A NEW HAWAIIAN ABUTILON

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In 1932 Mr. Otto Degener discovered in the Waianae Mountains, Oahu, an undescribed malvaceous shrub that he decided could not be referred to any known genus of the family. He described it as *Abortopetalum sandwicense*.[1] The original description of the genus *Abortopetalum* Degener reads:

> Frutex; foliis petiolatis, cordatis; floribus singulis, pendentibus; calyce campanulato, 5-fissis, sine involucellis; petalis liniari-spatulatis, apparentibus aliquantum abortatis; ovario 10-cellis; stigma parva; capsula erecta, 10-cellis; seminibus reniformibus.

In this Latin text, as well as in the more complete English text, there is no character given which does not agree with *Abutilon* as interpreted by Schumann[2] and Baker,[3] and generally accepted. The distinguishing character of the supposed new genus, namely, the narrow, spatulate, "abortive" petals, is not uncommon in species of *Abutilon,* although perhaps not so markedly developed as in this species. But even if this distinction could be made, the shape of the petals is certainly no character of generic rank in this group. Degener recognized the close relationship of *Abortopetalum* to *Abutilon,* a fact which he expressed by pointing out that the name "begins with the same two letters as does *Abutilon* and hence stands near that related genus in the Flora" ["Flora Hawaiiensis"]. No other points of relationship or distinction are mentioned.

The type locality of *Abortopetalum sandwicense* as given by Degener is "Gulch north of middle ridge between Puu Kamaohanui and Puu Pane, Oahu . . . on the eastern side of the gulch on both sides of the cattle fence." In Bernice P. Bishop Museum a specimen collected by G. W. Russ is labeled "above W. pineapple ridge, Kamananui, Waialua, at F. R. fence, E. slope, July 21, 1932." This

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[1] Degener, Otto, Flora Hawaiiensis, sheet Abortopetalum and sheet Abortopetalum sandwicense, both sides, August 19, 1932.

[2] Schumann, Karl, Malvaceae: in Engler and Prantl, Die natürl. Pflanzenf., III, 6, p. 37, 1890.

[3] Baker, E. G., Synopsis of genera and species of Malveae: Jour. Bot., vol. 31, p. 71, 1893.

locality is close to that from which the type was obtained and may be the identical locality.

The plant collected by G. W. Russ agrees with the description and illustration given by Degener except for the slightly less pronounced dentation of the leaf blades, and in other minor details of size, the slightly shorter calyx and petals (only one specimen measured), young staminal column, and filaments. They agree perfectly in the shape and size of the leaves, pubescence, and in the shape and color of the flowering parts as far as it can be judged from dry material. In studying this specimen I have found no characters additional to those given by Degener which serve to distinguish it from *Abutilon*. This specimen, as well as the one described by Degener, agrees with *Abutilon* in the absence of bracteoles, in the form and arrangement of stamens and styles, and in the persistently connate, distinctly one-celled, bivalvate, several-seeded carpels; the seeds are arranged in one series.

For these reasons I do not agree with Degener that a new genus is represented. In no characters of generic rank do the plants differ from *Abutilon,* to which genus they should therefore be referred.

Abutilon sandwicense (Degener) Christophersen, new combination.
Abortopetalum sandwicense Degener: Flora Hawaiiensis, August 10, 1932, both sides of the sheet.

During a systematic survey of the valleys of central Lualualei below Kanehoa, Oahu, in company with Mr. d'Alté A. Welch, I found a closely related form of this species flowering and fruiting on June 29, shortly after Degener's discovery. The shrubs have an ascending habit, reaching a height of about 4 meters. They were found growing in a small clump at an elevation of about 1,500 feet in the open, upper part of the forest on the northern slopes of one of the valleys between Puu Kanehoa and Puu Kaua. The valley was designated by us as no. 9, the ninth valley counting from the south. Near by, in the shade of the forest, another small clump of shrubs was found ascending to a height of about 10 meters, the stems being intertangled in the manner of *Hibiscus tiliaceus*. Still another shrub, about 2.5 meters in height, was found in the open on the flat ridge between this valley and the next valley to the south. Three weeks later, another clump of this same form was found at an altitude of about 1,800 feet in open forest at the head of a valley, no. 17, farther

north, almost directly below Puu Kanehoa. The shrubs were in flower and fruit and attained a height of 2 to 3 meters.

These shrubs differ in minor details only, and all (with possibly one exception) are to be referred to the same form. This form is so closely related to *Abutilon sandwicense* that I consider it merely a variety of this species.

Abutilon sandwicense (Degener) Christophersen variety **Welchii**, new variety (fig. 1).

A typo differt laminis foliorum oblongioribus longe acuminatis, calicibus angustioribus, petalis brevioribus, parte horum superiore lata rubro-brunnea, columna staminea breviore, parte horum superiore rubro-purpurea, carpellis numero 8-10, saepe 9, interdum longioribus.

This variety, named in honor of my friend and inspiring field companion d'Alté A. Welch, Assistant Malacologist at Bernice P. Bishop Museum, differs from the type of the species in its more oblong leaf blades with long acuminate tips, its narrower calyx, shorter petals, the upper broad part of which is reddish brown, its shorter staminal column with reddish-purple upper part, and its varying number of carpels (8-10) which may attain a greater length.

The ascending shrubs are 2-4 m high. Branches terete, densely whitish or yellowish tomentose, the older ones glabrous. Leaves alternate, petiolate, leaf blades 8-17 cm long and 5-11.5 cm broad, ovate, cordate, acuminate, with irregularly dentate or crenate-dentate margin, upper surface slightly rough, sparsely stellately pubescent to glabrate with veins prominent in the lower part, lower surface slightly paler, velvety stellately tomentose with prominent veins, petioles stout, as a rule arcuate, terete, densely tomentose, 5-12 cm long. Flowers solitary in the axils of the upper leaves, pendent, pedicels stout, terete, articulate, densely tomentose, 2-4.5 cm long, fruiting pedicels erect, stouter, grooved above the articulation, to 9 cm long and 2 mm thick. Bracteoles none. Calyx (in fresh material) campanulate, 3-4.3 cm long and 1.6-2.3 cm broad, divided to about the middle, pale yellowish green, outside stellately pubescent, inside and margin of lobes albo-pilose, lobes 5, 3-veined, lanceolate, acute or acuminate, 9-12 mm broad at base. Corolla (in fresh material) campanulate, narrow, or broadly open. Petals 5, free, opposite the lobes of the calyx, attached at the base of the staminal column, spatulate, acute or bluntly acuminate, glabrous except for the ciliate basal margin, the lower part broadly linear, slightly broader at the base, greenish yellow, the upper broadened part reddish brown (Hessian brown—Ridgway) with distinct greenish-yellow veins and irregularly serrulate margin, in fresh material 4-4.3 cm long, to 1.4 cm broad in the upper part, and 3-4 mm broad at base. Staminal column fluted, tapering, albo-pilose, more densely so at the base, in fresh material greenish yellow except for the reddish-purple uppermost part, 3-3.5 cm long including the stamens. Stamens numerous in a head at the top of the staminal column, filaments reddish purple, about 5 mm long, anthers reniform, one-celled, when ripe with reflected valves. Styles 8-10, glabrous, upper free part about 1 cm long, apex stigmatose. Ovary ovoid, tomentose, 8-10-celled (commonly 9-celled). Mature carpels surrounded by persistent calyx, connate at base, stellately pilose on the back and at the apex, acuminate, bivalvate, 20-25 mm long and up to 6 mm broad and thick, the entire capsule being about 20 mm broad. Inter-

carpellary ribs branching between the carpels, becoming detached at maturity. Dorsal ribs partly detached at maturity. Seeds 3-5 in each carpel, narrowly reniform, flattened, brown, with stiff erect stellate white hairs, 3 mm long, 2 mm broad, and 1-1.5 mm thick.

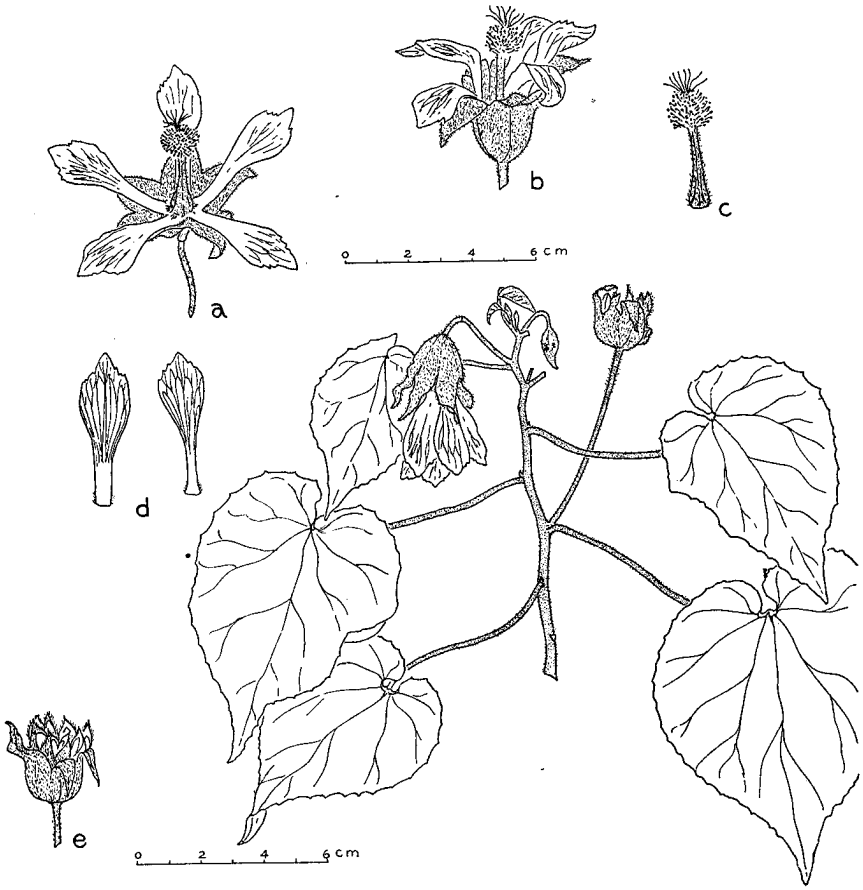

FIGURE 1.—*Abutilon sandwicense* variety *Welchii*: *a*, *b*, flowers; *c*, pistil and stamens; *d*, petals; *e*, calyx and capsule.

Oahu, Lualualei valley, central part below Puu Kanehoa, altitude about 1,500 feet, flowers, fruit, June 29, 1932, Erling Christophersen nos. 3712, 3720, and 3714 (type, in Bernice P. Bishop Museum); Lualualei valley, central part below Puu Kanehoa, altitude 1,800 feet, flowers, fruit, July 20, 1932, Erling Christophersen nos. 3721 and 3724 (?).

The description of this variety is based exclusively on the specimens in the type collection. The other specimens cited differ somewhat in details: in no. 3712 the carpels have more elongated, almost awl-shaped tips, the petals are reddish brown only in the very uppermost part, and the shrubs are as much as 10 meters high. In nos. 3720 and 3721 the dentation of the leaves is more pronounced. In no. 3724 the leaves are less elongated, distinctly and sharply dentate, and the carpels are only 15 to 20 mm long with blunt, short tips. The plants of this number may possibly belong to a distinct form.

Abutilon sandwicense is obviously related to *A. eremitopetalum* Caum[4] (*A. cryptopetalum* Caum), from which it differs, among other characters, in its exerted petals, the strongly reduced petals of *A. eremitopetalum* being enclosed by the calyx. From *A. Menziesii* Seemann it differs, among other characters, in its larger size of all parts and its linear-spatulate petals. It is worthy of note that Australia harbors species of *Abutilon* with a more or less pronounced reduction of the petals.

I want to express my indebtedness to Professor Dr. R. E. Fries, who has read this paper in manuscript.

[4] *Abutilon cryptopetalum* Caum being a homonym, the name having been preoccupied by an Australian species, I take the opportunity of proposing here, with the kind permission of Dr. Christophersen, a new name for the species, which will still be descriptive of its most conspicuous character, thus:

Abutilon eremitopetalum Caum, new name.

Abutilon cryptopetalum Caum: in Degener, Flora Hawaiiensis, June 14, 1933.

—Edward L. Caum.