

SOME NEW SPERMATOPHYTES FROM TEXAS¹

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In a collection of plants made by Mr. John A. Moore and the writer from the mountains of western Texas during the summer of 1931 several new species and one new variety were discovered.

Cladothrix lanuginosa Nutt. var. *carnosa* Steyermark, n. var.

Caulibus usque ad ramulos floriferos glabrescentibus; foliis caulinis involucralibusque parvis, 4–13 mm. longis, 3–9 mm. latis, carnosus, caulinis omnibusque praeter involucralibus supremis glabrescentibus. (Gravelly flat, 3 mi. east of Study Butte, Brewster Co., Texas, alt. 762 m., June 26, 1931, *Moore & Steyermark 3795*.—TYPE, in Gray Herb.).

Stems, up to the floriferous branchlets; glabrescent; cauline and involucral leaves small, 4–13 mm. long, 3–9 mm. broad, fleshy, the cauline and all except the uppermost involucral leaves glabrescent.

This variety is distinguished from *Cladothrix lanuginosa* by its stem being glabrescent up to the floriferous branches, instead of pubescent throughout, by its fleshy, instead of soft membranaceous, cauline and involucral leaves, and by its cauline and all except the uppermost involucral leaves being glabrescent instead of stellate-pubescent. The uppermost involucral leaves in the species are densely and conspicuously stellate-pubescent, producing a white cottony appearance at the summit of the inflorescence, whereas in the variety the pubescence is inconspicuous and does not produce the cottony effect. The leaves of the variety are on the whole smaller than those of the species.

The variety was found growing in abundance in an arid gypsum flat several miles north of the Rio Grande in soil heavily impregnated with alkaline salts, in association with such calciphiles as *Atriplex canescens*, *A. acanthocarpa*, *Suaeda suffrutescens*, *Greggia camporum*, and *Nama Havardii*. The extremely alkaline soil here has probably been a leading factor in producing the fleshy-leaved condition.

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To this variety should be referred Havard's no. 104 collected around Tornillo Creek, western Texas (Gray Herb.), a locality about thirty miles east of the one from which the present collection was made.

Polygala rimulicola Steyermark, n. sp.

Perennis tenuis e basi lignosa; caulibus multis, 1–5 cm. longis, ramosis, prostratis vel parum ascendentibus, gracillimis, confertim foliosis, viridibus, glabris sub lente papillis plurimis minutis et pilis brevissimis, mollibus sparsis incurvatis, obsitis; foliis omnino similibus, parum carnosius, glabris sub lente minute papillosis sparseque puberulentibus, elliptico-ovatis, acutis vel parum cuspidatis, subsessilibus, 1.5–4 mm. longis, 1–2.5 mm. latis; floribus 1–2, terminalibus, 5 mm. longis; pedicellis maturitate recurvatis nutantibusque, ca. 2 mm. longis; sepalo superiore ovato, acuto, glabro, persistente, roseo-purpurascienti alboque, 1.5–2 mm. longo, 1 mm. lato; sepalis inferioribus libris, oblongo-obovatis, acutis, deciduis, glabris, roseo-purpurascensibus albisque, 2–3 mm. longis, 1 mm. latis; alis roseo-purpurascensibus albisque, deciduis, obliquis, late obovatis, apice obtusis, basi angustatis, venosis, glabris, 4 mm. longis, 2.5 mm. latis; carina ca. 3 mm. longa, subviridi-flava, e rostrata, inflata, saccata, apice sub-oblique truncata angulis rotundatis basi superiore, appendicibus duobus brevibus parallelis rectis ornata, ad basim floris adversis, tertia parte superiore pilis plurimis brevibus erectis tenuibus tecta; petalis superioribus basi albis, apice purpureis, longitudine $\frac{3}{8}$ carinam adnatis, lineari-oblongis, apice subtruncato, intus pilis paucis brevibus tecto, 4.5 mm. longis, ca. 1 mm. latis, staminibus 7; capsula late obovato-ovata, emarginata, venosa, parce pilis brevibus incurvatis tecta, dense pilosa in sino apicis emarginatae, ca. 2 mm. longa, 1.5–2 mm. lata; semine oblongo, dense sericeo-pubescente pilis longis, 1–1.5 mm. longo; arillo 0.5 mm. longo, glabro, corneo, globoso, latere utraque umbone magno ornato. (Exposed rock crevices, Smith Canyon, Guadalupe Mts., Culberson Co., Texas, alt. 1900 m., July 20, 1931, Moore & Steyermark 3515.—TYPE, in Gray Herb.).

A delicate perennial from a woody base; stems numerous, very slender, prostrate or slightly ascending, branching, 1–5 cm. long,

green, apparently glabrous but under high magnification covered with numerous minute papillae and short soft scattered incurved hairs; leaves similar throughout, subsessile, elliptic-ovate, 1.5–4 mm. long, 1–2.5 mm. broad, acute to slightly cuspidate, slightly fleshy, apparently glabrous, but under high magnification covered with numerous minute papillae and few short soft scattered hairs; flowers 1–2, terminal, 5 mm. long; pedicels at maturity recurved and nodding, 2 mm. long; upper sepal persistent, rose-purplish and white, ovate, 1.5–2 mm. long, 1 mm. broad, acute, glabrous; lower sepals free, deciduous, rose-purplish and white, oblong-obovate, 2–3 mm. long, 1 mm. broad, acute, glabrous; wings deciduous, rose-purplish and white, oblique, broadly obovate, 4 mm. long, 2.5 mm. broad, obtuse at apex, narrowed at base, veiny (the veins ending free), glabrous; keel unbeaked, inflated, greenish-yellow, pouch-shaped, 3 mm. long, the outer upper and lower ends rounded, the inner upper end terminating in 2 short parallel straight appendages extending towards the base of the flower, the upper third of the keel covered with numerous erect short fine hairs; upper petals united to the keel about $\frac{3}{8}$ their length, white at the base, purplish-red at the apex, linear-oblong, 4.5 mm. long, 1 mm. broad, subtruncate at the apex, slightly puberulent within; stamens 7; capsule venose, broadly obovate-oval, 2 mm. long, 1.5–2 mm. broad, emarginate, sparingly covered with short incurved hairs, densely pubescent in the sinus of the emarginate apex; seed oblong, 1–1.5 mm. long, densely sericeous-pubescent with long hairs; aril globose, 0.5 mm. high, with a large umbo at each side, corneous, glabrous.

A well-marked species occurring in crevices of shaded to slightly exposed limestone boulders or cliff-faces in moist ravines of the Guadalupe Mountains.

The combination of characters distinguishing this species are the glabrous globose aril with no conspicuous lobes, the unbeaked keel, persistent upper sepal, prostrate habit, minute leaves and flowers, and essentially glabrous condition of stem, leaves, and fruit.

In habit this species slightly approaches *Polygala macradenia*, but the latter has a pubescent umbo, a 3-plicated beaked keel, thickly gland-dotted leaves, sepals, and fruit, and erect to ascending, instead of prostrate, stems.

It is related to *Polygala acanthoclada*, which it resembles in the beakless keel, and to *P. eucosma*, to which it is more closely allied. The Mexican *P. Purpusii*, *P. Conzattii*, and *P. Parryi*, with their glabrous arils, persistent upper sepals, unbeaked keels, and deciduous lower sepals, also are closely allied to this species, but, as Dr. S. F. Blake observes, the seed of *P. rimulicola* is unique in its group.

***Laphamia quinqueflora* Steyermark, n. sp.**

Perennis humilis multum ramosus effuse patulus e caudice robusto lignoso, caespitem confertum formans; caulibus erectis, divaricate corymbifereque ramosis, teretibus, striatis, minute puberulentibus, pullo-viridibus, 1–1.4 dm. altis; petiolis 0.8–1.3 cm. longis, minute puberulentibus; laminis late subrotundato-ovatis aut suborbiculatis, pullo-olivaceo-viridibus, nitidis, membranaceis, oppositis, integris vel leviter repandis, glabris vel pilis paucis sparsis minutis obsitis, obtusis, apice rotundatis, 0.5–1.5 cm. longis, 0.5–2 cm. latis; capitulis eligulatis, multis, 7 mm. longis, ca. 4 mm. latis, plerumque ca. quinque floribus, terminalibus, solitariis, corymbose dispositis; involucri bracteis 5, 2-seriatis, aequalibus, lineari-oblongis, obtusis, carinatis, carina convexa, apice leviter incurvato, 6–7 mm. longis, 1–1.5 mm. latis, moderatim minuteque puberulentibus; disci corollis 4.5–5 mm. longis, limbo cylindraceo subito in tubulum angustum angustato, limbo ca. duplo longiore quam tubulo, minute puberulente; pappo 22–26 aristis inaequalibus setosis barbellulatis, 12–14 brevioribus 10–12 longioribus composito, aristis longissimis, ca. 2 mm. longis, corollae tubulum angustatum, vix excedentibus; achaenio compresso, oblongo-cuneato, basi, paullo angustato, apice truncato, stramineo vel fulvo, hirtello, faciebus medio 1-nervatis. (Niches in exposed limestone cliffs, Lower McKittrick Canyon, Guadalupe Mts., Culberson Co., Texas, alt. 1900 m., July 20, 1931, Moore & Steyermark 3547.—TYPE, in Gray Herb.).

A low much-branched, diffusely spreading perennial from a stout woody caudex, forming a dense mat, 1–1.4 dm. high; stems numerous, slender, erect, terete, divergently and corymbosely branched, striate, minutely puberulent, dark green; petioles minutely puberulent, 0.8–1.3 cm. long; blades opposite, broadly

subrotund-ovate or suborbicular, 0.5–1.5 cm. long, 0.5–2 cm. broad, entire or slightly repand, obtuse and rounded at apex, membranaceous, essentially glabrous, dark olive-green, lustrous; heads discoid, numerous, terminal, corymbosely clustered, mostly 5-flowered, 7 mm. long, 4 mm. broad; involucral bracts 5, in 2 series, equal, linear-oblong, 6–7 mm. long, 1–1.5 mm. broad, obtusish, carinate with a convex keel, apex slightly incurved, margins subscarios, convex and slightly incurved, moderately and minutely puberulent; disk-corollas 4.5–5 mm. long, the cylindrical throat abruptly contracted into a narrow tube, the throat about $1\frac{3}{4}$ times as long as the tube, minutely puberulent; pappus of 22–26 unequal setose barbellate awns, consisting of 10–12 medium to long awns associated with 12–14 shorter ones, the longest awns 2 mm. long, slightly surpassing the constricted corolla-tube; achene compressed, oblong-cuneate, truncate at apex, hirtellous, stramineous to light brown, the faces 1-nerved in the middle.

A very distinct and well-marked species, differing from any of the other species in the genus. In having a pappus of 20 or more unequal rigid hispidulous bristles and a corolla with short proper tube and cylindraceous throat, it properly belongs in the section *Pappothrix*, but differs from the other species in that section especially in having the heads usually 5-flowered. Its distinctive characters are the 5-flowered heads, each of 5 involucral bracts, the essentially glabrous, membranaceous, subrotund, mostly entire or slightly repand leaves, and the pappus of 22 to 26 unequal setose hispidulous bristles.

This species was found growing on vertical exposed moist faces of limestone cliffs in deep canyons at an elevation of 1900–2590 meters (6000–8500 ft.), where it was conspicuous in dense hemispherical clumps, with its lustrous, dark olive-green leaves.

Valeriana texana Steyermark, n. sp.

Perennis caudice denso rugoso multum ramoso; caulibus pluribus, erectis, 1–1.5 dm. altis, gracilibus, fere glabris; foliis radicalibus multis, oblanceolatis vel obovatis, in petiolum longum gracilem paullo alatum contractis, petiolis inclusis, 4–10 cm. longis, 0.6–1.8 cm. latis, glabris, obtusis, integris, longitudine

usque ad $\frac{2}{3}$ altitudinem caulis attingentibus; foliis caulinis 1–2 jugis, omnibus simplicibus, oblanceolatis, plerumque brevioribus quam radicalibus, 1–4.5 cm. longis, lobis lateralibus nullis, integris; inflorescentia cyma thyrsiformi composita, multiflora, anthesi valde contracta, pedunculis superioribus oppositis, inferioribus alternatis; floribus parvis, subflavo-albis, multis; corolla 5.5 mm. longa, cum tubo infundibuliformi; staminibus 3, inclusis; fructu oblongo, in apicem truncatum paullo angustato, 3–3.5 mm. longo., prope 1.5 mm. lato, glabro. (On boulders in creek, Upper McKittrick Canyon, Guadalupe Mts., Culberson Co., Texas, alt. 2000 m., July 21, 1931, *Moore & Steyermark 3528*.—TYPE, in Gray Herb.).

Perennial from a thick rugose much-branched ligneous root-stock, 1–1.5 dm. high; stems several, slender, erect, with 1–2 pairs of cauline leaves, essentially glabrous; basal leaves numerous, contracted into a long slender slightly margined petiole, $\frac{2}{3}$ the height of the stems, 4–10 cm. long, 0.6–1.8 cm. broad, oblanceolate to obovate, entire, obtusish, glabrous, light green; cauline leaves in 1–2 pairs, all simple, lateral lobes absent, oblanceolate, much shorter than the radical ones, 1–4.5 cm. long, entire; inflorescence a compound thyrsiform cyme, numerous flowered, much contracted at anthesis, the upper peduncles opposite, the lower alternate; flowers small, very numerous, yellowish-white; corolla 5.5 mm. long, the infundibuliform tube 3 times as long as the broadly ovate lobes; stamens 3, included; fruit compressed, oblong, 3–3.5 mm. long, 1.5 mm. broad, slightly narrowed towards the truncate apex, glabrous.

This is the first collection of a species of *Valeriana* from Texas, so far as the writer is aware. It was found on moist shaded limestone cliffs in the ravines of various canyons in the Guadalupe Mountains of Texas, growing at an altitude of 1828–2438 meters (6000–8000 ft.).

It differs strikingly from other North American species of this genus, especially in having the leaves simple and undivided throughout, in the inflorescence much contracted into a compound thyrsiform cyme the length of which averages about one-half that of the flowering stem, and in a strongly developed multicapital caudex. Only *Valeriana pubicarpa* and *V. wyomingensis*



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