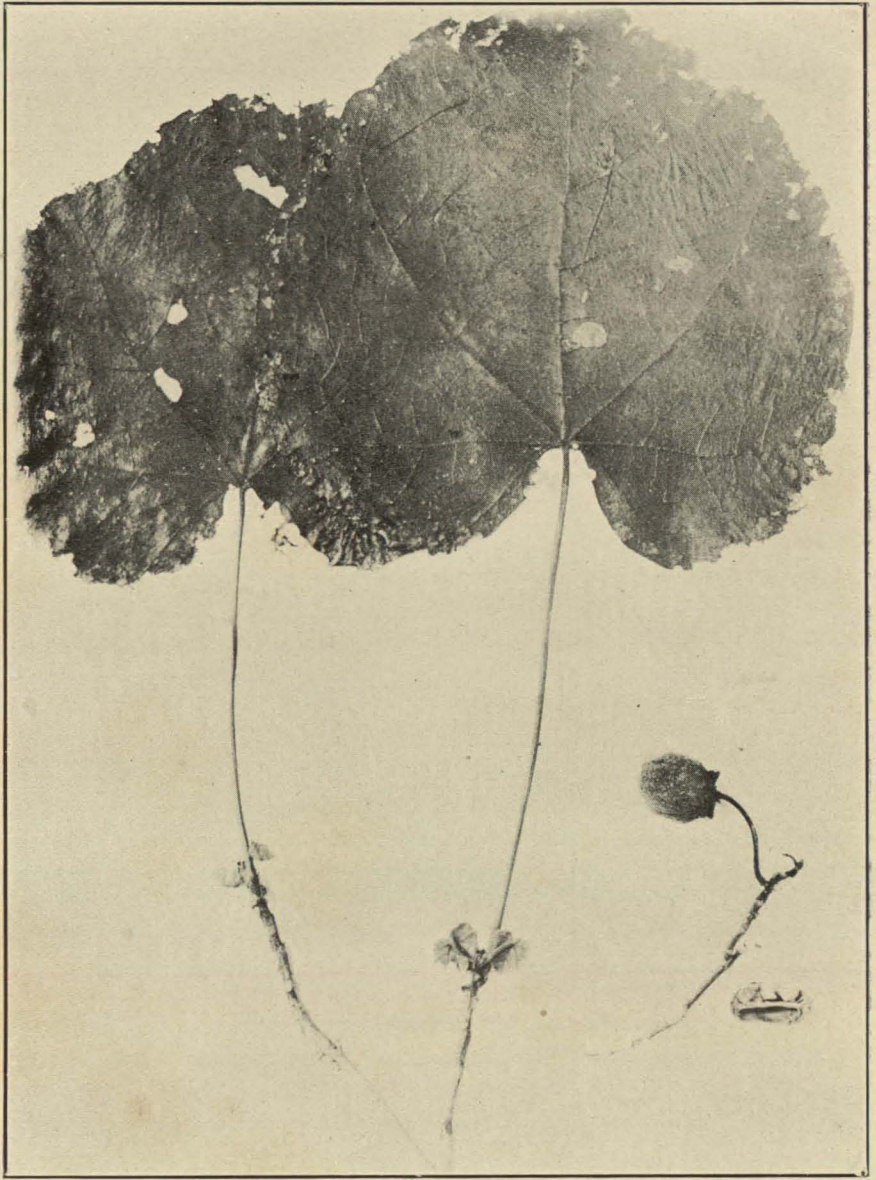


Plate 6. *Hibiscadelphus Hualalaiensis* Rock.
Showing foliage, mature fruits and seeds. About one half
natural size.