ECHINOCACTUS ALAMOSANUS BRITT. & ROSE.

ECHINOCEREUS LUTEUS BRITT. & ROSE.

STUDIES IN CACTACEAE—1.

By N. L. Britton and J. N. Rose.

In continuance of our studies of Cactaceae, after examining a large series of additional specimens, both living and herbarium, we find a number of new species to be described and a few old ones which need to be transferred to genera other than those to which they have been referred. All the new species here published have been studied from living material either seen in the field or grown in the greenhouse, and specimens have in all cases been photographed.

NEW SPECIES.

Echinocactus alamosanus Britt. & Rose, sp. nov. PLATE 66.

Plants usually single, sometimes in clusters, somewhat flattened from above, 30 cm. or more in diameter; ribs about 20, narrow; spines all yellow; radials usually 8, slightly spreading; central single, porrect or erect, somewhat flattened laterally, 6 cm. long and a little longer than the radials; flowers and fruit still unknown.

Type in the United States National Herbarium, no. 535974, collected high up in the canyons of Alamos Mountain, Sonora, Mexico, March 18, 1910, by Rose, Standley, and Russell (no. 12850).

This species is unlike anything we have yet seen from the west coast of Mexico. A small living plant was brought back to Washington, a photograph of which is here reproduced.

EXPLANATION OF PLATE 66.—From a photograph of the living plant taken in Washington.

Echinocereus luteus Britt. & Rose, sp. nov. PLATE 67.

Stem short, sometimes branching near the base, bluish green, more or less purplish, strongly 8 or 9-ribbed; ribs rather thin, hardly, if at all, undulate, their margins rounded; areoles small, 10 to 12 mm. apart; spines small, the radials 6 to 8, unequal, 2 to 8 mm. long, widely spreading, white with darker tips; central spine single, porrect; flowers on each rib appearing near the top of the plant and from the axil of the second or third areole; buds acute, reddish, covered with long, brownish bristles; areoles on ovary and flower tube bearing white wool and light-colored spines with dark tips; flowers pale yellow, sweet-scented, 7 cm. long including the ovary; petals oblanceolate, acute; filaments yellow; stigmas deep green.

Type in the United States National Herbarium, no. 535975, collected in the high mountains above Alamos, Sonora, Mexico, March 19, 1910, by Rose, Standley, and Russell (no. 15207). Only a single specimen was seen, growing on the exposed rocks. The specimen was sent to Washington, where it produced four flowers in 1910 and two in 1911. The species is perhaps nearest *E. inermis*, but it has more ribs and different spines.

EXPLANATION OF PLATE 67.—From a photograph of the type specimen as it flowered in Washington. Natural size.

Epiphyllum gaillardae Britt. & Rose, sp. nov. PLATE 68.

Much branched, especially below; joints terete at base, gradually widening above, 5 cm. broad at widest part, obtuse, light green or reddish when young; areoles separated by low scallops, the basal areoles (as also those of the seedling) bearing a tuft of white hairs; calyx tube slender, 18 to 20 cm. long, pinkish, bearing a few scattered bracts; petals white, 3.5 cm. long, very narrow, acute; style deep red; fruit narrowly oblong, 12 cm. long, 3 cm. in diameter, magenta-colored, the surface marked here and there by short ribs running down from the backs of the scattered bracts.

Type in the United States National Herbarium, no. 691240, collected in the Canal Zone, Panama, August 6, 1909, by Mrs. D. D. Gaillard.

Common in the Canal Zone and adjacent parts of Panama; first sent by Mrs. Gaillard, for whom it is named.

Mr. Pittier reports that the seeds of this species germinate while the fruit is still hanging on the plant. When he returned from Panama in March, 1912, he brought one fruit covered with the green seedlings.

The name Epiphyllum has priority over Phyllocactus. The later Epiphyllum of Pfeiffer, still in use by some writers, must revert to Zygocactus.

EXPLANATION OF PLATE 68.—From a photograph of a living plant collected at Porto Bello, Province of Panama, by H. Pittier, April, 1912. Slightly more than two-thirds natural size.

Hylocereus minutiflorus Britt. & Rose, sp. nov. PLATE 69.

Very slender, high-climbing vines, 3-angled, the angles sharp but not winged, deep green; areoles distant (2 to 4 cm. apart), the spines 1 to 3, minute, brownish; flowers 5 cm. long, opening at night; flower tube wanting or nearly so (10 mm. long), red except the greenish base; sepals linear, red at the tip, 3 to 4 cm. long; petals white; stamens white, about 1 cm. long, borne in one series at the base of the petals; style white, 2 cm. long, thick.

Type in the United States National Herbarium, no. 619842, collected near Lake Izabal, Guatemala, in 1907 by R. H. Peters and flowered in Washington in June, 1909, and June and July, 1911, and in 1912.

The flowers of this species are unusually small, but the vines are healthy and produced a few flowers in 1909 and 1911, and an abundance in 1912. The plants have been under observation since 1907.

EXPLANATION OF PLATE 69.—Flowering branch from the type specimen, in cultivation. Natural size.

Nyctocereus guatemalensis Britt. & Rose, sp. nov. PLATES 70, 71.

Stems half-erect, arching, creeping, or even prostrate, 3 to 6 cm. in diameter; ribs 8 to 12, very low; radial spines about 10; centrals 3 to 6, usually much longer than the radials, the longer ones 3 to 4 cm. long; flowers very fragrant, 4 to 5 cm. long; ovary somewhat tuberculate, each tubercle crowned by an areole bearing a cluster of pinkish or brownish spines; outer sepals brownish; petals lanceolate, acute, nearly white; stamens much shorter than the petals, attached all along the surface of the wide throat; style stout, 3 cm. long; fruit small (about 2 cm. long), spiny; seeds black, shining, 3 mm. in diameter.

Type in the United States National Herbarium, no. 535977, collected at El Rancho, Guatemala, April 4, 1905, by William R. Maxon (no. 8510).

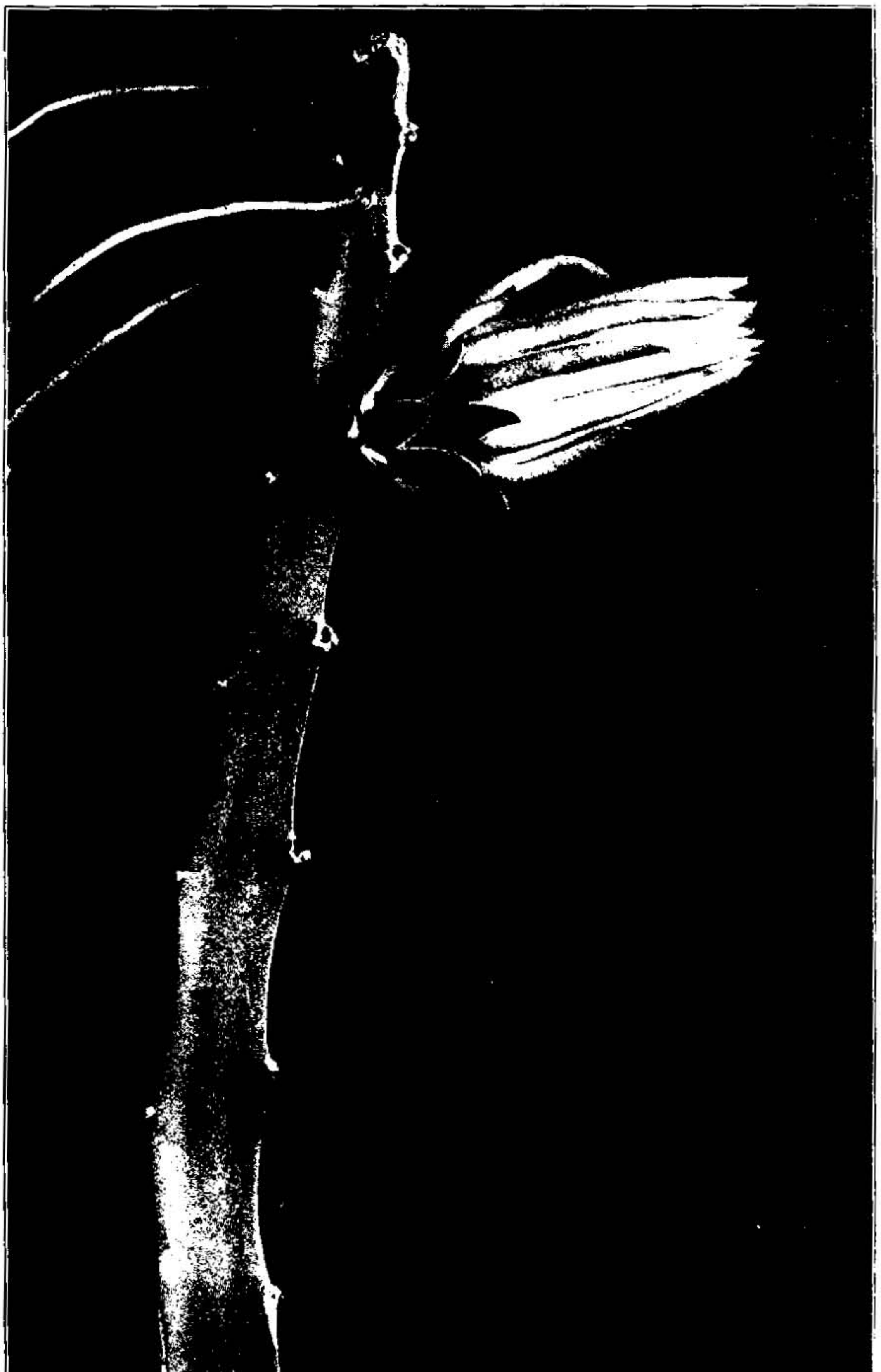
The following collections have been examined:

GUATEMALA: El Rancho, April 4, 1905, *Maxon* 8510; June 8, 1908, *Deam* 6249a; without definite locality, 1909, *F. Eichlam*.

Individuals from all three of these collections are now growing in Washington. Mr. Maxon's plant flowered in July, 1910, and Mr. Eichlam's in 1911.

EXPLANATION OF PLATES 70, 71.—Plate 70, part of a flowering plant, in cultivation. Natural size. Plate 71, A, B, two views from Guatemala showing the habit of this species. From negatives furnished by Charles C. Deam.

EPIPHYLLUM GAILLARDAE BRITT. & ROSE



HYLOCEREUS MINUTIFLORUS BRITT. & ROSE.

NYCTOCEREUS GUATEMALENSIS BRITT. & ROSE.

A. NYCTOCEREUS GUATEMALENSIS BRITT. & ROSE.

B. NYCTOCEREUS GUATEMALENSIS BRITT. & ROSE.

OPUNTIA CHAFFEYI BRITT. & ROSE.

WITTIA PANAMENSIS BRITT. & ROSE.

Opuntia chaffeyi Britt. & Rose, sp. nov. PLATE 72.

Perennial, from a large, fleshy, deep-seated root often 35 cm. long and 4 cm. in diameter; stems annual, 5 to 15 cm. high, much branched near the base; joints elongated, 3 to 5 cm. long, in cultivated specimens 25 cm. long, 6 to 7 mm. broad, slightly flattened, glabrous, pale bluish green or sometimes purplish; areoles circular, bearing the spines surrounded by white wool in the lower part and the yellow glochids surrounded by brown wool in the upper part; spines 1, rarely 2 or 3, needle-like, 2 to 3 cm. long, whitish or pale yellow; leaves minute, caducous; flowers not seen, but said to be rose color, small; fruit unknown.

Type in the United States National Herbarium, no. 535976, collected on the Hacienda de Cedros, near Mazapil, Zacatecas, Mexico, May 20, 1910, by Dr. Elswood Chaffey.

This is a most remarkable Opuntia, being the only one known which has annual stems. Dr. Chaffey after a careful investigation assures us that the species has this habit, although in exceptionally wet years the stem may be carried over until the next growing season. In our greenhouse it persists for several years. The young shoots suggest *O. leptocaulis*. We were at first inclined to consider it only a form of that species, but when good material was examined, it was seen to be very distinct. The joints, while narrow and elongated like those of the Cylindropuntias, are somewhat flattened and the spines show no sign of a sheath. This indicates that the species is probably a Platyopuntia and related, but not closely, to *Opuntia pumila*.

The species has been under observation in the greenhouse for two years, while Dr. Chaffey has repeatedly examined it in the field; but so far no flowers or fruit have been obtained.

EXPLANATION OF PLATE 72.—Root and young branch, as received from the collector. Natural size.

Wittia panamensis Britt. & Rose, sp. nov. PLATE 73.

Pendent; joints much flattened; flowers solitary from the upper areoles, purple throughout, 2.5 to 3.5 cm. long before the lobes open, decidedly 5-angled, stiff; outer sepals 5, equal, obtuse, angled on the back, the inner ones 5, similar but thinner, not angled, a little longer, all erect; petals 10, thinner paler, and much smaller than the sepals, apiculate, forming an inner compact cylinder; tube proper 5 to 6 mm. long, the throat 10 mm. long; stamens in two clusters, one from the base of the throat on long filaments, one from the top of the throat on short filaments, all included; stigma lobes 4, white, remaining in a close cluster, the top exserted beyond the petals; ovary globular, purple, bearing a few scarious scales; fruit greenish white to pink, about 1 cm. long.

Type in the United States National Herbarium, no. 691299, collected on mountains above Chepo, Panama, October 15, 1911, by H. Pittier (no. 4571), and flowered in Washington, April, 1912. Also collected by R. S. Williams at Marraganti, Panama, April 3 to 9, 1908 (no. 698).

The genus Wittia was described by Karl Schumann,[1] being based on a single species, *W. amazonica*. The present is a second species of this strange genus. As the illustration shows, the stem resembles that of species of Epiphyllum and of Rhipsalis, but the flowers are very different from those of either.

EXPLANATION OF PLATE 73.—A flowering branch of the type specimen, in cultivation. Natural size.

[1] Monatsschr. Kakteenk. **13**: 117. 1903.

NEW BINOMIALS.

Echinocereus chloropthalmus (Hook.) Britt. & Rose.

Echinocactus chloropthalmus Hook. Curtis's Bot. Mag. 74: *pl. 4373.* 1848.

This Echinocereus, long ago described as an Echinocactus, has never been transferred.

Leptocereus quadricostatus (Bello) Britt. & Rose.

Cereus quadricostatus Bello, Anal. Soc. Espafi. Hist. Nat. **10:** 276. 1881.

This is a common species in Porto Rico and has all the characteristics of Leptocereus.

Selenicereus urbanianus (Gurke & Weing.) Britt. & Rose.

Cereus urbanianus Gurke & Weing. Monatsschr. Kakteenk. **16:** 136. 1906.

This species was inadvertently omitted from our original treatment of Selenicereus.

Selenicereus vagans (K. Brandeg.) Britt. & Rose.

Cereus vagans K. Brandeg. Zoe **5:** 191. 1904.

Cereus vagans in habit is exactly like Selenicereus, and while its flowers are not quite typical, it seems best to refer it here, its place being, perhaps, next to *S. spinulosus.*

Cereus longicaudatus Weber, stated by us to be probably identical with *S. vagans,* has recently been studied by Mr. W. Weingart and he reaches the same conclusion. *Cereus longicaudatus* was published the same year as *C. vagans,* but several months later.

Wilcoxia viperina (Weber) Britt. & Rose.

Cereus viperinus Weber; Gosselin, Bull. Mus. Nat. Hist. (Paris) **10:** 385. 1904.

This species was re-collected at its type locality by C. A. Purpus in April, 1908 (no. 3301), and an examination of this material shows that it is a good Wilcoxia.