FIVE NEW SPECIES OF CRASSULACEAE FROM MEXICO.

By J. N. Rose.

No other group of flowering plants make in general such unsatisfactory herbarium specimens as do the Crassulaceae when treated in the usual way. In some species the stem leaves drop off easily, and in nearly all they will gradually detach themselves unless specially treated. Some species will grow in the herbarium for months, taking on abnormal shapes and gradually becoming dismembered. In nearly every case it is best to prepare herbarium specimens by plunging the entire plant or its parts into boiling water, in some cases allowing the material to remain several minutes. In this way the tissues are killed and the plant dries readily. By this treatment, however, the shape of the leaves is destroyed, and in the case of the thick terete leaves some very important characters are lost. Indeed, it seems almost impossible to identify some of the older species even with the type in hand. Owing to the great number of species recently described from Mexico, and the indications that many more are to be described, it seems highly desirable that the habit and foliage especially should be shown either by photographs or by drawings. In my own work I shall try in the future to photograph all new species which are described from living material.

The present paper contains descriptions of some miscellaneous new species, all of which are accompanied by full-page illustrations.

Echeveria bifurcata Rose, sp. nov. PLATE LXXVII.

Caulescent, usually forming a simple rosette of leaves; basal leaves lanceolate, acuminate, rather bright green, apparently never coloring very much, 5 to 7 cm. long, 10 to 15 mm. broad, deeply concave on the face; flowering stem 20 cm. long, leafy to the base, the leaves green and not at all glaucous, semiterete, acute, 3 to 5 cm. long; inflorescence 2-branched, each branch a secund raceme 8 to 12 cm. long; pedicels almost wanting; sepals spreading at right angles to the corolla, very unequal, acute; corolla 10 to 12 mm. long, bright red above, paler below.

Collected by J. N. Rose near Ixmiquilpan, Hidalgo, July, 1905, and flowered in Washington in July, 1906.

Type U. S. National Herbarium no. 454971.

EXPLANATION OF PLATE LXXVII.—From a photograph of a greenhouse plant. Scale ½.

Echeveria trianthina Rose, sp. nov. PLATE LXXVIII.

Acaulescent, giving off rosettes freely; basal leaves numerous, deep purple and mucronate when young, becoming greenish and losing the mucro, oblanceolate, 6 to 12 cm. long, 10 to 18 mm. broad, very thick, rounded below, concave above;

flowering stem 30 to 40 cm. long, naked below; stem leaves narrow, terete or semi-terete, acute, 2 to 8 cm. long, erect or ascending; inflorescence at first strongly reflexed, usually 2-branched near the top, rarely 3-branched or simple, the branches 8 to 10 cm. long; pedicels very short, 2 to 3 mm. long, only a little elongating in age; sepals unequal, deflexed in anthesis, but later spreading at right angles to the corolla, terete, acute; corolla buds ovate, acute; corolla pink; carpels distinct.

Described from specimens sent by Dr. C. A. Purpus from the Rio de Tolantango, Hidalgo, in 1904, which flowered in Washington November, 1905.

Type U. S. National Herbarium no. 399673.

EXPLANATION OF PLATE LXXVIII.—From photograph of a greenhouse plant. Scale $\frac{1}{8}$.

Sedum allantoides Rose, sp. nov. PLATE LXXIX.

Perennial, perhaps in native state woody at base, somewhat branching below, 20 to 30 cm. high, rather weak, sometimes reclining below; leaves closely set, above somewhat scattered, standing almost at right angles to the stem, alternating, very turgid, terete in cross-section, clavate or somewhat bowed, 20 to 45 mm. long, 8 to 12 mm. in diameter, rounded at apex, somewhat narrowed at base, very pale and glaucous; branches terminating in panicles, the lower subdivisions of these axillary, their flowers in small cymes; calyx deeply cleft; sepals nearly equal, ovate, acute, widely spreading, 6 mm. long; petals widely spreading, 7 to 8 mm. long, lanceolate, acute, greenish white, sometimes tinged with pink; stamens 10; anthers pink; scale large, white, notched; ovaries 5, erect, white; styles rather short.

Collected by Dr. C. A. Purpus on hills near San Luis, Oaxaca, altitude 2,100 to 2,400 meters, in 1907 (no. 417) and flowered in Washington in January, 1909.

Type U. S. National Herbarium no. 574992.

EXPLANATION OF PLATE LXXIX.—From a photograph of a greenhouse plant. Scale $\frac{1}{8}$.

Sedum compressum Rose, sp. nov. PLATE LXXX.

Perennial, more or less prostrate and rooting at the nodes, the flowering branches erect or ascending, glabrous; leaves closely set, spreading at right angles to the stem, glabrous, glaucous, flat, spatulate to oblanceolate, 2.5 to 3 cm. long, 10 to 12 mm. broad, with an ovate, acute tip; inflorescence cymose, consisting of 2 or 3 secund racemes; calyx cleft nearly or quite to the base, the lobes ovate to lanceolate, somewhat unequal; corolla bright yellow; petals distinct, spreading, 7 to 8 mm. long, lanceolate, acute; stamens 10, the 5 alternating with the petals distinct, the other 5 borne on the base of the subtending petals; scale small, flat; carpels at first erect with long attenuate tips.

Collected by Dr. E. Palmer in a canyon near Victoria, Tamaulipas, April, 1907, and flowered in Washington, November 20, 1907, January, 1909.

Type U. S. National Herbarium no. 573870.

The species closely resembles *Sedum palmeri* but I have grown the two species together and find that they are easily distinguished. *S. compressum* flowered somewhat earlier; the leaves are smaller and have a very decided acute tip.

EXPLANATION OF PLATE LXXX.—From a photograph of a greenhouse plant. Scale $\frac{1}{8}$.

Villadia levis Rose, sp. nov. PLATE LXXXI.

Stems usually erect, 30 to 50 cm. high, more or less branched, glabrous; leaves narrow, nearly terete, 2 to 3 cm. long, acute, spreading, often forming small rosettes along the lower part of the stem, and there somewhat angled; inflorescence an elongated leafy spike; sepals thick, ovate; corolla buds strongly angled, the angles granulate-roughened: corolla spreading, yellowish brown, the lobes ovate; scales large, orange-colored; style branches slender.

Collected by J. N. Rose near Santa Catarina, Oaxaca, September 7, 1906, (no. 11365) and flowered in Washington in 1908 and 1909.

EXPLANATION OF PLATE LXXXI.—From a photograph of a greenhouse plant. Scale $\frac{1}{8}$.

SEDUM ALLANTOIDES ROSE.

SEDUM COMPRESSUM ROSE.