

PROCEEDINGS
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NOTES ON CANAVALIA WITH THE DESCRIPTIONS OF
NEW SPECIES.

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For several years past various species and varieties of *Canavalia*, a genus of Leguminosae, have been under test at various places in the Southern States to determine their possible agronomic value. In the course of this work it was found necessary to determine critically the identities of the species. Two of these are clearly undescribed while another requires some nomenclatorial modification. All of the species here mentioned belong to the section *Eucanavalia* which includes such well known species as *C. ensiformis* (L.) DC.; *C. gladiata* (Jacq.) DC.; and *C. lineata* (Thunb.) DC. (*C. obtusifolia* of most authors). Several of the species in this group are distinguishable only by the characters of the mature pods and seeds. The original spelling of the generic name is *Canavali* but most botanists have used *Canavalia*, a spelling approved by the International Code of Nomenclature.

***Canavalia campylocarpa*, n. sp.**

Herbaceous, annual, or under tropical conditions perhaps longer enduring; stems twining, green, branching, minutely and sparsely appressed puberulent with white hairs, growing to a height of 2 to 4 meters; leaves trifoliolate; petioles about as long as the leaflets, shallowly channelled above, sparsely puberulent; petiolules dark green, densely white puberulent, somewhat swollen; leaflets membranaceous, ovate to oblong-ovate, short acuminate, sparsely puberulent especially on the margins and the veins beneath, in age nearly glabrous, 10-18 cm. long; stipules triangular, acuminate, ciliate, 3 mm. long, quickly fugacious, but the base of each developing into a persistent green protuberance; stipels linear, the minute

swollen base of each persistent; peduncles exceeding the subtending leaves; racemes 5-10 flowered; pedicels very short, a group of swollen nectaries at the base of each; calyx green, sparsely puberulent, 10-12 mm. long, the upper lobes rounded at apex and united except for a small emargination, the three lower lobes small, subequal, triangular, acute; corolla pink; standard erect, broadly oval, deeply notched at apex, white in the center, the sides recurved, 2 cm. long; wings closely enveloping the keel, 1.5 cm. long; keel blunt at apex; pods much compressed, curved into a semicircle, 6-10 cm. long, 2.5 cm. broad, wax-yellow when immature, brown when ripe, finely white puberulent, the longitudinal ridges small, the two posterior close to the dorsal suture, the other two parallel and distant one-fifth of the width of the pod; seeds oval in outline, compressed, 12-18 mm. long, wax-brown, the linear black hilum four-fifths as long.

The peculiar pods well distinguish it from any other species as yet described.

The seed of this plant was sent to the U. S. Department of Agriculture by John R. Bovell, Esq., Department of Agriculture, Bridgetown, Barbados, under the name "Babricou bean." In Antigua it has been used as a green manure crop. Presumably it is native to the West Indian region. It has been tested at various places in Florida and Mississippi, but has shown little promise of having value in those States.

Type specimen in the Economic Herbarium, United States Department of Agriculture.

***Canavalia microcarpa*, (DC.) n. comb.**

Lablab microcarpus DC. Prodr. 2:402.1825.

Canavalia turgida GRAHAM; Gray in U. S. Expl. Exped. 15:440.1854.

Lablab microcarpus De Candolle is based on Plate 141, Fig. 1, of Rumphius' "Herbarium Amboinense," which illustration and the accompanying description apply well to the species usually known as *C. turgida* Graham.

***Canavalia obtusifolia* (Lam.) DC. Prodr. 2:404.1825.**

Dolichos obtusifolius LAM. Enc. 2:295.1786.

Lamarck's description is based primarily on a plant from the island of "St. Domingue" that is *Santo Domingo*, of which he had specimens. In addition he cites as synonymous several earlier descriptions of Tournefort, Plumier and Plukenet, and doubtfully includes the "Katu-tjandi" of Rheede, Hort. Mal. 8:83. tab. 43.

De Candolle's name is based on that of Lamarck, but after a brief description of the plant he adds "in Malabar. — Rheed. mal. 8. t. 43," indicating apparently that he regarded Rheede's plant as the type of the species. Rheede's plant is in reality the same as *Canavalia turgida* Graham, a species that does not occur in the West Indies, whence Lamarck's type was derived. There is consequently no justification for considering *C. obtusifolia* and *C. turgida* synonymous as has been done by King (Journ. Asiatic Soc. Bengal 662:63.1898).

Whether the West Indies species is identical with *C. lineata* DC. Prodr. 2:404.1825 based on *Dolichos lineatus* Thunb. Fl. Jap. 280.1784 described from Nagasaki, Japan, is not certain. The variations of the seashore forms of *Canavalia*, especially the pod and seeds, indicate that there may be several closely related species that have been referred to by most botanists either as *C. obtusifolia* or *C. lineata*.

***Canavalia luzonica*, n. sp.**

Herbaceous, annual; stems climbing to a length of 3 to 5 meters, terete, sparsely appressed puberulent; petioles shorter than the leaflets, channelled above; petiolules somewhat fleshy, very short, densely puberulent; leaflets membranaceous, elliptic to ovate, rounded or broadly angled at base, mostly abruptly acuminate at apex, reticulate-veined, densely and loosely puberulent beneath, glabrous or nearly so above except on the veins, 5 to 10 cm. long; peduncles stout; racemes 10 to 20-flowered; pedicels very short, thick; bractlets suborbicular, fugacious, as long as the pedicels; calyx appressed-puberulent, 15 mm. long, the upper lip broad and emarginate, the lower of three minute ovate acutish teeth; corolla pink 3 to 4 cm. long; pods 10 to 17 cm. long and 2 to 2.5 cm. broad, somewhat compressed, brownish, finely appressed-puberulent, the two longitudinal ridges very close to the ventral suture, each pod with ten to 15 seeds; seeds oblong, somewhat compressed, dark brown, not shiny, 10 to 15 mm. long, the narrow black linear hilum somewhat curved and nearly as long as the seed.

This species occurs so far as known only in Luzon and the neighboring island of Lubang. In Merrill's Flora of Manila it is referred to *C. ensiformis* (L.) DC. from which it is abundantly distinct. It can not be matched by any of the species native to India.

The herbarium material is somewhat variable but represents probably a single species. The form above described as typical is represented in the following specimens from

Los Banos, Laguna, *C. F. Baker*, Nos. 553 and 2791 (type in herbarium, Philippine Bureau of Science); *L. Clements*, Jan. 9, 1913; and *G. C. Santos*, Jan. 18, 1913;

Manila, *E. D. Merrill*, No. 4094.

Most of the herbarium material differs in having the leaflets rather firmer in texture and sparsely appressed-puberulent beneath, and the calyx sparsely puberulent to glabrous. Forms with ovate or elliptic ovate leaflets include:

Manila, *Merrill* No. 2050; Antipolo, Rizal, *Ramos* Nos. 90 and 1596; Union Province, *E. Fenix* No. 12; Norzagaray, Bulacan, *Foxworthy* Jan. 1911; *Tuguegarao*, Cagayan, *Bolster* No. 188; Limay, Bataan, *Curran* Dec., 1909; Bataan, *Robinson*, Dec. 31, 1909; Mt. Mariveles, *Elmer* No. 6870; Lamao, Bataan, *Merrill* No. 3811; Lubang Island, *Merrill* No. 963.

Forms with small elliptic or elliptic-ovate, obtuse to acutish leaflets in-

clude Mt. Mariveles, *Williams* No. 532; Nueva Viscaya, *MacGregor*; Taal Volcano, *Subit*, Dec. 22, 1913; Benguet Prov., *Bacani*, Dec., 1908; Amburayan, *Vanoverbergh* No. 4028; Bontoc, *Vanoverbergh* No. 856; Bauco, Bontoc, *Vanoverbergh* No. 1526; Bontoc, *Curran & Merritt* Jan., 1909; Zambales Prov. *Ramos*, Dec., 1907; Dinalupihan, Bataan, *Merrill* Nos. 1602 and 1485; Susong Dalaga, *Loher* No. 2293.

Forms with narrowly elliptic-lanceolate leaflets attenuately acute or acuminate include Mt. Maquiling *Robinson & Foxworthy* Feb., 1913; Antipolo, *Ramos* Nov., 1914; Rizal Prov. *Foxworthy* Jan., 1906; Mt. Abu, Pampanga, *Foxworthy* Jan., 1907; Montalban, *Merrill* No. 9638 with notably lanceolate leaflets.

It is possible that with mature pods and seeds two species may be differentiated in the above material, a matter that can only be cleared up by further field work. Seeds from Luzon have several times been planted at Biloxi, Miss., but the plants did not even reach the blooming stage.



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