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Author(s): Griffiths

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but usually smaller, glaucous green turning to yellowish green and finally to scaly gray brown; areoles subcircular to obovate, about 6 mm. in longest diameter, enlarging irregularly in age and becoming conspicuously subareolate, the tissues of some of them proliferating into short columnar structures, invariably surrounded by yellowish brown, apparently dead epidermal tissue not later than the second year; spicules brown with yellowish tips, fading slightly with age, not numerous, scattered, unequal, not formidable, developing very unequally, usually none on sides of joints, commonly about 9 or 10 mm. long when fully developed in occasional areoles; spines mostly none or only a few, white or flesh colored, deeply tinted at base, flattened, but not annular or twisted, one erect or recurved, about 2.5 cm. long; flowers not seen; fruit purple throughout, large, subglobose, about 53 by 60 mm., edible, but with thick rind, smooth with subcircular areoles about 12 mm. apart, tawny with a small central bunch of brown spicules; seeds flattened, slightly angular, quite uniform in size, 3 to 4 mm. in diameter, with conspicuous marginal callus, about 0.5 mm. wide, with a narrowly rounded margin.

The species is most closely related to *Opuntia Engelmanni*, from which it differs in rarity of its spines, which are very conspicuous in that species. The fruits and seeds are also different. It appears to be a rare species. I have seen what I suspect is the same thing from one locality besides the type, both from the Territory of New Mexico. In the type locality about a dozen plants were found, all in situations inaccessible to livestock. Under cultivation the species becomes much more spiny than indicated above.

The type is No. 9460 D. G., collected in San Andreas canyon of the Sacramento Mountains of New Mexico, about 15 miles south of Alamogordo, August 3, 1908. I take pleasure in dedicating this species to Mr. A. B. Dille, who forwarded specimens of it to the United States Department of Agriculture a year or two ago. The type was secured from the same locality in which the original specimens were collected by Mr. Dille. The description was drawn in the field beside the type plants.—Plates 4, lower figure; 2, f. 10; 13, f. 7.

***Opuntia Allairei* sp. nov.**

A spreading, open branching, prostrate or slightly ascending plant, 3 to 4 dm. high, and 6 to 9 dm. in diameter, tuberous rooted; joints obovate, often 9 by 19 to 20 cm., but more commonly 5.5 by 10 to 11 cm. in current year's growth, blue-green, rather glossy with somewhat tubercular raised areoles; leaves circular in section, subulate, cuspidate, pointed, about 6

mm. long; areoles subcircular to obovate, about 3 mm. in longest diameter, but increasing in size with age to even subcircular and 4 mm. in diameter, 2.5 to 3.5 cm. apart; wool tawny brown, giving its characteristic color to the young areoles which, however, is early obliterated by the spicules which are yellow, numerous, formidable, 2 to 4 mm. long, in a compact, mostly connivent tuft, filling nearly the entire areole; spines none, or an occasional one bleached white distally with tinted base, erect, flattened, twisted, faintly annular; flowers yellow; fruit light red, lighter or mottled within, smooth with very small subcircular areoles and but few inconspicuous spicules, obovate-clavate, about 2 by 4.5 cm.; seeds subcircular, rather thick, mostly a little less than 5 mm. in diameter, with narrow marginal commissure.

The species is more closely related to *O. vulgaris* than any other species, but it differs in shape and surface of joints as well as in habit and general aspect of the plant.

The type is No. 322, San Antonio garden. The original material was collected by Mr. Allaire near the mouth of Trinity River, Texas, in April, 1908. This has been grown and has produced flowers and fruit during the past season and was in bloom when received. The description is a compilation of field notes and laboratory studies from abundant living material. I take pleasure in dedicating this species to Mr. C. B. Allaire, who collected it and supplied the material from which plants have been grown and descriptions drawn.—Plates 5; 2, f. 2; 12, upper figure; 13, f. 9.

O. WHIPPLEI Engelm. & Bigel. and *O. ECHINOCARPA* Engelm. & Bigel.

On pages 102 to 105 of Bulletin No. 60 of the Agricultural Experiment Station of New Mexico, published in 1906, Griffiths and Hare discuss two somewhat distinct forms of *O. Whipplei*. An opportunity was had during the past season of studying these forms further. There is no doubt but that the two forms referred to in that publication are the same species. The differences are due to differences of altitude, rainfall or soil conditions, or all combined. This species regularly dwarfs, becomes more proliferous-fruited and more sterile in its seed habits as one goes down the mountain sides from the altitude of Fort Whipple, Arizona, where it may be 5 feet high or more.