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long and often ten to twelve in number, yellow or often with brownish zone toward the apex.

This is a common, conspicuous species in the coastal region of California and is likely to be confused on the one hand with *O. occidentalis* Engelm. & Bigel., which has similar joints but is quite a different plant growing farther inland, and on the other hand with *O. littoralis* (Engelm.) B. & R., which has more subcircular joints and more yellowish translucent spines. The species is very interesting inasmuch as it often has many joints or portions of joints practically destitute of spines, while neighboring areoles are normally spiny. The plant has been in cultivation with me since 1904. The spineless characteristic of a portion of the plant body is exceedingly interesting and it was thought for a time that it might prove of economic value, but vegetative propagation made every year or two since that time has failed to produce any marked change in the degree of spinelessness which the plant bears in nature. In four generations grown vegetatively from single joint cuttings no increase in spineless area was observable at either San Antonio or Brownsville.

Several collections have been made of the species between Santa Barbara and Tija Juana but my inventory number 10353 is designated as the type. It was collected at San Pedro, California, September 22, 1911, and is a plant showing very little of the spineless variation.

✓ *Opuntia pyrocarpa* sp. nov.

An ascending-spreading, shrubby species 60 cm. high and having a spread of 2 m. or more when full grown, the main branches commonly resting on their edges at base and ascending at their extremities; joints large, nearly as broad as long, about  $22 \times 25$  cm. but contracted below into a very short but mostly evident stipitate base, medium green with considerable bloom; areoles long, obovate, not raised after the first season, about 6 mm. in length, brown, enlarging to subcircular in age; spicules brown, in a compact tuft 4 mm. long occupying the upper two-thirds of the areole and filling it in age; spines porrect, divergent, but mostly sloping down in age, one to three, mostly one or two, yellowish distally and gradually darkening to rather bright, light-brown proximally, the lower one-third of the joint unarmed, flattened, twisted, 3-4 cm. long; flowers 8 cm. in diameter,

yellow with light-red centers, filaments yellow, style white, stigma light-green, large, coarse, nine- to ten-parted, buds pointed, light greenish-red with color equally distributed through entire scale but their margins lighter, petals broad, pointed above and below and widest slightly above the middle, about  $4 \times 5.5$  cm., irregularly toothed or even cleft; fruit long, pyriform, burnt carmine with a decidedly purple tinge, same color in interior, spicules brownish but usually with yellowish tips, unequal, surrounded by the end of the gray wool, also having one to three fugacious spines in lower part of areole 5-6 mm. long.

The species is delimited by its large, broad, stipitate joints, long pyriform fruits, large flowers with broad-pointed petals. The type was collected near Marble Falls, Texas, in July, 1908, under my collection number 9392 and has been grown to maturity from cuttings at Chico, California.

*Opuntia squarrosa* sp. nov.

A bushy, hemispherical shrub 1 m. high and 2 m. in diameter; joints subcircular, raised at areoles even the second year and pronouncedly so the first, deep blue-green with an abundant gray bloom turning more yellowish with age; leaves backward-curved and standing almost at right angles to the surface, subulate, cuspidate, 6 mm. long, slightly flattened; areoles broadly obovate, subcircular in age, dark dull-brown, 6 mm. long, becoming dirty gray-black; spicules very prominent, dark brown, spreading, scattered through nearly the entire areole, their tips slightly yellow, often 8-10 mm. long; spines variable in color, mostly yellowish distally and brown at base, mostly one or two, porrect, 1-2 cm. long, flattened, often twisted; flowers very large and showy, 9-10 cm. in diameter, their centers bright purple fading to yellow at margins, the backs of the petals orange, filaments tinged a little above, apex of style also tinted slightly, stigma light-green, eight-parted; buds light green, pointed with thick, heavy, recurved, prominent outer segments making the bud appear squarrose; fruit purplish red throughout.

The species is frequently met with in the lower Delta region of the Rio Grande in Mexico. It has not been reported from the United States but it probably occurs in the region of Brownsville. It is easily distinguished from other species of the Delta region by its blue-green color, brown spicules and spines, and large, striking flowers. The type was collected under my inventory number 9981 in April, 1910, about 12 leagues south of Matamoros, Mexico.