

Common in S. California and east to Nevada: has mostly been referred to *G. inconspicua*, var. *sinuata*, p. 148.

G. tenuiflora, BENTH., p. 147. Radical leaves often cottony-tomentose when young, soon glabrate: calyx at most 2 lines long: corolla from half-inch to inch and a quarter long (including the lobes); the slender tube dilated into the somewhat narrowly funnelliform throat. — S. California to S. Utah.

G. inconspicua, DOUGL., p. 148. The panicles or flowering branches when well developed are rather rigidly erect, at least not effuse; the lateral peduncles short and erect, at least in fruit. The figures of Smith and of Hooker (from weak plants raised in England, and from which Bentham has mainly drawn the character) do not very well represent the species, although the whole tube of the small corolla is often thus included. Yet it is very commonly more exerted (as in var. *sinuata*), even before the fructified ovary enlarges, but always salverform, having a small and narrow throat, and limb only 2 to 4 lines in diameter. The effusely-flowered plants with ampliate throat, which were included in var. *sinuata*, are now taken for a small-flowered variety of *G. latiflora*. Apparently there are connecting forms between all these species.

G. Brandegéi, GRAY, p. 149. Add: Hook. f. Bot. Mag. t. 6378.

3. LÆSÉLIA, L. — Flowers involucrate or involucellate; both bracts and calyx wholly or mainly scarious. Corolla funnelliform, either regular or one or two sinuses deeper. Seeds winged or margined, the surface becoming mucilaginous when wetted. — Suffruticose, rarely annual, with spinulose-toothed leaves.

L. glandulosa, DON. Low, merely suffrutescens, roughish-pubescent with short and partly gland-tipped hairs: leaves mainly alternate, short-petioled or subsessile, lanceolate or narrowly oblong, those next the 1-2-flowered clusters similar but small, few-toothed, not scarious nor reticulated, nearly enclosing the involucre of wholly scarious oblong-lanceolate almost entire bracts: corolla violet or bluish, 6 or 8 lines long: filaments more or less declined-incurved: seeds broadly winged. — Syst. iv. 248; Benth. in DC. Prodr. ix. 319, in part (i. e. *Hoitzia conglomerata*, HBK., *H. capitata*, Willd., & *H. nepetifolia*, Cham.). *Hoitzia glandulosa*, Cav. Ic. Rar. iv. 45, t. 367. *H. Cervantesii*, HBK., Nov. Gen. & Spec. iii. 164. *H. spicata*, Willd. ex Rœm. & Schult. Syst. iv. 370. — Santa Rita Mountains, S. Arizona, Pringle. (Mex.)

5. (to be 4.) **POLEMÓNIIUM**, TOURN. — Flowers naked. Calyx herbaceous throughout, soft, usually accrescent. Corolla from rotate to funnelliform. Filaments pilose-bearded at base. Leaves simply pinnate, mucicous.

P. cærúleum, L. p. 151, only recently known at one or two stations in the Atlantic States, has now been detected also at Bethlehem, New Hampshire, by *F. S. Beane*, and on the mountains in Garrett Co., Maryland, by *J. Donnell Smith*.

P. flavum, GREENE. Like *P. foliosissimum*, but with flowers somewhat more paniculate and larger: corolla fully as large as in *P. cærúleum*, "yellow with tawny red outside," with broadly obovate throat and ovate acuminate lobes! — Bot. Gazette, vi. 217. — Highest slopes of the Pinos Altos Mountains, New Mexico, *Greene*.

P. pectinátum, GREENE. Glabrous and glandless up to the minutely glandular and pubescent inflorescence: leaflets very narrowly linear, hardly wider than the rachis: corolla probably white: otherwise not unlike narrow-leaved *P. foliosissimum*, of which it may be an extreme variety. — Bull. Calif. Acad. i. 10. — Eastern part of Washington Terr., *E. W. Hilgard*, fide *Greene*.

P. cárneum, GRAY, p. 151. Extends to the southwestern part of Oregon, where it was collected at Chetco by *Howell*.

Var. lúteum. Corolla yellow, the lobes (as in the species) broadly obovate, with rounded or retuse apex. — Cascade Mountains, Oregon, *Howell*, 1885.

P. foliosissimum, GRAY, p. 151. To this probably belongs *P. Mexicanum*, Nutt. Jour. Acad. Philad. vii. 41, from the northern Rocky Mountains.

more dilated : sterile filament wholly naked. — Proc. Am. Acad. xvii. 228. — S. California, near San Bernardino, to San Diego Co., *Wallace, Parish, W. G. Wright.*

- P. stenophyllus**, GRAY, p. 266. *P. rubescens*, Gray, Proc. Am. Acad. xix. 92, belongs to this species, the discolored flowers having been taken for red instead of purple or violet. — Common through S. Arizona, *Lemmon, Pringle*, and Northern Mex., *Palmer, Schaffner.*

Var. dasyphyllus, *P. dasyphyllus*, Gray, p. 266, a form with leaves and lower part of stem thickly beset with short retrorse pubescence (New Mexico and adjacent Texas as well as Arizona), varies into the glabrous state of the species.

- P. lanceolátus**, BENTH., p. 266. Habit of the *Elmigera* section : stem a foot or two high, herbaceous to the base or nearly, minutely puberulent or glabrate and the simpler inflorescence glandular : leaves from lanceolate to narrowly linear : corolla scarlet-red, an inch and more long, narrowly funnelform ; upper lip erect and 2-lobed, lower 3-parted and spreading : sterile filament glabrous : anther-cells short-oval, explanate in age. — Pl. Hartw. 22. *P. pauciflorus*, Greene, Bot. Gazette, vi. 218, narrow-leaved form. — Bluffs of the Gila, S. W. border of New Mexico, *Greene*. Rucker Valley, S. Arizona, *Lemmon.* (Mex.)

- P. pinifolius**, GREENE, l. c. Next to the preceding, glabrous throughout : stems a foot or two high, decidedly shrubby, much branched, with the herbaceous flowering branches short and slender, racemosely few-flowered : leaves much crowded on the sterile stems, linear-acerose (inch or less long, hardly half a line wide) : sepals broadly lanceolate and acuminate, puberulent : corolla an inch or more long, light scarlet, narrowly tubular, not enlarged at the throat ; upper lip 2-lobed and erect ; lower 3-parted and spreading ; lobes nearly linear, slightly bearded at base : anther-cells short-oval : sterile filament dilated and bearded above. — S. Arizona, in the San Francisco and Mogollon Mountains, *Greene*, and Rucker Valley, *Lemmon.*

- P. miser**. Next to *P. cristatus*, p. 266, every way smaller, only a span or two high, pruinose-puberulent, and the contracted inflorescence glandular-viscid but not villous : radical leaves spatulate or obovate ; cauline lanceolate, an inch or less long : sepals lanceolate, merely acute : corolla violet or bluish, only half-inch long, rather tubular than funnelform, the throat little dilated, spreading lobes short, base of lower lip moderately villous : sterile filament with dilated and curved tip hardly projecting from the throat, densely yellow-bearded down one side, the beard stronger and shorter than in *P. cristatus*. — Eastern Oregon, along the Malheur River, *Cusick.*

- P. Rattáni**, GRAY. Between *P. glaucus* and *P. Whippleanus* : a foot to a yard high, glabrous below, minutely viscidulous-pubescent above : leaves membranaceous, broadly elongated-lanceolate, 3 to 8 inches long, thickly denticulate ; radical and lowest cauline attenuate at base into a margined petiole ; the others half-clasping by a subcordate base : flowers glomerate in the interrupted thyrsus : cymes from the lower axils long-peduncled, upper short-peduncled or subsessile : pedicels short or hardly any : sepals oblong-lanceolate, acuminate, soft-membranaceous, loose : corolla curved in the bud, slightly oblique in anthesis, pale purple, inch long, campanulate-ampliate above the short tube ; lips short, lower villous-bearded within : anthers and filaments glabrous : sterile filament at length exerted, bearded with some sparse and long hairs : seeds of the genus. — Proc. Am. Acad. xv. 50. — In forests of N. W. California, in Humboldt Co., 1878-79, *Rattan.* Except for the wingless seeds, this is most nearly related to *Chelone nemorosa*, p. 259.

Var. minor, GRAY, l. c. Slender, with oblong leaves only an inch or two long, obscurely denticulate : thyrsus simple : flowers one half smaller : sepals attenuate : corolla 6 or 7 lines long. — Indian Creek, Del Norte Co., California, *Rattan.*

Var. Kléei. Intermediate in foliage inflorescence, and size of flowers between the foregoing variety and the type : sepals oblong, short-acuminate or obtuse. — *P. Kleei*, Greene in Torr. Bull. x. 127. — Summit of Ben Lomond, the highest peak of the coast ranges behind Santa Cruz, California, *W. C. Klee.*

- P. Gaírdneri**, HOOK., p. 270. The character of *alternate* leaves (specially noted by Hooker) was overlooked. This holds generally, as to most of the leaves in Washington Terr., coll. *Lyall, Howell, Suksdorf, Brandegee.* Stems vary from a span to near a foot high.

Var. Oregáus. Strict : leaves (narrow) even the bracteal ones and most of the peduncles opposite. — Mountains of E. Oregon, *Cusick, Howell.*

Eunanus Douglasii, Benth. Pl. Hartw. no. 1894 (excl. ripe fruit described, which is of *M. tricolor*); Gray, Pacif. R. Rep. iv. 120, mainly, not Benth. in DC. *E. Kelloggii*, Curran, in Greene, Bull. Calif. Acad. i. 100. — Common through middle parts of California. Mistaken by Bentham and myself for a later and caulescent form of *M. Douglasii*, first and well discriminated by Mrs. Layne-Curran.

+ + Ambiguous species, with corolla of § *Eunanus*, and little exerted, but with oblique late-dehiscent capsule of § *Enoe*.

M. latifolius, GRAY, p. 274. Extra-limital. The capsule in plant raised from Palmer's seeds appears to be only moderately oblique, linear-oblong, obtuse, and not indurated; but as now received from Mr. Greene, from its native habitat, and fully mature, it is lanceolate, strongly oblique, and as if bent on its broad base; the upper carpel much larger than the other, very gibbous and sharp-edged dorsally, and there very tardily dehiscent.

§ 3. **EUNANUS**, Gray, Bot. Calif. Corolla from tubular-funnelform to nearly campanulate, with either obscurely or manifestly bilabiate limb, the proper tube either moderately exerted or included in the campanulate or oblong calyx: style glandular-pubescent above: stigma usually peltate-funnelform, obscurely 2-lobed or entire: capsule symmetrical, from firm-chartaceous to membranaceous, dehiscent by both sutures into two valves, which bear the separated placenta: low or occasionally taller annuals, most of them glandular- or viscid-pubescent and heavy-scented.

* Corolla only a quarter-inch long, slender, only slightly exerted out of the broad and ventricose calyx until elevated on the growing capsule: valves thin-chartaceous.

M. Rattani, GRAY. Viscid-pubescent, a span or two high: leaves oblong; upper about equalling the sessile flowers: calyx very viscid, when fructiferous little higher than broad, a little oblique at orifice, and with short ovate teeth: corolla rose-purple, its lobes barely a line long, equal except that the upper are united to near the middle: capsule narrowly ovate-lanceolate, nearly half exerted: seeds oblong-oval. — Proc. Am. Acad. xx. 307. *Eunanus Rattani*, Greene, Bull. Calif. Acad. i. 105. — Lake and Colusa Co., California, *Rattan*, *Layne-Curran*.

* * Corolla a quarter to three-fourths inch long, funnelform or narrower, well exerted beyond the campanulate or oblong calyx: capsule-valves membranaceous or chartaceous: plants a span or two high and branching when luxuriant, when depauperate dwarf and simple, beginning to blossom from near the root.

+ Calyx not manifestly oblique at orifice, but lower teeth usually a little shorter. (Species of difficult discrimination.)

M. mephiticus, GREENE. Very viscid-pubescent and strong-scented: leaves from ovate-oblong to nearly linear: calyx-teeth short, broadly lanceolate, acutish: corolla half to two-thirds inch long and with somewhat bilabiate limb 4 or 5 lines broad, bright yellow, often purple-dotted in the throat, sometimes whole throat or even the limb turning reddish: seeds oval. — Bull. Calif. Acad. i. 9. *Eunanus mephiticus*, Greene, Bull. Calif. Acad. i. 102. — Common in the Sierra Nevada from the Yosemite northward.

M. nánus, HOOK. & ARN. Puberulent and somewhat viscid, or low and early-flowering plants almost glabrous: leaves obovate and spatulate-oblong, all with tapering base: calyx-teeth broadly lanceolate or triangular, acutish or when outspread obtuse, but acute when the tips are conduplicate, a quarter or a third the length of the oblong tube: corolla rose-purple with darker or yellow throat, mostly two-thirds or three-fourths inch long; the limb half-inch or less wide, evidently bilabiate and the lower lip a little shorter than the upper: seeds oval-oblong. — (Supra, p. 274, excl. the yellow-flowered form and the var.) California to interior of Washington Terr. and Wyoming, first coll. by *Tolmie*.

M. Bigelovii, GRAY, p. 274. Viscid-pubescent, sometimes viscidly villous: leaves nearly of the preceding or more acute, the upper ovate and acuminate: calyx-teeth triangular and acuminate or subulate-acute, about half the length of the tube: corolla crimson, sometimes with a yellow eye, three-fourths inch long when well developed, narrow up to the abruptly

much dilated throat and expanded slightly bilabiate limb, this half to three-fourths inch in diameter and rotately expanding: seeds oval to oblong. — Belongs mainly to the southern and eastern parts of the Sierra Nevada, and extends from the borders of Arizona to the interior of Washington Terr.

Var. ovátus. More rigid, a span to near a foot high, at length spicately flowered, all the floral and even most of the lower cauline leaves ovate from a broad base, closely sessile, acutely apiculate-acuminate. — Partly referred to *M. nanus*, partly to *M. Bigelovii*, on p. 274. W. Nevada (*Torrey*) and northward to the upper Columbia River, *Nevius*, *Hall*, *Howell*.

M. Whitnéyi. An inch or two high, in pubescence and foliage resembling the dwarf state of *M. nanus*: calyx about 2 lines long, campanulate, with narrow lanceolate and acutish teeth half the length of the tube: corolla with narrow tube (3 lines long) abruptly dilated into the broadly obconical throat and seemingly regular spreading limb (together 4 lines high), the latter "yellow" or probably nearly white, the throat dark purple in 8 or 10 longitudinal blotches. — *M. nanus*, var. *bicolor*, Gray, p. 275. *Eunanus bicolor*, Gray, Proc. Am. Acad. vii. 381; Greene, l. c. 103. Too scantily known only by specimens gathered on high sierras in Fresno Co., by *Brewer*, in the Geological Survey under *Whitney*, whose name it may bear.

M. Fremónti, GRAY, p. 275. At length a span or two high, from glabrate to soft-villous or tomentulose, not glandular and little viscid: leaves from narrowly oblong to spatulate or lanceolate: calyx-teeth short and broadly triangular or ovate, obtuse to acutish: corolla crimson, comparatively large, trumpet-shaped, being narrowly tubular-funnelform up to the abruptly spreading almost regular limb, this half to three-fourths inch in diameter: seeds oval. — Common only in Southern California. *Parish* finds a white-flowered variation.

+ + Calyx decidedly oblique at orifice, ovate in outline, at least in fruit, and strongly plicate-angled: corolla narrow.

M. subsecúndus. Viscid-pubescent, diffusely branched from the base, the at length elongated branches bearing spicately disposed flowers chiefly turned to one side: leaves oblong, short; lower less than inch long, upper shorter than the ample (4 lines long and 3 broad) fruiting calyx: teeth of the latter all similar, deltoid-ovate, acute, about a line long: corolla "deep red," half-inch long, with narrow tube and throat abruptly dilated into the nearly regular limb of 4 or 5 lines in diameter: capsule not exerted beyond the somewhat contracted oblique orifice of the calyx: seeds ovate-oblong. — In middle and western part of California, near Mt. San Carlos in Fresno Co., *Brewer*, and on Pine Mountain back of San Simeon Bay, *Palmer*.

+ + + Calyx more or less oblique at orifice, or two lower teeth manifestly shorter and smaller, the tube open-campanulate or short-oblong: leaves all entire: flowers short-pedicelled or sessile.

M. leptáleus, GRAY, p. 274. Small, an inch to a span high, viscid-puberulent or pubescent: leaves spatulate-oblong to nearly linear: calyx 2 or 3 lines long; the short teeth triangular-subulate, lower narrower and moderately shorter, at length spreading: corolla crimson, 2 to 4 lines long and slender in depauperate plants, half-inch long when well grown, with gradually widening throat (in withering becoming filiform) and small moderately bilabiate limb: capsule ovate to ovate-lanceolate. — Described originally from depauperate form of arid places, with withering attenuate corollas, now known in other conditions along the whole drier parts of the Sierra Nevada, coll. also in Lake Co. (*Curran*) and Humboldt Co. (*Rattan*) in more luxuriant state, with comparatively large flowers, the *Eunanus Laynceæ*, Greene, Bull. Calif. Acad. i. 104.

M. Párryi, GRAY, p. 275. Nothing to add, except a habitat, Mokiak Pass, S. Utah, *Palmer*, and syn. *Eunanus Parryi*, Greene, l. c.

M. Torrési, GRAY, p. 275. *Eunanus Torreyi*, Greene, l. c. There are small forms of *M. Bolanderi* which have been referred to this, in which the calyx-teeth are always short, broad, and obtuse or rounded.

* * * Corolla larger, more bilabiate, and ampliate in the throat: calyx (half-inch to inch long), with strongly plicate-angled tube, unequal and oblique; upper tooth much larger than lower, all acute: very viscid, with erect and commonly simple stem 1 to 3 feet high, and salient-denticulate leaves.