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## ILLUSTRATED STUDIES IN THE GENUS OPUNTIA — III.

BY DAVID GRIFFITHS.

Studies in field and cultivated plantations during the past five years have brought together sufficient data to warrant the addition of the following species to the genus *Opuntia*.

### ***Opuntia alta* sp. nov.**

A strictly arborescent species with distinct, short, cylindrical trunk, 3 to 3½ dm. in diameter and huge, spreading branches 1½ to 2 dm. in diameter, early becoming bare, brown-gray and scaly-cracked, 2½ to 3½ meters high in large specimens, mostly lower than this and often with a spread of 3 meters, mostly about 18 dm. high; joints sub-circular, ovate to obovate, quite uniform in size, about 18 by 25 cm. or possibly more often 17 by 21, blue-green, thin, with surface only slightly raised at areoles, turning gray-green and scaly-cracked in age; areoles obovate, about 3 to 5 mm. long and 3 cm. apart, slightly raised, closer on edges where they are also larger, rendering a somewhat congested appearance to spines and spicules, enlarging with age to sub-circular and often 1 cm. in diameter, tawny when young, becoming dirty black in age; spicules yellow, abundant, 8 mm. long, mostly scattered throughout the entire areole but more numerous above, increasing with age and filling and crowding the entire areole, the tissues of which proliferate slightly into a raised hemispherical structure, the outer spicules becoming dirty yellow and the central newer ones a brighter color; spines yellow, typically, one 15 to 20 mm. long, erect, and one 10 to 12 mm. long, and sloping down on sides of joints and two or even 3 long ones on edges, not increasing with age to any appreciable degree, at about 5 years of age and older the trunks becoming comparatively bare of spines but covered with the scattered, formidable, bunches of spicules only, slightly flattened and the largest ones faintly annular; flowers yellow, with broadly-rounded, wavy-margined, obovate petals, with abrupt cuspidate point, filaments yellow, greenish at very base, style white, stigma yellowish tinged, 10 to 12-parted; ovary broadly obovate to conical, about 2 by 3 cm. having small sub-circular areoles bearing spreading, unequal, yellow, fugacious spicules about 5 mm. long.

This species is distinctly arborescent in habit, one of the tallest and largest of our United States forms. It is very different indeed from *Opuntia cacanapa*, although one or



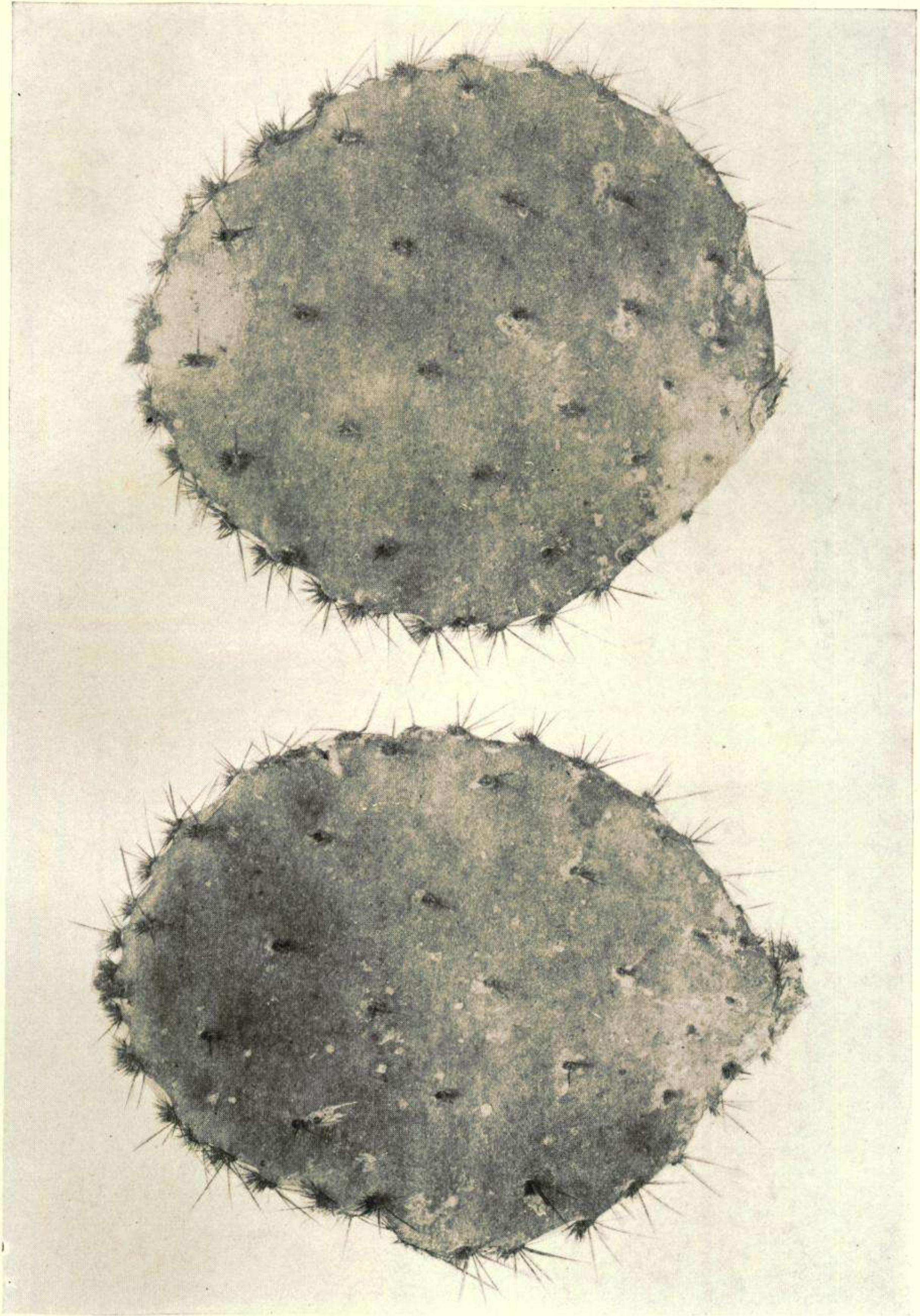
two of its characters seem to indicate a relationship. The type is yellow flowered, but there are forms which have flowers greenish-yellow, even lighter in color than the flowers of *Opuntia leptocaulis*. Owing to a constant tendency to segregation of species, it is considered preferable to recognize the yellow flowered form as typical, but I have little question but that the two forms must be considered specifically the same. The greenish-yellow flowers remain the same color throughout the day, but in the typical form where the flowers are lemon yellow they turn to orange in the afternoon, and when dried or closed upon the plant are distinctly reddish tinged, which is true of the type specimen. Corresponding changes in color take place in a large proportion of the species of the flat-jointed opuntias.

The description is a compilation of a description and two sets of notes made in the type locality when specimens were collected. The type is No. 9914 D. G., collected March 13, 1910, near Brownsville, Texas, the flowers being collected from the same plant April 20, 1910.—Plates 19 and 20, upper figure.

***Opuntia xanthogloch* sp. nov.**

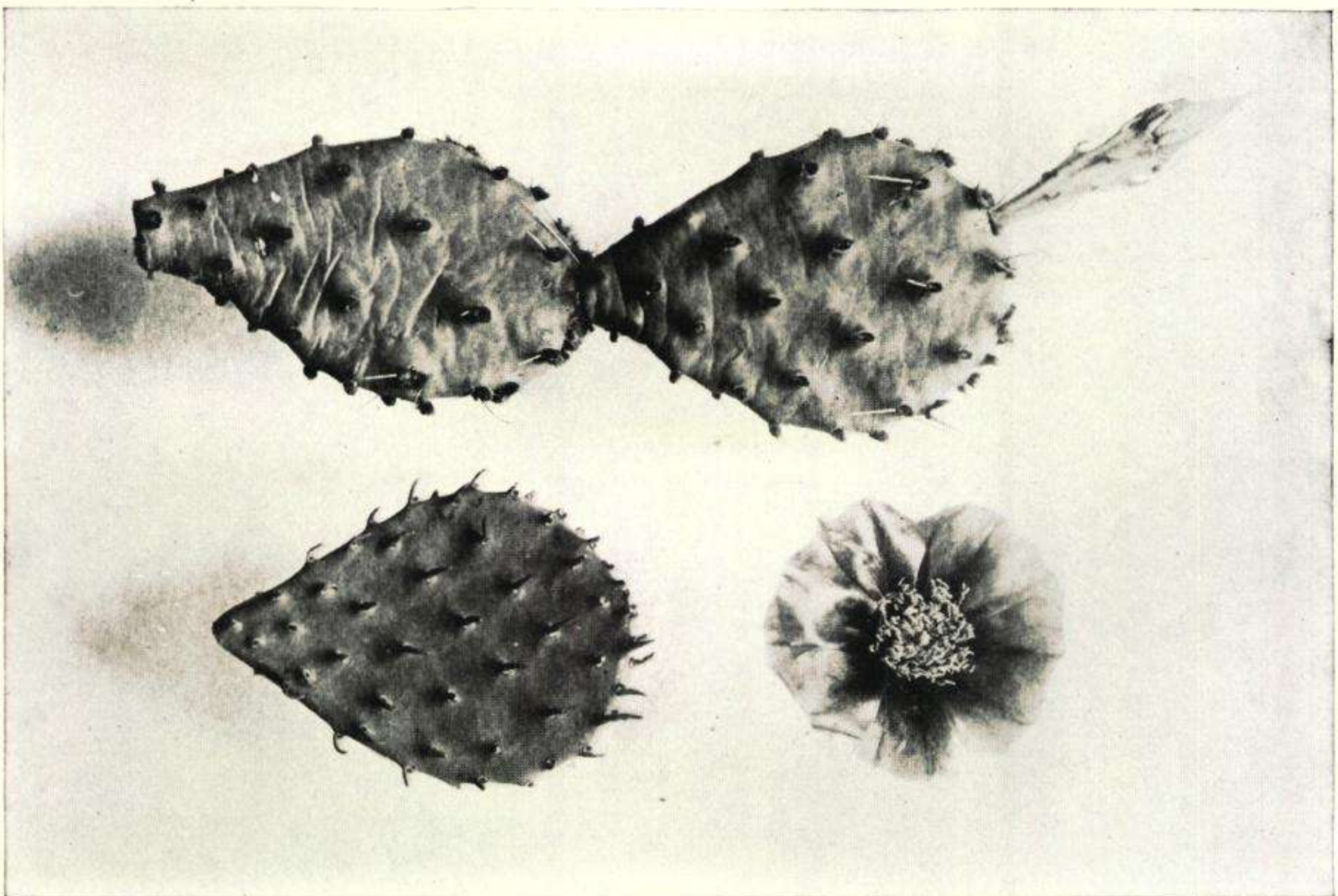
An erect to ascending, spreading, tuberous rooted species with radiating arms frequently resting on their edges on the ground, seldom over 3 dm. high, but often 8 or 9 dm. in diameter; joints usually widest near middle, but sometimes obovate, mostly more or less pointed above and below, about 10 by 15 cm., dark green, glaucous when young, wrinkled and decidedly raised-tubercular at the areoles; areoles about 4 mm. long, obovate, about 2 cm. apart, enlarging and becoming sub-circular in age, sometimes 1 cm. in diameter; leaves subulate, cuspidate, slightly flattened; spicules light brown when young, but soon turning light yellow, conspicuous and formidable, in compact, 4 to 5 mm. long tufts in upper portion of areole, increasing with age, the new ones coming from center of areole and longer from year to year, the annular growths being in concentric circles, but brown color only appears on young joints, the change in color beginning to take place early in May; spines delicate, flattened, often twisted, usually 1 or 2, the longest about 2 cm., erect, or when 2 or 3, one sloping downward; flowers lemon yellow, brownish red within, lax, 7 cm. in diameter, turning very light orange to pinkish, filaments greenish, style white, stigma white or very light yellowish, 5 to 6 parted; ovary long, obovate or obconical, somewhat tubercular with raised areoles which are small and sub-circular, about 12 mm. by 6 cm.





OPUNTIA ALTA.





OPUNTIA ALTA AND O. XANTHOGLOCHIA.