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Page(s): Page 90, Page 91, Plate 13

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***Opuntia cañada* sp. nov.**

Plant erect and ascending, spreading, rather compactly branched, about 9 dm. high and 12 or more dm. in diameter, growing commonly in thickets, but also frequently as isolated individuals; joints obovate to ovate, mostly broadly rounded above, about 16 by 22 cm. in second year joints but quite variable, yellowish, smooth and shining green when young, turning darker and more or less glaucous the second year; leaves circular in section, subulate, mucronate pointed, about 1 cm. in length; areoles sub-circular, brown when young, turning through dirty gray to black, but often retaining a brown center surrounded by a grayish or black zone owing to continued development of new wool from the central areolar area, broadly obovate, 5 mm. in greatest diameter but increasing in size with age and becoming subcircular, very prominent; wool light tawny when removed, but dark brown in situ, prominent; spicules very variable, often few or none until 1 or 2 years old, when they become conspicuous, unequal, often 12 mm. in length, upon last year's joints when present they are 2 to 3 mm. long, always unequal, scattered, light reddish-brown when young, turning yellow or dirty yellow in age; spines exceedingly variable in every characteristic, bleached white with usually tinted bases mostly completely white after a year or two, commonly yellow when young, but soon presenting the bleached, white appearance, flattened, sometimes twisted slightly, never annular, but minutely longitudinally striate under a lens, 1 to 4 or 5, mostly 2 or 3, 12 to 15 mm. in length on second year joints, but frequently increasing in both length and numbers upon old trunks; flowers yellow with tinge of red or deep orange on inside at bases of petals and often outside as well, stigma bright green and style varying from white to reddish-tinged; fruit light red, often mottled yellow and red, usually not uniformly colored, rind greenish-yellow and pulp lighter in color, its areoles usually gray on border and tawny brown within, the spicules being very light brown; seeds flattened but mostly quite thick, angular, between 3 and 3.5 mm. in diameter, with a prominent, rounded, roughened marginal callus, and prominently notched hilum.

The species is most closely related to the spiny form of *Opuntia laevis*, from which it differs in greater spininess, difference in color of plant body, larger, more robust plant, and in the nature of its fruit. The seeds of the two species are also different. It commonly grows upon the sides of arroyos and canyons from the lower foothills to the beginning of the oak timber and is rather common throughout the locality mixed with the spiny forms of *Opuntia laevis*, from which it is sometimes difficult to distinguish it, except in flower and fruit.

The type is No. 9593 D. G., collected in the foothills of the Santa Rita Mountains, Arizona, September 17, 1908. The

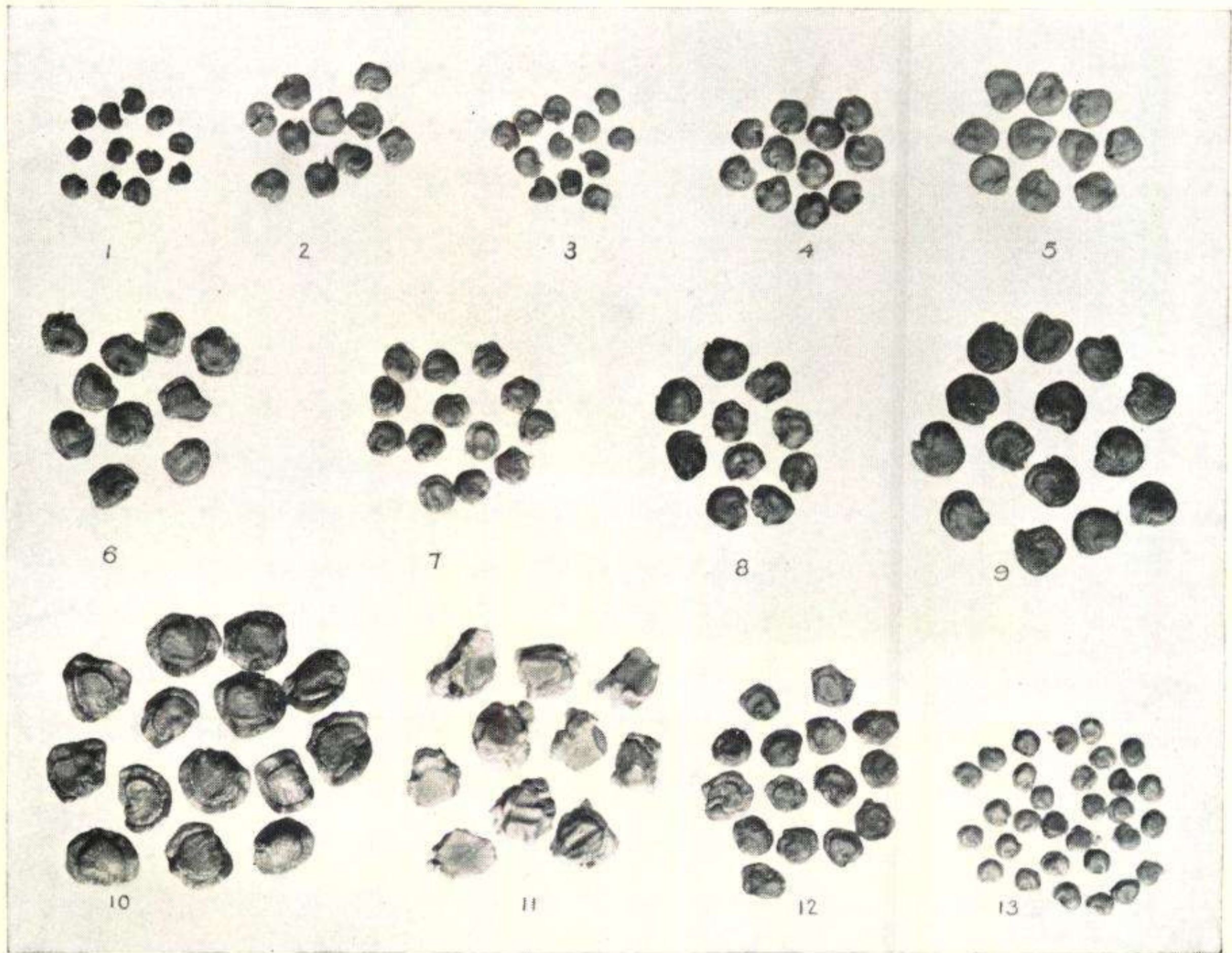
description is a compilation of four sets of field notes supplemented by laboratory studies.—Plates 6, lower figure; 2, f. 6; 13, f. 2 and 12.

***Opuntia megacarpa* sp. nov.**

An ascending, spreading, bushy, open-branched plant 6 to 10 dm. high and 12 to 15 dm. in diameter, the main branches resting on edges of joints and ascending at the extremities, the secondary ones of a joint or two in length growing erectly from them; joints obovate, mostly pointed above, glaucous, turning yellowish-green the second year, commonly 20 by 25 cm. and often widest at middle and tapering each way, often slightly purplish about the areole; areoles subcircular to obovate, 4 to 6 mm. in diameter, tawny brown turning gray in age and its tissues proliferating into a convex gray surface when not covered with spicules; spicules reddish brown in a rather compact, quite equal, crescentic bunch in upper portion of areole, about 3 mm. long but increasing with age in both numbers and length, becoming unequal and even 12 or 13 mm. in length, sometimes filling the entire areole; besides the regular spicules there are a few scattering fugacious bristles all through the areolar area of young joints; spines very long, formidable, often 7 or 8 cm. in length, one or none below to as many as six above, 8 cm. in length, changing successively from white through mottled flesh-color to reddish-brown at base, and in age dull, dirty brown throughout, tips always more or less translucent, bone-like even in age, flattened, twisted, sometimes striate, very faintly when at all annular, and this lasting only through the growing season, at first spreading in all directions but later sloping downward; flowers not seen; fruit dull, purplish red, often with a bleached yellowish appearance, about 38 by 82 mm., rind greenish, streaked with red, and pulp greenish; seeds very large, flattened, irregularly angular, often 8 mm. in diameter but more commonly about 7, with very prominent, more or less wavy, sharp marginal callus about 1.5 mm. wide, prominently notched at hilum.

It is difficult to express satisfactorily the relationship of this species. The spines in color might pass for some forms of *O. phaeacantha*. So might the seeds, so far as everything but size is concerned. The general habit of the plant is that of *Opuntia procumbens*, but, as indicated in the description, it is difficult to admit it even into the same group with either one of these species. Its main characteristics are its spinness, large, long fruits, and exceedingly large flat seeds.

The type specimen is No. 9501 D. G., collected near Banning, California, August 25, 1908. The description given above is a revision of one made in the field when the plant was collected.—Plates 2, f. 3; 13, f. 10.



SEEDS OF OPUNTIA.