

area of distribution of the xerophilous flora. Large groves exist in the neighborhood of Fiscal, and the line of distribution extends from here to San José de Golfo and to Sanarata.

Opuntia delicata Rose, sp. nov.

A small, procumbent plant with rather thin, ovate, bluish, slightly glaucous joints, often only 4 to 9 cm. in diameter; areoles prominent, bearing conspicuous brown spicules; lower areoles spineless, the upper ones bearing one or two slender brownish spines (the longer one 3 to 4 cm. long); flowers yellow, 5 cm. long; fruit oblong, spineless, 2 to 3 cm. long; seeds small, about 4 mm. in diameter, nearly smooth.

Type U. S. National Herbarium no. 454622, collected by J. N. Rose at Calabasa, April 30, 1908 (no. 11951).

Common in southeastern Arizona and observed at Calabasa, Nogales, and Benson. The description is made up from living and herbarium material. The fruit and seeds are described from material collected by J. W. Toumey in the Santa Rita Mountains.

Mr. Toumey refers his material to *O. stenochila*, which it closely resembles in its seeds.

Opuntia eichlamii Rose, sp. nov.

PLATE 66.

Tree-like shrubs of considerable size, up to 5 and 6 meters in height, growing straight and erect, the old portions of the stem round, covered with gray bark; joints from obovate, 15 by 20 cm., to almost rotund, 25 cm. wide, forming a scanty crown; epidermis smooth, with a dull gloss, dark green; areoles oval, 2 by 3 mm., 3 to 3.5 cm. apart, visibly sunk in a protuberance, this flattened below, 10 mm. long and 6 mm. wide, with brownish wool and very transient fox-red glochids; spines 4 to 6, very unequal, 1 cm. or less long, rose-color when young, in most cases, soon becoming white, exceedingly sharp, spreading asunder, rather inclined to point downward, the lowest even lying close to the joint; leaves on young joints, caducous, cylindrical, gray at the base running into reddish above, with little red tips bent outwards; flowers produced from the edge of the joint, 7.5 cm. long; ovary cylindrical, 3.7 cm. long, 2.5 cm. in diameter, bright leaf-green, thickly covered with tubercles 6 to 7 mm. apart, its areoles with dark brown wool and dark fox-red glochids penicillately disposed; corolla 3.5 cm. long, rotate when in full bloom, beginning with dark reddish brown scales, changing into magnificent brilliant carmine petals, 1.5 cm. wide; stamens 1.5 cm. long, green at the base, rose-colored toward the top; anthers bright yellow, standing in rows of 10 to 12 on the steeply sloping wall of the deeply umbilicate ovary; style 2.5 cm. long, stout in the lower third, ventriculose, dark red, brighter toward the upper part, ending in 8 to 11 bright green, club-like stigmas inclining toward one another; ripe fruit 4 cm. long by 3 cm. thick; strongly tuberculate; pulp red, very watery, and unfit to eat; seeds developed in profusion, of a reddish brown color.

Type U. S. National Herbarium no. 617659, collected in Guatemala in 1910 by F. Eichlam (no. 13).

Mr. Eichlam states that it is not widely distributed, so far as he has been able to learn. He says that, on the high plain of Guatemala, the species is found in a northeasterly direction, in the nearest suburbs of Guatemala City, especially on the old road to Mexico, and that between the city and churchyard it is scattered about in the thickets and grass.

The above description is based upon one furnished by Mr. Eichlam, who also sent three photographs, one of which is here reproduced.

Opuntia mackensenii Rose, sp. nov.

PLATE 67.

Plants often producing thick, tuberous roots, low (rarely over 30 cm. in height), sometimes 1 to 2 meters broad; stems mostly prostrate, the branches often erect or ascending; joints mostly suborbicular (occasionally broader than long), varying to obovate, 8 to 16 or rarely 20 cm. in diameter, pale and glaucous when young, rather deep green when older; areoles filled with brown bristles and pale wool when young,

the bristles becoming yellowish in age, the lower areoles naked, the upper bearing 1 to 4 unequal spines; spines brown, white, or brown below and white above, all becoming gray or whitish in age, mostly flattened on one side and twisted, slender, on young joints spreading, on very old ones usually reflexed; flowers medium-sized, yellow, with a 7 or 8-lobed stigma; fruit spineless, oval (or sometimes narrower with or without a contracted base), 4 to 5, rarely 6 cm. long, truncate at apex, rose-purple, with a nearly colorless, pleasant-tasted pulp; seeds suborbicular, 5 to 6 mm. broad, acutish-margined, nearly white.

Type U. S. National Herbarium no. 617434, collected by Bernard Mackensen, near Kerrville, Texas, August, 1909. The photograph was taken in Washington.

The following note by Mr. Mackensen made in the field is of considerable interest:

I now send you two more packages containing more typical specimens of *O. mackensenii*. I am also trying to have a photograph made of a large, typical plant. I have had to revise my ideas of this species somewhat in consequence of the examination of numerous specimens growing under various conditions. I find that many plants are without tubers, and I believe this to be the case especially with those produced by vegetative propagation. On normal plants the fruit is oval and rose-purple; on those suffering from drouth, disease, etc., it is usually narrower and frequently contracted below.

Opuntia mackensenii differs from *O. ferruginospina* chiefly in its tuberous roots and procumbent habit, and in the shape and size of its joints, character of its spines, yellow color of its flowers, size, shape, color, and taste of its fruit, and size and color of its seeds. It is evidently more closely related to *O. macrorhiza*, from which it differs chiefly in the size of its joints and the number and character of its spines, in its 7 or 8-lobed stigma, and in the form and color of its fruit.

APIACEAE.

A NEW ARRACACIA AND A NEW ERYNGIUM.

Arracacia compacta Rose, sp. nov.

Perhaps a meter high; stems purplish, more or less glaucous; basal leaves 35 cm. or more long, ternately compounded; ultimate segments lanceolate, sometimes lobed below, sharply serrate, acute, glabrous above, pubescent beneath; ultimate peduncles rather short, 2 to 4 cm. long; involucrel and involucrel bractlets wanting; peduncle 1 cm. or less long, pubescent when young; pedicels short, puberulent; flowers apparently purplish; fruit abundant, forming large compact heads hiding the peduncles and pedicels; carpels 12 to 14 mm. long, glabrous, sharply ribbed, with slender style but no stylopodium; ribs nearly equal, broad at base, acute; old tubes one in each interval and one under each rib; seed in cross section showing a deep concave base, the outer margin corrugated.

Type U. S. National Herbarium no. 592478, collected by Dr. C. A. Purpus at an altitude of 2,100 to 2,400 meters on Cerro de Chicamole, Puebla, Mexico, August, 1909 (no. 4110).

I have referred this species tentatively to *Arracacia*, although it lacks the stylopodium of that genus.

Eryngium purpusii Hemsley & Rose, sp. nov.

Perennial; stem rather slender, 60 to 80 cm. long, glabrous, naked below the inflorescence; basal leaves numerous, 20 to 35 cm. long, about 12 mm. broad, with numerous spinescent linear lobes narrower than the breadth of the leaves, often bearing small prickles in the axils of these lobes; inflorescence a terminal umbel somewhat compounded together with several axillary clusters; heads 2 cm. or more long, longer than broad; bracts erect, entire, pungent, 8 to 12 mm. long; bractlets entire, pungent; styles elongated; carpels naked below but bearing a few ovate scales above.

Type U. S. National Herbarium no. 592477, collected by C. A. Purpus on Cerro de Cacalotl, Puebla, Mexico, August, 1909 (no. 4109).