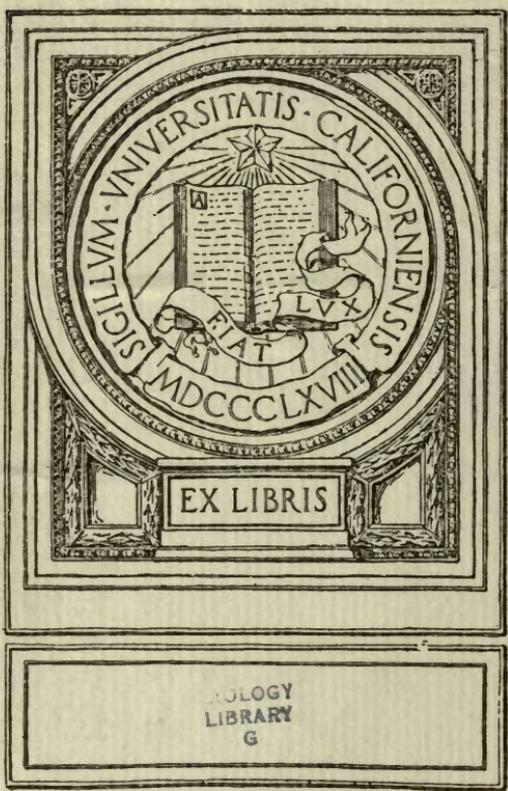


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AMERICAN PLANTS

VOLUME ONE

1907—1908

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Charles Russell Orcutt, Editor.

San Diego, California.

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PYRROCOMA GOSSYPINA Greene.

"Stoutish decumbent or ascending stems 8 or 10 in. high, densely clothed throughout, as are also the petioles of the radical leaves, with a fine white mass of cottony wool: radical leaves shortly petioled, lanceolate, coriaceous, subentire, or spinulose-serrate; cauline spatulate-lanceolate, entire, pungently acute: heads large, racemously disposed 1 in the axil of each cauline leaf and 1 terminal; involucre broadly hemispherical, $\frac{1}{2}$ - $\frac{3}{4}$ in. in diam., the bracts in only 2 or 3 series, thin, linear-lanceolate, acute, not notably herbaceous-tipped nor at all squarrose: rays numerous: achenes unknown."—Greene, pitt 3-23. Bear valley, San Bernardino Mts. (Parish—distributed as *Aplopappus lanceolatus*).

MALACOTHRIX INSULARIS Greene.

"Annual, glabrous, a foot or two high, corymbosely paniculate above, leafy below: leaves oblong-lanceolate in outline, laciniate-cleft to the middle, 2 in. long, sessile and somewhat clasping: involucre hemispherical, less than $\frac{1}{2}$ in. high, scales narrower and less scarious than in *M. Coulteri*: corolla yellow: akenes obtusely 5-angled and 15-ribbed: 1 or 2 of the pappus-bristles persistent; those of the receptacle sparse and short."—Greene, Cal ac b 1:194. Coronado Islands.

CALAIS PLURISETA Greene.

"Glabrous: proper stem 2-4 inches high; scapose peduncles 8-10 inches: leaves very narrowly oblanceolate and apparently quite entire, at most only denticulate: akenes $2\frac{3}{4}$ lines long; pappus paleae persistent, linear-lanceolate, $1\frac{1}{2}$ lines long, scarcely notched, the very slender awn $2\frac{1}{2}$ lines, subtended by a secondary awnlet on either side, one of these frequently one-third or $\frac{1}{2}$ as long as the primary, the other shorter, or both nearly obsolete. Island of Santa Cruz."—Greene, Pittonia 1:34.

MICROSERIS BREVISETA Greene.

"Small and slender, the foliage in reduced plants lance-linear and merely toothed, in other pinnatifid; scapes few, 3-6 in. high; involucre somewhat turbinate, achenes short and columnar, less than 2 lines long, the outer densely villous, the others dark chest-

nut-brown, their ribs rather coarsely and very roughly serrulate, paleae of the pappus ovate-oblong, larger than the achene, distinctly cymbiform, dull-white, scarberulous, tapering to a very short barbellulate awn."—Greene, pitt 5:8. San Diego, Cal.

MICROSERIS PARISHII Greene.

"Rather smaller and more slender than *M. Douglasii*; akenes slender, strictly columnar, 2" long or more, dark brown; paleae lanceolate, 3" long, very gradually tapering to an awn of 1 or $1\frac{1}{2}$."—Greene, Bull. Cal. Acad. Sci., li. 46 (Mar. 6, 1886). SD Co (Parish 755).

MICROSERIS ELEGANS Greene.

Span or more high, slender, head less than $\frac{1}{2}$ ": akenes turbinate, slightly over 1" long: paleae ovate-deltoid, $\frac{1}{2}$ " long, the slender awn about 2". Mesas, San Diego, Cal.; Cruz; Rosa; Baja; Contra Costa Co.

NEMAACLADUS CAPILLARIS Greene.

"A span to a ft. broad and high, very diffuse, the branches almost capillary, glabrous throughout: radical leaves spatulate-oblong; cauline linear-subulate, minute: pedicels capillary, divaricate or a little recurved: calyx-tube slender, long-turbinate, adnate to the lower half of the ovary, teeth ovate, obtuse, half as long as the tube, a little surpassed by the rounded summit of the 7-12-seeded capsule: corolla very minute, white: staminal tube distinct: seed oblong-oval, 10-striate, with numerous transverse lines forming distinct elongated reticulations."—Greene, Cal ac b 1:196. Mohave Desert.

NEMAACLADUS PINNATIFIDUS Greene

"Glabrous throughout: radical leaves linear-lanceolate, once or twice pinnatifid, the cauline coarsely toothed: pedicels divaricate, abruptly bent upwards beneath the calyx: calyx-tube short turbinate, the lanceolate teeth surpassed by the rather acute 15-25-seeded, oval capsule: seed short-oblong, flattened at each end, with longitudinally compressed, favose reticulation."—Greene, Cal ac b 1:197. Todos Santos bay, Baja Cal.; San Bernardino Mts.

NEMAACLADUS RUBESCENS Greene.

"Glabrous, like *N. capillaris*, and very similar in foliage and habit: pedicels divaricate or somewhat ascending: calyx-teeth twice as long as the very short tube which is adnate to the base only, of the globose, 20-40-seeded capsule: corolla apparently open-cam-

panulate, without tube, from light rose-color to dark rose-red: staminal tube elongated, equalling the calyx in length: seed oblong, with undulating lation."—Greene, Cal ac b 1:197. Todos Nevada; Mohave Desert, Cal.

NEMAACLADUS TENUISSIMUS Greene.

"Somewhat cinerous-puberulent throughout, or almost glabrous, very slender: radical leaves elongated-linear, remotely dentate, the cauline entire: pedicels capillary, deflexed and appearing secund: calyx-teeth ovate, less than half the length of the turbinate tube, which is adnate to the base of the globose, obtuse 10-20-seeded capsule, which exceeds the calyx: seed short-oval, the favose reticulation very slightly compressed."—Greene, Cal ac b 1:198. Todos Santos bay, Baja Cal.; Jamul valley, San Diego Co., Cal. (Or).

NEMAACLADUS LONGIFLORUS A. Gry.

Radical leaves canescent: calyx 5-parted, free from the narrow oblong capsule: corolla 6 mm long, 3 or 4 times longer than the calyx. So. Cal.

NEMAACLADUS RAMOSISSIMUS Nutt.

Glabrous, except the minutely pubescent tuft of radical leaves: calyx 5-cleft, its tube turbinate, adnate to the lower third of the ovary and roundish capsule: corolla 2 mm long, separating into 3 or 5 parts. Cal to N. M.

ESCHSCHOLTZIA RAMOSA Greene.

"Annual, a foot high, stoutish, glabrous and very glaucous; stem simple at base, but above compactly branching; leaf-segments numerous, strongly divergent, or even divaricate; corolla $\frac{1}{2}$ inch or more in diameter, light greenish yellow; torus cylindrical, with no rim, but an erect, double margin; pod 3 inches long, stout and straight; seed globular, reticulated."—Greene, Torrel b 13:217 (N 1886). Guadaloupe island (Greene); San Clemente island (W. S. Lyon); and "on a small rocky islet occupied by sea birds, very close to the northern shore of Santa Cruz" island (Greene).

E. elegans var. ramosa Greene, Cal ac b 1:182.

ARABIS MAXIMA Greene.

"Streptanthus arcuatus, Nutt. T. & G. Fl. 1, 77. Arabis arcuata, Gray, in part. Stems stoutish and tall (2 ft. high or more), numerous, 1 from each

branch of a multicapitous woody caudex: basal leaves numerous and tufted, commonly $1\frac{1}{2}$ -3 in. long, oblanceolate, often very narrow, conspicuously toothed or subentire, marked with a strong white midvein, canescent on both faces with short branched hairs; cauline 1- $1\frac{1}{2}$ in. long, lanceolate, acuminate, sagittate-clasping, with the usual pubescence, this extending to the stem, pedicels and calyx: fls large (about $\frac{3}{4}$ in. long); calyx purplish, corolla deep red-purple. Mountains of southern California, from Santa Barbara and Mariposa counties southward to the peninsula."—Greene, pitt 3: 192.

ARABIS PARISHII S. Watson.

"Low and caespitose (2-4 in. high), very stellate-pubescent throughout, the simple slender stems from a much branched caudex: leaves entire, the lower numerous, linear-oblanceolate, 6 lines long or less, the cauline few, linear, not articulate: fls rose-color, 3 or 4 lines long: pods glabrous, ascending on pedicels 2 or 3 lines long (including the elongated filiform style) by a line broad, attenuate above; valves 1-nerved and veined: seeds somewhat 2-rowed, elliptical, narrowly winged. In Bear valley, San Bernardino mts., Cal., at 6,500 ft. alt. (Parish)."—Am ac pr 22: 468.

ARABIS PULCHRA M. E. Jones.

"Perennial, canescent throughout with a fine stellate pubescence, the stems erect (a ft. high) from a branching woody base: leaves entire, not rosulate at base nor auriculate, the lower narrowly oblanceolate (1 or 2 in. long), the upper linear-lanceolate: fls usually large (3-7 lines long), and deep rose-color, soon spreading or reflexed: pods pendent on pedicels 3 or 4 lines long, finely pubescent, $1\frac{1}{2}$ - $2\frac{1}{2}$ in. long by $1\frac{1}{2}$ lines wide, the valves 1-nerved and veined, and stigma sessile: seeds small, in 2 rows, orbicular, winged."—S. Watson, Am ac pr 22:468. Valleys of western Nevada to San Bernardino and San Diego counties, Cal.

ARABIS PERENNANS S. Watson.

"Perennial, with a usually branching and somewhat woody base, roughly stellate-pubescent or sometimes glabrous above, about a foot high: lower

leaves broadly spatulate to narrowly oblanceolate, dentate or sinuate, the petioles sometimes ciliate, the cauline linear-oblong, auriculate, mostly entire. fls small, often pale: pods diversely spreading or reflexed, usually curved, glabrous, 1 or 2 in. long by a line broad or less, obtuse or acutish, the small stigma sessile: seeds orbicular, very narrowly margined."—S. Watson, *Am ac pr* 22:467. Northern Nevada, Utah, Arizona, and the San Bernardino mts, Cal.

ARABIS BECKWITHII S. Watson.

"Resembling *A. subpinnatifida*, biennial, hoary with a fine dense stellate pubescence: stem erect, a span high: leaves entire, an inch long or less, the radical oblanceolate, the cauline lanceolate, auriculate: fls rose-color, 3-6 lines long: pods glabrous (or slightly pubescent when young), spreading and arcuate, 2½ in. long by a line wide, acutish, the stigma sessile: seeds broadly elliptical."—*Am ac pr* 22:467. Quartz mts., Nevada. San Bernardino mts., Cal. (Parish 1302).

TROPIDOCARPUM DUBIUM Davidson.

"Decumbent, the many branches ½-1 ft. long, roughish pubescent; radical leaves regularly pinnatifid, with tricuspidate segments, 2-3 in. long with petioles one third their length, cauline leaves sessile with linear segments; sepals 1 or 2 lines long, obtuse; petals yellow, twice the length of the sepals; stamens tetradynamous (but not markedly unequal), slightly exceeding the short pistil: siliques puberulent, ½-1½ in. long, a line wide, nearly diamond shaped in cross-section, 1-celled below, the upper one-third or one-quarter obcompressed, 2-celled, the valves dehiscent leaving the placentae supporting the narrow but at the apex complete partition; seeds in 2 rows occupying the whole length of the pod; pedicels slightly arcuate, varying from ¼-1 inch in length."—Davidson, *Erythea* 2: 179-180. Los Angeles, Calif., common.

THELYPODIUM STENOPETALUM Wat

"Biennial, glabrous, branching from the base, the slender erect or ascending stems 1 or 2 ft. high: leaves all entire, glaucous, narrowly oblanceolate to linear-lanceolate, strongly auriculate at base, acutish, 2 in. long or less: racemes elongated, the spreading ped-

icels 2 or 3 lines long: calyx very narrow, purplish, 4 or 5 lines long; petals whitish, exserted, the blade very narrowly linear; filaments exserted: pods (immature) ascending, stipitate, 2 in. long, beaked with a rather slender style ½ line long or more. In Bear Valley, San Bernardino mts., Cal., on stony hillsides near the upper lake (S. B. Parish)."—Wats, *Am ac pr* 22:468, 468.

SIBARA FILIFOLIA Greene.

Greene, *pitt* 3:11, based on *Cardamine filifolia*:—"Annual, slender, a foot or less in height, branching above, glabrous and somewhat glaucous: leaves pinnately divided into 5 or 6 pairs of linear-filiform segments of a half-inch in length: raceme loose, 5-10-flowered; petals 2½ lines long, the limb obovate, truncate or retuse, lilac, marked with pinnate veins of deeper color: pod slender, ascending, an inch long, less than a half-line wide, not beaked, cells 12-15-seeded."—Greene, *Pittonia* 1:30. Santa Cruz Island.

PARISHELLA CALIFORNICA A. Gray.

A very small depressed winter annual, almost glabrous, with leaves and fls glomerate in a radical tuft, whence proceed radiately spreading and naked branches bearing similar tufts: leaves spatulate, primary ones 3-5 and the latter only 2 lines long: fls short-peduncled: corolla white. Mohave Desert (Parish).

GITHOPSIS DIFFUSA A. Gray.

Slender and diffusely much branched, small-leaved, glabrous and smooth: calyx-lobes subulate-lanceolate from a broad base, about equalling the small corolla and ½ the length of the linear closely sessile capsule: seeds short-oblong. San Bernardino Co., Cal. (Parish).

APOCYNUM FLORIBUNDUM Greene.

"Glabrous, pallid and glaucous, 2 ft. high, with numerous ascending and somewhat fastigate branches rising to about the same level, each ending in a cyme: leaves about 2 inches long, from ovate to elliptical, mucronate, the margins sparsely serrulate-scabrous: cymes not dense, many fl'd, erect: corollas erect, lurid-purplish, nearly cylindrical, the lobes erect, or only a little spreading. Dry ground bordering pine woods, in the higher mountains

west of the Mohave desert, in Kern Co., Calif., 1889."—Greene, *Erythea* 1:151.

GILIA BELLA A. Gray.

Stems diffuse from base, simple or sparingly branched, filiform, few-leaved, glabrous and smooth: leaves 2 or 3 lines long, 3-parted, villous at base, thickish, the broadly linear lobes carinate: fls sessile or short-pedicelled in axils of the uppermost bract-like leaves and in the forks: calyx-lobes strongly carinate and hyaline-margined: corolla rotata campanulate, with yellow tube, purple-spotted throat, and ample violet-colored limb ($\frac{1}{2}$ in. in diameter when expanded), the lobes almost flabelliform, entire: filaments a little hairy at base: ovules several in each cell. Mts. Baja Cal. (Or).

GILIA MULTICAULIS Benth.

"Plant often 2 ft. high, glabrous except the glandular-hirsute calyx: branches either many and with very few fls at the ends, or few and with large densely cymose clusters: calyx mainly herbaceous, the scarious spaces below the sinuses extremely narrow; segments also wholly herbaceous, erect: corolla with short tube, and broad funnelform throat, the latter about equalling the obovate acute segments, the whole dark violet, without markings: anthers also deep violet, on short filaments and wholly included within the limb of the corolla."—Greene, *Erythea* 3:103-4.

GILIA ABROTANIFOLIA Nuttall.

"Nearly glabrous, 1-2 ft. high, simple, or with few ascending branches, these and the upper part of the main stem naked and pedunculiform, bearing a terminal dense cymose cluster of large blue fls: leaves ample, even the cauline tripinnately dissected, the ultimate segments linear and spatulate-linear, spreading or curving backwards, very acute: calyx nearly or quite glabrous, mainly hyaline, only a broad midvein truly herbaceous, the segments acute, not connivent: corolla large, apparently blue without markings; throat ample-funnelform, lobes spreading, obovate, obtuse: stamens scarcely exerted."—Greene, *Erythea* 3:104. Santa Cruz Mts., Santa Barbara Co., Cal. San Bernardino region: "almost the same thing, but with rather smaller corollas, the stamens not at all exerted" (Parish).

GILIA TENUILOBA Parish.

"Leptodactylon. Stems slender, subligescent below, puberulent, 8-10 cm high, few-branched near the ends; leaves alternate, not longer (5-10 mm) than the internodes, palmately 3-parted, or becoming pinnate with 1-2 pair of lateral divisions, in either form the central division 2-3 times longer than the laterals, all the divisions linear, or very narrowly spatulately enlarged above, pungent, the leaves on the ultimate branchlets undivided; fls solitary, terminating the branchlets; calyx 6-8 mm long, the sinuses hyaline-membranaceous, the linear green ribs prolonged into short, nearly equal, acerose teeth; corolla funnelform, light yellow; tube slender, 10-13 mm long, slightly enlarged at the throat; lobes as long as the tube, linear oblong; anthers included, ovate, 1 mm long, on filaments of the same length, inserted near the base of the throat; styles 2 mm long, stigma lobes 3 mm long; ovary oblong, acute; ovules about 6 in each cell. San Jacinto Mts. (Parish 689)."—Parish, *Erythea* 7:95.

GILIA HALLII Parish.

"Leptodactylon. Stems woody below, set with opposite fascicle-like buds made up of short acerose scales, the upper buds producing slender, puberulent flowering branches, 10-12 cm long; their leaves opposite, palmately 3-parted to the base, the divisions acicular, the central one (7-8 mm) thrice longer than the laterals: fls few, clustered at the summits of the branches; calyx hyaline-membranaceous with green ribs which are prolonged into unequal acerose teeth; corolla 'white', or ochroleucous, becoming yellow in drying, funnel form; tube 6 mm long, scarcely exceeding the calyx, the throat only moderately enlarged; lobes obovate, 5-6 mm long; anthers oblong (2 mm), inserted on the throat, nearly sessile; styles only 2 mm long, the slender stigma branches 4 mm long; ovules reniform, 4 in each cell. Coyote canyon, at 5,000 ft. alt., on the desert slope of El Toro Mt., My 1899, H. M. Hall."—Parish, *Erythea* 7:94.

Subgenus *LINANTHUS*. Dichotomous annuals; leaves opposite, linear, or with linear divisions; fls solitary in the forks, and at the ends; corolla salverform.

GILIA DICHOTOMA Benth.

Erect, few-12 in. high, nodes few and exceeding the leaves, these or their 3-5 segments linear-fulfillform, 1 in. long; fls subsessile: calyx prismatic scarious except the 5 prominent angles which are prolonged into acerose-linear recurved segments: corolla salverform, tube scarcely exerted, limb 1-1½ in. broad, white, shaded on the outside with dark chocolate-color: stamens inserted below the middle of the throat, the base of each filament set within a nectariferous groove (as in certain Hydrophyllaceae): anthers linear: cells of capsule 20-40-seeded: seeds roundish, with a loose arilliform coat, not mucilaginous when moistened. Throughout Cal., Arizona; fls richly phlox-scented.

GILIA BIGELOVII A. Gray.

Smaller than *G. dichotoma*; corolla inconspicuous, lobes 2 lines long, scarcely surpassing the calyx-teeth: anthers oval: seeds oval or oblong, with a close coat, mucilaginous in water. Southeastern Cal. to Texas.

LINANTHUS LUTEOLUS Greene.

"Very diffusely branching, 3-6 inches high, rather roughly hirsute-pubescent throughout, the leaves and leaf-like organs all destitute of any special marginal ciliation: mature calyx 5-parted almost to the base, perhaps when young less deeply cleft and with narrow scarious spaces below the sinuses: corolla yellow, with very slender tube, no throat, and a rotate limb about one-third inch broad."—Greene, *Erythra* 3: 121. Cuyamaca Mts. (G. R. Vasey). Baja Calif. (Orcutt).

LINANTHUS MONTANUS Greene.

"*L. ciliatus montanus* Greene, pitt 2: 260. Habit of *L. ciliatus*, but larger, less hispid: corolla many times larger, nearly 2 inches long, with elongated tube gradually widening to a broadly funnel-form purple throat, the limb of cuneate-obovate truncate whitish segments ½ inch broad, yet apparently expanding not to the rotate, but only to the wide funnellform."—Greene, *Erythra* 3:120. San Bernardino Mts. to Napa Co., Cal.

NEMOPHILA MENZIESII H. & A.

Branches slender or stout and succulent, ascending, mostly 10-25 cm long, more or less hirsute-pubescent with spreading or appressed, not always re-

trorse hairs: cotyledons usually spatulate: leaves mostly opposite, the lower 4-9 cm long, pinnately divided into 5-9 oblong, ovate, or suborbicular, mostly 2- or 3-lobed or toothed divisions; upper leaves reduced and less divided in proportion to their distance from the root: peduncles slender, spreading, usually twice as long as the leaves: calyx-lobes lanceolate or ovate-lanceolate, 4-10 mm long; appendages lanceolate to linear, half as long or less: corolla pelviform, divided about 3-4ths the way to the base, 1-3.5 cm across, from light to deep blue, veined deeper blue or purple, lighter-colored and often dotted, but seldom hairy toward the center; scales varying from broad and wholly adherent to narrow and part free, lacinate, ciliate or entire, often crisp: style 2-4 times as long as the ovary, parted for about a third its length: capsule elongated-globular, 5-10 mm in diam: seeds 5-25 per capsule, 1-2 mm long, oblong-ovoid or globose, scaly, rough, with a few deep pits; caruncle stipe- or cap-like. Baby blue eyes. Throughout California.

Variety INTEGRIFOLIA Parish.

"Stems 6-8 in. long, prostrate; leaves 4-8 in. long, ovate or obovate, entire, or rarely 1-2-toothed, or lobed; corolla 6 lines wide, very light blue, or nearly white; calyx lobes equalling or surpassing the mature capsule, this ovoid, 3 lines high."—Parish, *Erythra* 6:91. San Bernardino Mts., 4,000 ft. alt.

NEMOPHILA RACEMOSA Nutt.

Near *N. aurita*, but less prickly: cotyledons with orbicular blade and long petiole: leaves shorter and broader in outline and with fewer divisions, these more often toothed or lobed; petioles never broadly winged nor auriculate-clasping: fls less than 1 cm across, more plainly racemose: corolla-scales narrow, often half free, sometimes obsolete. San Diego. Catalina. Santa Cruz Island. Cedros. Guadalupe.

NEMOPHILA SEPULTA Parish.

"Hirsute; stems 5-8 (rarely 15) cm long, procumbent; leaves usually approximate, opposite, oblong in outline, 12 mm (rarely 5 cm) long, the lower half narrowed into a margined petiole, above pinnately parted nearly to the midrib into 5 or 7 equal, oblong, entire, mucronulate lobes; fls in slender peduncles, soon deflexed, and burying the capsule more or less in the soil; lobes of the calyx triangular-acuminate, ciliate, the appendages nearly as long as the lobes: corolla very small (4-6 mm in diameter), little exceeding the calyx lobes, white, its appendages minute,

LYCIUM HASSEI Greene.

"Glabrous but slightly viscid, compactly branching and somewhat spinose, 8 or 10 ft. high: leaves spatulate, obtuse, an inch long; flowers 4- or 5-merous; calyx-lobes 2-4, foliaceous, oblong or lanceolate, unequal, much longer than the campanulate tube; corolla $\frac{1}{2}$ inch long, narrowly funnel-form, the oval lobes spreading, light purple with a greenish tinge: stamens well exerted; berries small, globose, scarlet. Santa Catalina Island, July 15, 1888; a single dense clump consisting perhaps of one or possibly several bushes, the whole mass as broad as high and quite impenetrable; collectors Dr. H. E. Hasse and Mr. W. S. Lyon."—Greene, Pittonia 1:222.

COLLINSIA CALLOSA Parish.

"Plants 15-30 cm high, dichotomously branched, glabrous except the slightly glandular pedicels and calyces; leaves opposite or ternate, oblong to acutely ovate, 2 cm or less in length, the upper much reduced, sessile, entire, the margins somewhat revolute; fls in verticils of 2 or 3, or solitary, on slender pedicels about 1 cm long; calyx lobes acute; corolla light blue, 5-8 mm long, the lips about equalling the moderately gibbous throat, their lobes all entire and of equal length, the lower lip with prominent internal callosities below the sinuses; filaments glabrous, the abortive one filiform, 1 mm high; style 4 mm long, stigma entire; mature capsule globose, shorter than the calyx lobes; seeds 3 in each cell, oblong-menisoidal, 3 mm long, reticularly rugose."—Parish, Erythea 7:96. San Antonio Mts., 6,500 ft. (H. M. Hall).

COLLINSIA CONCOLOR Greene.

"Near *C. bicolor*, but with few pairs of leaves and long internodes, the plant a foot high or more, delicately puberulent throughout: leaves 1-1 $\frac{1}{2}$ inches long, linear or oblong-linear, the margins crenate-serrate, or entire and revolute: racemes of few and rather remote verticils: calyx tube hoary with a long villous-arachnoid pubescence; segments oblong, obtuse: corolla red-purple throughout, in form like that of *C. bicolor*, but less than half as large."—Greene, Erythea 3:49. Southern part of San Diego Co., Calif. ?(R. D. Alderson).

COLLINSIA FRANCISCANA Biol.

"From $\frac{1}{2}$ -2 $\frac{1}{2}$ ft. high; low and erect or tall and reclining on neighboring plants; glabrous below, minutely viscid pubescent above: leaves ovate or ovate-lanceolate, the upper sessile, the lower shortly petioled: flowers from 1-3 in the axils of the leaves and bracts, or 5-6 in the axils of the uppermost bracts: pedicels from slightly shorter to 2 or 3 times as long as the calyx lobes, much elongated in fruit: corolla 8-12 lines long; upper lip white, purple spotted at base; throat $\frac{1}{4}$ longer than wide, closed at the mouth and almost glabrous within or scantily hispidulous; upper filaments slightly bearded; gland subulate, the abortive anther yellowish and glabrous, the filamentous portion thicker, about one-third as long, white and hispidulous: calyx lobes but slightly exceeding the ovary: seeds 8-12 in each cell, rugulose."—Bioletti, Erythea 1:17. San Francisco, Cal.

PENTSTEMON LEUCANTHUS Greene.

"Stems erect from a woody base, 4-6 ft. high: plant pallid and glaucous throughout: leaves linear-lanceolate, entire: thyrsus narrow, the flowers short-pedicelled: sepals ovate with a prominent acuminate tip: corolla white, 1-1 $\frac{1}{2}$ inches long, the tube narrow, the limb bilabiate with rather short spreading lobes: anthers horse-shoe-shaped, their edges muricate: sterile filament naked, obtuse at the short flattened apex. San Rafael mountains, Santa Barbara county, Calif. June 1887, John Spence."—Greene, Pittonia 1:72.

DIPLACUS PARVIFLORUS Greene.

"Rigidly shrubby, but flowering at from 3 inches to 2 ft. high; glabrous and glutinous: leaves narrowly ovate or rhombic-ovate, coarsely serrate-toothed: corolla an inch long, brick-red, nearly tubular, the small, entire, quadrate lobes very little spreading: stamens exerted. North side of the island of Santa Cruz, abundant on open, rocky slopes, flowering profusely at a height of only 3 or 4 inches, yet not at all herbaceous."—Greene, Pittonia 1:36.

DIPLACUS GRANDIFLORUS Greene.

"Low and decumbent: branches and peduncles minutely puberulent, the hairs simple, stiff, deflexed: leaves ob-

long-lanceolate, obtuse, entire, margin revolute, neither face either pubescent or at all resiniferous glandular: corolla 2 in. long, with ample funnel-form throat and scarcely more abruptly spreading but deeply divided and subdivided limb."—Greene, pitt 2:156. Monterey Co., Cal. (Hickman).

DIPLACUS LINEARIS Greene.

"Leaves sub-coriaceous; linear-lanceolate, revolute, the lower face covered with resin-dots and bearing few short-forked or triple-branched hairs, the herbage otherwise glabrous: corolla narrow and pale, but longer than in glutinosus; style-base slightly swollen."—Greene, pitt 2:156. Southern and Baja Cal.

DIPLACUS LONGIFLORUS Nutt.

"Leaves thin, plane and erose-dentate or (according to exposure) thicker and revolute; calyx and growing parts more or less soft- and even cobwebby-tomentose above the coating of resinous globules: corolla ample, more than twice as large as in *D. glutinosus*, nearly white with a tinge of pink-buff, the lobes quadrate-oblong, obliquely emarginate and slightly toothed: style-base not tuberous."—Greene, pitt 2:156. Santa Barbara and adjacent islands to Baja Cal.

DIPLACUS PUNICEUS Nutt.

Leaves narrow, firm, with revolute margins: style base not tubercular. Fls blood red or scarlet; canyons near the sea, San Diego, Cal., southward.

CASTILLEIA HOLOLEUCA Greene.

"Shrubby, 3-5 ft. high, white with a dense flobose tomentum: branches slender, leafy, with axillary leafy branchlets: leaves linear, entire, 1-2 inches long, less than a line wide: spike 2-4 inches, short-peduncled; bracts linear-spatulate, entire, or the uppermost 3-cleft, their tips cream-colored: calyx 8 lines long, deeply cleft on the upper side, merely lobed on the lower: galea of the corolla shorter than the tube, exerted, straight. Islands of Santa Cruz and San Miguel, 1886."—Greene, Pittonia 1: 38 (Mr 1887); W Am Sci 3:3. Santa Rosa Is (Br).

Is *C. foliosa* H-A fide Curran Cal ac

CORDYLANTHUS ORCUTTIANUS A. G.

Hirsute or hispidulous, 9-12 in. high, very leafy: leaves all pinnately parted

into narrow linear or filiform lobes: fls capitate-crowded: corolla yellowish, with broad and equal lips: filaments glabrous; anthers of the longer pair 2-celled, but lower cell remote and hardly polliniferous; of the shorter pair abortive, reduced to a 2-parted yellow-hirsute rudiment. Tijuana, Baja Cal. (Or).

LYCOPUS LACERUS Greene.

"Stem rather slender and somewhat flexuous, 2 ft. high, sharply angular and the angles roughish with scattered minute stiff suberect hairs; similar ones roughening the veins and veinlets of the lower face of the leaves, the plant otherwise glabrous, pale green: leaves of lanceolate outline, 1½-3 in. long, rather coarsely and somewhat evenly serrate, more commonly cut into irregular rather deep lobes, the base narrowed strongly to a short but distinct petiole: calyx-teeth broadly subulate, pungently acute: nutlets very small, obovate, the marginal callosity thick and narrow, of equal width around the summit and at the sides."—Greene, pitt 3:340. Wet meadows, San Bernardino valley, Cal. (Parish); Elk Grove, Sacramento valley, Cal. (Drew).

MONARDELLA PENINSULARIS Greene

"Near *M. sanguinea*, about as tall, still more slender, the branches ascending rather than divaricate, and the heads smaller, stem and branches canescently pubescent; leaves narrowly lanceolate, obtusish, with nothing of the elliptic in outline: bracts of the small heads ovate, acutish, not scabrous, only strigose-hairy along the veins: calyx similarly strigose between the striae, the teeth narrower and more obtuse than in *M. sanguinea*: more coarsely and conspicuously pubescent: corollas short, pale rose-red."—Greene, pitt 5:87. Northern Baja Cal. (Or).

MONARDELLA EPILOBIOIDES Greene

"Only weakly suffrutescent, low, only about 6 in. high, pale as if very glaucous, but clothed with a minute retrorse pubescence: lowest leaves crowded, from suborbicular and round-obovate to obovate, very obtuse, hardly ¼ inch long, the others thrice as long and remote, obovate-oblong and linear-oblong, acutish, veinless: bracts of the small involucre mostly ellipti-

cal, acute, reddish, pubescent, scarcely ciliate, less than $\frac{1}{2}$ in. long: calyx hirtellous throughout, the triangular-subulate teeth scarcely more so than the tube."—Greene, pitt 5:85. Bear valley, San Bernardino mts., Cal. (Parish).

MONARDELLA VIMINEA Greene.

"Evidently tall, the long somewhat willow branches in the herbaria 2 ft. long, with internodes of 2 or 3 in., but basal and presumably woody part of stem not known; herbage not very pale, somewhat glandularly puberulent, especially toward the inflorescence; the few leaves lance-linear, 1-1 $\frac{1}{2}$ in. long: verticillasters large, commonly 2, 1 above the other, but bracts comparatively small, ovate to elliptical, not colored, pubescent and copiously resinous-glandular, the longest not longer than the calyxes, shortly and rather indistinctly ciliate; calyx pubescent along the nerves and resin-dotted, teeth short, pubescent, purplish."—Greene, pitt 5:85. Mts. San Diego, Cal.

MONARDELLA SANGUINEA Greene.

"Allied to *M. lanceolata*, nearly as large, but more slender, much more freely and divaricately branching, leaves and heads only $\frac{1}{2}$ as large, the former mostly elliptic-lanceolate, only those of the lower main stem truly lanceolate: bracts of the involucre narrowly ovate, acute, scabrous-pubescent: calyx teeth triangular-subulate, merely villous-pubescent, without spreading or hispid hairs even at the base: corollas large and long-exserted for the size of the head, of a dark purple-red."—Greene, pitt 5:86. Julian, Cal. (G. W. Dunn).

OXYTHECA PARISHII Parry.

"Plant slender, sparingly and dichotomously branched, 6-18 inches high; radical leaves $\frac{3}{4}$ -1 inch long, obovate-oblong, minutely ciliate-denticulate, somewhat enlarged and subcordate at base, with a short thickened clasping petiole and distinct midrib; cauline bracts small, trifid, shortly acuminate, unilateral, with a connate sheath round the stem; stipitate glands conspicuous on the stems above the internodes; involucre on slender axillary and terminal pedicels ($\frac{3}{4}$ -2 inches long), expanding into a short obscure

tube conspicuously marked by longitudinal nerves, which are prolonged beyond the irregular margin into a diverging crown of slender acicular awns (18-28), somewhat unequal, about 2 lines in length, nearly twice the length of the involucre tube; fl. 5-14, pedicellate, unequally developed, the more mature reaching nearly to the summit of the involucre awns, the smaller usually staminate and abortive, with bracteoles of 2 kinds, one linear-spatulate, pubescent and ciliate, the other linear, about as long as the pedicels; perianth 6-cleft nearly to the base, divisions ovate, pubescent on the outside, smooth within; stamens 9, inserted at the base; akene lenticular, obtusely pointed, the small green embryo with long curved radicle and accumbent cotyledons."—Parry, Davenport ac pr 3:2 (28 F 1882). Ridge of the San Bernardino mountains, California (Parish 993). Dedicated to William F. Parish.

THYSANOCARPUS CONCHULIFERUS

"Glabrous and glaucous, 3-10 inches high, rather stout and branching: uppermost leaves remotely toothed, the middle and lower as remotely linear-lobed (the lobes straight and divaricate), all except the lowest auriculate-clasping: racemes short and dense: petals spatulate-oblong, nearly 1 $\frac{1}{2}$ lines long, light purple: samara 1 $\frac{1}{2}$ lines long, cymbiform, the somewhat conduplicate margin parted into spatulate lobes, or these coherent above, leaving narrowly oblong perforations: style $\frac{1}{2}$ line long beyond the margin of the fruit: pedicels $\frac{1}{2}$ inch long, firm but recurved."—Greene, Pittonia 1:31 (amended description).

"Common on mossy shelves and crevices of the high rocky summits and northward slopes of Santa Cruz Island."—Greene, Torr cl b 13:218 (N 1886, with earliest description).

HELIANTHEMUM SCOPARIUM Nutt.

Perennial, woody at base, much branched, pubescent with stellate hairs or glabrate, 1 ft. high; upper branches green and slender: leaves narrowly linear, one-third to one inch long, alternate: fls on slender pedicels, solitary or subcorymbose at ends of branchlets: sepals $\frac{1}{4}$ in. long: stamens about 20: style short: capsule equalling the ca-

lyx, often, with the other parts of the fl, much reduced. Baja Cal. to Lake Co., Cal., on dry hills near the coast.

HELIANTHEMUM ALDERSONII Greene

"Somewhat woody at base, the tufted and more or less tortuous stems a yard high or less, leafy below, almost naked at the paniced summit, both stem and leaves of a vivid green and only sparsely stellate-pubescent; leaves linear-lanceolate, 1½ inches long, with closely revolute narrow margin, and acute narrow midvein beneath: panicle 6 or 8 inches long; pedicels and calyces rather densely pubescent: larger sepals 3 or 4 lines long, abruptly pointed: petals ½ inch long: stamens about 25. Mts. of the southern borders of San Diego, Co., Calif., among rocks in hard and sterile granitic soil [R. D. Alderson]." —Greene *Erythea* 1:259.

SILENA SIMULANS Greene.

"Inflorescence viscid-pubescent, the herbage otherwise glabrous and dark green: stems a foot or two high, decumbent, from a thick fusiform perpendicular root: leaves narrowly linear-lanceolate, 2-3 inches long, the internodes short on the lower part of the stem and the axils bearing ovate scaly-bracted bulblets: flowers somewhat nodding, in a cymose panicle, deep scarlet: petals deeply 4-cleft, the upper 2 at right angle with the calyx, the other 3 parallel with it, appendages erose: stamens declined: seeds strongly tuberculate on the back. Islands of Santa Cruz and San Miguel." —Greene, *Pittonia* 1:63.

SILENA ANTIRRHINA Linn.

Stem 6 in. to 3 ft. high: leaves oblong-lanceolate or linear, commonly acute: fls rather numerous, small, ephemeral, borne in a compound cyme; pedicels long, filiform: calyx smooth, green, ovoid in fruit, about 4 lines long, contracted above; the teeth short: ovary scarcely stiped: petals small, pink or white, more or less emarginate or bifid. Waste places, widely distributed, very variable in size and foliage.

SILENA GALLICA Linn.

Stem hirsute with white jointed hairs: leaves spatulate, obtuse, mucronate, hirsute-pubescent on both sides. 8-18 lines long: racemes terminal, 1-sided, 2-4 in. long: fls more or less ped-

icellate: calyx 10-nerved, villous-hirsute, slender and subcylindric in anthesis, becoming in fruit broadly ovoid, with contracted orifice and short narrow spreading teeth: petals usually little exceeding the calyx; the blade obovate, somewhat bifid, toothed or entire. Now cosmopolitan; British Columbia to Baja Cal. Europe.

SILENA LACINIATA Cav.

Finely pubescent: root narrowly fusiform: stems erect or decumbent, somewhat rigid, knotty below; the branches ascending: leaves lanceolate to narrowly linear, scabrous, ciliolate, narrowed to a sessile base: fls terminal on the branches: calyx subcylindric or clavate even in fruit, 10 lines long: petals bright scarlet, 4-cleft or very rarely bifid: capsule oblong scarcely at all ovate, commonly exserted at maturity. Central California to New Mexico.

SILENA CALIFORNICA Dur.

Root simple, strong, penetrating vertically to a depth of 2-3 ft.: stems several, procumbent or suberect, leafy: leaves lanceolate or ovate elliptic, more or less narrowed to the base, acuminate, rarely obtusish: corolla more than an inch broad; petals variously cleft, most commonly with 2 broad lobes flanked by 2 narrower ones: capsule ovoid, concealed until dehiscence by the rather broad calyx. Oregon to San Diego, Cal.

SILENA PALMERI S. Watson.

Similar in habit to *S. longistylis*, more or less pubescent throughout, finely glandular above: leaves oblanceolate: calyx teeth commonly short and blunt, scarcely herbaceous; base of calyx often contracted about the short but distinct stipe of the ovary: petals purplish: claw villous, narrowly or broadly spatulate but not auriculate; limb deeply 4-cleft; segments entire or bifid: seeds large for the genus, tuberculate, ash-colored at maturity. Cuyamaca (Palmer). San Bernardino mts. (Parish). San Rafael mts. (Ford).

SILENA PLATYOTA S. Watson.

Minutely pubescent throughout, glandular above: root thick: stems slender, 1½ ft. high: leaves oblanceolate, acute, narrowed below to winged ciliated petioles: inflorescence branched: fls borne singly, or in the stronger individuals somewhat fascicled at the

ends of the branches: calyx clavate in fruit, with broad green nerves; teeth acutish with membranous ciliated margins: mature capsule short, oblong, not exceeding 2 lines in diameter: petals greenish white or roseate; claws villous toward the base, with broad entire or toothed auricles above; blade bifid; the short oblong lobes with or without small lateral teeth; appendages lance-oblong. Cuyamaca (Palmer). Baja Cal. (Or).

SILENA PARISHII S. Watson.

Grayish pubescent: root simple, thick, with a branching rootstock: stems several, decumbent, a span long: leaves lanceolate, acuminate, sessile, 1-2 in. long; the lower oblanceolate: fls aggregated at the ends of the branches: calyx tubular, narrowed below, an inch long, with narrow subulate teeth 3-4 lines long: petals narrow, scarcely exerted from the calyx, cleft into 4 or more filiform segments: seeds doubly crested with short vesicular hairs. San Bernardino mts.

CERASTIUM NUTANS Raf.

Pubescent, viscid annual, 8-18 in. high: stems branched: leaves oblanceolate, acute; the lowest narrowed toward the base: fls numerous in an open dichotomous cyme: calyx about 4 mm long: petals somewhat exerted, oblanceolate, bifid: pedicels elongated, ascending or spreading, tending to be hooked or nodding at the summit: capsule 4-6 lines long, nodding but curved upward. United States.

CERASTIUM VISCOSUM Linn.

Annual, viscid-pubescent, 3-9 in. high: leaves oval or elliptic-oblong, very obtuse; the lowest narrowed below to a short margined petiole: fls small, at first densely clustered at the ends of the branches, becoming laxer in fruit, but even the longest pedicels not exceeding the acute sepals (1¾-2 lines long): bracts herbaceous: petals scarcely equalling the calyx: stamens frequently 5. San Diego (Or).

STELLARIA NITENS Nutt.

Annual, slender, erect, shining: stems filiform, forked several times, leafy and slightly pubescent near the base, almost naked and quite glabrous above: leaves of 2 forms, the lowest (1-3 pairs) ovate, acute, only 2 lines long, on slender petioles of somewhat greater length,

not always persisting; the other leaves lance-linear-acute, 3-5 lines long: sepals very acute, scarious-margined, 1-3-nerved: petals ½ as long as sepals, sometimes absent: capsule oblong, about equalling the calyx. British Columbia to Baja Cal. Utah.

STELLARIA MEDIA Linn.

A low annual: stem pubescent in lines: leaves acute; the upper narrower sessile, the lower on pubescent narrowly margined petioles: calyx glandular-pubescent, equalled or slightly exceeded by the capsule: petals shorter than the sepals: stamens 3, 5, or 10. Common chickweed.

ARENARIA MACRADENIA Watson.

Glabrous or nearly so: rootstalk more or less ligneous, extensively and irregularly branched: stems stout for the genus, 6-15 in. high, knotted with the enlarged nodes: leaves chiefly cauline, glaucous, rigid, pungent, ½-2 in. long: fls larger than in the related species, in an open cyme: sepals fleshy subcarinate, 2½-2¾ lines long, with membranous margins: petals much exerted, obovate or oblong with an obtusish sometimes auricled base: staminal glands moderately developed: stigmas subcapitate. Mohave river (Palmer).

Variety **PARISHIORUM** Robinson.

"Smooth or minutely glandular-pubescent: caudex scarcely ligneous, densely multicapital: stems slender; nodes not conspicuously enlarged: leaves chiefly basal: petals narrowed at the base, shorter than or barely equaling the sepals, the latter fully 3 lines in length: staminal glands very large."—Robinson, *Am ac pr* 29:296. Common on mts. bordering on the Mohave Desert (Parish 1330).

ARENARIA MACROPHYLLA Hook.

Stems decumbent, angled, pulverulent-pubescent: leaves lanceolate, acutish to acuminate at both ends (less commonly elliptic, obtusish), 1-3 in. long, glabrous, more or less punctate: peduncles slender, terminal or becoming axillary, 1-5-fl'd: sepals ovate-lanceolate, very acuminate, exceeding the petals. San Diego (Or) to British America.

ARENARIA ALSINOIDES Willd.

Minutely pubescent with slightly hooked hairs or smoothish: stems long,

procumbent, moderately branched: leaves narrowly elliptic, acute, narrowed below, commonly pseudoverticillate, 8-10 lines long, punctate: fls axillary, solitary at the nodes: pedicels filiform, elongated, spreading or horizontal, nearly or quite an inch long: sepals ovate, acute, tuberculate-punctate, $1\frac{3}{4}$ lines long: petals commonly smaller or wanting: seeds smooth and shining. N. C.; Fla.; Texas. Mts. Baja Cal. (Or).

ARENARIA SAXOSA A. Gray.

Finely puberulent but green: stems many, spreading from a rather stout root, decumbent or creeping at the base, 2-12 in. long: leaves numerous opposite, not fascicled or pseudoverticillate (sometimes crowded), slightly fleshy, lance-oblong, acute, mucronate, 2-9 lines long, sessile by a scarcely narrowed base: fls terminal and subsolitary on short simple peduncles or in stouter individuals numerous and more or less paniculate: petals almost or quite equalling the ovate-lanceolate sharply acuminate slightly fleshy sepals. Colo. Texas. Baja Cal. (Or).

ARENARIA PALUDICOLA Robinson.

"Glabrous, flaccid: stems several, subsimple, procumbent, rooting at the lower joints, sulcate, shining, leafy throughout: leaves uniform, flat, 1-nerved, acute, spreading, $\frac{3}{4}$ - $1\frac{1}{2}$ in. long, 1-3 lines broad, often punctate, somewhat connate, slightly scabrous upon the margins: peduncles solitary in the axils, 1-2 in. long, spreading or somewhat deflexed: sepals nerveless, not at all indurated, acutish about $\frac{1}{2}$ the length of the obovate petals."—Robinson, Am ac pr 29:298. Swamps near San Bernardino (Parish 941) and San Francisco, Cal.

Arenaria palustris Watson, Bot Cal 1:70 (not Gay).

ARENARIA DOUGLASII T. & G.

Thinly glandular-pubescent and somewhat viscid, or nearly glabrous: stems much branched, 2-15 in. high: leaves attenuate to filiform points: peduncles filiform: fls numerous, larger than in the related species, 4-5 lines in diam.: sepals ovate, thin-margined, obscurely or more or less distinctly ribbed: petals obovate, conspicuous: capsule subglobose; the valves rounded at the apex; seeds large, smooth, or with

fine radiate striation, reniform, broadly margined. Baja Cal. to Oregon; Arizona.

SAPONARIA VACCARIA Linn.

Smooth annual with ovate or oblong-lanceolate, sessile and somewhat connate leaves: fls in a broad flat corymb: calyx ovoid, with 5 sharp herbaceous angles, the intervening parts being white and scarious: corolla rose-colored, destitute of appendages. Europe. Naturalized widely. s

SAGINA OCCIDENTALIS S. Watson.

Annual, glabrous, very slender and delicate, 2-6 in. high, decumbent at base or ascending: leaves not fascicled, $\frac{1}{4}$ - $\frac{1}{2}$ in. long, pungent. Los Angeles, Cal. to Washington.

POLYCARPON DEPRESSUM Nutt.

Stems numerous, 1-2 in. long: leaves opposite, spatulate, obtuse, attenuate to slender petioles: bracts much shorter than the scarcely carinate sepals: petals very narrow or subfiliform: capsule spherical. Baja Cal. (Palmer, Orcutt). San Diego (Nuttall). San Bernardino (Parish).

LOEFLINGIA SQUARROSA Nutt.

Small, 2-4 in. high: branchlets scarcely or not at all secund: sepals pretty strongly recurved and squarrose: stamens 3-5: seeds oblong or elliptical in outline. Sierra Co., Cal. to Baja Cal.

FOUQUIERA SPLENDENS Engelm.

Branching near the base, sending up numerous divergent simple slender stems few to 20 ft. high, with ashy-gray bark and large pith; leaves strongly grooved and ridged by the decurrent bases of the spines, spatulate to obovate, $\frac{1}{2}$ in. long, the primary attenuate into rigid petiole: fls brilliant crimson, on short pedicels in narrow nearly simple terminal racemes. Hocotillo or candle wood, the straight poles (when dry) excellent for torches, and often cut for fences. Abundant from the western precipitous slopes of the Colorado desert to El Paso, Texas, south into Baja Cal., Sonora, and to the state of Durango, Mexico. Curious at all times, brilliant in flower. Stems have produced leaves and flowers many months after being cut and stored in a house on an increase in the humidity of the atmosphere.

ends of the branches: calyx clavate in fruit, with broad green nerves; teeth acutish with membranous ciliated margins; mature capsule short, oblong, not exceeding 2 lines in diameter; petals greenish white or roseate; claws villous toward the base, with broad entire or toothed auricles above; blade bifid; the short oblong lobes with or without small lateral teeth; appendages lance-oblong. Cuyamaca (Palmer). Baja Cal. (Or).

SILENA PARISHII S. Watson.

Grayish pubescent: root simple, thick, with a branching rootstock: stems several, decumbent, a span long; leaves lanceolate, acuminate, sessile, 1-2 in. long; the lower oblanceolate: fls aggregated at the ends of the branches: calyx tubular, narrowed below, an inch long, with narrow subulate teeth 3-4 lines long: petals narrow, scarcely exerted from the calyx, cleft into 4 or more filiform segments: seeds doubly crested with short vesicular hairs. San Bernardino mts.

CERASTIUM NUTANS Raf.

Pubescent, viscid annual, 8-18 in. high: stems branched: leaves oblong-lanceolate, acute; the lowest narrowed toward the base: fls numerous in an open dichotomous cyme: calyx about 4 mm long: petals somewhat exerted, oblanceolate, bifid; pedicels elongated, ascending or spreading, tending to be hooked or nodding at the summit: capsule 4-6 lines long, nodding but curved upward. United States.

CERASTIUM VISCOSUM Linn.

Annual, viscid-pubescent, 3-9 in. high: leaves oval or elliptic-oblong, very obtuse; the lowest narrowed below to a short margined petiole: fls small, at first densely clustered at the ends of the branches, becoming laxer in fruit, but even the longest pedicels not exceeding the acute sepals (1¼-2 lines long): bracts herbaceous: petals scarcely equalling the calyx: stamens frequently 5. San Diego (Or).

STELLARIA NITENS Nutt.

Annual, slender, erect, shining: stems filiform, forked several times, leafy and slightly pubescent near the base, almost naked and quite glabrous above: leaves of 2 forms, the lowest (1-3 pairs) ovate, acute, only 2 lines long, on slender petioles of somewhat greater length,

not always persisting; the other leaves lance-linear-acute, 3-5 lines long: sepals very acute, scarious-margined, 1-3-nerved: petals ½ as long as sepals, sometimes absent: capsule oblong, about equalling the calyx. British Columbia to Baja Cal. Utah.

STELLARIA MEDIA Linn.

A low annual: stem pubescent in lines: leaves acute; the upper narrower sessile, the lower on pubescent narrowly margined petioles: calyx glandular-pubescent, equalled or slightly exceeded by the capsule: petals shorter than the sepals: stamens 3, 5, or 10. Common chickweed.

ARENARIA MACRADENIA Watson.

Glabrous or nearly so: rootstock more or less ligneous, extensively and irregularly branched: stems stout for the genus, 6-15 in. high, knotted with the enlarged nodes: leaves chiefly cauline, glaucous, rigid, pungent, ½-2 in. long: fls larger than in the related species, in an open cyme: sepals fleshy subcarinate, 2½-2¾ lines long, with membranous margins: petals much exerted, obovate or oblong with an obtusish sometimes auricled base: staminal glands moderately developed: stigmas subcapitate. Mohave river (Palmer).

Variety **PARISHIORUM** Robinson.

"Smooth or minutely glandular-pubescent: caudex scarcely ligneous, densely multicapital: stems slender; nodes not conspicuously enlarged: leaves chiefly basal: petals narrowed at the base, shorter than or barely equaling the sepals, the latter fully 3 lines in length: staminal glands very large."—Robinson, *Am ac pr* 29:296. Common on mts. bordering on the Mohave Desert (Parish 1330).

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ARENARIA ALSINOIDES Willd.

Minutely pubescent with slightly hooked hairs or smoothish: stems long,

procumbent, moderately branched: leaves narrowly elliptic, acute, narrowed below, commonly pseudoverticillate, 8-10 lines long, punctate: fis axillary, solitary at the nodes: pedicels filiform, elongated, spreading or horizontal, nearly or quite an inch long: sepals ovate, acute, tuberculate-punctate, $1\frac{3}{4}$ lines long: petals commonly smaller or wanting: seeds smooth and shining. N. C.; Fla.; Texas. Mts. Baja Cal. (Or).

ARENARIA SAXOSA A. Gray.

Finely puberulent but green: stems many, spreading from a rather stout root, decumbent or creeping at the base, 2-12 in. long: leaves numerous opposite, not fascicled or pseudoverticillate (sometimes crowded), slightly fleshy, lance-oblong, acute, mucronate, 2-9 lines long, sessile by a scarcely narrowed base: fis terminal and subsolitary on short simple peduncles or in stouter individuals numerous and more or less paniculate: petals almost or quite equalling the ovate-lanceolate sharply acuminate slightly fleshy sepals. Colo. Texas. Baja Cal. (Or).

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"Glabrous, flaccid: stems several, subsimple, procumbent, rooting at the lower joints, sulcate, shining, leafy throughout: leaves uniform, flat, 1-nerved, acute, spreading, $\frac{3}{4}$ - $1\frac{1}{2}$ in. long, 1-3 lines broad, often punctate, somewhat connate, slightly scabrous upon the margins: peduncles solitary in the axils, 1-2 in. long, spreading or somewhat deflexed: sepals nerveless, not at all indurated, acutish about $\frac{1}{2}$ the length of the obovate petals."—Robinson, Am ac pr 29:298. Swamps near San Bernardino (Parish 941) and San Francisco, Cal.

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fine radiate striation, reniform, broadly margined. Baja Cal. to Oregon; Arizona.

SAPONARIA VACCARIA Linn.

Smooth annual with ovate or oblong-lanceolate, sessile and somewhat connate leaves: fis in a broad flat corymb: calyx ovoid, with 5 sharp herbaceous angles, the intervening parts being white and scarious: corolla rose-colored, destitute of appendages. Europe. Naturalized widely. s

SAGINA OCCIDENTALIS S. Watson.

Annual, glabrous, very slender and delicate, 2-6 in. high, decumbent at base or ascending: leaves not fascicled, $\frac{1}{4}$ - $\frac{1}{2}$ in. long, pungent. Los Angeles, Cal. to Washington.

POLYCARPON DEPRESSUM Nutt.

Stems numerous, 1-2 in. long: leaves opposite, spatulate, obtuse, attenuate to slender petioles: bracts much shorter than the scarcely carinate sepals: petals very narrow or subfiliform: capsule spherical. Baja Cal. (Palmer, Orcutt). San Diego (Nuttall). San Bernardino (Parish).

LOEFLINGIA SQUARROSA Nutt.

Small, 2-4 in. high: branchlets scarcely or not at all secund: sepals pretty strongly recurved and squarrose: stamens 3-5: seeds oblong or elliptical in outline. Sierra Co., Cal. to Baja Cal.

FOUQUIERA SPLENDENS Engelm.

Branching near the base, sending up numerous divergent simple slender stems few to 20 ft. high, with ashy-gray bark and large pith; leaves strongly grooved and ridged by the decurrent bases of the spines, spatulate to obovate, $\frac{1}{2}$ in. long, the primary attenuate into rigid petiole: fis brilliant crimson, on short pedicels in narrow nearly simple terminal racemes. Hocotillo or candle wood, the straight poles (when dry) excellent for torches, and often cut for fences. Abundant from the western precipitous slopes of the Colorado desert to El Paso, Texas, south into Baja Cal., Sonora, and to the state of Durango, Mexico. Curious at all times, brilliant in flower. Stems have produced leaves and flowers many months after being cut and stored in a house on an increase in the humidity of the atmosphere.

ELATINE AMERICANA Arn.

Leaves obovate, very obtuse: fls sessile, closed or sometimes expanded and remaining so, purplish: stamens 2 or 3, as many as the petals and sepals: seeds cylindrical, slightly curved, about 1 mm long, very minutely pitted, 20-30 pits in each of 9 or 10 longitudinal lines. San Bernardino mts. (Parish 1431); Oregon, Atlantic states, Fiji Islands, Australia.

ELATINE BRACHYSPERMA Gray.

Mostly terrestrial, sometimes submerged or floating: leaves oblong or oval and attenuate at base or sublan- ceolate: fls sessile, mostly dimerous; stamens 2 or 3; seeds short-oblong, nearly straight, not over .5 mm long, pitted in 6-7 lines of 10-12 pits. Cal. Ill. Texas.

ELATINE CALIFORNICA A. Gray.

Floating: leaves obovate, attenuate at base, the lower with a petiole not longer than the blade: fls shortly pedicellate, with 3 or 4 sepals and petals and twice as many stamens: seeds circinate-incurved, about 1 mm long, minutely pitted in 10-12 lines of about 25 pits each. Sierra valley, Cal.

BERGIA TEXANA Seubert.

Annual, glandular-pubescent, branching from the base, a span high, lower branches somewhat decurrent: leaves oblanceolate, acute, serrulate, $\frac{1}{2}$ -1 $\frac{1}{2}$ in. long, attenuate to a short petiole: fls fascicled, shortly pedicelled: sepals carinate, about 3 mm long, exceeding the petals and stamens: capsule globose: seeds smooth and shining. Comondu, Baja Cal. (Br); San Diego (Or 686) to Sacramento, Cal.; Nevada. Texas.

HYPERICUM ANAGALLOIDES C.-S.

Stems many, weak, slender, procumbent or ascending, 1-10 in. long, simple or dichotomously branched: fls small, in leafy or naked, simple and few-fl'd or compound cymes, not glandular or punctate. Mts. San Diego Co. to British Columbia, in moist places.

HYPERICUM SCOULERI Hook.

Stems erect, from a running root-stock, $\frac{1}{2}$ -2ft. high, terete, simple or sparingly branched: fls few in an open cyme, black-punctate. By mt. streams, San Diego Co. (Or); British Columbia; New Mexico; Sonora.

SIDALCEA NITROPHYLLA Parish.

"Root thick but not lignescent; the whole plant glabrous except the leaves and calyx, which are very sparsely hirsute with short, simple hairs; leaves mostly broad, thin, orbicular, sharply and irregularly toothed, 6-18 mm wide, on petioles 3-5 cm long; stems few, 15-20 cm high; inflorescence paniculate with few and short branches: fls rather distant, on pedicels 4-6 mm long, which are subtended by short and slender bifid bracts; corolla 8 mm high, light-purple; stamineal phalanges indistinct; mature carpels entirely smooth, 2 mm high, their short, subulate beaks erect."—Parish, Erythea 7: 93. Alkaline meadows, Rabbit springs, 3,000 ft. alt., Mohave desert (Parish 1804).

SIDALCEA PARVIFLORA Greene.

"Stoutish, erect, 2-4 ft. high, nearly glabrous, only the stem a little glaucous and with a few apparently simple hairs, the foliage beneath, and also the calyx, more densely short-pubescent: racemes few, paniculately disposed: calyx segments acute or almost acuminate: petals very small ($\frac{1}{4}$ to one-third long), rose-color, round-obovate, erose at summit but neither emarginate nor even truncate: achenes rather notably angular but smooth. In brackish or sub-alkaline marshes of Los Angeles and San Bernardino counties, California."—Greene, Erythea 1: 148-9.

MALVASTRUM THURBERI A. Gray.

Shrubby at base, 3-5 ft. high, with wand-like branches, densely tomentose: leaves thick and subrugose; shortly petioled, the upper nearly sessile, rounded, cordate or truncate at base, somewhat 3-5-lobed, crenate, 1-1 $\frac{1}{2}$ in. long: fls small, nearly sessile in an interrupted naked spike, or more expanded and racemose.

Baja Cal. to Santa Barbara, Cal.; Sonora (Thurber).

MALVASTRUM MARRUBIODES D.-R.

"Malvastrum foliosum. Stout, tall and erect, simple above and leafy to the summit, densely and coarsely stellate-pubescent throughout: leaves thick, broadly ovate, subcuneate at base, shortly or obscurely 5-lobed, the lobes acute and acutely dentate, 1 $\frac{1}{2}$ -2 in. long, on petioles $\frac{1}{2}$ in. long; fls

nearly sessile in axillary nearly sessile panicles shorter than the leaves; bracts filiform: calyx 6-8 lines long, the lobes attenuate; petals purplish, little, exceeding the calyx: carpels round-oblong, smooth, a line long."—S. Watson, *Am ac pr* 20:356. Baja Cal. (Or).

MALVASTRUM SPLENDIDUM Kell.

Arborescent shrub or small tree, 6-15 ft. high, slender branches; leaves 2-3 in. broad, a little less in length, thick, coarsely toothed, broadly angularly 5-lobed, base cordate: calyx broadly triangular, broader than long, acute; bractlets short: corolla rose, $\frac{3}{4}$ in. long; the dense racemose panicle 12-15 in. long; carpels tomentose above with a stellate pubescence: leaves, twigs and young growth with dense white felty covering of stellate hairs: fls in je-jl. San Fernando valley, Cal. (Davidson).

RIBES AMARUM McClatchie.

"Shrub 3-8 ft. high, rigid stems and branches beset with yellowish-brown (commonly triple) spines, often setose-hispid; leaves, inflorescence and young branches glandular, pubescent and bitterish fragrant; leaves thin, $\frac{1}{2}$ -1 $\frac{1}{2}$ in. broad, 3-5-lobed and incised; peduncles 1- or 2-fl'd, 3-5 lines long; pedicels each with a round-ovate 2-4- (usually 3-) lobed bract, about 3 lines long; fls $\frac{3}{4}$ in. long; calyx-tube oblong-campanulate, 3 lines long, segments purplish-red, reflexed, 4 lines long, tips greenish, especially on back; petals pinkish-white, red-streaked near base on inside, 2 lines long, strongly involute, suborbicular when flattened out, rounded and erose-toothed at summit; pinkish filaments equalling or slightly exceeding the petals; anthers sagittate, ovate-oblong, mucronate, purplish; ovary densely glandular hairy; mature berry $\frac{1}{2}$ - $\frac{3}{4}$ in. in diameter, densely covered with glandular bristles which produce a very bitter secretion; pulp sweet. Quite common in shaded canyons of San Gabriel mts., Los Angeles Co., Calif."—McClatchie, *Erythea* 2:79.

RIBES MONTIGENUM McClatchie, *Erythea* 4:53.

"*Ribes nubigenum*: Shrub 1-2 ft high with numerous rigid spreading branches, armed with strong triple spines below the leafy fascicles, 3-5 lines apart; outer bark smooth and

light brown on one or two-year-old branches, but becoming loose and silvery with age; leaves and inflorescence hirsute, some of the hairs bearing glands; leaves $\frac{1}{4}$ - $\frac{1}{2}$ in. broad, deeply 5-parted, lobes incised and toothed; racemes 3-6-fl'd, bracts cordate, acuminate; calyx about $\frac{1}{4}$ in. broad, its rounded lobes spreading from place of insertion on ovary; petals minute; stamens less than a line long; anthers broader than long, deeply lobed; red berries glandular-hirsute, 2-3 lines in diameter, containing 1-3 large seeds."—McClatchie, *Erythea* 2:80. Mt. San Antonio, 10,000 ft. altitude, Los Angeles Co., Calif., among dry exposed rocks. San Jacinto Mt. (Davidson).

RIBES HESPERIUM McClatchie.

"Shrub 5-10 ft. high with spreading branches; stems smooth, beset with dark colored spines which are commonly single, but occasionally double or triple; leaves, inflorescence and young branches puberulent; leaves thin, $\frac{1}{2}$ -1 $\frac{3}{4}$ in. broad, 3-5-lobed, the lobes incised; peduncles 1-2 fl'd, 2-3 lines long; pedicels about 3 lines long; bracts broad, fan-shaped with ciliated membranous pinkish margin; fls about 3-eighths in. long; calyx-tube campanulate, slightly inflated, about 1 line long; segments from greenish-white to greenish-red, 3-4 lines long; petals white tinged with red, about $\frac{1}{2}$ the length of the sepals, cuneate-oblong, 2- or 3-toothed, slightly involute; filaments about $\frac{1}{2}$ longer than petals; anthers ovate-oblong, mucronate, greenish; ovary densely echinate, bristles greenish-red, mature berry very prickly, $\frac{1}{2}$ - $\frac{3}{4}$ in. in diameter."—McClatchie, *Erythea* 2:79. San Gabriel Mts., Los Angeles Co., Calif. "Fruit edible and of agreeable flavor."

RHAMNUS PIRIFOLIA Greene.

"Tree about 20 ft. high, the naked trunk 4 or 5 in. in diam., clothed with a smooth bark: branches few and spreading: leaves oblong-ovoid, or some ovoid, often obtuse or nearly truncate both at the base and at the mucronate apex, the largest 3 in. long and nearly 2 in breadth, the margins glandular-crenate or subentire, yellowish beneath, bright green and glabrous above, coriaceous and persistent: berries small, scarlet, mostly solitary

in the axils of the leaves, 2-seeded; seeds obovoid, with a deep narrowly cuneate-obcordate groove on the back."—Greene, *pitt* 3:15. Santa Cruz Island.

IMPERATOR HOOKERI Rupr.

"*Imperator brevifolia*—Culms 3-4 ft. high, erect from a creeping rhizome, firm, smooth; radical leaves numerous, 4-10 inches long, plain, smooth, very acute, 4-5 lines wide, contracted and long ciliate at the base, ligule short, membranaceous; cauline leaves, 4 or 5, short, first about 4 inches, second 3 inches, third 2 inches, fourth 1 inch long, rather rigid, acute, with a few long hairs at the base; ligule short ciliate, sheaths smooth, the upper ones elongated 6-7 inches long; panicle erect, nearly cylindrical, 5-9 inches long, $\frac{1}{2}$ - $\frac{3}{4}$ inches wide; branches of the panicle appressed, sparsely short-hairy below, with spikelets in pairs, one sessile, and the other pedicellate, toward the apex the spikelets single; the pedicels slightly hispid, and emitting a few long silky hairs; the outer glumes about $1\frac{1}{4}$ lines long, the upper a little longer, lance-oblong, obtusish; the lower five-nerved; upper 3-nerved and ciliate at the apex; both villous on the back with long silky hairs, which are about 3 lines long; third glume smooth, very thin, hyaline, about as long as the first; fourth glume two-thirds as long, narrow; palea bifid, broad, hyaline, nerveless, $\frac{3}{4}$ line long; stamen one. Southern California, 1031 Parish; New Mexico, 2001 C. Wright; also from Arizona and Western Texas."—Vasey, *Torr cl b* 13:26 (F 1886).

Cantilles canyon, Lower California (Orcutt 1137); Grand canyon (Toumey); Resting Springs (Coville).

ISOETES MEXICANA Underw.

"*Amphibious*: rootstock 2-lobed: lvs 20-30, bright green, 12-22 cm long; stomata numerous: sporangia oval, 5 mm long, 3 mm wide, delicate, unspotted; velum very narrow, almost wanting: ligule triangular, two-thirds as long as the sporangium: macrospores chalky-white, 0.25-0.375 mm thick, nearly smooth, the 3 converging ridges in strong relief: microspores slate-colored, 0.028-0.033 mm thick, mostly smooth."—Underwood, *bot gaz* 13: 93 (Ap 1888). Slow streams, base of Sierra Madre,

State of Chihuahua, Mexico, O 1887 (Pringle 1447).

Specimens referred to this by Underwood, from San Diego mesas, and from Baja California (and so listed in *Or, W Am Sci* 10: 156), are identified by Eaton as varieties of *melanopoda* and *orecutti*.

ISOETES MELANOPODA J. Gay.

"*Polygamous*; trunk subglobose, deeply blobed; lvs slender, stiff, erect, bright green, usually black at base (15-60 in number, 5-10 or rarely even 18 inches long), sporangia mostly oblong (2-4 or even 5 lines long), spotted, with narrow velum, ligula triangular-subulate; macrospores among the smallest in the genus, 0.25-0.40 mm in diam, with depressed tubercles often confluent into worm-like wrinkles, or almost smooth; microspores also smaller than usual, 0.023-0.028 or rarely 0.03 mm long, spinulose."—E, *St. Louis ac tr* 4: 386-7 (1882). Ill.; Iowa; Chico, Cal.

Variety PALLIDA Engelmann.

"A larger plant, li-bases pale, velum usually much broader, covering one-fourth or one-third of the sporangium; macrospores only 0.3-0.35 mm thick."—E, *St. Louis ac tr* 4: 387 (1882). Houston, Texas (E. Hall). Mesas, SD (Or, *My* 1903).

Variety CALIFORNICA A. A. Eaton.

"*Amphibious* monoecious. Trunk bilobed: 2 cm broad: bulb 4 cm in diameter. Leaves 20-100 10-30 cm long, 3 mm broad, flat above, rounded on back, taper-pointed, white or fuscous at base, with many stomata and 4-6 cardinal and several accessory bract-bundles. Velum $\frac{1}{3}$ - $\frac{1}{2}$ indus. a.e sporangium with few or many spots. Gynospores 278-500 u, average 460 u, smooth with a few fragmentary crests or vermiform with wrinkles: androspores 26-35 u light brown, densely echinate. Differs from type and *Var. pallida*, principally in the larger, usually smooth gynospores and larger androspores. Olema, Cal. Mrs. Brandegee, Miss Eastwood. Also Powder Mill Canyon, Santa Cruz, Cal., C. H. Thompson. Type in Herb. A. A. Eaton. Cotypes in Herb. Mo. Bot. Garden and University of Minnesota."—Eaton in *Gilbert List N A Pteridophytes*, 27 (1901).

"Note, July, 1903.—I have seen no polygamous tendency in this, so marked

in the species. Later material from several localities in Central Cal., show that it grades almost imperceptibly into *Howelli*, on one hand, and the type and *Var. pallida* on the other, so with the mostly unripe material furnished it is hard to draw the line."—A. A. Eaton.

ISOETES ORCUTTHI A. A. Eaton.

"Plant terrestrial, submerged only during the growing season. Trunk slightly trilobed, 4-6 cm long by 3-5 cm high, globose; leaves 6-15, 4-7 cm long, 6-7 mm broad, triangular, grooved above, slightly winged at base, with two (ventral and dorsal) weak bast-bundles, rarely with lateral ones also; stomata none (?); * sheaths fuscous, narrowly winged; velum entire; ligula lunate or semi-circular. Macrospores very small, 240-320 u in diameter dark fulvous when wet, cinereous or glaucous when dry, brightly polished, without crests, but the surface finely pitted as if with pin-punctures, and often sparsely covered with a fine scaly-white dust. Microspores dark brown, 22-35 u long, averaging 26 u long by 17 u wide, spinulose. Growing on mesas at San Diego, Cal. Sent by C. R. Orcutt.** Found only in "wet" seasons, when there is sufficient rain to fill the low depressions on top of the mesas, in which it grows. As there are often several dry seasons in succession it must have the power of lying dormant indefinitely, if, as may well be the case, it does not make a small growth in winter even when not submerged. It is not unique in this respect, however, as well ripened specimens of *Eatoni* and *Boottii* have been found to retain sufficient vitality to grow after being dried and kept in the herbarium six months or more, while Motelay (Mon. Isoetes) states that Engelmanni has been raised at the Botanic Gardens of Bordeaux from spores taken from herbarium specimens.

"A few of its anatomical characters may not be without interest to students of the genus. The rigidity of the leaves is not owing to the bast-bundles, which are small, but to the epidermal cells, which are large (13-17 u), with a very thick outer wall (4.4 u). As with all terrestrial species, the leaf cavities are very small and the dissep-

inents correspondingly thick, from 9-12 cells on the vertical to 6 on the transverse. Occasionally a bast-bundle is absent and its place occupied by another layer of epidermal cells. I have been unable to find stomata but from the character of the plant I think they are present, at times, at least. The leaves are very small and difficult to manipulate, owing to the thick dissepiments and walls, which must be removed after splitting the leaf by scraping, before the stomata could be seen. The terrestrial species heretofore found all have stomata, though fewer than the amphibious.

"This is the only North American species with ashy spores, though one black or dark brown spored species, *Melanospora*, is found. Colored spores are found on several widely separated species. Tasmania gives *Gunnii*, *Stuarti*, and *Hookeri* with glaucous or ashy spores; Australia gives *Muelleri* with ashy and *tripus* with fuscous spores. From South America we have *Gardneriana* with blackish spores, and from Central Africa *Nigritana* and *Welwitschii* with glaucous spores. Several other species have spores that are not chalk-white, the usual color.

"In all cases the color seems to be a pigment secreted in the spore itself, the enveloping silica having the usual white color, and all elevations have a chalky whiteness

"When the deposit of silica is thin the spores are dark brown, and ashy when it is thicker."—A. A. Eaton, Fern bulletin 8:13 (1900).

* Epidermis mounted in glycerine and allowed to stand till well cleared show many stomata.—A. A. Eaton (17 J1 1903).

** Since seen from Clovis and Pine Ridge, Fresno Co., Cal., C. H. Thompson. Soquel Point, Thompson. Santa Maria, Lower Cal., C. R. Orcutt.

HCSACKIA RIGIDA B. h.

Stems rigid, flexuous, with long internodes, herbage silky-canescens: leaflets 3-5, cuneate-oblong or obovate, crowded on a very short rachis, whole leaf sub sessile: peduncles elongated, rigid, 1-3-fl'd; supporting a small 1-3-foliate bract: corolla ½ in. long; calyx-tube cylindrical, 3 lines long; sub-

ulate teeth shorter; pod thickish, subterete, 1 in. long. Baja and southern Cal. (to Monterey?).

Variety ARGYREA S. Watson.

Hosackia argyrea Greene, Cal ac f 1: 184. *Lotus argyraeus* Greene, pitt 2:144.

Slender and diffuse, leaflets acute. San Bernardino (Parish) into Baja Cal.

HOSACKIA CRASSIFOLIA Bth.

Fls dull purple marked with green; the largest species. Baja Cal. to the Columbia river, in the mts.

HOSACKIA GRANDIFOLIA Bth.

Tall, slender, almost glabrous, long internodes, elongated peduncles, bearing umbels of bright yellow fls; corolla about 1 in. long. Cal.

Variety ANTHYLOIDES Gray.

Lotus leucophaeus Greene, pitt 2-145.

—"A low velvety pubescent plant with short peduncles and short internodes, the handsome fls $\frac{1}{2}$ in. long, ochroleucous, changing to red-purple." Pine and manzanita belt, San Diego to Solano counties, Cal.

HOSACKIA MARITIMA Nutt.

Ascending or depressed, sparsely strigose, somewhat succulent, branches 8-18 in. long; peduncles 1 in. long, 1-3-fl'd, naked or with a conspicuous 1-3-foliolate bract: corolla yellow, $\frac{1}{4}$ in. long, banner and wings equalling the straight keel; pod little compressed; seeds obliquely oval, compressed, smooth. Monterey, Cal. to Baja Cal.

HOSACKIA STRIGOSA Nutt.

Strigosely pubescent, much branched, decumbent or prostrate; peduncles elongated, 1-3-fl'd, 3-foliolate-bracted: corolla yellow, 4 or 5 lines long; pod pubescent, slightly curved upwards at the apex; seeds quadrate, somewhat cruciform, deeply notched at each end and at the hilum, surface closely sinuate-rugose. Baja Cal. to Mt. Diablo.

THERMOPSIS VELUTINA Greene.

T. californica var. *velutina* Greene, Erythea 1:81.

"Stouter than *T. californica* and much smaller, in maturity densely villous-tomentose throughout, the pubescence of only the younger or growing parts more appressed and somewhat silvery silky; stipules often larger than the leaflets, $1\frac{1}{2}$ in. long, obliquely ovate and obtusish or ovate-lanceolate; leaflets from narrowly to broadly and somewhat rhomboidly ovate, mostly acutish; racemes short

and short-peduncled; ovaries densely white tomentose."—Greene, Erythea 3: 19. Mt. Hamilton to the Cuyamaca mts., San Diego Co., Calif.

LOTUS TRISPERMUS Greene.

"Near *L. humistratus*, rather smaller, decidedly less conspicuously villous; calyx-lobes subulate rather than linear, hardly longer than the tube; pods linear-oblong, 3-seeded; seeds obscurely quadrangular, thick in the middle, thin and acute at the edges but not at the ends. Common on hills bordering the Mohave desert, Calif., thence eastward and southeastward in Arizona."—Greene, Erythia 1:258.

short 2-or 3-seeded pod. Baja Cal.

LOTUS CONFINIS Greene.

"Perennial; stems tufted, decumbent, barely a foot long; herbage velvety-pubescent; leaflets 5-7, obovate, acutish, 6 or 8 lines long; internodes about equalling the leaves; peduncles twice as long, bearing an unifoliolate-bracted umbel of 3-7 large fls; calyx-teeth subulate from a broad base, $\frac{1}{2}$ as long as the campanulate tube; corolla 9 or 10 lines long, of a rich red-purple; petals not very unequal; legume unknown."—Greene, Erythea 1:258. Mts. of San Diego Co., Cal. near Mexican boundary (R. D. Alderson, 1893).

LOTUS SULPHUREUS Greene.

"Suffrutescent at the very base, the slender branches 1 or 2 ft. long, only sparsely leafy, floriferous chiefly near the ends; herbage canescent with an appressed silky pubescence; leaflets 3-5, cuneate-obovate, obtuse or acutish, 2-4 lines long; umbel unifoliolate-bracted, many-flowered, on a slender peduncle about an inch long, exceeding the leaves; calyx a line long, the slender teeth $\frac{1}{2}$ line; corolla twice the length of the calyx, sulphur-yellow (deep red when withered with age); pod strongly arcuate, the slender beak equalling the body, th's 1-seeded. Wilson Peak, Los Angeles Co., Cal. (Davidson)."—Greene, pitt 2:293.

TRIFOLIUM FLAVULUM Greene.

"Pale green and glaucescent, stoutish, often larger than *T. fucatum* (branches not rarely 2 ft. long), but heads not half as large; leaflets $\frac{1}{2}$ - $\frac{3}{4}$ in. long, broadly obovate, from pectinate-denticulate to entire; heads $\frac{1}{2}$ -1 in. broad, 5-12-fl'd; fl seldom $\frac{1}{2}$ in. long;

calyx-tube a line long, the shortest of the teeth decidedly longer, the 3 lower about twice as long, all slender-subulate from a broad base; legume subsessile."—Greene, pitt 2:223. Same range as *T. fucatum*, but more abundant.

TRIFOLIUM CATALINAE S. Watson.

"Annual, low, branching from the root, appressed villous-pubescent, the ultimate or penultimate nodes of the branches elongated and bearing a single or 2 approximate sessile heads subtended each by a nearly sessile trifoliate leaf: leaflets oblong-obovate, obtuse or broadly emarginate, erosely dentate, 3 or 4 lines long; stipules ovate or ovate-lanceolate, acuminate, entire; heads small, ovate; fls sessile in whorls: calyx-tube coriaceous, narrow-campanulate, much shorter than the attenuate-subulate erect and rather rigid plumose teeth; corolla narrow, purplish, little exceeding the calyx."—S. Watson, Am ac pr 24:128. Catalina Island.

TRIFOLIUM FUCATUM Lndl.

"Branches stout and somewhat fistulous, often a ft. long; leaflets an inch long, rhombic-obovate, rather conspicuously sinulose-serrate or -dentate, in texture somewhat succulent: heads $1\frac{1}{4}$ -2 in. broad, 13-20-fl'd: fl 1 in. long or more; calyx-tube campanulate, only $1\frac{1}{2}$ lines long; none of the teeth so long as the tube, all triangular, the 2 upper short and acute, the 3 lower tapering to a setaceous point; corolla cream-color, with a slight greenish tinge, fading pinkish, the keel-petals with a dark purple spot; legume rather long-stipitate. Common in low and rather moist meadow lands throughout western California. Leaflets commonly marked by conspicuous dark-colored cross-btrs."—Greene, pitt 2:222.

ASTRAGALUS CIRCUMDATUS Ge.

"Perennial, low and diffuse, the stems a span long, more or less; pubescence very little, appressed; leaflets in 6-12 pairs, somewhat fleshy, oblong, obtuse, 2-3 lines long; racemes short-peduncled, few-flowered: corolla white, 4-5 lines long, the campanulate calyx half as long, its teeth subulate from a broad base and nearly equalling the tube: pod fleshy, 1-celled, $\frac{1}{2}$ inch long, oblong, obcompressed and surrounded

by a narrow turgid margin. Hanson's ranch, San Rafael mountains, Lower California, May, 1888, Mr. Lemmon."—Greene, Pittonia 1:173.

ASTRAGALUS LECTULUS S. Wats.

"Dwarf, closely caespitose, prostrate, densely silky-tomentose; stems very short: leaves an inch long, with 2-4 pairs of oblong-elliptical or oblanceolate leaflets 2 or 3 lines long; raceme shorter than the leaves, few-fl'd, and very shortly pedunculate: calyx tubular, pubescent with soft white hairs, 3 lines long including the short narrow teeth; corolla purplish, 4-6 lines long; pods densely hairy, 6 lines long, compressed-elliptical with the sutures approximate, nearly straight, acutish, the very short beak abruptly incurved. Common in sandy soil in Bear Valley, San Bernardino mts., Cal., at 6,000 ft. alt. (Parry, Parish)."—S. Watson, Am ac pr 22:471.

AMELANCHIER VENULOSA Greene.

Stems clustered and bushy, 6 or 8 ft. high, branches stout and rigid, bark ash: "leaves constantly broad-ovate, entire below the middle, sharply serrate at the obtuse apex, pale beneath, greener above, conspicuously feather-veined, the veins close, in about 8 pairs; pedicels and very short petioles white with a fine tomentum, this reappearing on the triangular-lanceolate segments of the calyx, but the full-grown fruit nearly glabrous; corymbs few-fl'd."—Greene, pitt 4:21. Cushenberry Springs, in southern California (Parish).

LYONOTHAMNUS ASPLENIFOLIUS Greene.

Leaves opposite, minutely stipulate, coriaceous, pinnately parted into 3-5 linear-lanceolate, remote segments, which are 2 in. long, and pinnatifid with many rounded lobes: calyx, corolla, stamens, etc., as in the typical species: carpels 2, ovate, and, although not yet mature, almost woody, each (perhaps parting into 2 valves when mature) about 4-seeded: seeds pendulous, membranaceous-winged."—Greene, Cal ac b 1:187. Santa Cruz Island, "A most beautiful tree, with ample, fern-like, shining foliage, and a red-brown bark, easily torn off in long strips."

POTENTILLA SAXOSA Lemmon.

"Perennial, slender, a foot high, pubescent and viscid-glandular: leaves narrow, pinnate, the leaflets in 5-7 pairs, flabelliform, $\frac{1}{2}$ inch long or less, and quite as broad, pedately cleft to the middle into oblong acutish segments: cymes loose, flowers small and inconspicuous; calyx rotate, the segments scarcely 2 lines long; stamens 25-30; filaments slender-subulate; anthers roundish, rather broader than long; pistils 8-10. Crevices of rocks, in the San Rafael mountains, Lower California, 6 May, 1888, Mr. and Mrs. Lemmon."—Greene, *Pittonia* 1:171.

PARNASSIA CIRRATA Piper.

"Erect, 3-4 dm high, glabrous throughout; radical leaves ovate, obtuse, palmately 5-veined, 1-2 cm long, cuneate at base but not at all reniform; petioles 4-5 cm long with a few fimbriae on the margin of the dilated base; cauline leaf very small, about 6 mm long, lance-ovate, obtuse, sessile: fl 2-2.5 cm in diameter: sepals lanceolate, obtuse, 7 mm long; petals oblong-obovate, 1 cm long, the lower half margined with fimbriae longer than the width of the petal: staminodia 5, as broad as the petals, 2 mm long, cleft half way into about 12 equal, filiform, gland-tipped appendages: capsule ovoid, 1 cm long. Mt. San Bernardino, S. B. and W. F. Parish, No. 156 in 1879 (type)."—Piper, *Erythraea* 7:128. Upper Sacramento river (Brewer 1445).

TELLIMA TRIPARTITA Greene.

"Very slender, less than a foot high, hispidulous under a lens, in no part glandular: radical leaves rather numerous, small, about $\frac{3}{4}$ inch broad, parted almost to the base into 3 obovate-spatulate or obovate lobes; the cauline solitary, similar to the radical: flowers only 3-6, in a loose raceme, the pedicels about equalling the calyx; this campanulate, nearly free from the ovary, the lobes triangular, acute: petals rather large, pinkish, 3-lobed, the 2 upper ones less distinctly so, or entire."—Greene, *Erythraea* 1:106. Near San Jacinto, Calif.

GAYOPHITUM LASIOSPERMUM Greene

"Very slender, erect, 1 or 2 ft. high, simple below, parted above into numerous dichotomous somewhat flexuous branches; glabrous except a scant pu-

bescence on the flower buds: leaves narrowly linear, $\frac{1}{2}$ -1 in. long: corolla $1\frac{1}{2}$ lines broad, rose-color changing to rose-purplish: capsules linear-oblong, on capillary erect pedicels, few-seeded, torulose: seeds canescent with an appressed silky pubescence. Near Julian, San Diego Co., Cal. Ag 1888."—Greene, *pitt* 2:164.

OENOTHERA RUTILA Davidson.

"Annual, stoutish, erect, 6-8 inches high, glabrous except the younger leaves and the inflorescence which are sparingly pubescent; leaves ovate-lanceolate, narrowed to the petiole, remotely denticulate in the upper half; floral leaves similar but smaller: spike slightly nodding, many-fl'd, becoming much elongated: calyx-tube 2 lines long: petals as long ovate, reddish: capsules 8 lines long, obtusely angled, appressed to the stem, attenuate to the narrow apex, curving outwards, puberulent, not contorted; seeds dark and angled."—Davidson, *Erythraea* 2:62. Mohave Desert, Los Angeles Co., Calif.

MENTZELIA INVOLUCRATA S. Wat.

"Annual, branching from the base, stout, a foot high or less, white-caulescent: leaves coarsely sinuate-dentate, linear- to oblong lanceolate, the lower attenuate to a short petiole, the rest sessile and mostly cordate-amplexicaul at base: fls terminal, solitary and sessile, involucrate with a pair of very broadly ovate acute or acuminate scarious bracts, the green margin coarsely toothed: petals pale yellow, an inch long, oblanceolate and cuspidately acuminate; stamens very numerous and slender, 3-6 lines long, the outer dilated above and continued into a long linear cusp on each side of the anther: style tubular, equalling the longer stamens, with 3 flattened stigmatic lobes at the summit: capsule about 9 lines long by 3 or 4 broad at the top, dehiscing by 3 apical valves: seeds in 1 row on each thin placenta, horizontally flattened but not margined, irregularly rugose and very minutely and densely tuberculate."—S. Watson, *Am ac pr* 20:367. San Bernardino Co., Cal. (C. C. Parry). Arizona (Palmer). Sonora (Pringle).

MENTZELIA AFFINIS Greene.

"A stoutish annual, often 2 ft. high, with white and shining glabrous stems,

simple and leafy below, widely branching above: leaves lanceolate, deeply sinuate-pinnatifid: fls scattered, $\frac{3}{4}$ in. broad, yellow; calyx-lobes attenuate-subulate, $\frac{1}{4}$ in. long: capsule 1 in. long, almost linear, hispid with short stiff hairs which are strongly pustulate at base: seeds short-cubical, the angles grooved, the surface muriculate."—Greene, Pitt 2:103. San Jacinto to near Lathrop, Cal.

DATISCA GLOMERATA B. & H.

Erect, 2-3 ft. high, branching: leaves ovate to lanceolate in outline, acuminate, 6 in. long, floral ones shorter and more narrowly lanceolate: fls 4-7 in each axil of the elongated leafy raceme, the fertile mostly perfect.

Baja Cal. north to Tuolumne Co., Cal. "The root is a bitter tonic known as Durango root" (Mrs. Bingham).

CUCURBITA CALIFORNICA Torrey.

Thick, fleshy perennial root; annual branches 3-5 ft long, spreading, hispid-scrabrous; lvs quinately-lobed, margins more or less undulate, dull green, mottled, with conspicuous branching veins, petioles 1-2 $\frac{1}{2}$ in. long, blade about the same length, tendrils divided to the base; fls 2 in. long. Redlands, Cal. (Parish).

Parry, Torr cl b 10:50, 2f of lf and fr.

CORNUS NUTTALLII And.

A showy shrub or tree 50-70 ft. high: fls greenish in dense heads 6-9 lines broad, followed by large clusters of crimson berries. San Bernardino (Wright) north to Fraser river.

CORNUS CALIFORNICA C. A. Meyer.

Shrub 6-15 ft. high, smooth purplish branches: leaves ovate, acute, mostly rounded or obtuse at base, 2-4 in. long, more or less pubescent with loose silky hairs: fls in small dense round-topped cymes, white or cream-colored. San Diego Co. to San Francisco, Cal.

GARRYA VEATCHII Kellogg.

Kellogg, Cal ac pr 5:40 (1873). "Shrub 2-3 m high; lvs elliptical, or the smaller lanceolate, 2-5 cm long, the edges revolute, glabrous above, and beneath clothed with a close panose tomentum; aments 3-4 in a cluster, declined, 2-4 cm long; bracts scarious, connate nearly to the strongly micronate tips, silky; immature fruit densely white hairy, becoming less densely hairy at maturity."—Parish, Zoe 5:73. Gabriel mts. Jac (Ha U 100).

AGROPYRON GLAUCUM R-S.

"Culms from running rootstocks, 1-3 ft. high, erect, rigid, smooth, with about 3 erect, rigid, narrow leaves, 4-6 in. long: spike distichous, 4-6 in. long. 4-6 lines wide, generally close or compact: spike-

lets 5-9-fl'd, smoothish or sometimes pubescent; outer glumes slightly unequal, narrowly lanceolate, acuminate or awn-pointed, the lower 4-5 lines, and the upper 5-6 lines long, the lower 1-3-nerved and the upper about five-nerved, the lateral nerves mostly all on one side of the midrib; fl'ng glumes 4-6 lines long, lanceolate, obtusish, or acute, or awn-pointed, usually sparsely pubescent, 5-nerved, the nerves indistinct below; palea about equalling its glume, rather acute, slightly bidentate, the keels hispid-ciliate, the back sparsely softly pubescent. The whole plant is usually glaucous. In rich soil the spikelets are sometimes double at the joints."—Vasey, bot gaz 10:259. Mont. to N. M.; Baja mts (Or 1162, 1164). Valuable for forage and hay. "Blue stem on blue grass."

AGROPYRON PARISHII Scribner & Smith.

"Culms 2 to 3 $\frac{1}{2}$ feet high, with flat leaves and erect or nodding spikes 6 to 12 inches long. Culms cylindrical, glabrous, striate, or smooth and shining below; nodes tumid, retrorsely pubescent; leaf sheaths striate, pubescent below, and sparingly ciliate along the margins, the basal ones shorter, the upper longer than the internodes; ligule membranous, very short; leaf blade constricted at the base, smooth on the back, scabrous above and on the margins, 2 to 3 lines wide, linear attenuate to the acute apex, the lower culm leaves 6 to 9 inches, and the uppermost 1 to 2 inches. Spike of 8 to 12 compressed oblancoate spikelets. Spikelets 5- to 7-flowered, 8 to 10 lines long, shorter than the internodes of the rachis, which is scabrous on the margins; empty glumes two-thirds as long as the spikelets, nearly equal, linear, acute or acuminate, 5-nerved, scarious on the margins; flowering glume lanceolate, acute, $\frac{4}{5}$ to $\frac{5}{8}$ lines long, flattened on the back below, prominently 5-nerved above, and scabrous toward the minutely 3-toothed awnless or short-awned apex. Awn, when present, straight, slender, 3 to 4 lines long. Internodes of the rachilla 1 line long, minutely pubescent. Palea as long as the glume, acute or obtuse. Represented in the National Herbarium by specimens collected by S. B. Parish in Waterman's Canon, San Bernardino Mountains, California, at an altitude of 3,000 feet, No. 2,054, June 28, 1888, and No. 2238, June 23, 1891. This species apparently connects Agropyron with Brachypodium. The habit is similar to that of *A. arizonicum*. It is the only American species with pubescent culm nodes."—Scribner & Smith, b 4, p 28, D-A agr (6F 1897).

Variety LAEVE Scribner & Smith.

"With the habit of the species, but the culm nodes and leaf sheaths glabrous; awns as long or longer than the flowering glumes. Type in the Gray herbarium No. 414, Dr. Edward Palmer, collected at Fowley's Cuyamaca Mountains, in the 1875."—Scribner & Smith, C 4, p 28, D-A agr (6 F 1897).

AGROPYRON TENERUM Vasey.

"Culms in tufts or patches, without

running rootstocks, apparently annual, about 3 ft high, erect, smooth; lvs narrow, 1 or 2 lines wide, 3-6 in. long; sheaths striate, smoothish; ligule short; spike slender, cylindrical, 4-6 in. long, 1 or 2 lines wide, with the spikelets one-third to $\frac{1}{2}$ in. distant, sometimes wider and with the spikelets closer; axis scabrous; spikelets 3-5 fl'd; outer glumes 5-6 lines long, rigid, lanceolate, acute or awn-pointed, strongly 6-nerved; fl'ng glumes lanceolate, acute, 4-5 lines long, rounded on the back, smooth or smoothish and with the nerves indistinct below, above conspicuously 5-nerved and scabrous, terminated with a stiff, straight awn $\frac{1}{2}$ -2 lines long; palea nearly as long as its glume, entire or obtusely 2-toothed at the apex, the keels ciliate or hispid-ciliate."—Vasey, bot gaz 10:258. "Common throughout the Rocky Mountains, and in bottom lands it is often cut for hay, of which it makes an excellent quality." Baja mts (Or 1159, 1163).

AGROSTIS DIEGOENSIS Vasey.

"Culms erect, stout, 2-3 ft. or more high, smooth; leaves 4-7 inches long, 1-2 lines wide, erect, those of the culm with long sheaths (the upper ones 8 or 9 inches long); ligule about 2 lines long, acute; panicle 6-8 inches long, lanceolate, the joints rather distant (the lower $1\frac{1}{2}$ -2 inches; branches numerous, unequal, erect, the longer ones about 2 inches long, and floriferous above the middle, the shorter floriferous to the base, the flowers numerous; spikelets light green, $1\frac{1}{2}$ -2 lines long, outer glumes acute, scabrous on the keel; flowering glume one-third shorter, oblong, obtuse, the mid-nerve terminating about the middle, with or without a minute awn; palea none. San Diego, California, by C. R. Orcutt."—Vasey, Torr cl b 13:55 (Ap 1886). Chollas valley (Orcutt 1058), San Diego, Cal. (type).

Cruz; Chollas (Or 1058). Ha U 54, Jac.

AGROSTIS TENUIS Vasey.

"Perennial, loosely tufted. Culms 6-10 in. high, slender, somewhat geniculate below; leaves 1-2 in. long, narrow, about 2 on the culm; ligule short. Panicle pyramidal, open, 2-3 in. long and 1- $1\frac{1}{2}$ wide; rays in three or fives below, above in twos or single, capillary, the longest 1 in. or more in length, fl'ng above the middle, spreading or erectish. Spikelets very small (less than a line long); glumes acute, purplish, the lower a little shorter and broader; fl'ng-glume thin, obtusish, 3-nerved above, a little shorter than the outer glumes, unawned; palea very minute or wanting." Vasey, Torr cl b 10:21. San Bernardino mts (Parish). Wash.

ARISTIDA ARIZONICA Vasey.

"Culms 1-2 ft. high, tufted, rigidly erect, unbranched, leafy to the middle,

smooth; leaves of the culm about 4, of nearly equal length, 4-8 inches long, canaliculate or becoming convolute, narrow and somewhat rigid, smooth; panicle 5-10 inches long, narrow; the branches in twos below appressed, somewhat distant (the lower internodes 2-3 inches long), unequal, the longer one overlapping the internode above, and naked below, the shorter one sessile, each with 2-8 short pedicelled spikelets; outer glumes nearly equal; 6-7 lines long, bidentate at the apex, mucronate or awn pointed, hispid on the keel, 1-nerved or the lower 3-nerved; flowering glume to the division of the awn and including the short hairy callus, 7-8 lines long, slender, smooth below, scabrous and twisted above, the awns nearly equal, 10-12 lines long, widely divergent when mature. * * * Arizona."—Vasey, Torr cl b 13:27 (F 1886).

Toumey (Ariz aes b 2) refers to this especially, and other Aristidas in general, as being rather unimportant range grasses.

Vasey, Grasses of the Southwest, pt 1 t 22.

ARISTIDA ORCUTTIANA Vasey.

"Culms about 2 ft. high, stout below, above becoming slender, very leafy; leaves near the base with loose open sheaths and rather broad blades, the upper one-quarter shorter; flowering inches long or more; panicle long and open, 4-5 inches long; branches rather distant, mostly single, flexuous, the lower ones about 3 inches long, the upper one-quarter shorter; flowering glume with the awn bent near the middle, and twisted below. The panicle is small for the size of the plant, and comparatively few-flowered. It approaches Aristida Schlediana. Southern California, C. R. Orcutt; Arizona, M. E. Jones."—Vasey Torr cl b 13:27 (F 1886).

Hanson's ranch, 6,000 ft. elevation, northern Baja California (H. C. and C. R. Orcutt, 507-type); not "Southern California" (?).

BROMUS HORDEACEUS L.

Bromus mollis L, Sp pl ed 2, 1:112 (1762). Serrafalcus mollis Parl Fl Ital 1:395 (1843).

Erect or ascending annual or biennial with a rather dense, erect panicle; culms about 2-8 dm high, usually somewhat

pubescent at the nodes; sheaths retrorsely soft pilose-pubescent; ligule 1.5-2 mm. long, lacinate; blades linear, pilose-pubescent to nearly smooth, about 5-15 cm long and 3-5 mm broad; panicle contracted, narrow pyramidal, 5-10 cm long, 2-4 broad; branches somewhat spreading in flower; spikelets 5-13 flowered, ovate-lanceolate, becoming obtuse, 12-15 mm long, 4-6 wide, with short pedicels; empty glumes broad, obtuse, coarsely pilose or scabrous-pubescent, the lower 3-5-nerved, 4-6 mm long, the upper 5-7-nerved, 7-8 mm long; flowering glume broad, obtuse, 7-nerved, coarsely pilose or scabrous-pubescent, rather deeply bidentate, margin and apex hyaline, 8-9 mm long; awn rather stout, rough, flattened toward the base, straight at first, frequently somewhat twisted when old, about 6-9 mm long; palea a little more than $\frac{3}{4}$ the length of its glume.

Southern Europe; introduced sparingly from Maine to Virginia, abundantly on the Pacific coast, from Washington, to Los Angeles, California.

BROMUS ORCUTTIANUS Vasey.

"Culms 3-4 ft high, erect, leafy below, scabrous above; lvs 4-6 in. long, erect, rather rigid, smooth except on the margins; ligule short, obtuse, somewhat cartilaginous; panicle 4-6 lines long, erect, rather scabrous, the branches short (1-2 in. long), in twos or threes, rigidly spreading horizontally, sparsely fl'd; spikelets 2-5 fl'd, short-pedicelled; outer glumes smoothish, scabrous on the nerves; the upper one oblong-lanceolate, 5-6 lines long, 3-nerved, obtuse; the lower one $\frac{1}{4}$ shorter, 1-nerved, narrower and acute; fl'ng glumes scabrous-pubescent, 5-nerved, rounded on the back, acutish; awn 2-4 lines long; palea rather shorter than the glumes, sparsely ciliate on the keels."—Vasey, bot gaz 10:223 Smith mt. S D Co (H. C. Orcutt); Mt. Adams, Wash. (Suksdorf).

BROMUS UNILOIDES HBK.

Annual, or sometimes perennial, 3-4 ft. high, several stems from same base; panicle large and spreading, spikelets about 1 inch long, $\frac{1}{4}$ wide, composed of 7-10 florets overlapping each other; flowering glumes coarse in texture, strongly nerved, usually bearing a short arm about 3 mm. long. Rescue grass. Widely distributed in South and Central America, Mexico, Southern Texas, and naturalized or cultivated in the southern United States, Europe, and Australia. Known also by the names Iverson's, California prairie, Schrader's brome, and Arctic, grass, Australian oats, etc. Shear, cir 26 agr D-A, f.

CALAMAGROSTIS DENSUS Vasey.

"Culms in large patches, from strong rootstocks, 3-4 ft high, robust, leafy, 5-6 nodes; the lower sheaths loose and longer than the internodes, the middle ones shorter than the internodes, the upper including the base of the panicle; lvs often a foot long, rigid, plane or becoming somewhat involute at the long slender points, somewhat scabrous, as are

the sheaths; ligule 1 line long, lacerate; panicle strict, lance-oblong, 4-6 in. long, rachis slightly scabrous, branches somewhat verticillate, appressed, 1 line long and densely fl'd; spikelets crowded, 2-2 $\frac{1}{2}$ lines long; outer glumes linear-lanceolate, nearly equal, acute, slightly scabrous, margins slightly scarios; third (or fl'ng) glume a little shorter, narrow, apex slightly toothed and mucronate, a few short hairs at the base; awn, twisted near the base, a little longer than its glume; palea a little shorter than the glume, thin; sterile tuft, slender, one-third to one-half as long as the glumes, with few hairs."—Vasey, bot gaz 16:147. Julian, S D Co (Or).

CALAMAGROSTIS KAELERIOIDES Vasey.

"Culms erect, 2 ft high, rather rigid, smooth; lvs 2-6 in. long, narrow, somewhat scabrous, ligule conspicuous, lacinate, blade rigid, pointed, the upper very short; panicle spike-like, narrow, 3-4 in. long, the branches in short, approximate (or at the base rather distant) clusters; spikelets about 2 lines long, linear-lanceolate, rather smaller, but otherwise much as in *Calamagrostis densus*; the panicle having much the appearance of *Koeleria cristata*."—Vasey, bot gaz 16:147. Julian, S D Co (Or).

ELYMUS ORCUTTIANUS Vasey.

"Culms generally several from one root, 2 or 3 ft high, rather slender, lfy; nodes 4-5; leaves 8-10 in. long, erect but not rigid, narrow and more or less involute when dry, scabrous on the margins, upper leaf equalling or exceeding the culm; sheaths striate, smooth; ligule a short ciliate line or nearly obsolete; spike 4-6 in. long, erect, loosely fl'd, with 15-20 spikelets, 2 or frequently only 1 at each joint, mostly flat and 2-ranked; spikelets 5-7 fl'd; outer glumes linear-lanceolate, rigid, long-pointed, 4-6 lines long, 1 or distinctly 3 nerved, equalling or exceeding the lower fls; lower fl'ng glumes 4-5 lines long, rigid, lanceolate, acuminate, rounded and smooth on the back, finely punctate, 5-nerved on the inside, the points scabrous; the upper fl'ng glumes gradually shorter and less pointed, and more scabrous above; palea $\frac{1}{4}$ to one-third shorter than the glumes, 2-toothed at apex, 2-keeled, the keels ciliate."—Vasey, bot gaz 10:258. S D! El Rancho Viejo, Baja (Br).

ELYMUS PARISHII Davy & Merrill.

"Stems tufted, 7-9 dm high, scabrid; lvs canescently pubescent with spreading hair; ligule a mere ring; blades flat or becoming involute, 5 mm wide, the uppermost 3.5-7 cm long, the lowest 8-16 cm long; spike 10-16 cm long, 10 mm wide, with somewhat divergent spikelets; spikelets in pairs, the lowest 1-2 cm apart, 1-1.5 cm long excluding the awns, 3-5 fl'd; empty glumes 11-16 mm long, about 1 mm wide, awn-pointed; internodes of rachilla 2-3 mm long; fl'ng glumes scabrous, 10 mm long; awns 2-2.5 cm long, scabrous."—Davy & Merrill, Univ Cal pub bot 1:60. Siskiyou Co; Jac (Hall 2097).

HORDEUM ADSCENDENS H B K.

"A rather slender, erect, leafy annual (?) 2 to 3 feet high, with terminal bearded spikes 3 to 4 inches long. Culms terete, smooth, shining; nodes smooth, on the southern part of San Diego county, Cal., lower ones minutely puberulent; sheaths shorter than the internodes, the lower smooth, striate; ligule membranous, ones densely pube cent. the upper rounded, entire, about 1 line long; leaf blades rather rigid, 3 to 6 inches long, 2 to 3 lines wide, striate, scabrous, gradually narrowed to the pungently tipped apex. Axis of the spike compressed, scabrous or subciliate on the margins, the joints about 1 line long. Empty glumes setaceous, rounded on the back, sulcate on the inner face below, scabrous, those of the central spikelet about 1 inch long, those of the lateral spikelets a little shorter; flowering glume of the central spikelet $4\frac{1}{2}$ to 5 lines long, scabrous; palea about as long as the glume, scabrous on the keel above. Prolongation of the rachilla awn-like, and two-thirds as long as the palea. Lateral spikelets neutral, the pedicellate third glume about 3 to $3\frac{1}{2}$ lines long, scabrous, subulate-pointed.—H B K., Nov. Gen. 1, 180. Distinguished from *H. nodosum* by its taller habit of growth, attenuate and pungently pointed leaves, longer spikelets and longer-awned glumes, the empty ones being flattened or sulcate on the inner face and not erect throughout. Abundant along irrigation ditches near Glendale, Ariz. No. 2522 C. R. Orcutt, April 30, 1896."—Scribner & Smith, b 4, p 24, D-A agr (6 F 1897).

SPARTINA GLABRA Muhl.

A glabrous, erect, and often stout salt-marsh grass 6-24 dm high with long, flat, or involute leaves, few or many erect, usually appressed spikes and glabrous spikelets. Culms simple, sometimes 2 cm in diameter below; sheaths glabrous, the lower ones crowded and imbricate, distichous; ligule a ciliate ring about 2 mm long; leaf-blades 5-7 dm long, 1-1.5 cm wide, usually flat but sometimes involute, tapering to a long involute tip, glabrous throughout. Panicles 2-4 dm long. Spikelets densely imbricate, 10-14 mm long; empty glumes glabrous, or both sparingly scabrous on the keel, the first 6-8 mm long, the second 10-14 mm in length; flowering glume 8-10 mm long. Palea somewhat exceeding the glume and thinner in texture. Salt marshes along the coast from Virginia to Florida and Texas. San Diego, Cal. (Orcutt).

SPARTINA FOLIOSA Trin.

A glabrous perennial with numerous, rather short flat leaves, densely flowered spikes and usually very strongly

aculeolate-ciliate keeled empty glumes. Culms simple, about 1 cm in diameter below. Sheaths crowded and overlapping, especially above; ligule a ciliate ring about 2 mm long; leaf-blades 2-6 dm long, about 1 cm wide, glabrous throughout, plane or sometimes involute in drying, tapering into a slender involute tip. Panicle 10-15 cm long, almost cylindrical, the spikes densely flowered, 2-5 cm long, appressed, primary, and secondary ones glabrous. Spikelets imbricate, 12-14 mm long, glabrous throughout or the empty glumes usually very strongly aculeolate-ciliate on the keels, the first narrow, 7-8 mm long, the second, 12-14 mm in length; flowering glume nearly as long as the second empty glume, slightly shorter than palea, glabrous throughout or sometimes ciliate on the margins below. Salt marshes along the coast, San Francisco, Cal., San Diego, Cal. (Palmer).

STIPA CALIFORNICA Merrill & Davy.

"A rather stout erect caespitose glabrous perennial, 7-10 dm high, with plane or involute lvs and elongated contracted panicles about 3 dm in length; culms and nodes glabrous; sheaths shorter than the internodes, glabrous except on the somewhat ciliate margins above; ligule a minute lacerate ring 0.5 mm long, with a prominent fringe of hairs on the apparently auriculate margins, 15 mm long; blades firm, plane or becoming involute in drying, 2-4 mm wide, 1-1.5 dm long, glabrous beneath, striate and scabrous above; panicles pale, interrupted, the common axis glabrous, branches solitary or in twos or threes at each node, appressed, fl-bearing throughout, the lower ones sometimes 1 dm long; empty glumes glabrous, hyaline, 3-nerved, about 11 mm long, sub-equal, with a very slender acuminate apex; fl'ng glumes about 5 mm long, excluding the very acute pilose calyx which is 1 mm long, lanceolate, sparingly hairy throughout with appressed stiff w hairs which increase in length toward the apex of the glume; awn slender, 2.5-3 cm long, geniculate, twisted and sparingly pilose below the geniculation with appressed or ascending hairs, scabrous above."—Merrill & Davy. Univ Cal pub bot 1:61. Jac (Hall 2566).

TILLAEASTRUM AQUATICUM.

Britton, NY bot gard b 2:1, based on *Tillaea aquatica* L. Sp Pl 128 (1753)
 "Tillaea angustifolia (Nutt.) mss.: "branching from the base, rooting; lvs linear, acute, connate; fls axillary, nearly solitary, on very short pedicels; segments of the calyx 4, ovate, about half the length of the ovate obtuse pet; carpels broad, obtuse, many seeded. Muddy banks of the Oregon and Wahlamet.—Plant 1-2 inches high. Styles 0; stigma

minute. Pet as long as the carpels. Sds small, linear-oblong." Nuttall."—Torr & Gray, Fl N Am 1:568 (1840).

Tillaea Bolanderi Greene, Fl Fran 183 (1891).

Tillaea simplex Nutt, Phila ac J 1:382 (1817).

Bullarda aquatica DC, Prods 3:382 (1828).

Crassula aquatica Schoenl, in E & P Nat Pl 3a:37, 891 (1891).

"In mud. NS to Md and Texas, Wash. to Baja and Colo. Europe to northern Africa."—Britton & Rose.

DUDLEYA ABRAMSI Rose.

"A very delicate little perennial with a thick caudex crowned by a dense rosette of small (2 cm long) linear-ovate, acuminate, somewhat glaucous lvs; fl'ng stems slender, 6-7 cm long, naked below, and with a few scattered ovate acute bracts above; inflorescence 2-branched (in 2 specimens seen), each branch bearing a second raceme of several subsessile fls; calyx 3 mm long, its lobes ovate or triangular-ovate, acute, about twice as long as the tube; corolla slender, 8-9 mm long, the tube longer than the calyx, the lobes narrow, acute, yellow, striped on the back with deep red, much longer than the slender styles and stamens."—Rose, N Y bot gard b 3:14. Wet crevices of rocks west of Jacumba, San Diego Co., Cal. (L. R. Abrams 3707)

DUDLEYA ALOIDES Rose.

"Tufted, acaulescent; lvs numerous, erect, rigid, very narrow, thick, semiterete, or the upper part subterete, 7-12 cm long, 10-15 mm broad at base, gradually tapering to the apex, very pale, hardly glaucous, often spotted with red; fl'ng stems 2-3 dm long, reddish, as also the branches and pedicels; stem-leaves ovate, acute, slightly clasping; inflorescence paniculate; pedicels rather slender, 18-20 mm long, ascending; calyx deeply 5-cleft, the lobes triangular-ovate, acute, 4 mm long; corolla broad, yellow, drying reddish(?), 10 mm long, the lobes acute." Rose, N Y bot gard b 3:15. San Felipe, SD Co., Cal. (Brandege, Orcutt, Hall).

DUDLEYA GRANDIFLORA Rose.

"Caudex very thick, crowned by a dense rosette; basal lvs strap-shaped, slightly broadened at insertion and gradually tapering from the base to apex, rather thin, 1-1.5 dm long, 1-2 cm broad just above the base, very glaucous on both sides, especially when very young; fl'ng stalk 3-5 dm long, bright red especially above, bearing scattered ovate acuminate lvs; inflorescence rather compact, consisting of a few upright secund racemes; pedicels, especially the lower ones, elongated, 1-1.5 cm long; calyx usually red, deeply 5-lobed, the lobes ovate, acute, about half the length of the corolla; corolla greenish-yellow, becoming reddish in age, 10 mm long, erect except the spreading acute tips, its segments united at the base into a very short tube 2 mm long; stamens shorter than the corolla, attached to its base; carpels erect, distinct."—Rose, N Y bot gard b 3:16. Whitewater ranch, Riverside Co., Cal. (T. S. Brandege, Parish Bros., Orcutt).

DUDLEYA CULTRATA Rose.

"Caespitose, the caudex bearing several rosettes of lvs; lvs strap-shaped, not glaucous, 6-10 cm long, gradually tapering from a rather wide base, 10-12 mm broad, rather thickish, terete near the apex, acute, sometimes sharply so; fl'ng branch about 30 cm long, naked below and with scattered lvs above; inflorescence of a few more or less elongated racemes; calyx-lobes triangular-lanceolate, acute; cor pale yellow, rather narrow, 12 mm long, 3 times as long as the calyx, the tube proper longer than the calyx, the segments acute; stamens shorter than the cor; anthers orange."—Rose, N Y bot gard b 3:16. Quintin (Orcutt).

Distributed in the past as *Cotyledon linaeus* (Orcutt).

DUDLEYA HALLII Rose.

"Acaulescent; basal lvs erect or spreading, elongated-lanceolate, acute, very pale and glaucous, thickish, 10-12 cm long; fl'ng stem stout, 3-4 dm long, their lvs ovate, the lower ones somewhat elongated, slightly cordate at base; inflorescence a rather short panicle, not at all glaucous; pedicels very short (about 2 mm long); calyx-lobes lanceolate, acute, 5 mm long; cor 15 mm long, pale green, tinged with rose."—Rose, N Y bot gard b 3:17. Near Riverside, Cal. (H. M. Hall).

DUDLEYA TENUIS Rose.

"Acaulescent; lvs forming a rosette, oblong-lanceolate, 3-4 cm long, acuminate, somewhat glaucous; fl'ng stems slender, 1-2 dm high; inflorescence a slender panicle, consisting of several elongated erect branches; pedicels very short, 1 mm long or less; calyx deeply 5-parted, its lobes ovate, acute, 2-2.5 mm long; cor 6-8 mm long, rather narrow, at first yellowish, in age becoming reddish, the segments united for about one half their length."—Rose, N Y bot gard b 3:14. Hanson's ranch, 6,000 ft elevation, Baja (Orcutt 113).

DUDLEYA PUMILA Rose.

"Acaulescent; leaves forming small dense rosettes, very glaucous, 2-3 cm long, ovate, acute; flowering stems delicate, less than 1 cm long, bearing small ovate leaves; inflorescence of 2 or 3 slender branches, ascending or spreading; pedicels 6-10 mm long; calyx pale, glaucous, its lobes lanceolate-ovate, 2-3 cm long, acute or sometimes obtusish; corolla 10-13 mm long, the lobes very narrow, acute, much longer than the stamens."—Rose, N Y bot gard b 3:14. On rocks of hillsides, SBer mts, altitude of 2,100 meters (H. M. Hall).

DUDLEYA GREENEI Rose.

"Caudex short and thick; lvs in rosettes, numerous, strap-shaped, 6-7 cm long, 15 mm broad at base, acute, very glaucous, drying thick and leathery; fl'ng stalk 3-4 dm high, bearing scattered ovate acuminate lvs; inflorescence consisting of numerous secund racemes; pedicels stout, ascending, 2-4 mm long; calyx 4 mm high, deeply 5-parted, the tube 2 mm long."—Rose, NY bot gard b 3:17. Santa Cruz Island (E. L. Greene).

DUDLEYA CANDELABRUM Rose.

"Basal lvs in a dense broad rosette, oblong-lanceolate, 10-15 cm long, 3 cm broad near the base, perhaps not all glaucous, drying rather thin; fl'ng stalk about 3 dm long, rather stout, its lvs lanceolate, acuminate, thin; inflorescence (in herbarium specimens at least) resembling a candelabrum, 20 cm high, 25 cm broad at top, each branch an elongated secund raceme; pedicels short (1-4 mm long); calyx 5-7 mm long, deeply parted into lanceolate acuminate lobes; cor 5-9 mm long."—Rose, NY bot gard b 3:17. S Cruz I. (E. L. Greene).

DUDLEYA BRYCEAE Britton.

"Caudex stout, short; basal lvs very numerous, lanceolate to oblong-lanceolate, 6-8 cm long, 2-3 cm wide, flat, about 2 mm thick, pale green, somewhat shining, sharply acuminate; fl'ng stems ascending from the lower axis, about 3 dm long, their nvs lanceolate, acuminate; cyme many-fl'd, about 8 cm broad; pedicels 3-6 mm long; calyx-segments linear-lanceolate, 4 mm long, about 1 mm wide towards the base, gradually tapering to an acute tip, the tube very short; cor pale yellow, 1 cm long, 5-ridged, its linear lanceolate lobes about as long as its—Britton, NY bot gard b 3-17. Coronado tube; carpels erect, distinct to the base." Islands, Baja, named for Miss Mary T. Bryce.

DUDLEYA INGENS Rose.

"Caudex 3 dm high or more, densely clothed with the bases of old lvs and crowned by a rosette of large lvs 10-20 cm long, and 3-4 cm broad; fl'ng stems 5-6 dm long; inflorescence a somewhat open panicle; calyx-lobes narrowly lanceolate, half as long as the cor, somewhat glaucous."—Rose, NY bot gard b 3:18. San Telmo, Baja (T. S. Brandegee). Vicinity of Todos Santos bay, Baja (Or).

DUDLEYA CANDIDA Britton.

"Caudex stout, about 6 cm high; basal lvs white-farinose all over, numerous, linear to linear-oblong, sharply acuminate, somewhat widened at the base, 5-7 cm long, 1 cm wide or less; fl'ng brach stout, about 3 dm tall, its narrowly lanceolate lvs somewhat clasping; inflorescence dense, about 6 cm broad; pedicels stout, 2-5 mm long; calyx-segments linear-lanceolate, acute to acuminate, more than one half as long as the linear acute cor-segments."—Britton, NY bot gard b 3:18. Coronado Islands, Baja (George Thurber, 1852, No. 52).

DUDLEYA MINOR Rose.

"Acaulescent, or very old plants with a carrot-shaped rootstock 5 cm long, crowned by a small rosette of spreading lvs; rhomboid-ovate, the larger ones 5-7 cm long, narrowed at base, abruptly acuminate, glaucous; inflorescence slender, with a few elongated 1-sided racemes; pedicels slender, 10-15 mm long; calyx 5-7 mm long, its lobes ovate to ovate-lanceolate, acute; cor yellow or pale orange, 12 mm long, its tube 2 mm long."—Rose, NY bot gard b 3:19. On rocky banks, S Gabriel canyon (H. E. Hasse).

DUDLEYA BERNARDINA Britton.

"Acaulescent, green, or the young leaves and inflorescence somewhat glaucous; basal leaves forming a rosette, spreading, obovate-spatulate to rhombic-obovate, abruptly sharp-acuminate, 5-8 cm long, 5 cm wide or less; flowering branch 1.5-2.5 dm high, leafy to or near the base, its leaves lanceolate to ovate-lanceolate, acute or acuminate, sagittate-clasping; cyme 10 cm broad or less, many-flowered; pedicels becoming 1-1.5 cm long; calyx 5-6 mm long, deeply 5-lobed, the lobes ovate, acute; cor yellow, about 12 mm long, cleft to below the middle, its lobes sharply acute; stamens about three fourths as long as the cor."—Britton, NY bot gard b 3:19. SB mts (Parish Bros. 100).

DUDLEYA OVATIFOLIA Britton.

"Glabrous, low, green, 1.5 dm high or less; fl'ng stems rigid; basal lvs ovate, shining above, acute, about 2 cm long; lvs of the fl'ng stems ovate, or the lower ovate lanceolate, obtuse, or the lower acute, 5-8 mm long; cymes few-fl'd; pedicels very slender, 1 cm long or less; fls about 1 cm long, calyx-segments triangular-ovate-lanceolate, about 2.5 mm long, nearly as long as the cor-tube; cor bright yellow, its segments lanceolate, acute."—Britton, NY bot gard b 3:20. Sierra, S Monica (H. M. Hall, 3255).

DUDLEYA ROBUSTA Britton.

"Acaulescent; basal leaves numerous, ascending, lanceolate, acuminate, light green, sometimes slightly glaucous, 10-15 cm long, 1.5-2.5 cm wide; fl'ng branches stout, leafy to or nearly to the base, 4-5 dm high, erect-ascending, their lvs lanceolate to ovate-lanceolate, sagittate, the upper ones very small, the lower 4-6 cm long; cyme many-fl'd, about 10 cm broad; pedicels, or some of them, at length 1-1.5 cm long, white-glaucous; calyx 5-6 mm long, deeply cleft, its lobes ovate, sharply acute, white-glaucous; cor about 1.3 cm long, orange, cleft to below the middle, the lobes acute."—Britton, NY bot gard b 3:21. S Cal' (Miss Mary T. Bryce).

DUDLEYA PARISHII Rose.

"Acaulescent; basal lvs in a rosette, lanceolate, acuminate, not very thick for this genus, not at all glaucous, becoming red; fl'ng stems rather stout, reddish, 3-1 dm high; lower lvs narrowly lanceolate, upper ones smaller, ovate, only slightly clasping at base; inflorescence paniculate, somewhat flat-topped, the branches spreading; pedicels rather slender, 4-8 mm long; calyx-lobes broadly ovate, acute (in herbarium specimens sharply acute); cor about 10 mm long, rather pale orange, drying quite reddish."—Rose, NY bot gard b 3:21. Near Sber (S. B. Parish). Near Ft Verde; Arizona (E. A. Mearns).

DUDLEYA LURIDA Rose.

"Acaulescent; basal lvs ascending or nearly erect, very numerous, not at all glaucous at fl'ng time, at last deeply bronzed, lanceolate, acuminate, 10-15 cm long, 10-22 mm broad at the middle, fleshy but not very thick for this genus; fl'ng stems stout, purplish, 4-5 dm tall, their lvs broadly ovate, acute; inflorescence paniculate, branches elongated; pedicels

8-12 mm long, rather slender; calyx-lobes ovate, acute, 5-6 mm long, reddish; cor reddish, 12-15 mm long, segments erect, acute."—Rose, NY bot gard b 3:22. Santa Monica range (H. E. Hasse).

DUDLEYA DELICATA Rose.

"Lvs in dense rosette, in clusters of 4-6 or more, erect or somewhat spreading, rather narrow, broadest at the base, the outer ones 2 cm broad, the inner ones considerably smaller and narrower, gradually tapering to an acute apex, 6-8 cm long, eshy but flattened, very glaucous; 'ng stems slender, about 20 cm long, lvs ovate, acute; pedicels very short, 2-4 mm long; calyx-lobes equal, ovate, acute, not glaucous; cor rather narrow, greenish-yellow, lobes slightly spreading at tip, obtuse or barely acuteish, oblong, united at base into short tube barely 2 mm long."—Rose, NY bot gard b 3:24. Spencer valley, near Julian, Cal. (L. R. Abrams).

DUDLEYA BRAUNTONI Rose.

"Plants caespitose, the rootstock crowned by 6-8 rosettes of lvs; lvs elongated, strap-shaped, becoming 20 cm long and 2 cm broad, but often at fl'ng time only 10 cm long and 1 cm broad, pale green and very glaucous on the face, acute, thickish, slightly cordate at base; inflorescence at first somewhat compact, elongated (10-20 cm long); pedicels very of 3 or 4 branches, these finally much short not elongated in fr), 1-3 mm long; calyx-lobes broadly ovate, 4-5 mm long, acute; segments of cor pale greenish yellow, 10-12 mm long, erect."—Rose, NY bot gard b 3:24. LA (Ernest Branton), on Elysian Hills.

DUDLEYA CONGESTA Britton.

"Acaulescent, green throughout, not at all glaucous; basal lvs rhombic-lanceolate to rhombic-ovate, sharply acuminate, dull, 5 cm long or less, 1.5-2 cm wide; fl'ng branch stout, about 13 cm tall, erect, its cordate-sagittate lvs numerous, triangular, acute to acuminate, lower 1 cm long, upper much smaller; cyme compound, dense, about 6 cm broad; pedicels very stout and short, 3 mm long or less, erect; calyx as long or a little shorter than the pedicels, its lobes ovate, sharply acute, longer than its tube, slightly longer than wide; cor lemon-yellow, about 3 times as long as calyx, its lanceolate segments acute, separate to below tips of calyx-lobes."—Britton, NY bot gard b 3:25. "Southern California" (Miss Bryce).

DUDLEYA ELONGATA Rose.

"Stems elongated, at length 2-4 dm long, simple or branched; lvs nearly linear, broadest near the base, very glaucous, 4-8 cm long, mm wide or less, acute to acuminate; fl'ng stems leafless below, leafy above, lvs ovate, acute, cordate, 1 cm long or less; calyx-lobes ovate, acute, 4 mm long, twice as long as the tube; cor 12 mm long, at first reddish-gard b 3:28. Near San Pedro, Cal. (H. E. yellow, in age deep red."—Rose, NY bot Hasse).

SYMPHORICARPUS MOLLIS Nutt.

Low, diffuse or decumbent, soft-pubescent or velvety tomentose, rarely

glabrate; leaves orbicular or broadly oval, 1-3 cm long; flowers solitary or in short clusters. California.

SYMPHORICARPUS RACEMOSUS Mx.

Snow-berry; slender, glabrous; leaves round-oval to oblong; corolla 2 mm high, 5-lobed above the middle, moderately villous-bearded within, narrowed at base. Baja Cal. to B. C. east to Atlantic.

LONICERA HISPIDULA Dougl.

Bushy and sarmentose, often feebly twining; leaves oval or orbicular to oblong, rounded at both ends or lower and short-petioled ones sometimes subcordate, uppermost subcordate or occasionally distinct; spikes slender, commonly paniculate, of few or several whorls of flowers; corolla pink to yellowish, 1-2 cm long.

Variety **SUBSPICATA** A. Gray.

Moronel of the Mexicans, used by them in the form of a tea as a blood purifier and for the healing of sores. More or less pubescent above: leaves 1-2.5 cm long, commonly all distinct. Baja Cal. to Monterey, Cal.

KELLOGGIA GALIODES Torr.

Slender perennial-rooted herb, about a ft. high, rather diffuse, glabrous or minutely pubescent; leaves opposite, lanceolate, sessile; interposed stipules small and scarious; fls small, in a loose forking cyme terminating the stem or few branches; the long pedicels thickened at the apex and articulated with the fls; corolla dull greenish-yellow, 3 lines long, pubescent outside. Cal.; Oregon; Arizona; Wyoming.

GALIUM CATALINENSE A. Gray.

"Herbaceous perennial, hispidulous-puberulent or glabrate, unarmed; stems erect, 3 or 4 ft. high, mostly simple with short flowering branches which little surpass the larger leaves; its nodes usually with a tumid ring; leaves in fives or fours; narrowly oblong, obtuse, mucronate, 1-nerved (rarely by the union of 2 leaves 2-nerved), either sessile by a contracted base or short-petioled; at the insertion within bearing some obscurely glandular bristle-shaped appendages; fls on short slender pedicels, perhaps polygamous; corolla white (2 lines in diam.); young fr sometimes naked and smooth,

sometimes beset with soft and straight bristles of about the length of the body."—Gray, Syn Fl 1:445. Catalina (W. S. Lyon).

GALIUM OCCIDENTALE McClatchie.

"Perennial, herbaceous, slender, from creeping rootstocks, 4-15 in. high, whole plant hirsute: leaves in fours, thin, fiat, elliptical or ovate, acute or acuminate, 3-6 lines long, 1-3 lines broad: fls few, polygamous, terminal, yellowish-white: ovary densely hirsute; mature fruit baccate, clothed with scattered hairs, pearly white, changing to black in drying, 1-1½ lines in diameter."—McClatchie, Erythea 2:124. 3,000-4,000 ft., Los Angeles Co., along the old Wilson trall.

GALIUM GRANDE McClatchie.

"Suffrutescent evergreen, the woody stems 3-5 lines in diameter, 3-8 ft. long, erect or reclining on bushes; herbaceous branches 4-12 in. long, these and foliage cinerously hirsute or hispidulous: leaves in fours, elliptic-oblong or slightly broader above the middle, acute (sometimes abruptly so) or acuminate, margins somewhat revolute, 3-6 lines long, 1-2½ lines broad, lower side lighter green: fls numerous, polygamous, commonly terminal, occasionally axillary, 1-5 on a peduncle, greenish yellow, 1-2¾ lines broad: ovary densely hirsute; mature fruit baccate, clothed with stiff hairs, at first nearly white, but soon changing to black, about 2 lines in diameter."—McClatchie, Erythea 2:124. Wilson Peak, Los Angeles Co., Calif.

GALIUM MIGUELENSE Greene.

"Suffrutescent, evergreen, the prostrate stems 6-8 inches long, whole plant covered with a sparse retrorse pubescence: leaves oval, acute, 1½-2½ lines long, dark green, coriaceous, in age deflexed and almost imbricated on the branches: berry large, glabrous, pearl-white: flowers not seen. Island of San Miguel."—Greene, Pittonia 1:34.

GALIUM FLACCIDUM Greene.

"Perennial, herbaceous, hirsute-pubescent, the weak reclining stems a foot long: leaves in fours, ½ inch long, narrowly oblong, obtuse or acutish, very thin, 1-nerved: peduncles slender, 4-bracted below the solitary greenish flower: ovary villous: fruit unknown. Shady woods on the north side of San-

ta Cruz Island, not common: resembling *G. Californicum*, but doubtless a dry-fruited species allied to the Mexican *G. uncinatum*."—Greene, Pittonia 1: 34.

GALIUM SICCATUM Wright.

"Perennial, 1-4 ft high, erect and very much branched and bushy when growing in some situations, or reclining in others; the whole plant cineres-puberulent; lvs in fours, not rigid, linear, 4-8 lines long, ½-1 line broad, barely mucronulate, midrib not prominent; inflorescence cymose-paniculate, fls polygamous, greenish-yellow, numerous; fr a line long, densely hispid with straight bristles."—Wright, Zoe 5:54. SD; to San Benito Co.; Mohave.

EUPATORIUM PASADENENSIS Parish

"Of the Eximbricata section; stems slender and apparently herbaceous, glandular-puberulent; upper lvs opposite, short petioled, ovate-deltoid, acute, and at base cordate, serrate, thin, minutely atomiferous beneath; cymes rather compact, on dichotomous peduncles longer than the lvs, pedicles 1 cm long, with 2-3 linear bracts; heads 20-30 fld; involucre bracts lanceolate, firm, 4 mm long, prominently 2-ribbed, the acute tips softer; cor 4-5 mm long, glabrous, w, the filiform tube twice the length of the expanded throat; pappus scabrous, equalling the cor, very promptly deciduous; achenes smooth, 5-angled, slightly arcuate, 1.5 mm longer; receptacle a little rounded."—Parish, Zoe 5:75. Pasadena (Mc Clatchie).

PENTACHÆTA ORCUTTII A. Gray.

"*P. aurea* subsimilis; capitulis parvulis; involucre villosulo-pubescente, bracteis viridioribus; ligulis brevioribus; pappi setis 8-10 capillaribus basi haud dilatatis caducis."—Vallecito, in the northern part of Lower California, C. R. Orcutt, May 4, 1886."—A. Gray, Proc. Am. Acad., xxii, 309 (March 4, 1887).

PENTACHÆTA PALEACEA Greene.

"A span high, with very numerous filiform branches: involucre small, scales in 2 series, pubescent, setaceous-tipped: corollas of ray and disk y.: akenes nearly linear; pappus-bristles 5, slender, with a thin, triangular palea at base."—Greene, Bull. Cal. Acad. Sci., i. 189-190 (Aug. 29, 1885).

PENTACHÆTA LYONI A. Gray.

"Hirsute, at least the margins of the plane linear or spatulate-linear leaves, 4-7 in. high, with the sparing ascending branches leafy up to the head or short peduncle: involucre hirsute; its bracts linear-lanceolate and of nearly equal length, green, with narrow scarious margins: pappus-bristles 9-11 or commonly 12."—Gray, Syn Fl 1:446. Catalina and San Pedro, Cal (W. S. Lyon).

CHRYSOPSIS FASTIGIATA Greene.

"Plants 3-8 dm high, erect or spreading; spring leaves 3-5 cm long, oblong-spatulate, narrowed to a margined petiole, mucronate, lax, clothed with a pubescence denser and softer than that of the later leaves, soon withering and leaving the main stems naked; rameal leaves small (5mm), oblong-acute, closely sessile, rigid, appressed, together with the branches somewhat viscid and canescently villous with long, softish hairs; involucre cylindrical; scales in 5 series, villous; rays 8-12, ligules ovate, 5 mm long, minutely 3-toothed at the summit; short outer pappus distinctly squamellate; hairs of the achene toothed at apex."—Parish, *Erythea* 7:97.

Witch Creek, San Diego Co. (Alderson); Santa Monica (Hasse); Los Angeles (Davidson); Pasadena (McClatchie); Whitewater on the Colorado desert (Parish).

CHRYSOPSIS SESSILIFLORA Nuttall.

"Rather slender, erect, 2 ft. high, viscid-giandular and sparingly hirsute: leaves oblong, acute, subsessile: heads few and sessile, or nearly so, at the ends of the several fastigiate terminal branchlets: achenes strong appressed-pubescent: outer pappus indistinct, of few rather long setae rather than paleae. Santa Cruz to Santa Barbara, in the California coast hills."—Greene, *Erythea* 2:105.

APLOPAPPUS CRUENTUS Greene.

"Shrubby and low, the stout divergent monocephalous branches very leafy and somewhat villous: leaves coriaceous, spatulate-obovate, an inch long or more, glabrous, not veiny, closely spinose-serrate: heads solitary, very large (more than an inch broad and nearly as high); involucre turbinate, the scales closely imbricate in many series, their appressed tips green and glutinous: rays numerous, of a deep saffron-red: achenes 15-nerved; pappus of long and stiff not very copious unequal light-colored bristles."—Greene, *pitt* 2:17. Coronado Islands (Pond), on the largest.

APLOPAPPUS JUNCEUS Greene.

"Near *A. spinulosus*, but more slender, sparingly leafy, the stems tufted, and 2' high, from a woody base: leaves linear, the lowest broader and pinnatifid, the upper often only 3-toothed at apex, lobes and teeth all spinulose-tipped: heads few

and corymbose, $\frac{1}{2}$ ' high: involucre turbinate, giandular-scabrous, not at all pubescent; scales setaceous-tipped: rays numerous, light y.: achenes conspicuously nerved."—Greene, *Bull. Cal. Acad. Sci.*, i. 190 (Aug. 29, 1885).

sd Co-San Telmo, Baja!

EREMIASTRUM ORCUTTII S. Watson.

"Pappus consisting of 5 white oblong-ovate laclinate paleae and as many inner alternate bristles twice as long: in every other respect—habit, foliage, pubescence, involucre, etc.—the nearly exact counterpart of *E. belloides*."—S. Watson, *Proc. Am. Acad.*, xxv. 132-3 (Sept. 25, 1890). Southwestern part of the Colorado desert, San Diego County, California (C. R. Orcutt, April, 1889).

ASTER ENSATUS Greene.

"Tall, very leafy, rather closely panicled above, the numerous short-pedicellate heads rather large: stem glabrous below, the branches of the inflorescence coarsely pubescent in lines: leaves linear-lanceolate, acute, of firm texture, slightly curved, the lowest 3 or 4 in. long, evenly and sharply serrate, those of the branches and branchlets perfectly entire, very closely stiffly and sharply setose-cillolate: campanulate involucre one-third inch high, their linear bracts in 2 or 3 series but nearly equal, the outer sometimes wholly herbaceous, the inner with dark-green tip and midvein: rays about 30, pale-purplish or flesh-color. Meadows about San Bernardino, Cal. (Parish 3818)."—Greene, *pitt* 3:223.

XYLORRHIZA TORTIFOLIA Greene.

Tomentose-pubescent, at length glabrate, 2 ft. high: leaves oblong to narrowly lanceolate, rigid, spinulose-dentate and acuminate, sometimes incisely pinnatifid, veiny: involucral bracts lanceolate-subulate, rigid: rays purple or violet, often 1 in. long: achenes sericeous-canescens: pappus at length ferruginous, deciduous in a ring. Utah; Arizona; Colorado and Mohave deserts, Cal.

XYLORRHIZA ORCUTTII Greene

Greene, *pitt* 3:48, based on *Aster orcuttii* Vasey and Rose, *bot gaz* 16:113:—

"Stems suffruticose, somewhat branching, pearly white, glabrous: lower leaves obovate, 1-2 in. long, with cuneate base; upper ones often oblong, with broad sessile or somewhat clasping base, obtuse at tip, spinulose-toothed, glabrous: heads solitary and terminal on leafy branches, sessile or nearly so, very large, an inch or more

in diam.: bracts of the involucre closely imbricated in 3 or 4 series, oblong with tapering green tips ciliate on the margins: rays an inch long, 'lavender to delicate mauve color': disk-fls 4 lines long, tapering toward the base: style branches broad: achenes densely long white villous: pappus coarse and scabrous."—Rose, bot gaz 16:113. Cariso creek wash, Colorado desert, Cal.

ERIGERON COLVILLEI Greene.

"Erect, 1-1½ ft. high from a deep seated perennial root or rootstock; stem very rigid and brittle, abundantly leafy below, the leaves diminishing upwards, all linear, plane, obtuse, and with the whole plant canescently hispidulous: heads in a very lax terminal corymb; bracts of involucre in 2 or 3 series moderately unequal; rays rather few and broad, violet."—Greene, Erythra 3:20. Coso Mts., eastern Calif. (Coville n. 931).

ERIGERON TENUISSIMUS Greene.

"Perennial, very slender, 2 ft. high or more, simple below, equally leafy up to the inflorescence, nearly glabrous: leaves filiform, 1 or 2 in. long; flowering branches at summit of the stem almost racemously disposed, divaricate, or even somewhat deflexed, each having 1 or 2 small heads: bracts of the broadly campanulate involucre in 2 or 3 not very unequal series, the outer ones strigose-pubescent: rays 30 or more, purplish or bluish: achenes oblong-linear, compressed, nearly glabrous."—Greene, pitt 3:25. Near Ventura, Cal.

ERIGERON BLOCHMANAE Greene.

"Perennial, very stout, equally leafy up to the close terminal corymb of large purple-rayed heads; stems strongly striate and, with the spatulate-linear leaves, canescently-hispidulous: the main cauline leaves 2 in. long or more, each with a short very leafy branch in its axil: corymb of 12-20 rather short-peduncled heads, these more than ½ in. high, little less than ¾ in. broad: bracts of the involucre subulate-linear, moderately unequal, in about 3 series, their pubescence white and more appressed than that of the herbage of the whole plant: rays 50 or 60, of moderate width for the genus: achenes compressed, perfectly glabrous, chestnut-brown. Along sandy beaches of the northern

part of Santa Barbara Co., California, Mrs. Blochman."—Greene, pitt 3:25.

ERIGERON JACINTEUS Hall.

"Low, 2 or 3 in. high, the monocephalous stems ascending or spreading from slender rootstocks, cinerous with a dense but short almost hirsute pubescence; lvs small but exceeding the internodes, spatulate to obovate, obtuse or acute, the larger 3 lines long by 1 line wide, the upper smaller, all sessile by a narrowed base, 1-nerved: heads on short peduncles, hemispherical, 7 lines wide, including the rays; involucre 2 lines high; bracts narrow, acute, strongly 1-nerved, sparsely pubescent at least when young, the margins hyaline: rays about 20, 2 lines long, p: akene flattened, strigose-pubescent: pappus simple, of nearly scabrous awns, equalling the cor."—Ha U 127.

GNAPHALIUM BICOLOR Biol.

"Shrubby at base, about 2 or 3 ft. high, branching, leafy up to the inflorescence; very strongly scented: cauline leaves about 2 inches long, acute, linear-lanceolate, with broad, cordate or somewhat auricled, slightly decurrent base; floral leaves smaller, cordate-acuminate; upper surface of leaves deep green, densely covered with short glandular hairs, a little wool only at the base of the mid rib; lower surface and stems densely white-woolly: glomerules compact, arranged in somewhat fastigiate, loose or close panicles; heads 2½ lines long, about 75-flowered; involucre pearly becoming sordid; outer bracts oval, acute, scarious; inner ones with ovate-oblong scarious limb narrowed to a broadly linear, green-herbaceous base."—Bioletti, Erythra 1: 16-17. San Diego, Calif., common in low thickets among the coast hills (Greene).

FRANSERIA CHENOPODIFOLIA Benth.

Habit of *F. deltoidea*: leaves broadly ovate or subcordate, rather slender-petioled, crenate-serrate, rarely somewhat incised, an inch broad, minutely white-tomentose, upper face glabrate: fertile involucre glomerate, subglobose, 2-3-fl'd, tomentose-lanate, but the numerous subulate divergent spines naked. Todos Santos bay (Or), and Magdalena bay (Hinds), Baja Cal. Benth, bot sulph 26. Gray, Syn Fl 1:450.

Franseria deltoidea Torr Pl Frem 15.

Santos (Parry, Or) to Magdalena bay, Baja (Br).

FRANSERIA FLEXUOSA A. Gray.

Widely branched from a woody base, canescently pubescent or glabrate in age: branches slender, flexuous: leaves

coriaceous, short-petioled, deltoid-lanceolate and lacinate dentate, or upper lanceolate with cuneate base, feather-veined, the tapering tip and coarse teeth somewhat spinulose: heads naked-paniculate on the branches: fertile involucre pubescent, armed with 7 or 8 stout-subulate and widely spreading straight spines, 2-3-fl'd. Am ac pr 20: 298. Canyon Cantilles, Baja Cal. (Or).

Cantilles! San Esteban, Baja (Br).

VIGUIERA LACINIATA A. Gray.

Low, shrubby, 1-3 ft high, with slender branches; lvs about 1½ in. long, including the petiole, thin, rigid, very scabrous, the coarse teeth, or lobes, ovate or triangular blunt: heads nearly ½ in. long; rays nearly the same: squamellae of pappus thick: paleae of receptacle acutish. S D! Quintin!

VIGUIERA PARISHII Greene.

"Shrubby, much branched and scabrous-hispid; lvs mostly opposite, an inch or two long, including the short petiole, ovate, acute, the margins with a few coarse triangular teeth; fl'ng branches long and flexuose, nearly naked above, and each bearing a single head; involucre short, its scales ovate-lanceolate; rays about 10; receptacle convex; bristle-like awns of the pappus about equalling the finely ciliate akenes, and deciduous; the intervening scales apparently persistent, numerous and acute."—Greene, Torr ci b 9:15. S D Co (Parish). CD. Baja!

HELIANTHUS OLIVERI A. Gray.

Stout, 10-12 ft. high, leafy to top, remarkable for its soft-villous and even tomentose pubescence and no roughness: leaves all alternate, lanceolate, 4-7 in. long, tapering to an acute point, and at base into a short and margined petiole, nearly entire, obscurely triplinnerved near the base: involucre villous, of linear-subulate bracts, not surpassing the disk: rays an inch long: paleae of the pappus subulate from a broad base. Gray, Am ac pr 20:299. Los Angeles Co., Cal (J. C. Oliver).

BIDENS SPECIOSA Parish.

"B Nashii Wiegand Torr ci b 26:421, as to the Cal. plants only. Aquatic, perennial by stolens, glabrous throughout; stems erect or assurgent, stout, with an extreme height of 25 m, branched at every node, the lowest branches becoming stolons, the upper short, erect, their ultimate branchlets 1-3 fl'd; lvs lanceolate, 1-2 dm long, exceeding the internodes, conspicuously toothed, narrowed to the connate base; heads on peduncles 4-8 cm long, erect, nodding in fr outer involucre bracts 4-8, foliaceous, linear-oblong, serrate, equal, mostly twice longer than the head, reflexed; inner bracts 8, membranous, yellowish, acutely oval, equalling the disc; rays 8, golden-yellow, obovate-oblong, 2x1 cm, the tips entire or ob-

scurely toothed; ovaries oblong, truncate, the edges retrorsely hispid; disc 2 cm broad, 1 cm high; its cor light y, 6 mm long, campanulate, the lower half abruptly contracted into a columnar base, 5-toothed; chaff linear-acute, as long as the florets, y-tipped; mature achenes black, flat, 5 mm long, cuneate, very slightly constricted at the summit; awns 2, w, 3 mm long, or with a third awn half as long, and the achene then ribbed on the awned face, awns and edges of the achenes retrorsely barbed with rigid prickles."—Parish, Zoe 5:76. Common in shallow streams, S Ber valley.

BLEPHARIPAPPUS NUDATUS Greene.

"Freely branching from base, branches slender, sparsely leafy, 6-12 in. high; all the leaves, both of the radical rosulate tuft and of the branches, oblong-lanceolate and quite entire, scabrous, especially on the margins, but these and all other parts of the plant devoid of the usual glands: heads small; rays white, rather short and inconspicuous; disk-corollas bristly-hairy at summit: achenes with scattered and very closely appressed hairs: pappus of about 10 stout scabrous white awns (hardly to be called paleae) two-thirds as long as the achene, their basal villous hairs copious and elongated, only a third shorter than the awns themselves."—Greene, pitt 3-168. Mts. Baja Cal. (Or).

MADIA DENSIFOLIA Greene.

"Annual, 3-5 ft. high, the stem almost naked above and corymbose-panicled, very densely leafy at and near the base, the leaves all narrowly linear and entire, with strong midvein and no lateral nerves, 4-8 in. long, densely short-hirsute, not at all glandular; the reduced and scattered rameal leaves sparsely bristly-ciliate, the hairs longer than the width of the leaf, all the upper branches and foliage abundantly glandular: rays ample, often red at base: achenes compressed-trigonal."—Greene, pitt 3-167. Common in western California.

MADIA TENELLA Greene.

"Annual, erect, very slender, 8-12 in. high; sparsely short-pubescent, the peduncles and involucre glandular: lowest leaves opposite, upper alternate, all narrowly linear, entire, obtuse, bristly-ciliate below the middle: heads few, small, solitary or subracemose: bracts of the involucre 5-7, with short and broad tips; rays as many, ¼ in. long,

golden-yellow, their achenes little compressed and trigonous, not enclosed, but only the dorsal portion embraced, by the involucre bracts; chaff of receptacle distinct, in 1 series between disk and ray: the receptacle convex and somewhat hirsute."—Greene, Pitt 3-167. Bear valley, Cal. (Parish).

HEMIZONIA CLEMENTINA Brandegee

"H. Streetsii Gray, Syn. Fl Suppl 451, not Am ac pr 12:162. Hirsute, especially below; stems erect or ascending, at length much branched and leafy to the numerous corymbosely-crowded heads, 3-4 cm high: leaves linear, obtuse or acute, attenuate to the base, 4-8 cm long, entire or with a few short teeth: heads 8-10 mm high; involucre bracts linear, those of the receptacle about 15, slightly united below; rays 14-20, 5 mm long; disk fls numerous: akenes of the ray rugose-tuberculate at maturity, indistinctly triangular, with an upturned beak, and stipe 1 mm long, those of the disk sterile, bearing a pappus of about 10 subulate-linear paleae, unequal in length and width."—Brandegee, Erythra 7:70. San Clemente and Catalina Islands.

ARNICA SCABERRIMA Greene.

"Stout stems 2 feet high, with only 2 pairs of leaves over and above the small and bract-like ones subtending the several long naked stout peduncles: lowest leaves 6 inches long, spatulate-oblancheolate, rather closely dentate, the upper pair as long and as saliently dentate but of oblong-lanceolate outline and sessile, both faces of all strongly scabrous: stem and peduncles rough with short stiff, mostly gland-tipped, hairs: involucre campanulate, their bracts biserial, the outer somewhat oblancheolate, acute, hirsutulous: rays deep-yellow, not large in proportion to the heads; disk-corollas slender, only the short tube hirsute: achenes hirsute and with some sessile glands; pappus fuscous, subplumose."—Greene, Pittonia 4:165. Little Kern river, 9,000 ft. alt. (C. A. Purpus 5260).

ARNICA BERNARDINA Greene.

"Nearly allied to *A. incana*, and with similarly bunched coarse, even fleshy-fibrous roots, tufted basal leaves, etc., but only cinereous with a fine tomentose pubescence, this here and there over-spread with some long arachnoid hairs,

especially the leaves beneath; foliage larger, more elliptic-lanceolate, and more conspicuously denticulate or dentate: heads still larger, nearly $\frac{3}{4}$ inch high and an inch broad; involucre bracts oblong, obtuse, much shorter than the disk: rays relatively larger than in either *A. tomentosa* or *A. incana*, somewhat villous on the outside, 8-nerved, 3-toothed: disk-corollas with long villous tube and much shorter broad and almost campanulate glabrous throat: achenes only sparsely short-setulose, not glandular; pappus long, dull-whitish, barbellate. Bear valley, San Bernardino mountains, California (Parish)."—Greene, Pittonia 4: 170.

SENECIO ILICETORUM Davidson.

"Stems erect, from a biennial or perennial root, 1½-3 ft. high, very floccose-woolly, at length glabrate above: radical leaves at first floccose beneath, thin, ample, undivided, 8-12 in. long, including the petiole, elliptic oblong, acute at both ends, coarsely dentate, the teeth spreading, triangular, callous-tipped, the sinuses rounded and the larger of them denticulate; lower cauline leaves resembling the radical, with very short petioles rapidly becoming sessile, the uppermost narrow lanceolate entire or irregularly dentate: head $\frac{1}{2}$ - $\frac{3}{4}$ in. diameter, less than $\frac{1}{2}$ in. in depth, nearly sessile, 6-10 in number, closely crowded on the top of the peduncle: scales of the involucre lanceolate acuminate, with few calyculate ones at the base: rays none: all the flowers fertile. Flowering end of My and beginning of Je."—Davidson, Erythra 2:85. Cucamonga Mts., Calif.

PTILORIA EXIGUA Greene.

Radical and lower cauline leaves pinnatifid, those on the branches reduced to short scales: bristles of pappus 9-18, their more or less dilated and paleaceous or thickened bases a little connate in 4 or 5 phalanges and often 1-2-setulose on each side. Wyoming; Texas; Nevada; Cal.

PTILORIA CICHORIACEA Greene.

Perennial, 1-4 ft. high, stout; heads sessile along naked branches; mature achenes short-linear, smooth, lightly and acutely 5-angled. Rocky hills, southern Cal.

PTILORIA PANICULATA Greene.

Erect, annual, 1-2 ft. high; bearing numerous 3-5-fl'd heads in an elongated narrow or more open panicles, or else more strictly disposed on virgate branches: leaves linear or the lower lanceolate. Oregon; Idaho; Santa Cruz Island.

PTILORIA PARRYI Orcutt.

Stout, widely branched from base; leaves thickish, deeply pinnatifid; pappus-bristles naked (often united in twos or threes) at base. Southern Utah; Mohave Desert.

PTILORIA PAUCIFLORA Raf.

Stout, rigid, 1-2 ft. high, branches spreading: lower leaves commonly lanceolate, upper linear or reduced to scales: pappus dull white, plumose only to near the base. Wyoming to Texas and Cal.

PTILORIA PENTACHAETA Greene.

Annual, ½-3 ft. high: pappus of 5-7 bristles distinct to the base, which is little dilated, plumose only above the middle. Baja Cal. (Or); Colorado Desert; Nevada; Arizona; New Mexico.

PTILORIA VIRGATA Greene.

Rigid, 1-4 ft. high: heads 6-8 mm long, mostly sessile or short peduncled: upper leaves linear, small, entire; lower oblong, or spatulate, often sinuate or pinnatifid: akenes subclavate or oblong, rugose-tuberculate between the narrow ribs: pappus moderately plumose. Baja Cal. to Oregon; Nevada; Utah.

HYMENOPAPPUS LUGENS Greene.

"Near *H. luteus*, and with similar multicapitous caudex and leafless pedunculiform stems about a foot high, but more slender, the monocephalus branches of the inflorescence longer and more divergent; herbage less tomentose, often green and almost glabrous: involucre smaller, campanulate, their bracts distictly biserial, the outer shorter, oval or broadly oblong, showing a rather broad dark-purple margin, the inner cuneate-obovate, not margined: corollas greenish-yellow, elongated, the narrow subcylindric throat much longer than the proper tube: achenes silky-villous; scales of the pappus oblong-obovate, as long as the proper tube of the corolla and exceeding the villous hairs of the achene. Inyo and San Bernardino counties, Cal. (Parish)."—Greene, pitt 4:43.

ERIOPHYLLUM OBOVATUM Greene.

"Stem a foot high from a perennial root; branches few, stout, erect or ascending from a decumbent base, leafy up to the monocephalous terminal peduncles; only the lowest leaves opposite, and all, together with the branches, peduncles and involucre, densely white-tomentose: leaves all entire, an inch long or more, from obovate-spatulate to broadly oblanceolate: heads large, hemispherical; involucre bracts broad and few, apparently united toward the base: rays light yellow: corolla-tube glandular-hispidulous: achenes glabrous: pappus conspicuous, of about 8 very unequal paleae, the longest being lanceolate, remotely lacerate-toothed, the others very short and obscure."—Greene, *Erythea* 3:123. San Bernardino Mts., Cal. 5,000 ft.

CHAENACTIS ORCUTTIANA Parish.

Parish, *Erythea* 6:92, based on *C. tenuifolia* Orcuttiana Greene, *W Am Sci* 3:157."—Cliffs facing the ocean, Encinitas, Oceanside, Cal.

Chaenactistenuifolia Orcuttiana Greene, *W Am Sci* 3:157 (Ag 1887):—"Stouter than the type and somewhat depressed; lvs thickish and more than once pinnatifid, the secondary lobes short and obtuse; fl'g branches and involucre resinous-glandular; plant fl'ng in summer, after the disappearance of the vernal type." A succulent, non-erect maritime plant, SD.

CHAENACTIS PARISHII A. Gray.

Minutely canescent: stems branching from a suffrutescent base and bearing few heads: leaves pinnately parted into short and partly entire linear lobes: heads hardly over ½ in. high: paleae of pappus 13-15, linear. San Jacinto Mts., Cal. (Parish): Baja Cal. (Or).

CHAENACTIS SANTOLINOIDES Greene

"A caespitose perennial, the stems; less than a span high, and, with the foliage, densely white-woolly; leaves linear to linear-lanceolate in outline, 1-2 in. long and 1-3 lines wide, somewhat quadrangular with the numerous, small, crowded and imbricated lfts; heads large, solitary, on naked peduncles 5-8 in. high; cor apparently w; pappus of 10-15 very unequal, oblanceolate scales."—Greene, *Torr cl b* 9:17. S Ber mts (Parish 1945).

CHAENACTIS SUFFRUTESCENS A. G.

Tomentose-canescens: branches simple from a decumbent ligneous stem, erect, bearing a solitary long-peduncled head: leaves pinnately parted into narrowly linear entire lobes: head nearly an inch high: paleae of pappus 10, oblong-ligulate. Near Mt. Shasta, Cal.

ALNUS OBLONGIFOLIA Torr.

Alnus rhombifolia Nuttall.

The alder is a slender tree occurring along our perennial streams, from Mission valley to the Cuyamaca mountains in Lower California, and north and eastward. Rarely exceeds 50 feet in height and 2 feet in diameter.

ERIOGONUM FASTIGIATUM Parry.

"Fruticose, 3-6 inches high, fastigiate branched from near the base and dichotomous above, the younger stems densely lanose; leaves crowded below, more scattered above, linear lanceolate, 3-5 mm in length, loosely hairy above, densely tomentose beneath, strongly revolute, tapering below into a slender petiole with a broad membranous clasping base; involucre sessile in the upper axils, or terminal on the dichotomous branches, 2 mm in height, deeply 5-parted, with acuminate segments, united below into a membranous tube; perianth with broadly oval segments nearly equal, with short turbinate tube; bractioles linear-hispid shorter than pedicels; stamens 9, anthers reddish, akenes narrowly winged, embryo not seen. A low, densely branched shrub. Its slender fastigiate branches forming a flattened summit, with the remains of dead foliage below, flowers rather conspicuous, intermixed with the projecting dichotomous branches. To be placed in the virgate section though the inflorescence is mainly reduced to a single terminal involucre. Is apparently near *E. taxifolium*, Greene, *Pittonia*, 1, 267. C. R. Orcutt, No. 1591. La Salada, Lower California, April, 1886."—Parry, *W Am Sci* 6: 102 (S 1889).

MICROSERIS PLATYCARPHA A. Gray.

Span or more high, head $\frac{1}{2}$ ' or less in length; main bracts of involucre about 8, oblong; akenes turbinate, 2" long, tapering abruptly into a very short awn. San Diego county, Cal., southward.

PHACELIA LYONI A. Gray.

Viscid-pubescent and heavy-scented, a foot or more high, robust; leaves pinnately divided into narrow oblong and deeply pinnatifid divisions; their short lobes oval and crenate; spikes dense; corolla (pale or ochroleucous) 2 or 3 lines long, broadly campanulate; appendages semi-oval, their base united to the filament; stamens and style not exerted; capsule narrowly oblong, many-seeded, nearly equalling the linear-spatulate hispid and viscid sep; seeds oval, scrobiculate. Cat (Nevin & Lyon).

PHACELIA ORCUTTIANA A. Gray.

Viscid, pubescent, about a foot high; leaves pinnatifid, somewhat lyrate, the lobes short-oblong and entire; fls sessile in the at length elongated dense spikes; corolla rotate-campanulate, double the length of the calyx, with limb 3 or 4 lines broad, white with yellow eye, nearly or quite destitute of internal appendages; capsule oval, nearly equalling the narrowly spatulate (barely 2 lines long) sepals, 12-14-seeded; seeds oval, obscurely

favose-reticulated between the transverse corrugations. SD Co; Baja!

PHACELIA PARISHII A. Gray.

Very like *P. pulchella* in foliage and habit; peduncles fully as long as the fruiting spike, primary ones scape-like; fls almost sessile, crowded; corolla (2 lines long) blue or bluish, hardly at all surpassing the calyx, the appendages obscure or none; fructiferous sepals broadly spatulate, equalling the oblong about 20-seeded capsule; seeds over $\frac{1}{2}$ line in length, narrowly oblong, scrobiculate. Mohave (Parish) near Rabbit Springs.

PHACELIA SUFFRUTESCENS Parry.

"Plant decumbent, branching from a perennial root, with occasional suffrutescens stems persistent for several years; hispid pubescent throughout, the setose-hispid hairs intermixed with shorter stalked glands containing an amber-colored, viscid, oily secretion; lower lvs interruptedly pinnate, pinules 5-7, sessile, ovate, pinnatifid-incised or lobed; fl'g branches divaricate from the axils of the upper leaves, rather short, with close spikes; fls shortly pedunculate, sepals spatulate, about twice the length of the capsule; corolla inconspicuous, little exceeding the calyx, short, funnel-form, lobes shorter than the tube; appendages oblong, obliquely truncate above, nearly as long as the tube, slightly broader, but not auriculate or hooded, below; stamens moderately exerted; style long, divided nearly to the base; ovary short-oval, hispid-pubescent, quite constantly 1-seeded by abortion; seed dark, oblong, tuberculate in longitudinal lines. Common on rocky ledges throughout So Cal." * * * —Parry, *Dav ac pr* 4:38.

NEMOPHILA AURITA Lindl.

Plant prickly, weak and straggling, leaning on other plants for support; branches 2-6 dm long, hirsute, angled or winged, the angles armed with sharp prickles which aid in climbing; leaves all but the lower alternate, 5-15 cm long, more or less deeply pinnatifid into mostly 7-13 entire or shallowly lobed downward-pointing divisions; retrorsely barbed along the principal veins beneath; petioles winged, expanded below into an auriculate-clasping base; fls mostly in very loose naked racemes at tips of branches; calyx-lobes lanceolate, 4-10 mm long; appendages usually less than a third as long, spreading; corolla with a short throat constricted below the top and spreading limb 1-3 cm across, violet, paler outside; scales triangular, usually firmbricate, below covering base of the stamens, above turning away from them, often 3 mm long; nectarles prominent, 1 between each pair of scales; style 2 or 3 times as long as ovary, cleft only at tip; capsule globular, 5-9 mm in diam., thin walled; seeds 4 per capsule, globular, 1.25-3 mm in diam., conspicuously favose-reticulated. SD to Plumas Co, Cal, Arizona.

PHACELIA HETEROSPERMA Parish.

"Annual, a foot or less high, with erect branches, glandular and viscid, the foliage and inflorescence with sparse short and viscid hairs; leaves few on short peti-

oles, ovate, an inch long, with a few coarse angular teeth, or the basal ones nearly entire: fls in strict spiciform racemes, at length elongated and loose; corolla campanulate, 3-4 lines high, little exceeding the unequal fil and short cleft style included: capsule oblong, 3 lines high, exceeded by the sepals; seeds numerous (40-50), light brown, deeply pitted and variously angled or rounded."—Parish, bot gaz 13:37. Mohave, LA Co.

ABUTILON AURANTIACUM S. Wats.

"Woody at base, the herbaceous stems $\frac{1}{2}$ -2° high, pubescent and somewhat villous: leaves densely soft-tomentose, velvety and whitish, round-cordate, acute, the rounded basal lobes overlapping, unequally serrate, $\frac{1}{2}$ -1 $\frac{1}{2}$ " broad, shorter than the petioles: fl. axillary and solitary, on villous-pubescent pedicels, which are as long as the petioles and mostly jointed near the base or the lower above the middle: calyx-lobes broadly ovate, acute; corolla bright orange, 6-9" long: calyx and fr. villous-pubescent; carpels 10, abruptly short-beaked, 3-seeded, 4" long, about equalling the calyx. On Todos Santos Bay, Lower California, by C. C. Parry, January, 1883, and at Tia Juana, by C. R. Orcutt, in May of the same year."—S. Watson, Proc. Am. Acad., xx. 357 (Feb. 21, 1885).

ABUTILON CRISPUM Sweet.

Very finely tormentose: branches very slender, elongated: lvs cordate, acutish or acuminate, crenate, 1-3 in. long; upper small and nearly sessile: fls solitary, small, y, on slender axillary pedicels as long as the lvs and jointed near the top; carpels about 12, membranaceous, inflated, rounded above, 2-valved to the base, 4-5-seeded, at length $\frac{1}{2}$ in. long. Cantilles! Fla. Widely distributed through the tropics.

ABUTILON LEMMONI S. Watson.

"Perennial, the stout half-woody branching stems 1-2° high, hoary throughout with a very dense short stellate pubescence, its stellate character scarcely perceptible on the calyx: leaves cordate to cordate-lanceolate, acute or slightly acuminate, dentate, the blade usually 1' or less (sometimes 2') long, about equalling or shorter than the slender petioles, slightly greener above: peduncles axillary, solitary, shorter than the leaves, joined near the top: calyx with broadly ovate acute lobes; corolla y. or orange, small (3-4" long): carpels about 9, acute, 4-5" long, finely pubescent, 3-seeded, equalling or a little exceeding the enlarged calyx."—S. Watson, Proc. Am. Acad., xx. 357-8 (Feb. 21, 1885).

LATHYRUS SPLENDENS Kellogg.

"Pride of California," distinguished for its profusion of large brilliant rose red to crimson flowers borne in clusters of 10 or more the second year from seed. The most magnificent of the native climbing plants of West America. Described as half-hardy in New Jersey. It stands frost and snows in the mountains of Southern and Lower California, up to 4,000 feet altitude, where it festoons the shrubbery with its wealth of color.

LATHYRUS ALEFELDI White.

"Perennial; glabrous or sparingly pubescent throughout; stem rather stout, flexuous, quadrangular, wingless, scarcely striate between the angles; stipules semi-cordate, acuminate, thick and strongly reticulated, one-third to one-half as long as the lfts, and often nearly as broad, the lower lobe very coarsely acuminately toothed, lfts, 6-10, alternate or in pairs, oblong to ovate or obovate, obtuse, frequently retuse, thick and stiff, prominently reticulated, glabrous on both surfaces, 1.5-4 cm long, $\frac{1}{2}$ to one-third as broad; tendrils long, stout and trifid; peduncle 6-10 fl'd, twice as long as the corresponding fl; fls large 2-3 cm long; cor p (?), pedicels longer than the calyx tube, calyx dilated, pubescent, particularly on the margin; upper calyx-teeth broadly triangular, acute, lateral pair oblong-lanceolate, and the lowest coriaceous, subulate, the 3 lower teeth equalling the tube, the upper shorter, legume flat, sparingly pubescent, about 8-seeded. May."—White, Torr cl b 21:499, S D.

Parish, Erythea 6:88. Throughout SD Co. 200-5,500ft alt, clambering over bushes on hillsides.

LATHYRUS VIOLACEUS Greene.

"Apparently glabrous, but under a lens sparsely short-hairy throughout: stems slender, shrubby below, 4-8 ft high, acutely angled: lfts about 12, elliptical, obtuse and with slender deflexed mucro, margins delicately crisped: peduncles surpassing the lvs, many fl'd and rather dense: fl about 8 lines long; lateral pair of calyx-teeth oblong-lanceolate, much longer than the tube, the lowest one equalling these in length but only one $\frac{1}{2}$ as wide, the short upper pair slightly connivent at the tip and forming a semi-elliptical sinus; pet at first red-purple, changing to violet blue, the banner very broadly obovate, the sides only slightly recurving, the middle displaying about 10 nearly parallel veins, some of them simple, others forked near the summit, all running through to the upper margin of the organ, none running into meshes, wings a trifle shorter than the keel, almost parallel with it, not meeting above it."—Greene, Erythea 1:105. Mts LA Co.

LATHYRUS LAETIFLORUS Greene.

"Somewhat shrubby habit of L. violaceus and as tall; the more scanty short hairs straight and appressed; of firmer texture, elliptic-lanceolate: peduncles exceeding the lvs, loosely many fl'd about 11 lines long; lateral pair of calyx-teeth broadly subulate, not longer than (scarcely as long as) the tube, lowest one subulate, rather longer than the tube, the very short upper pair connivent, the tips almost meeting, forming a broadly obovate or nearly orbicular sometimes almost closed sinus; pet nearly white (faintly flesh colored), the banner obovate, with sides abruptly reflexed, each side with a concavity, the middle with few divergent short and simple red veinlets none of which reach the border or anastomose; wings meeting and concealing the keel

from above."—Greene, *Erythea* 1:105-6. LA Co.

POTENTILLA ACUMINATA Hall.

"Perennial from a stout somewhat woody root: stems several, slender, glandular-pubescent, 4 in. or less high, not scape: lvs sparsely pubescent on both sides, the petioles glandular, pinnate with 1 or 2 pairs of sessile or short-petiolate leaflets, or all but the terminal sometimes suppressed; stipules lanceolate, acute, entire; leaflets orbicular to cuneiform-obovate, 2-6 lines wide, conspicuously toothed: fls few; pedicels slender, 5 lines or less long; hypanthium hemispherical, 1 line wide; bractlets linear-lanceolate, acute, half as long as the narrowly ovate acuminate sepals: petals y, narrowly ovate, acuminate, equalling the sepals: stamens more than 20, closely inserted about the pistils: akenes 10 or more, slightly incurved at apex, the somewhat longer style attached just below the tip."—Ha U 86.

POTENTILLA CALLIDA Hall.

"Root thick, somewhat woody: stems several, slender, erect or ascending, 2 in. or less high, villous throughout with long hairs and also bearing some short glandular hairs above: stipules ovate, the free portion $\frac{1}{2}$ line long, entire or toothed; lvs villous, pinnate; the lower 6-10 lines long, with about 7 pairs of crowded lfts; the upper much shorter, bract-like, with 1-5 pairs of lfts; lfts 1 line long, divided to the base into 2 or 3 oval segments: fls sometimes solitary on the ends of the stems but usually 3-6 in a simple raceme; pedicels slender, 2-5 lines long; hypanthium saucer-shaped, $1\frac{1}{2}$ -2 $\frac{1}{2}$ lines wide; bractlets narrow; sepals twice as long, narrowly ovate, acute: petals w, oblong, obtuse or acutish, narrowed at base but not clawed, a little longer than the calyx (about $1\frac{1}{2}$ lines long); stamens about 20; fil filiform: pistils several; style atery attached, slightly longer than the glabrous akene."—Ha U 87.

DENDROMECON FLEXILE Greene.

"Six to ten ft. high, tree-like, with numerous more or less drooping branches; leaves ovate-oblong to elliptical, obtuse, often mucronulate, 2-5 inches long, fleshy and glaucous, crowded on the branches, short-petioled, their margins smooth and revolute; corolla rather pale yellow, 2 inches in diameter, on a short pedicel; capsules stout, curved, 3-5 inches long; seed large, spherical, lightly scrobiculate, with a large amber colored caruncle. A common large shrub of the island of Santa Cruz, very strikingly unlike either the original mainland species, or that of the neighboring island of Santa Rosa. The large, pallid, somewhat succulent leaves are so numerous as to weigh down the branches, and this gives the shrub a rather

graceful appearance; when dry they are thinner and softer than in the other species. In their axils the leaf-buds appear as solid, pyramidal, thorn-like protuberances, another singular characteristic."—Greene, Torr cl b 13: 216 (N 1886).

DENDROMECON RIGIDUM Benth.

Shrub 2-8 ft high, with numerous slender branches, bark whitish: lvs ovate to linear-lanceolate, 1-3 in. long, very acute or mucronate, sessile or nearly so, twisted upon the base so as to become vertical, reticulately veined, margin rough or denticulate: fls 1-3 in. in diam or pedicels 1-4 in. long; capsules curved, attenuate above into the short stout style, $1\frac{1}{2}$ -2 $\frac{1}{2}$ in. long: sds $1\frac{1}{2}$ lines long.

Curran, Cal ac pr sr 2, 1: 244, refers D. Harfordii and D. flexile to this.

DALEA ORCUTTII S. Watson.

"Perennial, with numerous short slender herbaceous subprocumbent or ascending stems (3-4' long) from a woody branching rootstock, appressed silky-pubescent: leaves 4-6" long, the folded oblong-obovate leaflets (4-6 pairs) $\frac{1}{2}$ " long, glabrous above; peduncles about equalling the leaves; spikes short ($\frac{1}{2}$ " long), somewhat crowded, the fl. reflexed or spreading; calyx short-villous, turbinate, the lanceolate acuminate teeth equalling or exceeding the tube; the p. orbicular banner and the wings scarcely exerted, the broad twice-longer keel p. on the inner margin."—S. Watson, Proc. Am. Acad., xx. 359 (Feb. 21, 1885).

Canilles mts (Orcutt).

LUPINUS ORCUTTII S. Watson.

"Diffusely much branched from the base, low (2-4' high), pubescent throughout with short stiffish spreading hairs: leaflets 5, oblong-spatulate, 3-6" long, shorter than the petioles: racemes numerous, sessile in the axils, 1-2" long, the scattered p. or reddish fl. 3" long: pod oblong, 4" long, 2-3-seeded: seeds 1" in diameter."—S. Watson, Proc. Am. Acad., xx. 359 (Feb. 21, 1885).

ESCHSCHOLTZIA LEPTANDRA Greene

"Perennial, or at least biennial, a foot or more in height, rather stout, strictly erect and with a somewhat corymbose habit; glabrous and very glaucous: ultimate leaf-segments rather coarse, linear-spatulate, nearly parallel; flower buds oblong-ovate, abruptly and rather sharply acuminate; inner rim of torus thin-hyaline, erect, pervaded by about 16 stout and prominent nerves, outer greatly reduced, but manifest as a narrow somewhat turgid ring; petals an inch long, widely-expanding, lemon-yellow throughout, or orange-tinted below the middle; stamens about 32; anthers filiform and nearly $\frac{3}{4}$ inch long; filaments barely a

line long. Desert plains near Verdi, in the western part of Nevada (C. F. Sonne).—Greene, *Pittonia* 1:170.

ESCHSCHOLTZIA TENUISECTA Greene

"Annual, erect, a foot high, glabrous and a little glaucous: ultimate leaf-segments long and slender, gradually tapering from a broad obtuse or truncate apex, widely divergent in the young leaves, less so in the later ones: flower buds ovate, with a long and gradually attenuate acumination: inner rim of torus nerveless and horizontal (its margin, not its body, in contact with the ovary), the outer coriaceous, about a line deep, red; petals an inch long, widely expanding, bright yellow, with a light-orange base; stamens about 24; anthers linear, 2 lines long; cotyledons cleft below the middle into 2 filiform segments. Chico, Calif. (Parry).—Greene, *Pittonia* 1:169.

ESCHSCHOLTZIA PARISHII Greene.

"Annual, slender, less than 1° high, glabrous and glaucous: stems simple or sparingly branched; peduncles terete, very slender: torus turbinate, no spreading rim, the 2 margins similar and approximate: petals widely spreading, broad and overlapping each other, apparently light y.: fr. not seen.—Greene, *Bull. Cal. Acad. Sci.*, i. 183 (Aug. 29, 1885).

ESCHSCHOLTZIA PENINSULARIS Gn.

"Annual, smooth and glaucous, slender, erect, much more branched than *E. Californica*, with corollas of 1-3 the size and more broadly campanulate: rim of torus broader in proportion, the inner margin a very short, nerveless, hyaline ring; seed slightly elongated and distinctly apiculate at each end, reticulations less regularly favose.—Greene, *Bull. Cal. Acad. Sci.*, i. 68-9 (Mar. 7, 1885); l. c. 183.

PSORALEA RIGIDA Parish.

"Erect, 1-2 ft high, viscid above and sparsely villous with short black and white hairs intermingled; lvs pinnately 3-foliate, on inch long petioles; lfts as long, ovate-lanceolate, glabrous and rigid; stipules lanceolate; peduncles shorter than the leaves, bearing a globose head, inch high, 20-fl'd; bracts shorter than the fls, lanceolate, deciduous; calyx two-thirds length of cor, its teeth acuminate, the lower twice the length of the upper; cor 8 lines long, whitish or ochroleucous, the keel with a large purple spot at the apex; petals very long-clawed; the tenth stamen free one-third its length; ovary densely villous; pod $\frac{1}{4}$ in. long, not wrinkled, closely conformed to the shining dark seed. Dry hills, Oak Grove, S D Co Je 1882 (Parish 643).—Parish, *Torr cl b* 19:91.

PAPAVER LEMMONI Greene.

"Near *P. Californicum*, but a larger and coarser plant, 1-3 ft. high; corolla twice as large, 2-3 inches broad, apparently of a deeper red, the base of the petals green: capsule broader and merely obovate; stigmas 7-10, their lower half sessile and radiant upon the summit of the capsule, upper half coherent one with another and forming a conical apiculation. Hilly and mountainous region of San Luis Obispo county, California (J. G. Lemmon).—Greene, *Pittonia* 1:168.

SILENA MULTINERVA S. Watson.

"Annual, erect, sparingly branched, glandular-pubescent, about 1° high: leaves linear to linear-oblong, acute, the lowermost narrowly oblanceolate, 1-2' long: inflorescence dichotomously cymose; bracts linear: calyx narrowly ovate, 20-25 nerved, 5-6" long, the acuminate teeth usually p-tipped; petals purplish, scarcely equalling the calyx, without appendages or auricles, emarginate: filaments glabrous, included: capsule nearly sessile, oblong-ovate, included: seeds minute, tuberculate, not crested. Found near Jamul, San Diego County, by C. R. Orcutt, in April, 1885, and on the island of Santa Cruz, California, by T. S. Brandegee, in 1888.—S. Watson, *Proc. Am. Acad.*, xxv. 126-7 (Sept. 25, 1890).

S. conoidea Davidson, *Erythea* 1:58, not L.

VICIA HASSEI S. Watson.

"Often tall: leaflets 3-6 pairs, linear to narrowly oblong, acute or obtuse and apiculate, or more frequently truncate and emarginate or toothed at the apex; stipules semi-sagittate with the rather broad lower lobe usually 2-4-toothed: peduncles 6-15" long, 1-fl. or sometimes remotely 2-fl.: pod more attenuate at each end and short-stipitate, 5-9-ovuled, 9-16" long. On open grassy hills about Los Angeles, California, growing with *V. exigua*; Dr. H. E. Hasse. Also collected at Santa Cruz by Dr. C. L. Anderson, at Benicia by Dr. Bigelow (*V. exigua* var (?) *Californica* Torr. in Pac. Railroad Rep. 4.76), and on Guadalupe Island by Dr. Palmer.—S. Watson, *Proc. Am. Acad.*, xxv. 129-130 (Sept. 25, 1890).

EUPHORBIA SERPYLLIFOLIA Pers.

"Glabrous, prostrate or ascending, dichotomously branching; stems terete, or more or less angled (in the type almost winged); stipules setaceous or lacerate, triangular at the base; leaves short petioled, oblique at the base, blade varying from spatulate to oblong or obovate, apex truncate or retuse and more or less crenulate serrate. Inflorescence solitary or in loose leafy clusters; involucre campanulate, the lobes triangular subulate; glands transverse oblong, more or less cupped in the centre; appendages narrow, 3-4-crenate lobed or nearly entire; stigmas

short, bifid. Capsules smooth, carpels carinate; seeds sharply quadrangular, slightly to manifestly rugose between the angles, the rugae sometimes so obtuse as to make the surface appear shallow pitted."—Millspaugh, Pittonia, 2:83.

Colorado, Oregon, California, Arizona.

Variety *CONSANGUINEA* Boiss.

Differs from the species in having a more erect growth; an obtuse sharply serrate apex to the leaves; lacerate lobes to the involucre; darker and more ovate seeds less sharp on the angles; and more or less red coloration in the stems and leaves."—Millspaugh, Pittonia 2:84.

Northern Lower California (Orcutt); Washington (Suksdorf); Idaho (Greene); Kansas (J. E. Bodin).

Variety *RUGULOSA* Engelman.

"Differs principally in its thickly matted growth; the prolongation of the teeth down the longer side of the leaf; and the turgid very finely rugulose seeds. The type from San Bernardino, Calif., S. B. & W. F. Parish, 1881."—Millspaugh, Pittonia 2:85.

Variety *NEO-MEXICANA* Millsp.

"Erect, glabrous, with acutely angled branches. Differs from the species and var. *consanguinea*, chiefly in its elongated sharply pointed seeds, having the 2 ventral facets concave, and the involucre lobes entire or 2-3 cleft."—Millspaugh, Pittonia 2:84.

Type locality:—plains of the upper Gila river, N. M.

Euphorbia neo-mexicana Greene, Cal ac b 2:55.

EUPHORBIA TOMENTULOSA S. Wat.

"Suffruticose, diffusely much branched, a foot high or less, pubescent throughout with a very fine tomentum; leaves round-ovate or broadly elliptical, somewhat oblique, slightly cordate at base, obtuse, crenulate, shortly petiolate, 2-4 lines long and about equalling the internodes; stipules attenuate: involucre small in small terminal cymes, turbinate, tomentose; lobes narrow, ciliate; glands 4, rounded, the white appendage transversely oblong or rounded; capsule subglabrous, purple, obtusely lobed: seed purplish, irregularly rugose and pitted."—S. Watson, Am ac pr 22:476. Rosario, northern Baja Cal. (Or).

EUPHORBIA DICTYOSPERME F-M.

"Stem stout, 2-3 dm high, 2-4 mm thick, few to several stems from the base, branched; rays 3, several times dichotomously branched, the umbel longer than the main stem; stem leaves obovate spatulate, or cuneate, the lower short petioled and retuse or even orbicordate, the upper rounded at the apex, 8-15 mm wide, 1-3 cm long, almost entire to crenate serrulate; floral lvs ovate elliptical, lower serrulate or crenulate, mostly very obtuse, 6-10 mm wide, 10-15 mm long; in-

volucre broad campanulate; lobes and bracts almost globose, 3 mm in diam, with many short warts on the upper part; styles 1-1.5 mm long, free, bifid almost to the base; seeds ellipsoid lenticular, yellowish brown, 1.8 mm long, 1.3 mm wide, 1 mm thick, or often smaller, the depth of the reticulations much varied, netted, usually prominent and forming large areolae. Southern Washington to Baja, mostly in the interior."—Norton, Mo bot gard R 11:106 t 22-23.

EUPHORBIA PALMERI Engelm.

Many stemmed, 8-11 in. high, 3 mm thick, glaucous, erect; rays 4-5, 3-5 cm long, 2-3 times branched, a few branches below the umbel; sterile branches from the base small and few; stem leaves oblong obovate, 7-17 mm long, 3-10 mm wide, or the lower ones sometimes smaller, and oblanceolate and acute as on the sterile branches, close together and passing into scales below, 5-15 mm apart above; umbel leaves broadly ovate, shorter and 10-15 mm wide; floral leaves broader to subreniform, apiculate, sometimes slightly erose on the apical margin and sometimes subconnate; involucre whitish, 3 mm high, slightly narrower, hirsute about the mouth inside, lobes hirsute or ciliate; glands broad ovate, truncate, yellowish brown, punctate, usually short stipitate and turned up at the inner edge; bracts more or less lobed, hirsute above, adnate to the involucre below; stamens about 15; calyx a distinct disc; styles 1-1.5 mm long, basal third united, bifid above; stigmas capitate; capsule 5 mm high, 5.5 mm long, 1.5 mm wide. Mts. southern and Baja California.

GODETIA PULCHERRIMA Greene.

"Puberulent, slender, erect, 1-3 ft. high; leaves linear, acute at each end, nearly entire; calyx-tube very broad and short, nearly cyathiform; segments partly coherent and turned to one side under the open corolla: petals 1 1/4 in. long, cuneate-obovate, truncate or retuse at the erose summit, lilac and streaked with white veins above, whitish at the base, dotted throughout with minute elongated spots of dark crimson; stamens equal; filaments lilac; anthers white, these reaching scarcely to the middle of the petals: style elongated; stigma-lobes obovoid, purple; capsule linear, 1 in. long or more, distinctly pedicelled, the sides scarcely costate."—Greene, Pitt 2:217. Los An-

geles Co.; Ft. Tejon (Parish n. 1899), "apparently not rare in southern Cal."

HIPPURIS VULGARIS L.

"Springing from a perennial rootstock, with annual, simple, erect stems and whorls of 6-12 or more 1-nerved linear or lanceolate leaves which are more or less decayed (sphacelated) at the tips, and 10-20 mm long by 1-3 mm broad. Stamens with short, thick filaments and comparatively large 2-celled anthers, which dehisce laterally. Fruit oval, or somewhat 4-sided, hollow in the interior, 2 or 3 mm long, stigmas persistent. Common in Arctic America and Canada. It occurs also in Moosehead Lake, Maine (Porter), west to Oregon, and thence to California (Parish) and New Mexico. Mr. Safford sends it from the Straits of Magellan, and it is common in Europe and Central Asia."—Morong, Torr bot cl b 18:231.

PLATYSTIGMA CALIFORNICUM B.-H.

"3-10" high; radical leaves entire, the laminal portion rhombic-ovate, acutish; cauline spatulate to linear, obtuse, sharply denticulate; petals narrowly oblong, 2" long; stamens 6-9. Temecula Canon, north of San Luis Rey, in San Diego county, Cal., March 27, 1885, by the writer."—Greene, Bull. Cal. Acad. Sci., ii. 59 (Mar. 6, 1886).

DRABA CUNEIFOLIA Nutt.

Small (1 or 2 in. high) with small and mostly entire leaves, and glabrous pods on pedicels about a line long. Coast ranges of southern Cal."—S. Watson, Am ac pr 23:256.

ERIOGONUM ORCUTTIANUM S. Wats.

"Of the E. Heermannii group; the very short herbaceous leaf stems from a woody base, and the rigid divaricate branches finely subtomentose-pubescent; leaves scattered, thick, nearly glabrous, broadly ovate or obovate, obtuse, shortly petiolate, $\frac{3}{8}$ " long; bracts ternate, deltoid-subulate, small, subherbaceous; involucre solitary, tubinate-campanulate, subtomentose, nearly 1" long; fl. tomentose, greenish white, 2-3" long, the oblong-obovate lobes of the perianth nearly equal."—S. Watson, Proc. Am. Acad., xx. 371 (Feb. 21, 1885). Shrub, 2' high; Cantillas Canyon, Lower California (H. C. and C. R. Orcutt, August, 1883).

ERIOGONUM MINUTIFLORUM Wats.

"Of the E. Pusillum group; very slender, 6' high or less, diffusely branching, glabrous, excepting the small ovate rosulate leaves which are densely white-tomentose on both sides, becoming less tomentose above; bracts minute; peduncles filiform, divaricately spreading; 3-8" long; involucre very small (1-3" long), broadly turbinate-campanulate, purplish; perianth y., minutely puberulent, very small."—S. Watson, Proc. Am. Acad., xxvii. 125 (July 31, 1891). Colorado desert, San Diego Co., California (Orcutt, April, 1890).

ERIOGONUM VAGANS S. Watson.

S. Watson, Am ac pr 20:370, based on

Oxytheca inermis Watson, Am ac pr 12:273."—Very near *E. hirtiflorum*, Gray, but less diffusely and finely branched, the branches more decumbent, and the fls and akenes 2 or 3 times larger ($\frac{1}{2}$ line long). Both have similar ciliate leaves, unilateral foliaceous bracts, glandular pubescence, villos fls, and obtusely triangular akenes." San Bernardino mts.; Mohave desert.

EMMENANTHE PENDULIFLORA Bth.

California yellow bells; a broad bushy annual from a span to 2 feet high, loaded with broadly bell-shaped pendulous flowers, $\frac{1}{2}$ inch long, of a delicate cream color—the persistent corolla drying and retaining its shape until seed ripens. The general effect of a branch is suggestive of a long spike of the lily of the valley, says one writer. Utah; Lake county, Cal. to Lower California; Arizona.

GILIA ORCUTTH. Parry.

"A span high, slender; leaves only 2 or 3 pairs up to the inflorescence, very small, with filiform divisions; fl. few, in the clusters; tube of the corolla less than $\frac{1}{2}$ " long, rather thick, dilated at summit, hardly longer than the turbinate campanulate throat and limb, its lobes ovate; stamens and style included."—Parry, Proc. Dav. Acad. Natl. Sci. iv. 40 (1884).

GILIA LEPTANTHA Parish.

"Annual; stems slender, much branched, 25-30 cm high, below loosely wooly, becoming glabrous above, beset with numerous tack-shaped glands; lvs mostly basal, 2-3 cm long, the thick midrib having a very narrow marginal blade with several linear cuspidate, alternate tooth-like lobes, the rameal lvs reduced to minute subulate bracts; panicle diffuse; pedicels shorter than the calyx, or rarely much longer; calyx 3 mm long, scarious, the green midribs prolonged as short, subulate, divergent teeth; cor 10-12 mm long, purple, the slender tube moderately dilated at the yellow throat; fl at the sinuses of the cor, and surpassing its oblong lobes; capsule ovoid, shorter than the calyx-teeth; seeds w, 2 mm long, minutely roughened."—Parish, Zoe 5:74. Sber mts. (

ERIODICTYON CRASSIFOLIUM Benth.

"Densely tomentose-villous, the hairs straight; corolla salver-form, twice as long as the calyx, densely villous outside; seed finely about 10-striate, with innumerable minute transverse lines."—Greene, Bull. Cal. Acad. Sci., 1. 201.

MONARDELLA MACRATHA A. Gray.

"Robust, stems 1-2 ft long; pubescence sparse and spreading; internodes elongated; the larger lvs 9-14 lines long and 8 lines wide; cor deep red, tube somewhat trumpet-shaped, apparently glabrous but short-pubescent under a strong lens; stamens exerted beyond the cor.-lobes."—Ha U 110, 109, 111. Palomar, Cuyamaca! San Bernardino Co (Parish 4578).

Variety ARIDA Hall.

"Very similar to var. *pinetorum*, the stems always short and the foliage congested; lvs even more reduced, the largest only 5 lines long while the majority are only 1 or 2 lines long; cor as in var. *pinetorum* but still more slender and under 1 in. in length."—Ha U 111 t 10.

Variety NANA A. Gray.

Varietella nana A. GRAY, Am ac pr 11:101.

Differs from the type in the pale rose-colored cor, only slightly exerted from the calyx tube. Cuyamaca! Ha U 111 (not Jac).

Variety PINETORUM Hall.

"Stems shorter than in var. *tenuiflora*, ashy-pubescent, the hairs short and dense; internodes sometimes short with as many as 5 pairs of lvs crowded on a stem only 1½ in. long, sometimes more elongated; lvs ovate to elliptic, much reduced in size, the largest under 6 lines in length; cor very slender, pale y to almost w, 1-1¼ in. long, conspicuously pubescent; stamens not exerted beyond the corlobes."—Ha U 110 t 12.

Variety TENUIFLORA Gray.

"Stems about a foot long, more pubescent than in the type, the pubescence not appressed; internodes long; lvs ovate, the larger 10-14 lines long; cor pale rose or yellowish, the tube slender and more pubescent, 1¼-1½ in. long; stamens not exerted beyond the corlobes."—Ha U 110 t 11.

PHACELIA AFFINIS A. Gray.

Viscid, pubescent, less than a foot high, leaves pinnately parted mostly into linear-oblong entire or incisely toothed lobes; fls short pedicelled, less crowded or sparse in the fruiting spikes; corolla rotate-campanulate, small, light blue, a little exceeding the calyx; capsule oblong, shorter than the spatulate-dilated fructiferous sepals, 20-30-seeded; seeds oval-oblong, strongly favose-reticulated between the corrugations. Mts Baja! *Phacelia rugulosa* Lemmon, pitt 1:175.

ATRIPLEX JULACEA S. Watson.

"Perennial, the slender woody stems procumbent, and the numerous short slender branchlets ament-like from the crowding of the close leafy undeveloped buds, scurfy-pubescent; leaves small, ovate-triangular, sagittate and clasping, thick, the larger cauline 2 lines long, those upon the branchlets scarcely ½ line long and sulcate from the folding back of the margins; fruit mostly solitary in the axils, 2 or 2½ lines long, the ovate marginless rigid bracts united to above the middle, and densely covered with irregular corky appendages."—S. Watson. Am ac pr 20:370. Santos!

OXYTHECA CARYOPHYLLOIDES Pry.

"Plant low (4-6 inches), with short simple primary stem, or branching from the base, upper stems prolonged into numerous slender, intricate branches, smooth or glandular-pubescent, with irregular patches or dark-colored glands on the upper stem and

involucres; leaves radical, obovate, spatulate, occasionally emarginate, tapering into a petiole expanding at its clasping base; cauline bracts ternate with oblong divisions, nearly equal, ½ line long, shortly acuminate; involucres (except in the lower axils) sessile, 5-parted to near the base, divisions nearly equal, 1½ lines long, narrowly ovate with strong mid-nerve prolonged into an awn about one-third its length; fl, 2-3 in each involucre, shortly pedicelled and with very minute bractlets; perianth short, greenish, obscurely lobed, closely embracing the matured akenes; akenes broadly triangular, smooth, with rounded edges; embryo with curved radicle and orbicular accumbent cotyledons."—Parry, Dav ac pr 3:2 (28 F 1882). Mts. San Bernardino county, Cal, Ag 1881 (Parish 1097).

OXYTHECA EMARGINATA Hall

"Slender annual, 2 5 in. high, more or less glandular-pubescent; up to the involucres, the lvs and bracts sparsely strigose-pubescent, the whole herbage and especially the involucres early turning red; lvs clustered near base of stem, narrow, oblanceolate, emarginate, 4-8 lines long; involucres obpyramidal, 3 lines high, shallowly 5-lobed, each lobe with a narrow w membranous margin and tipped with an awn a line or less in length; fls usually 4, on short pedicels, slightly exerted, externally pubescent on the lower half; segments 6, distinct to the base, oblanceolate, fimbriate above into slender divisions, 1-three-fourths lines long; stamens 9; akene triangular, enclosed by the withering-persistent perianth."—Ha U 75.

OXYTHECA LUTEOLA Parry.

"Prostrate (3-10 in. broad), dichotomously branched from the base, smooth, or with scattered pubescence on the slender branches; lvs orbicular to oblong-obovate, 1½-2 lines in width, with slender petioles 3 or 4 times as long, covered below with dense wooly pubescence, smoother above, the cauline in 1-sided pairs (the third at each node obsolete or nearly so), one or both passing into linear-aciculate bracts; involucres sessile, 5-parted, the spreading unequal divisions resembling the bracts, the longer 2-5 lines in length (including the slender awn) and about equaling the bracts; fls pubescent, crowded (7-15), developing centripetally, the short pedicel jointed at the base of the perianth and subtended by 2 bractlets, 1 linear, the other broader and scarious; perianth 6-cleft nearly to the middle, greenish-y; fl short; anthers oval; styles short, with spreading capitate stigmas; akenes smooth; cotyledons orbicular, accumbent to the longer radicle."—Parry, Terr cl b 10:23. Lancaster, Cal. (Parry).

HETEROMELES ARBUTIFOLIA Roem.

The California toyon, or tollon, is a handsome evergreen shrub found throughout the state, better known as the Christmas berry, or California holly. The scarlet berries are borne in the greatest profusion, and, ripening at Christmas time, are extensively used in decorating. The berries are said to have formed an important article of food with the Indians, and school children frequently eat them; but, so far as known, they are not otherwise utilized. They are not unpleasant to the palate, having a healthy, bitterish by-taste. The toyon is more useful as a hedge plant, doubtless, than for its fruit. It ranks high as an ornamental evergreen, the dark foliage forming a beautiful setting for the panicles of white flowers. It appears in many horticultural catalogues under the name of *Photinia arbutifolia*.

ERIOGONUM TAXIFOLIUM Greene.

"Shrubby and apparently diffuse, but low, the slender branches tomentose-canescenscent: leaves numerous, fascicled, narrowly lanceolate, the margins closely revolute, only 3-5 lines long, glabrate: involucre a line long, few fl'd, arranged in loose virgate somewhat arcuate terminal sessile spikes 2-5 in. long: fls white, a line long; perianth-lobes similar, spatulate-oblong, obtuse."—Greene, pitt 1:267. Cedros Island, Greene, pitt 2:295.—"A much larger and almost heath-like shrubby plant, copiously floriferous," Fish's ranch, San Diego Co., Cal. (Dunn).

CHORIZANTHE ORCUTIANA Parry.

"Decumbent, 2-6" broad, appressed pubescent throughout, densely branched from the base; radical leaves narrowly lanceolate, obtuse, tapering to a slender petiole; cauline leaves smaller, sessile, opposite, connate, obtuse; upper involucre bracts broadly triangular, scarious, acuminate; involucre in the lower forks and loosely scattered on the slender branches, sharply triangular, with short chartaceous tube (not corrugated); divisions 3, nearly equal, not conspicuously foliaceous, broadly divergent, with recurved uncinat awns; fl. partly exsert, pedicellate; perianth as long as the pedicel, tube narrowly turbinate, segments equal, narrowly spatulate, with long ciliate hairs externally, extending beyond the segments in an irregular fringe; stamens 9 (or less), with short filaments on the throat; anthers dull reddish, orbicular; stigmas short, recurved; akene narrowly triangular; embryo 1" in length,

with linear cotyledons and slender radicle."—Parry, Proc. Dav. Acad. Natl. Sci., iv. 54-5 (1884).

Pt Loma and mesas, SD (Or).

ERIOGONUM GIGANTEUM S. Watson.

"A stout and tall shrubby perennial, bearing its leaves at the ends of the branches, which are tomentose or glabrate: leaves oblong, truncate or subtruncate at base, obtuse, 2-4 in. long including the stout petiole, pinnately nerved, densely tomentose, white and reticulately veined beneath, greener above: peduncle stout, bearing a broad dense dichotomously branched tomentose cyme, the foliaceous bracts lanceolate to linear: involucre sessile (the alar pedicellate), narrowly campanulate, densely tomentose, nearly a line long, cleft to the middle, the teeth lanceolate and acute; fls small, tomentose, whitish, the oblong lobes green-nerved."—S. Watson, Am ac pr 20:371. Catalina Island (W. S Lyon).

VARIETY FORMOSUM K. Brandegee.

"Branching from the base, rarely arborescent; leaves densely white-tomentose on both sides, less so above with age, oblong-lanceolate or oblanceolate, 5-8 cm long, 13-20 mm wide, on stout petioles 2-4 cm long; cyme larger, looser, and more foliaceous than the type; pedicels much longer and exserted. San Clemente Island."—K. Brandegee, Erythra 4:79.

ERIOGONUM DAVIDSONII Greene.

"Annual, slender, erect, about a foot high: leaves in a rosulate tuft at base of stem, round-obovate to subreniform, abruptly narrowed to a long stoutish channeled petiole, densely lanate-tomentose on both faces, but especially beneath: stem glabrous and glaucescent throughout, parted below the middle into few and slender virgate branches: involucre sessile along the branches, remote, rather few-fl'd and narrow, turbinate or almost prismatic, a line long, rather prominently 5-toothed: perianth pinkish or white, $\frac{3}{4}$ line long; outer sepals spatulate-obovate, the inner narrower, all more or less retuse. Mts. of Los Angeles and San Diego counties, Cal.: the type specimens from Wilson Creek, Dr. A. Davidson."—Greene, pitt 2:295.

ENOGONUM BLOOMERI Parish.

"Virgatae; perennial, with leafy caudex; leaves densely white-tomentose,

oval, ovate or obovate; scapiform peduncles numerous, foot high, erect, repeatedly di- and tri-chotomously branched; lower bracts foliaceous; involucre distant, 2 lines high, teeth subacute, few (3-15) fl'd; fls 4 lines high, attenuate at base, glabrous, yellowish; filament hairy at base; achene glabrous, 2 lines long, attenuate above."—Parish, *Erythea* 6:87. Mts., southern Calif., 4,000-7,000 ft. alt.

LASTARRIÆA CHILENSIS Remy.

"Involucral whorls closely adherent, and similar to the external cauline bracts; perianth sharply triangular, coriaceous, segments unequal, with prolonged uncinatè awns."—Parry, Proc. Dav. Acad. Natl. Sci., v. 36 (Nov. 1, 1886).

Pacific Coast of North and So Am.

MIMULUS CLEVELANDI Brandegee.

"Perennial, suffrutescent at base, 3-6 dm. high, glandular-pubescent throughout; stems many from the base, sparingly branched above; leaves lanceolate, serrate, 3-7 cm. long, narrowing to the clasping base, in age revolute on the margins; flowers shortly pedicellate; calyx 2 cm. long, contracted above the ovary, the upper and longer portion curved and spreading, the lanceolate, somewhat unequal teeth $\frac{1}{2}$ the length of the tube; corolla golden yellow, nearly twice the length of the calyx, with gradually dilated throat and widely spreading nearly equal lips; styles stout, minutely and densely glandular; stigma tubular-peltate; mature capsule 10-12 mm. long, nearly quadrangular, tapering slightly toward the apex, opening to the base by the upper suture, the lower separating for only a short distance from the tip, and each valve splitting at the tip for nearly the same distance as the lower suture; placentæ separate, as in *M. glutinosus*; seeds foveolate, apiculate at both ends."—T. S. Brandegee, Garden and Forest, 8:134, f 20 (3 Ap 1895).

South side of Cuyamaca peak, San Diego county, California.

ALLIUM CRISPUM Greene.

"Bulb unknown: leaves several, linear, shorter than the scapes: scape 5-8 in. high, stout, gradually thickened above; spathe 1-valved, cleft to the middle into 2 ovate, abruptly acute lobes, these eventually torn apart to the base by the expanding umbed: pedicels 12-25, stoutish, an inch long; perianth light purple, 3-4 lines long, the outer segments oblong-ovate, plane, entire, the inner lanceolate, canalliculate, their margins minutely but strongly undulate; stamens broadly subulate, rather more than one half as long as the perianth; ovary not crested. Near El Paso de Robles, San Luis Obispo, Cal (Parry)."—Greene, *Pittonia* 1:165.

ALLIUM DICHLAMYDEUM Greene.

"Vegetative characters of *A. peninsulare*, but the plant only half as large. perianth deep rose p, 5 lines long; outer segments oblong, abruptly acute, spread-

ing, the inner lanceolate-oblong, erect and thus apart from the outer, their tips slightly spreading, all entire: filaments subulate, one-third shorter than the perianth; ovary crested."—Greene, *Pittonia* 1:66. "Common on hills along the coast of California;" San F.

ALLIUM PENINSULARE Lemmon.

"Bulb small, broadly ovate, not deep-seated: leaves few, ligulate, shorter than the scapes, the latter 2 ft. high and very stout, conspicuously striate and glaucous: spathe monophyllous, acuminately 2-lobed, at length torn asunder to the base on opposite sides by the expanding pedicels: umbel 25-35-flowered, the pedicels 2 inches long or somewhat less: perianth deep red-purple, the ovate-oblong and slenderly acuminate segments 6 or 7 lines long: filaments scarcely half as long as the perianth-segments, triangularly dilated below: ovary scarcely crested. Las Cruces canyon, near San Rafael valley, 42 miles east of Ensenada, Lower California, 4 May, 1888, J. G. Lemmon."—Greene, *Pittonia* 1:165 (15 Je 1888).

MUILLA CORONATA Greene.

"Corm $\frac{1}{2}$ - $\frac{3}{4}$ inch thick, an inch below the surface of the ground: scapes very slender throughout, 2-4 inches high: leaves 2 or 3 only, narrowly linear, semiterete, twice the length of the scapes, the margins retrorsely scarabrous: umbels 2-4-bracted, 3-10-flowered: perianth rotate, its segments $1\frac{1}{4}$ -2 lines long, exteriorly green with bluish margins, pale blue or nearly white within: filaments greatly dilated, hyaline-petaloid, cuneate-oblong in outline, obtuse, retuse or almost obovate above: anthers subsagittate, erect, fixed by the middle or a little above it to an abrupt incurved median acumination of the broad filament. Mohave Desert (C. C. Parry)."—Greene, *Pittonia* 1:165.

PAEONIA BROWNII Dougl.

Restricted in its distribution (Greene, Garden and Forest 3:356) to Southern and Lower California. Glabrous but not glaucous, leaves twice or thrice as large as in *P. brownii*, of rounded and pedate general outline. Grows in dry, rocky soil, from a few hundred, to two or three thousand feet altitude, where it is subjected to a light fall of snow (Orcutt W 7:215). Without much floral beauty, though the luxuriant foliage makes it useful in some situations.

EUPHORBIA ARENICOLA Parish.

"Anisophylli; annual, with prostrate

stems; leaves distant, thin, glaucous, ovate-lanceolate, entire, 2 mm long; stipules short, setaceous, entire, or few-cleft; involucre solitary, broadly campanulate, ciliate, 2-3 mm long; glands 4, sessile, emarginate and concave, yellow; capsule depressed-globular, 2 mm long and as broad, strongly deflexed; seed ovate, smooth, ash-colored."—Parish, *Erythra* 7:93. Camp Cady, Mohave desert (Parish 1370), distributed as *E. cuspidata* Engelm M S.

LESQUERELLA PALMERI S. Watson.

"Pubescence dense, stellate-lepidote; caudex simple, apparently biennial, the simple stems 1° high or more; basal leaves narrowly oblanceolate, repand, the cauline narrower and mostly entire; petals spatulate, 3" long; pods pubescent, ovate-globose to broadly ellipsoidal, erect on long spreading or ascending pedicels; style as long as the pod; cells 2-4-ovuled. Arizona (Palmer, 1872); Lower California (C. R. Orcutt, 1884)."—S. Watson, *Proc. Am. Acad.*, xxlii. 255 (May 29, 1888).

CALAMINTHA MIMULOIDES Benth.

"Herbaceous, 50-60 cm high, viscidly hirsute, fragrant; leaves thin, ovate, 2-3 cm long, coarsely toothed; fls usually 3 in each axil, on slender pedicels, leafy-bracted at base; calyx tubular, 7 mm long, 13-nerved, obscurely bilabiate, the cuspidate teeth nearly equal; corolla dull red, sparsely villous, tubular, enlarging in the throat but not gibbous, 4 cm long, bilabiate; lips straight, 5 mm long, the upper deeply 2-lobed, villous within, the lower more deeply 3-lobed; filaments didynamous, the upper pair higher inserted, convergent, included under the upper lip, all antheriferous; style exsert, its branches unequal; ovary on a short columnar gynobase; nutlets all 4 usually maturing, globose, light colored, perpendicularly veined."—Parish, *Erythra* 7:96. Near Acton, Los Angeles Co., Cal. (Hasse), 4,000 ft. alt., head of Cottonwood canon.

ROSA CALIFORNICA C. & S.

Spines stout, straight or recurved; leaflets obtuse at both ends, often villous, as also the pedicel and receptacle: fruit ovate, with a prominent neck. Oregon to Baja Cal.

Variety **GLABRATA** Parish.

"Entirely glabrous, except the inside

of the calyx-lobes, not glandular; stems slender, prickles approximate, slender, straight, or nearly so; leaves on mature wood crowded, leaflets 3-5. $\frac{1}{2}$ - $\frac{3}{4}$ in. long, on young shoots more distant, leaflets about 7, inch or less long; corymbs 1-3 fl'd, fls less than inch in diameter." Parish, *Erythra* 6:88. Desert side of San Bernardino Mts., Cal.

IRIS HARTWEGII Baker.

"Root-stock slender; stems distant, or few-clustered; leaves 3-4 lines wide, the lowest somewhat exceeding the stems, these about 1 ft. high, leafy; bracts distant; fls 1-3, light blue with darker veins; tube short; outer segments $2\frac{1}{2}$ in. long, the ovate blade nearly 1 in. wide, narrowed into a wide claw; inner segments nearly as long, lanceolate-linear; anthers $\frac{3}{4}$ in. long, on nearly as long filaments; styles with divergent foliaceous crests $\frac{1}{2}$ in. long; capsule 1 in. high, oblong, obtusely 3-angled; seeds cubical or angled, flattened, wrinkled."—Parish, *Erythra* 6:86. Mts. of southern California, distributed as *I. Parishii* Foster M S.

MIRABILIS ASPERA Greene.

"Stout, low, scabrous-hispidulous and viscid throughout; the somewhat fleshy leaves cordate-ovate, obtusish, with prominent white midvein and transverse veins; campanulate involucre 5-toothed, the teeth triangular: fls apparently solitary in the involucre, red-purple: fruit globose, dark olive-green marked by 10 whitish longitudinal striae, smooth, but under a lens faintly rugulose transversely between the striae."—Greene, *Erythra* 4:67-8. Type: Parish 3757. "Herbaceous throughout."

ABRONIA VILLOSA S. Watson.

"Pubescence more or less densely villous, subglandular, spreading; stems weak and slender; leaves $\frac{1}{4}$ -1" long, oblong or ovate, obtuse or acutish, attenuate into a slender petiole; heads 5-10-flowered; involucre scales narrowly lanceolate, log-acuminate, 3-4" long; fl. pink, the lobes obovate with a deep sinus; fr. with a firm body, strongly reticulate-pitted, the 3-5 broad wings consisting of a simple lamina, usually truncate above. Nearest to *A. umbellata*, Arizona (Wheeler)."—S. Watson, *Amer. Natl.*, vii. 6 (May 1873). Mohave and CD; Utah (Parry).

POLYGONUM FUSIFORME Greene.

"Perennial, the very stout geniculate stems decumbent or assurgent, 3-6 ft.

long, dark red, the internodes $2\frac{1}{2}$ -4 inches long and fusiform; leaves narrowly lanceolate, acuminate, 3-5 inches long, glabrous, minutely punctate; ochreae very thin, delicately striate, sparsely strigose-pubescent along the lines and ciliate at summit; peduncles terminal, short, stoutish; bearing 5 or more paniculately disposed short spikes, these slender and few-fl'd: calyx pinkish, not punctate, only $\frac{3}{4}$ line long, 4-parted, compressed, the 2 outer lobes only $\frac{1}{2}$ as broad as the 2 inner and cucullate, or at least strongly ventricose at summit: stamens 4 or 5, small, included: styles 2; achenes much flattened, broadly ovate, tapering abruptly to a stout beak-like apiculation, very dark brown, smooth and shining."—Greene, *Erythraea* 1:259. Near the Needles, Calif., from the moist banks of the Colorado.

CALLITRICHE LONGIPEDUNCULATA

"With thread-like stems; leaves all spatulate or oblanceolate, 3-8 mm long, the blades 1-2 mm broad, rounded at the apex, and sloping into narrowly margined petioles often longer than themselves, dotted with stellate scales, 3-nerved, the lateral nerves running into each other very near the apical margin. Perigonal sacs longer than the fruit. Styles much longer than the fruit, erect, deciduous. Peduncles lengthening to 10-25 cm at maturity, and frequently 2 or 3 proceeding from the same axil, or a little below it. Fruit thick, nearly orbicular, three-fifths to 1 mm long by about four-fifths mm in breadth, minutely emarginate, the lobes divergent, with a deep intervening groove, obtusely margined, and with or without a very narrow wing."—Morong, *Torrey bot cl b* 18:236.

Mesas, San Diego, California (Orcutt, 1884), type.

ASTRAGALUS ORCUTTIANUS S. Wats.

"Stems numerous, slender, decumbent, 1° long, sparingly strigose-pubescent; leaflets 8-10 pairs, rounded, 1-2" broad; peduncles shorter than the leaves, 2-3" long in fr.; raceme loose, few-fl.: calyx campanulate, 2" long, the teeth mostly equalling the tube; pod linear-falcate, ascending, coriaceous, attenuate to a stipe shorter than the calyx, with a dorsal groove and acute ventral suture, 2-celled by the intrusion of the dorsal suture, 9" long. Allied to *A. Arizonicus*, rather peculiar in habit, the small round leaflets upon an elongated rachis exceeding the raceme. In *Canillas Canon* ("Tantillas" of Palmer), Lower California, by C. R. Orcutt, August, 1883."—S. Watson, *Proc. Am. Acad.*, xx. 361 (Feb. 21, 1885).

ERIOGONUM FOLIOSUM S. Watson.

"Of the *E. vimineum* group: annual, branching from the base, floccose-tomen-

tose, the branches sparse and spreading; leaves ovate, cordate or cuneate at base, obtuse or acute, undulate, tomentose beneath, 3-9" long besides the petiole, radical, and in the axils of the subulate bracts: involucre broadly turbinate, cleft nearly to the middle, green, 1" long; fl. $\frac{1}{4}$ " long, the segments white or pinkish with a green midvein."—S. Watson, *Proc. Am. Acad.*, xx. 371-2 (Feb. 21, 1885). *Canillas*, Lower California (Palmer, 1875; Orcutt, 1882).

ERIOGONUM DESERTICOLA S. Wats. "Apparently an annual of the *E. Pusillum* group (base and foliage unknown) tall, several times dichotomously branched, white-tomentose, becoming mostly glabrous and yellowish green; bracts all small and deltoid; involucre shortly pedicellate or subsessile toward the end of the branches, erect or spreading, turbinate-campanulate, 1" long; perianth villous, the elliptical segments yellow with greenish or reddish midveins, 1-1 $\frac{1}{2}$ " long. In the southwestern part of the Colorado desert, San Diego Co., California; C. R. Orcutt, November, 1890 (n. 2189)."—S. Watson, *Proc. Am. Acad.* xxvi. 125-6 (July 31, 1891).

SALICORNIA SUBTERMINALIS Parish.

"From running root-stalks, apparently herbaceous, compact, 1 ft. high; spikes 1-2 in. long, of 3-5 enlarged fertile bracts, terminated by 5-10 slender, infertile ones, these sometimes with pairs of lateral branches of 2-3 bracts; utricle and seed smooth."—Parish, *Erythraea* 6:87. In strongly alkaline soil, Riverside Co., Cal.

MIMULUS PARISHII Greene.

"Stout, 2° high, villous and very slimy; leaves ovate-lanceolate, erose-dentate, 1-2" long, the uppermost clasping; pedicels shorter than the leaves; calyx-teeth triangular, acute, nearly equal; corolla pale rose-red, only the small, nearly regular limb exerted from the calyx; seed small oblong, with a loose, wrinkled coat."—Greene, *Bull. Cal. Acad. Sci.*, 1. 108-9 (Mar. 7, 1895).

Mohave (Parish 1165) L A Co (Nevin); Baja!

FRANKENIA GRANDIFOLIA C. & S.

Fls pink; calyx-tube furrowed. San Francisco to Mexico; Arizona; Nevada; saline soil.

FRANKENIA PALMERI S. Watson.

Shrub, a ft. high, fls w. San Diego, south.

SIMMONDSIA CALIFORNICA Nutt.

The goat-nut, or deer-nut, is an acorn-like fruit, edible and pleasant to the taste, produced by a low, oval-formed, rigid shrub, in profusion, under all conditions of soil from the sea coast to the borders of the desert to eastern Arizona. The Indians at the Catalina mission, in Lower California, claim

not to eat them, and I find no record of their ever having been utilized for food. It occurs on Cedros island, and the mainland opposite to the gulf shores.

Diguet, Rev d Cci nat Appliquees (O 1895) 686-6. "Le Jojoba." Reviewed in Erythea 4:32-3.

Shrub 1½-6 ft high. Leaves persistent through the most protracted droughts, fls only when rain occurs, fruit often abortive near the coast or when water fails. The fresh seeds are eaten like almonds in Lower California (according to Diguet); when dried by fire and ground they are used as a beverage, in the form of tablets made up with sugar, or as a simple infusion; when fire-dried contains 48.3 per cent of fatty matter; the oil solidifies at 5 degrees and is suitable for food of good quality, not turning rancid; is prepared by ebullition with water; recommended for culture in the desert regions of northern Africa (Diguet).

LOPHOTOCARPUS CALIFORNICUS Smith.

"Submerged aquatic, 3-4 dm high, with weak, slender, ascending petioles 3-4 dm long. Blades hastate or sagittate, the middle lobes 4-8 cm long, lanceolate, acute, 5-nerved, the basal lobes widely divergent, ¼1½ as wide as the middle one, and shorter than or equalling it in length, linear-acuminate. Scape slender, nearly as long as the petioles, bearing 3-5 verticils of fls, those of the 2 or 3 lowermost fertile. Bracts of the fertile whorls 6-7 mm long, those of the upper staminate verticils 1 cm long. Pedicels of the fertile florets 1-2 cm long, equalling the staminate. Sepals orbicular, 6-9 mm long. Verticils about the length of the fertile pedicels apart. Fruiting head 10-12 mm in diam. Immature achenia obconate, 1.5 mm long, with a minute horizontal beak, broadly winged on each margin."—Smith, Mo bot gard r 11:146 t 54 (27 S 1889). Coyote creek, Los Angeles Co. (Parish 1136). Stockton (J. A. Sanford).

Sagittaria calycina Davidson, Pl LA 18, not Engelm.

GILIA MACULATA Parish.

"Inch high, diffusely branched from the base, sparsely pubescent; lvs entire, 2 lines long, broadly linear, thick and strongly carinate, obtuse, acerose; earlier fls nearly sessile in the lower forks, later ones crowded above; calyx-lobes nearly equal, much like the lvs, but with a narrow hyaline margin, ciliate; the narrowly campanulate tube of the cor not exceeding the calyx, the limb rotate, 2 lines wide; fil inserted on the base of

the tube; anthers exerted; seeds few."—Parish, Torr cl b 19:93. Agua Caliente, CD (W. G. Wright).

Genus DUDLEYA Britton & Rose.

"Cauliscent or acaulescent perennials with flat linear to ovate basal lvs, and yellow, orange, red or rarely white, fls mostly in panicles. Lvs of the fl'ng branches usually much shorter and relatively broader than the basal ones, sessile, or clasping. Calyx conspicuous, 5-lobed, the lobes erect, linear-lanceolate to ovate, obtuse to acuminate. Cor nearly cylindrical, or somewhat angled, the segments united below the middle, erect, or their tips somewhat spreading, obtuse to acuminate. Stamens twice as many as the calyx-lobes, distinct. Carpels erect, many-seeded."—Britton & Rose, N Y bot gard b 3:12. Named in honor of William R. Dudley. Type species, *Echeveria lanceolata* Nuttall.

DUDLEYA PULVERULENTA.

Britton & Rose, NY bot gard b 3:13, based on

"*Echeveria pulverulenta* (Nutt. ! mss.): lvs spatulate, acuminate, very pulverulent; those of the leafy stem gradually diminishing to bracts, broadly cordate, clasping; panicle dichotomous, fastigiate; the pedicels rather longer than the (pale scarlet) fls; calyx about half the length of the connivent petals. St. Diego, California. Fl'ng the second year in May. Stem 2-3 ft high, leafy. Pedicels nodding. Petals pale scarlet or coral-color. Carpels linear-lanceolate. Seeds numerous, subulate." Nuttall.—Torr & Gray, Fl N Am 1:560 (1840).

?*Cotyledon pulverulenta* Baker in Saund Refug Bot 1:t 66 (1869).

?*Echeveria argentea* Lem, Ill Hort 10: 78 (1863).

DUDLEYA LANCEOLATA.

Britton & Rose, NY bot gard b 3:23, based on

"*Echeveria lanceolata* (Nutt. ! mss.): rosulate radical lvs lanceolate, acuminate, a little pulverulent; stem scariform, with small and distant clasping cordate lvs; panicle fastigiate, dichotomous; the fls (red and yellow) on very short pedicels; segments of the calyx ovate, obtuse, much shorter than the petals. St. Diego, California, with (*E. pulverulenta*). A smaller plant."—Torr & Gray, Fl N Am 1:561 (1840).

Cotyledon lanceolata Benth & Hook, Brewer & Watson, Bot Cal 1:211 (1876).

Genus HASSEANTHUS Rose.

"Stems several arising from small globose or oblong corms. Basal lvs linear, terete, narrowed below into flattened petioles; stem-lvs narrowly ovate, tergid but somewhat flattened. Calyx 5-lobed. Cor-segments united at base into a short tube, yellow or white changing to purple. Carpels 5, united at base (?), widely spreading. Named in honor of Dr. H. E. Hasse. Type species, *Sedum variegatum* S Wats."—Rose, NY bot gard b 3:37.

HASSEANTHUS BLOCHMANAE.

Rose, NY bot gard b 3:37, based on *Sedum Blochmanae* Eastw, Cal ac pr, sr 2, 6:422 t 53 (1896).

Santa Barbara Co., Cal.

HASSEANTHUS VARIEGATUS.

Rose, NY bot gard b 3:37, based on *Sedum variegatum* S. Wats, Am ac pr 11: 137 (1876).

esa.Ms, San Diego, California.

HASSEANTHUS ELONGATUS.

"Resembling *H. variegatus*, but with long slender stems and cyme-branches, linear elongated lvs, oblong calyx-lobes, and bright yellow cor; the lvs not at all variegated."—Rose, NY bot gard b 3:37, Orange Co., Cal. on San Joaquin hills (L. R. Abrams).

HASSEANTHUS MULTICAULIS.

"Perennial by an oblong corm 2-3 cm long. Stems 2-5, rather stout, 1-1.5) cm high, variegated, glabrous, not at all glaucous; basal lvs 3-4 cm long, terete, acute; stem-lvs 1-2.5 cm long, ovate-oblong, acute or acuminate, turgid or somewhat flattened; inflorescence of several secund, many-fl'd racemes; fls subsessile; calyx-lobes ovate, obtuse; fl-buds pinkish, obtuse; cor-segments widely spreading above the middle, pale yellow tinged with red, 7-8 mm long, slightly united at base; stamens 10, borne on base of cor-segments; carpels widely spreading (?) in age."—Rose, NY bot gard b 3: 38. LA. Co. (Hasse).

Genus STYLOPHYLLUM Britton & Rose

"Perennials with more or less branched rootstocks; basal lvs linear, elongated, terete, or flattened but always narrow, sometimes abruptly widened below into a broad clasping base; fl'ng stems with long sessile lvs not clasping at base. Calyx 5-lobed, lobes ovate, equal, small. Cor campanulate, not angled, white, red or yellowish, its lobes broad, thin, and spreading, united below into a tube. Stamens 10, borne on the cor-tube. Carpels 5, united below, generally strongly spreading as in *Sedum*."—Britton & Rose, NY bot gard b 3:33. Type, *Cotyledon edulis* Nutt.

STYLOPHYLLUM VISCIDUM.

Britton & Rose, NY bot gard b 3:33, based on

Cotyledon viscida S. Watson, Am ac pr 17:372 (1882). Near Oceanside and San Juan, Cal. (Nevin, Orcutt). Readily distinguished by its viscid foliage.

STYLOPHYLLUM VIRENS.

Rose, NY bot gard b 3:34.

San Clemente Island (Blanche Trask).

STYL. ALBIDUM Rose.

San Clemente Island (T. S. Brandege).

STYL. TRASKAE Rose.

Santa Barbara Island (Blanche Trask).

STYL. INSULARE Rose.

"Stems very thick and woody, 6-8 cm in diam, crowned by a rosette of spreading lvs, the old lvs somewhat persistent; lvs 10-15 cm long, 1-1.5 cm broad above the base, 2 cm broad at base, fleshy, much flattened except toward the apex, acute, more or less glaucous especially when young; fl'ng branch stout, purplish, 3-4 dm long; inflorescence paniculately branched; primary branches short, nearly equal, 2 or 3 times dichotomous, ultimate branches short and few-fl'd; calyx 3 mm long, lobes twice as long as the tube, ovate, acute; cor long reddish, somewhat campanulate, its tube about the length of the carpels; carpels united at base, widely spreading."—Rose, NY

bot gard b 3:34. Catalina (Blanche Trask). STYL. HASSEI Rose.

"Caudex elongated, sometimes about 3 dm long, 2-3 cm in diam, somewhat branching, covered with the old persistent lvs, crowned with a dense erect rosette; lvs very glaucous, linear, not tapering, except toward the apex, 10 cm long or less, 1 cm wide or less, thick but flattened below, terete and obtuse toward apex; fl'ng stems weak, their primary branches 1-2-dichotomous, the ultimate branches slender and many-fl'd; calyx small, glaucous, 4 mm long, cleft to or below the middle, its lobes ovate, acute; cor-tube about 1 mm long; carpels widely spreading in age."—Rose, NY bot gard b 3:35. Catalina (H. E. Hasse). STYL. SEMITERES Rose.

"At first caulescent but old plants decidedly caulescent and branching; lvs numerous, closely set on the caudex, linear, semiterete, 10 cm or so long, often becoming reddish, acute; fl'ng branches about 20 cm long, their lvs ovate, turgid, acute, lowest ones opposite; inflorescence a pair of secund racemes; pedicels very short (1-3 mm long); calyx 5 mm long, its lobes 4 mm long, ovate, acute; cor 9 mm long, its segments united below for about 2 mm, oblong, obtuse, yellowish but tinged with red; stamens borne on the cor, all shorter than the cor but these alternating with the lobes shorter than the others; carpels somewhat spreading."—Rose, NY bot gard b 3:35. Habitat? (probably OD or Baja). STYL. ATTENUATUM B & R.

Cotyledon attenuata S. Watson, Am ac pr 22:472 (1887).

*Near San Quintin, Baja (Or).

STYLOPHYLLUM PARISHII.

"Stems not as thick as in *S. edule*, somewhat glaucous; fl'ng branches 2-3 dm high, rather weak, glabrous; inflorescence paniculate; pedicels 8 mm long or less; calyx 5-parted, the lobes 4 mm long, broadly oblong with rounded apex; cor-segments twice as long as the calyx, united at the base into a tube 2 mm long, yellowish (?); stamens 10, borne on the cor at the top of the tube; carpels united only near the base."—Britton, NY bot gard b 3:37. Pala, SD Co. (Parish Bros).

STYLOPHYLLUM EDULE.

Britton and Rose, NY bot gard b 3:36, based on

"*Sedum edule* (Nutt.) Mss.) : 'caespitose; lvs terete, subulate at the apex, dilated at the base, glaucous; scape paniculately branched above, the branches cymose; fls nearly sessile, decandrous; pet lanceolate, acute, about twice the length of the lanceolate sep. Edges of rocks and ravines, St. Diego, California. Scapes a ft high, with a few short and distant subulate lvs; the radical lvs 3-4 inches long, succulent. Fls. numerous, rather large. Scapes at the base of the carpels 0. A remarkable species, allied apparently to *Echeveria teretifolia*, but with white fls tinged with green, the pet wholly distinct, etc. The numerous scapes are gathered and eaten while young by the savages.' Nutt. all."—Torr & Gray, Fl N Am 1:560 (1840).

Cotyledon edulis Brewer, Bot Cal 1:211 (1876)

'Ladies' Finger Tips,' so-called from the

round, slender leaves, said to have been eaten as a salad by the Indians.

STYLOPHYLLUM ORCUTTII.

"Resembling *S. attenuatum* in its foliage and habit, but stouter and very glaucous; cor-tube much shorter and shorter even than the calyx, the lobes broader, and more keeled, segments rose-colored, not at all tinged with yellow; calyx-lobes obtusish; anthers red."—Rose, NY bot gard b 3:36. SD; Todos; Coronado Islands.

Cotyledon *orcuttii* Greene; Or, W Am Sci 10:72.

STYL. DENSIFLORUM Rose.

Cotyledon nudicaule Abrams, So Cal ac b 2:42 (1903), non Lam (1786).

"Plants growing in dense clumps with more or less branching rootstocks, very glaucous throughout; lvs numerous, erect, nearly terete, acute, 6-12 cm long; flng branches slender and weak; inflorescence a rather dense compact cyme, its ultimate branches rather short, 4-8 fl'd; pedicels short, 1-3 mm long; calyx 2 mm long, its lobes twice as long as the tube, broadly ovate to orbicular, obtuse; cor white or pinkish, 6 mm long, its segments spreading, distinct nearly to the base; stamens 10, a little shorter than the cor; carpels spreading."—Rose, NY bot gard b 3:36. Gabriel (Hasse).

SEDUM SPATHULIFOLIUM Hook.

"Glabrous, glaucous or pulverulent; lvs broadly spatulate, obtuse; the uppermost small; stems decumbent at the base; cyme compound; fls slightly pedicellate, decandrous; petals (yellow) linear-lanceolate, acute, much longer than the calyx, scarcely exceeding the stamens."—Torr & Gray, Fl N Am 1:559 (1840).

Hooker, Fl Bor Am 1:227.

Oregon, on rocks. Stems about 6 inches high. Fls rather large. S Ber mts. Common in cult in So Cal gardens.

ROSA MINUTIFOLIA Engelm.

Very spiny and prickly: stipules short, narrow; leaflets very small: fls small, solitary, on very short pedicels, fruit globose, densely prickly. Todos Santos bay, Baja Cal., south.

RHUS OVATA S. Watson.

"A shrub, 5-10' high, glabrous excepting the finely pubescent branches and the bracts of the inflorescence: leaves coriaceous and shining, ovate, acute or acuminate, entire or rarely sparingly toothed, 2-3' long, on a stout, usually reddish petiole 4-8" long: fl. in dense closely panicle spikes $\frac{1}{2}$ ' long or less, the rounded bracts and sepals purplish; petals light y.: fr. compressed-ovate, 2-3" long, viscid-pubescent."—S. Watson, Proc. Am. Acad., xx. 358-9 (Feb. 21, 1885).

Genus ROMNEYA Harvey.

Smooth stout erect perennial herbs, with colorless juice, pinnately divided alternate lvs and very large showy fls. Sep. 5, with a broad membranous dorsal wing. Pet 6. Sta numerous, with filiform filaments somewhat thickened below, and oblong anthers. Ovary oblong, densely setose, more or less completely several-celled by the intrusion of the many-ovuled placentae; valves 7-12,

opening from the summit downward. Sds finely tuberculate.

ROMNEYA COULTERI HARVEY.

Half-hardy shrub, 6-15 ft high, branching and flexuous, woody at base: lvs glaucous, thickish, petioled, 3-5 in. long, the lower ones pinnatifid, upper ones pinnately toothed; petioles and margins often sparingly ciliate with rigid spinose bristles: the magnificent wax-like fls 6-9 in. across; pet broadly obovate: fil $\frac{1}{2}$ in. long, bright yellow, purple at base: capsule oblong, $\frac{1}{2}$ in. long, obscurely many angled, hispid with appressed bristles and crowned with the persistent stigmas: sds black, a line or less long. Matilija poppy, named in honor of T. Romney Robinson, a noted astronomer. Ventura Co. Baja!

ROMNEYA TRICHOCALYX Eastwood.

Closely resembling *R. Coulteri* in habit, lvs thinner, divisions narrower; sep setose. SBar and Ventura Cos. SD Co.

PINUS PARRYANA Engelm.

Parry's nut-pine. Small trees of the table lands of Northern Baja, a few extending across the border into San Diego county. Jac mts, and S Ber mts bordering the desert region. Lvs mostly in 4's or 5's, robust; cones globose; sds large, soft-shelled.

The pinone tree, peculiar to Southern and Lower California, but most abundant on the table lands near the international boundary, is a very graceful and symmetrical tree, 20-30 feet high, 10-18 inches in diameter, distinguished by the 3-5 (mostly 4) leaves in a sheath, $1\frac{1}{4}$ - $1\frac{1}{2}$ inches long. The oval seeds, 5-8 lines long, with a thin light-brown mottled shell, are delicious in flavor, either roasted or fresh, and in a good season are collected in immense quantities by the Indians for food. These nuts in a roasted condition are not rare in San Diego markets, and often exported in quantities, being considered quite a luxury with some. Unlike the other nut pines, the tree is very ornamental when properly grown, and forms a worthy monument to the botanist of the Mexican boundary survey of 1850—Dr. Charles Christopher Parry—in whose honor the specie is named.

PINUS PONDEROSA Dougl.

The yellow pine is a noble tree, one of the largest known, 200-300 feet high and 12-15 feet in diameter at times, with leaves in threes, 5 to even 11 inches long. "Throughout the San Bernardino range, the San Jacinto and Cuyamaca mountains, forming the greater part of the coniferous forest," says Parish (Zoe., 4:351.)

PINUS TORREYANA Parry.

The Soledad pine was for many years

believed an exclusive resident of the suburban parts of San Diego, occurring on the hills facing the sea near Del Mar. A second small grove has been discovered on Santa Rosa island. Where most exposed it forms a low, scraggly shrub, 2 or 3 feet high only at times, but spreading over a wide area; at its best estate it forms a small, graceful tree 20 to 30 feet high, a foot or more in diameter. The very stout leaves are 8 by 11 inches long, 5 in a sheath. The edible seeds, 8-11 lines long, with a very hard shell, produced in an ovate cone, 4-5 inches long and nearly as great diameter.

WASHINGTONIA FILIFERA Wendl.

The California fan palm, bearing great clusters of small black berries, the clusters weighing 10 to 20 pounds each, furnished the desert Indians with a most important article of food, equal to that of the pinon nuts to the mountain tribes, ranking next in value to the mesquite bean. The berries have a thin, very sweet, and pleasant flavored pulp, which any palate might appreciate.

CONVOLVULUS LUTEOLUS A. Gray.

Stems three-fourths to 1½ ft. long, ascending, or more elongated and twining; bracts about their own length distant from the calyx, narrowly oblong to linear-lanceolate, 2-4 lines long, much smaller than the very obtuse unequal sepals; corolla 1-1½ in. long, campanulate-funnel-form, pale yellow; stigmas linear.

CONVOLVULUS LONGIPES S. Watson.

Erect, much branched feebly twining perennial, glabrous throughout; small-leaved. Desert regions, Cal., Nevada.

Genus **MIMETANTHE** Greene.

Calyx campanulate, 5-cleft, the tube somewhat 5-sulcate, neither angled nor ribbed; lobes unequal, the uppermost largest. Corolla tubular-funnel-form, Stamens 4, didynamous. Style glabrous; stigma bilamellar. Capsule oblong-ovate, rather acuminate, equaling the calyx, not gibbous at base, minutely glandular, chartaceous, dehiscent by the whole of the upper suture, by the lower only to the base of the apical acumination, both valves in dehiscence strongly reflexed in so far as separated; placentae born on the middle of the valves, many seeded. Seed minute, oblong-ovate, yellowish, under the microscope favose-reticulate and glandular.—Greene Cal ac b 1:181.

MIMETANTHA PILOSA Greene.

A villous glandular annual, with a sickening solanaceous odor. Baja Cal. to Washington.

NICOTIANA GLAUCA L.

Leaves long-petioled, subcordate; corolla: shrub 8-15 ft. high. "The large glaucous, thickish leaves are used as healing and anodyne poultices."—Harvard. Naturalized from So. Am.

QUERCUS AGRIFOLIA Nee.

The California live oak is justly one of the trees described as picturesque, the stout, low trunk 8, to even 20 feet, in circumference, with a spread of branches of 120 feet. Mendocino county appears to be its northern limit, while near La Grulla, south of Ensenada, Lower California, is the most southern recorded station, where its branches sweep the ground. The shining, elongated, tapering, acute-pointed acorn, 1-1½ inches long, and ¼ to 1-3 inch in diameter, characterizes the species and are among the treasured trophies of the average tourist, who often says he "can taste them still"—but generally prefers not to do so—the second time.

JUGLANS CALIFORNICA S. Watson.

The California black walnut is usually a small tree, growing 20 to 75 feet high, 2 to 4 feet in diameter, bearing a roundish nut, the kernel sweet and delicate in flavor. Occurs from along the Sacramento river to San Diego county, California; occasionally cultivated, but more as a shade or street tree, than for its excellent nuts.

IRIS MACROSIPHON Torr.

Stems very slender, flattened, surpassed by the dark green grass-like leaves; fls rich p-blue, on short pedicels. Mts. San Diego—Or 1056.

ERYSIMUM INSULARE Greene.

"Shrubby, diffuse, a foot high, forming a dense tuft of from 2-6 ft. broad, cinereous with a minute appressed pubescence, or glabrate; leaves narrowly linear, canaliculate, entire, rather rigid, recurved at apex, crowded upon the numerous woody branches; racemes short and dense, on short peduncles, or almost sessile; corolla yellow, ¾ inch broad; siliques quadrangular, 2 inches long, 1½-2 lines thick, beaked with a stout style, Sandy slopes above Cuyler's Harbor, Island of San Miguel."—Greene, Torr cl b 13:218 (N 1886).

PLATYSTEMON DENTICULATUS Gne.
Or w 10:41, error for *Platystigma*
denticulata.

PLATYSTEMON LINEARIS Curran.

Platystigma lineare Benth.

PLATYSTEMON OREGANUS Curran.

Platystigma californicum B & H.

Platystigma oreganum B & H.

Platystigma denticulata Greene.

Meconella denticulata Greene.

Meconella californica Torrey.

Meconella oregana Nuttall.

Genus ARGEMONE Linnaeus.

Setose and spinulose-dentate chiefly
ann herbs with orange-y and acrid
juice and sinuate or pinnatifid lvs;
Sep with cornute tip or appendage be-
low the apex: Pet 4 to 6: Sta num:
Ova densely setose 1-celled, with 4-5
nerviform placenta, stig oval, some-
what radiate and united on the sum-
mit of the very short obsolete sty.

ARGEMONE CORYMBOSA Greene.

Greene, Cal ac b 2:59.—Mohave Des-
ert (Curran).

"Probably a depauperate form of *A.*
hispida."

ARGEMONE HISPIDA A. Gray.

See *A. platyceras* L & O.

Argemone Californica? of catalogues.

"Chicalote"; Thistle Poppy.

Davidson, Pl LA Co.

Baja! Fls white.

Argemone var. *hispida* Prain.

ARGEMONE MEXICANA Linn.

Fls y; sparingly naturalized in Cal.

Introduced from Mex.

ARGEMONE PLATYCERAS L. & O.

Link & Otto, Ic Pl Rar 1:85 (1828).

Type locality: "in Mexico in Confre de

Perote prope Hacienda de la Laguna."

Argemone hispida A. Gray. Fls w.

Hall, U 81.—"Prickly, or Thistle,

Poppy."

Cockerell. w 5:6.

Variety **HISPIDA** Prain.

St erect, simple or rarely branching
2-6 dm high, hispid throughout and
more or less armed with rigid setae, les
or prickles; lvs 6-10 cm long, the lower
reduced to a winged petiole, the upper
sessile; fls w, 5-8 cm broad; capsu-
le oblong, 3 cm long, very prickly;
sd- 2 mm in diam.

Abrams, Pl LA 162.—Occasional in
dry exposed slopes or dry canyon floors
in all our mts.

PLATANUS RACEMOSUS Nutt.

The sycamore is a spreading, lofty
tree common near water courses from
the coast to the desert, up to an alti-
tude of 3,000 or 4,000 feet. "A tree
growing in sandy loam at San Bernar-
dino measures 9½ feet in circumference
at 3½ feet from the ground; height
about 60 feet."—Parish, Zoe, 4:3.

PROSOPIS JULIFLORA D. C.

The mesquite is the most abundant
desert tree, rarely over 20 feet high,
often forming extensive groves miles

in extent. The mesa back of San
Diego, near the normal school, is its
western limit, where it is only a small
shrub, but it extends east to Texas
and south to the Argentine republic.

PROSOPIS PUBESCENS Benth.

The screw-bean is a characteristic
desert tree, slender, 15-20 feet high;
not rare from Riverside county south-
ward into Lower California, abund-
ant in the Palm valley, not far from San
Diego.

PRUNUS ILICIFOLIA Walp.

The holly-leaf cherry is a beautiful
dark evergreen shrub, yielding a
pleasant edible fruit. Useful for hedges
or ornamental planting.

CEANOTHUS GRUTTII Farry.

"Branches flexible, dull reddish, with
short, hispid pubescence; leaves petiolate,
broadly orbicular to oblong-cordate,
usually rounded obtuse, 30-40 mm. in
length, often as broad, irregularly gland-
ular-serrate, sparingly hispid above,
strongly triple-nerved beneath, with
prominent hairy ciliate veins; inflores-
cence axillary, oval scarcely exceeding
the leaves, rather compact, with pubes-
cent rachis, and smooth pedicels; fl. ap-
parently white or light blue (seen only in
fallen fragments); fr. glandular-hispid,
with corrugated resinous epicarp, and
conspicuous crests; seeds light brown."—
Parrv. Proc. Dav. Acad. Natl. Sci. v.
194 (Aug. 31, 1889).

ZIZYPHUS PARRYI Torr.

Parry's lotus or jujube is found in
gravelly ravines near San Felipe and
Rock Springs, in San Diego county,
south into Lower California, and east
of San Bernardino. The fruit is ½-¾
inch long, of a dull brownish cadmium
yellow color, mealy and dry. It is
an unsymmetrical thorny shrub, 4-15
feet high. Said to make excellent jelly
like its near relatives, the classic lotus
and jujubes, so well known as the
source of jellies and confectons of
various kinds.

Genus KRAMERIA Linnaeus.

Small shrubs or somewhat woody per
herbs, silky-tomentose and often pros-
trate, with alt and entire narrow lvs;
fls solitary, on axillary bracted peds,
purplish: sep 5 somewhat unequal,
more or less pet-like: pet 5; the 3 upper
similar, long clawed, approximate: the
lower short, sessile and fleshy: sta. 4,
united below: anth 2-celled, dehiscent
obliquely at the apex: ova simple,
silky: ovules 2, pendulous from toward
the apex of the cell: sty simple,
straight, obliquely terminal, acutish:
stig terminal: capsule globose, coriaceous,
indehiscent, spinose or muricate, 1-

seeded; sd naked, albumen 0: embryo straight, cotyledons auriculate at base and including the radicle.

KRAMERIA CANESCENS A. Gray.

Gray, Pl Wright 1:42 (1852).

Type locality: "prairies near the Pecos," Texas.

Virgin and Muddy rivers, Nev (Merriam ailey). Baja mts (Or 950).

Pubescence short and tomentose: lvs lanceolate to linear: peds short, 2-bracted: sep lanceolate, the smaller one linear: capsule ovate-globose, tipped with the stout curved sty, and armed with slender prickles barbed at apex.

Torrey, bot Mex boundary 49 t 13.

POA ORCUTTIANA Vasey.

"Culms caespitose, about 2° high, radical leaves numerous, narrow, flaccid, about 6' long, scabrous; culm leaves 2-4 inches long, attenuate at the apex, and with the sheaths scabrous, upper sheath very long; ligule membranaceous, about 2'' long, acute, becoming lacerate; nodes smooth; panicle 4-6' long, lax, the branches erect and somewhat appressed, the lower in threes, 1-3' long, the lower hind or more naked, numerously flowered above; empty glumes nearly equal, 1½'' long, the upper 3-nerved, lower one-nerved, scarious margined; flowering glumes oblong, obtusish, flattish on the back, scabrous, about 2'' long scarious tipped, slightly pubescent below, five-nerved; palea as long as its glume, acute-ciliate scabrous on the keels. First collected by C. R. Orcutt near San Diego in 1884, and subsequently by Mr. Lorenzo Jared in Santa Barbara county, Cal. The mature spikelets have the appearance of Gl. ciliaris. Its narrow, scabrous leaves are good, distinctive characters."—Vasey, W 3:165 (Ag. 1887)

NAVARRETIA FOLIACEA Greene.

"Near *N. atractyloides*, but more diffuse and leafy, leaves ampler, less coriaceous and of a lighter green, their segments not wholly spinose, but herbaceous below; segments of the calyx very unequal, 2 large, ovate-acuminate spinose tipped and more or less recurved, 3

very small and only broadly subulate: corolla white, small, little surpassing the calyx; herbage scentless."—Greene, Pitt 1:138 (25 N 1887). Potrero, SD co (D. Cleveland).

NAVARRETIA PENINSULARIS Greene.

"Diffusely branching, 3-10' high, glandular-puberulent and very viscid: leaves all acerose-pinnatifid: fls. rather few, in numerous scattered and mostly pedunculate glomerules: calyx sparsely hirsute, the segments subulate, entire, very unequal, the shortest fully equalling the tube the longest surpassed by the purplish corolla: capsule 3-celled, many-seeded. Hanson's ranch, in the northern part of Lower California, July 10, 1884, C. R. Orcutt, No. 1113. Related to *N. divaricata*, but sufficiently distinguished by its clamminess and different inflorescence, as well as by its larger corollas."—Greene, Pittonia, i. 136.

NAVARRETIA HAMATA Greene.

"Near *N. atractyloides*, and like it aromatic, but smaller and comparatively slender; leaves not ioliaceous-dilated, but with a linear, or nearly linear rachis and few or many spinose-subulate segments of which the terminal one, and sometimes one or all of the lateral pairs are strongly recurved or else abruptly deflexed (forming hooks); calyx-segments all subulate and spinose-tipped, all erect, 2 twice as large as the others: corolla salverform, deep purple, large for the plant, the slender tube well exerted from the calyx. Guadalupe mt., Lower California, June, 1883, C. R. Orcutt. Also at All Saints bay, May, 1885, by the present writer."—Greene, Pit. i. 139 (N 25, 1887).

ECHINOSPERMUM GREENEII A. Gray.

"*Allocarya echinoglochis*. Habit pubescence and inflorescence of *A. trachycarpa*, but a coarser, larger plant; nutlets 1'' long, ovate, straight, carinate ventrically down to the nearly basal ovate scar, the back covered with coarse granulations and stout barbed prickles ¼-½ line high, these distinct at base or more or less confluent into walled reticulations, the latter sometimes strongly developed and the prickles themselves correspondingly reduced or even nearly obsolete. SD. o Oregon."—Greene.

ERIOGONUM CLAVATUM Small.

"Annual, acaulescent. Leaves basal; blades 5-13 mm. broad, much broader than long, undulate, strigose-hispid on both sides, cordate at the base or rarely truncate; petioles about twice as long as the blades, hispid; scapes erect, solitary, glaucous, forked above, the ultimate division filiform, the lower internodes more or less swollen above the middle; bracts scale-like; peduncles hair-like, ½ cm. long, spreading; involucre narrowly turbinate, very small, less than 1 mm. long; segments obtuse, as broad as long, shorter than the tube; calices densely hirsute less than 1 mm. long, the segments nearly equal, ovate-lanceolate, acute; filaments glabrous."—Small.

Baja.

ERIOGONUM GLAUCUM Small.

"Annual, slender, acaulescent. Leaves basal; blades ovate or oval-ovate, 5-10 mm long, obtuse, undulate-cripsed, often inequilateral, softly hispid on both surfaces, obtuse or subcordate at the base; petioles 2-3 times longer than the blades, hirsute; scapes erect, solitary or several together, 1-5 cm tall, glaucous, forked, the branches ascending or spreading; peduncles filiform about one cm. long, more or less spreading; involucre glabrous, turbinate, 1 mm. long; segments oblong, obtuse, about as long as the tube; calices densely hirsute, 2 mm. long; segments lanceolate, acute, erect; filaments glabrous."—Small, Torr club b 25:51 (25 Ja 1898).

ERIOGONUM RUBESCENS Greene.

"Near *E. grande* but low, the depressed leafy caudex only a few inches long; leaves ovate-cordate, with crisped margins and both surfaces tomentose or the upper glabrate; peduncle stout, erect, a foot high, bearing at summit a compact cymose cluster of many-flowered umbels:

perianth glabrous, rose-red, campanulate; filaments villous at base. Island of San Miguel, where it is abundant on low sandstone cliffs near the sea: but first found in a similar locality at the extreme west end of Santa Cruz. A most beautiful species."—Greene, Pittonia 1:39.

ERIOGONUM GRANDE Greene.

'Basal shrubby and leafy part a foot or two high with many branches; peduncles 3-5°, thick and fistulose below, slender and loosely cymose-dichotomous above; leaves ovate-oblong, obtuse, cordate at base, the margins crisped, 2-3' long, on petioles of equal length, lower surface densely white-tomentose, upper glabrate; involucre terminal only; perianth glabrous, white, segments equal, obtuse, rotate-spreading in flower; filaments villous at base. Interior of Santa Cruz Is., very common;***"—Ge pit 1:38

ERIOGONUM THURBERI Torr.

"Sandy ravines, San Pasqual, Calif., My; Thurber. ** Wallace. Leaves in a subradical cluster, about ½' long undulate-rugose pubescent above, white-tomentose underneath. Stem a scape about a span high, trichotomously subdivided below the middle, with ovate acute ternate bracts at the forks. Pedicels 1' long. Involucre less than a line in diameter, cleft nearly to the middle into 6 rather obtuse lobes; exterior segments of the perianth nearly four times broader than the inner. Filaments & ovary smooth. Styles short. Achenium smooth. Embryo strongly curved. No bracteoles were detected; in their place are only woolly hairs." *** Torr, bot Mexican boundary 176-7 Baja! LA Co.

HELIANTHUS CALIFORNICUS DC.

SF: Baja! along streams.

HELIANTHUS GRACILENTUS A. Gray

SBer Co; SD Co; Baja; dry hills.

HELIANTHUS PETIOLARIS Nutt.

Baja to Oregon; Texas

LEPTOSYNE BIGELOVII A. Gray.

CD; Mohave; Ventura Co.

ARCTOSTAPHYLOS OPPOSITIFOLIA P

"Shrub 3-10' high, densely branched above, more or less naked below; stems 1-3' in diameter, with light greenish or gray bark smooth or with loose, shreddy fibers on the upper branches, young shoots minutely tomentose; leaves opposite or ternately whorled, narrowly lanceolate, entire, revolute, 1-2' long, 2-3'' wide, light green above, minutely tomentose beneath, with a prominent mid-nerve, the narrow blade gradually tapering to a short or obsolete petiole. Inflorescence paniculate, the lower floral branches in the axils of the upper opposite leaves, which higher up pass gradually into deltoid, more or less acuminate bracts, disposed in whorls of 3 or less at regular intervals, each bract subtending a branch or pedicel, & decurrent as a ridge down the rachis; pedicels 3 or 4 times longer than the bract, bibracteolate close to the base; corolla orbicular, 2-2½'' high, shortly urceolate, with broad, reflexed lobes; stamens 10, anthers comparatively large, as long as the appendages filaments short, densely bearded at base; style about twice the length of the ovary, included, or slightly exsert; ovary densely tomentose at the summit; fr orbicular, 2-3'' broad, with a smooth, thin pericarp & scanty pulp, becoming wrinkled at maturity, enclosing 5 easily separated nutlets, nearly equal in size, & 2-celled by a partition from the ventral suture, occasionally both cells fertile or more or less abortive."—Parry Davenport ac pr 4:36-37. Baja!

PHOLISMA DEPRESSUM Greene.

"Stems solitary, completely covered by the rhombic-ovate, or sometimes oblong, closely imbricated scales, fls in a depressed, barely convex head, an inch or 2 broad; sepals 6, linear-narrow, minutely glandular ciliolate; corolla tubular-funneliform, 6 lobed, lilac-p; stamens

shorter & style longer than in *P. arenarium*."—Greene, Cal ac b 1:198. Baja.

ARCTOSTAPHYLUS ARGUTA Zucc.
Variety **DIVERSIFOLIA** Parry.

"Shrub 6-15 ft high; stems 1-3 inches in diameter, with light gray bark slightly furrowed, on the upper branches shreddy, & on the young, growing shoots tomentose; leaves varying greatly in size & form, according to position or season of growth; in young, vigorous offshoots or suckers, broadly lanceolate, 3½' long by 1½' broad, smooth on both sides, reticulate, scarcely at all revolute; on the upper & fl'ing branches, narrowly lanceolate, strongly revolute, & tomentose beneath, in all more or less irregularly serrate, with mucronate cartilaginous teeth & short petioles. Inflorescence racemose, from the axils of the upper terminal leaves, secund & horizontal, rachis, bracts, pedicels, and calyx long tomentose; bracts about ½ as long as the pedicels, corolla 3 lines long, stamens 10 (occasionally 8), filaments bearded below, anther appendages about as long as the anthers; style shortly exserted; ovary hairy hispid above. Fr small, 2 lines broad, warty, with a solid 5-celled putamen, cells more or less abortive. Needs comparison with the Mexican type, which probably includes several published species."—Parry, Dav ac pr 4:35.

A colored portrait of this in *Datos para la materia medica Mexicana*, (pt 3 11) well represents our shrub. It enjoys in Mexico the names *madronyo borracho*, and *garambullo*—the latter name in Baja is applied to *Cereus sargentianus*—and is in medicinal repute. SD! Baja!

A. polifolia B-W, non H & K.**DODECATHEON CLEVELANDI** Greene

"A foot or 2 high, pale green & glandular: new roots formed not at the end of the dry season but at its beginning, remaining dormant through the summer,

no tubers formed either originally or by root-metamorphosis: leaves scarcely fleshy not depressed but ascending or erect, spatulate-obovate, the margins erose: fls 5-merous: corolla bright-p with a y base & some dark-p spots next the andræcium: andræcium about 2" long filaments connate, the tube dark-p, the ornate exterior of each filament changing to y at the base of the anther & continued up the back of it nearly to the apex in a lanceolate form & lying in irregular folds; anthers otherwise p, not quite twice the length of the staminal tube, slightly divergent around the moderately exerted pistil, retuse at the rather blunt apex: capsule oblong, circumscissile at top: seeds reddish-brown, somewhat cubical, the testa sinuately reticulate."—Greene Pitt 1:214 SD! Baja!

ARCTOSTAPHYLOS PRINGLEI Parry.

"Young branches, including the petioles and margins of the leaves, copiously ciliate-pubescent, with mixed glandular hairs leaves short, petiolate, glaucous, minutely net-veined, with conspicuous mid-nerve, ovate to broadly subcordate, abruptly short mucronate; inflorescence closely paniculate from a thickened base, intermixed with bud-scales, indicating a late flowering period. racemose branches slender, thickly covered as well as the bracts, pedicels and calyx, with ciliate and glandular hairs, bracts lanceolate membranous, petaloid, deciduous, bracteoles linear nearly $\frac{1}{2}$ as long, pedicels slender, divaricate, 4-5 times as long as the bracts, calyx ciliate-glandular, corolla smooth, broadly urceolate; ovary and fr. glandular, hispid, nutlets irregularly coalescent, 5-7-celled."—Parry. Bull. Cal. Acad. Sci. ii. 494 (Nov. 2, 1887).

Variety DRUPACEA Parry.

'Differing from the above only in the completely consolidated stone, deeply sculptured, & usually with a conspicuous 1-sided furrow. Mts east of San Diego; Or 543; S 1886, distributed as A glauca."—Parry, Cal ac b 2:495.

ARCTOSTAPHYLOS PARRYANA Lmn.

"A much branched shrub, 3-5° high: foliage coriaceous, bright green; blade ovate or oblong $\frac{1}{2}$ -1' long, acute or obtuse, entire, conspicuously impressed

veiny; petioles slender, $\frac{1}{4}$ - $\frac{1}{3}$ ' long: inflorescence paniculate-corymbose, the pedicels & bracteoles w-tomentose: bracts foliaceous, narrow; bracteoles 2 or 3 lines long, deltoid, with callous tips: segments of the rotate calyx obtuse: fr ovate or globose, $\frac{1}{4}$ - $\frac{1}{3}$ ' long, y'ish; exocarp smooth & glabrous, rather thin; endocarp of from 5-7 firmly united bony carpels, apiculate at each end, & marked with longitudinal ridges corresponding with the back of the carpels: seeds 2 lin. long, incurved, w. Tehachapi mts."—Lemmon Pitt 2 68

ARCTOSTAPHYLOS BICOLOR A. Gray.

Densely branched irregular shrub, 3-5 ft high, with brown shreddy bark; leaves dull green above, whitish tomentose beneath; fls in condensed racemes, w with a pinkish tinge; fr often persistent until 2d fl'ing in F, smooth & shining, deep red, $4\frac{1}{2}$ lines in diameter; copious and rather dense granular pulp; putamen smooth externally, solid, 5-celled, 1 or more abortive. SD! Baja!

PALMERELLA: Calyx 5-parted down to the turbinate tube, which is wholly adnate to the ovary; the lobes slenderly linear-subulate. Corolla with its long and straight narrow-cylindrical tube, entire (at least the upper part), not at all dilated at the throat; the short lobes abruptly spreading; 2 smaller distinct, spatulate-linear and turned backwards; the other 3 oblong, united at the very base. Filaments (more or less) adnate to near the throat or the upper part of the tube of the corolla, then free or further adnate to one side, and monadelphous: anthers oblong, united, 3 of them naked, 2 tipped with a small tuft of very unequal rigid bristles. Stigma, ovary, and apparently capsule of Lobelia, of which the plant has the habit, except in the remarkably long tube of the corolla.

PALMERELLA DEBILIS A. Gray.

Glabrous herb; stems simple or branched above, 2° high, slender & weak, leafy: cor tube w'ish, $\frac{3}{4}$ ' long, tomentose

within, 3 upper lobes deep violet-b, 6-8 mm long. Cantilles.

Variety *SERRATA* A. Gray, bot Cal 1:619.

Inflorescence & tube of cor somewhat puberulent; lowest leaves broad, spatulate, obovate, acutely serrate. Ventura. *GITHOPSIS SPECULARIODES* Nutt.

1-9' high; leaves lanceolate-oblong or linear, sessile, coarsely toothed; fls erect, deep blue, usually with w center; ovate lobes of cor about equaling the rigid calyx-lobes

SALVIA BERNARDINA Parish.

"(Echinospice) S B Parish, in herb. Suffrutescent, several ft hi, somewhat puberulent or glabrate: lvs rugose & g above, paler beneath. lanceolate, 2' long, pinnately lobed, the lobes crenate: num verticillate hds an i in diam: cx naked within its arcuate upper lip tipped with 3 aristiform teeth, which are commonly united almost to the end into 2 or 1, greatly surpassing the 2 singly aristate lobes of the lower: cor p, surpassing the cx Near Sber, 1885; S. B. Parish."—Greene, Cal ac b 1:211.

Katharine Brandegee, Zoe 4:97—"is probably, as Gray thought, a hybrid."

SALVIA CEDROSENSIS Greene.

Calospace. "Shrub 1-3° hi, branches w-tom ntose, the hairs branching: lvs g & not rugose above, w beneath, ovate, with cuneate, truncate or cordate base, crenate, 6-10 li long: on short petioles: fls in short, rather dense, naked racemes: cx funnelform, 4 li long, striate-veined, the 3 very short lobes entire, mucronate-pointed; pedicel less than a li long: cor deep bi, twice the length of the cx: nil naked: sty vilous above. Cedros Island, 28 Ap 1885 Common at middle & higher elevations Related to *S. ballotiflora* & *S. platycheila*."—Greene, Cal ac b 1:212

ESCHSCHOLTZIA GLAUCOA Greene.

Perennial, very glaucous, erect, 2-4 ft. high, of a loose y cymose and sometimes distinctly dichotomous inflorescence: leaves small, their segments

linear and little divergent; torus with a narrow but manifest spreading rim: petals an inch long, with orange spot at base and commonly a narrow border of the same color at the truncate summit, otherwise light yellow: seeds globular, reticulated: cotyledons linear, cleft to the middle. On dry clayey hillsides of the interior basin of Santa Cruz Island."—Greene, Pittonia 1:45 (Mr 1887).

ESCHSCHOLTZIA MARIQUINA Greene.

"Root perennial: stems stout and succulent, very leafy and dichotomous, 2-3 ft. long, wholly prostrate: herbage very glaucous and also white-puberulent: leaves dense, i. e., the spatulate-oblong obtuse segments numerous, short and crowded: torus with manifest rim spreading horizontally: calyptra about ½ inch long, oval, abruptly narrowed to a very short blunt or even retuse tip: corolla broad-campanulate; petals 10 lines long, lemon-yellow with a rhomboidal spot of orange at base: pod small: seed reticulate. About Point Harris on the northeastern part of the island of San Miguel, on clayey slopes near the sea; very plentiful."—Greene, Pittonia 1:60.

ESCHSCHOLTZIA GLYPHTOSERMA.

"Wholly glabrous and very glaucous: stems very short: lvs much dissected, but short and compact: scape-like peduncles numerous, 6 i high, terete, and rather stout: cor as in *E. tenuifolia*, but of a deeper yellow, sds not reticulate, but deeply pitted and of an ash-gray color. A most peculiar species, collected in 1884 by Mrs. Curran, on the Mohave Desert. The sds are remarkably unlike those of any other known *Eschscholtzia*."—Greene, Cal ac b 1:70 (7 Mr 1885).

ESCHSCHOLTZIA HYPECOIDES Benth.

Scabrous or hirsute, pubescent below, glabrous above, glaucescent; branches many and rather slender from an annual root, decumbent at base, about 30 cm high or less, leafy; lf segments few, linear-cuneiform; calyx oblong-conic, 1 cm long; pet 2 cm long or less, orange; torus short, tubular or turbinate, without expanded rim to the outer margin, the inner erect, hyaline; sds faintly reticulated.

Abrams, Fl LA 161:—"Santa Monica mountains, not common."

ESCHSCHOLTZIA LEMMONI Greene.

"Ann, 6-12 i high, with num ascending branches, leafy below, hoary pubescent throughout, even to the capsules, with short spreading w hairs; lvs with elongated petioles; ped stout-

ish, quadrangular, the earliest scapiform; torus urceolate, 3-4 li long, nearly glabrous, constricted just below the narrow, erect hyaline border; calyptura ovate, long acuminate, very conspicuously hairy; pet orange-color, nearly or quite an i long."—Greene, W 3:157 (Ag 1887). Mts of San Luis Obispo county, Cal.

ESCHSCHOLTZIA MEXICANA Greene.

"Ann, smooth and glaucous: foliage less finely dissected (than *E. californica* and *E. peninsularis*): sts short: ped num, stout and scape-like: pet i long, y or cream color; torus short, obconical, the outer margin a sub-cartilaginous ring, the inner erect, scarious, with stout nerves: globular, apiculate, with coarse but rather faint reticulations.—*E. californica*, var. *parvula*. Gray, Pl Wright, 2:10. *E. Douglasii*, Torr, Mex Bound, 31; Hems! Biol Cent Am. This plant ranges from the region of the upper Gila, in New Mexico, far southward into Texas and adjacent Mexico, and is apparently a very good species."—Greene, Cal ac b 1:69 (7 Mr 1885).

A rank-growing *Eschscholtzia* growing in the San Rafael valley, Lower California, with large reddish-or colored fls, was doubtfully referred to this by Prof. Greene.

ESCHSCHOLTZIA MODESTA Greene.

"Ann, very slender and diffusely branching, 1 ft high, glabrous and moderately glaucous: lvs sm, with few and narrow seg: pedicels axillary, 1 i long or more, terete and very slender, nodding in the bud: bud 2 li long, the permanent portion (torus) with no rim, nearly as long as the broadly ovate calyptura: cor rotate-spreading, ½ i broad: pet obovate, not meeting, the rounded apex erose-or sinuate-toothed, or, in later fls, deeply 3 lobed, pale y; sta 8 in 2 rows on opp sides of the pistil, or, in late fls, 4 only; anthers ½ li long, on slender fil a li in length; pod 2 i long, narrow, the valves thin: sds globular, minute, reticulate; cotyledons very narrowly oblanceolate, entire. Collected by S. B. Parish in LA Je 1887 (No. 1951)."—Greene, Pittonia, 1:169 (6 Ja 1888).

Genus DICENTRA Borkh.

Dutchman's Breeches. Per herb with the sts and lvs from a tuber-like, grain-bearing or scaly crown: fls racemose or paniculate: cor flattened, heart-shaped or 2-spurred at base: fil of each set dilated and united, but distinct at the very base and slightly free above.

Bikukulla Adans.

The name *Capnorchis* is earlier than the species *Plantarum* of Linnaeus.

DICENTRA CHRYSANTHA H. & A.

Glaucous plants with stiff coarse leafy sts 2-3 ft high: lvs bipinnate, ½-1 ft long or more, the divisions cleft into narrow lobes; fls y, in a large racemose panicle; cor linear-oblong, only slight-

ly cordate, ½ i long; pet distinct; capsule ¾-1 i long; style slender, persistent, at dehiscence of the capsule splitting up to the stig; sds crestless. Lake Co, Cal to Baja. "Golden Eardrops." *Dielytra chrysantha* H & A, Bot Beech 320 (1839-1840).

Hall U 81.

Type locality: not specifically given. Type "collected by Douglas, probably near San Francisco or Monterey."—Coville.

Bicuculla chrysantha Abrams, Fl LA 163.

Bikukulla chrysantha Coville, CNH 4:69, 235, 256.

Capnorchis chrysantha Jepson, Erythea 1:12.

DICENTRA OCHROLEUCA Engelm

Santa Monica and Temescal, Riverside Co. Cal.—W. S. Lyon.

"stem erect, 3-4 ft high, leafy, lvs glaucous, large (lower ones a ft or more long), 3-pinnate, ultimate divisions deeply cleft into lanceolate-linear lobes; fls panicled on very short pedicels, about 15 lines long, ochroleucous; membranaceous sep suborbicular; exterior pet slightly saccate at base, upwards narrower, somewhat concave below the acute tip, and scarcely spreading; inner pet widened above into a deep purple circular tip, crested with 2 very broad flat and elongated appendages; sta subulate scarcely cohering."—Engelmann, Bot Gaz 6:223. LA Co. gelmann, Bot Gaz 6:223. LA Co.

Bicuculla ochroleuca Heller.

Abrams, Fl LA 163, Monica mts.

Genus CARDAMINE Linnaeus.

Erect or ascending herbs mostly growing in marshes or along water-courses, with running rootstocks or fibrous rts, entire, lobed or divided lvs and racemose or corymbose, w or p fls: Sta usually 6: Siliques elongated, flat, generally erect; valves nerveless, elastically dehiscent at maturity, sessile on the receptacle: Sis in 1 row in each cell, compressed, marginless: Cotyledons accumbent, equal or unequal.

CARDAMINE FILIFORA Greene.

Greene, Pittonia 1:30. Cruz.

Arabis filifolia Greene.

CARDAMINE GAMBELII S. Watson.

Watson, Am ac pr 11:147.

Type locality: near Santa Barbara, Cal (Gambel).

Rather stout, 6-9 dm high, branched, decumbent at base and rooting at the lower joints, glabrous or sparingly soft villous; lvs mostly basal, persisting in a rosulate cluster, pinnately divided; lfts 4-6 pairs, ovate to oblong-linear, usually cuneate at base and acute, mostly few-toothed, 6-24 mm long; raceme nearly sessile, becoming elongated; fls w, 6-8 mm broad; pedicels slender, divaricate; pods about the same length, narrow, erect or ascending, often curved; sty slender, 2 mm long.

Abrams, Fl LA 172.—Frequent in

marshes and wet places in the valleys.
 Sber (Parish 1130). Mexico?
CARDAMINE INTEGRIFOLIA Gray.
 Greene Cal ac b 2:389. Cruz.
 Mendocino Co. Baja.

Davidson *Erythea* 2:178, LA Co.
 Smooth or slightly pubescent: sts
 from sm deep-seated tubers, rather
 stout, erect, 10-18 i high, sim-
 ple or branched above: lower lvs often
 simple, subcordate-orbicular, 1-2½ i
 broad, 5-7-nerved, repand; the upper
 deeply lobed or pinnately 5-foliolate,
 lfts ovate to oblong, more or less ir-
 regularly toothed or entire: pet 6-9 ll
 long, w or pinkish: pods 1-1½ l long,
 as many ll wide, pointed at each end
 and tipped with a sty 1-1½ ll long:
 pedicels spreading, ½-1½ l long.

Cardamine angulata Torrey, Pac Ry
 R 4:65.

Cardamine paucisecta Bentham, Pi
 Hartw 297 (1857).

Dentaria integrifolia Nuttall, T & G
 Fl 1:88.

Dentaria Californica Nuttall, in T &
 G Fl 1:88 (1838).

Genus ARABIS Linnaeus.

Ann or per, glabrous or pubescent
 herbs with entire, lobed or pinnatifid
 lvs and white or purple fls: Siliques line-
 ar, elongated, comp. esse 1, with smooth
 or keeled mostly 1-nerved valves, not
 elastic, dehiscent at maturity: Stigma
 nearly entire or 2-lobed: Sds in 1 or
 2 rows in each cell, flattened, winged or
 wingless: cotyledons accumbent.

ARABIS ARCUATA A. Gray.

Hall U 81. Sber mts (Parish 1300).
 Cruz.

Gray, Am ac pr 6:187 (1864).

Type locality: "shelving rocks, on
 high hills near St. Barbara, Upper Cal-
 ifornia."

Canescently villous or tomentose
 with branching hairs, the pubescence
 of the ind short, branched and entan-
 gled: sts rather stout, erect from a
 branching per base, 1-2 ft high or
 more: lower lvs num, oblanceolate, on
 slender petioles; the cauline oblong-
 or linear-lanceolate, 1-2 i long, auricled
 at base, acute; all sparingly sinuate-
 toothed, sometimes entire: fls erect; pet
 p or deep vio, 4-6 ll long, scarcely 1 li
 wide, spreading and recurved: sds
 narrowly winged or wingless.

Streptanthus arcuatus Nuttall, in T
 & G, Fl 1:77 (1838).

ARABIS GLABRA Bernh.

Bien; erect, pubescent below, gla-
 brous and glaucous above, simple or
 somewhat branched, 5-10 dm high;
 basal lvs petioled, 5-15 cm long, oblan-
 ceolate or oblong, dentate or sometimes
 lyrate, pubescent with simple hairs,
 those of the st with sagittate base,
 glabrous, entire, or the lower dentate,
 5-10 cm long, lanceolate or oblong,
 acutish; fls yellowish-w, 4 mm broad;
 pedicels 4-10 mm long, erect; pods nar-
 rowly linear, 5-7 cm long, 1 mm wide,
 erect and appressed: sds in 2 rows in

each cell, marginless; sty 0.

Abrams, Fl LA 179.

Type locality: Europe. Baja mts
 (Or 1124).

Arabis perfoliata. Lamarck.

Brewer & Watson, bot Cal 1:31
 (1876).

Turritis glabra L, Sp Pl 2:666 (1753).
Turritis macrocarpa Nuttall, T & G
 Fl 1:78 (1838).

ARABIS HOLBOELII Hornem.

Davidson, *Erythea* 2:178, LA Co.

Sber foothills (Parish 270).

NM. Yosemite. Greenland and Arctic
 circle.

More or less stellate-pubescent, rare-
 ly hirsute, or even glabrous: st erect,
 1½-2 ft hi, simple or bracing: lower
 lvs spatulate, entire or denticulate;
 cauline oblong-lanceolate, sagittate
 and clasping at base, ½-1 i long or
 more: pet twice longer than cx, 3-4 ll
 long, w or rose-color, rarely p, becom-
 ing reflexed: pods 1-4 i long, ½-1 li
 wide, strongly reflexed: sds wingless
 or narrowly margined.

Hornem, Fl Dan xl, t 1879.

Sisymbrium reflexum Kellogg, Cal ac
 pr 2:101 f 29.

Arabis retrofracta Grah; Watson, Bot
 King Exp 18.

Turritis patula Grah.

ARABIS PLATYSPERMA A. Gray.

Mt. Shasta: Yosemite: Sber mts
 (Parish 498).

Canescent with a short stellate pu-
 bescence: sts several from a per base,
 slender, 4-12 i high: lvs entire, the
 lower oblanceolate or spatulate, 1 i
 long; the cauline oblong-lanceolate,
 sessile but not auricled at base, 4-10
 li long; pet rose-colored, 2-3 li long;
 pods straight, erect, 1-2 i long and 2
 li wide, acuminate, without sty, loosely
 reticulated: sds in 1 row, with a broad
 thin wing.

Gray, Am ac pr 6:519 (1865).

Type locality: "Sierra Nevada, on
 Mount Dana, alt. 13,227 feet, and above
 Ebbett's Pass."

East Humboldt mts, Nev (Watson).

ARABIS REPANDA S. Watson.

Abrams Fl LA 178.

Watson, Am ac pr 11:122.

Bien; st stout, branching, 3 dm high
 or more, pubescent throughout with
 mostly stellate hairs, usually longer
 and simple at base; lvs narrow-
 ly obovate to oblanceolate, 3-10
 cm long, sparingly toothed or nearly
 entire, those of the st narrowed to a
 winged petiole, acute or obtuse; fls w,
 sm; pet narrow, 4 mm long, slightly
 exceeding the cx; pods recurved-
 spreading, faintly 1-nerved at the base,
 sds elliptic, broadly winged.

Hall U 81. Sber mts (Parish 498).
 Yosemite. Gabriel mts.

ARABIS VIRGINICA Trelease.

Abrams, Fl LA 178.

Ann or rarely bien, glabrate; sts as-
 cending or decumbent, 1.5-3 dm high;
 lvs oblong, narrow, deeply pinatifid,

2.5-7 cm long, the lower petioled, upper nearly sessile; pedicels spreading or ascending, 4 mm long in fr; fls very sm, w; pods linear, ascending, 16-24 mm long, about 2 mm broad; sds in 1 row in each cell, nearly as broad as the pod, orbicular, wing-margined.

Arabis Ludoviciana C. A. Meyer.

Genus CAULANTHUS Watson.

Stout erect bienn, with pinnatifid, toothed or nearly entire lvs and p or greenish-w fls: Sep about equal, saccate at base: Pet slightly longer, undulate-crested, claw broad, blade rhomboid scarcely broader than claw: Anth linear, sagittate at base, curved: Stig somewhat 2lobed, the lobes parallel with the valves: Pods terete, elongated, sessile upon the receptacle; valves 1-nerved: Sds in 1 row, oblong, somewhat flattened, scarcely or not at all margined: Cotyledons incumbent.

CAULANTHUS AMPLEXICAULIS S. Watson.

Hall, U 82.

Davidson, Erythra 2:178, LA Co.

Glaucous ann, rather slender and flexuous, simple or more frequently with several spreading branches; lvs elliptic-oblong or the upper broadly cordate-clasping, subentire often ascending; pedicels 8-24 mm long, widely spreading.

Abrams, Fl LA 166.—Near San Fernando (Davidson).

CAULANTHUS COULTERI S. Watson.

Watson, Bot King Exp 27; Bot Cal 36.

Mostly hispid: sts rather slender, 1-2 ft hi, simple or branched: lvs mostly dentate, sessile, the radical broadly spatulate and sinuately toothed; cauline oblong-lanceolate, clasping with a cordate base; the uppermost entire: sep 3-4 li long, broad, acute, hispid: pod straight, terete, 3-4 i long, nearly 1½ li broad, pendent upon the hispid pedicel, beaked by the stout sty: stig 2-lobed. So Cal (Coulter); Ft. Tejon (Xantus).

CAULANTHUS CRASSICAULIS S. Watson.

Glabrous, glaucous; st hollow, inflated, erect, 2-3 ft hi, rarely branched: lvs mostly radical, petioled, runcinate or runcinate-pinnatifid: fls 6 li long, dark p; ex very woolly: pod terete, 3-5 i long, 1½ li broad, ascending on very short pedicels: stig 2-lobed, sessile.

Watson, bot King Exp 27 (1871); bot Cal 36: "known as wild cabbage and at times used for food."

Type locality: "Mountain side on the east shore of the Salt Lake, Utah."

Coville, CNH 4:62, 251.

CAULANTHUS GLANDULOSUS Hooker.

Variety LAEVIS S. Watson.

Baja (Or 899); Sber (Parish 449).

CAULANTHUS INFLATUS Watson.

Watson, Am ac pr 17:364 (1882).

Type locality: "in the Mohave Desert, California."

CAULANTHUS PILOSUS S. Watson.

Watson, bot King Exp 27 (1871).

Type locality: "on dry foot-hills in the Truckee Valley, and near Humboldt lake, Nevada."

Genus TROPIDOCARPUM Hooker.

Slender erect branching an, more or less hirsute-pubescent with simple hairs or with a few forked ones intermingling: lvs pinnatifid: fls y, borne in loose leafy-bracted racemes: sep concave, spreading, at base: pet spatulate-obovate: sta tetraynamous; anth short, rounded; stig circular or slightly emarginate, on a slender sty: silique partially or completely 2-celled, sometimes twisted.

TROPIDOCARPUM GRACILE Hooker.

Hooker, Ic Pl L t 43 (1837).

Sts slender, erect or spreading, usually 15-25 cm long, more or less pubescent: lvs shallowly or deeply pinnatifid, seg acutish, cleft or entire: cauline lvs reduced; pedicels axy, spreading, 6-20 mm long; pods lance-linear to linear, 1-2 cm long, strongly obcompressed throughout; sds in 2 rows in each cell.

Type locality: "Monterey, California."

Coville, CNH 4:65, 234. Near Sber.

Abrams, Fl LA 173.—Frequent in our interior valleys.

Genus THELYPODIUM Endl.

Erect an or biennial herbs, glabrous or somewhat pubescent with simple hairs: lvs entire, toothed or pinnatifid: fls racemose or subspicate, p'ish or w'ish: siliques nearly terete, linear, short-stipitate or sessile; valves 1-nerved, dehiscent; sty short; stig nearly entire: sds in 1 row in each cell, oblong margiless; cotyledons incumbent.

THELYPODIUM COOPERI S. Watson.

Southern Cal (Parish 1761).

THELYPODIUM INTEGRIFOLIUM Endl.

Stout, 3-6 ft high, branched at the summit, often corymbosely: radical lvs often a ft or more long, oblong-elliptical, long-petioled; cauline lvs mostly narrowly lanceolate, 1-2 i long, sessile, ascending, the uppermost linear: fls crowded and almost corymbosa at the end of the branches: sep 1½-2½ li long; pet spatulate-obovate, pale rose-color: frng racemes short and crowded; pod 6-15 li long, somewhat torulose, acuminate with the slender sty.

Edge of the Mohave Desert (Heermann). Ore: NM.

Davidson, Erythra 2:178, LA Co.

Deserts, San Bernardino Co. (Parish 1435).

Thelypodium integrifolium Nuttall in T & G Fl 1:96 (1838).

THELYPODIUM LASIOPHYLLUM Greene.

Torr cl b 13:142 (1885), based on Turritis (?) lasiophylla Hooker & Arn. Bot Beech 321 (1839-40).

Abrams, Fl LA 166.

Erect an, simple or sparingly branched above the middle, hispid be-

low, often smoothish above: lvs oblanceolate in outline, irregularly sinuate-toothed or pinnatifid with spreading acute entire or toothed seg, 4-12 cm long, distinctly petioled and the upper sessile by a narrow base: infl racemose: sep oblong, $\frac{1}{2}$ as long as pet: pet narrow, spatulate, 3-5 mm long, pale rose or yellowish-w: siliques usually deflexed or widely spreading, slender attenuate, 3-5 cm long, on pedicels 2-3 mm long.

Sisymbrium reflexum Nuttall, Pl Gamb 183.—Watson Bot. Cal 1:41.—Greene, Cal ac b 1:221.

Thelypodium neglectum Jones, Am nat 17:875.

Variety *INALIENUM* Robinson.

Abrams, Fl LA 166. Hills about LA. Size and habit of type; pet y; siliques erect or slightly spreading.

Sisymbrium acutangulum Brewer & Watson, Bot Cal 1:41 (1876).

THELYPODIUM WRIGHTII A. Gray.

Baja mts (Or. 945).

Genus **THYSANOCARPUS** Hooker.

Erect and slender, sparingly branched ann with minute w or rose-colored fls in slender elongated racemes: sta 6, tetralynamous or rarely only 4: Capsule compressed, orbicular, 1-celled, 1-ovuled, indehiscent, winged; the wings entire crenate or perforated. **THYSANOCARPUS CURVIPES** Hooker.

More or less hirsute, 2 dm hi or more, branching above; basal lvs rosulate, oblong, pinnatifid with short, blunt lobes or dentate; upper lvs lanceolate, sagittate-auriculate, clasping at base, 1-2 cm long; pedicels very slender, 3-6 mm long, strongly recurved; capsule usually pubescent; wings entire or crenate.

Abrams, Fl LA 177.—“Frequent on grassy slopes. Mr.-Ap.”

Hail, U 83.

Variety *ELEGANS* Robinson.

Variety *PULCHELLUS* Greene.

Davidson, Er. thea 2:179. LA Co.

THYSANOCARPUS LACINIATUS Nutt.

Smooth or nearly so, somewhat glaucous, 2-4 dm high, lvs rather thin. Basal ones not forming a rosette, linear, entire to deeply pinnatifid into narrow linear, seg, upper lvs entire, 20-25 mm long, 2-4 mm wide, narrowed at base, racemes 10-20 cm long: pods elliptic to orbicular, 3-3.5 mm in diam, including the entire or slightly crenate wing, reticulate, glabrous or sometimes somewhat pubescent; pedicels slender, spreading and becoming more or less deflexed.

Abrams, Fl LA 177.

Brandegee Zoe 1:113, Catalina I.

Variety *CRENATUS* Brandegee.

Genus **STANLEYA** Nuttall.

Mostly tall erect branching glabrous or glaucous per herbs; lvs entire toothed or pinnately divided; fls large, y, bractless, in elongated terminal racemes: sep linear, narrow; pet narrow,

long-clawed: sta 6, nearly equal, anth twisted: ova short, stipitate; sty short or 0: siliques linear, long-stipitate, spreading or recurving, somewhat compressed, dehiscent; valves strongly 1-nerved: sds in 1 row in each cell: cotyledons straight.

STANLEYA PINNATA Britton.

Sts stout, 15-25 dm high; lower lvs pinnatifid or pinnately divided or rarely entire, 10-20 cm long, 2-8 cm wide, long-petioled; upper lvs similar or less divided or oblong-lanceolate and entire, short-petioled; fls numerous, y; pet 16-24 mm long; fl filiform exserted; siliques 5-8 cm long, on stipes about $\frac{1}{2}$ as long.

Abrams, Fl LA 165.

CD (Parish), Mohave, SBer, NM, Ar, Wyo.

Britton, NY ac tr 8:62 (1889).

Type locality: “in Upper Louisiana.”

Cleome pinnata Pursh, Fl 2:739 (1814).

Stanleya pinnatifida Nuttall.

Genus **SOPHIA** Adams.

Ann or per herbs, canescent or pubescent with short forked hairs, with slender branching sts, 2-pinnatifid or finely dissected lvs: fls y, in terminal racemes, these becoming elongated in fr: ex early deciduous: sty very short: siliques linear or linear-oblong, slender-pedicelled, valves 1-nerved: sds minute, oblong, wingless, in 1 or 2 rows in each cell: cotyledons incumbent. **SOPHIA INCISA** Greene.

Glabrous or somewhat glandular-hairy, 3-6 dm high, freely branching; lvs pinnately divided, the seg lanceolate or linear-lanceolate, incisedly serrate; pet lanceolate spatulate, surpassing the pet; pedicels 4-6 mm long, spreading, exceeded by the spreading or curved-ascending, nearly or quite glabrous capsule; sds in 1 row in each cell.

Abrams, Fl LA 177. SBer mts, frequent in the pine belt.

SOPHIA PINNATA Howell.

Densely canescent throughout, pale; st erect, branched, 2-7 dm high, slender, the branches ascending; lvs 5-10 cm long, oblong, 2-pinnatifid into very numerous small, toothed or entire obtuse seg; pedicels very slender, widely spreading, 10-15 mm long; pods horizontal or ascending, oblong or linear-oblong, somewhat compressed, 6-8 mm long, 2 mm wide, canescent or glabrous: sds in 2 rows in each cell.

Abrams, Fl LA 177.—“Common in sandy soil in the foothills and valleys. Ap-Je.”

SD (Or 43). Baja!

See *Sisymbrium pinnatum*.

Genus **ATHYSANUS** Greene.

Slender diffuse ann, leafy only near the base: lvs simple, toothed: sep equal: pet without claws: sta 6, equal: siliques orbicular, not winged or margined, 1-celled, 1-ovuled.

ATHYSANUS PUSILLUS Greene.

Hirsute-pubescent; sts filiform, branching from the base, the branches mostly ascending, unilaterally racemose throughout; lvs few, ovate, sparingly toothed, 1 cm long; fls minute, often apetalous; pods lenticular, more or less uncinately hispid, 2 mm long or less.

Abrams, Fl LA 176.—Frequent in the chaparral belt throughout our range. Mr-My.

Vancouver Island; SD! Baja!

Thysanocarpus pusillus Hooker, Ic Pl t 43; Hook & Arn, bot Beechey 324.

Thysanocarpus oblongifolius Nuttall, in T & G Fl 1:118.

Genus ALYSSUM Tournefort.

Pod oval or orbicular, compressed; valves convex and nerveless; sds 1 or 2 in each cell; cotyledons accumbent. Sep equal; pet w or y: longer fil often toothed; low herbs, stellate-canescens, mostly with simple lvs. Nearly 150 species, natives of the old world.

König Adans.

ALYSSUM MARITIMUM Lam.

Ascending or sometimes procumbent, freely branching, 1-3 dm high, minutely pubescent with appressed hairs; basal leaves oblanceolate, narrowed into a petiole; fls w, fragrant, about 4 mm broad; fring pedicels ascending, 6-8 mm long; capsules glabrous, pointed, oval or nearly orbicular, 2-3 mm long.

An escape from gardens, along streets and in waste places. Flowering nearly throughout the year. Sweet alyssum.

König maritima R. Br.

Abrams, Fl LA 180.

Lobularia maritima Desv.

Genus CAPSELLA Moench.

Erect ann herbs, pubescent with forked hairs: basal lvs tufted: fls racemose, small, w: silicles cuneate-obcordate, obcompressed, the valves keeled: sty short: sds num in each cell, marginless: cotyledons accumbent. Shepherd's Purse.

Bursa Weber.

CAPSELLA BURSA-PASTORIS Medic.

Erect, branching, 15-40 cm high, pubescent below, mostly glabrous above; basal lvs lobed or pinnatifid, forming a rosette, 5-12 cm long; cauline lvs few, lanceolate, auricled, dentate or entire: fls 2 mm broad; pedicels slender, spreading or ascending, 10-14 mm long in fr: pods triangular, more or less deeply emarginate at apex, rarely truncate, 4-6 mm long. Common weed.

Type locality: European.

Bursa Bursa-pastoris Britton.

Abrams Fl LA 175.

Bursa pastoris Wigg, Prim Fl Hols 47 (1780).

Davidson, Erythra 1:57. LA.

CAPSELLA DIVARICATA Walpers.

Erect or subdecumbent, branched;

lvs ovate and entire, or pinnatifid with several oblong lobes; upper lvs linear and often entire; silicle elliptic-oblong, obtuse. A small slender-branching glabrous ann, 2-6 i hi.

Parry, bot obs Wyo 4.

Type locality: "shady grassy plains of the Oregon, near the junction of the Wahlamet."

Bursa divaricata K, Rev gen pl 1:21 (1891).

Hutchinsia procumbens Desv.

Capsella elliptica Meyer.

Hymenolobus divaricatus and *H. erectus* Nuttall, in T & G Fl 1:117 (1838).

Genus BRASSICA Linnaeus.

Mustard. Erect branching an or biennial herbs, with pinnatifid lvs, those of the st dentate or often nearly entire, and showy y fls in elongated racemes: silicles elongated sessile on a receptacle, terete or 4-angled, tipped with a persistent usually 1-seeded beak; valves 1-3-nerved: stig truncate or 2-lobed: sds in 1 row in each cell, globose: cotyledons conduplicate.

BRASSICA ADPRESSIS Boiss.

Parish, Zoe 1:57.

*None of the leaves clasping the stem.

BRASSICA NIGRA Koch.

Erect 1-3 m high, freely and widely branching, pubescent or glabrate; lower lvs slender-petioled, deeply pinnatifid, with 1 terminal large lobe and 2-4 smaller lateral ones; seg all dentate; upper lvs short-petioled or sessile, pinnatifid or dentate or the uppermost entire; fls 6-10 mm broad; pedicels slender, 4 mm long in fr: pods narrowly linear, 4-angled, smooth 10-15 mm long, 1 mm wide, appressed against the st beak slender 2-4 mm long; sds dark brown.

Abrams, Fl LA 170.—Common in poorly cultivated fields, especially in adobe soils. Ap-My.

Davidson, Erythra 1:56, LA Co.

Hall, U 81.

Parish, Zoe 1:57.

Cruz; Guad; Black mustard.

Frangeege, Zoe 1:112, Cat.

Koch, in Roehl Deutschl Fl Ed 3, 4:713 (1833).

Type locality: European.

Sinapis nigra L sp Pl 2:668 (1753).

BRASSICA ALBA Boiss.

Erect, branching above, 3-10 dm high, more or less pubescent with simple hairs; lvs all pinnatifid or the upper only dentate; pods spreading, pubescent, tipped with a flattened black of about equal length; sds pale y.

Abrams, Fl LA 170.

Davidson, Erythra 1:57, Monica (Hasse).

White Mustard.

**Upper leaves clasping.

BRASSICA CAMPESTRIS L.

Sts 3-10 dm hi, glabrous and glaucous or rarely slightly pubescent be-

low; lower lvs petioled, pubescent, more or less lobed or pinnatifid, the upper glabrous, lanceolate or oblong, acute or obtuseish, sessile and clasping at the base, entire or dentate; pedicels spreading or ascending, often 2 cm long in fr; pods 3-5 cm long; beak 8-10 mm long.

Frequent in waysides and neglected gardens. Ja-Ap. In favored places often flowering nearly throughout the year.

Abrams, Fl LA 170.

Br Zoe 1:113, Cat.

Parish, Zoe, 1:57.

Davidson, Erythea 1:57, LA.

Cruz; Guad. San Miguel Island. Wild turnip.

BRASSICA SINAPISTRUM Boiss

Parish, Zoe 1:57.

Ann. rough with spreading hairs, 2-5 ft hi; lower lvs usually with a large coarsely toothed terminal lobe and a few smaller ones upon the rachis; upper lvs often undivided, oblong or lanceolate; pods somewhat torulose, 1-1½ i long, more than a third occupied by the stout 2-edged beak; valves often ribbed by the prominent nerves.

"The charlock of the eastern U S and Eu, where it is often a troublesome weed in grainfields. Sparingly naturalized in So Cal."—Watson, Bot Cal 1:40.

Sinapis arvensis Linnaeus.

Genus NASTURTIIUM R. Brown.

Nearly or quite glabrous ann or per, sometimes growing in water, mostly in wet places; lvs toothed or pinnatifid or pinnately divided; fls sm, w or y; sep spreading in anthesis; pet scarcely clawed; stig capitate, nearly sessile; pod linear or oblong, terete or nearly so, valves mostly 1-nerved; sts minute, in 2 rows in each cell; cotyledons accumbent.

*Flowers white.

NASTURTIIUM OFFICINALE R. Br.

Watercress. Aquatic, glabrous; sts branching, floating or creeping, rooting from the nodes; lvs odd-pinnate; lfts 3-11, roundish or oblong, nearly entire; racemes elongated in fruit; flowers white, 4-5 mm broad; petals twice the length of the sepals; pods 1-3 cm long, 2 mm wide, spreading and slightly curved upward, on pedicels of about their own length.

Common in streams. My-O. Eu, widely naturalized in Am.

P. Brown, Hort Kew ed 2. 4:110 (1812).

Parish, Zoe 1:125.

Davidson, Erythea 1:57, LA Co.

Roripa *Nasturtium* Rusby.

Abrams, Fl LA 172.

Nasturtium aquaticum Tragus, Hist 82 (1552).

**Flowers yellow.

NASTURTIIUM CURVISILIIQUA Nuttall.

Ann or bienn, sparingly pubescent or glabrous, with erect or ascending, usually much branched sts. 15-45 cm hi; lvs mostly oblanceolate in outline, pin-

natifid, pinnately lobed or toothed, the lower 25-75 mm long; racemes short; fls pale y, 4 mm broad; pet slightly exceeding the sep; sty short; pods linear, 8-15 mm long, about 1.5 mm wide, strongly curved upward; pedicels spreading or ascending.

Frequent in low ground, about ponds and on river bottoms. Variable in foliage characters.

Parry, bot obs Wyo 17.

Roripa *curvisiliqua* Bessey.

Abrams, Fl LA 172.

Variety LYRATUM S. Watson.

Davidson, Erythea 2:178. LA Co.

Lvs coarsely toothed, broad above, narrowed toward the base.

Variety FILIPES A. Gray.

Variety LAEVIS S. Watson.

NASTURTIIUM OBTUSUM Nuttall.

Variety SPHAEROCARPUM S. Watson.

Genus LEPIDIUM Linnaeus.

Erect or diffuse, glabrous or pubescent, an or nearly bienn or per herbs, with pinnatifid, lobed or entire lvs and racemose w or wish fls; pet small or rarely 0; sta often fewer than 6; siliques oblong or obovate, flattened contrary to the partition, more or less emarginately winged at apex; valves keeled, dehiscent; sts 1 in each cell, flattened; cotyledons incumbent or rarely accumbent.

LEPIDIUM ACUTIDENS Howell.

Branching from the base, decumbent or ascending, 10-20 cm long, pubescent throughout with short spreading hairs; lvs linear tapering at both ends, entire or faintly and remotely denticulate, 2-5 cm long, about 2 mm wide; branches fling about 2-3 their length; racemes rather loose; pedicels strongly flattened, appressed to the st to near the middle, then curving outward; pod strongly reticulated, sparsely pubescent, 4 mm long including the acute teeth, about 3 mm broad; sinus about 1 mm deep and 2 mm broad at tip.

Abrams, Fl LA 168.—In saline places toward the coast. Cieneaga; Santa Monica.

Lepidium dictyotum acutidens Gray.

LEPIDIUM DICTYOTUM Gray.

Gray, Am ac pr 7:329; Watson, King Exp 30 t 4.

"Under sage-brush in early spring at Carson City and Steamboat Springs, Nevada (Anderson, Watson, Mann)."—Watson, bot Col 1:44.

SD (Or 1037).

Variety ACUTIDENS Gray.

Davidson, Erythea 2:179, LA Co.

See *Lepidium acutidens* Howell.

LEPIDIUM FLAVUM Torrey.

Davidson, Erythea 2:179, LA Co.

Torrey, Pac Ry R 4:67 (1857).

Type locality: "sandy places near the Mohave creek," Cal.

Glabrous, decumbent, diffusely branched; sts 3-6 i long; radical lvs pinnatifid with short obtuse lobes; cauline lvs few, oblanceolate, acutely toothed or entire; racemes short, near-

ly sessile; pet bright y; pods orbicular, 1 li broad or more, shortly winged with broad divergent acutish teeth, on spreading or deflexed pedicels 2-4 li long; style nearly as long as the pod.

LEPIDIUM FREMONTI Watson.

Davidson *Erythraea* 2:179. LA Co. Watson, Bot King Exp 30 (1871). Type locality: "on the Mohave river," Cal (Fremont).

Per with a somewhat woody base, diffusely branched, glabrous and glaucous, 1-1½ ft hi; lvs linear, 1-3 i long, entire or sparingly lobed; racemes rather short and few fld, terminal and lateral; pods rounded, abruptly cuneate at base, 2-4 li broad, slightly emarginate with short very obtuse teeth.

Northwestern Nev (Watson, Lemmon). So Ut (Parry). So Colo (Rothrock).

LEPIDIUM LASIOCARPUM Nutt.

Low, branching from or near the base, decumbent or ascending, hirsute with spreading hairs or somewhat tomentulose; lower lvs pinnately parted, seg usually rather broad, obtuse or rounded, sparingly toothed or entire; racemes several; pedicels distinctly flattened, horizontally spreading, 3 mm long; capsule suborbicular, thin-margined near the apex, hispid pubescent upon both faces or at least upon the margins.

Abrams, Fl LA 168.—Sand-dunes along the seashore.

Davidson, *Erythraea* 2:179, LA Co.

Branchegee, Zoe 1:113, Cat.

Nuttall, in T & G Fl 1:115 (1838).

Type locality: "near St. Barbara, in Upper California."

Coville, CNH 4:66, 36, 242, 244, 245, 246, 247, 248, 250, 252, 253. "A common desert annual."

Variety *TENUIPES* S. Watson.

LEPIDIUM LATIPES Hooker.

Hooker, Ic Pl t 41; T & G Fl 1:116.

Hispid with short spreading hairs or the lvs glabrous; sts several, stout, simple, 1-3 i long; lvs exceeding the sts, ir'ly and coarsely pinnatifid, the seg linear and entire or lobed; racemes short and capitate, in fr 1 i long or less; pedicels 1-2 li long; sep very unequal; pet broadly spatulate, ciliate, greenish, 1-2 li long, much exceeding the sep; pod broadly oval, 2 li broad, sparingly pubescent, strongly reticulated, the broad acute wings nearly as long as the pod.

In saline soils near the coast, from Martinez, Cal. to Baja. SD (Or 20).

LEPIDIUM MEDIUM Greene.

Glabrous or nearly so; sts simple below, branching above, erect, 2-9 cm hi; lvs lanceolate, dentate, rarely pinnatifid; st lvs entire; pedicels slender, terete, spreading or divaricate, longer than the capsule; sta 2-4; capsule orbicular retuse, glabrous.

Abrams, Fl LA 167.—Common in the valleys and mountains throughout our range.

Greene, *Erythraea* 3:36.

Hall, U 82. Pepper grass.

Pt Loma, SD (Or 1039).

Lepidium intermedium Gray, Bot Cal 1:47 not A. Rich.

LEPIDIUM NITIDUM Nuttall.

Erect or usually branched from the base and spreading, 1-3 dm high, glabrate or somewhat pubescent; lower lvs deeply pinnatifid with narrow rachis and alternate seg; the upper lvs often entire; racemes 1-several, loosely fld; pet considerably exceeding the sep; pedicels strongly flattened, spreading; capsule smooth, shining, often purplish, 4-5 mm long.

Abrams, Fl LA 168.—Very common on grassy plains and hills. F-Mr.

Branchegee, Zoe 1:113, Catalina Is.

Davidson, *Erythraea* 2:179, LA Co.

Genus CHEIRANTHUS Linnaeus.

CHEIRANTHUS ANGUSTATUS Greene.

Per; rather stout, erect, 5 dm high or more; lvs narrowly linear-lanceolate, entire or few-toothed, few and scattered above, densely clothing the basal part of the herbaceous st and short sterile branches of the short subigneous caudex, the whole plant subcinereous; appressed 2-forked hairs: ex-lobes 10-12 mm long; pet y, the lower pair parallel to each other, the upper divergent from each other; pods in a long, lax, raceme, 4-sided, ascending.

Abrams, Fl LA 179. Monica and Santa Ana mts.

CHEIRANTHUS SUFFRUTESCENS.

Per; often much branched, the branches woody, 1 m long or less, usually straggling among low shrubs, rough from the persistent bases of the old lvs, usually about 5 mm thick; floral branches clustered at the ends of the main branches, slender, 3-4 dm long; lvs scattered along the floral branches, densely clothing their bases, very narrowly linear-oblancoleate, 2-3 mm broad, entire or remotely and obscurely denticulate, these as well as the branches cinerous with appressed 2-forked hairs: ex-lobes 6-7 mm long; pet y, cruciform; pods in rather short but lax racemes, on pedicels about 8 mm long, widely spreading, straight or slightly curved upwards, 4-sided, 1.5-1.75 mm broad, 5-6 cm long; beak slender, scarcely 1 mm broad and but little longer; sds brownish, about 1.5 mm long. Common on the sanddunes along the seashore. Flowering nearly the year round.—Abrams, Fl LA 179.

Genus ERYSIMUM Linnaeus.

Erect ann, somewhat hirsute at least below with simple hairs; lvs pinnatifid; Infl spiciform with several divaricately spreading branches; fls sm, y; siliques terete, tapering almost from the base to apex; stig slightly 2-lobed; sds in 1 row in each cell.

A monotypic genus as above defined by Abrams.

Erect stoutish bien or per, simple or with few branches: lvs narrow, entire, dentate or lobed: fls large, or to light y. sep narrow, equal at base or the lateral saccate: pet with slender claws and obovate blades: pod linear, flatte, with 1-nerved valves or quadrangular: s.l.s in 1 row, num, not margined.

As last defined by Jepson, the genus *Cheiranthus* of Linnaeus.

ERYSIMUM OFFICINALE L.

Abrams, Fl LA 169.

See *Sisymbrium officinale* Scop.

ERYSIMUM ASPERUM DC.

British Am to Mexico. Cruz. Sber (Or 1391). Baja! SD (Or 17). Hall, U 82.

DC, Syst 2:505 (1821); Hook, Fl 1:64 t 22.

Type locality: "on the plains of the Missouri, commencing near the confluence of the White river."

Coville, CNH 4:64, 260.

Bien, canescent with short appressed hairs: sts solitary and simple, rarely branched above, 1-3 ft hi or less: lvs oblanceolate or narrowly spatulate: the cauline linear to linear-lanceolate, entire or sparingly repand with short acute teeth, 1-3 l long: sep narrow, 4-6 li long, strongly gibbous: pet 8-12 li long, light y to deep or, or p: pods 1-4 l long, 1 li wide, beaked with a stout sty, ascending on stout spreading pedicels 3 li long.

Erysimum Californicum Greene.

Cheiranthus asperus Nuttall, Gen 2:69 (1818).

Genus BARBAREA R. Brown.

Erect glabrous biennial or per branching herbs with angled sts, pinnatifid lvs and racemose y fls. Siliques elongated, linear 4-angled; valves keeled or ribbed; sty short; stig 2-lobed or capitate. S.l.s in 1 row in each cell, flat, oblong, marginless. Cotyledons accumbent.

BARBAREA BARBAREA MacM.

Tufted sts erect, 3-6 dm high; lower lvs petioled, 5-12 cm long, lyrate-pinnatifid, seg oval or obovate, repand-toothed or sometimes entire; upper lvs sessile, rarely clasping: fls y, 6-8 mm broad; pods spreading or ascending, about 2 cm long, obscurely 4-angled; pedicels about 4 mm long.

Barbarea vulgaris R. Br.

Abrams, Fl LA 171.—"Moist places in the mts, confined mostly to the pine belt. Je-Ag."

BARBAREA VULGARIS R. Br.

See *Barbarea barbarea* MacM.

Variety *ARCUATA* Fries.

Pods and pedicels spreading.

Variety *GLABRIOR* Robinson.

Genus SISYMBRIUM Linnaeus.

Erect ann with pinnatifid or finely dissected lvs, the base not clasping or auriculate; fls sm, y: sep oblong or linear, equalling or exceeding the claws of the pet: siliques linear, terete or nearly so, the valves more or less dis-

tinctly 3-nerved; stigma sessile or the style very short: cotyledons incumbent. **SISYMBRIUM INCISUM** Engelm.

Ann; pubescence short, more or less glandular: sts branched, 1-4 ft hi: lvs pinnate, segs linear to ovate-oblong, more or less deeply pinnatifid, sometimes entire: pet y, about 1½ li long: pods narrowly linear, usually pointed at both ends, ½ l long and 8-12-seeded, or sometimes much shorter and few-seeded, mostly exceeding the spreading pedicels.

Engelmann in Gray, Pl Fendl 8 (1849).

Type localities: "banks of streams in New Mexico; Santa Fe creek, and Mora River." LA (Davidson). Wash. NM.

Variety *FILIPES* Gray, Pl Fendl 8. *Sisymbrium longepedunculatum* Four, Sisyb 59, excluding synonymy.

Davidson *Erythraea* 2:178. LA Co.

A form with divaricate pedicels, 6-8 li long, exceeding the pods. From Ore, perfectly glabrous (Spaulding); from Ar, canescent with a fine dense pubescence (Palmer).

Variety *HARTWEGIANUM* S. Watson.

The short pods on somewhat appressed or nearly erect pedicels about 2 li long.

Sisymbrium Hartwegianum Fourn, Sisyb 66.

SISYMBRIUM OFFICINALE Scop.

Davidson, Pl LA Co 2; *Erythraea* 1:57. LA Co.

Hedge Mustard. A little rough-hispid with scattered hairs; stems rigid, erect, 3-4 ft high, with divaricate branches above; lvs lyrate and often somewhat runcinately pinnatifid or pinnately parted with dentate or coarsely toothed seg, petioled, the lowest rosulate and 4-10 l long: fls 1½-2 lines in diam; pods terete, ½ l long, tapering from base to summit, nearly sessile, closely appressed to the axis in a long slender raceme. A very common weed.

Santa Cruz Island, "in cult lands only."—Greene.

Erysimum officinale L.

SISYMBRIUM ACUTANGULUM DC.

Davidson, *Erythraea* 1:57 LA, probably refers to *Thelypodium lasiophyllum* inalienum.

SISYMBRIUM REFLEXUM Nutt.

Brandege, Zoe 1:113, Cat.

See *Thelypodium lasiophyllum* Greene.

SISYMBRIUM PINNATUM Greene.

Sisymbrium canescens Nuttall, Gen 2:68 (1818).

Upper San Joaquin valley, Cal. Baja. Greene, Cal a b 2:390 (1887).

Cruz, LA (Davidson).

Erysimum pinnatum Walter, Fl Carol 174 (1788).

See *Sophia pinnata* Howell, for description.

Genus RAPHANUS Linnaeus.

Erect or widely branching from the base, ann or bien herbs, with lyrate lvs and showy fls: Siliques elongated linear,

fleshy or corky, constricted or continuous and spongy between the sds, indehiscent: sds globose: cotyledons conuplicate.

RAPHANUS RAPHANISTRUM L.

Wild Radish. Pet y, veined, becoming w or p: pods necklace-shaped, long-beaked, 1-9-seeded, breaking easily between the sds. Naturalized in various parts of the world as a troublesome weed in cultivated fields.

RAPHANUS SATIVUS L.

Davidson, *Erytnea* 1:57. LA Co, "bids fair to become one of the most troublesome of weeds.

Davidson, *Fl LA Co 2.*

Bienn or ann from a more or less elongated fleshy rt: erect and freely branching, 3-5 dm high, sparsely pubescent with stiff hairs or nearly glabrous above: lower lvs deeply lyrate-pinnatifid: seg crenate or dentate: fls 12-18 mm broad, y or w, with p veins: pods 2-4 cm long, constricted between the sds when mature: sds 2-several; beak conical, 1-2 cm long.

Abrams, *Fl LA 171.*

CLEOME LUTEA Hooker.

Erect, glabrous, branching, 4-12 dm high; lvs 5-foliolate, slender-petioled or the upper 3-foliolate and subsessile; lfts oblong or oblong-oblancoleate, entire, short-stalked or sessile, narrowed at the base, obtuse or acute and mucronulate at apex, 1-5 cm long bracts linear-oblong mucronulate; fls densely racemose; pedicels slender, 10-12 mm long; pod linear, acute, 3-6 cm long, borne on a stipe nearly as long.

Abrams, *Fl LA 181.*—"Field near Downey (Davidson)."

Mts. Baja Cal. (Or 1245); Nevada; Co'o. **CLEOMELLA OBTUSIFOLIA Torrey.**

Branching from the base, 3'-1½° high, finely pubescent or hairy: lfts broadly obovate to oblong, shorter than the petioles; stipules deciduous; pet 2" long; sep ciliate or almost fimbriate, very much shorter than the pet; pods 2-4" broad; stipe 3" long, reflexed upon the pedicel.

Torrey & Fremont, in Fremont, 2d R 31: (1845).

Type locality: "on the American fork of the Sacramento river, Cal."

Genus ISOMERIS Nuttall.

Ill-scented shrubs with puberulent branches, 3-foliolate petioled lvs and large y fls axillary or in bracteate racemes: sep 4, persistent: pet 4, oblong, equal: receptacle dilated with a hemispherical torus: sta 6, inserted in the receptacle: enlarged glandular on upper surface: ova longstipitate, many-ovuled on the placenta; sty short, stig minute, cap oval or nearly globose, inflated, tardily 2-valves: sds smooth.

ISOMERIS ARBOREA Nuttall.

Widely branching shrub, 1-3 m high, with hard y wood and puberulent branches, lvs 3-foliolate: lfts oblong to lanceolate, equaling the petioles, entire, mucronate; fls in terminal bracteate

racemes; bracts simple; pet y, 10-16 cm long twice longer than the sep; cap oblong 2.5-3.5 cm long, attenuate into the stipe and abruptly tapering at the apex.

Abrams, *Fl LA 181.*

Nuttall, in T & G *Fl 1:124* (1838).

Type locality: "St. Diego, Cal."

Variety **GLOBOSA Coville.**

Abrams, *Fl LA 181.*

Coville, *Wash biol soc pr 7:73* (1892); *CNH 4: 67, 258.*

St not glaucous; pet ovate, sub-palmately veined; capsule globose, truncate or retuse, 2.5-3.5 cm long; s1 with a transverse groove between hilum and body; otherwise as the type form.

Type in USNHb (No. 1107, Death Valley Exp), collected 24 Je 1891, on Caliente creek, a few miles above Caliente, Kern Co, Cal, by Frederick V. Coville.

Genus **RESEDA Linnaeus.**

Erect or decumbent herbs with entire, lobed or pinnatifid lvs and sm spicate or narrowly racemose fls: Pet 4-7, toothed or cleft: Disk cup-shaped, glandular: Sta 8-30, inserted on the inner surface of the disk and on one side of the fl: capsule 3-6-lobed, horned at the top before maturity. Mignonette or Dyer's weed.

RESEDA ODORATA Linnaeus.

Common Mignonette: Sts decumbent or ascending, 4-7 i high; lvs spatulate-oblong, entire; raceme broad and rather open; fls very fragrant, 2 li broad, greenish w: anth large, brick r. A garden escape.

RESEDA ALBA Linnaeus.

White Mignonette: lvs pinnately or deeply pinnatifid, the seg linear or oblong; raceme dense, spike-like; fls nearly or quite w, 2-3 lines broad. Southern Europe.

RESEDA LUTEA L.

Ascending or decumbent, somewhat pubescent with short stiff hairs or nearly glabrous; lvs 5-10 cm long, broadly ovate or oblong, deeply lobed or divided, sometimes pinnatifid, seg linear-oblong with undulate margins; fls in narrow racemes, 4-6 mm broad, greenish y; pedicels ascending, about 4 mm long in fr; pet 6 or 5, all but the lowest in cleft; sep of the same number; capsule oblong, about 8 mm long, with 3 or rarely 4 short teeth.

Abrams, *Fl LA 182.*—An occasional escape from gardens.

Genus OLIGOMERIS Cambess.

Low glaucous chiefly ann with linear and entire lvs, and sm greenish fls in terminal spikes: Sta usually 4: Pet 2, posterior, free or united at the base, entire or 2-3-lobed, persistent: Disk 0. Sta 3-10: ova 4-angled, 4 beaked: Cap 4-sulcate, many-seeded, opening at the summit.

OLIGOMERIS GLAUCESCENS Camb.

Ann or bien; 15-30 cm hi, branching at base; branches ascending; lvs often fasciated and somewhat fleshy, 1-2 cm

long; spikes elongated terminal, the stalk-like branches bracteate, densely fid; pet oblong, obscurely lobed, posterior; sta 3, posterior; capsule depressed globose, 3 mm in diam, 4-lobed, 4-cuspidate; sds smooth.

Abrams, Fl LA 183.

Oligomeris subulata Boiss.

Mohave and Colorado Deserts; Arizona; Baja Cal.

VIOLA PEDUNCULATA T. & G.

Peach violet; Yellow Pansy. Short-caulescent, stem 2-6 i hi, ascending, from a deep-seated rootstalk; lvs round ovate, usually with truncate base, coarsely crenate, $\frac{1}{2}$ - $1\frac{1}{4}$ i long; petioles 1-2 i long; stipules foliaceous, narrowly lanceolate, uppermost often sparingly incised; fls large, 1 i broad, on erect peduncles (4-5 i long) much surpassing the lvs; lateral pet bearded; stigma bearded; ovary and capsule glabrous, the latter broadly oblong, 5 lines long. Santos! SF. Santa Rosa Isl.

Abrams, Fl LA 254.

Fl $\frac{3}{4}$ i long, brilliant or-chrome, with purplish-bk center, very fragrant (resembling ripe peaches), the back of upper pet chestnut color.

Brandegee, Zoe 1:113. Cat.

VIOLA PINETORUM Greene.

"Caulescent, the short stems tufted at the end of a slender nearly horizontal rootstock or root a foot long; fl'ng stems surpassed by the long-peduncled foliage; herbage cinerous-pubescent; leaves from oval to linear-lanceolate, the broader coarsely sinuate-toothed, the narrower nearly or quite entire, all tapering below to the slender elongated peduncle; stipules mostly scarious, lanceolate-acuminate, sparingly lacerate; fls on long filiform peduncles, small, purplish or bluish."—Greene, Pitt 2:14, Kern Co.; 3:42, Bear Valley, San Bernardino Co. (Parish) "truly yellow-flowered." Yosemite and Donner Lake.

See *V. purpurea* variety *pinetorum*.

VIOLA BLANDA Willd.

So Cal (Parish 1795). Hall U 95.

Acaulescent, lvs and scapes from slender filiform, rtstocks, glabrous or nearly so; lvs thin, ovate cordate to round-reniform, crenulate; pet oblong to ovate-lanceolate; pet w with p veins on the lower and sometimes the lateral ones, usually beardless; spur short and saccate.

Abrams, Fl LA 254.—Occasional about cold springs in the upper portions of the pine belt of the San Bernardino and San Jacinto mountains.

Type locality: "In America boreali."

Willd., *Mort Berolet* t 24 (1816).

V. PINOCHASII Steud.

Sts clustered from a deep fasciated rootstock; saccate base, only the lvs and fls appearing above the ground.

more or less pubescent; lvs large, bipinnately dissected into long linear or oblong seg; stipules lanceolate, entire or toothed; ped equalling or exceeding the lvs; pet 10-14 cm long, y, the upper brownish-p without.

Abrams, Fl LA 255, Bear.

Julian, SD Co (Cleveland, Or) to north of Mendocino Co.

Viola chrysantha Hooker.

VIOLA LOBATA Benth.

Rtstocks erect; sts stoutish, erect, 15-30 cm high, leafy to the summit, puberulent or nearly glabrous; lvs reniform or cordate in outline, 5-10 cm broad, palmately cleft into 5-9 narrowly oblong lobes, the central largest or longest, some of the basal lvs often less lobed or merely coarsely toothed; pet 12 mm long, y, the upper brownish without, the lateral slightly bearded.

Abrams, Fl LA 254.—Occasional on the borders of mountain meadows in the SBer mts. Bear.

Variety *INTEGRIFOLIA* S. Watson.

Variety *PETIOLATA* Rose.

Cuyamaca (Or 1503).

VIOLA PALMATA Linnaeus.

Variety *CUCULLATA* A. Gray.

Acaulescent, the lvs and scapes directly from rather short and thick rtstocks, glabrous or somewhat villous-pubescent; lvs round-cordate, reniform or hastatereniform, the basal sides often cucullate-involute; cor only saccate-spurred, bl or vio-p, rarely w; lateral pet bearded toward the base; sty gibbous-clavate, beardless at summit.

Abrams, Fl LA 254.—In swamp-lands about Los Angeles, Davidson.

Genus POLYGALA Tournefort.

Herbs or shrubs with alt, opp or whorled lvs and racemose, spicate, or rarely solitary fls; pet 3, united into a tube, which is split on the back and more or less adnate to the sta; sta 8 or 6, monadelphous below or diadelphous; cap membranous, compressed, dehiscent along the margin; sds usually hairy.

POLYGALA CALIFORNICA Nutt.

Sts many, slender, 5-20 cm hi from a woody base, mostly simple; lvs oblong-lanceolate or ovate-elliptic, 1-2.5 cm long; fls rose-p, on bracteate pedicels, 2-6 mm long; wings 5 mm long, rounded, saccate at base, inner sep broadly spatulate, 1 cm long or less; lateral pet linear-lanceolate, somewhat ciliate, equaling the broad obtuse somewhat curved beak of the rounded hood; fr mostly from cleistogamous fls; cap glabrous, broadly ovate, 3 mm long, retuse, narrowly margined; sd pubescent; caruncle calyptriform, wrinkled and bladderly.

Abrams, Fl LA 231. Mt Wilson trail, 3000 ft alt (McClatchie).

POLYGALA CORNUTA Kellogg.

Davidson, Erythra 2:84. El Dorado Co northward. LA Co; SBer (Torrey).

Chara hirsuta.

First published by Allen, in Torrey club b 27:301, t 10, 11 (1900), from Lakeside, SD Co, Cal.

Robinson, NY bot gard b 4:261, publishes the following description:—"Monoecious; 0.05-0.6 m. high, moderately incrustated; stems 0.26-0.62 mm. in diameter, singly corticated, the primary cells almost or completely covering the stem except in the youngest internodes, very small secondary cortical cells rarely developed; spine-cells often forming whorls around the stem, single or more often paired, and then usually unequal, variable, 0.25-1.7 mm. long, 0.05-0.11 mm. wide at base; lower internodes of the stem usually 1.5-2 cm., but reaching 6 cm. in length, the apical 3 or 4 together usually not exceeding 1 cm. in length: stipulodes forming a double whorl at each node, comparatively short, those in the upper whorl 0.38-0.56 mm. long, 0.035-0.05 mm. wide, those in the lower 0.26-0.37 mm. long, 0.03-0.04 mm. wide: leaves 10-12 in a whorl, 7-11 mm. long, containing 5 or 6 internodes, very slender, rarely more than 0.2 mm. in diameter at their bases, and little more than half this near their apices, cortex single, completely covering the leaves or leaving irregular, elongated interstices; leaflets 6-8 at the sterile nodes, forming a similar whorl at the apex, 0.4-1.4 mm. long, 0.07-0.09 mm. wide, the bracteoles attaining a length of 1.7 mm., all bracteoles exceeding the mature sporocarps, the anterior 0.84-1 mm. long, 0.31-0.37 mm. wide; oospores 0.63-0.68 mm. long, 0.23-0.25 mm. wide, truncate at both ends, with 14 or 15 striae; whorl of crown-cells about 0.9 mm. high, 0.18 mm. wide at base, the individual cells nearly square, but with rounded angles."

Chara Sanctae-Margaritae.

Type locality: Lakeside, SD Co, Cal.

Robinson, NY bot gard b 4:89 (based on *C. gymnopus Sanctae-Margaritae* Allen, Torrey club b 27:303, t 14, 15, f 1-4, 1900), publishes the following description:—"Monoecious, the antheridia and oogonia borne upon

the same leaf-nodes; 0.1-1 m. high, light-green, moderately but often unequally incrustated; stems 0.6-1 mm. in diameter, triply corticated, the terminal internodes beset with the lower ones less so or nearly destitute of, spine-cells, the length of the latter usually 0.7-1 mm.: stipulodes forming a double whorl at each node, those in the upper linear, acute, about 0.7 mm. long, 0.125 mm. wide, usually twice the length of the uncorticated basal internode of the leaves, stipulodes of the lower whorl of similar width, but only 0.35-0.45 mm. long: leaves 10-12 in a whorl, 1-1.5 mm. long, containing 8-10 internodes, all triply corticated except the basal one, and the terminal one, or sometimes two, which are uncorticated; leaflets at all nodes well developed, 0.3-0.82 mm. long, those at any node the same size or more often the anterior the longer, similar as bracteoles, the anterior 0.96-0.12 mm. long, exceeding the sporocarps, usually slightly, but sometimes one and a half times their length, posterior bracteoles 0.3-0.6 mm. long; antheridia about 0.35 mm. in diameter, often early deciduous; sporocarps 0.8-1 mm. long and 0.04-0.44 mm. wide; oospores 0.63-0.68 mm. long, 0.28-0.34 mm. wide, with 13 or 14 striae; whorl of crown-cells 0.14-0.2 mm. high, 0.16-0.2 mm. wide at base, the individual cells lanceolate-ovate, rounded at the apex, ascending.—Robinson. Central and Southern Cal."

Dichondra occidentalis.

Homer D. House, taking as his type, specimens in the US Nat hb, collected 7 Ja 1884, at SD, by Orcutt, describes this in *Muhlenbergia* 1:130, as follows:—"Stem perennial, slender, creeping, branching, 10 to 40 cm. long, glabrate, or appressed pubescent when young with silvery hairs: leaf-blades large, broadly reniform, 2 to 5 cm. broad, 1 to 3 cm. long, usually retuse at the apex, glabrous or with some scattered pubescence, dark green above, paler beneath, shallowly cordate and somewhat cuneate at the base, 7-nerved; petioles 5 to 8 cm. long, pubescent toward the base. peduncles filiform, 1 to 2 cm. long:

calyx turbinate, densely pubescent, its lobes obovate, 1.5 mm. long, blunt or rounded, scarcely enlarged in fruit: corolla nearly twice as long as the calyx, subrotate, white, its lobes ovate, obtuse: capsules about 4 mm. high, subglobose, sericeous-pubescent: seeds brown, glabrous, 1.5 mm. long."

Genus RAMONA Greene.

Per aromatic herbs or shrubby plants, with rugose veiny mostly crenulate lvs, and rather showy fls, capitate-glomerate or sometimes more open and paniculate: cx bilabiate, mostly deeply cleft on the lower side as if spathaceous: cor strongly 2-lipped, upper lip spreading, 2-lobed or emarginate: anth-bearing sta 2; fls slender, exserted, apparently simple and bearing a linear 1-celled anth, or with an articulation showing that the portion above it answers to a filiform connective, the lower end of which sometimes projects into a subulate point: Otherwise as in *Salvia* (included in *Salvia* by some botanists). *Audibertia* of Benth.

Ramona capitata Briquet.

Audibertia capitata G, Am ac p 7:387.

Providence mts, S Ber Co (Cooper).

Ramona Clevelandi Briquet.

Audibertia Clevelandi Gray, Am ac pr 10:76.

Minutely tomentulose-canescens: lvs oblong or the upper lanceolate-oblong, all obtuse (1-2 i long): hd-like clusters 1 or 2 (rarely 3) and rather distant, or single terminating ped-like branchlets: bracts ovate or oblong, merely mucronate or abruptly short-pointed, viscid-pubescent, as is the cx: upper lip of the latter short and subulate.

Type locality: SD Co.

Ramona grandiflora Briquet.

Audibertia grandiflora Benth.

Herbaceous, very villous and glandular, aromatic: sts stout, 1-3 ft high, lowest lvs hastate-lanceolate, obtuse, 3-8 li long, on margined petioles, the upper oblong, sessile, all very rugose, sinuate-crenate, w-tomentose beneath; fls densely capitate-glomerate in large interrupted spicate hds; bracts broadly ovate, entire; cx spathaceous, the

orifice oblique, 2 lower teeth very short; cor crim, over 1 i long.

Salvia spathacea Greene.

Santa Monica to SF.

Ramona humilis Greene, *Erythraea* 1:44
Based on *Audibertia humilis* Bth.

Salvia humilis Greene, *Pittonia* 2:

A span high, tomentulose-canescens, caespitose; fling st scape-like; lvs mainly radical, oblanceolate or spatulate-oblong, very obtuse, tapering into a slender petiole; spike of 3-4 sm and closely sessile hd-like clusters; bracts lanceolate or ovate, villous-hirsute, their tips and the c-teeth subulate, not rigid; sta and sty long-exserted.

Salvia Sonomensis Greene.

Mts SD Co (Palmer). SF. Nev.

Phacelia rugulosa.

"Annual, 6 inches high, puberulent and very viscid: leaves mainly radical, 2 inches long, divided pinnately into small 3-5-lobed sessile segments as broad as long: racemes terminal, slender, elongated, or sparingly leafy peduncles: corolla minute, bluish: stamens not exserted: fruiting calyx 2 lines long, the segments narrowly linear below the abruptly dilated summit, exposing the elliptical transverse y rugulose capsule: seeds about 10, oblong, ¼ line long, encircled by deep and closely connected foveolations, and intermediate sharp ridges. Lower California, May, 1888, Mr. Lemmon."—Greene, *Pittonia* 1:175.

Ptelea ovalifolia.

Greene, CNH 10:73 (16 J1 1906), describes this as follows:—"Mature twigs of the season chestnut-color, lightly rugulose, quite as prominently tuberculate, minutely and not densely puberulent, those a year old glabrate, the tuberculation more prominent, the rugosity less so: leaves ample, firm, but not subcoriaceous, of a light vivid green on both faces and almost polished, a trifle paler and duller beneath, with mere traces of pubescence on veins and veinlets; terminal leaflet oval, 6.5 to 8 cm. long, 3.5 to 4 cm. broad, the pair smaller by one-fourth to one-third, obliquely oval, all sessile, nearly obtuse, some with a short and abrupt blunt point, all more or less crenate:

samaras small for the foliage, sub-reniform-orbicular, the width being about 1.7 cm., the length only 1.4 cm., the base retuse, the apex only very obtuse; body broadly round-oval, large, its width notably greater than that of the wing, obscurely puberulent in full maturity, the rugosities tending transversely but almost wholly broken into pitted reticulations, each with a gland at bottom; style and stipe not obscure, both short.

"The type and only known specimen, I find on sheet 321, National Herbarium, collected in California in 1875 by G. R. Vasey, no other data given; in all the valuable collection of Californian *Ptelea* belonging to the California Academy there is nothing showing approach to this in respect to either its broad and large oval leaflets or its transversely elongated samaras."

Ptelea cinnamomea.

Greene, CNH 10:75 (16 J1 1906), describes this as follows:—"Twigs of the season of a rather bright cinnamon-red, glabrous, rugose and glandular-tuberculate but polished, those a year old similar but darker and not shining; leaves thin, of a vivid light-green above, paler beneath, copiously glandular and the glands colorless and pellucid, obscurely puberulent along the veins beneath, glabrous and shining above; middle leaflet 5 to 7.5 cm. long, obovate-oblong and obtuse as to those of the lower and fruiting branches, elliptic-lanceolate on vigorous sterile shoots, always obtuse, lightly crenate, the pair two-thirds as large, only slightly inequilateral; samara from suborbicular to somewhat obovate, about 18 mm. long, obtuse at base, at apex subulate-pointed, by the projecting style pervading a cusp-like continuation of the wing, the body very large, much wider than the width of the wing, suborbicular to round-obovate, the usual transverse, ridges faint, apt to be broken into something like a reticulation, the intervals strongly glandular.

"Vicinity of Ione, California, in the foothills of the Sierra, June, 1904,

Ernest Branton; type in the National Herbarium."

Ptelea crenulata.

Greene, CNH 10:75 (16 J1 1906), as follows:—

"*Ptelea angustifolia* Brew. & Wats. Bot. Cal. 1:97, 1876, in part, not Benth.

"*Ptelea crenulata* Greene, Pittonia 1:216, 1888; Flora Franciscana 75, 1891; Man. Bay-Reg. 72, 1894, of all in part only.

"Young twigs gland-dotted and sparsely hirtellous-villous, those of the second season dark brown or blackish, glabrate, glandular-tuberculate and rugulose; leaflets notably unequal, the laterals one-third to two-thirds the size of the terminal, this 4 to 7 cm. long, broadly to narrowly cuneate-obovate, all of rather light vivid green, gland-dotted and more or less puberulent, the feather veins strongly divergent and on the lower face whitish and very conspicuous, the margins crenulate, or in the largest and most vigorous specimens doubly subserrate crenulate, the apex acute or in some obtusish; branches of the inflorescence and the pedicels minutely hirtellous; filaments hirsutulous from base to above the middle; samara orbicular, 1.4 to 1.6 cm. wide, the length from slightly less to a trifle more, not flat but distinctly concavo-convex, sometimes a little retuse at both ends, sometimes at neither; body very large and thick, of nearly or quite twice the width of the wing, very broadly round-oval or almost orbicular, not circumvallate, closely but irregularly transverse-rugose and also marked, at least from the middle upward, by a broad, shallow furrow, the whole moderately gland-dotted and puberulent; style and stipe short, equal.

"The description of this more common Californian species is here completed in the light of perfect material from Mount Diablo, partly as collected by the late Dr. Parry, July 4, 1872, and partly from a pocket of many mature samaras brought from the same locality, October, 1898, by Dr. C. Hart Merriam. Its habitat on that mountain seems to be in Mitch-

ell's Canyon, on the northward slope, and, as Dr. Merriam informs me, at an elevation of about 300 meters. Flowering specimens were distributed from this station by C. F. Baker, collected by himself in April, 1903, the distribution numbers being 2942 and 2943. The species appears to occur at various other places up and down the Coast Range of middle California.

"Number 5564 of Heller & Brown, from the Marysville Buttes, distributed for *P. crenulata*, I suspect may represent another and a more local species; but the specimens are, as usual, in flower only. A like degree of uncertainty exists in relation to a sheet from Kaweah, Tulare County, collected by Miss Eastwood, April, 1895."

***Ptelea bullata*.**

Greene, CNH 10:75 (16 JI 1906), describes this as follows:—"Shrub dioecious, the male not known: growing twigs obscurely puberulent, rugulose; older branches dark-brown, glabrous: leaves of a light and vivid green, lighter beneath, glabrous on both faces except for a sparse short pubescence on the midvein beneath, sparsely gland-dotted and very minutely densely punctulate; terminal leaflet elliptic-lanceolate, 5 to 6.5 cm. long, acute at both ends, not very distinctly serrulate, the pair more than two-thirds as large, more or less inequilateral; flowers many, in ample loose subcorymbose panicles, but these sessile, not equalling the foliage: samaras suborbicular or inclining to round-obovate, abruptly acute, the base truncate or subcordate, about 1.5 cm. long, 1.2 cm. wide above the middle; body large, round-ovate, much wider than the width of the wing, puberulent, faintly circumvillate, gland-dotted only while immature, in maturity finely transverse-rugose, but the intervals between the ridges elevated above them as if inflated.

"Anderson's Ranch, Lower Lake, Lake County, California, May 11, 1901, Agnes Bowman; type specimen in the Herbarium of the California Academy; no others seen. The species is a most notable one in the characters

of its fruit; this being destitute of dot-like glands, and the surface of the capsular body rising in blister-like elevations between the uncommonly slender and low transverse ridges, all manifestly quite normal."

***Ptelea cycloloma*.**

Greene, CNH 10:75 (16 JI 1906), describes this as follows:—"Young twigs and other growing parts puberulent, even older twigs and branches puberulent, dark-brown, tuberculate, but mature foliage more obscurely pubescent or puberulent, yet not glabrous on either face, wholly of a light but dull green; terminal leaflet oblong, lanceolate, obtuse, but at base abruptly acutish, 4.5 to 6 cm. long, somewhat crenulate, the pair about two-thirds as large, only slightly inequilateral: samaras variable as to size, the smaller 1 cm., the larger 1.5 cm., wide, orbicular, not notched or lobed or truncated at either end; body unusually large, commonly almost orbicular, its breadth nearly twice that of the wing, also unusually thick and double convex, with no trace of circumvallation, only a low transverse rugosity but with copious and prominent gland-dots.

"Mountains near Mariposa in the Sierra Nevada, California, collected by J. W. Congdon, the fruiting specimens in July, 1893, the flowering in May, 1894; type in the Herbarium of the California Academy, sheet No. 12214. The flowering specimens are from the pistillate shrub, and the stamens therefore unknown. The species is most interesting, inasmuch as its fruits, with their unusually large and thick nut-like body and narrow wing, make some approach, not, however, any near approach, to those of the more southerly *P. aëtera*."

Genus HYDROCOTYLE Tournefort.

L., sp. pl. 1:234 (1753).

Per herbs without erect stems, the pedicels and leaves from creeping stems or rootstocks: leaves simple, round in outline, long-petioled: flowers in a small umbel, or disposed in 2 or more umbels which are proliferous one above the other: fruit flattened laterally, suborbicular, acutely margined and with 1 or 2 ribs

on each side: oil tubes 0.

Hydrocotyle verticillata.

Hydrocotyle interrupta Muhl, Cat 10.

Type locality; unknown. Mas-Fla. Tex, Ark. Erroneously (?) reported from CD, SD Co, by Or.

Hydrocotyle Americana.

L, sp pl 1:234 (1753).

Type locality: "septentrionalis America." Can, Min, NC. Erroneously (?) reported from LA Co, by Davidson.

Hydrocotyle umbellata.

L, sp pl 1:234 (1753).

Descending branches of the rt-stock with round tubers; umbels many-fl'd, simple (rarely slightly proliferous); pedicels 4-12 mm long; fr strongly notched, 2 mm long, about 3 mm broad, with dorsal ribs prominent but obtuse.

Type locality: America. Mas-Fla. Min-Tex. Cal., Mex.

HYDROCOTYLE PROLIFERA Kellogg.

Kellogg, Cal ac pr 1:15.

Tuberous as in *H. umbellata*; umbels proliferous, with 3-5 whorls, each containing 5-20 fls; pedicels 2-6 mm long; fr slightly notched, 2 mm long, somewhat broader, with dorsal ribs prominent and more obtuse than in *H. umbellata*.

Type locality: marshes "about San Francisco." Ar, Mex, Tex,? Jamacha, SD Co (Or 442).

Hydrocotyle cuneata.

Coulter and Rose, mon 28.

"Umbels few-fl'd, proliferous, sometimes slightly branching; pedicels very short; fr 2 mm long, 3-4 mm broad, tapering to the pedicel by a very distinct cuneate base."

Type locality: Montezuma Well, Ar (D. T. Mac Dougal, 575), Type in USNHb. Western Tex. CD, SD Co (Or, Ap 1889). SF.

Hydrocotyle ranunculoides.

L fls, sup 177 (1781).

Glabrous, sts floating or creeping in mud, rt-ing at the nodes; lvs orbicular, 5- or 6-cleft, lobes crenate, 1.5 i broad or less; petioles 3-5 i long; ped 1-2 i long, reflexed in fr; pedicels 0.5 i long; fr ovoid, 1 li broad or broader; ribs obscure.

Type locality: Mex. Wash, Pa, Fla. Baj (Or?).

H. natans, Cyrilli, Pl Rar Neap 1:20, t 605 (1892).

SBer (Parish 685); to Oregon; Pa; Fla.

Genus BOWLESIA Ruiz & Pavon.

Ruiz and Pav, Prod Fl Peruv 44, t 34 (1794).

Bowlesia septentrionalis.

Coulter and Rose, mon 31.

"Weak, 5 cm to 3 or even 6 dm long, dichotomously branching; lvs thin cordate to reniform, 1.5-3 cm broad, 3-5 lobed (lobes entire or toothed), on long, slender petioles; umbels 1-4 fld, on short peds, fr about 2 mm long, sessile or nearly so."

Type locality: near Tucson, Ar Myrtle Buck). Type in USNHb. Tex. Sacramento valley, Cal, to Baj (Or.)

BOWLESIA LOBATA R. & P.

Type locality: Peru. The Cal plants referred to this sp are *B. septentrionalis*.

Genus ERYNGIUM Tournefort.

L, sp pl 1:232 (1753).

Pers with clustered fibrous rts, often dichotomously branching sts prickly inv and often prickly lvs; lvs opp, or the upper sometimes alternate, simple, commonly oblanceolate and spinulose-serrate or incised, or the radical, when growing in water, with fistulous petioles and the blade more or less obsolete: fls greenish-w or bluish, condensed in hds, terminal on the branches or on short peds in the forks; bracts spinose, conspicuous; bractlets usually spinose-tipped: ex-lobes persistent on the fr: fr covered with whitish thin scales; ribs obsolete; oil-tubes 0.

ERYNGIUM ARMATUM Hook.

Coulter and Rose, bot gaz 13:141 (1888).

Based on *E. petiolatum armatum* Watson, bot Cal 1:255 (1876).

Diffusely branching, sts 3-10 i long; lvs broadly oblanceolate, incised or serrate, teeth spinose; bracts and bractlets prominent, broadly lanceolate, strongly spinose-tipped, with an entire callous margin, sometimes scarious-winged at the very base, 7 li long or less; ex-lobes longer than the styles, narrowed at apex into a sharp point or cusp.

Type locality: not stated. SD? to

Butte Co, Cal. Quintin?

Humboldt and Butte Co; SD mesas! near Quintin! distributed as *E. petiolatum*.

ERYNGIUM PETIOLATUM Hook.

Hooker, Fl Bor Am 1:259 (1834).

E. petiolatum juncifolium G, Am ac pr 8:385 (1872).

Throughout Cal, mostly in marshes.

Type locality: "Moist soils on the plains of the Multnomak river," Ore (Douglas). As now understood, excluded from the Cal flora.

Eryngium Parishii.

Coulter and Rose, mon 57.

"Low, much branched at base, the slender sts erect or spreading, 1-4 dm long; basal lvs from simple to pinnate, the blades or segs from lacinate-toothed to cleft, tapering into a long more or less spinosely-toothed petiole; infl beginning near the base and diffusely branching, the hds on very short peds, nearly globose, about 6 mm long, bracts very narrow and rigid, longer than the hds, 12-18 mm long, with a few spinose bristles at base and not at all scarious margined bractlets very narrow and rigid, much longer than the fls, about the size of the bracts, with short scarious margin below (broadening upward to a short lobe on each side), at the top of which and just above there may or may not be a few bristles, the margined base inclosing the fr and falling off with it; seps ovate, scarious-margined, 1.5 mm long, tapering above into a cuspidate-bristly tip; styles longer than the seps."

Type locality: Oceanside, SD Co (S B Parish, 4436, in USNHb). Quintin! SD mesa! San Lu's Obispo Co, Cal (Lemmon).

Genus SANICULA Tournefort.

L. sp pl 1:235 (1753).

Glabrous pers, with almost naked or few-leaved sts, mostly palmate (pinnate in a few sp) lvs with more or less pinnatifid or incised lobes, inv and involucels present, and greenish-y or p fls in fr compound few-rayed umbels. Cx-teeth somewhat foliaceous, persistent: fr subglobose, densely covered with hooked bristles or tuberculate: carpel with neither ribs nor strengthening cells: stylopodium 0: oil tubes mostly large, 5 (3 dorsal and

2 commissural), or 3 to many irregularly disurbed: sd face from plane to deeply concave or sulcate.

SANICULA MENZIESII Hook. & Arp.

H & A, bot Beechey 142 (1832).

S. nudicaulis H & A, bot Beechey 347 (1840).

St solitary, erect, 3-10.5 dm high, branching; lvs round-cordate, 5-10 cm broad, very deeply 3-5-lobed, the broad segs sharply toothed or somewhat cleft, the teeth bristle-tipped; upper lvs more narrowly lobed and laciniately toothed; umbel with 3 or 4 slender rays, inv of 2 or 3 sm lf-like bracts, and involucels of 6-8 sm entire bractlets; fls y, the sterile ones short-pedicel, fr sessile, but distinctly stipitate, obovate, 2-4 mm long, covered with strong bristles, sd face sulcate.

Type locality: not stated (north-west coast of Am, fide Hooker). BC, Wash, Cal, Baja (Or).

British Columbia to SD!

Sanicula arguta Greene.

"Sts more or less branching, 1.5-4.5 dm high, from a thickened r-stock; lvs palmately 5-parted, the middle division elongated and distant, all the divisions more or less pinnately lobed and toothed, decurrent upon the rachis, forming a broad toothed wing; teeth spinosely pointed; umbel 3-5-rayed, with inv of lf-like bractlets; fls y, the sterile ones on pedicels 3-4 mm long; fr obovate, tapering into a stipitate base, somewhat naked below, more bristly above, 6 mm long."

—Coulter and Rose, mon 36.

Type locality: hills near SD (C. G. Pringle, 1882). Type in USNHb.

SANICULA LANCINIATA Hook. & Arp. Oregon to Baja! Guad; Cruz; Cat.

H & A, bot Beechey 347 (1840).

Usually slender plants, 1-6 dm high; lvs broadly ovate to orbicular in outline, from slightly 3-lobed to deeply 3-parted, the divisions from toothed to laciniately cut, with bristle-tipped teeth; umbel 3-5-rayed, with inv of lf-like bracts, and involucels of sm lanceolate apiculate bractlets; fls y; fr orbicular, not at all stipitate, 3 mm long.

Type locality: Cal (Douglas). Mendocino Co to Baj (Or).

SANICULA BIPINNATIFIDA Dougl.

Douglas, in Hook, Fl Bor Am 1:258 t 92 (1834).

Sts 3 dm or more high, from a thickened rt-stock, with usually a cluster of lvs at base, and 1-3 lvs above; lvs pinnately 3-7-parted, the divisions incisely toothed or lobed, decurrent on the rachis and forming a toothed wing, teeth acute or slightly pointed; umbel with 3 or 4 elongated rays, inv of lf-like bracts, and involucrels of sm narrow acute bractlets; fls p (rarely y), in dense hds, the sterile ones pediceled; fr bristly all over, 3 mm long; sd face broadly concave, with a prominent central longitudinal ridge.

Type locality: Fort Vancouver on the Columbia (Douglas and Scouler). Type in hb Kew. BC, Wash, Ore, Cal, Baj (Or).

SANICULA TUBEROSA Torr.

Torrey, Pacific Ry R 4:91 (1856).

Sts 1-6 dm high, from a sm globose tuber; lvs twice or thrice pinnate, usually very finely divided, ultimate segs very sm; umbel 1-4-rayed, with inv of lf-like bracts, and involucrels of sm unequally united bractlets; fls y, the sterile ones on long pedicels; fr broader than long, more flattened laterally than in any other sp, 2 mm long, tuberculate, not at all bristly; sd somewhat laterally flattened, with plane face.

Type locality: "hillsides, Duffield's ranch, Sierra Nevada," Cal (Bigelow). Type in hb Columbia Univ. Cal, Baj (Or).

GALIUM APARINE Linn.

Goose grass, Cleavers, a plant regarded as a most valuable cooling diuretic, useful in most diseases of the urinary organs" (Gunn). "Considered as a sovereign remedy in kidney diseases" (Mrs. Bingham). A cold infusion is used, as heat destroys its medicinal virtues. Goose grass, as this plant is sometimes called, is abundant in Southern and Baja California—in fact throughout the west, but our plant differs from the eastern and European form.

Variety VAILLANTI Koch.

Texas; Quintin! SD! British Columbia.

GALIUM TINCTORIUM Linn.**Variety SUBMONTANUM** Wright.

"Usually erect unless growing in a

moist situation; stem-angles more or less hispid; lvs 4, 5 or 6 in the whorls, often shorter than in the type, margins and midrib often scabrous; fls with a 3 or 4-parted cor; fr! g pedicels capillary, often longer than the lvs, not divaricate."—Wright, Zoe 5:53. S. Cal; Wash; Nev. Variety **DIVERSIFOLIUM** Wright.

"Rather diffusely branched, stem angles more or less scabrous; lvs in fours, fives or sixes, often slightly scabrous on the margins and mid-rib; cor 3- or 4-parted, pedicels stouter than in *G tinctorium* submontanum; fr! g pedicels barely exceeding the lvs, stoutish, usually strongly divaricate."—Wright, Zoe 5:54. Arizona; Cal; Mexico.

GALIUM MULTIFLORUM Kellogg.**Variety PARVIFLORUM** Parish.

"Lvs approxina e, thick, 4-6 mm long, lateral nerves, and sometimes the mid-vein obsolete; fr less densely hirsute than in the species."—Parish, Zoe 5:75. S Ber mts.

Ptelea obscura.

Greene, CNH 10:76 (16 JI 1906), describes this as follows:—"Shrub slender, probably low, the slender twigs after the first season dark-brown, glabrate, closely rugulose and strongly glandular, all the growing parts, including both faces of the leaves, minutely and sparsely appressed-pubescent; odd leaflet about 3 cm. long, narrowly rhomboid-ovate, broadest in the middle or below it, acute at base, acutish at apex, lateral leaflets from less to more than half as large, inequilaterally oblong-ovate, the leaf as a whole of a light-green, the lower face lighter but not glaucescent; flower large, solitary, the petals oblong-obovate, short-unguiculate, densely puberulent without and within; filaments long, but stoutly subulate, glabrous throughout; fruit not known with certainty.

"Near Santo Tomas, Lower California, May 17, 1886. C. R. Orcutt; type in the United States National Herbarium. The locality of this is not, like that of *P. aptera*, maritime, but well inland among the peninsular hills and mountains, a fact which of itself would betoken specific difference, especially on our Pacific coast anywhere, and on the peninsula of Lower California it would be little short of decisive. But there are excellent characters of foliage upon which to establish *P. obscura* as a species; and there is ground for a suspicion that its fruit furnished the type of the figure

of so-called *P. aptera* in the third volume of Garden and Forest, as I have suggested below under that species."

"Plainly a synonym of *P. aptera*, which see for remarks confirming this opinion."—Orcutt.

Ptelea nucifera.

Greene, CNH 10:75 (16 JI 1906), describes this as follows:—"Ptelea aptera Brandegee, Proc. Cal. Acad. II. 2: 138, 1889, not Parry.

"Evidently a low stunted shrub, the branches of the season and leaf-bearing twigs mostly less than an inch long, dark brown, puberulent, not strongly tuberculate; flowers and early foliage not known; mature leaves subcoriaceous, small, the leaflets very unequal, the lateral pair usually greatly reduced and unequally so, the odd leaflet narrowly obovate-oblong to obovate, lightly and not closely crenate, the whole leaf glabrous and coarsely gland-dotted above, scantily pubescent beneath; fruits oval, 2 cm. long, very thick and nut-like, encircled by a distinct though narrow wing, this and the body thickly beset with low tubercles frustulate at summit.

"Las Huevitas, Lower California, May 20, 1889, T. S. Brandegee. Type in the Herbarium of the California Academy. It is mounted on the same sheet with some of Dr. Parry's specimens of his *P. aptera*, and even the fruits of *P. nucifera*, all detached from the twigs that supported them, have been recklessly placed within the same pocket containing those of *P. aptera*; but they are so different as to be segregated without the least difficulty. They are fully three times—now and then four times—the size of *P. aptera*, but have a wing. The body has its own outline, being exactly oval in *P. nucifera*, whereas in *P. aptera* it is, as Dr. Parry said, "broadly ovate".

"The locality of *P. nucifera* is well down toward the middle of the Lower California Peninsula, and at some distance inland, in the vicinity of a desert water hole, while *P. aptera* is maritime, inhabiting hills that slope down to the sea, well toward the northern extremity of the penin-

sula.

"Specimens of the fruit of *P. nucifera* appear to have been communicated by Mr. Brandegee to Dr. Parry; for in the Parry Herbarium I find attached to the type sheet two pockets, one containing his types of the fruit of *P. aptera* and so labelled; the other inclosing five perfect samaras of *P. nucifera*. This pocket is without a mark of any kind in Dr. Parry's hand; as if he may have entertained some doubt about its contents being referable to *P. aptera*."

"Plainly a synonym of *P. aptera*."—Orcutt.

Ptelea aptera.

"The type of this was collected by C. C. Parry at Punta Banda, a promontory which forms the southern shore of Todos Santos bay, Baja California, on January 24, 1883. The season was what is known as a dry year, little rain having fallen, and only a few old fruits were secured, the shrubs then being in young leaf and early flower; the fruits secured at this time were small, perhaps infertile ones, but the same locality was visited again in 1884, in 1885, and in 1886, and an abundance of material secured. The fruits collected at a later date varied greatly, some being several times as large as the original specimens. The first specimens were wingless, but in the later collections many were found with narrow but well defined wings. The type specimens of *P. obscura* were collected near Santo Tomas, at the summit or on the south slope of the ridge which at its western extremity is known as Punta Banda, and there can be no doubt of its identity with typical *P. aptera*. Santo Tomas is only a few miles from the sea. *P. nucifera* also in nowise differs from *P. aptera* as it may be observed in the type locality. Prof. Greene is author of 54 (and joint author with Dr. Rose of two others) of the 59 species of *Ptelea* which he recognizes; it is to be hoped that they are not all based upon 'specimens' instead of specific characters, as seems to be the case with *P. nucifera* and *P. obscura*. I may add that

I have examined the Brandegee specimens without discovering any characters to distinguish *P. nucifera* from *P. aptera*."—Orcutt.

Wislizenia divaricata.

Greene, Wash biol soc pr 19:130 (6 S 1906), describes this as follows:—"Glabrous, very widely and loosely branched, the branches from strongly divergent to quite divaricate, stout, rigid, uncommonly naked-looking, the scattered foliage sm for the plant and all but the proper cauline lvs unifoliate, the lflets cuneate-oblong, almost pungently acute, 1.5-2 cm long: racemes many and elongated: fr 5 mm wide, the carpels elongated pyriform, being constricted just above the base, marked longitudinally by a prominent narrow reticulation rather than by crowded and unbroken lines, the summit crowned with a circle of about 5 low tubercles."

Type locality: Borrego Springs, CD, northern part of SD Co.

Type: Orcutt, 1492, in USNHb (23 Je 1888).

Wislizenia Californica.

Greene, Wash biol soc pr 19:130 (6 S 1906), describes this as follows:

"*Wislizenia refracta* Greene, Fl. Fr. not of Engelm.

"Stout, much branched, the branches elongated, sparingly leafy, copiously floriferous, minutely scaberulous in lines: leaflets commonly oval, obtuse or subtruncate, mucronulate, sometimes narrower and acute, scaberulous along the midvein beneath: carpels short, usually obovoid rather than pyriform, the longitudinal lines or ribs coarse but low and not very salient, somewhat broken into an obscure reticulation at summit and there, as it were, angled by 4 or 5 coarse and low tubercles.

"Interior of California, in dry, sandy soil from about Tulare northward to Sacramento: abundant about Lathrop; totally distinct from the Texan *W. refracta*."

Ptelea brevistylis.

Greene, CNH 10:73 (16 Jl 1906), describes this as follows:—"Twigs and branches for two seasons dark reddish brown, sparsely puberulent, not rugulose but roughened with a

rather close tuberculation; leaflets of a dull light green, ovate—to oblong—lanceolate, 5 cm. long, in age glabrate, doubtless pubescent when young, the margins lightly crenulate: samaras large and with broad thin-nish wing, the outline usually round-obovate, but in some nearly orbicular, the length of the largest 2 cm., the breadth toward the summit 1.8 cm.; body of the fruit large, round-obovate, very obscurely and irregularly rugose, somewhat pubescent, strongly gland-dotted, very eccentric, its summit nearly or quite styleless and the wing thin, deeply emarginate, or obcordate, the almost sessile stigma in the notch, the base of the wing merely subcordate and the stipe long.

"Of this shrub, singular among California species of *Ptelea* by its large fruit with broad wing, which is subcordate at base and nearly obcordate at summit, only a single specimen has been seen, and that imperfect as to foliage, but with a fine cluster of fruits. It was collected by G. R. Vasey in 1875, in what part of the State it is impossible to ascertain.

"It is unmistakably Californian by the peculiar hue and venation of foliage that are common to all known Californian species, and which occur in no others; and its fruit is pubescent, as in none but Californian members of the genus. The type specimen is in the National Herbarium, sheet No. 321."

Genus *SPHACELE* Benth.

Shrubby or suffrutescent aromatic plants with the floral lvs gradually reduced with rather large fls solitary in their axils, forming a leafy raceme: ex campanulate deeply and nearly equally 5-toothed, membranous in fr, naked within: cor with a broad tube, with a hairy ring at its base within, and 5 broad or roundish and plane, rather erect lobes: sta 4, distant, somewhat ascending; fls naked; anth sacs divergent.

Sphacele calycina Benth.

Suffrutescent, 3-4 ft high, pubescent or even somewhat woolly; lvs

very veiny or scarcely reticulated, broadly ovate to oblong-ovate, obtuse, dentate or serrate, the base entire and varying from cordate to acute, 2-4 i long, the lower on petioles half i long, the uppermost sessile; cor w or pink-tinted, over 1 i long; cx with triangular-lanceolate lobes, in fr ovoid-inflated, 3-fourths to 1 i long; nutlets bk, very smooth, elliptical in outline, nearly 2 i long.

Variety WALLACEI A. Gray.

Davidson reports from LA Co, and Abrams includes in his Fl LA 346.

Genus CLEMATIS Linnaeus.

Virgin's Bower. Sts woody at base, climbing by aid of the petioles of the opp lvs: sep petaloid, w or colored, valvate in the bud; pistils num; ak in a hd, the styles persistent as hairy or plumose tails, very conspicuous in fr. CLEMATIS LASIANTHA Nutt.

Abrams, Fl LA 154.

Branchlets and sep tomentose-pubescent, foliage less so: lvs trifoliate, elliptic to orbicular in outline, truncate or rounded at base, above 3-lobed and coarsely toothed, 1-2 i long; fls polygamous, solitary or 3 together on bracteolate peduncles 2 i long, 1¼-2¼ i in diam; sep broadly oblong; akenes 2 li long, supporting a tall 2 i long or more, the fr of 1 fl forming a hd-like cluster 2-2½ i broad.

SEER mts (Parish 840). Napa Co. CLEMATIS LIGUSTICIFOLIA Nuttall.

Nuttall, in T & G Fl 1:9 (1838).

Type locality: "plains of the Rocky mountains, in open and in bushy places, near streams."

Coville, CNH 4:55;

Davidson, Fl LA 154.

Abrams, Fl LA 154.

Nearly glabrous, except the infl: lfts 5-7, ovate, cordate or obtuse at base, 3-lobed or coarsely laterally toothed about midway, or nearly entire; fls 2 i in diam; panicles borne on axillary peduncles 2 i long; fr'ng panicles 6-15 i long. Hall, U 79.

Abundant along water courses in canyons among the foothills and mountains to an altitude of 6000 ft.

Cruz (Greene, Br); S Rosa (Br); and Cal (Lyon). SEER (Parish 126).

Baja to Ore, east to New Mexico.

Variety CALIFORNICA S. Watson.

"Lvs silky tomentose beneath, often small. SD to the Sacramento, Arizona?"—S. Watson, Bot Cal 1:3. Baja!

CLEMATIS PAUCIFLORA Nuttall.

"Somewhat silky-pubescent: sts more slender, short-jointed; lvs short and fascicled; lfts 3-5, only 3-9 li long, cuneate-obovate to cordate, mostly 3-toothed or lobed; fls solitary or few and paricled, on slender pedicels: sep thin, 4-6 li long; akenes glabrous SD (Nuttall, Cooper, Cleveland)."—Watson, Bot Cal 1:3.

"San Sebastian, El Rancho Viejo," Ba'a—Brandege, Cal ac pr, sr 2, 2:126. SBER (Parish 704); Santa Cruz Island.

Genus THALICTRUM Tournefort.

Meadow Rue. Per herbs with tall erect sts from a short rt stock bearing bi- or tri-ternately compound lvs with petiolulate (or some sessile) lfts: fls many, small, paniced; sep in pistillate fls 4-7, in stam fls more commonly 4, greenish or more or less petaloid; pet 0: sta many, with long mucronate anth on capillary fil; akenes 4-15, veined or furrowed and usually acute at both ends, sometimes inflated, tipped with the persistent long styles. THALICTRUM POLYCARPUM S. Wat.

Davidson, Fl LA Co.

Abrams, Fl LA 156.

Glabrous, aromatic, 1¼-3 ft high: lfts ovate to roundish, ½-1 i long, the pair below the terminal one usually sessile, serrate or incised or divided into 2 or 3 seg, the teeth acute or acutish, rather prominently veined beneath; panicle 3-6 i long, terminal or with accessory branches from upper axils: sep elliptic to ovate, mostly acute; sta 16-25, anth yellowish; pistils of about the same number, sty purplish; akenes somewhat inflated, the sides marked with anastomosing veins. Oregon. Hall, U 80.

Mts Baja (Or 894); SBER and LA Co (Parish 260).

Sparingly distributed by Or as T. Fendleri Engelmann.

THALICTRUM OCCIDENTALE A. Gray

Habit similar to T. polycarpum, lfts rather larger, panicles more slender and open, the stam very diffuse with slender elongated pedicels, sty more attenuate: fr 1-6 in each hd, narrowly oblong (3-4 li long) and narrowed at each end: si nearly ¼ i long.

SEER mts (Parish 1484); Ore; Mont; Wash.

THALICTRUM SPARSIFLORUM Turcz.

Slender, glabrous, 1-3 ft high, leaves sessile or nearly so; leaflets ¼-1¼ in long, with obtuse often mucronate lobes; panicle loosely few-fl; pedicels elongated; fr'ng heads nodding, the large divaricate akenes strongly compressed, semi-obovate, shortly pedicelate, slightly nerved. Alk, Sib, Ut, Colo.

Cuyamaca mts (Or 1502)?

Genus MYOSURUS Linnaeus.

Dwarf with entire tufted radical lvs and naked 1-fl scapes: sep 5, spurred at base; pet 5, with a nectariferous hollow at summit of the slender claw: sta 5-20: akenes numerous, crowded on a long and slender spike-like receptacle: ovules attached near the summit of the cell.

MYOSURUS APETALUS Gay.

Gay, Fl Chil 1:31, t 1, f 1.

Gray, Torr cl b 13:2.

Receptacle in fr oblong or linear, 2-8 li long; akenes long-beaked. Ut; Chili;

Mesas, SD. Less than 2 i high.

Myosurus aristatus Bentham fide Gray.

Near Santa Tomas, Baja! Mts eastward, 4000 ft altitude! New Zealand.

Variety *LEPTURUS* A. Gray.

MYOSURUS ARTISTATUS Bentham.

See *Myosurus apetalus* Gay.

MYOSURUS MINIMUS Linn.

Mouse Tail. Lvs linear-filiform; scapes 3-6 i high, the slender receptacles ½-2 i (commonly about 1 i) long; mature akenes with somewhat rhomboidal back and very low keel ending in a straight appressed or rarely obsolete tip. Eu; Asia; Aust; Am.

Myosurus Shortii Rafinesque, in Sill J 1:379.

Variety *APUS* Greene.

Greene, Cal ac b 2:6.

Mesas, SD!

Variety *FILIFORMIS* Greene.

Greene, Cal ac b 2:6.

Mesas, SD* Arizona (Rusby). Guad (Greene).

MYOSURUS SHORTHII Rafinesque.

See *Myosurus minimus* L.

Genus *RANUNCULUS* Linnaeus.

Ann or per herbs, with alt or mostly basal simple entire, lobed, divided or dissected lvs, and y, w, or sometimes r fls: Sep mostly v. deciduous: Pet equal in number or more, conspicuous or minute, bearing a nectariferous pit and sometimes a scale at base of blade: Akenes capitate or rarely spicate, generally flattened, smooth, papillose or pectinate, sometimes transversely wrinkled, beaked with a minute or elongated sty.

RANUNCULUS ALISMAEFOLIUS Gyr.

Ranunculus Bolanderi Greene, Cal ac b 2:58 fide A. Gray.

Idaho to California.

Variety *ALISMELLUS*, A Gray, Am ac pr 7:327 (1868).

Hall, U 79. Buttercup.

Coville, CNH 4:56, 268, 282

Type locality: "Lake Tenayo and on Mount Dana, Sierra Nevada, to a height of 12,000 ft."

RANUNCULUS AQUATILIS Linn.

Parry, Wy 18.—Wyoming.

Muel, *Erythra* 1:61.

North Alaska, British Am, Cal.

Variety *CAESPITOSUS* De Candolle.

Ticate, Baja (Or 1182).

Ranunculus caespitosus DC.

Sts short, growing in mud: segs of lvs ligulate, 1 li or more long: fl 2-3 li in diam. Baja!

Variety *HISPIDULUS* Drew.

"Emersed lvs sm, 3-lobed, the lobes toothed, glabrous above, the lower face hispid with short, stiff bristles, which extend to the petioles and stipules. Otherwise as the var. *heterophyllus*. In ponds at Jernigan's, on Mad river, JI 10"—Drew, Torr cl b 16:150. Humboldt Co, Cal.

Variety *THICHOHYLLUS* Gray, Man ed 5, 40 (1867).

Sber mts (Parish 994), SD Co! Baja!

of wide distribution in ponds and streams.

Sts long, coarsely filiform: peds 1-2 i long: fl 3-5 li in diam: akenes num in a close globular hd, which is 2-3 li in diam.

R. trichophyllus Chaix, in Villars, Hist Pl Dauph 336 (1786).

RANUNCULUS BOLANDERI Greene

See *R. alismaefolius* Gyr, fide A. Gray.

RANUNCULUS BONGARDI Greene,

Erythra 3:54

Variety *DOUGLASHII* Davis.

CD (identified by Rose)!

RANUNCULUS CALIFORNICUS Benth. Bentham, Pl Hartw 295.

Mostly pubescent and hirsute; st branching, 2-6 dm high; radical lvs usually pinnately ternate, the lfts aciniately cut into 3-7, usually linear lobes; fls 1-2 cm broad; petals 7-15; akenes 3.5 mm long, flattened, slightly margined, beaked with the short straight or slightly curved sty.

Abrams, Fl LA 155.—Frequent on the mesas and in open places in the foothills. F-Ap.

Ranunculus Deppel Nuttall, in T & G, Fl 1:21.—Greene, Cal ac b 1:388; Torr cl b 14:118.

Ranunculus dissectus H & A Bot Beech 316 fide Gray.

Cuyamaca! Cruz (Greene). Santa Rosa and San Miguel Islands.

Variety *CANUS* S Watson.

Sber mts (Parish 1582).

See *Ranunculus canus* Bentham

Variety *LATILOBUS* A. Gray, Am ac pr 21:375.

Ranunculus Lutovicianus Greene, Cal ac b 2:58 (1886); Fl Fr 300 (1892).

So Cal (Parish 1787). Hall, U 80.

A common coarse-leaved robust form.

RANUNCULUS CANUS Benth.

Sber mts (Parish 1582).

R. Californicus canus S. Watson.

RANUNCULUS CYMBALARIA Pursh.

Cockerell, W. 5:6.

Greenland, Asia, North and South Am. So Cal (Parish; Or). Hall, U 80.

Type locality: "in saline marshes near the salt works of Onondago, NY."

Pursh, Fl 2:392 (1814).

RANUNCULUS ESCHSCHOLTZII Schl.

Hall, U 80.

RANUNCULUS FLAMMULA Linnaeus.

Variety *REPTANS* E. Meyer.

So Cal (Parish 996).

RANUNCULUS HEBECARPUS Hooker & Arn.

Brandege, Zoe 1:113, Catalina.

Guad (Palmer, Greene).

Slender, 15-30 cm high, branched, pilose-pubescent, lvs of rounded outline, deeply lobed or cleft, the seg 3-lobed; fls minute, on filiform pedicels; akenes few in a globose hd, rounded and flattened, papillose and pubescent; beak short, recurved.

Abrams, Fl LA 155.—Growing in moist shady places, not common. Oak

Knoll; Monica mts.

Variety PUSILLUS S. Watson.

"Sts very slender, filiform, weak and ascending or procumbent, 3-6 i long; lvs reniform, crenately 5-lobed or parted."—Brewer and Watson, bot Cal 1:9.

Davidson, Pl LA Co 1.

Not rare in shady canyons near the coast under bushes. Baja SD (Or 596).

RANUNCULUS HYDROCHROIDES G.
So Cal, east of the Sierras.

Genus AQUILEGIA Tournefort.

Erect branching per herbs with ternately decompound lvs and large showy fls: Sep 5, regular, petaloid, deciduous; pet concave, spurred at base; sta num, inner ones reduced to staminodia: Carpels 5, sessile, many-ovuled, forming hds of follicles in fr. Columbine.

AQUILEGIA TRUNCATA Fisch. & Mey.
Cuyamaca (Or); Baja Cal; fls red tinged with orange.

Hall, U 79. Cuyamaca! SBER and LA Co (Parish). By shady streams. Baja! Sts 1-2 ft high; fls 1-2½ i in diam, r tinged with orange or y; sep spreading or reflexed; pet truncate, the very short limb not at all produced; spurs thick and blunt, 6-9 li long.

Abrams, Fl LA 152.

Type locality: "in California, prope coloniam. Ross (Icam)."

Genus DELPHINIUM Tournefort.

Ann or per, erect branching herbs with palmately divided lvs, and racemose or paniculate showy fls: Sep 5, the posterior one prolonged into a spur; pet usually 4, the 2 posterior spurred; Carpels few, becoming many-seeded follicles. Larkspur.

DELPHINIUM CARDINALE Hook.

Abrams, Fl LA 153.

Sts few to 15 ft high, stout, nearly glabrous, branching above; lvs large, 5-7 lobed nearly to the base, the divisions deeply 3-5-cleft with narrow long-acuminate seg; infl racemose or paniculate, many-flid; sep obovate; pet y at base, somewhat hairy; carpels smooth. A showy per, with large scarlet fls; quite hardy. SD! Quintin! Cedros Island.

"The fls are sometimes yellow. San Pablo, San Quintin, Baja"—Brandegee, Cal ac pr, se 2, 2:126.

DELPHINIUM NUDICAULE Torr-Gray.

Smooth or slightly villous; stem ½-2 ft high or more; lvs mostly near the base of the st, 1-3½ i in diam, 3-5-lobed, lobes more or less deeply 3-5-toothed with broad obtuse mucronulate seg; fls 1-1¼ i long, including the straight spur, which is longer than the sep, usually light scar with more or less of or; sep but little spreading; pet usually ciliate or somewhat villous; carpels pubescent or smooth. Mendocino Co to SF.

*Flowers usually blue or purple, at least not red.

DELPHINIUM CONSOLIDA Linn.

"Escaped and growing along irrigating ditches at San Pablo, Baja Cal."—Brandegee, Cal ac pr, sr 2, 2:126.

DELPHINIUM DECORUM Fisch-Mey.

More or less pubescent with spreading hairs, but usually nearly glabrous; st 6-15 i high; lower lvs 5-lobed, sparingly toothed, the upper with narrow linear divisions; fls large, deep ind, long pedicelled in an open raceme, sep broad, 6-9 li long, spreading; spur usually long and narrow; ova and capsule glabrous. Baja! SD'

Delphinium patens Bentham, Pl Hartw 296.

Abrams, Fl LA 153.—Gabriel, Monica, LA.

Variety PATENS Gray.

More slender than the type, sometimes obscurely and sparsely pubescent; sts erect; racemes closer; pedicels ascending in fr; sep 8-10 mm long. Hall, U 79.

Abrams, Fl LA 153.—"Frequent in the foothills of all our mts."

DELPHINIUM DEPAUPERATUM Nuttall.

Slender, few-flid; lower lvs reniform, 3-5 parted, the rather broad lobes entire or few-cleft; ovaries pubescent. LA (Davidson); Oregon; Nevada.

Nuttall, in T & G, Fl 1:33 (1838).

Type locality: "in the shade of pine woods in the Blue mts of the Oregon." **DELPHINIUM HESPERIUM A. Gray.**

A. Gray, Bot Gaz 12:51.

Parish, Erythea 3:60.—Antelope and Bear. Parish No. 3781 is D. scaposum Greene.

DELPHINIUM PARISHII A. Gray.

A. Gray, Bot Gaz 12:53 (1887).

Type locality: "Agua Caliente, on the southeastern borders of Cal."

"San Enrique and northward, Baja."—Brandegee, Cal ac pr, sr 2, 2:126.

DELPHINIUM PARRYI A. Gray.

Gray, bot gaz 12:50.

Glabrous or minutely and sparsely puberulent, sts erect, 4.8 dm high, from rather simple or few-fascicled elongated rts, neither fusiform nor tuberiform; lvs 3-5 parted, divisions and few lobes linear, obtuse; raceme, virgate, at length rather loose; sep mostly broadly oblong, about 10-15 mm long, equaling the spur, deep bl, sparsely and minutely puberulent or glabrate; upper pet w-margined, 7-8 mm long; follicles about 15 mm long, apparently glabrous and shining, but minutely puberulent under a lens.

Abrams, Fl LA 153.—Frequent in the foothills throughout our region. Ap-Je.

LA (Da 1); Cruz; Rosa; Cat; San Clemente; Hall, U 79.

DELPHINIUM SCAPOSUM Greene.

Greene, bot gaz 6:156 (1881).

Type locality: "hill country between the Gila and San Francisco rivers," NM.

So Cal (Parish 1222, 3781).

DELPHINIUM SIMPLEX Dougl.

Canescent throughout with a fine short somewhat woolly pubescence, rarely nearly glabrous: st stout and strict, 1-2½ ft high, leafy: lvs all much dissected, with linear obtuse lobed, on stout erect petioles: racemes usually dense and many fl, pedicels often short and nearly erect: fls bl to nearly w or yellowish; sep 4-5 li long, usually about equalling the stout straight spur, rarely much spreading: ovaries and capsule pubescent. Mts, Baja (Or 1200); Wash; Id.

Hanson's (Or 1200); north to Wash. and Idaho.

DELPHINIUM VARIEGATUM T. & G.

Pubescent with straight spreading or often reflexed hairs, the pubescence above sometimes tomentose above or rarely nearly 0, sometimes tomentose throughout or short and appressed: sts 1-2 ft high, sparingly leafy: lvs all dissected with oblong or linear, obtuse or acutish lobes: fls large, on long pedicels in a short, open raceme, deep bl—rarely w; sepals broad, spreading, 6-10 li long; spur usually comparatively short and stout; upper pet not p-veined: ova and capsule pubescent. CD; Mohave SBar.

Abrams, Fl LA 153.—"Port Ballona. Mr-My."

Genus CROSSOSOMA Nuttall.

Sep 5, orbicular, imbricated in the bud, unequal, persistent, scariously margined, united at the base into a short turbinate tube: pet 5, not clawed: sta 12-30, inserted with pet in 2-3 ir series upon the somewhat thickened base of ex, persistent: anth attached dorsally a little above the base, de-hescing longitudinally down the sides: carpels 2-6, distinct, sessile upon a short stipe, concave, follicular, many-seeded: sds in 2 rows, with a large fringed arillus, globose-reniform, bk and shining: embryo strongly curved in the thick fleshy albumen and nearly as long, the narrowly oblong cotyledons exceeding the radicle. Smooth shrub with all entire mucronulate lvs, and solitary fls terminating the branches.

CROSSOSOMA BIGELOVII S. Watson. "El Rancho Viejo, Paraiso," Baja.—Brandege, Cal ac pr, sr 2, 2:126.

Vaslit, Zoe 1:27, questions if this is more than a depauperate form of *Crossosoma Californicum*.

S. Watson, Am ac pr 11:122.

Low and more slender than *C. Californicum*; lvs glaucous, 3-6 li long, somewhat fasciated: pedicels shorter: pet p or w, spatulate-oblong, 6 li long: sta 15-25, carpels 10-12-seeded, ½ i long. SBar Co.

Santo Tomas, Baja' CD (Parish).

"Wood very brittle, exhaling a pleasant birchy fragrance when freshly broken."—Greene.

CROSSOSOMA CALIFORNICUM Nuttall.

Stout diffuse shrub, 4-12 ft high, 4 i in diam: wool whitish, black gray and bitter: lvs oblong, 1-3 i long, attenuate to a very short petiole: fls large, showy, on long stout pedis, w: pet orbicular, 6-9 i long, carpels 6-9, oblong, 8-12 li long, 20-25-seeded: sds over 1 li in diam with a shining crustaceous testa, covered with the brown fringe of the arillus.

Vaslit, Zoe 1:27. Cat. Guad. 12 ft high, 4 i in diam.

Nuttall, Pl Gambel 150 t 22.

Genus BERBERIS Linnaeus.

Barberry. Shrubs with 7 wood: lvs alt, prickly: fls y, in bracteolate racemes: sep petaloid: pet concave: fl irritable: stig peltate-umbilicate: fr a berry.

BERBERIS DICTYOTA Jepson.

Erect, stout, scarcely branched, 3-4½ ft high, sparsely leafy: lfts 5-7, glaucous on the upper surface, little paler but very prominently reticulated on the under surface, very strongly unilate, lowest pair close to base of petiole: fl with a recurved tooth on each side near the apex. Solano Co.

Abrams, Fl LA 157.—"near Glendale (Davidson); Switzer's trail, Gabriel mts."

BERBERIS FREMONTII Torrey.

Torrey, Bot Mex boundary 2:30 (1859).

Type locality (as taken from Fremont's plant): "on the tributaries of the Rio Virgen, in southern Utah."

"Growing in great rounded clumps 10 ft high—San Sebastian, El Rancho Viejo," Baja.—Brandege, Cal ac pr, sr 2, 2:126.

Cantillas mts, Baja! Campo, SD Co!
BERBERIS NEVINII A. Gray.

Shrub 2-3 m high; lfts pale, lanceolate or oblong-lanceolate, often acuminate, teeth not remote, spinulose-serate, 1-2.5 cm long; racemes loosely 5-7 fld, equaling or surpassing the lvs; pedicels slender, Fernando, LA Co (Nevin).

Abrams, Fl LA 157.

BERBERIS PINNATA Lagasca.

California Barberry. A few inches to 6 ft high; lfts usually 5-9, often 11-13 or even 17, and rather crowded on the rachis, ovate-elliptical to oblong, 1-2½ i long, shining above, somewhat paler beneath, plane or moderately undulate, shallowly repand and dentate, the mostly num teeth prickly; lowest pair close to base of petiole; racemes clustered, dense; fl as in *B. dictyota*: fr oblong-ovoid, 4 li long. Chollas (Cleveland); abundant near Julian, SD Co! SF.

SBar hills (Parish 948. A dark evergreen ornamental shrub.

BERBERIS REPENS Indl.

Lindley, Bot Reg t 1176.

Cockerell, w 5:6.—Custer Co. Colo. SD Co (Palmer, 1875); British Columbia; NM.

A low, somewhat procumbent shrub, less than a ft high: lfts 3-7, ovate, acute, not acuminate, 1-2½ i long, not shiny above; racemes few, terminating the stems (1-1½ i long).

Genus **CANBYA** Parry.

Gray, Am ac pr 12:51, t 1.

Sep 3, caducous; pet 6, persistent, at length scarious and enwrapping the capsule: sta 6-9; fl shorter than the oblong-linear anth: Ova subglobose, 3-carpelled, with nerve-like many-ovuled placentas: stigmas sessile, linear-oblong, appressed to the ovary over the placentas: capsule ovoid, membranaceous, 3-valved, the valves separating to the base from the persistent filiform placentas: Sds several, very smooth and shining, narrowly oblong-obovate and slightly curved; rhaphe naked: Embryo very sm cylindrical.

CANBYA AUREA S. Watson.

"A slender form (?)."

CANBYA CANDIDA Parry.

Gray, Am ac pr 2:51 t 1 (27 D 1876).

S. Watson, Bot Cal 2:429.

Scarcely 1 i high, densely much branched, the sm somewhat fleshy lvs and very short branches closely crowded: fls w, the pet hardly 2 li long: a dwarf glabrous ann with alt linear entire lvs and num filiform 1-fl'd scapes. Sber Co (Cajon Pass)!

Genus **PAPAVER** Linnaeus.

The California species are ann herbs, with narcotic juice: lvs pinnately cleft, lobed or divided: fls showy, solitary on long peds, nodding in bud: sep 4: pet 4: sta many: ovary and capsule obovoid to subglobose, with 4-many intruded placentae: capsule dehiscent just below the stigmatic summit by pores or valve-like openings.

PAPAVER CALIFORNICUM Gray.

Santa Barbara Co. to San Dlego; Cam po (Or 151).

Gray Am ac pr 22:313.

McClatchie Brythea 2:79. Pasadena,

SBer (Spence). SD!

Greene, Pittonia 1:167.

Or, Garden and Forest 3:385.

Or 1511, Campo, Cal.

Two ft high or less; glabrous or sparsely pilose-pubescent; juice milky; lvs pinnately divided, the seg oblong or roundish, toothed or lobed or entire; pet r with a g spot at base; stig sessile and radiate upon the summit of the ovary, persistent in fr; capsule ½ i long or more, turbinate-obovate, 6-11-nerve; pores or valve-like openings just beneath the stig, quadrate.

Papaver Lemmon Greene.

Abrams, Fl LA 163.—Monica, Gabriel m's. Mr. Mv.

PAPAVER HETEROPHYLLUM Greene.

Meconopsis heterophylla Benth, Hort Soc tr 21.

Clear Lake, Cal. to San Quintin, Baja Cal (Palmer 680).

Quintin (Palmer 680). Cruz Cat LA (Da). San Clemente Island. Clear Lake, Cal.

Wind poppy: 1-2 ft high, glabrous; juice y; lvs pinnate or pinnately cleft, or pinnate with pinnately cleft lobes, the seg exceedingly diverse in shape on the same plant or even on the same fl, varying from oval and entire or lobed to narrowly linear; pet broadly cuneate-obovate, brick-red, with a dark spot at base, 1 i long or less; stig capitate at summit of a distinct and slender style; capsule clavate-obovoid, 3-7 li long; pores small with rounded valves which separate from the stout parietal ribs.

Greene, Pittonia 1:168, based on Meconopsis heterophylla Benth.

Meconopsis crassifolia Benth.

Genus **PLATYSTIGMA** Benth.

Ann herb with lvs, sep and pet as in Platystemon, fls rarely with 2 sep and 4 pet; pet deciduous: sta 6-12: carpels 3, combined into a single 1-celled ovary, which is 3 lobed or nearly terete: placentae as many as the carpels, parietal, many-ovuled: stigmas ovate to subulate: capsule competely 3-valved, dehiscent through the placentae.

PLATYSTIGMA LINEARE Benth.

Acaulescent or nearly so; scapes commonly 4-8 i high, hispid with spreading hairs: lvs linear, 1-2 i long, sessile; sep brownish; pet light y, cuneate-orbicular or obovate, 4-9 li long; sta many, fl conspicuously dilated; body of capsule 5-7 li long. SF, south.

PLATYSTIGMA DENTICULATUM.

Greene, Cal ac b 1:389.—Cruz.

Greene, Torr cl b 13:218, based on Meconella denticulat (which see for description).

Abrams, Fl LA 159.

Genus **PLATYSTEMON** Benth.

Low ann with mainly opp entire lvs: sep 3: pet 6 in 2 series: sta many: fl petaloid and obovate or spatulate: stig subulate-filiform, 1 terminating each carpel: carpels 6-20, each several-ovuled, connivent or coherent in a circle, becoming torulose, at maturity separating, and breaking transversely into indehiscent 1-seeded joints: anthesis lasting for more than one day: pet tardily deciduous, withering and closing over the forming fr. Cream cups.

PLATYSTEMON CALIFORNICUS Benth.

Cream-cups. Conspicuously pilose; branched from the base, widely spreading and more or less decumbent or nearly acaulescent, 3-6 i high; peduncle more or less scape-like, 5 i long; pet cream-y; sta about 25.

Southern Utah; Arizona. Mendocino Co to SD; Quintin.

PLATYSTEMON CRINITUS Greene.

"Subacaulescent, the foliage, scapiform peduncles, and the calyx densely crinite-hirsute with w soft spreading hairs 3 or 4 li long; n buds exactly globose: cor 1 i broad, pet deep green-

ish-y, marcescent-persistent: sta innumerable: fl widely dilated: carpels many, the short torulose pods scarcely longer than the persistent linear stigmas."—Greene, *Pittonia* 2:13. (Key) Co, Cal.

ERIOGONUM NODOSUM Small.

"A white-tomentose shrub, 5-1.5 meters tall, with spreading, forking branches. Leaves small, 2-6 mm. long; blades elliptic or elliptic-ovate, acutish, revolute, narrowed into short petioles: bracts scale-like, acute or acuminate: involucre turbinate-campanulate, 2.5 mm. long, angled, sessile: segments broad, much shorter than the tube; calices glabrous, pink, 3 mm long; segments rounded at the apex, the 3 outer oblong or obovate-oblong, the 3 inner cuneate: filaments villous below the middle: achenes 3-angled scabro-pubescent above the middle."—Small, *Torr club b* 15:49 (25 Ja 1898). CD.

KRAMERIA PARVIFOLIA Benth.

Bentham, *Bot Sulph* 6 (1844).

Type locality: "Bay of Magdalena," Baja.

Mohave; Ut; Nev; NM; CD, SD C.; Son.

A rigid diffusely branched shrub, 1-2 ft hi, with silky appressed pubescence, the slender divaricate branchlets often spinose: lvs linear, 4-8 li long; the lower obtuse, often sm and ovate to oblong, the upper aculeately tipped, and, with the infl, usually sprinkled with short rigid gland-bearing hairs: fls 2-4 li long; peds with 2-3 pairs of lf-like bracts: the ovate silky sep p within: pet with claws united nearly to the top, the middle blade narrow: sta nearly free: fr with num very lender prickles retrorsely barbed their whole length, cordate-globose, 4 li long, shortly acuminate, obscurely ridged on each side.

Genus *TISSA* Adams.

Low or ann per herbs with fleshy linear or setaceous lvs, and sm pink or whitish fls in terminal racemose, bracted or leafy cymes: Stipules scarious, usually conspicuous: Sep 5: pet 5, fewer or 0, entire: Sta 2-10: Ova 1-celled, many-ovuled; sty 3: Cap 3-valved to the base: Sds reniform-globose or compressed, smooth, winged or tuberculate.

Buda Adams.

Spergularia Prsh.

TISSA MACROTHECA Britton.

Abrams, *Fl LA* 149.—"Common in salt marshes and alkaline flats. My-Jl."

Sts stout, 7-12 i hi, erect or ascending from the short, often branched, woody crown of a very thick and fleshy tap-

root; herbage deep g and viscid-pubescent; lvs narrowly linear, 1-1½ i long; pedicels is 3-6 li long, sep 3-4 li long, scarious-margined; pet as long, pink; capsule about equaling ex: sds with or without a wing, even in the same capsule.

Jepson, *Fl Mid Cal* 169.

TISSA MARINA Britton.

Abrams, *Fl LA* 148.

Stout, erect or ascending, smooth or glandular-pubescent; cap 5-8 mm long at maturity; pedicels short; sds smooth, margined or marginless, or roughened with projecting points. Along the Atlantic and Pacific coasts of Am.

Lepigonum medium of NA authors.

TISSA VALIDA Greene.

"Perennial, with a perpendicular fleshy and somewhat fusiform and simple or branching root: stems stout, tufted, the outer members of the tuft decumbent at base, the others erect, ½-1 ft high, the internodes 1-1½ inches long; herbage altogether pale, and glabrous-pubescent with short, spreading gland-tipped hairs: branches cymose and floriferous from below the middle: sepals oblong-lanceolate, rather exceeding the valves of the ovate capsule: seeds black and almost shining, mostly destitute of wing."—Greene, *Erythra* 1:107, Cruz.

TISSA TENUIS Greene.

Lepigonum tenue Greene, *Pitt* 1:63.

Abrams, *Fl LA* 149.—Monica (Nevin).

Cap 6-8 mm long, twice the length of the ex. SBar.

CALANDRINIA CAULESCENS HBK.

HBK, *nov Gen* 6:77.

Howell *Erythra* 1:33.—"Glabrous or slightly pubescent, branching from the base; decumbent st 3-10 l long; ped erect or ascending: sep ovate, acute; pet broadly obovate, 3-5 li long; sd shining. Near the coast from BC to South Am. Variety *MENZIESII* A. Gray.

Abrams *Fl LA* 140.

Calandrinia elegans Spach.

Calandrinia Menziesii T & G.

CALANDRINIA MENZIESII Hook.

See *Calandrinia caulescens* Menziesii.

CALANDRINIA ELEGANS Spach.

Davidson, *Pl LA Co* 3.

C. caulescens Menziesii.

CALANDRINIA MARITIMA Nutt.

Abrams, *Fl LA* 141. Monica (Davidson).

Sts glaucous, depressed, 6-10 cm long: lvs mostly rosulate at base, obovate to obovate-spatulate, upper bract-like: fls in a loose naked cyme: ex ovate, acute, about 3 mm long; pet 5-6 mm long, rose-p: cap ovoid, 4 mm long, acutish: sds dull grayish.

CALANDRINIA AMBIGUA Howell.

Claytonia ambigua S. Wats *Am ac pr* 18:375.

Calandrinia sesuvioides Gray *Am ac pr* 22:278.

"Depressed and spreading from a stout root: seps broadly ovate: pets obovate, white: seeds shining. Colorado

Desert, California."—Howell, *Erythea* 1:34.

CALYPTRIDUM MONANDRUM Nutt.

Nutt. *1-G* 1:138.
Petals oftener 3; filaments subulate; the very short style undivided; mature capsule linear and much exserted. Quinten. CD; SD to Santa Clara valley.
Hall, *U* 77.

Abrams, Fl LA 141.

Calamintha Chanateri.

T. S. Brandege, *Zoe* 5:195 (Ag 1905), describes this as follows:—

"Stems frutescent, branching, 1 m.

high, forming clumps, upper parts

pubescent; leaves orbicular or broad-

ly ovate, with truncate or cuneate

base, obtuse, crenate-serrate or entire,

1 cm. long and broad, slightly pubes-

cent on the upper face, more so on

the lower; petioles pubescent, 5 mm.

long; flowers single or in 2-4-flowered

cymes in the axils of the leaves;

peduncles and pedicels 1-2 mm. long;

bracts linear-lanceolate; calyx tubu-

lar-campanulate, slightly bilabiate,

6-7 mm. long; the teeth about 1

mm. long, triangular, acuminate,

these of the lower lip slightly longer;

corolla 13 mm. long, pubescent out-

side, cream-white; the tube straight,

as long as the calyx; lobes of the

lower lip short; stamens conniving in

pairs; style bearing a few scattered

hairs nearly its whole length. Col-

lected by H. P. Chandler near San

Diego, California, on Mount San

Miguel, May 21, 1904."

LATONIA ANNUA Sksd.

Suksdorf, *W* 15:50.

Pflanze einjährig, 4—16 cm. hoch

(zuweilen vielleicht grösser). Blätt r

kurz, 1-6 cm. lang oder weni er, r uh,

ihre Scheiden fast kurzhaarig. Rispe

dicht, 1-4 cm. lang, oder kürzer und

dann oft zu einer armblütigen Ahre

verkömmert. Ahrochen 3-4 mm. lang,

2-oder 3blütig. Kelchpelzen fast

gleichlang, rau, besonders längs den

Nerven; die unterste breitlinealisch,

stumpf bis fast spitz; die oberste wie

bei *E. Pennsylvanica*.—In dichten

Massen an den Rändern von Tümpen

die bald austrocknen, bei Dalles am

Kolumbastrom, 8. Juni 1897. (Maine

Nr. 1553.)

GNAPHALIUM MICROCEPHALUM

Nutt.

Petal SD! Oregon. Da 9.

Bien; sts slender with several erect

branches, 5-8 dm hi, loosely corym-

bose-paniculate above, the whole her-
bage w with a persistent wool, not at
all glandular or heavy-scented; lvs lin-
ear or the lower spatulate, slenderly
decurrent; hds rather few or loose in
the paniculately or cymosely disposed
clusters; inv ovate; bracts w, ovate or
oblong, obtuse, except in the inner.

GNAPHALIUM PALUSTRE Nutt.

Low, branching ann, 5-15 cm hi,
floccose with long wool; lvs spatulate
to oblong and lanceolate: hds glomer-
ate, leafy-bracted; inv about 2 mm hi,
embedded in loose wool; bracts linear,
obtuse, brownish-g, tips w.

Nuttall, *Am phil soc tr, n sr, 7:403*

1841).

Type localities: "Rocky mts, Ore, Cal

and Chill."

Wash; Wyoming; N M; Baja.

Coville, *CNH* 4:128. "near Three Riv-

ers."

Abrams, Fl LA 410.

GNAPHALIUM PURPUREUM Linn.

Bien, simple or branching, erect or
decumbent at base, 2-3 dm hi, canes-
cent with a dense close wool: lvs spat-
ulate, obtuse, usually becoming glab-
rate and g above: hds crowded in an
elongated more or less interrupted spi-
ciform infl: inv brownish: ak sparsely
scabrous.

Abrams, Fl LA 411, Lincoln Park

(Davidson).

Wash; Texas; Mass; So Am.

GNAPHALIUM RAMOSISSIMUM Nutt.

Sacramento—L A; Cruz.

Bien, erect, 6-15 dm hi, paniculately
much branched above the middle; the
panicle often rather narrow and vir-
gate; herbage glandular and very
sweet-scented, only the st slightly
arachnoid; lvs g on both sides, dis-
tinctly decurrent; hds narrow, 4 mm
hi, rose color; bracts oblong-lanceo-
late, acutish.

Abrams, Fl LA 410.

Genus **NAVARETIA** Greene.

Mostly scented, viscid ann with alt
lvs; lvs pinnatifid or lower ones sub-
entire, the seg mostly rigid, subulate
or cuspidate; cx-seg mostly unequal,
entire or some toothed or cleft; fls in
terminal capitate bracted clusters; cor
tubular-funnelform or salver-form;
sta equally inserted.

Greene, *Pittonia* 1:130 (1887).

NAVARETIA ATRACTYLOIDES Gne.

Sts stoutish, low and spreading or
procumbent, somewhat purplish and
bracts rigidly coriaceous, oblong-
lanceolate to ovate, 2-4 broad, margin
villous-pubescent 2-6 i long; lvs and
armed with subulate on laristate teeth;
seg of the cx moderately or very un-
equal, ovate to lanceolate, entire, se-
taceous at apex; cor narrowly funnel-
form, p, 7-9 li long; sds about 10 in
each cell.

Gilia *atractyloides* Steud.

Abrams, Fl LA 313.

H&A, *Bech Bot* 368.

Jepson *Erythea* 1-16, near Lower

Lake.

Genus DENDROMECON Bentham.

Smooth branching shrubs with alternate vertical, thick, rigid entire or ciliolate-denticulate lvs, and showy yellow fls. Sep. 2, Pet 4. Sta numerous, with short filiform fl and linear anth. Ovary linear, 1-celled, and with 2 nerve-like placentae, elastically 2-valved from the base upward; valves striate-costate. Sds oval or globose, finely pitted, carunculate.

DENDROMECON HARFORDII Kellogg.

Brandegee, Zoe 1:46.

Santa Rosa Island, form of *D. rigidum*).

MECONOPSIS HETEROPHYLLA Bth.

Br, Zoe 1:113. Cat.

Bentham, Hort Soc tr 1:2.—Sr 2. 1:408.

Hooker, Ic Pl t 272.

Abrams, Fl LA 162.

See Papaver heterophyllum Greene.

Genus STREPTANTHUS Nuttall.

Ann (rarely bien), often glaucous: radical lvs commonly toothed or pinatifid, the cauline similar or entire, often sagittate-clasping; sep of the same color as the pet, 2 or all saccate at base, the cx thus ovoid or broad at base and contracted above or by the spreading of the tips becoming somewhat flask-shaped, rarely subcylindric: pet p or w, with a narrow undulate or crisped limb and channeled claw, regular or somewhat ir: sta tetradynamous, or in 3 unequal pairs, the two longer pairs with fl connate below or the uppermost pair with entirely united fl: silique oblong to narrowly linear, flattened parallel to the partition, sometimes subterete; valves 1-nerved or rarely carinate: sds flat, margined or winged; cotyledons accumbent: receptacle enlarged.

STREPTANTHUS HETEROPHYLLUS Nuttall.

Davidson Trythea 2:178. LA Co.

Mesas, foothills and lower mts of SD Co! and Baja!

Abrams, Fl LA 167.

More or less pubescent throughout with spreading simple hairs: st usually simple, 1 mm high or less: lvs linear, at least the lowest pinatifid with divaricate lobes or toothed, the upper usually entire; fls p or w, 8-12 mm long; cx narrow: sep slightly saccate: pods abruptly reflexed on slender pedicels 5-7 cm long, about 1.5 mm wide, beaked by a slender sty: sds small and crowded, narrowly winged.

Genus CLEOME Linnaeus.

Ours branching herbs with digitately 3-5-foliate lvs and y fls in bracteolate racemes: sep 4, often persistent: pet 4, cruciate, entire, equal: sta 6: ova stipitate with gland at base: capsule elongated, long-stipitate, many-seeded.

CLEOME INTEGRIFOLIA Nutt.

K Br, Zoe 1:82. Monterey Cal.

At the falls of the SD river (Or).

Genus CLEOMELLA De Candolle.

Branching ann: lvs with 3 lfts: fls y: sta 6, exserted: pods rhomboidal, few

seeded and small, pendent on spreading pedicels.

CLEOMELLA BREVIPES S. Watson.

Desert, San Bernardino Co. (Parish 1289).

* Stipe longer than the pod.

CLEOMELLA OBTUSIFOLIA T-G.

Colorado Desert (Or 1484); Arizona.

CLEOMELLA OCCARPA A. Gray.

Desert, San Bernardino Co. (Parish 1286).

** Stipe shorter than the pod.

CLEOMELLA PARVIFLORA A. Gray.

Nevada; desert, San Bernardino Co. (Parish 1288).

Genus HELIANTHEMUM Tournefort.

Woody herbs or low shrubs, more or less branching, mostly with showy y fls; pet 5, y, fugacious: sta num: placentae or false septa 3, ovules few-many; sty short or filiform or spatulate, jointed with the ova; stlg capitate or 3-lobed: embryo curved. Rock-rose. **HELIANTHEMUM GREENEI** Robinson.

H. occidentale Greene.

Santa Cruz Island.

Genus CERASTIUM Linnaeus.

Chick weed. Ann or per, pubescent or hirsute herbs, with terminal dichotomous cymes of w fls: Sep 5, rarely 4: Pet of the same number, emarginate or bifid, rarely G 0: sta 10, rarely fewer: sty equal in number to the sep and opp, or fewer: Capsule cylindrical, 1-celled, many-ovuled, often curved, dehiscent by 10, rarely 8 apical teeth: Sds rough. **CERASTIUM TRIVIALE** Link.

Bien or per, viscid-pubescent, tufted, erect or ascending, 15-45 cm long; lower lvs spatulate-oblong, obtuse: upper lvs oblong, 12-25 mm long, acute or obtuse; bracts scarious-margined: infl cymose, loose, pedicels at length much longer than the cx; sep obtuse or acute; pet exceeding sep, 4-6 mm long, 2-cleft; capsule usually curved upward.

C. vulgatum L.

Abrams, Fl LA 146. Frequent in lawns.

Genus ARENARIA Linnaeus.

Ann or per herbs, with sessile lvs and terminal cymose or capitate, rarely axillary and solitary w fls: sep 5: pet 5, entire or scarcely emarginate, rarely 0: Sta 10: Sty usually 3, rarely 2-5: Ova 1-celled, many-ovuled: Capsule globose or oblong, dehiscent at apex by as many valves or teeth as there are sty, or twice as many: Sds reniform-globose or compressed.

ARENARIA FENDLERI A. Gray.

Sts num from a thick per rt, glaucous glandular-pubescent above, erect, leafy, 10-35 cm high: basal lvs gramineous, setaceous, ciliolate or smooth, 5-10 cm long, somewhat pungent: cauline becoming reduced, connate and sheathing at base; infl dichotomous, few-many-fid: sep lanceolate, alt, glandular, 4-6 mm long: pet w or pale y, obovate, slightly exceeding sep: cap 3-4 mm long.

Abrams, Fl LA 147. LA (Nevin).

Genus LEPIGNUM Fries.

LEPIGNUM GRACILE Watson.

See *Tissa gracilis*, Britton

LEPIGNUM MACROTHECUM F. & M

See *Tissa macrotheca* Britton.

LEPIGNUM MEDIUM Fries.

See *Tissa marina* Britton.

ILLECEBRACEAE.

Distinguished from the scarias-stipulate Caryophyllaceae only by the solitary or sometimes geminate ovules, undivided or 2-cleft sty, and 1-seeded utricular or ak-like fr; pet 0 or reduced to mere fl.

Genus PENTACAENA Bartling.

Tufted per with subulate pungent lvs and silvery-hyaline stipules; fls sessile clustered in the axils: Sep 5, unequal, hooded, the 3 outer larger and with a stout divergent terminal spine: Pet minute, scale-like: Sta 3-5, inserted at the base of the sep. Sty very short, 2-cleft: Utricle enclosed in the rigid persistent ex.

PENTACAENA RAMOSISSIMA H. & A.

Hooker, Bot misc 3:338.

Abrams, Fl LA 150.

Prostrate: subulate pungent gray-green leaves crowded: stipules silvery: sessile fls clustered: sepals 5, hooded, ending in a spine.

Ore; Mex; Chili; Braz; Patagonia; Cruz; Rosa; El Rosario, Baja!

PORTULACACEAE.

Herbs generally fleshy or succulent, with alt or opp lvs and regular but unsymmetrical perfect fls. Sep commonly 2: Pet 4 or 5, rarely more, hypogynous, equal in number to the pet and opp them or fewer; anth 2-celled, longitudinally dehiscent: Ova 1-celled; sty 2-3-cleft or divided; ovules 2-many, amphitropous: cap membranous or crustaceous, circumscissile or 3-valved: Sds 2-many, reniform-globose or compressed; embryo curved; endosperm farinaceous.

Genus CALANDRINIA H. B. K.

HBK nov Gen 677 in part.

Howell, Erythea 1:33. Succulent herbs, with alt lvs, and ephemeral fls in bracted racemes: Sepals 2, persistent: petals 3-7: sta 3-10, seldom of the same number as the pet: Ovary free, many-ovuled: Sds bk, minutely tuberculate.

CALANDRINIA BREWERI S. Watson.

Watson, Am ac pr 11:124.

"Sts prostrate: sep deltoid-ovate: pedicels reflexed in age: sds dull. Cal."—Howell, Erythea 1:33.

Genus PORTULACA Tournefort.

Low succulent prostrate or ascending herbs with alt or opp lvs and scarious or setaceous stipules: Fls axillary or terminal, ephemeral, (ours) y: Sep=2, coherent at the base into a tube and adnate to the base of the ova, the free upper portion at length deciduous: Pet 4-6: Sta 4-20, perigynous with the pet:

sty 1, deeply 3-8-veft: cap circumscissile near the middle, many-seeded.

PORTULACA OLERACEA Linn.

Fls y: purslane; a widely disseminated weed.

Sts prostrate, 1-5 dm long; lvs fleshy, glabrous, obovate to spatulate, rounded at the apex; fls sessile, axillary; stipules minute; sep acute, carinate; pet y, 2-4 mm long; stig 5; cap 6-10 mm long; sds dull bk, finely tuberculate.

Cultivated grounds and waste placés. My-Ag. Purslane.

Abrams, Fl LA 142.

CALYPTRIDIMUM PARRYI A Gray.

"Depressed, small-leaved: leaves (only 1/4 in. long) spatulate, or the rosulate radical ones cuneate-obovate with long tapering base: spikes in age second and scorpioid: fructiferous sepals orbicular or oval, less complanate, herbaceous with narrow white margin, a line or two long, a little surpassed by the oblong capsule: style half the length of the ovoid ovary."—Gray Am ac pr 22:25. Bear (Parry.)

Genus MONTIA Micheli

Mich, Nov Pl Gen 17 t 13.

"Low glabrous herbs, with delicate pale or w fls in loose axillary or terminal simple or compound racemes: sep 2, g, persistent: pet usually 5, more or less unequal: sta 3-5; ova 2-ovuled: cap 3-valved, 3-seeded."—Howell, Erythea 1:36.

MONTIA PERFOLIATA Howell.

Scapose sts 10-30 cm hi; lvs long petioled, oblanceolate to ovate or deltoid; involucral bracts completely jointed, forming a perfoliate disk; fls in short or rather long peduncled racemes; sep ovate, 2-3 mm long; pet 3-5 mm long, w or rose color: sds lenticular, bk and shining, minutely granular.

Abrams, Fl LA 142.

Howell, Erythea 1:38 (1893). Indian Lettuce.

Common from Vancouver Island to Chili.

Claytonia perfoliata Donn: Wild Sp 2:1186.

MONTIA SPATHULATA Howell.

Low and rather dense, 3-10 cm high; radical lvs linear or spatulate-linear, little exceeded by the fl-ing sts; cauline lvs from spatulate-ovate to lanceolate, almost distinct or connate upon one side into an orbiculate or 2-lobed inv; inf 1-2 cm long; fls sm; pet 2-4 mm long; sds bk, shining, granulated.

Abrams, Fl LA 142.—Kings canyon (Davidson).

Howell, Erythea 1:38 (1893). Oregon and adjacent Cal.

Claytonia spathulata Douglas; in Hook Fl 1:226 t 74.

Genus GORMANIA Britton.

"Low, Sedum-like species, perennial by horizontal rootstocks. Lvs spatulate to obovate or ntarily orbicular, those of the fl'ng stems similar to the basal ones, but smaller. Fls cymose or thyrsoid, yellow to red. Calyx mostly deeply 5-lobed. The lobes acute or obtuse. Petals 5, united

below the middle, acute to acuminate, somewhat spreading above. Stamens 10, borne on the cor; anthers mostly oblong, Carpelis many-sided, united below, erect or nearly so, even in fruit."—Britton, NY bot gard b 3:29. Named in honor of M. W. Gorman. Type, *Cotyledon oregonensis*, Wats.

GORMANIA ANOMALA Britton.

San Luis Obispo Co., Cal. (Mrs. R. W. Summers).

GORMANIA OBTUSATA.

Britton, NY bot gard b 3:29, based on *Sedum obtusatum* A. Gray, Am ac pr 7:342 (1868).

Sierra Nevada of California. Hall 83.

GODETIA EPILOBIOIDES S. Watson.

Tomentosely puberulent, $\frac{1}{2}$ -2 $\frac{1}{2}$ ft hi; lvs linear (or inclined to lanceolate), denticulate; cx r; pet light p or w, 3-6 li long; cap acuminate at apex, attenuate to a short pedicel, rarely subsessile. Baja, Ore.

SBar foothills (Parish 1095).

Oregon to Baja; Cruz; S Bar; Cat.

GODETIA QUADRIVULNERA Spach.

Simple or with erect branches from the base, finely pubescent or the younger parts canescent; lvs linear or narrowly oblong, entire or slightly denticulate, mostly less than 1 li long, sessile or very short-petioled; pet 4-6 li long, truncate or obtuse or even subacute, towards apex erose-denticulate; style longer or shorter than sta; cap pilose-pubescent, 2-ribbed on the 4 sides, sessile.

Da 6. Ha U 97. Puget Sound to Baja! Cruz; Cat; Rosa; 1-2 ft high; fls w or bright phlox p; very showy in some of its cultivated forms.

GODETIA BOTTAE Spach.

Spach, Mon Onagr 73 (1835).

Coville, Cont U S Na hb 4:196.

Type locality: "in California australiori."

Sts erect, 3-6 dm hi, nascent parts puberulent, otherwise glabrous; lvs linear-lanceolate, glabrous or sparsely puberulent, denticulate; fls abruptly reflexed in bud; well developed bud about 2 cm long, acutish, drooping; pet pink, often paler below and speckled with p, mostly 2.5-3 cm long, cuneate, tapering from the truncate apex to the sessile base; stigma-lobes broadly obovate, usually p; cap linear, about 4 mm long, not at all costate, its beak short and nearly as broad, cinereous with a short appressed pubescence.

Da 6. Monterey to S D; S Bar (W.G. Wright). Cat.

Godetia pulcherrima Greene.

GODETIA DUDLEYANA Abrams.

"Sts erect, simple below, more or less branched above, 3-6 dm hi; herbage puberulent throughout, with rather short curved hairs; lvs linear-lanceolate, entire or rarely faintly and remotely repand-denticulate; fl-buds drooping, elliptic-ovate, tapering above to a rather long acuminate tip, 10-15 mm long; ex-tube 1.5-2 mm long; pet obovate, truncate at the apex, abruptly tapering near the base to a short (2

mm long) and narrow claw, 15-20 mm long, pink, often with p specks below the middle; sta slightly unequal, the longest 12 mm long, anth y; sty filiform, glabrous, 12-14 mm long; stigma-lobes oblong, 1.5 mm long, y; cap linear, abruptly tapering at base to a short pedicel, and at the apex to a slender beak, about 2.5 cm long, each cell laterally bicostate.

"Frequent in the upper portions of the chaparral belt of the San Gabriel mts. The type is the author's number 2625, collected in the Little Santa Anita canyon at 2500 feet altitude. This species has been confused with *G. Bottae*, but it is much nearer *G. hispidula* Wats."—Abrams, Fl LA 267.

GODETIA VIMINEA Spach.

Sts erect, 3-6 dm hi, nearly or quite glabrous; lvs linear-lanceolate, entire, 2.5-5 cm long; ex-tube 4-6 m long; pet p, 2-3 cm long; sta short, nearly equal; stigma-lobes p, linear-oblong; cap 2-3 cm long, somewhat bicostate on the sides, pubescent.

Abrams, Fl LA 267.

MENTZELIA INTEGRIFOLIA Rydb.

Usually branching, 9-13 i hi; sts ostensibly smooth, pubescent under a lens; lvs oblong or ovate, 1 $\frac{1}{2}$ i long or less, entire or sometimes toothed; fls small, approximate near the ends of the branches; cx-lobes 1 li long, little shorter than the obovate pet; fil not dilated; capsule linear, 6 or 7 li long; sts cubical, minutely mottled, rather acutely angled, as broad as long. Mt. Diablo to LA Co.

Abrams, Fl LA 255.

Mentzelia dispersa S. Watson, Am ac pr 11:137 (1876).

Mentzelia albicaulis integrifolia S. Watson.

Type locality: "East Humboldt mts. Nev and Antelope Island and the Wahsatch, Ut; 4500-6000 ft alt."—Watson, Bot King exp 114 (1871).

Coville, CNH 4:108.

MENTZELIA LAEVIKAULIS T. & G.

(Blazing Star)—Blen, st stout, erect, branched above 6-10 dm hi, often w; lvs lanceolate, sinuate-toothed, 5-15 cm long; fls sessile on short branches, 6-8 cm broad, light y, diurnal; ex-tube naked; cx-lobes 2.5 cm long or more; pet 10, rarely 5, oblanceolate, acute; sta num, about equaling the pet in length, the outer with dilated fil; cap 3 cm long; slr many in double rows on the 3 placentae, horizontally flattened and winged, minutely tuberculate, 3 mm broad.

Frequent in dry washes in our interior valleys and canyons. My-S.—Abrams Fl LA 256.

C D (Parish 159). SBar to Columbia river, Ut, Wyo.

Jepson, Erythea 1:13.

MENTZELIA MICRANTHA T. & G.

Rather slender, 3-6 dm hi, simple below, corymbosely and rather compactly dichotomous above; lvs ovate, acute or acuminate, serrate or sinuate-

toothed or entire, 2.5-5 cm long; fls sm. shorter than the floral lvs; ex-lobes 2 mm long; pet oval, 3 mm long; 5 outer sta with dilated fil; capsule cylindrical or nearly so, 6-12 mm long, few-seeded; sds prismatic, with a very shallow groove, sides faintly tuberculate.

Abrams, Fl LA 256—Occasional in the chaparral belt throughout our range.

Brandege, Zoe 1:113, Cat.

CUCURBITA FOETIDISSIMA HBK.

Jepson, Erythea 1:12.

Calabazilla or mock-orange. Sts stout, rough, hirsute, trailing to a length of 2-5 m; st very large, carrot-shaped; lvs ovate-triangular, cordate or truncate at the base, acute at the apex 1-3 dm long, denticulate, usually slightly 3-5-lobed, rough above, canescent beneath, on stout petioles, 8-15 cm long; peds 2.5-5 cm long; fls mostly solitary; cor 7-10 cm long; pepo globose, 5-10 cm in diam, smooth.

Abrams, Fl LA 384.—“Frequent on dry sandy soil throughout our range.”

Curcubita perennis A. Gray.

MICRAMPELIS LEPTOCARPA Greene.

“Habit of *M. fabacea*, but slender, with smaller and more deeply lobed foliage; lvs very thin, rather sparsely and delicately scabrous; fls w, apparently open-campanulate rather than rotate; the staminate about 8-12 in a simple raceme; pistillate ones twice as large ($\frac{1}{4}$ i broad), with oblong prickly ovary $\frac{1}{2}$ i long or more; mature fr rather narrowly oblong, acute, about 5 i long, less than 2 i thick, strongly armed with flattened prickles $\frac{1}{2}$ -1 i long; seed-cavities 2, each with perhaps 5 or 6 sds, but these unknown. C D (W. G. Wright).”—Greene, Pittonia 2:282 (1892).

MICRAMPELIS MACROCARPA Greene.

Nearly glabrous sts much branched, climbing over shrubs, from a very large fusiform root; lvs about 1-1.5 dm broad, with closed sinus, 5-cleft to the middle or below it, the divisions slightly 3-5-lobed, mucronate; fruit ovoid-oblong, 8-12 cm long, usually densely echinate with stout but rather soft spines; the longest often 5 cm long, usually 12-14 seeded; seed ovoid, 18 mm long, light brown, encircled by a dark marginal line.

Frequent in the hills and in the chaparral belt of all the mountains. F-May. Commonly called chilicothe or wild cucumber.

Abrams, Fl LA 385.

Echinocystis macrocarpa Greene, Cal ac b 1:188.

Genus MESEMBRIANTHEMUM Linn.

M. AEQUILATERALE Haworth.

The “beach strawberry,” “sea apple,” or “Hottentot fig,” is a stout, prostrate perennial plant, abundant on the sea shore from Santa Cruz, California, to Chili, Tasmania, and Australia, bearing large, solitary brilliant rose-red flowers, that are very fragrant, followed

by luscious dull-red berries that are very acceptable to children, large and small, when enjoying a day on the beach.

Sts prostrate, often forming extensive mats; lvs 3-angled, opp, clasping, linear, 1-3 i long, smooth; fls solitary, sessile, $1\frac{1}{2}$ i dm, rose-p; ex-tube turbinate, $\frac{1}{2}$ i long or more, angled or terete, the larger foliaceous, lobes nearly as long; sty 6-10. Beach strawberry, Hottentot-fig. SD to Chili, Australia, Tasmania.

Abrams, Fl LA 139.

M. NODIFLORUM Linn.

A prostrate branching ann with rather slender terete lvs; fls w, sm, about 1 cm broad. SD!

Abrams, Fl LA 140. Near Capistrano south.

Brandege, Zoe 1:113, Cat.

LA Co. (Davidson) to Baja, in saline soil.

M. CRYSTALLINUM Linn.

Ice plant: the broad succulent leaves excellent as a salad; widely distributed.

An or biennial, prostrate and widely branching, herbage covered with w glistening papillae; lvs flat, fleshy, clasping, broadly ovate or spatulate, undulate; fls axy, sessile or nearly so, w or p; ex-tube campanulate, 3-5 li long, lobes ovate, retuse or acute; stig 5. Cruz. SD! Baja! S Africa.

Abrams, Fl LA 139.

SESUVIUM SESSILE Pers.

Sts prostrate, much branched, 1-3 dm long or more; lvs broadly spatulate or linear, 1-4 cm long; fls sessile or nearly so, 6-10 mm long; sep ovate-lanceolate, scarious margined, 6 mm long; fl united below the middle, r.

Abrams, Fl LA 139.

MOLLUGO VERTICILLATA L.

St much branched, prostrate, 10-20 cm long, glabrous, not succulent; lvs in whorls of 5's or 6's, spatulate to linear-lanceolate, entire, obtuse, 10-25 mm long, narrowed to a short petiole; fls 1.5-2 mm broad; sep oblong slightly shorter than the ovoid cap; cap roughened by the projecting sds; sds minute, smooth and shining or slightly granular. Abrams, Fl LA 138.

Growing in damp places near borders of pools. Garvanza, Davidson; Laguna, Orange Co.

Type localities; “in Africa, Virginia. Linnaeus, sp Pl 1:89 (1753).

Coville, C N H 4:115, 261.

GILIA TENUIFLORA Benth.

Commonly a ft hi, slender; radical and lower cauline lvs with shorter lobes than in *G. tricolor*; upper lvs sm, few; fls mostly slender tube, 4-5 times the loose panicle; cor p or rose, funnelform with slender tube, 4-5 times as long as ex (7-9 li long); its lobes broadly obovate and longer than the sta.

Gray, Bot Cal 1:498 (1876).
Monterey to Ubi, Baja (Br.) Jacumba, SD Co! “sometimes 2 ft hi.”

Lindl, Bot Reg t 1888.
 Variety **ALTISSIMA** Parish.
 "1-3 ft hi, much branched; branches of the infl beset with tack-glands; cor 1 i long, lilac, with darker throat; cap oblong. Common in the foothills near Sber."—Parish, Erythea 6:90.

Hall, U 105.

Abrams, Fl LA 315. Gabriel mts.

Variety **LATIFLORA** Gray.
 "A form with shorter tube to the cor, more abruptly dilated throat, and broader limb: radical lvs sometimes simply pinnatifid."—Gray, Bot Cal 1:498 (1876). LA.

GILIA VIRGATA Stend.

An, w-floccose, becoming glabrate; sts slender, either simple and virgate or with virgate branches from base and paniculately branched above, 1-3 dm hi; lvs slender filiform, the lower mainly entire and the upper rarely more than 3-parted; cor blue or lavender, its tube 8-12 mm long, surpassing the acerose ex-lobes; anth linear-sagittate, 2 mm long.

Abrams, Fl LA 316.

Monterey to Baja mts! Hemet valley (I. J. Gray).

Hall, U 105.

Variety **FLORIBUNDA** A. Gray.

Gray, Am ac pr 8:272 (1870), Cal.

Abrams, Fl LA 316 Azusa, Cal.

Branches few, terminated by large compact fl-clusters; lvs mostly pinnately 3-7-parted; cor larger than type. SD Co! Sber Co (Parish 315).
 Coville, CNH 4:156.

NAVARRETTIA PROSTRATA Greene.

Plants glabrous; primary fl-cluster sessile, the branches radiating from beneath it, simple or once-forked, terminating in the head-like clusters; lvs pinnatifid, rachis broad and slender, segments remote; heads dense, surrounded by foliaceous bracts 1-1½ i long; bractlets not exceeding the w fls; cor-lobes oblong; cx with unequal teeth, the 2 longer tridentate; cx-teeth in fr contracted over the 2-celled capsule: sds 9-11, sm; embryo short-cylindrical, cotyledons about equalling the caulicle in length. Central Cal. LA (Davidson). Baja mts!

Greene, Pittonia 1:130.

Abrams, Fl LA 313.

Gilia prostrata A. Gray, Am ac pr 17:223.—& Syn Fl Suppl 409.

NAVARRETTIA VISCIDULA Greene.

Erect, 2-3 i hi, viscid-pubescent; lvs 1½ i long or less, narrow, with broad rachis and remote short-subulate lobes; bracts little dilated; cor rather large, blue-p, tube exerted, limb 2 li broad, its lobes elliptic; ovules 1-4 in each cell.

Abrams, Fl LA 313.

So Cal to the sacramento region (Greene).

Greene, Pittonia, 1:138.

Bentham, Pl Hartw 325.

Gilia viscidula H. & A.

Genus **PHACELIA** Juss.

An, rarely per, mostly hirsute or his-

pid herbs, rarely suffrutescent; lvs entire or variously lobed or dissected; fls often showy in scorpioid spikes or racemes: cx deeply 5-parted, commonly more or less accrescent, unappended; cor from nearly rotate to campanulate, tubular or funnelform, deciduous, the tube commonly with internal lamellate projections or appendages: sta inserted on the base of the corollatube: sty 2-cleft: cap 1-celled, 2-valved, the thin septa-like placentae adherent.

PHACELIA CILIATA Benth.

Branched from base with rather simple ascending branches, 2-4 dm hi, herbage scabrous, otherwise glabrous; lvs pinnately divided, divisions oblong, toothed or incised; spikes rather short, becoming loose in fr; pedicels short or almost 0; cx-lobes lanceolate to broadly ovate, chartaceous, 7-10 mm long in fr, with thickened midrib and reticulations, sparsely bristly-ciliate; cor blue; sta shorter or about equaling cor; cap ovate, mucronate, about ½ as long as cx-lobes, which are arched over it; sds oval, favose.

Abrams, Fl LA 323. Hollywood; Capistrano.

Baja! Da 12; SF.

PHACELIA CAMPANULARIA A. Gray.

LA; SD mts; CD.

PHACELIA CIRCINATA Jacq. f.

Ha U 107. British Columbia to Baja mts! N M; Dakotas.

See P. Magellanica.

PHACELIA COOPERAE A. Gray.

Gray, Am ac pr 15:49.

Hubby, Erythea 4:123-4.—"Distinct from P. gymnoclada Torr," fide Fernald. Ojai valley, Ventura Co, Cal.

PHACELIA DAVIDSONII A. Gray.

Sber foothills (Parish 842).

Variety **MACRANTHA** Parish.

"Stem stout, assurgent or erect, 1 ft. or more long, corolla ½ inch or more high, dark purple, the white of the throat extending into the base of the limb. San Bernardino Mts., Cal."—

Parish, Erythea 6:90. 5,000-6,000 ft. alt.

PHACELIA CORDIFOLIA S. Watson.

Sber foothills (Parish 446).

PHACELIA CURVIPES Torr.

SD mts; CD (Parish 466).

PHACELIA DISTANS A. Gray.

Sts much branched, ascending, 3-5 dm hi; herbage with scattered hispid hairs and close fine pubescence; lvs pinnately 9-17-divided into linear-oblong 1-2-pinnatifid or cleft divisions; spikes scattered, solitary or geminate; sep unequal, narrowly obovate to spatulate; cor 6-8 mm long, rotate-campanulate, usually blue, rarely paler, lobes rounded; internal appendages semioval with free pointed tips; sta little or not exerted.

Abrams, Fl LA 323.

Valued for bee-pasturage.

Ha U 107, Cruz; Rosa; Calmalli; Da 11. SF. Cat.

Phacelia scabrella Greene, Pittonia

133. San Miguel Island.

PHACELIA DOUGLASSII Torr.

Sts branched from base; branches prostrate or decumbent, 1-2 dm long; herbage pubescent and circinate with mostly spreading hairs; lvs elongated-oblong or linear to elliptic, pinnatifid or pinnately parted into several to many pairs of lobes, terminal lobe not larger nor parallel-veined; racemes becoming elongated; pedicels filiform, 1-2 cm long; ex-lobes spatulate; cor rotate-campanulate, pale blue, about 1 cm broad; appendages semi-oblongate; ovules to each dilated placenta 12-14; cap ovate, mucronate; sds roundish-oval, scrobiculate.

Abrams, Fl LA 325.

Davidson, Pl LA Co 12.

Monterey to Baja! Da 12.

PHACELIA FREMONTII Torr.

Much branched from the base, 1.5-3 dm hi; lvs pinnatifid into 7-15 oblong or obovate entire or obtusely 2-3-lobed divisions; fls crowded in the ax length elongated spiciform racemes; cor broadly funnel-form, twice the length of the spatulate ex-lobes; the long and narrow appendages united below with the fl or almost free from them; cap oblong; sds 20-30, oblong, strongly and somewhat evenly corrugated.

Abrams, Fl LA 326.—LA River; Wilson's Peak, Davidson. Summit of Santiago Peak.

Torrey, Bot Ives Exp 21 (1860).

Mohave!

Type locality: "Yampai Valley," Ar.

PHACELIA GRANDIFLORA A. Gray.

Pt. Loma, SD! Santos! Cat.

PHACELIA HISPIDA A. Gray.

An 5 dm hi or less, diffusely branched, setose-hispid with long slender w bristles; lvs with rather few, coarse divisions, the uppermost sometimes merely lacinate-incised; spikes soon loose and loosely paniculate; fls on short slender horizontal pedicels; cor very pale bl, rotate or campanulate; lobes rounded at apex; ex-lobes narrowly linear with attenuate base nearly equalling cor, in fr 3-12 mm long and almost 4 times as long as the globose cap; sds short-oval, roughish-scrobiculate. SBar; Baja; Cruz.

Davidson, Pl LA Co 11.

Abrams, Fl LA 322.

Gray, Syn Fl 2 pt 1, 161 (1878).

Type locality: "SBar to SD."

Coville, CNH 4:158. Panamint and Argus mts.

SBar; Baja; Cruz. Da 11.

Phacelia ramosissima var. *hispida* Gray, Am ac pr 10:319 (1875).

PHACELIA MAGELLANICA Coville.

Hispid and the foliage strigose, more or less canescent, 2-5 dm hi, from a per or bien rt; lvs lanceolate to ovate, acute, pinnately and obliquely straight-veined; lower tapering into a petiole, and commonly some of them with 1-2 pairs of smaller lateral lfts; inf hispid, dense spikes thyrsoïd-congested; cor w'ish or bluish, moderately

5-lobed, longer than the oblong-lanceolate or linear ex-lobes; fil much exerted sparingly bearded.

Coville, CNH 4:159. Iyo mts.

Abrams, Fl LA 322.

Aldoea circinata Willd En Supp 9 (1813).

Phacelia circinata Jacq, f, Eclog 1:135 t 91; A. DC Prodr 9:298.

Phacelia heterophylla Pursh.

Phacelia Californica Cham.

Hydrophyllum magellanicum Lam, S Hist Nat 1:373 (1787).

NAMA DEMISSUM A. Gray.

Dwarf, depressed commonly 2-3 i hi, pubescent, hirsute or sometimes rather hispid; lvs linear-spatulate, all or most of them tapering into a petiole; fls subsessile in the forks; sep very narrow-linear, not at all broader upward, usually much shorter than the bright p cor: cap short-oblong, 10-16-seeded.

Gray, Bot Cal 1:517.

Conanthus demissus Heller.

NAMA PARRYI A. Gray.

Gray, Bot Cal 1:621.—"Six ft hi! from a woody stout base: lvs linear, villos-hirsute throughout, numerous pinnately veined and somewhat bullate, the margins revolute and unilobate or repand; fls unilateral and at length densely spicate on the few branches of the compact scorpioid cyme: sep nearly filiform, little surpassing the oval cap: sds oval, ½ li long, minutely marked with narrow transverse reticulations. On the Mohave slope of the SBar mts (Parry, D 1875, in fr only). Lvs on new shoots 2 i or 3 i long and only 2 li or 3 li wide. Cynes apparently pedunculate: cap and ex only 2 li or so in length. St. Wigandia-like over ½ i in diam at base, decidedly woody, but with a large pith."

Eriodictyon Parryi Greene.

NAMA ROTHROCKII A. Gray.

"A span or two hi from a per rt, cinereouspubescent or minutely hirsute and slightly viscid: the st, ex, etc., hispid with long and short (Wigandia-like) bristles: lvs lanceolate-oblong, obtusely pinnatifid-toothed: fls num in a terminal and sessile capitate cluster: sep hardly at all dilated upward, ½ i long, nearly equalling the cor; sds rather few, large (almost 1 li long), oval, closely reticulate-pitted. Meadows on S. Kearny river, at 5000 ft. (Rothrock, in Wheeler's Exped., 1875). Lvs an i or more long; the rather prominent pinnate veins running to the sinuses between the strong teeth, and there forking: cor w'ish or p'ish: ova and 2-celled cap somewhat hirsute.; most remarkable in the genus for the toothing of the lvs and for the almost stinging hairs, like those of Wigandia. But the narrow funnel-form cor and the habit are those of Nama."—A. Gray, Bot Cal :621.

Genus ERIODICTYON Benth.

Low shrubs or rarely herbaceous, with alt more or less dentate lvs, and

funneliform or campanulate fls in terminal panicles or scorpioid cymes; sep narrow, not dilated above: fil more or less adnate to the tube of cor, little or not at all exerted, sparsely hirsute: ova nearly or quite sessile, 2-celled by the meeting of the dilated placentae in the axis: cap first loculicidal then septicidal, thus 4-valved; each valve with a short beak or acumination and closed on one side by the adherent dissepiment or half-partition.

ERIODICTYON CALIFORNICUM
Greene.

Shrub, commonly 10-20 dm hi; lvs oblong to oblanceolate, tapering below and frequently above, dentate at least above the middle, very glutinous, the areas between the veins on the under side with a close dense felt; ex 2 mm long, with linear lobes; cor w or pale blue tubular-funneliform, 8-12 mm long; sta and sty included.

Abrams, Fl LA 327. Gabriel and SBER mts.

E. glutinosum Benth.

ERIODICTYON PARRYI Greene.

Greene, Pittonia 2:22, based on Nama Parryi, which see.

Abrams, Fl LA 328. Gabriel, SBER and Santa Ana mts.

Hall U 106 (description revised in part).

ERIODICTYON GLUTINOSUM Benth.

See E. Californicum.

ERIODICTYON TOMENTOSUM Benth.
ERIODICTYON TRICHOCALYX Heller.

"Shrub, height unknown: bark of the pale growth of the season, and as well as the lvs shining with a gummy exudation: lvs oblong, the largest 9 cm long including the petiole of 1 cm or less, averaging 1 cm wide, sinuate-dentate, the apex rounded or acutish, the base gradually narrowed into the petiole, deep green and glabrous above, veins prominent beneath, especially the midvein, the spaces between the veins whitened with a very short and close tomentum which is barely perceptible to the touch: inflorescence pubescent with short hairs which completely cover the short, 3 mm long ex, the lobes of which are linear: cor narrowly campanulate, 6 mm long, 4 mm wide across the summit, probably p'ish, densely pubescent on the outside, the rounded lobes slightly over 1 mm long and about as wide: sta equals the cor tube, anth inserted as base of cor, but adnate for one-third their length, the adnate portion bearded, but not densely so: sty equals fil. The type was collected by Mr. G. B. Grant at Seven Oaks Camp, SBER mts, Je 1901, and was distributed as Eriodictyon Californicum. It resembles that species somewhat in its lvs, but otherwise is totally different, being probably more nearly related to E. angustifolium."—Heller, Muhlenbergia 1:108-9 (26S 1904)

LINANTHUS ANDROSACEUS Steud.

Stoutish, usually simple, 7-15 i hi, finely tomentose or glabrate; lowest lvs spatulate; bracts ciliate, otherwise

nearly glabrous; fls usually many; cor lilac, lavender, p or w, 1 i long, much exceeding the bracts, the lobes 3-4 li long; the throat dark p with y border 1 li long; sta little surpassing the throat of cor.

Coville, CNH 4:152. Kaweah river.

Greene, Pittonia 2:258 (1892).

Type locality: Californian.

Of Parish is L. montanus.

Gilia androsacea Steudel.

Leptosiphon androsaceus Bentham, Hort tr 1834 t 18; Bot Reg t 1710; Bot Mag t 3491.

Gray, Bot Cal 1:491.

Common in western Cal; Cruz; Rosa.

LINANTHUS AUREUS Greene.

Abrams, Fl LA 318.

Nearly simple or more commonly diffusely branched, 5-15 cm hi; lf-seg narrowly linear, 6 mm long, hispidulous; pedicels seldom longer than fls; cor open-funneliform, golden y; lobes rounded obovate, widely spreading, equaling tube; fil inserted just below sinuses, glabrous at base; sds about 10 in each cell. Mohave, NM.

Greene, Pittonia 2:257 (1892).

Gilia aurea Nuttall, Fl Gamb 155 t 22 (1848).

Type locality: "Santa Barbara."

SBar; Mohave! CD! N M.

LINANTHUS BICOLOR Greene.

Gilia tenella Benth.

Very near L. Parviflorus but dwarf, 1-3 i hi; lvs and bracts hispidulous-ciliate; limb or cor 1-1½ li long, tube 6-9 li long, dull p or pink with y throat. Marin Co to So Cal.

Abrams, Fl LA 319. Wilson's Peak (Davidson).

Leptosiphon bicolor Nuttall.

Abrams suggests that Davidson's plant is L. ciliatus.

LINANTHUS CILIATUS Greene.

Rigid, 4 1-1 ft hi; sts finely tomentose, internodes long; lvs scabrous and hirsute; fls few; cor ½-¾ i long; bracts equally long, deep rose fading w, conspicuously hirsute-ciliate, ex-lobes acrose.

Gilia ciliata Benth.

Abrams, Fl LA 319. Wilson's Peak. Variety MONTANUS L. montanus.

LINANTHUS DENSIFLORUS Benth.

Linanthus gradiflorus Greene

Erect, simple, ½-2 ft hi; divisions of the palmately divided lvs 5-11, linear-filiform and rigid, ciliate towards the base and somewhat scabrous on the margins; cor lilac or w, 1 i long or less, its tube only equaling or little exceeding the obovate lobes, little lf at all exerted beyond the ex-teeth, its limb ½ i broad, more or less; sds 3 in each cell, strongly wrinkled. Alameda, Cal. south.

LINANTHUS DIANTHIFLORUS Greene

Branching from the base, the branches decumbent or simple and erect, 4-12 cm hi, more or less pubescent; lvs all simple, narrowly linear; cor short-funneliform, 2 cm long or more, lilac with a darker or y'ish

throat, the ample lobes from denticulate to strongly fringed-toothed: fil inserted near the base of the tube; ovules 12-20 in each cell.

Abrams, Fl LA 317.

Gilia dianthoides Endl.

LINANTHUS LEMMONI Greene.

Abrams, Fl LA 318.

Sts widely branching, about 10-15 cm hi, hirsutely pubescent; lf-seg linear, 5-6 mm long; fls solitary or few in the axils and subsessile, but more densely clustered at the ends of the branches; cx turbinate-prismatic, strongly 5-costate; lobes acerose-subulate, equaling the throat of the y'ish short-funnelform cor, cap many-seeded.

Gilia Lemmonii Gray.

LINANTHUS LINIFLORUS Greene.

Gilia liniflora Benth.

A ft hi or more, mostly branching above; lf-seg $\frac{1}{2}$ -1 i long, in a diffuse panicle: cor with nearly obsolete tube: limb rotate, $\frac{1}{2}$ - $\frac{3}{4}$ i broad, the obovate lobes naked, with several blue longitudinal lines or veinlets; sta $\frac{1}{2}$ as long as cor-lobes; fil with a densely pilose ring just above the base, cor pubescent at their insertion; ovules 6-8 in each cell. Stockton, Cal. Baja!

Abrams, Fl LA 317.

Common in Cal; SD; SBar; Baja!

LINANTHUS PARVIFLORUS Greene

Simple or with few branches from the base, erect, 3-11 i high, almost glabrous; bracts scabrous or hirsutulous, not ciliate or scarcely so, 3-4 li long; seg of lvs obovate or linear-spatulate; cor p, pinkish or pale y, $\frac{3}{4}$ -1 $\frac{1}{2}$ i long, lobes oval, 2-3 li long or less, tinged with r or brown on the outside, throat y; sta $\frac{1}{2}$ as long as cor-limb, or more.

Greene, Pittonia 2:258 (1892).

Abrams, Fl LA 318.

Coville, CNH 4:153.

Leptosiphon parviflorus Benth.

Bot Reg 19 sub t 1622 (1833).

Type locality: "California."

Gilia micrantha Steudel.

Gray, Bot Cal 1:491.

Gilia lutea Steudel.

Gilia longituba Benth., Pl Hartw 324, 325.

Leptosiphon luteus Benth.

LINANTHUS PUSILLUS Greene.

Sts very slender, diffusely dichotomously branched, pubescent; pedicels capillary; cx 3 mm long, the teeth subulate, barely half as long as the tube, hispid-ciliate; cor short-funnelform, little or not at all exceeding the cx; sds 3-4 in each cell.

Abrams, Fl LA 318.

Gilia pusilla Benth.

LEPTODACTYLON CALIFORNICUM

H. & A.

Shrubby, 6-12 dm hi, the branches and very crowded lvs tomentose-pubescent and more or less glandular, lf-seg narrowly linear, about 1.5 cm long; cor rose or lilac, its limb 2-4 cm in diam, with broadly wedge-obovate lobes, their margins often minutely erose; ovules 20 or more in each cell.

Abrams, Fl LA 317.

Gilia Californica Benth.

LA; SBar Co; SD Co.

Genus **MICROSTERIS** Greene.

Sm much branched ann with entire lvs, all except floral ones opp, and minute fls scattered singly or in pairs in the axils of the alt lvs: cx tubular, 5-cleft, the lobes acute, scarious-margined: cor salver-shaped, the tube narrow: sta straight, short, unequally inserted on the cor-tube: cap 3-celled, at length distending and rupturing the cx-tube: sds few, large, the coat when moistened developing a thick glutinous mass.

MICROSTERIS CALIFORNICA Greene.

Slender, 1-2 dm hi, loosely and somewhat dichotomously branched from the middle: lvs ovate-subulate in the lowest to oblong and oblong-lanceolate, 1-2 cm long, all more or less pubescent with scattered hairs, a few fine gland-tipped hairs on the fig branches and cx; cx-teeth slightly shorter than the tube; cor r, lobes emarginate: little surpassing the cx; cap ovoid.

Abrams, Fl LA 312.

Collomia gracilis of recent authors, not of Douglas.

British Columbia to Baja mts! Colo; N. M.

GILIA DENSIFOLIA Benth.

Per, canescent-lanate when young, glabrate in age: sts rigid, branched from a goody base, usually spreading, 1.5-3 dm hi; lvs rigid, mostly pinnatifid or incisely lacinate into short subulate spinulose lobes; fls densely clustered, capitate-glomerate; cor violet-blue, its tube about 12 mm long, 2-3 times the length of cx; anth sagittate; Nev, Santa Clara Co, Cal.

Abrams, Fl LA 316.

Hall, U 104.

Benth., in DC Prodr 9:311 (1845).

Coville, CNH 4:155. Tejon mts.

Hugelia densiflora Benth., Bot Reg 19 sub t 1622 (1833). ("A short stout form.")—Gray.

Type locality: "California."

Hugelia elongata Benth.

GILIA DIANTHOIDES Endl.

See *Linanthus dianthiflorus*.

GILIA FILIFOLIA Nutt.

Nuttall, Pl Gamb 156.

Gray, Bot Cal 1:495:—"Like *G. floccosa*, but more rigid: lvs mostly 3-parted: cor bl or bl'ish, little if at all exerted: anth oval, very sm: ovules 4-6 in each cell." SBar, Nev, Ar, Mohave

GILIA FLOCCOSA A. Gray.

Gray, Am ac pr 8:272 (1870). "Cal to Ar, interior of Ore, and Ut."

Gray, Bot Cal 1:495 (1876):—"Smaller than *G. virgata*: lvs mostly entire: cor about 4 li long; bl or becoming w (probably never "y"): anth linear-oblong (barely $\frac{1}{2}$ li in length): ovules 1-4 in each cell."

Baja! Oregon; Utah; Arizona; CD!

Hugelia lutea Benth., Bot Reg.

Gilia lutescens Steudel; Benth. in DC.

GILIA FLORIBUNDA A. Gray.

SD mts (Parish 425); Arizona; Baja!

GILIA GILIOIDES Greene.

Loosely branching, erect or diffuse, 8-21 in hi; radical and lower lvs pinnately parted into narrowly oblong or lanceolate divisions, or all so divided, or the upper palmately divided into 3-5 obovate or lanceolate divisions; cor 4-6 li long, salverform, bl-p; sta unequally inserted; cap globose; sds 1 or 2 in each cell. So Cal, Sierra Nev. Coville, CNH 4:155.

Greene, Erythea 1:93 (1893).
Collomia giloides Bentham, Bot Reg 19 sub t 1622 (1833). California.

GILIA INCONSPICUA Dougl.

Stms simple or branching from the base, often somewhat woolly when young, and viscid-glandular above, 18-36 cm hi; lower lvs bipinnatifid, the upper pinnately-parted or pinnatifid, becoming sm and entire; fls somewhat crowded and subsessile or at length loosely panicle; cor violet or p'lish, 6-15 mm long, narrowly funnelform, the tube scarcely equaling the ex.

Parry, Bot Obs Wyo 4.

Abrams, Fl LA 315.

BC; Baja; Wyo; Texas.

GILIA LATIFLORA A. Gray.

SD Co; LA Co (Palmer).

Variety **EXILIS** A. Gray.

Diffusely paniculate-branched above, 3-4 dm hi, glabrous below or the young parts somewhat arachnoid-tomentose, more or less glandular above; basal and lower lvs simply pinnatifid, linear-lanceolate, 3-5 cm long, with short ovate or triangular and cuspidate-tipped lobes, these often enlarged and toothed or lobed; the cauline few, becoming entire and subulate above; panicle cymes very loose; fls mostly on elongated almost capillary pedicels, about 1 cm long, dilated-funnelform, abruptly contracted below into a narrow tube, which equals or slightly exceeds the ex, its lobes rounded-obovate, the throat y'ish below; cap obovoid.

Abrams, Fl LA 315. Gabriel mts.

GILIA LEMMONI Gray.

Ha U 104. Mohave! LA. Baja!

GILIA LINIFLORA Benth.

See *Lianthus liniflorus*.

GALIUM ANDREWSII A. Gray.

Densely matted, the prostrate sts rting at the oints, 5-10 cm long, grayish, sparsely scabrous or smooth; lvs crowded, acrose-subulate, 4-8 mm long; fls dioecious, stam slender-pedicelled in few-fld terminal cymes, pistillate solitary, subtended by a whorl of lvs which are longer than the at length reflexed pedicel; berry whitish, becoming dark-colored.

Abrams, Fl LA 379. Gabriel mts.

Type localities: "near Fort Tejon," "Dry Hills, Atascadero," "Santa Inez mts, near SBar, near Kirka Pass, and near Monterey."

Coville, CNH 4:118.

Hanson's !Cuyamaca! SBar to Lake Co.

GALIUM ANGSTIFOLIUM Nutt.

Suffrutescent at base, 3-8 dm high, with rigid virgate branches, glabrous or minutely scabrous; lvs narrowly linear, 1-nerved, 12-20 mm long; dioecious; cymes sm, in narrow panicles, the fertile ones more or less condensed; cor dull w, about 3 mm broad; bristles of fr about the length of body.

Abrams, Fl LA 378.—"Frequent on sand-dunes along the seashore, and in the foothills, often ascending to 4000 ft alt."

Hall, U 121.

Nuttall, in T & G Fl 2:22 (1841).

Type locality: "St. Francisco," Cal. Coville, CNH 4:118.

SBar to Baja! Cruz; Rosa; SD (Or 122).

GALIUM CALIFORNICUM H-A.

Davidson, Pl LA Co 8.

Hall, U 121.

Abrams, Fl LA 379.—"Frequent in all the mts."

So. Cal (Parish 1505).

Wholly herbaceous, from slender creeping rt-stocks, often in low tufts, 8-30 mm hi, hirsute throughout; sts slender; lvs in 4's, thin, ovate to elliptic, acute or acuminate, 6-12 mm long; fls polygamous, few, terminal, yellowish-w; fr baccate clothed with scattered hairs, pearly w, changing to black in drying, 2-3 mm in diam.

GALIUM NUTTALLII Gray.

Suffrutescent below, often climbing, 6-15 dm hi, the angles of the sts and margins of the lvs roughened or hispidulous, otherwise glabrous; lvs in 4's, thickish, oval to linear-oblong, mucronulate or obtuse, 3-6 mm long; fr glabrous, p. 4mm broad.

Abrams, Fl LA 379.

Br. Zoe 1:114, Cat.

SD to Humboldt Co; Cruz; Rosa.

LA (Davidson).

"Berry shining white."

Gray, Pl Wright 1:80; Bot Cal 1:283; syn Fl 1:40.

Galium suffruticosum Nuttall, in T. & G. Fl 2:21 (not H. & A.).

Galium miguelense, Greene.

GALIUM TRIFIDUM L.

McClatchie, Erythea 2:124, LA Co. Texas, Labrador; SBar (Parish 821) to Aleutian Islands.

L, sp Pl 1:105 (1753).

Type locality: "in Canada."

Coville, CNH 4:118. Sierra Nevada.

Variety **PUSILLUM** Gray.

Parish, Erythea 3:62.—Bluff lake and Bear.

Variety **SUBBIFLORUM** Wiegand.

Per with slender rt-stock and slender weak wholly herbaceous ascending sts, 4 dm hi or less, much branched and intermingled, sharply 4-angled, somewhat scabrous; lvs in 4's, linear-spatulate, very unequal, 8-10 mm long, obtuse, cuneate at base; flaccid and nearly smooth; pedicels capillary, equaling the lvs, nearly glabrous, rarely 2-3-fld; cor minute, w, its lobes trifid, very obtuse; fr glabrous.

Abrams, Fl LA 378.

ALIGERA CILIOSA Suksdorf.

"Disk oval or roundish, stoma shaped, its opening elliptic-rhombic, or roundish and larger. California."—Suksdorf, *Erythea* 6:23.

ALIGERA INSIGNIS Suksdorf.

"Disk orbicular, stoma-shaped, its aperture roundish."—Suksdorf, *Erythea*, 6:24. Baja.

ALIGERA MACROCERA Suksdorf.

Valerianella macrocera A. Gray.

"Disk cup-shaped, orbicular, shorter than the fruit, California."—Suksdorf, *Erythea* 6:23.

DIPSACUS FULLONUM Linnaeus.

Fuller's-teasel.—Blen, stout, with num short prickles on the st, branches, midribs of the lvs and inv otherwise glabrous or nearly so, 1-2 m hi; lvs sessile or the upper ones connate-perfoliate, lanceolate or oblong, entire, the lower obtuse, crenate; lvs of the inv spreading or reflexed, shorter than the hd; hds ovoid, becoming cylindric, 6-10 cm long; scales of the receptacle with hooked tips, about equaling the fls; lilac, 8-12 mm long.

Abrams, Fl LA 383.—Occasional in moist places about LA. Eu.

BLOOMERIA AUREA Kellogg.

Bulb about 15 cm in diam, becoming densely covered with brownish fibres; scape scabrous, 2-5 dm hi; lf solitary, equaling or exceeding the scape, 6-12 mm broad; bracts narrowly lanceolate; pedicels num 3-6 cm long; perianth near-rotate in bloom; seg 8-12 mm long; appendages about 2 mm long, bicuspidate, minutely papillose.

BLOOMERIA CLEVELANDI S. Wats.

"Differing from *B. aurea* in the several very narrow leaves (1" wide or less), in the stouter scape (3-7" high), in having the thick and fleshy appendage at the base of the filament smooth instead of papillose, and obtuse at the summit instead of bicuspidate, and in the much shorter style, which is shorter than the ovary. On the mesas near San Diego, California; first collected by D. Cleveland, in 1874, and recently received from him and from C. R. Orcutt."—S. Watson, *Proc. Am. Acad.*, xx. 376 (Feb. 21, 1885).

BLOOMERIA MONTANA Greene.

"Corm 1" broad; leaf solitary; scape 2° high, stout and scabrous; bracts numerous, lanceolate; pedicels 30-50, 1-2' long; perianth rotate, 1' in diameter; appendage at base of filament 1" long, its lateral cusps subulate-filiform, ½ as long as the filaments; anthers linear, 1½" long, attached almost at the very base, but versatile."—Greene, *Bull. Cal. Acad. Sci.*, ii. 10-11 (Dec. 14, 1885).

BRODIAEA CAPITATA Benth.

Scape 1.5-5 dm hi, very tortuous, not rarely twining; lvs about equaling the scape, carinate; bracts p, darker than the fls; fls several clustered in a head on short pedicels 12 mm long or less; perianth tube funnellform, shorter than seg; appendages connivent, forming a corona. Throughout Cal; Ut; Baja! Guad; Rosa.

Abrams, Fl LA 87.

Hall, U 67. Blue Dicks.

Bonito Island, Baja.

Hookera capitata Kuntze, *Rev Gen Pl* 712.

Brodiaea insularis Greene.

Variety ALBA. Fls waxy white.

CALOCHORTUS ALBUS Dougl.

"stem stout, glaucous, usually branchin a foot or two hi; radical lvs a ft or two long, 8-12 li wide, lanceolate-acuminate; bracts large and foliaceous, 1-5 i long, 4-8 li wide; sepals shorter than petals, ovate-acuminate, greenish w; petals pure w, purplish at base, ovate-orbicular, acutish, 12-15 li long, with scattering long silky hairs above the gland; gland lunate, shallow, with 4 transverse imbricated scales, fringed with close short yellow or w glandular hairs; anthers oblong-obtuse, mucronate; ova attenuate above; capsule 1 or 2 i long, 6-12 li broad, abruptly short-beaked; sds brown, pitted."—Purdy, *Cal ac pr*, sr 3, bot 2:117.

Cruz, Rosa (Br) La (Da), SD Co.

Abrams, Fl LA 89.—"Common on shady banks in the Gabriel mts."

CALOCHORTUS AMABILIS Purdy

"Sts stout, usually branching in pairs, 8-12 i hi, glaucous; radical lvs 10 i long 4-6 li wide, lanceolate-acuminate, tinged with r bracts large and foliaceous, 2-3 i long, 4-6 li wide; sep shorter than pet, ovate, shortly cuneate at base, sharply acuminate or even mucronate at apex, y tinged with brown on the back; pet clear y ovate, with a short claw, obtuse at apex, naked but margined with a close row of short stiff hairs, very strongly in-arched so that the tips of the pet overlap each other much like a child's pin-wheel; gland very deep, projecting upwards and outwards like a knob, lined with short stiff hairs which cross each other; anth oblong-obtuse; ova elliptical, short-beaked."—Purdy, *Cal ac pr*, sr 3, bot 2:119.

CALOCHORTUS AUREUS S. Watson.

"Low, 4-6' high, with a single linear earinate radical leaf, 3-4' long; scape short, 1-2-flowered, the single pair of bracts linear, 2' long; sepals greenish -y, with a dark-p. spot near the base, oblong-or ovate-lanceolate; petals broadly cuneate, 15" long, bright-y, with a small, well-defined circular densely hairy gland near the base and a lunate purplish spot above it; young capsule narrowly oblong, not winged. On sand-cliffs, Southern Utah (Mrs. E. P. Thompson); June."—S. Watson, *Amer. Natl.*, vii. 7 (May, 1873).

CALOCHORTUS CATALINAE S. Wat.

Sts branching, 3-6 dm hi, bulbiferous at base, lvs and bracts linear; sep ovate-lanceolate, p-spotted near the base, nearly equaling the pet; pet cuneate-obovate, 3-5 cm hi, lilac, with a large ovate purplish blotch at base; gland oblong, y or brown, covered with brown or yellowish hairs; anth obtuse -inkish, 5 mm long, on fil 3 times as long; cap 2.5-5 cm long, about

1 cm wide.

"Common on the plains and in the foothills. Onofree Mountains; Santa Ana mountains; San Pedro hills. Extending as far north as the Santa Inez mts."—Abrams, Fl LA 90.

CALOCHORTUS CLAVATUS S. Watson

Sts rather stout, 3-5 dm hi, bulbiferous near the base; bracts linear; sep ovate-lanceolate, acuminate, about equaling the pet; pet cuneate-obovate, tinged with brown below, the lower half clothed with long clavate hairs; gland circular, deep, bordered with imbricated scales; anth p, obtuse, 8-10 mm long, about equaling the fl; cap narrow, about 5 cm long.

Abrams, Fl LA 90. Monica mts.

Variety "EL DORADO."

Variety "VENTURA."

CALOCHORTUS FLEXUOSUS S. Wats.

"Branched and flexuous above; bracts alternate $\frac{1}{2}$ - $\frac{1}{4}$ ' long, linear-lanceolate, carinate, rather rigid; sepals oblong-lanceolate, greenish with a deep-p. and orange or p. gland above, the glandular cuneate, 12-15" long, purplish, with a deep-p. claw and an ill-defined circular orange or p. gland above, the glandular hairs extending laterally to the margin; capsule triangular, narrowly oblong. Southern Utah and Northern Arizona (Mrs. E. P. Thompson); April and May. The bulbs, as of other species, are eaten by the Indians."—S. Watson, Amer. Natl. vii 7 (May, 1873).

CALOCHORTUS INVENUSTUS.

"Near *C. splendens*, but sepals not recurved, oblong-lanceolate with a narrow scarious margin; petals cuneate-obovate, of a dull somewhat greenish or livid white, glabrous, except a few scattered white hairs near the base, the short claw and the small lanceolate curly-hairy gland purple; filaments shorter than the anthers, these oblong-linear, truncate at apex, slightly sagittate at base."—Greene, pitt 2:71. Mts. west of Mohave Desert.

CALOCHORTUS LYONI S. Watson.

"Near *C. nitidus*; stems branching and somewhat flexuous, 1-2' high, bearing several leaves and 2-4 or more solitary fl.: sepals naked, acute; petals lilac or purplish, with a darker p. sparingly brown-villous spot at base surrounding the short-oblong hairy gland, 12-20" long; anthers oblong-elliptical, obtuse, $1\frac{1}{2}$ " long; capsule narrowly elliptical, obtuse, 3-winged, nearly 1' long. Los Angeles County, California; collected on hills near Los Angeles by W. S. Lyon and Dr. Gray, and at Newhall by Dr. Gray, in 1885."—S. Watson, Proc. Am. Acad., xxi. 465 (June 2, 1886).

CALOCHORTUS DUNNII Purdy.

"St not bulbiferous at base, a ft or two hi, slender; lvs linear, deeply channeled; sep ovate-acute, with w scarious margins, a little over the length of the pet, never recurving,

light g without, gnish w within, faintly spotted; pet broadly cuneate, as broad as long rounded above, w, with a rish brown transverse band above the gland; gland sm and round, densely hairy with short matted hairs, short scattering hairs on each side of the gland only; cap linear as in *C. venustus*. Originally collected near Julian, SD Co Cal by the veteran naturalist, George W. Dunn, in whose honor the name is given."—Purdy, Cal ac pr, sr 3, bot 2:147.

CALOCHORTUS PURDYI, Eastwood.

"Glabrous and glaucous; st 2-3 dm hi, rather stout, erect, branching, 2 to many-flowered, not bulbiferous at base; radical lf solitary, sheathing the st, linear-lanceolate, acuminate, 2 dm long, 1 cm wide, the upper surface bright, the lower glaucous and ribbed with the filiform nerves; bracts foliaceous, lanceolate-acuminate, amplexicaul, upper ones opp; pedicels equalling or slightly surpassing the bracts, erect in fl, recurved in fr; fl broadly open-companulate; sep from elliptical to narrowly ovate, abruptly acuminate, tinged with p on the outer surface, veined on the inner, two-thirds as long as the pet; pet broadly obovate-cuneate, acute or rounded at apex, creamy w or tinged with p, bearded all over the inner surface with long hairs which are w on the upper half of the pet, p on the lower, somewhat arched by the narrow, transverse, semi-circular, conspicuous gland the shallow pit of which is covered by a densely hairy narrow scale; anth lanceolate, abruptly acuminate, cream color or p'lish, shorter than the fl, which broaden to the base; cap 3 cm long, 2 cm wide, broadly elliptical, with the 3 wing-like valves transversely veined."—Eastwood, Cal ac pr, sr 3, bot 1:137, t 11 f Sa-8f.

CALOCHORTUS PLUMMERAE Greene.

"Near *C. splendens*, but longer; sepals erect; petals as broad as long, distinctly unguiculate, forming a campanulate cup, the lamina of a rich red-purple, more than half its surface ornamented with orange-colored hairs, the gland near the base densely ciliate; anthers oblong-lanceolate, obtuse, mucronulate, $\frac{1}{2}$ in. long, on filaments of an equal length; ovary long and narrow, almost equaling the petals."—Greene, pitt 2:70. San Bernardino Co., Cal. (Mr. and Mrs. Lemmon; Parish). Dedicated to Mrs. S. Plummer Lemmon.

CALOCHORTUS SPLENDENS Dougl.

Abrams, Fl LA 90. Gabriel and Santa Ana mts.

Sts single 3-6 dm hi, usually branched above, bulbiferous at base; sep lanceolate-acuminate, recurved, y'ish, with an oval p spot near the base within; pet obovate-cuneate, 3-4 cm long and of greater width, lilac

with a sm p blotch at base surrounding the densely hairy gland, the lower third sparsely hairy to, but not below, the gland; anth obtuse, usually shorter than the fl.

Davidson, Fl LA Co 17.

Variety **ATROVIOLACEUS**.

Variety **MAJOR**.

Variety **MONTANUS**.

Variety **RUBRA**.

CALOCHORTUS VENUSTUS Dougl.

St 2-5 dm lvs and bracts narrow; sep oblong-lanceolate, 3-5 cm long, acute, about equalling the pet; pet broadly obovate-cuneate, broader than long, w, shaded above with lilac, a conspicuous reddish-p spot near the summit, a brownish-y arch in the center, and a brown base, or these markings sometimes obscure; gland oblong or lunate, densely hairy and surrounded by a few scattered hairs; anth oblong, obtuse on dilated fl of nearly equal length; cap narrow, 5-7 cm long.

Abrams, Fl LA 91.

Davidson, Fl LA Co 17.

Variety **CITRINUS**.

Variety **OCULATUS**.

Variety **PURPURASCENS**.

Variety **ROBUSTA**.

Variety **ROSEUS**.

Variety **SULPHUREUS** Purdy.

Pet light y, with eye in center and a rose-colored blotch at summit.

Abrams, Fl LA 91. Newhall (Davidson).

CALOCHORTUS WEEDII Wood.

Sts often much branched above, 3-5 dm hi; bracts linear; sep oblong with an acuminate tip nearly as long as the pet or exceeding them, y orange-spotted at the base; pet cuneate-obovate, sometimes truncate, 2.5-3.5 cm long, deep y, usually dotted with brown, the upper margin ciliate, densely clothed with hairs at least on the lower two-thirds; anth about equalling the fl.

Abrams, Fl LA 90. SD Co

CHLOROGALUM POMERIDIANUM Kt.

Bulbs large, about 1 dm long, densely and coarsely fibrous-coated; st and spreading panicle 6-15 dm hi; lvs 2-5 dm long, 15-30 mm wide, carinate, undulate; pedicels slender, about 6 mm long; perianth rotate, its seg 16-20 mm long, w with p veins; cap about 6 mm long.

FRITILLARIA BIFLORA Lindl.

Bulb of a few very thick and fleshy ovate scales, 6-10 cm long; st usually stout, 15-45 cm hi, 1-3. fld; lvs 2-6, mostly near the base, somewhat verticillate or scattered, lanceolate or oblong-lanceolate, 5-10 cm long; perianth dark brownish-p. tinged with g; seg spreading; oblong-lanceolate, about 25 mm long; sta 8-10 mm long; anth 4 mm long, mucronate; sty distinct above; stig linear; cap broadly obovoid, somewhat 6-angled, 12-18 cm long. Chocolate or Black Lily.

TRITELEIA LANA Benth

Scape 3-6 dm hi; umbel 10-30 fld; pedicels 3-6 cm long; perianth 3-4 cm long, funnelform, violet, cleft nearly

to the middle, anth versatile, ovate-lanceolate, 2-lobed at base bluish or w.

Abrams Fl LA 87.—On low hills, Los Felis, Davidson.

Brodiaea laxa Watson.

YUCCA MOJAVENSIS Sargent.

The datile, or wild date, of the Mexicans, better known to Americans as the Spanish bayonet, Mexican dagger plant, wild banana, etc., occurs from the Mohave desert to the vicinity of San Quintin, Lower California, extending eastward through the arid regions of Arizona and Sonora, and perhaps to Texas. It attains almost tree-like proportions, and forms extensive forest-like plantations. Such a forest, when in full bloom, is a sight to be remembered. The large, waxy, bell-shaped flowers, of a creamy, sometimes marked with prune purple, are of surpassing beauty. The fruit does not seem to mature well near the coast. It is somewhat of the size and shape of a banana, of a sweetish taste, slightly reminding one of a fig. Near San Diego the plant is commonly under 8 feet in height; in the interior attains to 15 or 18 feet.

Genus HELIANTHUS Linnaeus.

Erect ann or per herbs, with opp or alt simple lvs, and large peduncled corymbose or solitary hds of both tubular and ray fls, the rays y, the disk y, brown or p; inv hemispheric or depressed, its bracts imbricated in several series; receptacle flat, convex or conic, chaffy, the chaff subtire: ray-fls sterile; disk-fls perfect, with short tube and 5-lobed limb: sty-branches tipped with hirsute appendages; ak thick, oblong or obovate, compressed or somewhat 4-angled; pappus of 2 scales or awns, or sometimes with 2-4 additional shorter ones, decid.

HELIANTHUS ANNUUS Linn.

Robust hispid or scabrous; sts often 2.5 cm hi, thick, mottled or spotted with p; lvs all but the lowest alt, acute or acuminate, more or less regularly dentate or denticulate, 10-25 cm long, petiolate; inv bracts broadly ovate to oblong, aristiform-acuminate; disk 2 cm broad or more, dark p or brown; rays often 5 cm long.

L, sp Pl 2:904 (1753).

Type locality: "in Peru, Mexico." Gray, Syn Fl 1, pt 2, 272 (1884), says the type "came not from Peru nor even from Mexico."

Coville, CNH 4:131.

Abrams, Fl LA 415.—"A common weed."

Sunflower; widely distributed.

HELIANTHUS NIVEUS Br.

Helianthus dealbatus A. Gray.

Throughout Baja (Hinds; Belding; Or).

HELIANTHUS PARISHII A. Gray.

Sts slender, 1-5 m hi, simple or branched above; lvs elongated-lanceolate, softly cinereous-puberulent or canescent beneath, scabrous above; hds 10-15 mm hi; rays 20-35 mm long; inv bracts linear-subulate, longer than the disk, villous ring or 2 tufts above the short proper tube; paleae of the pappus slender-subulate.

Abrams, Fl LA 415. Oak Knoll (Grant).

Hall, U 128. Parish sunflower.
SBar (Parish 1025).

Genus ENCELIA Adanson.

Herbs or low shrubs with alt or opp lvs, and usually with large peduncled hds of both ray and disk fls, the rays neutral y, the disk y or brownish, perfect; receptacle flat, convex or conic, chaffy; chaff usually soft r and mainly scarious; ak flattened, thin-edged, often villous; pappus 0 or an awn or its rudiment to each margin of the wingless ak.

ENCELIA CALIFORNICA Nutt.

Woody at base, branched above, 6-12 dm hi, strong-scented, minutely pubescent; lvs ovate to oblong-lanceolate, rarely denticulate or toothed, about 5 cm long, g and glabrate; hds commonly solitary, disk about 2 cm broad, brownish or purplish; inv w-villous; rays 16-20, 2.5 cm long or more, golden-y; ak obovate with very shallow notch and no pappus, the margins very long villous.

Abrams, Fl LA 415.
SBar: Da 8; SD! Baja!

Genus BIDENS Linnaeus.

An or per herbs with opp serrate or usually lobed or dissected lvs, or the upper mostly alt, and usually rather large hds of both tubular and radiate fls or rays 0. Involucral bracts in 2 sr, distinct or somewhat united at base, the outer often foliaceous and much longer than the inner; receptacle flat or nearly so, chaffy, the chaff subtending the disk-fls; rays when present neutral, usually y; disk fls perfect; ak flat, quadrangular or nearly terete; pappus of 2-6 teeth or subulate awns, barbed or hispid.

BIDENS PILOSA Linn.

Ann; sts erect, usually branched from the base, 4-6 dm hi, glabrous or sparsely pilose-pubescent; lvs pinnate, pilose-pubescent lifts 3-5, irregularly serrate or incised, 15-25 mm long; hds scattered, few, 10-12 mm broad; rays 0; ak narrow, linear, about 1 cm long. Frequent along streets and irrigating ditches. Native of tropical Am.

Abrams, Fl LA 418.

Parish 20e 1:59.

Davidson, Erythra 1:60 LA Co.

Genus LEPTOSYNE De Candolle.

Glabrous ann or per herbs or rarely shrubby, with dissected lvs, and usually scapiform erect peduncles, bearing rather large heads of y fls: inv

bracts in 2 series, the outer of narrow foliaceous spreading bracts, the inner of broad membranous erect ones; rays broad, pistillate and often fertile, sometimes neutral; chaff of receptacle linear, thin, scarious, decid with the fr: ak flat or somewhat concavo-convex, margined; pappus a minute callos cup or a pair of paleae.

LEPTOSYNE DOUGLASII DC.

An, 3 dm hi; lvs mostly basal, 2-3-parted into filiform divisions; rays 10-15 cm long; the ring of disk-cor distinctly bearded; sparsely beset with capitate rigid bristles, the margin becoming corky; cup-like ring in place of pappus entire.

Abrams, Fl LA 417.

SD Co! Baja! SBar; Monterey; Arizona.

Genus PLUCHEA Cass.

Herbs or shrubs with alt lvs and sm hds of tubular fls in terminal cymose clusters: involucral bracts imbricated in several sr, appressed, herbaceous; receptacle 1at, outer fls of hd pistillate their cor filiform, 3-cleft or dentate; central fls perfect, but mostly sterile, their cor 5-cleft; ak sm, 4-5-angled or sulcate; pappus a sr of capillary scarious bristles.

PLUCHEA BOREALIS A. Gray.

Tessaria borealis T-G, Emory R 143.

Texas—SD; Baja! "Cachimilla."

See Pluchea sericea.

PLUCHEA CAMPHORATA DC.

An, stoutish, minutely and somewhat viscid-pubescent, leafy, 6 dm hi; lvs oblong-ovate to oblong-lanceolate, acute at both ends, toothed or denticulate, the larger 7-12 cm long, petioled; hds short-pedicelled, dull p, crowded in a corymbose cluster; bracts ovate to lanceolate, often colored.

DC, Prodr 5:452 (1836).

Type locality: "in Virginia."

Mass—Fla; Texas—Cal; Quintin!

McClatchie, Erythra 2:125, Cat.

Abrams, Fl LA 407.

Erigeron camphorata L, sp Pl ed 2, 2:1212 (1762).

PLUCHEA SERICEA Coville.

Shrub 4 m hi or less, with suberect slender willowy branches, very leafy up to the cymose clusters of rather sm hds; lvs silky-pubescent, 2.5-5 cm long, linear-lanceolate, acute at both ends, entire; involucre campanulate; outer bracts ovate, obtuse, tomentose; inner ones narrowly linear, deciduous; fls w'ish, tinged with p or red; pappus copious, the bristles of the sterile fls clavellate-dilated, of the fertile slender.

Abrams, Fl LA 407, Arrowwood.

Pluchea borealis A. Gray.

Brandege, Zoe 1:114. Cat.

Coville, CNH 4:128. Death Valley; Utah; etc.

Polyppappus sericeus Nuttall, Pl Gamb 178 (1848).

Type locality: "Rocky mts of upper California."

Tessaria borealis Torrey, Emory R 142 (1848); Gray, Pl Fendl 75 (1849),

Pl Wright 1:102 (1852), with first description.

Genus **STYLOCLINE** Nuttall.

Low and diffuse w-woolly ann, with alt lvs and terminal subglobose hds: bracts of inv and of the receptacle decid with the mature fr, those of the fertile fls involute or saccate-conduplicate, embracing the obovate or oblong obcompressed ak; those of sterile fls plane or concave: pappus 0 in the fertile fls, composed of a few caducous bristles in the sterile ones.

STYLOCLINE GNAPHALIOIDES Nutt.

Sts 5-10 cm long; lvs linear or the upper oblong, obtuse; fr'ing bract hyaline, broadly ovate, woolly on the back. Calmali (Br); SD! Stanislaus Co; Cruz; Rosa.

Abrams, Fl LA 408.

Genus **FILAGO** Linnaeus.

Erect slender floccose-woolly an, with alt entire lvs and sm discoid hds in capitate lateral and terminal clusters: bracts of inv few, scarious; receptacle convex or subconic, chaffy, each chaff-scale subtending an ak; outer fls of hds in sev sr pistillate cor filiform, minutely 2-4-dentate: central fls few, perfect, but mainly sterile, their cor tubular, 4-5-toothed: ak terete or slightly compressed.

FILAGO CALIFORNICA Nuttall.

Slender, erect an, 2 dm hi or less; lvs linear or lowest spatulate; hds ovate, slightly angular; pistillate fls 8-10-bracteate, their bracts broadly ovate and deeply boat-shaped, somewhat arcuate-incurved, very woolly, with broadish obtuse hyaline tips; inner bracts oblong, concave, nearly glabrous; akenes narrowly oblong, minutely papillose-granular; pappus of the embraced 0; of the others copious.

Abrams, Fl LA 409.

Nuttall, Am phil soc tr, n sr, 7:405 (1841).

Type locality: "near St Barbara." Cal. Coville, CNH 4:128. Panamint mts. Guad; Cruz; Rosa; Utah; Oregon.

Genus **GNAPHALIUM** Linnaeus.

Everlasting fls; woolly erect or diffusely branched an, biennial or per herbs with alt lvs and discoid hds of staminate and perfect fls: involucre bracts scarious, w or y'ish, imbricated: receptacle fat, naked: staminate fls in several sr, flat, naked: staminate fls in several sr, their cor filiform, minutely dentate or 3-4-lobed: central fls perfect, their cor tubular, 5-toothed or lobed; aks not ribbed: pappus a single sr of scabrous capillary bristles, sometimes thickened above.

GNAPHALIUM CALIFORNICUM DC.

Jepson, Erythea 1:12.

McClatchie, Erythea 2:125, Cat.

Bien, 6-10 dm hi, stoutish, corymbosely branched at the summit, bearing rather loose cymosely disposed clusters of broad hds; lvs lanceolate, glabrate above, glandular and balsam-

ic-scented, strongly adnate-decurrent; hds 5-7 mm hi, nearly as broad, w or y'ish; outer bracts ovate or oblong, the inner acute.

Abrams, Fl LA 410.

GNAPHALIUM CHILENSE Spreng.

Sts rather stout, from an ann or bien rt, 3-6 dm hi, loosely floccose or the upper faces of the lvs often nearly glabrous; lvs lanceolate or the lower often spatulate or oblanceolate; hds in close clusters at the ends of the corymbose branches; inv hemispheric, with a y'ish-g tinge; bracts oval or oblong, obtuse.

GNAPHALIUM LEUCOCEPHAALUM Gray.

Per from a lignescnt rt; sts several, 4-6 dm hi, strict, mostly simple, very leafy; herbage w with close wool except the under sides of the lvs; st-lvs narrowly linear, attenuate, acute, erect, short-decurrent at the narrow base, viscid-glandular above; hds in a sm close cyme; inv broadly campanulate, much imbricated, pearly w; bracts ovate and oblong, obtuse.

Texas; Arizona; So Cal (Parish).

Abrams, Fl LA 410, near Monrovia.

Biol. Erythea, 1:17.

McClatchie, Erythea 2:125, Gabriel mts.

Genus **MICROPUS** Linnaeus.

Low floccose an, with all entire lvs and sev fld-scatered hds: pistillate fls in 1 or 2 sr on a sm receptacle, each enclosed in a conduplicate bract which has a scarious, appendiculate lip: hermaphrodite sterile fls central, few, mostly naked; inv outside of the fr'ing bracts, scanty and scarious; akenes gibbous, obovate, each enclosed in its bract and falling away with it: pappus 0.

MICROPUS CALIFORNICUS F. & M.

Slender, erect, 1-3 dm hi; lvs mostly linear; fructiferous bracts 5-6, becoming firm-coriaceous, somewhat semicordate or semiobovate in outline, straight anteriorly, the soon erect bract-like tip mostly scarious.

Guad; Cruz; Baja! SD mts! Oregon.

Abrams, Fl LA 408.

Genus **PSILOCARPHUS** Nuttall.

Sm, usually depressed and much branched floccose ann, with opp lvs and globose hds which are sessile in the axils or at the forks. Fr'ing bracts num, crowded on the globular or oval receptacle, cucullate-saccate, semiobovate or semiobcordate, rounded at the tip, somewhat membranaceous, apex introrse, the ovate or oblong hyaline appendage inflexed or erect. Ak loose within the bract, oblong or narrow, straight, slightly compressed.

PSILOCARPHUS GLOBIFERUS Nutt.

Abrams, Fl LA 408.

Branched from the base and spreading or prostrate; lvs linear or narrowly spatulate, the upper-most little surpassing the very woolly hds; ak obovate-oblong, about 1 mm long.

VERBESINA ENCELOIODES B-H.

Ann; sts densely puberulent, much branched or rarely simple, 3-6 dm hi; lvs deltoid-ovate or deltoid-lanceolate, 5-10 cm long, coarsely dentate, g and minutely pubescent above, pale and densely canescent beneath, all alt or the lowest opposite, narrowed at the base to a margined petiole, these often with dilated appendages at the base, hds several or many, 2.5-5 cm broad; inv bracts lanceolate, canescent; rays 12-15, golden-y, 3-toothed; ak of the disk-fis obovate, winged; pappus of 2 subulate awns, those of the rays rugose, thickened, often wingless.

Abrams, Fl LA 416.

Parish Zoe 1:59.

Davidson, Erythea 1:60. LA Co.

COLEOSANTHUS CALIFORNICUS Kun

Shrubby at base, 6-9 dm hi, paniculately branched; herbage somewhat glandular-puberulent; lvs alt, ovate, somewhat triangular or slightly cordate, obtuse, irregularly crenate-toothed, 3-ribbed from the base, velvety, roughish 2-3 cm long, short-petioled; hds spicate or racemose along leafy branches, about 1 cm hi, 10-15-fld; involueral bracts with thinnish, mostly obtuse straight tips. Mendocino Co to Baja!

Abrams, Fl L A 391.

Brickellia Californica A. Gray.

Hall U 125.

COLEOSANTHUS DESERTORUM

Coville.

"Shrubby, about 1 m hi; branches minutely w-tomentose, becoming glabrous in the 2d or 3d year, but still with a w epidermis, afterward gray; lvs alt, minutely cinereous-tomentose; petioles 2-5 mm long; blades deltoid ovate, truncate at the base, crenate-dentate, commonly 3-8 mm long, on vigorous shoots reaching 16 mm in length; hds in glomerules of 2-4 fis, on short leafy branches from a main axis, or in the 2d or 3d year the branches elongated and divaricate and bearing a single terminal glomerule; inv 7-8 mm hi, about 10-12-fld; bracts 3-nerved, with traces of minute tomentum, 1 mm or less wide, bluntly acute, the outermost oblong-lanceolate, all widely recurved after the maturing of the ak 2 mm long sparingly short-hispid; pappus scabrous."—Coville Wash biol soc pr 7:68 (1892).

Brickellia desertorum Coville.

Coville, CNH 4:119. Mohave desert.

Type locality: "between Banning and Seven Palms," Riverside Co. Cal.

Type in U S No Hb (Or, 7 N 1839).

CUPRESSUS GUADALUPENSIS S. Wat.

The blue cypress is a handsome, slender tree, 40 to possibly 60 feet high, with beautiful exfoliating reddish bark and glaucous foliage, first discovered on Guadalupe island, and later found in rocky canyons near Ensenada, on the mainland. It proves not rare in some of the canyons near the interna-

tional boundary, and Perish records it in "ravines near the Old Mission, San Diego, not abundant" (Zoe., 4:352). Its graceful habit and compact growth makes it one of the most ornamental species in the genus.

PINUS COULTERI Don.

The big cone pine is a tree 1-2½ feet in diameter and 50 or more feet high, occurring above 5,000 feet usually, from Mount Diablo to the Catalina mountain and on the mountains north-east of Ensenada in Lower California. The cones are long, oval pointed, 10-14 inches long and 4 or 5 inches in diameter, yellowish brown, persistent for many years on the tree, the scales with a very stout, long incurved point (sometimes 2 inches long.)

PINUS LAMBERTIANA Lam.

The sugar pine attains at times a height of 300 feet and a diameter of 8 to 20 feet, with light brown smoothish bark, splitting in small sections. The bright brown cylindrical cones are 1 to 1½ feet long, 3-4 inches wide, on peduncles 3 inches in length, containing smooth, black seeds ½ inch long. "The exudation from the partially burned tree loses its resinous qualities and acquires a sweetness similar to that of sugar or manna, for which it is sometimes used, whence the name of sugar pine." (Watson, Botany of California, 2:123). The sugar which I have collected from trees in the Cuyamaca mountains was very sweet, fine grained and white as snow.

PINUS MURICATA Don.

A small pine, growing near San Isidro, in Lower California, not known from San Diego county, is found, only near the coast, as far north as Mendocino—where it grows 50 to 80 or 120 feet high. At San Isidro trees only 3 feet high were perfecting cones, which are said to persist over 30 years on the tree. The leaves are in pairs. The cones are sessile, ovate, about 3 inches long, with stout prickles on the outside. The cones occurring in whorls around the stem, and remaining closed for many years, are one of the curiosities of California botany.

PINUS JEFFREYI Murr.

The Jeffrey or black pine is a tree 75 feet high, trunk 3 feet in diameter, usually found in the mountain valleys near small streams, extending into Lower

California. Credited to the Cuyamaca mountain.

Genus SAMBUCUS Tournefort.

Shrubs or trees, with pinnately compound leaves, serrate leaflets, small usually white and odorous flowers in broad cymes, and red or black berry-like fruits.

SAMBUCUS GLAUCA Nutt.

The California elder is considered superior to either the eastern or the European species in the quality of its fruit. Edward J. Wickson says: "It is common throughout the state; and frequently becomes a tree 20 feet or more in height with a trunk 18 inches in diameter. The fruit is very abundant, and largely used."—California Fruits, Ed. 2, p. 65.

GARRYA PALLIDA Eastwood.

Lvs ovate to ovate-lanceolate, acute and with a recurved mucro, entire, sparsely silky-pubescent beneath, with straight upwardly appressed pubescence; racemes short; bracts about 3 mm long; cx-teeth close to the base of the sty and concealed in the young fr by dense hairs.

Abrams, Fl LA 294. Santa Ana mts. **GARRYA FLAVESCENS** S. Watson.

"(Garrya—? Watson, King's Rep. 5; 421).—Pubescence silky, appressed; lvs elliptic-oblong, 1-2½ i long, acute at each end, entire, glabrate above, margin revolute; petioles 3-6 l long; aments pendulous; bracts 6-10 pairs, broad-ovate, connate, foliaceous, acute or the lower acuminate; sterile aments 1-2 i long, loose, the fls (1-3 together) on pedicels equaling or exceeding the bracts; fertile aments 1 i long, dense, with solitary fls and densely pubescent fr.—Frequent from Southern Nev and Ut to Ar and NM; growing 5-8 ft hi, and fl'ng in Mr."—S. Watson, Am nat 7:301 (My 1873).

Variety **PALMERI** S. Watson.

S Bar—Baja! Cedros Is G. Veatchii.

POA HOWELLII Vasey and Scribner.

Cruz; Oregon.

Variety **CHANDLERI** Davy.

"Chandler's Meadow Grass. Stems 3.5-5.5 cm high; lvs smooth; sheaths somewhat inflated; ligule scarious, w, truncate, dentate, 2-4 mm long; blades flat, acute, 3-3.5 cm long, 5 mm wide; panicle but little exserted (at least in young plants), 7-13 cm long; branches sparsely scabrid, remote, the lowest in whorls of 3-5, the whorls 2.5-3.5 cm apart; lowest branches very unequal, 1.5-7 cm long, spikelet-bearing only on the upper half; spikelets 4.5-5 mm long, 2-fl'd; empty glumes minutely puberulent and serrate, broad, the lower 2 mm long, acute, 1-nerved, upper about 3 mm long; fl'ng glumes scabrid, 3 mm long, acute, sparingly webbed at base with a long thin web; stamens 3, anthers 1.5 mm long."—Davy, Univ Cal pub bot 1:60. Siskiyou Co;

Jac (Chandler 1703).

Cereus sciurus.

Katharine Brandegee, Zoe 5:192 (Ag. 1905), describes this as follows:—"(*Echinocereus*) Densely caespitose forming clumps sometimes 2 feet in diameter, the numerous short, upright heads covered with slender short spines, gray on the older parts, light yellowish brown with darker tips on the young growth; ribs 12-17, low and much disconnected, on the growth of the year often entirely resolved into tubercles; areolae small soon naked, 5-8 mm. apart on the same rib; radial spines 15-18, centrals 1-6, laterals longest rarely reaching 15 mm. very slender, centrals little stouter; flowers 7 cm. long, about 9 cm. in expansion; ovary and tube densely spinose; petals in 2-4 rows, bright magenta, paler towards the base, the tips erose, acute, the outer surface marked with numerous striae; stamens numerous with greenish filaments and yellow anthers; pistil green with obtuse stigmas; seeds tuberculate about 1 mm. long. Collected by T. S. Brandegee April, 1897, on hills near San Jose del Cabo, Baja California."

Mammillaria lenta.

Katharine Brandegee, Zoe 5:194 (Ag 1905), describes this as follows:—"Caespitose by dichotomous branching forming nearly flat-topped masses, the body thick and fleshy, the divisions 3-5 cm. in diameter and probably 1-2 cm. above ground; tubercles slenderly conical, about 1 cm. long, light green; areolae not woolly; spines all spreading and all alike excepting that the later formed are yellow in the center of young tubercles, they are so soft and fragile as to be difficult to count, but appear to be 30-40 in number; axils with short persistent wool and an occasional bristle; flowers not seen, fruit clavate, red, 1 cm. long, few-seeded; seeds dull black, more than 1 mm. long, tuberculate not punctate, strongly constricted above the hilum, the upper part globose. Collected by Dr. C. A. Purpus on rocks near Viezca in Coahuila, January, 1904."

CALYCADENIA TENELLA T. & G.

Slender, paniculately diffusely branched above, 1-5 dm hi, sparsely hirsute-pubescent; the filiform branchlets minutely viscid-glandular; lvs almost filiform, the margins involute, destitute of glands; hds scattered; involucre cylindraceous-campanulate; ray-fls 3-5, 3-parted to the slender tube, w or often tinged with rose; ray-ak rugose, short-stipitate and abruptly rostellate-apiculate; disk-fls 5, w, cleft into oblong-linear lobes; their pappus of 4-5 lanceolate paleae tapering into stout rough awns and as many intermediate short lanceolate truncate ones. SD!

Abrams, Fl LA 422.

Hemizonia tenella Gray, Am ac pr 9:191.

Osmadenia tenella Nuttall.

SD! Baja! White tar weed.

DEINANDRA FASCICULATA Greene.

Hirsute or hispid below, glabrous and viscid-glandular above, 2-5 dm hi; hds sm. subsessile usually fasciculate-clustered; inv bracts glabrous or glandular-hispidulous; bracts of the receptacle slightly united; pappus of the disk-ak of 6-10 linear paleae.

Abrams, Fl LA 421.

Hemizonia fasciculata T. & G.

DEINANDRA KELLOGGII Greene.

Closely resembling *D. Wrightii* in habit; hds solitary, terminating the slender paniculate branches; pappus of the tubular fls united to near the lacerate summit.

Abrams, Fl LA 422. Pasadena.

DEINANDRA WRIGHTII Greene.

Slender, diffusely and widely branching; the filiform branchlets terminating in a single hd; lower lvs lacinate-pinnatifid; pappus of disk-ak composed of 8-9 firm distinct paleae, lacinate at apex.

Abrams, Fl LA 422. SBer.

CORETHROGYNE VIRGATA Benth.

Sts erect, often 1 m hi; herbage floccose-woolly; lvs narrowly obovate to oblanceolate, serrate-toothed above; infl a large virgate panicle, viscid with short-stalked glands, usually bearing many hds; inv turbinate-campanulate, 10-12 mm broad; bracts rather broadly linear, their tips usually somewhat reflexed.

Abrams, Fl LA 401.

Variety **BERNARDINA** Abrams.

Sts erect or ascending, 6-8 dm hi; herbage densely floccose-woolly; lvs oblanceolate or oblong, serrate-toothed above; infl somewhat virgate-branched; hds not num; only the inv and the uppermost portion of the peduncles glandular; inv turbinate-campanulate, 6-8 mm broad; bracts narrowly linear, their tips somewhat recurved. Common on the dry plains of the interior valleys, especially in the SBer valley. The type is the author's No. 2931, collected at Mentone."—Abrams, Fl LA 401.

HEMIZONIA SCABRELLA Drew.

"About 2 ft hi, main st zigzag with slender diverging branches, glabrous; lvs minutely scabrous; glands sm, terminal, distinctly stalked; hds mostly terminal, nearly cylindrical, 4 li hi; rays 3-5, 3-parted, bright y; bracts of the recep 5-8, at length separable; disk fls variable in number, their ak uniformly glabrous and without pappus, rarely fertile. Hillsides near Grouse Creek, Ag. 1. Has the habit of section *Calycadenia*, but with anomalous characters in the disk-ak."—Drew, Torr cl b 16:151. Humboldt Co, Cal.

HAZARDIA SQUARROSA Greene.

Suffrutescent, erect, 6-10 dm hi, glandular and glutinous; lvs oblong, about summit of the branches, 1 cm long; bracts of the inv rigid, appressed, in many series, their tips abruptly spreading; rays 0; ak sparsely pubescent.

Abrams, Fl LA 400.

Greene, *Erythea* 2:112.

Aplopappus squarrosus H-A Bot Beech 146 (1833).

Pyrocoma grindelloides DC prodr 5:350 (1836).

Aster grindelloides OK Rev Gen 318 (1891).

Monterey, Cal. to Baja Calif.

McClatchie *Erythea* 2:124 Cat.

CHRYSOMA CUNEATA Greene.

Freely branching and spreading, about 3 dm hi; lvs coriaceous, cuneate-obovate or spatulate-obovate, often retuse, 10-14 mm long, resinous-punctate, glutinous; hds about 12 mm hi, in a terminal fasciculate corymb; bracts tin lanceolate or linear, obtusish; rays 1-5 or 0; ak pubescent.

Abrams, Fl LA 398. Gabriel.

Greene, *Erythea*, 3:11.

Aplopappus cuneatus A. Gray, Am ac pr 8:635 (1873).

Type locality: "California, in Bear Valley, alt 4500 ft." SBer Co.

Variety **SPATHULATA** Greene.

Greene, *Erythea* 3:11.

Bigelovia spathulata Gray Am ac pr 11:74 (1876)

Bigelovia rupestris Greene, Bot gaz 6:183 (1881).

Lower California, Arizona.

CHRYSOMA ERICOIDES Greene.

Diffusely branching, 8 dm hi or less, branches fastigate corymbose, very lfy throughout; lvs linear, terete, those of the branches about 1 cm long deflexed, bearing in their axils very short branchlets hidden by 2-ranked closely imbricated shorter ones; inv turbinate, about 6 mm hi; bracts tomentose-ciliate, all erect, the outer successively shorter, becoming g'ish and passing into the very short lvs; rays about 3-5, short; ak glabrous.

Abrams, Fl LA 398. Frequent on bluffs and sand-dunes along the seashore.

Ericameria microphylla Nuttall.

CHRYSOMA PALMERI Greene.

Paniculately much branched, about 1

m hi or less; lvs all filiform terete, those of the branches about 2 cm long; lower bracts of the inv g'ish-tipped; rays 3-4; ak pubescent.

Abrams, Fl LA 398. LA, SD.

Greene, Erythea 3:12, based on *Aplopappus Palmeri* Gray, Am ac pr 8:636 (1873).

Aster Nevini OK, Rev gen pl 316.

CHRYSOMA PANICULATA Greene.

Greene, Erythea 3:12, based on *Bigelovia paniculata* Gray Am ac pr 8:644 (1873).

Aster asoe OK Rev gen 315.

Southern California eastward.

CHRYSOMA PARISHII Greene.

Arborescent, 2-4 m hi; lvs lanceolate, 3-5 cm long, 6-10 mm wide, acute, subcoriaceous, strongly punctate, glutinous; hds num in crowded corymbs, terminating the erect branches, sm, 10-12-fld; inv turbinate; the bracts few, irregularly imbricated, lanceolate, acute, with a g midrib; ak turbinate, minutely silky.

Abrams, Fl LA 398. Gabriel; SBer.

Greene, Erythea 3:10, based on *Bigelovia parishii* Greene, Torrey cl b 9:62 (1852).

Aster parishii OK Rev gen 318.

Low mts of southeastern Calif.

CHRYSOMA PINIFOLIA Greene.

Rather, stout, with rigid, erect branches, 15 mm hi or less; st-lvs filiform, 2.5 cm long or more, mucronate; hds rather few in a contracted panicle, or scattered, campanulate; proper bracts of the inv broadly lanceolate and with a g'ish midrib, the loose outer ones subulate, shorter than the inner and passing into the sm lvs of the flg branchlets; rays usually 6-10; ak glabrous or nearly so.

Abrams, Fl LA 398.

Aster pityphyllus OK, Rev gen 316.

Interior of Southern Cal.

Greene, Erythea 3:12, based on *Aplopappus pinifolius* Gray, Am ac pr 8:636 (1873).

CHRYSOMA TERETIFOLIA Greene.

Greene Erythea 3:12, based on *Linossyris teretifolia* D-H, Pac Ry R, 5:9 t 7 (1855).

Bigelovia teretifolia Gray, Am ac pr 8:644 (1873).

Aster durandii OK Rev gen 316.

Mts of Mohave Desert region.

APLOPAPPUS INTERIOR Coville.

Stenotus interior Greene Erythea 2:72 (1894).

Related to *A. linearifolius* DC, but differing in its shorter lvs (12-20 mm), subulate-bracteate peduncle, shorter, acute, involucrel bracts, and smaller rays 9-11 mm long. In *A. linearifolius* the larger lvs are 30-40 mm long, the peduncles leafy-bracted, the involucrel bracts 11-14 mm long, including the filiform-subulate acuminatum, and the rays 13-15 mm long.—Coville, Wash biol soc pr 7:65 (1892); CNH 4:121 (1893).

Hall, U 124.

Ut; Ar; Inyo Co; SD Co.

SOLIDAGO CALIFORNICA Nutt.

Roughish with an almost cinereous short pubescence, 6-9 dm hi, lvs larger and more num below, passing from obovate to oblong-lanceolate, and from obtuse to acute, the lower and broader more or less serrate; panicle virgate, rather loose, the racemiform clusters second; hds 6 mm hi; bracts lanceolate-oblong or oblong-linear, obtusish; rays 7-12; ak pubescent.

Hall, U 131.

SOLIDAGO CONFINIS Gray.

Glabrous, or the infl sometimes minutely pubescent, 4-9 dm hi; lvs lanceolate, the st lvs shorter, about 5-8 cm long, the basal often oblanceolate or obovate, hds about 4 mm long, crowded in a dense oblong panicle, not second; rays not surpassing the disk-fls; ak canescently pubescent.

Monterey to Mexico: CD! Cruz; Rosa.

ASTER GREATAE Parrish.

Sts erect or assurgent, 4-17 dm hi, glabrous or above sparsely hirtellous; lvs thin, ovate, oblong-lanceolate or lanceolate, 6-15 cm long, the scabrid margins few-toothed or entire, base clasping; uppermost usually reduced to linear or linear-lanceolate bracts; hds 5 mm hi, in an ample panicle; inv-bracts loosely imbricated in a few series, lanceolate, g, minutely ciliate; rays 30-40, light p, narrow, acute, 5-10 mm long; ak hirsute.

ASTER HESPERIUS A. Gray.

Sts paniculately branched, 6-10 dm hi, varying from nearly glabrous to scabrous-pubescent; lvs lanceolate, entire or the larger with a few denticulations. 5-10 cm long 6-15 mm wide; hds crowded, 8-10 mm hi; inv of narrowly linear or more attenuate acute or gradually acuminate erect bracts, either unequal and imbricated or with some loose and slender herbaceous exterior ones which equal the inner; rays either w or vio, 6-8 mm long.

Abrams, Fl LA 402. Cienega, near LA; and in low ground about SBer.

ASTER MENZIESII Lindl.

Strictly erect, about 4-6 dm hi, usually simple and very leafy up to the mostly simply racemose or racemose-paniculate infl, the whole plant cinereous and roughly pubescent; lvs oblong-lanceolate, acute, 5-7.5 cm long, remotely and faintly serrate; hds num in an ample cymose panicle, inv nearly hemispheric, about 6 mm hi; bracts in rather few series, spatulate-linear, very obtuse, wholly g-herbaceous; rays dull pale p'ish.

Abrams, Fl LA 401. Occasional on dry wooded hills about LA and eastward.

Throughout Cal.; LA (Parish 573); Nevada.

TETRADYMYIA COMOSA A. Gray.

Branches erect, elongated, 4-8 dm hi; primary lvs linear, softly floccose-tomentose, the earlier 5-7 cm long, and 4 mm wide, plane; those of the branch-

es often filiform, decid, some of the upper changed to soft spines; hds cormbose or glomerate at the summit of the branches; inv 5-9-fld, its bracts 5-6; pappus fine, concealed by the long wool of ak.

Gray, Am ac pr 12:60 (1876).

Type locality: "W. Nev.," "S. E. borders of Cal.," "Potrero," SD Co.

Coville, CNH 4:141.

Abrams, Fl LA 438.

Nevada; SBER; SD Co; Baja!

Genus PEREZIA Lagasca.

Per herbs with mostly reticulated often setulose-ciliate or spinulose lvs, and solitary cymose or paniculate middle-sized discoid hds of rose-p, w, or bl fls; involucre bracts imbricated in few-several series, dry, chartaceous or coriaceous: receptacle flat, naked, rarely pilose or fimbriate: cor 5-lobed, somewhat bilabiate: ak narrowed at apex: pappus of copious capillary scarbrous rigid or soft bristles.

PEREZIA MICROCEPHALA A Gray.

Tall, branching above, 1.5-2 m hi, leafy; lvs oblong, the upper ovate, cordate-clasping, 8-12 cm long, thin coriaceous, minutely glandular-scarbrous, veiny, closely spinulose-denticulate; hds corymbose at the summits of the paniculate branches, 12-15 mm hi; involucre bracts very acute, coriaceous; fls 10-15 in a hd, cor 8-10 mm long, rose-p.

Abrams, Fl LA 443.—Frequent on the dry interior plains and foothills. Jl-Ag.

Bloch, Erythea 1:191. Sacapellote. Notes its medicinal repute. Monterey to SD.

SBar to Santo Tomas, Baja!

Genus CENTAUREA Linnaeus.

Ann or per herbs, with alt entire dentate or pinnatifid lvs, and large or middle-sized hds of variously colored fls; inv ovoid or globose, bracts imbricated in num series, tipped with stout spine: receptacle flat, bristly: cor-tube slender, the limb 5-toothed or cleft: ak oblong or obovoid, compressed or somewhat 4-angled, obliquely or laterally attached to the receptacle: pappus of num slender scarbrous bristles or scales or rarely 0.

CENTAUREA MELITENSIS Linn.

L. Sp Pl 2:917 (1753).

Type locality: the island of Melita, Mediterranean sea.

Coville, CNH 4:142.

Parish, Zoe 1:58.

Davidson, Erythea 1:60. LA Co.

Abrams, Fl LA 442. A common weed in waysides and fields. Jl-N. Native of Southern Eu.

Erect, branching, 5-8 dm hi, cinereous-pubescent or when young somewhat woolly; basal lvs lyratepinnatifid, those of the st lanceolate, mostly entire, narrowly decurrent; principal bracts with slender spines of about their own length, spines pectinate-spinulose at base, innermost with spinulent tips: fls y; pappus of very un-

equal rather rigid bristles or squamellate.

CARDUUS CALIFORNICUS Greene.

Rather slender, 6-12 dm hi, canescently woolly; lvs sinuate-pinnatifid, moderately prickly; hds solitary on long ped, about 4 cm hi; inv somewhat woolly; lower bracts coriaceous-acerose, spreading and incurved, others straight, all subulate-spinulent at tip; fls lilac-purple or rose; lobes shorter than throat.

Abrams, Fl LA 441. Monica, Gabriel, etc.

Greene, Phila ac pr 1892, 359 (1893).

Type locality: "hillsides, near Knight's Ferry, on the Stanislaus, Cal."

Cirsium Californicum Gray, Pac Dy R 4:112 (1857).

CARDUUS EDULIS Greene.

Stout, 1-2 m hi, pubescent, lfy up to the short panicle; lvs oblong or narrower, sinuate-pinnatifid, weakly prickly; hds 3-4 cm hi, depressed-globose, few in a terminal cluster, lfy-bracted at base; inv arachnoid when young; fls deep p, their seg shorter than the throat.

Abrams, Fl LA 441. Pasadena (McClatchie).

CARDUUS OCCIDENTALIS Nuttall.

Stout, 6-9 dm hi; lvs deeply pinnatifid, glabrate above, canescently tomentose beneath; hds solitary on stout ped; inv subglobose; bracts straight, subulate-lanceolate, with short spines, densely covered with cobwebby hairs; fls deep r-p; lobes longer than the throat.

Abrams, Fl LA 441.

Nuttall, Am phil soc tr, n sr, 7:418 (1841).

Type locality: "round SBER," Cal.

Coville, CNH 4:142. Near Caliente.

CYNARA SCOLYMUS L.

Stout and low, with very ample hoary-tomentose bipinnatifid lvs; inv bracts ovate obtuse or emarginate.

Abrams, Fl LA 442. An occasional escape from gardens. Je-Jl.

Genus GLAUX Linnaeus.

Somewhat succulent per with opp lvs, distinguished from all other genera of the order by the absence of the cor: ex pish or w, campanulate, 5-lobed, assuming the appearance of a cor, the sta alt with the lobes: cap 5-valved at apex: sds few, immersed in the tissue of the placenta.

GLAUX MARITIMA Linn.

Sea Milkwort: in saline soil round the northern hemisphere.

SAMOLUS FLORIBUNDUS HBK.

Erect or ascending, branched at least at the base, 15-45 cm hi; lvs membranous, 25-75 mm long, obovate, obtuse, at the apex, narrowed at the base into petioles, the basal often rosulate; fls sm, less than 2 mm broad, usually num, in loose elongated paniced racemes; pedicels filiform, spreading, bracteolate near the middle; cx-lobes acute, shorter than the cor; cap 2-3 mm in diam,

the 5 apical valves spreading at maturity.

Abrams, Fl LA 299. SBer valley.
Samolus Valerandi L. var. Americana
A. Gray.
Davidson, Pl LA Co 11.
Greene, Cal ac b 1:406.

PHOLISMA DEPRESSUM Greene.

"Sts solitary, completely covered by the rhombic-ovate, or sometimes oblong, closely imbricated scales, fls in a depressed, barely convex hd, 1-2 i broad; sep 6, linear-filiform, minutely glandular ciliolate; cor tubular-funnel-form, 6-lobed, lilac-p; sta shorter and sty longer than in *P. arenarium*."—
Greene, Cal ac b 1:198. On roots of Aplopappus Berberidis. Quintin (Greene, in 1835).

DODECATHEON CLEVELANDI Greene.

"A ft or 2 hi, pale g and glandular; new rts formed not at the end of the dry season but at its beginning, remaining dormant through the summer; no tubers formed either originally or by rt-metamorphosis: lvs scarcely fleshy not depressed but ascending or erect, spatulate-obovate, the margins erose: fls 5-merous, cor bright p with a y base and some dark p spots next the androecium: androecium about 3 li long, fl connate, the tube dark p, the ornate exterior of each fl changing to y at the base of the anth and continued up the back of it nearly to the apex in a lanceolate form and lying in irregular folds; anth otherwise p, not quite twice the length of the staminal tube, slightly divergent around the moderately exerted pistil, retuse at the rather blunt apex: cap oblong, circumscissile at top: sds r'ish brown, somewhat cubical, the testa sinuously reticulate." Greene, Pittonia 1:214. Type locality SD named in honor of Daniel Cleveland, a pioneer botanist of SD. Baja! Giant Cyclamen.
Orcutt, W Am Scientist 7:128.

Abrams, Fl LA 300.—"Frequent on dry mesas and grassy hillsides."

DODECATHEON HENDERSONI Gray.

Scapes r or r'ish, 9-14 i hi, from a strong cluster of fleshy fibrous rts; lvs elliptic, often widest below the middle, the margin more or less crisped, 1-1 $\frac{3}{4}$ i long, on petioles about as long; umbels 3-13-fld, the pedicels 3 $\frac{1}{2}$ l long or less; fls 5, rarely 4-merous; cx cleft into ovate-lanceolate lobes; pet p with a transverse y band at base, which is edged above by w and bounded below by a black p area, oblong, 7 li long; fl black-p; anth clavate, 2 li long; cap oblong, circumscissile well below the summit. Mosquito Bills, Sallors Caps, Rosa.

Genus FRAXINUS Tournefort.

Ash: lvs unequally pinnate, exstipulate, decid: fls sm, in sm crowded panicles, appearing just before the lvs and from separate buds, dioecious or polygamous: fr a 1-seeded samara, with terminal wing.

FRAXINUS OREGANA Nuttall.

Oregon ash: tree 15-30 ft hi; lvs 6-11 i long; lfts 5-7, oblong to oval, acute, entire or somewhat serrate toward the apex, pubescent, especially beneath, glabrate in age: fls dioecious: cor 0. Ore. Baja!

Abrams, Fl LA 302. San Gabriel and Lytle creek canyons.

Davidson, Pl LA Co 11.

Nuttall, Sylva 3:59 t 99.

Jepson, Erythea 1:15.—"Scott valley, Handsome trees, 70-90 ft hi."

FRAXINUS DIPETALA H. & A.

Flowering ash: shrub 5-12 ft hi; lvs 2-6 i long; lfts 3-9, g above, y'ish g beneath when young; fls mostly perfect; cor w, 3 li long, of 2 distinct oval pet abruptly narrowed at base into very short claws. SBer (Parish). Baja!

Abrams, Fl LA 302.—"Occasional in canyons."

Variety **TRIFOLIOLATA** Torrey.

Baja! Las Huevitas, Baja (Br).

Genus ASCLEPIAS Linnaeus.

Per erect or decumbent herbs, with opp verticillate or rarely alt lvs, and fls in terminal or axy umbels: cx 5-parted or divided, usually sm, lobes acute, often glandular within: cor deeply 5-parted, lobes mostly valvate, reflexed in anth: corona-column generally present: corona of 5 concave, erect or spreading hords, each bearing within a slender or subulate incurved horn: fl connate into a tube: anth tipped with an inflexed membrane; winged, the wings broadened below the middle; pollen-masses solitary in each sac, pendulous on their caudicles: stig nearly flat, 5-angled or lobed: follicles usually thick, acuminate: sds usually comose. Milkweed.

ASCLEPIAS ERIOCARPA Benth.

Erect, 5-8 dm hi; densely floccose-woolly, the loose wool hardly decid except from the angled st below; lvs not rarely ternate and the uppermost alt, elongated-oblong or the upper lanceolate, obtuse or subcordate at base, short-petioled, 10-20 cm long; umbels few or several, on stout peduncles; fls dull w; cor at first woolly outside; lobes longer than the pedicels; column short but distinct; hoods shorter than the anth, rather spreading, ventricose, semi-orbicular in outline and open round to near the middle of the back, the summits produced inwardly into an acute angle or tooth barely enclosing the filiform acute horn; ova glabrous, the summit of the sty villous; follicles more or less wooly.

Abrams, Fl LA 307.—"Frequent on dry mesas and in the foothills, also occasionally in the pine belt of the San Gabriel mts."

Bentham, Pl Hartw 323 (1849).

Type locality: "in collibus siccis juxta praedium Tularcitos in vicinibus Monterey, Cal."

Coville, CNH 4:149.

Jepson, *Erythraea* 1:15. Putah canyon, northward.

Ha U 103. SBer (Parish 459) to Baja! ASCLEPIAS MEXICANA Cav.

Sts 6-12 dm hi, glabrous or sparsely puberulent; lvs in whorls of 3-6 or the lower and uppermost opp, linear to linear-lanceolate, 6-15 cm long, 4-12 mm broad, short-petioled; umbels many, corymbose, densely many-fld, on ped longer than the pedicels; fls g'ish-w; cor-lobes 4 mm long; hoods broadly ovate, entire, shorter than the anth, exceeded by the stout subulate incurved horn. Ore. Baja! Nev.

Abrams, Pl LA 307.—Frequent on the mesas and in the foothills.

Cav. Ic Pl 1:42 (1791).

Type locality: "prope Mexico."

Coville, CNH 4:149.

Hall, U 103.

Asclepias fascicularis Decaisne, of Bot Cal.

Ha U 103. Oregon to Baja! Nevada.

Genus **PHILIBERTELLA** Vail.

"Cx sm, 5-parted, lobes acute; cor campanulate or rotate, deeply 5-parted, lobes acute or obtuse, with a shallow entire or undulate ring forming an outer crown in its throat, the inner or staminal crown consisting of 5 turgid fleshy or hard scales, or flattish appendages, attached in a circle at the base of the sessile or slightly stalked gynostegium (column), forming a hollow entire or undulate spreading surface near the level of the conical stig; foliioles naked, slender, attenuate at both ends or obtuse at the base. Twinning herbs, or partly shrubby plants, of warm regions, with opp glabrous pubescent or woolly lvs and umbellate sometimes fragrant and showy fls."—Vail Torr cl b 24:305 (Je 1897).

PHILIBERTELLA HARTWEGII Vail. Variety **HETEROPHYLLA** Vail.

Sts slender, twinning, glabrous, puberulent or somewhat pubescent above; lvs 2.5-5 cm long, 2-4 mm wide, variable, some tapering into the petiole, others with rounded and more with dilated or auriculate-cordate or truncate base; cor scarcely puberulent, 1 cm broad, its lobes acute; column sessile. Growing over low shrubs or herbs.

Abrams, Fl LA 306.

ERYTHRAEA DOUGLASII A. Gray.

Gray, Bot Cal 1:480 (1876).—"Mostly slender, from 2-12 i hi, loosely pinnulate: lvs lanceolate or linear-lanceolate and acute, or the lower ones narrowly oblong (from ½ to nearly 1 i long); ped long and filiform, commonly strict and the earlier or central ones 1 i long or more, lobes of the pink cor oblong (barely 2 li long); sds globular, hardly ¼ li long."

Erythraea tenella Nuttall, ms, Gray, Bot Cal 1:480.

Erythraea elata Nuttall, ms, Gray, Bot Cal 1:480.

Erythraea Nuttallii Watson, Bot

King Exp 276, in part.

Erythraea exaltata Coville, CNH, 4:150, Panamint mts.

Cicendia exaltata Grisebach, in Hooker, Fl Bor Am 2:69 (1838), wrongly characterized fide Gray.

Type locality: between the Kettle Falls and Narrows, of the Columbia river, N. W. C." Oregon; Idaho; Utah; Baja!

Genus **NEMOPHILA** Nuttall.

Low diffuse slender or fragile more or less hirsute an herbs, with alt or opp mostly pinnatifid or lobed lvs, and mostly showy fls, solitary and peduncled, lateral or terminal: cx deeply 5-parted or cleft, with a reflexed or spreading appendage in each sinus; cor campanulate or rotate-campanulate, usually with 10 small appendages within at base: sta included, inserted near base of cor-tube; anth ovate or oblong: ova 1-celled; sty more or less 2-cleft; ovules 4-20: cap 2-valved: sds carunculate.

NEMOPHILA INSIGNIS Dougl.

Sts much branched, spreading, 1-3 dm long, nearly glabrous or somewhat pubescent with more or less retrorse hairs; lvs mostly bipinnatifid, pubescent with spreading hairs, 2-5 cm long, lobes elliptic-ovate; ped mostly 25-45 mm long; cx-lobes ovate-lanceolate, acute; cor 15-25 mm broad, rotate-campanulate, tube scarcely ½ the length of lobes, usually deep bl, slightly hairy toward the base; scales rather broad, ciliate; sds usually 12, corrugate-roughened.

Abrams, Fl LA 320.

Davidson, Pl LA Co 11.

Baby-eyes, fls cyanine blue.

SBer Co (Parish, Or). Temecula valley, Riverside Co (Cleveland). Common nearly throughout Cal.

NEMOPHILA INTEGRIFOLIA Abrams.

Abrams, Fl LA 321, based on N. Menziesii integrifolia Parish, which see for description.

NEMOPHILA PEDUNCULATA Douglas Washington to Baja! (Or 1128 in part).

NEMOPHILA SPATULATA Coville.

Sierra Nevada mts, Tulare Co; San Jacinto mts (Hall 2406).

Hall, U 107.

Coville, U S Na Hb cont 156.

PHACELIA TANACETIFOLIA Benth.

Parish, *Erythraea* 6:90. SBer valley. The plants usually referred here are *P. distans*, which this much resembles, but this is usually much stouter, erect, sparsely branching or simple; lvs larger and less finely dissected; spikes terminating the branches, approximate, 6-9 cm long; sep linear, beset with rigid bristles, in fr little exceeding the oval cap; cor open-campanulate, 6-8 mm long, lavender, the lobes blunt, not rounded; internal appendages entirely adnate, tip rounded.

Abrams, Fl LA 322. "Monica mts between Cahuenga Pass and Encino."

Quintin (Palmer, Or).

Bentham, Bot Reg x t 1696 (1834).

Type locality: "California."

Bentham, Hort Soc Lond tr sr 2. 1:479.

Coville, CNH 4:160, Tejon mts.

PHACELIA VISCIDA Torr.

St erect, mostly simple, 3-6 dm hi, very glandular above; lvs ovate or obscurely cordate, doubly or incisely and irregularly dentate, 2.5-6 cm long; cx-lobes linear or obscurely spatulate, obtuse, 7-8 mm long; cor deep bl with p'ish or w'ish center, rotate-campanulate, 10-20 mm broad; cap ovate, abruptly cuspidate-pointed, equaling the cx.

SBar; Cruz; Rosa; Cat; Da 12.

Variety **ALBIFLORA A. Gray.**

Fls w, otherwise typical.

Abrams, Fl LA 324.

PHACELIA WHITLAVIA A. Gray.

About 3 dm hi, lousely branching, hirsute and glandular; lvs ovate or deltoid, incisely toothed; cx-lobes linear; cor with cylindraceous ventricose tube, usually about 2 cm long and twice the length of the lobes, p; appendages to the exserted fil hairy.

Ha U 108, Jacumba, SD Co. (Or 2267).

Da 12.

Abrams, Fl LA 324. Gabriel and Santa Ana mts.

PHACELIA PHYLLOMANICA A. Gray.

Shrubby below, often more than 6 ft hi, the largest species known.

Guad (Palmer, Greene).

HELIOTROPIMUM CURASSAVICUM Lin.

L. sp Pl 130.

Ann, fleshy, glabrous throughout, more or less glaucous, branched, diffuse, the branches 15-45 cm long; lvs oblanceolate or sometimes linear, 2.5-5 cm long, obtuse at the apex, narrowed into petioles or the upper sessile; scorpioid spikes densely fld, bractless, mostly in pairs; fls about 4 mm broad; cx-seg lanceolate, acute; cor w or rarely lavender; stigma annular.

Hagenbuck, Erythea 4:39. Plant dried and reduced to powder, held in great esteem by Mexicans as a cure for wounds.

Genus ALLOCARYA Greene.

Mostly low spreading an, with linear entire lvs, the lowest opp, and sm fls in terminal spikes or racemes: pedicels thickened at the summit and persistent; cx 5-divided, persistent, seg narrow; cor salver-shaped, w, y in throat; sta included: ova 4-divided; sty short; nutlets crustaceous, smooth or rough, attached at their bases or below the middle to the receptacle, the scar of the attachment concave or raised.

ALLOCARYA TRACHYCARPA Greene.

St branching from base, decumbent, 3-dm long or less, rough with a rather coarse and somewhat spreading pubescence; racemes leafy almost throughout; seg of cx linear, widely spreading; cor very sm; nutlets ovate, straight, carinate on both sides, the dorsal keels

and nearly straight transverse rugae dentate-interrupted; scar suborbicular, nearly basal.

Abrams, Fl LA 331.—"In low ground near Inglewood."

Genus PECTOCARYA De Candolle.

Low, slender, obscure ann with strigose pubescence and narrowly linear lvs: fls minute, w, on very short pedicels, scattered along the sts or branches: cx deeply 5-cleft, spreading or reflexed in fr; cor with a circle of processes or crests which almost close the throat; sta included: nutlets flat, thin, radiately divergent, bordered at apex or all around with a row of bristles hooked at tip.

PECTOCARYA PENICILLATA DC.

Branching at base, branches diffuse, 1-4 i long; nutlets divergent in pairs, oblong, 1 li long, surrounded by a wing which is incurved along the middle in age and bears at the rounded apex a series of slender bristles hooked at the tip. Napa valley, Cal (Jepson).

Abrams, Fl LA 330. Common in all our valleys and foothills, mostly in dry ground.

A DC Prodr 10:120 (1846).

Coville, CNH 4:163.

Cynoglossum penicillatum H. & A., Bot Beech 371 (1840-1).

Type locality: Californian.

PECTOCARYA LINEARIS D. C.

Sts slender, diffusely branched from the base, decumbent or ascending, canescent throughout with appressed hairs, lvs with spreading hairs; nutlets oblong, 4 mm long, becoming recurved, the winged margins toothed, the teeth ending in a hooked bristle, apex thickly beset with slender hooked bristles.

Abrams, Fl LA 330.

DC, Prodr 10:120 (1846).

Type locality: "in Sancti Jacobi Chilensis Campis aridis."

Coville, CNH 4:163. Nev. Panamint mts.

Cynoglossum linearis Ruiz & Pav, Fl Peruv 2:6 (1799).

PECTOCARYA SETOSA A. Gray.

Sts erect, 4-6 cm hi, y'ish green, canescent with appressed hairs; cx with a few strong hispid hairs; nutlets, broad, about 1 mm long, beset on the margins and inner surface with hooked bristles. Mohave! CD! Baja!

Abrams, Fl LA 330.

Gray, Am ac pr 12:81 (1876).

Type locality: "S. E. Cal, on the desert plains of the Upper Mohave River." Coville, CNH 4:163.

Genus PLAGIOBOTHRYS F. & M.

Slender ann with mostly soft pubescence, hairs often rusty when young: lvs mostly in a radical tuft: racemes spike-like, elongated, loose, sometimes leafy: pedicels very short or almost 0, filiform, persistent; cor short, w, with crests or processes at the mouth of the throat: nutlets ovate, carinate on

both sides towards the apex and often also laterally margined, on the back rugose or roughened; insertion above the base or median, the scar raised and rounded and leaving a corresponding depression on the receptacle or gynobase.

Pop-corn fs.

PLAGIOBOTHRYIS CANESCENS A. G.

Plant with diffuse, straggling or prostrate branches: cx persistent, not circumscissile.

Abrams, Fl LA 332.

PLAGIOBOTHRYIS COOPERI A. Gray.

Diffusely branched from the base with slender sparsely-leaved ascending fig sts, 1.5-3 dm long, hispidulous; lvs spatulate-linear to oblong-lanceolate; spikes at length few-fld, sparingly bracteate or above bractless; cor-limb 4-6 mm broad; nutlets trigonous and reticulate rugose, dentate-muriculate on the reticulations.

Abrams, Fl LA 333.

PLAGIOBOTHRYIS NOTHOFULVUS

Plant erect, 1-2½ ft hi; sts 1 to several from the depressed rosulate tuft of lvs, branching mostly above, the branches widely spreading or erect; herbage silky-villous, hairs very r'ish only when young; lvs oblong-ovate or lanceolate; spikes leafless; ex cleft to middle, 1½ li long, in fr circumscissile below the middle, the upper part falling away and leaving the persistent base about the nutlets; cor 2-3 li broad.

Abrams, Fl LA 332.

Genus **CRYPTANTHE** Lehm.

Mostly low erect branching setose or hispid an herbs, with narrow alt entire lvs, and sm mostly w fs, in scorpioid bractless or bracteolate spikes: cx 5-parted or-cleft, at length decid, erect or spreading in fr: cor sm, funnellform, usually with 5 scales closing the throat: sta included; fil short: ova 4-divided; sty short; stig capitate: nutlets erect, rounded on the back, the margins obtuse, acute or winged, attached laterally to the conic or elongated receptacle, scar elongated.

CRYPTANTHE AMBIGUA Greene.

Sts rather slender, loosely branching, 20-25 cm hi, sparsely hispid and hirsute; lvs rather broadly linear; fs becoming scattered; cx-lobes 5-7 mm long, beset with rather short, rigid bristles; cor about 3 mm broad, nutlets deltoid-ovate, 2 mm long, brownish, sparsely and faintly muricate.

Abrams, Fl LA 334.

Greene, Pitt 1:113 (1887).

Hall, U 108.

Coville, CNH 4:164. Tejon mts.

Eritrichium muriculatum var. *ambiguum* Gray, Syn Fl 2, pt 1, 194 (1878).

Type locality: not given. Cal, Nev, Wash, Arizona? So Cal.

Eritrichium angustifolium Watson, bot Kings R, 241 (not Torr).

Eritrichium muriculatum Torr. Wilkes Esp xvii, t 13.

Krynitzkia ambigua Gray.

CRYPTANTHE BARBIGERA Greene.

Rather stout, much branched, 2-4 dm hi, hispid and hirsute; lvs narrowly linear; spikes elongated, fs becoming rather distant; cx-lobes linear, attenuate, 6-8 mm long in fr, covered with long shaggy bristles, usually intermingled with long w villous hairs; cor often 6 mm broad; nutlets rarely acuminate, about 2 mm long, grayish, muricate-papillose; scar open, dilated at base.

Abrams, Fl LA 334.

Greene, Pittonia 1:114 (1887).

Type locality: not given. S Ber Co to S Ut and Ar.

Coville, CNH 4:165. Panamint mts.

Eritrichium barbigera Gray, Syn Fl 2 pt 1, 194 (1878).

Arizona; Southern California; Baja!

CRYPTANTHE FLACCIDA Greene.

Slender, strict, 3-6 dm hi, strigulose with minute close pubescence; lvs linear, minutely more or less strigulose-hispid; cx erect in fr, appressed to the rachis, 4-5 mm long; sep filiform-linear, thickish below, their bases very hispid with deflexed and strong, somewhat hooked bristles; nutlets solitary, scarcely flattened ventrally, the groove of attachment enlarged at base but not furcate. So Cal to Wash.

Abrams, Fl LA 334. Chatsworth Park.

Coville, CNH 4:165.

Myosotis flaccida. Dougl MS, Lehm. Pag 2:22 (1830).

Type locality: not given. Douglas, collector.

Krynitzkia oxycarya Gray.

CRYPTANTHE INTERMEDIA Greene.

Cx-lobes 3-5 mm long, armed with rather rigid and pungent, w'ish or rusty-y'ish bristles; cor usually less than 4 mm broad; nutlets grayish, about 2 mm long, oblong-ovate, thickly rough-muricate; scar wholly or partly open, with an open areola.

Abrams, Fl LA 334.

Greene, Pittonia 1:114 (1887).

Coville, CNH 4:165.

Eritrichium intermedium Gray, Am ac pr 17:225 (1832).

LA; SD; Mohave Desert; Baja Cal.

CRYPTANTHE LEIOCARPA Greene.

Commonly branched from the base, 1-3 dm hi; spikes leafy bracted, the terminal larger and interrupted, the lateral short and glomerate; sep short-linear, rispidd bristly, nutlets 4, narrowly ovate, acute, 1.5 mm long, the ventral groove not forked or scarcely so.

Abrams, Fl LA 335.

Santa Cruz Island (Greene).

CRYPTANTHE MICROSTACHYS

Greene.

Rarely over 3 dm hi, much branched from the base, hispidulous or hispid; cx in fr ascending or erect, but not appressed to the rachis, 2-3.5 mm long; sep linear, hispid with widely spreading, but not deflexed, straight and somewhat pungent hairs; nutlet solitary, somewhat flattened laterally, the

groove of attachment divaricately forked and somewhat open at the base.

Abrams, Fl LA 334.
CRYPTANTHE RAMOSISSIMA Greene,
Pitt 1:116 (1887).

Coville, CNH 4:165.
Krynitzka ramosissima, Greene,
Cal ac b 1:203 (1885). Gray, Am ac
p 20:277.

Type locality: "Mohave Desert,"
Curran. Not from Cerros or Guadalupe
Islands fide Greene.

Eritrichium racemosum, Watson.
Krynitzka racemosa Greene, Cal. ac
b 1:208.

CD (Parish 775). Baja mts and desert
(Or.). San Julio canyon, etc., Baja
(Br).

CRYPTANTHE MURICULATA Greene.
Rather stout, branching, rough-hir-
sute or hispid, 2-4 dm hi, with well de-
veloped rather dense spikes, mostly in
2's and 3's at the ends of the branches;
ex about 3 mm long, lanceolate; cor 4-6
mm long; nutlets 2 mm long, muricate-
papillose and somewhat rugose on the
back; ventral groove and its basal
bifurcation mostly closed, lateral an-
gles acutish, distinct.

Abrams, Fl LA 333.

Genus AMSINCKIA Lehm.

Ann with rough-hairy herbage, the
hairs commonly with pustulate-dilated
base, often conspicuously hardened or
granular: fls y, in elongated spike: sep
5, or 4 or 3 through union of 2 in 1:
cor salverform, throat somewhat fun-
nelform with more or less distinct
folds but destitute of crests or pro-
cesses: sty filiform: nutlets crustace-
ous, triquerous or ovate-triangular,
smooth or rough: cotyledons deeply 2-
parted.

AMSINCKIA ECHINATA A. Gray.

Nutlets beset with prickly projec-
tions.

Mohave region (Cooper).

AMSINCKIA TESSELLATA A. Gray.

Nutlets much flattened on back, with
coarse granulations.

Contra Costa range to Baja mts! Utah;
Nevada; Cat.

AMSINCKIA GRANDIFLORA Kleebl.

Nutlets smooth and polished, Anti-
och, Cal.

AMSINCKIA LYCOPSOIDES Lehm.

Nutlets brown or blackish, muricu-
late and rugose, minute.

Br Zoe 1:114, Cat. Da 12.

AMSINCKIA SPECTABILIS F. & M.

Nutlets somewhat flattened laterally,
reticulate-rugulose, granulate.

Parish, Zoe 5:117, recognizes only this
species in So Cal. Plumas Co to Quintin.
F. & M, Sem Petrop 2:26 (1835).

Parish, Zoe 5:117, recognizes only
this species in So Cal. Plumas Co to
Quintin!

Hall U 108.

Type locality: not given.

Coville, CNH 4:166, near SBer.

AMSINCKIA INTERMEDIA F. & M.

Nutlets much incurved, carinate dor-
sally; cor under $\frac{1}{2}$ l long.

Fls chrome y' with orange spots at
base of the divisions of the cor. Cruz,
Baja.

British Columbia to Quintin! Cruz;
Cat; Rosa.

CUSCUTACEAE.

W or y slender twining parasites, the
lvs reduced to minute alt scales: cx
5-lobed, rarely 4-lobed or 4-5-parted,
the lobes imbricated in the bud: cor
usually campanulate, 5-lobed, rarely
4-lobed, the tube bearing as many fim-
briate or crenulate scales as there are
lobes and alt with them, or these
sometimes obsolete: sta as many as
cor-lobes and alt with them, inserted
in the throat or sinuses above the
scales; anth short, 2-celled, longitud-
inally dehiscent: ova 2-celled; ovules 2
in each cavity; stys 2, separate or
rarely united below; stigmas capitate
or linear: cap globose or ovoid, cir-
cumscissile, irregularly bursting or in-
dehiscent, 1-4-seeded: sds globose or
angular; embryo linear, curved or
spiral; cotyledons 0.

Genus CUSCUTA Tournefort.

Ann parasitical leafless herbs, desti-
tute of green color, with twining fili-
form stems: fls small, in lateral heads
or clusters: cx colored like the cor,
deeply 5-cleft: cor campanulate or
somewhat urn-shaped to short-tubu-
lar, with 5 usually spreading lobes im-
bricated in the bud, and as many sm
scales or appendages inserted in the
tube below the sta or σ ; ovary globu-
lar, 2-celled, 4-ovuled; stigma globose:
capsule 1-4-seeded: cotyledons 0. Dod-
der.

CUSCUTA SUBINCLUSA D. & H.

Sts commonly stout; fls sessile or
nearly so, $^{2\frac{1}{2}}$ -4 li long; lobes of cor
short, tube somewhat urn-shaped, only
partly covered by the fleshy, usually
reddish ex. Common on coarse herbs
and shrubs. Cruz. "The most com-
mon species in the state."—Greene.

Abrams, Fl LA 311.

Genus SOLANUM Tournefort.

Herbs or shrubs, often stellate-pu-
bescent: fls cymose, paniculate or ra-
cemose, w, blue, p or y: ex campanu-
late or rotate, mostly 5-toothed or
cleft: cor rotate, the limb plaited in
the bud, 5-angled or -lobed: sta in-
serted on the throat of cor; fil short,
anth linear or oblong; acute or acum-
inate, connate or connivent into a cone;
anth-sacs dehiscent by a terminal pore
or by a short introrse terminal slit,
or longitudinally: ova usually 2-celled;
stig sm: fr a several-seeded berry.

SOLANUM ELAEAGNIFOLIUM Cav.

Parish Erythea 3:61.—"Well estab-
lished by roadsides at South Riverside,
Cal. (W. J. Lester).

SOLANUM ROSTRATUM Dunal.

Ann, erect, branching, 1-3 dm hi,
pubescent with long y'ish stellate hairs
and armed with long straight prickles;
lvs pinnatifid; cx densely prickly, its
lobes narrow, nearly half the length
of the cor and enclosing the fr; cor

about 2 cm broad, y; anth linear-lanceolate, the lowest much longer and larger, with an incurved beak. Tex.

Parish, Zoe 1:124.

Davidson, *Erythea* 1:98, *Monica* (Hasse).

Abrams, Fl LA 352.

SOLANUM XANTI A. Gray.

Sts woody, 3-10 dm hi, the younger angled, moderately villous with many-celled unbranched mostly gland-tipped hairs; lvs ovate, ovate-oblong, to oblong-lanceolate, the largest 4-6 cm long, acute or obtuse at base, margins entire; cor 1-2 cm broad, usually deep violet angulately 5-lobed, berry greenish.

Abrams, Fl LA 351. Gabriel mts.

Hall U 114.

Parish, Cal ac pr sr 3, bot 2:167.

Gray, Am ac pr 11:90 (1876).

Type locality: not given.

Throughout Cal., south.

Variety **GLABRESCENS** Parish.

Sts woody, slender, 10-15 dm hi, elaborate or above hirsutulous with short mostly 1-celled hairs; lvs oblong, elliptic or lanceolate, mostly attenuate or acute at base, 2-6 cm long; cor 2 cm broad.

Abrams, Fl LA 351.—“Occasional in the valleys and foothills, mostly in dry and rather exposed places.”

Parish, Cal ac pr sr 3, bot 2:167.

Hall U 114.

Variety **INTERMEDIUM** Parish.

Sts woody, lax, 2 m hi or less, viscid; lvs cordate to oblong, at least obtuse at base, often with lateral lobes near the base, 3-15 cm long; cor 2-4 cm broad.

Abrams, Fl LA 351.—“Common in all our low hills and in the mts.”

SOLANUM WALLACEI Parish.

Sts woody, about 1 m hi, densely tawny with long many-celled glandular, mostly simple hairs; lvs thickish, usually smoother than the sts, crenate, the lower ample, cordate; upper ovate, rounded or subcordate at base; cx narrowly funnelform, deeply cleft or less so and broader; cor 2-4 cm broad, deep violet; sty glabrate or vilous below; fr dark p.

Abrams, Fl LA 351. Cat.

SOLANUM VILLOSUM Lam.

Rather low mostly spreading an, villous, more or less viscid; lvs conspicuously angulate-dentate; fil somewhat pubescent; berries y.

Abrams, Fl LA 351.

PHYSALIS AEQUATA Jacq. f.

Davidson, *Erythea* 1:98. LA.

Parish, Zoe 1:123.

G and almost glabrous, 1-2 ft hi, widely spreading; lvs ovate or oblong, sinuate-toothed or repand; pedicels very short; cor under $\frac{1}{2}$ i broad; fring cx ovate-glabose and little angled at maturity.

Jacq, f, Elog 2 t 137.

PHYSALIS CRASSIFOLIA Benth.

Pale or minutely hoary with an extremely short and fine almost imperceptible pubescence; lvs at length near-

ly glabrous ($\frac{1}{2}$ -1 $\frac{1}{2}$ i long), ovate or round-cordate, repandly few-toothed or almost entire; pedicels long and slender; cor cream-color, $\frac{1}{2}$ i in diam; fr-cx 1 i long, 5-angled.

Bentham Bot Sulph 40 (1844).

Type locality: “Bay of Magdalena,” Baja.

Coville, CNH 4:167. Funeral mts.

Physalis cardiophylla Torrey, bot Mex B 153, a form with mostly round-cordate lvs.

PHYSALIS PUBESCENS Linn.

Widely spreading, 1-2 ft hi, villous or pubescent with viscid spreading soft hairs, strong-scented; lvs ovate or cordate, varying from entire to angulate-toothed, rather tender, 2 i long; pedicels shorter than the ovate strongly 5-angled fr-cx; cor $\frac{1}{2}$ i in diam. SD! Baja! CD! Atlantic states.

Genus LYCIUM Linnaeus.

Shrubby, often spiny plants, with small entire lvs, and w, g'ish or p'axy or terminal solitary or clustered fls: cx campanulate, 3-5 lobed or 3-5-toothed, not enlarged in fr, persistent at the base of the berry; cor funnelform, salver-shaped or campanulate, the limb 5-lobed, the lobes obtuse; sta 5; fil filiform, sometimes dilated at the base; anth-sacs longitudinally dehiscent; ova 2-celled; sty filiform; stig capitate or 2-lobed; berry globose to oblong.

LYCIUM ANDERSONII A. Gray.

2-4 ft hi; cor w, narrow, 5 li long, limb 2-3 li wide, the short rounded lobes with naked edges; pedicels and cx 1 li long; berry bright r, or amber color, edible. Or.

Gray, Am ac pr 7:388 (1868).

Type locality: “S. E. part of Nevada.”

Coville, CNH 4:167. Ut, Cal.

LYCIUM CALIFORNICUM Nutt.

Glabrous; sts slender, much branched, about 6-12 dm hi; lvs thickish, 2-6 mm long, obovate or spatulate to nearly linear; pedicels often nearly obsolete; cor w. its tube about 3 mm long, included in the campanulate 4-toothed cx, its limb rotate, 4-parted, scarcely 4 mm broad.

Abrams, Fl LA 352. On bluffs near the sea. Redondo; Long Beach; Laguna. First collected by Nuttall at SD.

Genus RUMEX Linnaeus.

Per or a leafy-stemmed herbs; st grooved, usually branched; lvs entire or undulate, flat or crisped, with scarious obliquely truncate cylindrical sheathing stipules; fls green, usually perfect, in a simple or compound often paniced raceme: cx 6-parted, the 3 outer sep unchanged in fr, the 3 inner ones (wings) usually bearing a grain-like callosity on the back, larger and enclosed in the ak; sta 6; fil short, glabrous; anth oblong; sty 3-parted; stig peltate, tufted; ak 3-angled.

RUMEX ACETOSELLA Linn.

Per by slender running rt-stocks,

slender erect or nearly so, simple or branched, 2-4 dm hi glabrous; lvs narrow-hastate, petioled, uppermost lvs somewhat entire; panicle narrow, naked, becoming reddish; cx g, 1 mm long; sta exserted; ak granular, exceeding the persistent ex. Eu.

Abrams, Fl LA 120.

Davidson, Erythea 1:99. LA Co.

RUMEX CONGLOMERATUS Mun.

Sts slender, mostly clustered, 3-4 ft hi; lvs ovate or mostly oblong, slightly undulate, 4 i long, reduced above; flg branches slender, whorls remote, with a lanceolate or ovate lf subtending every whorl or almost naked; pedicels slender, about as long as the fr, tumidly jointed near the base and geniculate; inner fr'ing sep oblong $\frac{3}{4}$ - $1\frac{1}{2}$ li long, callous grains mostly 3, and smooth. Eu. Common naturalized weed. Green dock.

Santa Cruz Island (Greene).

Abrams, Fl LA 121.

Parish, Zoe 1:126.

McClatchie, Erythea 2:78, Pasadena.

RUMEX CRISPUS Linn.

St 2-3 ft hi, smooth, channelled, from a v fusiform rt; lvs bluish-green, crisped, lanceolate, acute 4 i long, reduced above; fls rather loosely whorled; cx green; pedicels twice as long as fr, tumidly jointed near the base; inner fr'ing sep broadly ovate, scarcely cordate, 2-2 $\frac{1}{2}$ li long, all with smooth callous grains. Common naturalized weed. The rt is used in medicine for cutaneous diseases.

Parish, Zoe 1:126.

McClatchie, Erythea, 2:78, Cat.

Davidson, Erythea 1:99, LA Co.

Pacific Rural Press 38:511.

L, Sp Pl 1:335 (1853). Eu.

Coville, CNH 4:191.

Abrams, Fl LA 121.

Europe; widely naturalized in Cal.

RUMEX HYMENOSEPALUS Torrey.

"Sandy soils from El Paso to the canyons of the Rio Grande; Mr-Ap. Rt w, st 2-3 ft hi; foliage intensely bitter; Thurber. Lower lvs a ft or more long and 2-3 in width, somewhat undulate on the margin; upper ones nearly flat; panicle a ft long, fls crowded; inner sep of the frutiferous ex nearly $\frac{1}{2}$ i long, roundish ovate, strongly cordate, of a very thin texture, often rose-colored, slightly reticulate-veined, twice as long as the achenium." * *

* Torr bot Mexican bound, 177-8. (1859).

Davidson, Pl LA Co 7.

Coville, CNH 4:191.

Abrams, Fl LA 121.

"Canaigre." Utah; N M; Cal; Quintin!

The tubers rich in tannin; useful in curing sores on horses.

RUMEX MARITIMUS Linn.

Europe; Asia; Wash. to Mexico the Atlantic; Cruz.

RUMEX PERSICARIOIDES L.

Ann, pubescent, pale g; st erect, simple or branched, 2-6 dm hi, sometimes spreading, very lfy; lvs lanceolate or oblong, 2 dm long or usually less,

narrowed at the base or cordate, acute at the apex, the margins undulate and somewhat crisped; panicle simple or branched; racemes erect, lfy bracted; whorls dense, usually rather distant; pedicels equaling or somewhat exceeding the inner ex-lobes, jointed at the base; inner ex-lobes oblong, 2 mm long, with 1-3 bristles on each margin, each bearing an ovoid or oblong grain; ak about 1.5 mm long, pointed, r'ish. Eu.

RUMEX PULCHER L.

Sts erect, 5-8 dm hi, with rigid divaricately spreading branches; lvs scabrous beneath, the basal oblong or lanceolate, acute, cordate or obtuse at base; fls on short stout rigid pedicels; wings ovate, 2-3 mm long, with 4-6 rigidly awned teeth on each side. Eu.

Abrams, LA 120. Sparingly introduced Englewood.

RUMEX SALICIFOLIUS Wein.

Glabrous and somewhat glaucous; sts ascending or spreading, simple or branched, grooved, flexuous, 4-8 dm long; lvs mostly lanceolate, acute or acuminate, petioled, not undulate or crisped; racemes dense, interrupted below in fr; fls in dense clusters; wings 2 mm long, undulate or subdentate, each bearing a large ovoid grain; ak 2 mm long dark r.

Abrams, Fl LA 120.

Weinm, Fl 1821 1:28 (1821). Cal.

Coville, El 1821 1:28 (1821). Cal.

A common weed from the Atlantic to the Pacific; Alaska to Mexico. Cruz; Ross; Ha U 76.

POLYGONUM HYDROPIPEROIDES Mx.

Sts rather stout, 3-10 dm hi, erect or decumbent, clothed with short appressed hairs; lvs lanceolate, obtuse; sheath cylindrical, loose, ciliate; racemes panicled, terminal, erect, narrow, more or less interrupted, 3-7 cm long; cx w or wish, often conspicuous; sta 8; sty 3-parted to below the middle; ak 3-angled, ovoid or oblong, 2-2.5 mm long, smooth.

Frequent along streams, especially toward the coast.

Michx, Fl 1:239 (1803).

Type locality: "in Pa, Va, Carolina." Southern California (Parish 1872).

Abrams, Fl LA 122.

POLYGONUM INCARNATUM Ell.

Ann, glabrous or nearly so; st erect, simple or branched above, more or less swollen at the nodes, 8-12 dm hi; lvs lanceolate, 6-18 cm long, acuminate at both ends, short petioled, sparingly punctate and ciliate; sheaths loose, long, sometimes ciliate when young, becoming naked; racemes panicled, drooping, 4-10 cm long, linear; cx w or pink, sm; sta 6; sty 2-parted to near the base; ak ovoid-oblong, lenticular, smooth and shining.

Abrams, Fl LA 122. Marshes about LA.

Davidson, Erythea 1:99 LA Co.

POLYGONUM LAPATHIFOLIUM L.

St simple or much branched, erect or ascending, swollen at the nodes, 3-12 dm hi, the peduncles and petioles glan-

dular; lvs lanceolate or oblong-lanceolate, 5-20 cm long, attenuate to the apex, tapering to the short petiole, ciliate, inconspicuously punctate; sheath cylindrical, ribbed or striate; racemes panicle, 2.5-10 cm long, drooping, narrow, rather dense, ex pink, w or y'ish, 5-parted; sta 6; sty 2-parted to below the middle; ak lenticular, 2 mm long.

Abrams, Fl LA 122.

Genus NEMACAULIS Nuttall.

Slender diffuse, ann, with spatulate mostly radical lvs and no stipules: fls capitate, each with a free herbaceous bract, perfect; cx 6-cleft, colored, enclosing the ak; sty 3; stig capitate: ak short-ovoid, obscurely 3-angled.

NEMACAULIS NUTTALLII Bentham.

Sts prostrate or ascending, 15-30 cm long, glabrate, r'ish; lvs narrowly spatulate, 2-5 cm long, including the short petiole, densely tomentose-hairy on both sides; bractlets of the fl-clusters obovate-spatulate, 2 mm long, the outer flowerless, the inner smaller, woolly within and glabrous without; fls y'ish, scarcely 1 mm long, short-pedicellate, glabrous; inner seg broadest; ak 0.7 mm long.

Nemacaulis denudata Nutt, Phila, ac J II, 1:168.

Nemacaulis foliosa Nutt, Phila, J ac II, 1:168.

Eriogonum denudatum Curran, Cal ac pr.

Nemacaulis denudata and foliosa Nutt Phila ac J II, 1:168.

S D to San Borgia, Baja (Br). C D!

ERIOGONUM VIMINEUM Dougl.

Glabrous or tomentose toward the base, erect, 2-4 dm hi, much branched from near the base, the branches elongated and virgate, the lower commonly in whorls of 4-5; lower forks often leafy; lvs orbicular to broadly ovate, 6-18 mm long, w-tomentose beneath, becoming glabrate above, the margins undulate, on petioles of about the same length; inv very narrow, 2 mm hi; fls few, pale rose or y'ish, 2 mm long, outer seg obovate; inner oblong.

Davidson, Pl LA Co 14.

Jepson, Erythra 1:12.

Abrams, Fl LA 119.

Washington; Nevada; Baja!

ERIOGONUM VIRGATUM Bentham.

Slender, 3-6 dm hi, tomentose throughout, branches few, ascending, elongated, strictly virgate or flexuous; bracts lanceolate, shorter than the inv, sometimes including 1 or more lvs; inv tomentose, narrow, 4 mm long; perianth 2 mm long, w or y'ish, glabrous.

Bentham, in DC Prodr 14:16 (1856).

Type locality: "in California."

Coville, CNH 4:188.

Davidson, Pl LA Co 15.

Jepson, Erythra 1:13.

Abrams, Fl LA 119.

Siskiyou Co (Greene).

ERIOGONUM WRIGHTII Torr.

Much branched, leafy at base, 2-5 dm hi, rather slender; lvs oblong-ovate,

15-25 mm long, acute, narrowed at base to a 4-8 mm long petiole; bracts all sm, triangular; inv loosely spicate along the ascending branches, 3 mm hi, the teeth rigid, acute; perianth rose color, 3 mm long; ak scabrous on the angles above, these acute at base.

Abrams, Fl LA 118. Gabriel mts.

Sacramento to Baja! N M; Nevada.

Variety TAXIFOLIUM Parish.

E. Taxifolium Greene, pitt, 1:267; 2:295.

Parish, Erythra 6:87.—"A shrub 2-3 ft high, with slender tomentose branches." Spencer valley, SD Co (R. D. Alderson); and eastern base of Grayback Mt. in Whitewater canyon, Cal. Ha U 74.

Genus CHORIZANTHE R. Brown.

Low, dichotomously-branched ann herbs, with rosulate basal lvs and opp or ternate st-lvs, often reduced and bracteate: involucre 1-fld, or rarely 2-3-fld, tubular or funneliform, sessile, 3-6-angled or costate, 3-6-toothed or 3-6-cleft, its teeth divaricate, cuspidate or awned: fls pedicellate or nearly sessile, included within the involucre, or the seg protruding: cx 6-parted or 6-cleft, colored: sta usually 9, rarely 3 or 6, adnate to base of cx-tube: ova glabrous.

CHORIZANTHE CALIFORNICA A. G.

Hirsute and glanular, 3 dm hi or less, often r'ish; bracts 1-2 cm broad, lateral or rarely perfoliate, lobed; involucre on contracted bractlets and often clustered in the axils, 4-6 mm long, obtusely angled, 2-3-toothed and 2-3-sided; seg of perianth obovate, entire, villous-pubescent on the midvein.

Abrams, Fl LA 113.—"Common on sandy soil."

SBer to San Diego; Da 15.

CHORIZANTHE FERNANDINA S. Wat.

Procumbent, rather stout, strongly silky-pubescent, 6-10 cm long; lvs narrowly oblanceolate, not tomentose; lower bracts foliaceous, the upper narrowly linear; tube of inv 2 mm long, teeth stout, with straight awns; fls w, 2 mm long; lobes nearly equal, broadly oblong, alt ones slightly narrower.

Chatsworth Park.

Abrams, Fl LA 114.

San Fernando, Cal. (Mrs. A. E. Bush).

Baja (Or 1369), near Quintin!

San Fernando, Cal. (Mrs. A. E. Bush); Quintin! Da 15.

CHORIZANTHE LEPTOCEROS S. Wat.

Very slender and nearly glabrous: lvs and bracts as in C. Thurberi; inv 4-6 mm long, somewhat hirsute, deeply 4-6-cleft, the coriaceous turbinate base surrounded by as many rigid usually hooked awn-like spurs; lobes rigid, narrow, unequal, attenuate, into straight rigid somewhat divergent awns; fls 2 or 3, occasionally exserted, villous-pubescent, 1 mm long; seg narrowly oblong to ovate, nearly equal.

Abrams, Fl LA 113.—"on dry sandy plains from San Gabriel eastward."

Davidson, Pl LA Co 15.

Near SBer (Parish 829, Parry). Da 15.

CHORIZANTHE PARRYI S. Watson.

Branching from the base, 5-8 cm hi

villous-pubescent; lvs narrowly oblanceolate, 2.5 cm long, not tomentose; lower bracts as large, similar, pungent; tube of the inv 2 mm long, the alt teen strongly divergent, as long or longer, fls nearly sessile, w or pinkish, 3 mm long; villous on the nerves, cleft nearly to the middle; seg recurved, somewhat undulate, oblong-ovate, acutish, crenate, the inner ones about the same length, but narrower; sta inserted at the base.

SBer; Campo; Quintin! Baja mts!
CHORIZANTHE PROCUMBENS Nutt.

Slender, procumbent, branching from the base and diffuse, villous-pubescent, often yish. lvs spatulate, 2.5 cm long or less, not tomentose, bracts mostly sm; inv 2-3 mm long, the alt teeth strongly divergent, about equaling the tube, uncinat; fls sessile, 2.5 mm long, glabrous or somewhat villous, seg equal, narrowly oblong, obtuse, entire; sta inserted at the base.

SBer! Quintin! CD (Parish 820). Forms large yellowish-green patches on mesa or hillside.

CHORIZANTHE SPINOSA S. Watson.

"Resembling *C. unaristata*; bracts more rigid, lanceolate, attenuate to a long spine; involucrel seg unequal, 1 or 2 often much the larger, all with straight spines; fls w; lobes round-ovate, entire, the alt ones a half smaller. Near SBer (Lemmon)."—Watson, Bot Cal 2:481.

Parish, Zoe 5:113, not SBer but Mohave.

CHORIZANTHE STATICOIDES Benth.

Dry plains throughout Cal. Ha U 72.

Erect or decumbent, rather stout, 1-4 dm in, with spreading branches, villous-pubescent, often p'ish, lvs all basal, tomentose beneath, oblong, obtuse, 4.5-6 cm long; bracts not acerose; inv in rather close cymes, 3-6 mm long, the alt teeth larger, nearly equal; fls nearly sessile, 4-5 mm long, glabrous or sparsely villous on the midvein, cleft to near the middle; seg oblong, entire, the alt ones about half as long and narrower; sta inserted at base.

Bentham, Linn Tr 17:418.

CHORIZANTHE THURBERI S. Watson.

Somewhat glandular-puberulent, usually about 1 dm in, branching from the base; lvs 2.5 cm long, glabrous, slightly ciliate; bracts oblong, more or less united, 2-6 mm long; involucrel glabrous, chartaceous, triangular-prismatic, obscurely reticulated, 4-6 mm long, 1-2 mm broad, with 3 broad straight awned spurs at base and 3-5 broad short erect teeth; fls 1 or 2 on slender pedicels, pubescent at base, nearly 2 mm long; seg oblong-spatulate, obtuse or emarginate, the alt ones slightly shorter.

Abrams, Fl LA 113.
 Coville, CNH 4:189.

Centrostegia Thurberi Bentham, in DC Prodr 14:27 (1856).

Type locality: "in collibus arenosis ad San Felipe Californiae."

Mohave, near Colorado river (Parish 895).

Variety **CRYPTANTHA** Curran.

Mohave near Lancaster. (Curran).

CHORIZANTHE XANTI S. Watson.

Watson, Am ac pr 12:272 (1877).

Branching diffusely from near the base, 6-15 cm in, villous-pubescent and tomentose; lvs ovate-oblong, 4-12 mm long, tomentose beneath; lower bracts similar or linear-oblancheolate; involucrel tomentose, in diffuse cymes, the tube 4 mm long with strongly divergent teeth ½ as long or more, alt ones much smaller; fls rose color, 5 mm long, sessile, villous, seg linear-oblong, entire, acutish, alt ones ½ as long; sta inserted at base.

San Geronio Pass (Parry); LA (Nevin); SD Co.

Type localities: "near Fort Tejon," "SBer," and "San Geronio," Cal.

Coville, CNH 4:190.

Abrams, Fl LA 114.—"Common in the chaparral belt of all our mts."

Genus **PTEROSTEGIA** F. & M.

Very slender ann, diffusely dichotomous from the base, with opp lvs and foliaceous bracts: inv ax, sessile, solitary, consisting of a single 2-lobed bract, shorter than the solitary sessile fl, enlarged in fr, scarious and reticulated, loosely enclosing the ak, gibbously 2-saccate on the back; ex 6-parted or rarely 5-parted; sta 3-6, inserted at the base of the ex-lobes: ak triangular, glabrous; cotyledons accumbent.

PTEROSTEGIA DRYMARIOIDES Nutt.

Fls several from the base, 10-30 cm long or more; lower lvs petioled, 4-12 mm long fan-shaped, 2-lobed, the lobes crenately toothed or slightly lobed; upper lvs obovate-spatulate, entire or more or less toothed; bracts similar, 2 mm long; inv 2-3 mm long in fr, the margins of the lobes toothed or lacinate; fls about 1.5 mm long, sessile; ex-lobes lanceolate.

Abrams, Fl LA 111. Common and general below 4000 feet. The whole plant often reddish when growing in exposed places.

Hall U 76.

Coville, CNH 4:191. Panamint mts.

Fisch & Mey, Ind Sem Petrop 2:43 (1835).

Type locality: "in portu Bodega novae Californiae."

Cruz; Rosa; Guad; Quintin; SD! Ha U

Genus **ALTERNANTHERA** Forsk.

Ann or per branching herbs, with opp (at least the lower) entire lvs and perfect or dioecious fls, in panicles or hds, 3-bracted: sep 5: sta 5, united into a short cup at base; sterile fil minute, tooth-like; anth 1-celled; sty short; stig capitate or 2-lobed; sd vertical, lenticular.

ALTERNANTHERA ACHYRANTHA

R. Br.

St prostrate, pubescent; 1-3 dm long; lvs smoothish oval or obovate, narrowed into a petiole; hds mostly solitary, solitary or clustered, dense, oval, w; stp lanceolate, spine-pointed, woolly with barbed hairs on the back, the 2

inner ones much smaller; sterile fl subulate, equaling the fertile ones.

Davidson, *Erythea* 1:99 LA Co.

Davidson, *Pl LA Co* 15.

Abrams, *Fl LA* 134. Streets of LA. Davidson, Native of tropical America. **AMARANTUS ALBUS** Linn.

Erect, subterete wish, with spreading branches; lvs long-petioled, ovate, or obovate, obtuse, glabrous, light green; fls polygamous in sm axy clusters; bracts subulate, pungent-pointed, much longer than tht 3 membranous sep; sta 3; utricle slightly rugose, larger than the sep. Eu. A common weed.

L, Sp Pl ed 2, 2:1404 (1762).

McClatchie, *Erythea* 2:79. Cat.

Parish, *Zoe* 1:112.

Davidson *Erythea* 1:99. LA Co.

Type locality: "in Philadelphiae maritimis."

Coville, *CNH* 4:179. Nev. etc.

AMARANTUS BLITOIDES S. Watson.

Sts somewhat succulent, prostrate, 3-6 dm long w'ism; lvs glabrous, deep green, shining; fls in sm axillary few-fld spikelets; bracts ovate-oblong, shortly acuminate, 2-3 mm long; sep 4-5, 1.5-2 mm long, oblong, obtuse and mucronulate or acute; sta 3; utricle smooth, circumscissile; sd 1.5 mm broad.

Abrams, *Fl LA* 133.—"Common about Rialto."

Davidson, *Pl LA Co* 15.

AMARANTUS DEFLEXUS L.

Glabrous, purplish-g, somewhat succulent; st usually much branched, erect, stout or slender, 3-9 dm hi; lvs ovate to oval, obtuse to marginate at apex, mostly narrowed at the base, 3-7 cm long, 1-4 cm wide; petioles slender, often as long as the blades or the lower longer; fls polygamous, in dense mostly short and thick terminal spikes and capitate in the axils; bracts shorter than the 2-3 oblong or spatulate sep; utricle fleshy, 3-5-nterved, smooth, indhiscent, rather shorter than the sep.

Abrams, *Fl LA* 133. Redondo, Greata. A ballast plant introduced from tropical America.

Genus **CHENOPODIUM** Tournefort.

An or rarely per herbs, mostly introduced weeds in Am: lvs often w-mealy, sometimes glandular, alt, petioled: fls perfect, bractless, clustered in axy or terminal often paniced spikes; cx herbaceous, 3-4- or mostly 5-narted; lobes usually connate or crested, more or less closely covering fr; pericarp membranous, closely investing the lenticular of subglobose, horizontal or vertical sd: embryo annular or curved around the copious endosperm. Goosefoot.

CHENOPODIUM ALBUM Linn.

L, Sp Pl 1:219 (1753). Eu.

Commonly 2-4 ft hi, erect, usually paniculate branched; herbage more or less light green or w-mealy; lvs rhombic-ovate, sinuate-dentate below or about the middle, uppermost vary-

ing to lanceolate, subentire, 1-2 i long, whiter beneath than above: fls densely clustered in close spikes, panicle strict and close or somewhat spreading; cx about $\frac{1}{4}$ li wide in fr, lobes strongly carinate. Pigweed. White goosefoot.

Coville, *CNH* 4:179.

Abrams, *Fl LA* 124.

Variety **VIRIDE** Moq.

Lvs bright g or very slightly mealy beneath, otherwise as in type.

Abrams, *Fl LA* 125. Vernon (Davidson).

CHENOPODIUM AMBROSIOIDES Linn.

St ascending or erect, 2-4 ft hi, much branched, leafy, more or less glandular-pubescent, strong-scented; lvs oblong to lanceolate, obtuse, subacute or acute at apex, narrowed to a short petiole, repand-dentate, undulate or the upper entire, 2-5 i long; fl-clusters dense, axy upon the branches, forming a leafy spike; cx-lobes appressed; pericarp decid. Eu. Frequent in waste places.

CHENOPODIUM CALIFORNICUM S. W.

Block, *Erytnea* 2:10, medicinal note on root.

Stout, erect, or decumbent at base, 5-8 dm hi, from a thick fusiform rt; lvs broadly triangular-hastate, truncate or cordate at base, 3-9 cm long, sharply and unequally sinuate-dentate, lark g, glabrous or slightly mealy when young; fls in dense clusters in terminal spikes; cx deeply 5-toothed, loosely enveloping the fr; pericarp persistent; sd subglobose, about 2 mm broad.

Watson, *Bot Cal* 2:48 (1880).

Coville, *CNH* 4:179.

Blitum Californicum Watson, *Am ac pr* 9:101 (1874).

Type locality: "Cal, from the Sacramento to Fort Tejon and SD."

CHENOPODIUM RUBRUM L.

St angled, erect, 1-2 ft hi; herbage g or nearly so; lvs lanceolate-oblong to broadly ovate, coarsely sinuate, 1-2 i long; fls num in dense short axy spikes; cx-lobes 2-4, rather fleshy; sta 1-2; sds shining, margin acute. Eu. springly naturalized.

Abrams, *Fl LA* 125.

CHENOPODIUM MURALE Linn.

Stout, erect, 3-6 dm hi, lower branches usually spreading or decumbent; lvs 3-8 cm long, rhombic-ovate, broadly cuneate or subtruncate at base, acute at apex, glabrous or slightly mealy when young; spikes paniced, loosely fld; cx enclosing fr; sd acutely margined.

L, Sp Pl 1:219 (1753). Eu.

Coville, *CNH* 4:180.

Eu. Common in waste places.

CHENOPODIUM FREMONTI S. Watson

Watson, *Bot King Exp* 287 (1871).

Type locality: (from Fremont's specimen) "on the Noru Plattt.

Coville, *CNH* 4:179. Pandamint mts.

Erect, slender, branching, $\frac{1}{2}$ -2 ft hi, more or less mealy; lvs broadly triangular-nastate, $\frac{1}{4}$ -1 i long, obtuse or abruptly acute, truncate or cuneate at base, the upper rarely becoming oblong

to linear-lanceolate: fls often sm, w-mealy, scattered in sm clusters upon the slender open-panicked branchlets, or the infl sometimes stouter and more contracted: sep strongly carinate: sd 1-2-thirds li broad. Colo. NM. Can-tilles!

Genus **MONOLEPIS** Schrader.

Low branching ann herbs, with sm narrow alt entire, toothed or lobed lvs and polygamous or perfect fls in sm ax clusters: cx of a single persistent herbaceous sep: sta 1: sty 2, slender: utricle flat, the pericarp adherent to the vertical sd: embryo nearly a complete ring.

MONOLEPIS NUTTALLIANA Greene.

Slightly mealy when young, becoming glabrous or nearly so; st 8-24 cm hi, with many ascending branches; lvs lanceolate, short-petioled or the upper sessile 1-6 cm long, narrowed at base, 3-lobed, the middle lobe linear or linear-oblong, acute or acuminate, 2-4 times as long as the ascending lateral ones; sep oblanceolate or spatulate; utricle minutely pitted, 1 mm broad. Abrams, Fl LA 125. Cienega (Davison).

Genus **ATRIPLEX** Tournefort.

An or per herbs or shrubby, often scurvy-canescens or silvery, with alt petioled or sessile lvs, or som: opp: fls dioecious or monoecious, sm g in panicked spikes or in axy clusters: staminate fls branchless, consisting of a 3-5-parted cx and an equal number of sta: pistillate fls subtended by 2 or more united bractlets which enlarge in fr, their margins entire or toothed, often crested or winged: cx 0; stig 2: utricle completely or partially enclosed by the fr-ing bractlets: embryo annular.

ATRIPLEX BREWERI S. Watson.

Dioecious, stout, 1.5-2 m hi, woody below, grayish-puberulent; branches terete, somewhat flexuous: lvs ovate-oblong, somewhat rhombic-cuneate at base, obtuse or abruptly acute, 2.5-5 cm long; cx deeply 4-cleft; fr'ing bracts spongy ovate to rounded, convex, united at the margin to the middle, entire, 2-3 mm broad.

Abrams, Fl LA 129. Bluffs along the seashore.

Parish, Erythra 7:91. Monica.

Atriplex orbiculris S. Watson, Am ac pr 17:377.

ATRIPLEX CALIFORNICA Moq.

Finely w-mealy; sts slender, leafy, mostly herbaceous, prostrate or scrambling among low shrubs, usually much branched and forming a mat; lvs ovate-lanceolate to oblong-lanceolate, 4-12 mm long, sessile or narrowed to a short petiole; staminate fls in terminal spikes, the pistillate in axy clusters; fr'ing bracts membranous, ovate, acute, entire, loosely closed over the utricle but not united, 3 mm long or less.

Abrams, Fl LA 129.

Cruz; Rosa; Cat; Baja.

ATRIPLEX CANESCENS James.

Erect and shrubby, rather strict, about 8 dm hi; lvs oblanceolate to narrowly oblong or linear, 15-45 mm long, obtuse or acutish, narrowed to the base, entire; usually dioecious; fls in panicked spikes; cx 5-cleft; fr'ing bracts connate and indurated, not scurvy or muricate, the wings distinct and broad veined and entire or toothed, 4-6 mm long.

James, Cat 118 (1825).

Type locality: "in the plains of the Missouri near the Big-bend."

Coville, CNH 4:180.

Abrams, Fl LA 130, SBer, SD.
ATRIPLEX EXPANSA S. Watson.
Southern California (Parish 1011).

An, erect, much branched, closely and finely mealy-scurvy: lvs triangular and somewhat hastate, abruptly acute, sessile or nearly so; staminate spikes usually slender and interrupted, naked above; fr'ing bracts more compressed, sides often unappendaged, strongly reticulated. SBr Co (Torrey): SD (Palmer); NM: So Colo.

Abrams, Fl LA 127 Ballona marshes.

ATRIPLEX LEUCOPHYLLA Dietr.

Dietr, Syn 5:536.

Coast of LA Co (Parish 1125); Cruz (Greene).

Abrams, Fl LA 129.

Densely wish-scurvy, sts stout, 3 dm long or more, mostly prostrate; lvs thickish, orbicular or elliptic, 8-16 mm long, sessile, 3-nerved; staminate clusters in a dense terminal spike, 1-2 cm long; pistillate fls in axy 2-3-fld clusters; fig bracts completely united and with a short terminal wing, globose or nearly so, 3-4 mm long.

Coast of LA Co (Parish 1125); Cruz.

ATRIPLEX MICROCARPA Dietr.

Cruz; Cat; Quintin.

Minutely and somewhat hoary puberulent, the num r'ish branches nearly glabrous; sts 15-30 cm long, spreading and decumbent; lvs oblong or oblong-ovate, 6-10 mm long, acute at each end, sessile; fls in sm ax clusters, the terminal ones usually more staminate, fr'ing bracts round-obovate, usually less than 2 mm broad. The roundish summit narrowly bordered with 3-7 sm herbaceous teeth, sides frequently somewhat muricate or 1-nerved; seed 0.5 mm broad.

ATRIPLEX SEMIBACCATA R. Br.

Per; sts much branched from the base, prostrate, woody below, branches 3-10 dm long, branchlets slender, wish, leafy throughout; lvs oblong-lanceolate, tapering at base to a short petiole rounded at apex, 2-4 cm long, 15-30 mm wide, entire or commonly irregularly and remotely dentate, pale g above, silvery beneath; staminate fls in short capitate spikes terminating the branchlets; fr'ing bracts about 3 mm long, margins entire or minutely toothed on the lateral angles, becoming fleshy and r'ish when mature. Australian salt-bush.

Wiseburn; Wilmington; Santa Ana.

More common about SD and Escondido. Abrams, Fl LA 128. Becoming well-established along roadsides and in waste places.

ATRIPLEX PATULA Linn.

Sts stout, succulent, erect, 2-6 dm hi, with few ascending branches, herbage g, only the growing parts somewhat mealy; lvs lanceolate or linear, entire or coarsely toothed, sometimes hastate at base; infl more or less leafy below, clusters dense in spikes or panicles; bracts rhombic-ovate, thick and subcoriaceous, 8-12 mm long, entire or toothed, sometimes mucronate.

Pacific rural press 33:510.

Abrams, Fl LA 127. Frequent in saline places.

Orache; an introduced weed, LA (Parish 1122).

ATRIPLEX SERENANA A. Nelson.

Sts rather stout and more or less diffuse, 3 am or more long; branches smooth and shining, straw-colored; foliage finely grayish-scurvy; lvs oblong-ovate, acute, 8-18 mm long, thin, sharply toothed or the smaller entire; fl-clusters unisexual, staminate in terminal simple or compound spikes, the pistillate axillary; fring bracts 2 mm long, the margins laciniately toothed or dentate, the central tooth lanceolate and conspicuous.

ATRIPLEX WATSONI A. Nelson.

Branching from the base, somewhat woody below, slender, decumbent or sometimes prostrate, densely hoary-scurvy; lvs most opp, cuneate-rounded at base, acute or acutish, oblong-ovate, 12-25 mm long; stam fls in dense clusters in short interrupted terminal spikes; ex 5-cleft; fring bracts sessile, slightly cordate at base, acute 4 mm long and broad, compressed, united to above the middle, entire or slightly denticulate; sd nearly 2 mm long.

Abrams, Fl LA 128. SD.

Atriplex decumbens Watson.

GENUS SALICORNIA Tournefort.

Fleshy glabrous ann or per herbs, with opp terete branches, the lvs reduced to mere opp scales at the nodes; fls sunken, 3-7 together in the axils of the upper lvs, forming narrow terminal spikes, perfect or the lateral staminate; ex fleshy, 3-4-toothed or truncate, becoming spongy in fr, decid; sta 2 or sometimes solitary, exserted; sty and stig 2; utricles enclosed by the spongy fring ex; embryo conuplicate.

SALICORNIA AMBIGUA Michx.

Per by a woody rtstock; st decumbent or trailing, 1-6 dm long, the branches ascending or erect, nearly or quite simple, rather long-jointed, 7-15 cm long, pale g; scales broadly ovate, acute or obtuse; fring spikes 1.5-4 cm long, broad as the branches; fls about all equally hi and about equaling the joints.

Michx, Fl 1:2 (1803).

Coville, CNH 4:184. Near Bakersfield.

Abrams, Fl LA 130. Very common

in salt marshes along the coast. My-Ag. Type locality: "in Carolinae scirpetis maritimis."

GENUS SALSOLA Linnaeus.

Ann or per much-branched herbs, with prickly-pointed lvs and sessile perfect 2-bracteolate fls, solitary in the axils or sometimes several together: ex 5-parted, its seg appendaged by a broad membranous horizontal wing in fr and enclosing the utricle; sta 5; ova depressed; sty 2; utricles flattened, its sd horizontal; embryo coiled into a conic spiral.

SALSOLA TRAGUS L.

Ann, more or less scabrous-pubescent, bushy-branched, the branches slender, 2-6 dm hi; lvs and outer bracts usually r at maturity, the former not noticeably swollen at base, linear, somewhat fleshy; ex membranous, conspicuously veiny, its wings longer than the ascending lobe.

Abrams, Fl LA 132. Occasional along roadsides. Commonly called the Russian thistle.

BATIDEAE.

A low maritime shrub, with opp entire exstipulate lvs and dioecious bracteate fls, in axillary sessile ament-like spikes; stam-fls distinct; ex campanulate, 2-lipped; pet 4, rhombic-ovate, clawed; pistillate fls 8-12, united into a fleshy spike, without perianth; ova coherent, 4-celled, becoming a fleshy ovoid-conical fr; stig sessile, capitate; sds 1 in each cell, erect, oblong; testa membranous; embryo slightly curved, caulicle inferior; endosperm 0; represented by a single monotypic genus.

GENUS BATIS P. Browne.

BATIS MARITIMA Linn.

Glabrous, sts branched, prostrate, 9-14 dm long, the short flg branches erect; lvs linear to ovate-oblong, 1.5 cm long, narrowed to base; spikes solitary in ax along the branches; the staminate 4-8 mm long; the pistillate 2 mm long, becoming 10-15 mm long in fr; bracts entire, obtuse or acute, in vertical rows, persistent, those of the pistillate decid; pet w; sta 2 mm long, exserted.

Abrams, Fl LA 135, San Pedro and Redondo.

SD! WI.

LAURACEAE.

Aromatic trees or shrubs, with alt entire minutely-punctate exstipulate lvs and perfect or unisexual y or greenish fls, in panicles or racemes: ex 4-6-parted, seg imbricated in 2 sr; cor 0; sta in 3-4 sr, some of them often imperfect; anth 2-4-celled, opening by valves; ova superior, free from the ex, 1-celled; ovules solitary, anatropous, pendulose; sty 1; stig 1; fr a 1-seeded drupe. Laurel family.

GENUS UMBELLALARIA Nuttall.

Trees with thick evergreen petioled lvs and perfect fls, borne in terminal or

axillary pedunculate umbels, which are included before expansion in an inv consisting of 4 broad decid bracts: cx 6-parted, decid; sta 9, inserted on the throat in 3 rows, the 3 inner with a fleshy 2-lobed stipitate gland at the base, alt with 3 ligulate stamirodia; anth 4, 4-valved, the outer introrse, the inner extrorse; stig dilated, somewhat lobed; drupe subglobose or ovoid, subtended by the thickened base of the cx.

UMBELLULARIA CALIFORNICA Nutt.
Tree 4-15 m hi, growing parts and infl somewhat puberulent; lvs shining, dark g, lanceolate-oblong, 5-10 cm long; peduncles in 4 terminal panicles or solitary in the upper axils, 6-10 fl; sep 3-5 mm long, oblong-ovate; sta included; drupes solitary or 2-3 in a cluster, 2 cm long, becoming dark p with thin pulp and stone.

URTICACEAE.

Ours an or per herbs, with mostly stipulate, simple lvs and often with stinging hairs: fls in racemed or panicled cymes (ament-like), with small persistent bracts, monoecious or polygamous, small, g'ish; pet 0; cx mostly 4-parted or sep distinct, with as many sta opp the lobes; fl inflexed and anth reversed in the bud, straightening elastically at anthesis; ova superior 1-celled, 1-ovuled; sty and stig 1: fr an akene; endosperm oily, not copious; embryo straight. Herbs with stinging hairs, lvs opp.

Sep 4, distinct. *Urtica*.
Staminate cx 4-parted; pistillate, usually 2-4-toothed. *Hesperocnide*.
Herbs without stinging hairs; lvs alt. *Parietaria*.

Genus *URTICA* Tournefort.

Simple or branching herbs, with stinging hairs, and opp 3-7-nerved petioled serrate or dentate stipulate lvs; fls clustered in ax geminate racemes or hds; staminate fls 4-merous; pistillate cx with unequal sep, inner larger, at length enclosing the flattened ak; stig sessile, tufted. *Nettle*.
URTICA HOLOSERICA Nutt.

Nettle. Per; sts simple, stout, 1-3 m hi, or more, more or less bristly and finely pubescent; lvs finely and densely pubescent beneath, less so above or with only a few scattering bristles, ovate to lanceolate, 5-10 cm long, the upper much shorter, on petioles $\frac{1}{4}$ as long, coarsely serrate; stipules narrowly oblong, acute or obtuse, 6-10 mm long; staminate fl-clusters rather loose, nearly equaling the lvs; pistillate denser and shorter; inner sep ovate, densely hispid, 1 mm long, about equaling the broadly ovate ak.

URTICA URENS Linn.
An; erect, branching from the base or sometimes simple, 25-50 cm hi; lvs ovate or oblong-ovate, deeply and sometimes doubly serrate, 1-4 cm long, on slender petioles of about the same length; stipules 4 mm long; fl-clusters

rather dense, mostly shorter than the petioles; fls androgynous, mainly pistillate. *Eu*.

Abrams, Fl LA 107, Common in gardens and waste places.

URTICA BREWERI S. Watson.

Much resembling *U. holosericea*, grayish with a short hispid pubescence or nearly glabrous and with scattered bristles; petioles slender, 2.5-5 cm long, about $\frac{1}{2}$ the length of the lvs; fl clusters rather open, scarcely exceeding the petioles; sep obovate or somewhat rounded, obtuse, minutely hispid, nearly 2 mm long and about twice the length of the broadly ovate ak.

Watson, Am ac pr 10:348 (1875).
Coville, CNH 4:195. Mt Whitney meadows.

Abrams, Fl LA 108.
Parish, Zoe 5:112, as not LA.
Type locality: "LA".

Genus *HESPEROCNIDE* Torrey.

Ann herbs distinguished from *Urtica* by the pistillate perianth, which is a membranous flattened oblong-ovate sac, with a minutely 2-4-toothed orifice.
HESPEROCNIDE TENELLA Torr.

Slender and weak, 25-50 cm hi, simple or branched, somewhat hispid with branching hairs and bristly; lvs 1-3 cm long, thin, ovate, obtusely serrate; petioles slender, $\frac{1}{2}$ as long; fl clusters rather dense, nearly glomerate, shorter than the petioles; cx thin, hispid, with hooked hairs, in fr 1-1.5 mm long; ak membranous, striately tuberculate with minutely rough points.

Genus *PARIETARIA* Tournefort.

Ours slender ann without stinging hairs: lvs alt, entire, 3-nerved petioled, without stipules: fls in ax glomerate clusters, polygamous, subtended by leafy bracts; cx of the perfect fls 4-parted, in the pistillate tubular-ventricose, 4-cleft with connivent lobes; sty slender or 0; stig spatulate, recurved, densely tufted; ak ovoid, smooth and shining, enclosed in the dry brownish nerved cx.
PARIETARIA DEBILIS Forst.

Very slender, usually diffusely branching from the base, 10-25 cm hi, somewhat hispid; lvs 5-10 mm long or more, broadly ovate, obtuse, rounded at the base or abruptly cuneate; petioles slender, about equaling the lvs; ak 1 mm long. Growing in shade of bushes, SD! Baja!

Abrams, Fl LA 109.
Davidson, Pl LA Co 16.
Forst, Fl Ins Aust Prodr 73 (1786).
Type locality: "Nova Zeelandia."
Coville CNH 4:195. Funeral mts.

RAMONA POLYSTACHYA Greene.
Greene, Pitt 2:235, based on *Audbertia polystachya* Benth.

White sage; valuable for bee pasturage; Santa Barbara to Baja!

Genus LINARIA Tournefort.

Ann or per herbs: lower lvs opp, upper alt: fls in bracteate racemes or solitary and y: ex 5-parted: cor bilabiate, more or less tubular, personate and with a spur at base on lower smallest: sta 4: cap dehiscent below the summit by 1 or 2 simple or lacerate perforations or chinks, many-seeded.

LINARIA CANADENSIS Dum.

Toad Flax: ann or bien; fl'ing sts 1 or more, erect, 6-18 i hi, with linear mostly alt lvs: fls in a raceme; pedicels erect, not longer than the slender curved spur of the blue cor.

Abrams, Fl LA 357.

LINARIA VULGARIS L.

Buller-and-eggs: per, erect, 1-2½ ft hi; lvs linear, very num; fls y in a terminal dense raceme.

Genus ANTIRRHINUM Tournefort.

Ann or per herbs with lower lvs opp and upper ones alt: cor gibbous or saccate at base on lower side; palate closing the throat: cap dehiscent by pores at the base of the sty. Snap dragon.

ANTIRRHINUM COOPERI A. Gray.

Utah; Ft. Mohave (Cooper).

ANTIRRHINUM COULTERIANUM Bth.

St 5-10 dm hi, erect, or gaining support by the infl which is villous-pubescent with viscid and often glandular hairs; lvs distant, linear to oval; spike virgate, 5-20 cm long; pedicels shorter than the cx: sep linear or lanceolate, obtuse, all shorter than the oval or ovate-oblong glandular-pubescent cap; cor violet-p or usually w with y'ish palate, the lower lip large, the tube about 6 mm long.

Abrams, Fl LA 358.

Hall, U 115.

Santa Barbara to San Diego Co.**ANTIRRHINUM FILIPES A. Gray.**

Arizona; San Diego (Or 1046).

ANTIRRHINUM GLANDULOSUM Lnl.

San Bernardino (Parish 433); Cruz.

St stout, branching, 3-5 ft hi, very leafy; herbage glandular-pubescent; lvs lanceolate, sessile, gradually diminishing into the bracts of the inflorescence; bracts equallying or shorter than the oblong tube of cor; sep oblong-lanceolate, unequal. Mt. Hamilton, Cal. (Greene).

SBER (Parish 436). Cruz.

ANTIRRHINUM JUNCEUM A. Gray.

Cedros. A suffrutescent plant 2-4 ft high, forming oval bushes, not observed far north of Quintin.

ANTIRRHINUM NEVINIANUM A. Gray

Los Angeles (Nevin); S D Co!

ANTIRRHINUM NUTTALLIANUM Bh.

Cruz; Rosa; SD! Guadalupe.

Variety EFFUSUM Gray, Bot Cal 1:622.

Mohave (Palmer, Parry, Lemmon).

ANTIRRHINUM ORCUTTIANUM A. G

A tall viscid annual with w or violet fls; S D; C D; Baja; L A Co (Davidson).

ANTIRRHINUM SPECIOSUM A. Gray.

Gambelia speciosa Nuttall. Cat; Guad.

ANTIRRHINUM STRICTUM A. Gray.

Erect, nearly simple, glabrous, 1-2 ft hi, often climbing by tortile filiform peduncles; lowest lvs ovate-lanceolate, upper becoming linear or floral ones filiform and much shorter than the peduncles; cor violet-p, 5 li long.

Santa Barbara; SD! Baja!

ANTIRRHINUM SUBSEILE A. Gray

SD! Quintin (Palmer 435).

ANTIRRHINUM WATSONI Vasey-Rose

Sonora (Pringle, Palmer); Quintin (Palmer 657); Magdalena and Santa Margarita Isl. (Br).

Genus PENTSTEMON Mitchell.

Per herbs or suffrutescent plants, with opp or rarely verticillate lvs fls large, showy, in terminal racemes, panicles or cymes: cx 5-parted: cor irreg, tubular, often inflated, limb 2-lipped, upper lip 2-lobed, lower 3-lobed: sta 5, included, 4 antheriferous and didynamous, 1 sterile as long or shorter than the 4; anther-sacs divergent or connivent: sty filiform; stig capitate: cap septically dehiscent; sds num, mostly angled.

PENTSTEMON CENTRANTHIFOLIUS

Bentham, Scroph Ind 7 (1835).

Glaucous, strict and virgate, 4-8 dm hi; lvs all entire, the lower lanceolate, the upper clasping, ovate-lanceolate; panicle narrow, usually 3 dm long or more; pedicels slender; cor deep scar, narrow, tubular and obscurely bilabiate; the short oblong lobes alike, except that the posterior are united higher; anth opening widely, splitting through the apex.

Hall, U 119. Scarlet Bugler.

Abrams Fl LA 360.

Type locality: Californian.

Coville, CNH 4:169. SBER mts.

McInterey to Baja! Arizona.

Shelone centranthifolia Bentham,

Hort soc Lond tr, sr 2, 1:481 (1835).

PENTSTEMON CLEVELANDI A. Gray.

Gray, Am ac pr 11:94.—Syn Fl II, 1:265, near SBER (probably CD fide Parish, Zoe 5:118).

SBER Co; Baja mts. Fls bright solferino, 1-3 ft hi, lvs dark g; handsome in cultivation.

PENTSTEMON CORDIFOLIUS Benth.

Somewhat scandent over shrubs by long sarmentose branches, very lfy, scabrous-puberulent and the infl somewhat glandular; lvs subcordate or ovate with truncate base, acutely serrate or dentate, 2.5 cm long or less; thyrsus short and lfy; ped several-fld; sep ovate-lanceolate; cor scar, the tube about 2.5 cm long, the lips about 15 mm long, the upper li erect, the lower more or less spreading; sterile fl bearded down one side; anth dehiscent through the apex.

Abrams, Fl LA 360.

Santa Barbara; Baja; Cruz; Rosa.

PENTSTEMON HETEROPHYLLUS Ln

Green, seldom glaucescent, glabrous throughout or rarely primrose-puberulent; sts or branches slender, 6-15 dm hi, from a woody base; lvs lanceo-

late or linear or the lower oblong-lanceolate, mostly narrowed at base; thyrsus virgate, loose, usually elongated; sep ovate; cor 2.5 cm long or more, the narrow tube rose-colored or pink, sometimes changing to vio, ventricose funnelform; bud often y'ish; sterile fl glabrous.

Abrams, Fl LA 361. Monica mts.

S Ber mts (Parish 114).

PENTSTEMON LABROSUS Hook. f.

Hooker, f. Bot Mag ex t 6738 (1884)

Glabrous; sts herbaceous, slender, erect, simple, 4-5 dm hi; lvs all entire, the lowest oblanceolate, 5-6 cm long, about 1 cm broad, the upper linear-lanceolate, reduced; bracts minute, fls in a simple raceme; pedicels 1-2 cm long; ex-lobes ovate, acuminate, 4 mm long; cor scar, 2.5-3 mm long, destitute of beard; tube narrow; upper lip erect, the 3 lobes of the lower one equaling the upper one in length, reflexed about two-thirds the length of the tube; sterile fl glabrous; anthers closed toward the apex.

Hall U 119. Rabbit ears.

Coville, CNH 4:170. Frazier mt.

Abrams, Fl LA 360. Gabriel, S Ber mts.

P. barbatus var. *labrosus* Gray, Bot Cal 1:622 (1876).

PENTSTEMON PALMERI A. Gray.

Sts 6-9 dm hi; labrous except infl, that glandular or primrose-puberulent; lvs coriaceous, glaucous, ovate or oblong-lanceolate, from sharply dentate to nearly entire, upper from closely sessile to completely connate-perfoliate; thyrsus elongated pyramidal, racemiform; cor cream-w, suffused pink; the short narrow proper tube hardly surpassing the ovate appressed sep, very abruptly dilated into the ventricose-campanulate throat, about 2 cm long and as broad at orifice; lips broad, the upper erect, 2-lobed, lower 3-lobed, widely spreading, sparingly bearded at base; sterile fl densely bearded above with long y'ish hairs.

Gray, Am ac pr 7:379 (1868).

Type localities: Ar, "in Skull valley, and on Rio Verde near Fort Whipple."

Abrams, Fl LA 361. About 5000 ft.

Gabriel and S Ber mts.

Coville, CNH 4:170. Coso mts. Nev.

Hall, U 119.

Utah; Nevada; Arizona; Cantilles! Quintin!

PENTSTEMON PARISHII A. Gray.

Size and habit of *P. spectabilis*; lvs entire or minutely denticulate; upper clasping by subcordate base but not connate; cor r, more dilated.

Hall U 119, suggests that this is a hybrid of *P. centranthifolius* x *spectabilis*.

Abrams, Fl LA 361. Cucamonga; S Ber.

San Bernardino and S D Co (Parish 355).

PENTSTEMON SPECTABILIS Thurber.

Pale or glaucescent and glabrous throughout, 6-12 dm hi; lvs thinish-coriaceous, ovate or ovate-lanceolate or the lower oblong, acute, the upper pairs acuminate and their broad bases

connate-perfoliate, spinulosely dentate or denticulate; thyrsus many-fl'd, elongated pyramidal or sometimes virgate, 3-6 dm long; peduncles and pedicels slender; cor rose-p or lilac with the ample limb blue, 2.5 cm long; the narrow proper tube twice the length of the short ovate ex-lobes then abruptly dilated into the campanulate-ventricose or broadly funnelform throat, somewhat bilabiate, the oval or roundish lobes 6-8 mm long; sterile fl glabrous; anthers dehiscent from the base toward but not to the apex.

Hall, U 120.

Abrams, Fl LA 361.

LA Co—Las Huevitas, Baja (Br); N M.

PENTSTEMON AMBIGUUS Torr.

CD (Parish); Colo; N M; Mexico.

PENTSTEMON ANTIRRHINOIDES Bth.

San Bernardino Co; S D Co; Baja.

PENTSTEMON BARBIATUS Nutt.

Colo; New Mexico; Mexico.

Variety **LABROSUS** A. Gray.

Kern Co (Rothrock); Baja mts!

PENTSTEMON CERROSENSIS Kelg.

Cedros Island (Pond).

PENTSTEMON EATONI A. Gray.

San Bernardino mts (Parish 112).

PENTSTEMON GLABER Pursh.

Southern California (Parish 1848).

PENTSTEMON PARRYI A. Gray.

CD (Parish 356); Utah; Nevada; Arizona.

PENTSTEMON ROTHROCKII Gray.

S D mts; Little O'arache mt. (Rothrock).

PENTSTEMON TERNATUS Torr.

Kern Co; San Diego Co; Baja!

Genus PEDICULARIS Tournefort.

Per herbs with alt, opp or rarely verticillate pinnately lobed cleft or pinnatifid lvs, and irr fl's in terminal spikes or spike-like racemes: ex 2-5-cleft, cor tubular, strongly bilabiate; galea arched and compressed; lower lip of 3 small rounded lobes or teeth: sta 4; anthers approximate in pairs, their sacs transverse, equal; cap flattened, oblique at apex, loculicidally 2-valved.

PEDICULARIS DENSIFLORA Benth.

Sts simple, erect, 2-3 dm hi, commonly several from the scaly caudex; herbage nearly glabrous or somewhat soft-pubescent; lvs pinnately divided or parted, the seg oblong, doubly serrate-toothed or incised; spike terminal, dense or at length loose; bracts linear, ciliate or serrulate toward the apex, mostly shorter than the fls; ex 5-angled, equally or unequally 5-toothed, 6-8 mm long; cor 2.5 cm long or more; galea large, somewhat broader above; strongly arched, lower lip small, of 3 rounded teeth; fl glabrous.

Abrams, Fl LA 372. Monica mts (Davidson).

PEDICULARIS SEMIBARBATUS A. G.

Nearly st-less; depressed, more or less pubescent; lvs in a basal tuft, 15-20 cm long, on petioles mostly exceeding the irreg sessile spikes, 2-pinnately parted or nearly so, the oblong lobes laciniately few-toothed; cor yellowish, tinged with p, pubescent without, about 2 cm long; galea nearly

straight; fl villous above.

Gray, Am ac pr 7:385 (1868).

Type localities: "on Mount Dana, 10,000 ft alt;" "Ebbett's Pass, 7006-8000 ft;" "in or near the Yosemite Valley;" "and Mariposa Grove, at and above 5000 ft."

Hall U 118.

Coville, CNH 4:173. Sierra Nevada.

Abrams, Fl LA 373.—"Frequent on dry ridges in the open pine forests of all our mts. My-Jl."

Genus *COLLINSIA* Nuttall.

Ann with simple verticillate or opp lvs, and irr fls in whorls forming racemes, or solitary in the axils: ex campanulate, 5-cleft: cor declined, the proper tube very short, the abruptly expanded and gibbous throat forming an angle with it, deeply bilabiate, the upper lip erect, 2-cleft; the lower lip larger, 3-lobed, the lateral lobes spreading or drooping, flat, the middle one conduplicate, keel-like, enclosing the 4 deconned sta and the filiform sty: sta didynamous; fil filiform; anth-sacs confluent at the apex: fifth sta represented by a gland on the upper side of the cor-tube near the base: stig sm, capitate or 2-lobed: cap ovoid or globose, septically 2-valved, the valves 2-cleft; sds few, large, peltate, concave on the inner side.

COLLINSIA BICOLOR Benth.

Simple or branched above, 1.5-4 dm hi, glabrous or finely pubescent and often viscid above; lvs broadly oblong or the upper narrowed from the broad base to the apex, serrulate, 5 cm long or less; fls crowded in whorl-like clusters, the lowest subtended by lvs, the others by bracts; pedicels shorter than the oblong or lanceolate ex-lobes; cor about 2 cm long; the lower lip usually rose-p; the upper lilac or w, its lobes nearly as long as those of the lower; throat saccate, bristly within; gland conic.

Auricula-p fls. upper divisions of cor w, tinged with rose and auricula-p spots at the center.

Lindl, Bot Reg t 1734 (1834).

Type locality: "California."

Biol, Erythea 1:17.

Hall, U 115.

Coville, CNH 4:171.

Abrams, Fl LA 362.

COLLINSIA PARRYI A. Gray.

Sts puberulent throughout, simple or more or less branched, 1.5-2.5 dm hi; lvs thinnish, the lower oblong, crenate, petioled, the upper lanceolate-linear, obtuse, mostly entire and closely sessile, 2-4 cm long; pedicels solitary or the upper in 2's or 3's, as long as or the lowest exceeding the fls; ex-lobes oblong, obtuse; cor deep bl, 6-8 mm long, twice the length of the cx, lips about equal in length, not longer than the throat; cap about equaling the cx.

Gray, Syn Fl 2 pt 1, 257 (1878).

Type locality: "Sber Co, Cal."

Coville, CNH 4:171. Panamint mts.

Abrams, Fl LA 363.

COLLINSIA TINCTORIA Hartweg.

Resembling slender forms of *C. bicolor* in habit; herbage nearly or quite glabrous below, strongly viscid above and giving off a brownish stain; ex-lobes linear or oblong-linear, obtuse; cor pale p'ish or nearly w and streaked with p, 12-15 mm long, lobes of the upper lip very short, reflexed.

Frequent on shady slopes in the upper portions of the chaparral belt of the San Gabriel mts. Ap-Je.

Hartweg, MS, in Bentham, Pl Hartw 328 (1849).

Type locality: "in montibus Sacramento."

Coville, CNH 4:171. Tejon mts.

Abrams, Fl LA 363. Gabriel mts.

COLLINSIA CHILDSII Parry.

Stem strict, mostly simple: cor light blue.

COLLINSIA PARVIFLORA Dougl.

Often diffuse: cor little exerted 4-6 mm long.

Genus *MIMULUS* Linnaeus.

MIMULUS BIGELOVII A. Gray.

Eunanus bigelovii, Gray, Pac Ry R 4: 121.—Greene, Cal ac b 1:102. So Cal; Utah; Nevada.

MIMULUS EXIGUUS A. Gray.

Baja mts (Orcutt). Probably *M. Palmeri*.

MIMULUS FLORIBUNDUS Dougl.

Ann, slender, diffuse, 1-3 dm hi, villous and very slimy, musk-scented; lvs ovate, 1-2.5 cm long, dentate, short-petioled; pedicels mostly longer than the lvs; ex narrowly campanulate, 4-6 mm long; th eteeth nearly equal, 1 mm long; cor light y, mostly twice as long as ex; cap globose-ovate, obtuse.

Lindl, Bot Reg 14 t 1125 (1828).

Type locality: "on moist rocks in the interior of the districts of the river Columbia."

Rocky mts; Col, Wyo, Cal, Ore, Baja, Cruz.

Coville, CNH 4:171. Kernville.

Hall, U 116.

Abrams, Fl LA 366.

Mimulus peduncularis Douglas, Scroph Ind 29 (fide Greene).

MIMULUS LATIFOLIUS A. Gray.

Eunanus latifolius Greene, Cal ac b 1:99. Guadalupe (Palmer); Cruz (Br).

MIMULUS MOHAVENSIS Lemmon.

Eunanus mohavensis Greene, Cal ac b 1:106. Mohave river (Lemmon).

MIMULUS MOSCHATUS Dougl.

Soft-villous and very viscid, strongly musk-scented; sts weak and reclining, rt'ing at the nodes, 2-6 dm long, from per creeping rt-stocks; lvs oblong-ovate, about 2.5 cm long, remotely dentate, petiolate; ex-teeth somewhat unequal, about $\frac{1}{2}$ the length of tube; cor y, 1.5 cm long; cap ovate, acute. BC; Cuyamaca!

Lindl Bot Reg t 1118.

Parry, Bot obs Wyo 13.

Gray, syn Fl 2:278.

Abrams, Fl LA 365.

Variety *LONGIFLORUS* A. Gray.

Gray, Syn Fl 2, pt 1, 278 (1879).

Type locality: Californian.
Coville, CNH 4:172. Sequoia Park.
Hall, U 117.
LA (Davidson).

"The common California form."
Mimulus moniliformis Greene (in part).

Variety **SESSILIFOLIUS** A. Gray.
Sts ascending, cor 2.5 cm long; otherwise as in the type.

Abrams, Fl LA 366.
Mimulus inodorus Greene (in part).
MIMULUS FREMONTI A. Gray.

Lvs narrowly oblong or the lowest spatulate, obtuse; ex-teeth ovate, obtuse or acutish, less than $\frac{1}{4}$ the length of tube; cor crimson; otherwise as in M. Bigelovii.

Hall, U 116.
Abrams, Fl LA 365.
MIMULUS BREVIPIES Benth.

St simple or branched, 3-6 dm hi, very viscid-pubescent; lvs lanceolate to linear, 3-10 cm long, entire or commonly denticulate; ex-teeth very unequal, acuminate. The posterior fully $\frac{1}{2}$ the length of the broadly campanulate tube; cor y, 2.5-4 cm long, the expanded limb nearly as broad, campanulate, with ample rounded lobes; cap ovate-acuminate, firm-coriaceous. SBR; Quintin!

Abrams, Fl LA 365.
Hall, U 116.
Eunanus brevipes Greene, Cal ac b 1:105.

MIMULUS CARDINALIS Dougl.
Viscid-villous, 2-4 ft. high: leaves ovate, erose; cor scarlet, rarely y, over 1 in. long.

MIMULUS PALMERI A. Gray.
Leaves narrow; cor nearly rotate.
Mohave: San Bernardino; Baja!
Minulus androsaceus Curran, Greene, Cal ac b 1:121. Tehachapi, and Santa Cruz Co. Quintin!

MIMULUS INCONSPICUUS A. Gray.
Leaves ovate, entire, $\frac{1}{2}$ in. long or less. Columbia river; Baja!

MIMULUS MICROPHYLLUS Benth.
An, glabrous below, somewhat pubescent above; sts terete, slender, with ascending branches or commonly simple, 1-3 dm hi; fls in short racemes or in depauperate forms, solitary; lvs ovate to orbicular, often coriate at the base, denticulate or coarsely toothed; peduncles slender; ex often dotted, oblique at orifice; teeth obscure or prominent, the upper one largest; cor 1-2 cm long, throat rather narrow, the limb broad, usually without p dots. So Cal (Parish (850).

Abrams, Fl LA 367.
VERONICA BYZANTINA BSB.
An, pubescent; sts diffusely branched, spreading or ascending, 1.5-4 dm long; lvs ovate or oval, short-petioled, crenate-dentate or somewhat incised, 8-24 mm long, the lowest opp, the upper alt, each with a slender-peduncled fl in its axil; pedicels filiform, equaling or exceeding the lvs; cor 6-8 mm broad, bl; cap 6 mm broad, half as hi, shallowly and broadly emarginate.

Abrams, Fl LA 368. LA (Davidson).
Veronica Buxbaumii Tenore.

VERONICA PEREGRINA Linn.
An, glabrous or somewhat glandular-puberulent; sts erect or ascending, simple or branched, 1.2 dm hi; lvs oblong, oval, linear or slightly spatulate, 6-20 mm long, the lowest opp, short-petioled or sessile, broader than upper and mostly entire, each with a short-pedicelled fl in its axil; fls nearly w, about 2 mm broad; cap nearly orbicular, obovate, 2-3 mm hi.
Hall, U 120. Neckweed.
McClatchie, Erythra 2:124, Pasadena.
Abrams, Fl LA 368.
San Julian, Baja (Br). SD! Canada to the Pacific; So Am. Almost cosmopolitan.

ADENOSTEGIA MARITIMA Greene.
Abrams, Fl LA 372.
Corymbose branched, 1-3 dm hi; herbage glaucous and more or less heavy-pubescent, often tinged with p; lvs linear to linear-lanceolate, about 2 cm long, entire; fls in short spikes; bracts oblong-lanceolate, entire or commonly 3-toothed, the 2 lateral teeth much the smaller; fls p, equaling or slightly exceeding the bracts.
Cordylanthus maritimus Nuttall.

Genus **CASTILLEIA** Linnaeus.

Herbs or suffruticose plants with alt sessile lvs and r or y fls in terminal leafy-bracted spikes, the bracts and ex often brightly colored; ex tubular, cleft in front or behind or commonly both, the lobes entire or 2-toothed; cor very irreg, its tube about equaling ex, the limb 2-lipped; upper lip (galea) arched, elongated, concave or keeled, laterally compressed, entire, enclosing the 4 didynamous sta; lower lip short 3-lobed; anth-sacs oblong or linear, unequal, outer one attached to fil by its middle, inner one pendulous from apex; sty in form; stig entire or 2-lobed; cap ovoid or oblong, loculicidally dehiscent, many-seeded; sds reticulated.

CASTILLEIA CALIFORNICA Abrams.
"Sts slender, fragile, branching from a rather thick, woody rt, erect and more or less branched above, 4-5 dm hi, sparsely and minutely puberulent; upper st lvs linear, remotely and obscurely denticulate or entire, 2-4 cm long, 2-3 mm broad, obtuse or rounded at apex with shorter slender leafy brachlets in their axils; racemes at first viscid-pubescent or villous, becoming nearly glabrous, 10-20 cm long; bracts r or r-tipped, about 2 cm long, 3-4 mm wide, entire or rarely with 1 or 2 very short lateral teeth; ex about 2.5 cm long, cleft about equally before and behind, its lobes 1 cm long, cleft at the apex, the teeth lanceolate, 3-4 mm long, acute; cor 2.5-3 cm long; galea about $\frac{3}{4}$ the length of the tube, g on the back, the face bright r; the tube g'ish-y.

"This species is related to C. Doug-

lasii, Benth., but differs from that in foliage habit and fls.

B. Tejuanga wash, LA Co. The slender sts straggling among low shrubs. No. 1363, Ap 6, 1901.—Abrams, So Cal ac b 1:68 (1902).—Fl LA 369.

CASTILLEIA FOLIOLOSA Hook.-Arn.

Suffrutescent with many sts from the base 3-4 dm hi, w woolly throughout lvs linear and entire, rather crowded below and fascicled in the lower axils, 3 cm long or less; uppermost and bracts 3-parted into linear lobes; bracts with lobes spatulate-dilated at apex, the middle lobe largest, shallowly 3-lobed; spikes rather dense; fls about 18 mm long, galea only slightly exceeding the cx, shorter than or as long as the tube; ex-lobes truncate or retuse; cap about 1.5 cm long.

H. & A. bot Beechy, 154 (1833).

Hall, U 115.

Abrams, Fl LA 370.

CASTILLEIA MARTINI Abrams.

Sts several from a rather stout woody rt-stock, erect or spreading, about 3 dm long villous and viscid throughout; lower lvs linear or broadly linear, entire, 2.5-3 cm long, 3-5 mm wide; the uppermost somewhat broader, divided to near the middle into 3 lobes, the two lateral lobes narrow, spreading, shorter than the middle one; bracts similarly lobed, slightly dilated, scarlet tipped; racemes narrow and becoming rather loose, 1-2 dm long; cx 1.5 cm long, cle nearly to the middle behind, scarcely as deep before, its segments broadly lanceolate, toothed; the teeth less than 2 mm long, the anterior one much the shorter; galea rish along the inner margin, 1 cm long, equaling or slightly exceeding the tube; capsule acute 1 cm long.

"This species is closely related to *C. Breweri* Fernald, and may prove to be only a form of that little-known species. It is what has been locally known as *C. miniata* Dougl, but it can be no near relative of that species.

"Wilson's Peak, LA Co No 1881, JI 10, 1901."

Abrams, So Cal ac b 1:69 (1902).—Fl LA 369.

CASTILLEIA MINIATA Dougl.

C. miniata (Dougl mst); glabra v apice pilosa, foliis caulinis integris calycibus utrinque praesertim infra fissis, segmentis apice bifidis laciniis lanceolatis oblongisve corollae tubum vix aequantibus. Benth.

"Hab. Blue mts, NW Am. Dougl. Tolmie.

"The fl, though generally altogether shorter than in *C. pallida*, has yet usually the whole upper lip exerted from the cx."—Hook, Fl Bor Am 2:106 (1838).

Alaska to So Cal (Parish); Colo; Utah.

CASTILLEIA OBLONGIFOLIA A. Gray.

"Two ft or more hi, very lfy, densely villous or pubescent; lvs widely spreading, 5-nerved, 1 or 2 i long, narrowly

elliptical and very obtuse, or the uppermost oblong-ovate and acute; bracts similar, the upper r'dish; spike many-fid; ex-lobes narrowly lanceolate or linear; cor 2 i long; somewhat falcate narrow galea as long as the tube; lip very protuberant and fleshy globular; saccate, its minute lobes subulate.—Southern borders of SD Co, Pa'mer. Collected along with *C. miniata*.—A. Gray, Syn Fl 2: Part 1, 296 (1878).

CASTILLEIA STENANTHA A. Gray.

"Taller (than *C. minor*) 1 to 5 feet hi; corolla linear, double the length of that of the preceding species; the slightly falcate and commonly reddish galea one-half longer than the tube.—*C. affinis*, Benth, Pl. Hartw. 329, in part (no. 1897); Gray, l. c. (Am. Jour. Sci. II 33:) in part; moist grounds, Cal from Monterey to SD, and through the southern part of the Sierra Nevada.—A. Gray, Syn Fl 2: part 1, 295 (1878).

Genus ORTHOCARPUS Nuttall.

Ann or rarely per herbs, mostly with alt lvs, and y, w or p fls in bracted usually dense spikes, the bracts sometimes brightly colored; cx tubular, 4-cleft or sometimes split down both sides; cor very tr, the tube slender, the limb 2-lipped; upper lip but little exceeding the inflated 3-plaited or 3-saccate lower one. Otherwise as in *castilleia*.

ORTHOCARPUS DENSIFLORUS Benth.

An, erect, simple or branched from the base, 1-3 dm hi, soft-pubescent above; lvs linear or linear lanceolate, entire or with a few slender lobes; spike dense, the lowest fls sometimes distant; bracts about equaling the fls, 3-cleft into linear p lobes; cor 18-20 mm long, p; lip moderately ventricose and somewhat 3-saccate for its whole length, the teeth or lobes conspicuous, erect, oblong-linear; galea narrow, puberulent, or nearly smooth.

Greene, Cal ac b 2:409, Cruz.

Abrams, Fl LA 371. Hills near LA (Greata).

ORTHOCARPUS EXSERTUS Heller.

"Branched from near the base, 3 dm hi, the branches erect or ascending, brownish, pubescent with straight, rather chaffy hairs, which are scattered below, more plentiful above; lvs few, 2 cm or less in length, 3 or 5 lobed, these narrowly linear, 1 mm wide, appearing almost capillary in the dried state; inflorescence occupying nearly the entire upper half of the stem in fully developed plants, lax below, crowded above; floral bracts shorter or no longer than the cx, differing little from the lvs, except that they have a much broader, entire middle division, only the tips purplish; bracts and lvs pubescent like the stem; cx almost 2 cm long, the slender tips purplish, pubescent with soft, wavy hairs; cor apparently bright rose-purple, about 3 cm long, the tube twice the length of the lips; lower lip abruptly dilated, 5

mm or more across, slightly pubescent, each of the 3 divisions dotted above with a darker spot; upper lip extending 4 mm above the lower, densely bearded on the back, the apex slightly hooked. The type is a specimen in my possession collected by Mr. Geo. B. Grant at Lincoln Park, near Pasadena, LA Co. Ap 1902, No. 886, and grows in "grassy, sunny places." It was distributed as est to that species as we understand it, *Orthocarpus purpurascens*, and is near-but differs in pubescence, in the lvs, and especially in the naked, exerted state of the fls. The cor also probably differs in shape."—Heller, Muthlenlergia 1:109-110 (26 S 1904).

ORTHOCARPUS LASIORHYNCHUS

Ann, nearly glabrous, about 2 dm hi; lvs 3-5-cleft into linear-filiform divisions, or the lower entire; floral ones similar, the lobes p-tipped; spikes dense and short; cx-lobes lanceolate, obtuse, $\frac{1}{2}$ as long as tube; cor rose-p, slightly pubescent in throat; lip conspicuously 3-saccate; sacs as broad as long, teeth very short; galea lanceolate, obtuse, puberulent.

A. Gray, Am ac pr 12:82.

Hall, U 118. Cuyamaca.

Mohave (Palmer, Parry, Lemmon).

Parish, Zoe 5:118, says Sber mts not Mohave.

Southern Cal (Parish 482); Baja!

Orthocarpus Parishii A. Gray.

ORTHOCARPUS PARISHII A. Gray.

See *Orthocarpus lasiorhynchus*.

ORTHOCARPUS PAUCIBARBATUS G. S F; San Diego mts (Parish 408).

ORTHOCARPUS PURPURASCENS Bh.

Ann, erect, rather stout, at length much branched from the base, 1.5-5 dm hi, villous-pubescent; lvs with lanceolate base or body, and lancinately 1-2-pinnately parted into narrow linear or filiform lobes, or the upper palmately cleft; spike thick and dense; bracts equalling the fls, somewhat dilated, their lobes crimson as also cx and cor; cor 2.5-3 cm long, lip moderately saccate, w-tipped, with y and p markings; galea densely p-bearded on back, incurved at tip; fl hairy.

Abrams, Fl LA 370.

Humboldt Co to Baja! Rosa.

MENTHA PIPERITA L.

Per by subterranean suckers; sts glabrous or sparsely puberulent, mostly erect, branched, 3-9 dm hi; lvs ovate-oblong to oblong-lanceolate, narrowed or rounded at the base, petioled, acute at the apex, sharply serrate, glabrous except the veins beneath; whorls of fls in terminal, dense or interrupted spikes, 2.5-7 cm long in fr; cx tubular-campanulate, its teeth subulate, ciliate, half as long as the tube or more; cor glabrous.

Abrams, Fl LA 348. LA.

Davidson, Pl LA Co. 14.

Genus TRICHOSTEMA Linnaeus.

Ann or per strong-scented herbs or rarely shrubby, with lanceolate, oblong or linear, entire or slightly repand lvs,

and sm or middle-sized, usually bl or p fls, paniculate or in axillary loose or dense clusters; cx campanulate, very unequally 5-lobed; cor-tube slender, exerted or included, the limb somewhat oblique and deeply 5-cleft into oblong more or less declined seg; sta 4, didynamous, ascending, curved, the anterior pair longer; fl filiform, spirally coiled in the bud, long exerted; anth-sacs divaricate, more or less confluent at the base; ova deeply 4-lobed; sty 2-cleft at the summit.

TRICHOSTEMA LANATUM Benth

Shrubby, about 1 m hi, very leafy, lvs thickish, narrowly linear and with revolute margins, 1-nerved, glabrate and shining above, canescent-tomentose beneath, sessile, many-fascicled in the axils, uppermost reduced to bracts; cymes in a naked terminal thyrsus, whole infl clothed with a dense violet or p wool; cor 1 cm long; fl 2 cm long. Romero; woolly blue-curls. Monterey Co. Baja! Black-sage, Sber.

Abrams, Fl LA 340.

Bloch, Erythea 1:191. Monterey to San Diego; note on its medical value;" romero, which is the Spanish for 'rosemary.'"

Davy Erythea 6:37. Monterey Co.

In cultivation a most interesting and showy shrub, with deep p fls.

The black sage is a small shrub found in the coast range from Monterey southward to Baja California(?), "cultivated in gardens of the Californians," and "valued as a stimulant" (Mrs. Bingham).

TRICHOSTEMA LANCEOLATUM Bth.

Strong-scented ann. simple or branching from near the base, 1.5-3 dm hi, very lfy, herbage cinereous or villous-pubescent and minutely glandular; lvs lanceolate, acuminate, sessile or the lowest subsessile, with 3-5 strong, nearly parallel nerves, 2 cm long; cymes short-peduncled or nearly sessile; cx villous; cor almost filiform, somewhat pubescent, bl.

Bentham, Lab 659 (1835).

Coville, CNH 4:176.

Jerson, Erythea 1:14.

Abrams, Fl LA 339.

Genus SCUTELLARIA Linnaeus.

Ann or per herbs, with fls solitary or 2-3 together in the axils or in bracted racemes or spikes; cx campanulate, gibbous, bilabiate, the lips entire, the upper with a crest or protuberance upon its back, often deciduous in fr, the lower persistent; cor much exerted, dilated above into the throat, glabrous within, upper lip archel, entire or emarginate, the lower spreading or deflexed, its lateral lobes sm and somewhat connected with the upper, its middle lobe broad, sometimes emarginate the margins mostly recurved; sta 4, didynamous, ascending under the upper lip, the upper pair 2-

celled, the lower 1-celled: sty unequally 2-cleft at apex; ova deeply 4-parted: nutlets subglobose or depressed, papillose or tuberculate.

SCUTELLARIA ANGUSTIFOLIA Psh.

Stems slender, cor hairy inside, two-thirds to 1 inch long, violet blue.

SCUTELLARIA BOLANDERII A. Gray.

Per by filiform rt-stocks, pubescent; sts slender, simple or branched from base, about 3 dm high, very leafy to the summit; lvs ovate-elliptic, very obtuse, closely sessile by somewhat cordate base, 2.5 cm long or less; fls short-pedicelled, seldom equaling the lf; cor yellowish, throat inflated, villous within.

Jepson, *Erythraea* 1:12.

Hall, U 113.

Abrams, Fl LA 341. Moist woods, El Monte (Davidson).

SCUTELLARIA TUBEROSA Benth.

Soft-hairy, mostly 3-4 in. high, producing many tubers: cor deep blue or violet, one-half to two-thirds in. long.

VERBENA POLYSTACHYA H. B. K.

Sts erect, scarious, sometimes hirsute or hispid, paniculately branched; lvs oblong to broadly lanceolate, 2.5-5 cm long, sessile by a narrowed base or short-petioled, obtuse or acute incisedly serrate, occasionally somewhat lobed; spikes thicker and denser than in *Ver. urticifolia*, a slightly taller species.

Abrams, Fl LA 327. Occasional in marshes.

VERBENA PROSTRATA R. Br.

Soft-villous to hirsute, diffusely spreading, at length much branched, 5-9 dm long; lvs obovate or oblong, with cuneate base tapering into a margined petiole, velvety, acutely incised and serrate; often 3-5-cleft; spikes solitary or somewhat clustered, elongated, hirsute or villous; bracts subulate, shorter than ex; cor violet or blue, 4 mm long; nutlets oblong.

Abrams, Fl LA 327.

Jepson, *Erythraea* 1:12.

VERBENA URTICIFOLIA L.

Sts minutely hirsute-pubescent to almost glabrous, erect, 10-16 dm hi; lvs thin, petioled, ovate to oblong-lanceolate, acuminate or acute, evenly or doubly serrate; spikes slender-filiform, paniced; bracts ovate, acuminate, shorter than the ex; cor 2-4 mm long, w or purplish.

Abrams, Fl LA 327. Occasional in marshes.

Genus *LIPPIA* Linnaeus.

Per herbs with opposite sometimes verticillate or rarely alt lvs, and sm bracted fls in ax or terminal hds or spikes: ex sm, membranous, ovoid, campanulate or compressed and 2-winged, 2-4 toothed or 2-4-cleft: Cor cylindric, limb oblique spreading, somewhat 2-lipped, 4-cleft, the lobes broad, often refuse or eroded: sta 4, didynamous: anth not appendaged, the sacs nearly parallel: ova 2-celled; ovules 1 in each cell; sty short; stig

oblique or recurved: fr dry with a membranous exocarp, at length separating into 2 nutlets.

LIPPIA LANCEOLATA Michx.

Green, glabrous or very sparingly pubescent with forked hairs; sts slender, weak, procumbent or ascending, often ringed at the nodes, simple or little branched, 3-6 dm long; lvs thin, oblong, ovate or ovate-lanceolate: short-petioled, acute, sharply serrate to below the middle, narrowed at base, 2.5-7 cm long; ped axy, slender, usually longer than the lvs; hds at first globose, becoming cylindric, about 15 mm long in fr; bracts acute; ex flattened, 2-cleft; cor pale bl, scarcely longer than the ex.

Abrams, Fl LA 328.

San Bernardino (Parish 1099).

LIPPIA NODIFLORA Michx.

Creeping: peduncles 1-4 in. long; fls rose to w.

PLANTAGINACEAE.

Ann or per mostly acaulescent rarely stoloniferous herbs, with basal, in the caulescent species opp or alt, lvs, and sm perfect, polygamous or monoecious fls. bracteolate in dense terminal long-scaped spikes or heads, or rarely solitary: ex persistent, 4-parted: cor hypogynous, scarious or membranous, mostly marcescent, 4-lobed: sta 4 or 2, inserted on the cor-tube or throat; fl filiform; anth versatile. 2-celled, longitudinally dehiscent: ova superior, 1-2-celled or falsely 3-4-celled: sty filiform, simple, mostly longitudinally stigmatic: ovules 1-several in each cell: fr a membranous or coriaceous capsule, circumscissile at or below the middle; sds peltate.

Genus *PLANTAGO* Linnaeus.

Characters of the family. Plantain. **PLANTAGO BIGELOVII** A. Gray.

Very slender, ann, 1 dm hi or less; lvs very narrowly linear or filiform, glabrous; scapes very slender, slightly pubescent above; spikes slender, about 15 mm long and 4 mm broad, often much shorter and reduced to 4-5 fls; ex broadly scarious-margined; pyxis oblong-ovate, much exceeding the ex, circumscissile at the lower third. Baja! Abrams, Fl LA 377. Inglewood.

PLANTAGO ERECTA Morris.

An, silky pubescent, 6-15 cm hi, lvs erect, narrowly linear to narrowly lanceolate, about two-thirds the length of scapes or nearly equaling the shorter ones: scapes 1 or few; spikes few-many-fl'd, capitate or oblong, 15 cm long or usually less; ex-lobes obtuse, scarious margined with brownish midrib; pyxis ovate, truncate, purplish above, circumscissile at the lower third; seeds 2.

Abrams, Fl LA 376.

Variety *Obver-a* Abrams.

A more robust form; lvs with few to several callous denticulations: scapes usually num; spikes 15-40 cm long; cap circumscissile near the middle.

Abrams, Fl LA 377.—Occasional in sandy soil toward the coast, also on Catalina Island. In our opinion not a good species and scarcely worthy of varietal distinction.

Plantago *obversa* Morris.

PLANTAGO HIRTELLA H. B. K.

Per from a thick rt. hirsute, especially the scape and lvs; lvs oblong-ob-lanceolate to narrowly oblong, 5 dm long or less, tapering below to a short petiole, sparsely dentate; scape usually longer than the lvs, stout, erect; spike 15-30 cm long, dense, except at base; cor persistent, its lobes closed over the cap; sd 3.

Abrams, Fl LA 376.

San Francisco to Chile.

PLANTAGO LANCEOLATA Linn.

Ribgrass or English plantain; widely naturalized. Europe.

PLANTAGO MAJOR Linn.

Glabrous or sometimes sparsely pubescent; lvs spreading, long-petioled, mostly ovate, narrowed or rounded at base, entire or coarsely dentate, 2 dm long or less; scapes exceeding the lvs, erect, 3 dm long or less; spikes 2 dm long or less; pyxis ovoid, circumscissile at about the middle, 5-16-seeded.

Plantain; a common weed; widely naturalized. Europe.

PLANTAGO PATAGONICA Jacq.

British Columbia to Patagonia.

VARIETY ARISTATA A. Gray.

Parish, Erythra 3:61.—“North of Santa Ana canon, near Mentone, San Bernardino Co., Cal.” In some almost all the bracts aristate, in others only a few of the lowest ones, forming a transition to the common var. *nuda*, Gray. Variety *GNAPHALOIDES* A. Gray.

Baja! San Diego Co.!

PLANTAGO PICTA Morris.

Utah, Arizona, Southern California (Parish 2643).

PLANTAGO OBLONGA Morris.

Colorado Desert, California (Orcutt).

PLANTAGO IGNOTA Morris.

Ft. Verde, Arizona (E. A. Mearns 199); northern Baja California.

PLANTAGO SPECIOSA Morris.

Santa Catalina Island, California (G. B. Grant 2412).

PLANTAGO OBVERSA Morris.

Del Mar, San Diego County, California (Belle Sumner Angier 21).

Plantago erecta Morris in part; Torr bot. cl. b. 27:118 (1900).

PLANTAGO ERECTA Morris.

Plantago patagonica Californica Greene Man bay reg. 236 (1894). California; Oregon.

PLANTAGO VIRGINICA Linn.

Variety *LONGIFOLIA* A. Gray.

San Julio, Baja Cal (Br).

Genus *OXYTHECA* Nuttall.

Slender dichotomously branched an. stipitate-glandular at the nodes; lvs in a rosette at base; bracts foliaceous and more or less united, usually ternate; involucre few-fld, more or less dis-

tinctly edicellate, campanulate or turbinate, 3-5-cleft, the teeth bearing an awn or awnless; fls equal, glandular-pubescent on the outside; sta 9.

OXYTHECA PERFOLIATA T. & G.

Utah; Nevada; Mohave; CD.

OXYTHECA TRILOBATA A. Gray.

Much branched from the base, 1 dm hi or less; lvs somewhat villous, ob-lanceolate, 2-3 cm long; bracts ternate, oblong-lanceolate, awned, not reflexed; inv broadly turbinate, 5-parted nearly to the base, strongly nerved, 3-4 mm long, with awns slightly shorter than the lobes; pedicels spreading, 4-10 mm long; fls 3-5 in each inv, light rose color, 2 mm long; seg ligulate-oblong, 3-cleft, the lobes lanceolate, acuminate, slightly erose on the sides; ovary triangular.

Abrams, Fl LA 116. SBer and SD Co.

SanBer Co (Parish 600). Ha U 76.

LICHENES.

ACOLIUM BOLANDERI Tuck.

SD, on rocks and pebbles (Or 2118). Baja, Hasse, Erythra 3:44; 4:150—“A teredo-like fungus and not a lichen.” (Stizenberger).

ACOLIUM STI. JACOBI Tuck.

“Thallus of white granules soon compacted into a chinky crust; apothecia of middling size in this genus (in the solitary specimen 0 mm, 5-8 in width, and about the same in height), of the substance and color of the thallus, more or less turbinate, the interior exciple yellow, the disk more or less protruded, black, but yellowish green at the surface. Spores (no thekes observed) rounded and short-ellipsoid, bi-ocular, 0.020-0.030 mm long, 0.016-0.020 mm wide.” Tuckerman, Torr cl b 10:22. Mesas, SD (Pringle! Or).

ALECTORIA CANARIENSIS Mont.

San Diego (Palmer).

ARTHONIA ANASTOMOSANS Ach.

Hasse, Erythra 3:44; 4:108. On various barks, LA Co.

ARTHONIA DISPERSA (Schrad.)

Hasse, Erythra 3:44, on Quercus, LA Co Variety *TETRAMERA* Stiz.

Hasse, Erythra 4:108. On Quercus.

Variety *CYTISII* Mass.

Hasse, Erythra 4:108. On Quercus.

ARTHONIA EPIGINA Tuck.

San Diego (Or).

ARTHONIA GLOBOSA Tuck.

San Diego mesas (Or 2132)

ARTHONIA ORBOLIFERA Ach.

Hasse, Erythra 4:108. On *Heteromeles*.

ARTHONIA PREMNEA Tuck.

Hasse, Erythra 4:150, LA Co, on dead twigs.

ARTHONIA RADIATA Pers.

Hasse, Erythra 3:14, on Jugans and Quercus, LA Co; 4:108.

ARTHONIA SANGUINEA Hig.

Baja, on cacti (Or).

ARTHONIA STICTELLA Stiz.

Hasse, Erythra 4:108. On bark.

BIATORA ATROPURPUREA Fr.

San Diego (Or 2125).

BIATORA COARCTATA Nyl.

Hasse, Erythra 4:97, 108, LA Co, on earth and rocks.

BIATORA CYRTELLA Nyl.
Hasse, Erythea 4:98, LA Co, on Juglans and Quercus.

BIATORA DECIPIENS Fr.
San Diego mesas! Baja!

BIATORA FRANCISCANA Tuck.
Hasse, Erythea 4:97, LA Co, on sandstone.

BIATORA GLOBIFERA Fr.
Hasse, Erythea 4:150, LA Co. SD mesas! Baja (Or 2178).

BIATORA MIXTA Fr.
Hasse, Erythea 4:108, LA Co, on shrubs.

BIATORA NAEGELII Hepp.
Hasse, Erythea 4:108, LA Co, on shrubs

BIATORA TURGIDULA Nyl.
Hasse, Erythea 4:150, Los Angeles Co.

BIATORA VARIANS Ach.
Hasse, Erythea 4:150, Los Angeles Co.

BUELLIA BOLANDERI Tuck.
Hasse, Erythea 3:44, Los Angeles Co.

BUELLIA BOLACINA Tuck.
Hasse, Erythea 3:44, LA Co. SD (Or). Baja.

BUELLIA GEOGRAPHICA Tuck.
Variety LECANORINA Floerk.
Hasse, Erythea 3:44, Los Angeles Co.

BUELLIA HALONIA Tuck.
Pt Loma, S D, on rocks (Or); San Telmo, Baja (Or 2139). Hasse, Erythea 4:108, Los Angeles Co.

BUELLIA LEPIDASTRA Tuck.
Hasse, Erythea 4:108, LA Co, on rocks.

BUELLIA MYRIOCARPA Mudd.
Hasse, Erythea 3:44, LA Co. SD (Or 2130).

BUELLIA PARASEMA Fr.
Hasse, Erythea 3:43, LA Co; 4:108.

Variety TRIPHFRAGMIA Nyl.
Hasse, Erythea 3:44, LA Co, on Rhus.

BUELLIA PARASITICA.
Near San Telmo, Baja, on Lecanora pallescens!

BUELLIA PETRAEA Tuck.
Hasse, Erythea 4:108, LA Co, on rocks.

Variety MONTAGNAEI Tuck.
Hasse, Erythea 4:98, on quartz, LA Co.

BUELLIA SIDALEA Tuck.
SD (Or 2159, on Euphorbia misera). Washington.

Hasse, Erythea 4:108, LA Co, on various barks.

Variety PENICHTRA Tuck.
Hasse, Erythea 3:43; 4:108, LA Co.

BUELLIA STELLULATA B-R.
Hasse, Erythea 4:98, 108, LA Co on rocks San Diego (Or 2134)?

CALICIUM TURBINATUM.
San Diego!

CETRARIA CALIFORNICA Tuck.
Hasse, Erythea 3:41, Los Angeles Co.

CHIODECTON SPAEROTUM Tuck.
San Diego (Or 2124).

CLADONIA FIMBRIATA Fr.
Throughout N. A. on earth and rotten logs, San Diego!

Variety TUBAEFORMIS Fr.
SD! Hasse, Erythea 3:43, LA Co.

CLADONIA FURCATA Fr.
San Diego!

Variety RACEMOSA Fr.
Hasse, Erythea 3:43, Los Angeles Co.

CLADONIA GRACILIS Nyl.
San Diego!

CLADONIA PYXIDATA Fr.
Hasse, Erythea 3:43, LA Co; 4:107, on earth.

COLLEMA FLACCIDUM Ach.
Hasse, Erythea 3:42, Los Angeles Co.

COLLEMA LIMOSUM Ach.
Hasse, Erythea 4:97, Los Angeles Co.

COLLEMA NIGRESCENS Ach.
Hasse, Erythea 3:42, Los Angeles Co.

COLLEMA PULPOSUM Nyl.
Hasse, Erythea 4:97, LA Co, on earth and rocks.

ENDOCARPISUM GUEPINI Nyl.
Hasse, Erythea 3:42; 4:106, LA Co, on earth.

ENDOCARPON HEPATICUM Ach.
Hasse, Erythea 4:98, LA Co, on clay.

ENDOCARPON PUSILLUM Tuck.
San Diego mesas!

EVERNIA PRUNASTRI Ach.
Pt Loma, SD, on Euphorbia misera (sterile)! Hasse, Erythea 3:41, LA Co.

EVERNIA VULPINA Ach.
SD mts, on pines; Cuyamaca (Or 421). Baja mts! Used by the Indians as a substitute for sugar, it is said. Hasse, Erythea 3:41, Los Angeles Co.

HEPPIA DESPREUXII Mont.
San Diego.

LECANACTIS ABIETINA.
San Diego on Pinus Torreyana!

LECANACTIS CALIFORNICA Tuck.
Hasse, Erythea 4:108, LA Co, on Quercus.

LECANACTIS PREMNEA.
Punta Banda, Baja!

LECANORA ATHROCARPA Nyl.
Hasse, Erythea 4:97, 107, LA Co, on bark

LECANORA ATRA Ach.
N. A. SD, on rocks and pebbles! Hasse, Erythea 4:107.

LECANORA BADIA Ach.
Hasse, Erythea 3:42; 4:107, LA Co, on rocks.

LECANORA BRUNONIS Tuck.
Hasse, Erythea 3:43, Los Angeles Co.

LECANORA CALCAREA Som.
Hasse, Erythea 4:150, Los Angeles Co.

LECANORA CENISIA Ach.
SD, on Pinus Torreyana (Or 2141). Hasse, Erythea 4:107, Los Angeles Co, on earth.

LECANORA CERVINA Nyl.
Colorado Desert, SD Co (Or 2180).

LECANORA CHLOROPHANA Ach.
Hasse, Erythea 3:43, Los Angeles Co.

LECANORA CINEREA Som.
SD. Hasse, Erythea 3:43, LA Co.

Variety GIBBOSA Nyl.
Hasse, Erythea 3:43, LA Co; 4:107.

LECANORA FUSCATA Fr.
Hasse, Erythea 4:97, LA Co, on rocks.

Variety OLIGOCARPA Nyl.

LECANORA GLAUCCARPA Ach.

LECANORA HAYDENI Tuck.
Mesas near San Quintin, Baja; a very peculiar species, usually attached to small pebbles!
Laramie plains, Nebraska, on the earth, detached and infertile (Hayden).

LECANORA MELANOPSIS Ach.
Hasse, Erythea 4:150, Los Angeles Co.

LECANORA MURALIS Schaer.
Mesas, SD, on earth and rocks (Or 2136).

Hasse, Erythea 3:42; 4:106, Los Angeles Co

Variety DIFFRACTA Fr.
Hasse, Erythea 3:42, Los Angeles Co.

LECANORA PACIFICA Tuck.
SD, on Quercus dumosa! Oregon. Hasse, Erythea 3:42, Los Angeles Co.

LECANORA PALLESCENS Schaer.
 Near San Telmo, Baja! Hasse, Erythea
 3:43, Los Angeles Co.
 LECANORA PALLIDA Schaer.
 SD, on Quercus dumosa (Or 2175). N. A.
 Variety CANCRIFORMIS Tuckermann.
 SD; Baja; on bark of trees and shrubs!
 Hasse, Erythea 3:42; 4:106, LA Co.
 LECANORA PINGUIS Tuck.
 Near San Telmo, Baja, on rocks (Or
 2115), and San Quintin (2119).
 LECANORA PRIVIGNA Nyl.
 Hasse, Erythea 3:43, LA Co; 4:107, on
 rocks.
 Variety PRUINOSA Hasse.
 Hasse, Erythea 3:43, Los Angeles Co.
 Variety REVERTENS Tuck.
 Hasse, Erythea 4:97, Mt Echo, on quartz
 LECANORA SCHLEICHERI Nyl.
 SD, on earth (Or 2173). Rocky mts (Hay-
 den, Parry).
 LECANORA SUBFUSCA Ach.
 SD, on Rhus integrifolia (Or 2143).
 Hasse, Erythea 3:42; 4:107.
 Variety ALLOPHANA Ach.
 San Diego (Or 2135)?
 Variety CAMPESTRIS Nyl.
 Hasse, Erythea 4:97, LA Co on trees.
 Variety COLOCARPA Ach.
 Hasse, Erythea 4:97, LA Co, on rocks.
 LECANORA VARIA Nyl.
 SD, on bark (Or 2147)?—Hasse, Erythea
 3:42, Los Angeles Co.
 LECANORA XANTHOPHANA Nyl.
 Hasse, Erythea 3:43, LA Co; 4:107, on
 rocks.
 LECIDEA ALBO-ATRA Hoffm.
 Variety AMBIGUA Ach.
 Hasse, Erythea 3:43, Los Angeles Co.
 LECIDEA AROMATICA Ach.
 Hasse, Erythea 4:108.
 LECIDEA BRANDEGEI Tuck.
 Hasse, Erythea 3:43, Los Angeles Co.
 LECIDEA CRUCIARIA Tuck.
 Sweetwater canyon, S Diego, on rocks.
 LECIDEA CUMULATA Som.
 Hasse, Erythea 3:43, Los Angeles Co.
 LECIDEA ENTEROLEUCA Fr.
 Cosmopolitan. Pt Loma, SD, on rocks!
 Hasse, Erythea 4:108, Los Angeles Co.
 Variety FLAVIDA Fr.
 Hasse, Erythea 4:108, on rocks.
 Variety ACHRISTA Som.
 Hasse, Erythea 3:42, Los Angeles Co.
 Variety AMBIGUA Anz.
 Hasse, Erythea 4:150, Los Angeles Co.
 LECIDEA LAPICIDA Fr.
 Hasse, Erythea 3:43, Los Angeles Co.
 Variety DECLINASCENS Nyl.
 Hasse, Erythea 4:108, LA Co, on rocks.
 LECIDEA LATYPIZA Nyl.
 Hasse, Erythea 3:43, Los Angeles Co.
 LECIDEA MORIO Schaer.
 Hasse, Erythea 4:150, LA Co, on argil-
 laceous rock.
 LECIDEA NASSATA.
 Mission valley, San Diego!
 LECIDEA PLATYCARPA Ach.
 Hasse, Erythea 4:108, on rocks.
 LECIDEA SQUALIDA Ach.
 Variety CAULESCENS Nyl.
 Hasse, Erythea 4:108.
 LECIDEA SYLVANA Koerb.
 Hasse, Erythea 4:108, on dead twigs.
 LEPTOGIUM MYOCHRUM Tuck.
 Hasse, Erythea 3:42, Los Angeles Co.

OPEOGRAPHIA ATRO-RIMALIS Nyl.
 Hasse, Erythea 3:44, Los Angeles Co.
 OPEOGRAPHIA RIMALIS Ach.
 Hasse, Erythea 4:150, near San Pedro,
 Cal., on bushes.
 OPEOGRAPHIA VULGATA.
 San Diego, Cal. (Orcutt).
 PANNARIA LEPTIDIOTA Fr.
 Hasse, Erythea 4:97, Los Angeles Co.
 Variety CYANOLEPRA Tuck.
 Hasse, Erythea 4:97, Los Angeles Co.
 PANNARIA MICROPHYLLA Delis.
 Hasse, Erythea 4:107, LA Co, on earth.
 Forma CALIFORNICA Tuckermann.
 Hasse, Erythea 3:42, Los Angeles Co.
 PANNARIA NIGRA Nyl.
 Hasse, Erythea 4:97, LA Co, on stones.
 PARMELIA BAHIANA Nyl.
 Hasse, Erythea 4:150, LA Co, on Quer-
 cus; "identical with the Chilean plant"
 (Stizenberger).
 PARMELIA CONSPERSA Ach.
 Arctic America to Mexico. SD, on
 rocks, stones, bushes and earth! Baja (Or
 2160). Hasse, Erythea 3:41, LA Co; 4:106.
 PARMELIA OLIVACEA Ach.
 SD Co, on Quercus agrifolia! Hasse,
 Erythea 3:41, Los Angeles Co.
 Variety ASPIDOTA Ach.
 Hasse, Erythea 3:41, Los Angeles Co.
 PARMELIA PERFORATA Ach.
 Cosmopolitan. Baja, sterile (Or 2162).
 PARMELIA PHYSODES Ach.
 San Diego, on shrubs (Or 2161).
 Variety ENTEROMORPHA Tuck.
 Hasse, Erythea 3:41, Los Angeles Co.
 PARMELIA TILIACEA Floerk.
 Hasse, Erythea 3:41, Los Angeles Co.
 PELTIGERA CANINA Hoffm.
 Hasse, Erythea 3:42, LA Co; 4:97, on
 ground among mosses.
 PERTUSARIA FLAVICUNDA Tuck.
 Pt Loma, SD (Or 2129). Table mt, Baja
 (H. C. Orcutt and C. C. Parry in 1833).
 Hasse, Erythea 4:97, LA Co, on coast
 rocks.
 PERTUSARIA LECANINA Tuck.
 Hasse, Erythea 4:150, San Bernardino
 range, on trunks of trees.
 PERTUSARIA PUSTULATA Nyl.
 SD! Throughout the U. S. Hasse, Ery-
 thea 3:43, Los Angeles Co.
 PHYSCIA ADGLUTINATA Nyl.
 Hasse, Erythea 3:42, Los Angeles Co.
 PHYSCIA CRISPA Nyl.
 Hasse, Erythea 3:42, Los Angeles Co.
 PHYSCIA HISPIDA Tuck.
 Hasse, Erythea 3:42, Los Angeles Co.
 PHYSCIA OBSCURA Nyl.
 Hasse, Erythea 3:42, Los Angeles Co.
 PHYSCIA TRIBACEA Tuck.
 La Paz, Baja (Palmer); California (Bo-
 lander; New England: S. C.; La.
 PHYSCIA STELLARIS L.
 Arctic Am to Mexico, Atlantic to Pac-
 ific. SD (Or 2164). Valle de los Palmas,
 Baja, on Prosopis juliflora (Or 2163). Hasse,
 Erythea 3:42, Los Angeles Co.
 Variety AIPOLIA Nyl.
 Hasse, Erythea 3:42, LA Co; SD, on
 rocks, common.
 Variety HISPIDA Schreb.
 San Diego, on old roofs and fences.
 PHYSCIA ERINACEA Tuck.
 Hasse, Erythea 3:42, LA Co. SD, on
 Euphorbia misera!

PHYSICIA CILIARIS DC.

Hasse, Erythea 3:42, Los Angeles Co.

PHYSICIA PULVERULENTA Nyl.

Hasse, Erythea 3:42, Los Angeles Co.
Forma **MUSCIGENA** Hasse, Erythea 3:42, Los Angeles Co.

Variety **LEUCOLEIPES** Tuck.

Hasse, Erythea 4:97, Los Angeles Co.

PLACODIUM AURANTIACUM N-H.

Cosmopolitan. Pt Loma, SD, on Euphorbia misera! Hasse, Erythea 4:106, LA Co, on Quercus.

PLACODIUM FERRUGINEUM Hepp.

SD (Or 2176). Hasse, Erythea 4:106, LA Co.

SARCODES SANGUINEA Torrey.

Sts stout, r'ish, 15-35 cm hi, more or less glandular-pubescent, clothed with firm fleshy scales, the upper narrower, passing into the linear bracts, these ciliate-margined, exceeding the fls; cor cylindrical-campanulate, 5-lobed, persistent; sta 10, unappendaged; ova 5-lobed, 5-celled.

Torrey, Pl Frem 18 (1853).

Type locality: "valley of the Sacramento; the precise locality not recorded, but probably on the Yuba river."

Coville, CNH 4:146.

Hall, U 106. Snow plant.

Abrams, Fl LA 295.—"Frequent in the coniferous forests of the San Antonio and SBer mts above 7000 ft."

Snow plant of the Sierra Nevada. SBER mts (Parish 304).

Genus **PTEROSPORA** Nuttall.**PTEROSPORA ANDROMEDEA** Nutt.

A stout purplish-brown, clammy-pubescent herb, 1-3 ft high; raceme long, many fld; cor w, $\frac{1}{4}$ in. long. Pinedrops. New England to British Columbia. Ha U 100. SD mts (Parish 965).

Genus **ARCTOSTAPHYLOS** Adanson.

Shrubs or sm trees, with evergreen coriaceous alt lvs, and sm w or rose-colored fls, in racemes, spikes, or panicles; bracts and bractlets present, scale-like; ovules solitary in the cells, which become bony nutlets or combine into a few-several-celled stone; fr a drupe with a hard surface and a mealy or almost bony pulp between it and the nutlets. Manzanita.

ARCTOSTAPHYLOS PATULA Greene.

Difusely branched shrub, 1-1.5 m hi; young twigs rusty puberulent or nearly smooth; lvs smooth, bright g, ovate to broadly cordate, 2-3 cm long, entire, obtuse; bracts lanceolate; pedicels smooth; fr smooth, depressed-globose, about 6 mm in diam; nutlets united into a deeply lobed stone. San Antonio and SBER mts, 5000-8000 ft.

Greene, Pitt 2:171 (1891.)

Hall, U 101.

Abrams, Fl LA 297.

GRINDELIA CUNEIFOLIA Nutt.

Bushy and suffrutescent, 6-12 dm hi, glabrous; lvs thickish and rather fleshy, 7-10 cm long, cuneate-spatulate to linear-oblong, entire or sparsely dentate, clasping at the broad base; inv about 12 mm hi, glutinous, its bracts

all with squarrose g tips; pappus awns usually several, compressed barbellulate.

PENTACHAETA AUREA Nutt.

Difusely branching, 1-3 dm hi, somewhat villous-pubescent; hds about 10-15 mm broad, many-fld; fls all y; rays obtuse, 20 or more; involucre bracts broadly lanceolate, setaceously acuminate, with green middle portion and scarios margins; achenes somewhat villous-pubescent; pappus bristles 5-8.

Abrams, Fl LA 394.—Arroyo Seco (Davidson). Frequent in the Santa Ana mts.

Baja! SBER Co (Parish).

Genus **JAUMEA** Pers.

Succulent and glabrous per herbs, with opp entire subterete fleshy lvs, and solitary terminal short-peduncled middle-sized hds of y fls; inv cylindrical-campanulate, its bracts broad and imbricated, the outermost short and fleshy; rays pistillate, fertile; receptacle naked, conical; disk-fls y; sty-branches papillose or hairy; ak 10-nerved; pappus 0.

JAUMEA CARNOSA A. Gray.

Sts rather slender, prostrate, many from fleshy crown of the tap-rt, mostly simple, 1-2 dm long, r'ing at the nodes; lvs 1.5-2.5 cm long; hds about 1 cm hi; rays about 6, linear, not surpassing the disk; ak glabrous.

Salt marshes, British Columbia to Mexico.

HETEROTHECA GRANDIFLORA Nutt.

An or bien, 1-2 m hi, hirsute, the inf viscid and strong-scented; st lvs oval or oblong, coarsely toothed, partly vertical by a twist in petiole, this bearing at base 2 stipuliform lobes; inv about 1 cm hi; ray-ak without pappus; those of the disk with but faint traces of the outer and shorter bristles.

Abrams, Fl LA 395.—"Frequent in waste places in sandy soil. Je-N, or in favored places flowering throughout the year."

Nevada; SBar; Baja!

BACCHARIS VIMINEA DC.

Shrubby and willow-like, producing short lateral fl'ing branches, these terete and minutely striate; lvs narrowly lanceolate, entire or sparingly denticulate, obscurely 3-nerved, 5-7 cm long; hds about 4 mm hi, hemispheric, in sm cymose clusters, inv tawny, destitute of g center or costa.

Abrams, Fl LA 406. Very common along all our streams throughout our range. Ap-Jl.

Brandegee, Zoe 1:114, Cat.

DC, Prodr 5:400 (1836).

Type locality: "In California."

Coville, CNH 4:127. Near SBER.

Monterey; S Ber (Parish 702); Cruz; Cat. SD Co!

BACCHARIS DOUGLASII DC.

SF; SD Co! Cruz; Rosa.

BACCHARIS CONSANGUINEA D C.
Santa Cruz Island (Greene).

Genus ERIGERON Linnaeus.

Branching or scapeose herbs, with alt or basal lvs and corymbose, paniculate or solitary hds of both tubular and radiate fls: inv hemispheric or campanulate, its bracts narrow, nearly equal, usually imbricated in but 1 or 2 sr: receptacle nearly flat, usually naked; ray fls p'ish or w'ish, pistillate; disk fls y, tubular, perfect, 5-lobed: sty-appendages short, mostly rounded or obtuse. ak flattened, mostly 2nerved; pappus bristles scabrous, in 1 sr, or with an outer shorter sr.

ERIGERON CANADENSIS Linn.

Throughout temperate N. A. Baja mts!

ERIGERON SANCTARUM S. Watson.

Santa Inez mts, S Bar Co; Rosa.

ERIGERON GLAUCUS Ker.

Cruz; Rosa; San Miguel Island.

ERIGERON PARISHII A. Gray.

Rocky canyons, Mohave (Parish).

ERIGERON FOLIOSUS Nutt.

Baja mts! S Ber (Parish); Rosa; Oregon.

Varlety **STENOPHYLLUS** A. Gray.

Cruz (Greene); range of type.

Varlety **TENUISSIMUS** A. Gray.

Hanson's! SD Co!

ERIGERON INCOMPTUS A. Gray.

Baja! SD foothills.

ERIGERON PHILADELPHICUS Linn.

Fla; Texas; SD Co; S Ber Co (Parish).

ERIGERON DIVERGENS T. & G.

Nebr; Texas; Washington; Baja (Br).

APLOPAPPUS MONACTIS A. Gray.

Gray, Am ac pr 19:1 (1883).

Type locality: "borders of the Mohave Desert," Cal.

Coville CNH 4:121.

MADIA SATIVA Molina.

Sts simple with a few short ascending branches above, erect, stout, 3-9 dm hi, pubescent with slender hairs and beset with stalked very viscid glands; lvs lanceolate, nearly entire, glandular-pubescent; hds 12 mm hi, short-peduncled or sessile in the upper axils and at the ends of the short branches; cup of receptacle broadly campanulate, enclosing many disk-fls; disk-ak cuneate-oblong (4-angled ray-ak falcate-obovate).

Abrams, Fl LA 419.

Genus ACHYRACHAENA Schauer.

Soft-pubescent sparingly branched an, with narrow lvs, all but the lowest alt, and rather large oblong-campanulate hds terminating pedunculiform branches; bracts lanceolate, herbaceous, each enfolding a ray-ak: bracts of the low convex receptacle membranous in a single row between ray and disk-fls: ray-fls 6-8, very short, 3-cleft; their ak slightly obcompressed, destitute of pappus: disk-fls mostly fertile, clavate, 10-striate, bearing a showy pappus of 10-elongated-oblong silvery-scarious scales.

ACHYRACHAENA MOLLIS Schauer.

Erect, 24 dm hi; lvs linear, entire or serrulate; hds 2.5 cm long or less in fl; rays very short and involute, y, chang-

ing to reddish-brown; hds expanded in fr, forming a globose cluster; pappus becoming very showy. SD! Baja!

Throughout California; Baja! Cruz.

CENTROMADIA PARRYI Greene.

Widely branching, 3-6 dm hi, sparsely hirsute, minutely resinous-glandular, aromatic; lowest lvs pinnatifid, the cauline linear, entire, sharply pungent, spreading, the uppermost pilose-ciliate toward the base; hds scattered; ray-ak dull black, 1.5 mm long, somewhat compressed, smooth on the sides, with a few coarse tuberculations on the back; disk-ak with 3 or more paleae exceeding the cor; chaff of the receptacle not pungent.

Abrams, Fl LA 421.—"Brackish flats toward the coast. Je-Ag."

CENTROMADIA PUNGENS Greene.

Stout with rather rigid ascending or spreading branches, 4-8 dm hi, hirsute or hispid, scarcely viscid, nearly or quite scentless; lower lvs 2-pinnatifid, upper 1-pinnatifid, the lobes pungent-tipped; chaff of receptacle rigid-pungent; disk-ak destitute of pappus; ray-ak nearly black, about 2 mm long, the ventral angle carinate, the plane sides and rounded back faintly tuberculate-rugose.

BACCHARIS EMORYI A. Gray.

Erect with slender branches, 1-5 m hi; lvs mostly oblong, or the lower broader, with attenuate or cuneate base and the larger somewhat petioled, more or less 3-nerved, often 2-4-toothed, pale; those of the branches oblanceolate-linear, mostly entire, 1-nerved; inv campanulate or oblong, 6-8 mm long; bracts firm-coriaceous the outermost oval obtusish, the innermost thin, bearded toward the tip; pappus of the pistillate 12 mm long in fr.

Gray, Bot Mex B 83 (1859).

Type locality: "On the Gila," Ar.

Coville, CNH 4:127. Nesting Springs.

Abrams, Fl LA 405.

L A; Arizona; Utah; Nevada; Arizona.

BACCHARIS GLUTINOSA Pers.

Sts herbaceous above, woody below, 1-3 m hi; branches striate-angled; lvs very glutinous, lanceolate (acute, denticulate or repandodontate, 5-7 cm long; hds in ample cymose panicles at the ends of simple slender branches, mostly 6 mm hi; inv stramineous, destitute of g center or distinct costa.

Abrams, Fl LA 406.—Occasional on borders of marshes. Ag-N.

Pers, Syn Pl 2:425 (1807).

Type locality: "in R [egni] chilensis ruderatis."

Coville, CNH 4:127.

Baja; LA Co; Colo; Texas; Mexico; Chili.

BACCHARIS PILULARIS DC.

Monterey—Oregon; Rosa; not SD Co?

Compactly branched evergreen shrub, 2-4 m hi or lower and depressed when growing along the seashore; branchlets angular from the lf-bases; lvs subcoriaceous, glutinous, 2 cm long or less, cuneate-obovate, coarsely toothed or some entire; inv nearly

hemispheric, 4 mm long, its bracts oval or oblong, all but the innermost very obtuse; fls w; fertile pappus not over 8 mm long.

Abrams, Fl LA 405. *Monica* (Davidson).

BACCHARIS PLUMMERAE A. Gray.

Loosely pubescent throughout, not at all glutinous; sts herbaceous from a woody base, 6-12 dm hi, somewhat branched; lvs linear-oblong, obtuse, irregularly and acutely serrate, 5 cm long or less, obscurely 3-nerved; hds 8 mm long; involucre bracts linear; ak somewhat compressed, puberulent, obscurely 5-nerved; pappus in fr 8 mm long.

Abrams, Fl LA 405.—"Topango canyon (Davidson).

Cruz; S Bar; L A Co (Parish 1110).

ARTEMISIA BIENNIS Willd.

Ann; sts erect, virgate, 3-10 dm hi, lfy to the summit; herbage deep g, glabrous and nearly tasteless, aromatic; lvs 1-2-pinnately parted into lanceolate or broadly linear lacinate or toothed lobes, or the uppermost only pinnatifid; hds sm, in close glomerules on the spiciform short branches and sts; inv hemispheric; ak with sm epigynous disk. Eu.

Abrams, Fl LA 437. LA.

ARTEMISIA CALIFORNICA Less.

Hagenbuck, *Erythea* 4:39.—"A strong decoction is made, which is used to bathe the wounds and swellings."

California sage; shrubby, with num ascending branches, 6-12 dm hi, aromatic; lvs cinereous with a minute appressed pubescence, the lowest parted into a few linear filiform seg, the upper entire; hds many, nodding in long racemose lfy panicles; inv hemispheric, about 4 mm broad; ak truncate at summit, with a squamellate or coroniform-dentate pappus.

Less, *Linnaea* 6:523 (1831).

Type locality: "in California," near SF.

Coville, CNH 4:137. S Ber mts.

Abrams, Fl LA 437.

S F; Las Huevitas, Baja (Br); Guad; Rosa; Cruz.

ARTEMISIA DRACUNCULOIDES Psh.

Per; sts clustered, herbaceous, 6-12 dm hi, virgately branched, glabrous, pungent, scented when bruised, tasteless; lowest lvs 3-cleft at summit, the others linear, entire; hds num, nodding on very slender short ped in a close or open panicle, the clusters sometimes secund; inv hemispheric, about 2 mm broad; marginal fls fertile; disk-fls perfect, sterile.

Pursh, Fl 742 (1814).

Type locality: "in Upper Louisiana."

Coville, CNH 4:137.

Hall, U 124.

Abrams, Fl LA 437.

ARTEMISIA HETEROPHYLLA Nutt.

Per; sts erect, somewhat woody at base, 1-2 m hi; lvs lanceolate to oblong, ovate or elliptic, 5-10 cm long, sparingly pinnatifid, cleft or often en-

tire, g above, w-tomentose beneath; hds mostly erect in dense terminal panicles, the axis leafy; inv oblong; marginal fls pistillate; disk-fls perfect, all fertile.

Abrams, Fl LA 437.

Hall, U 124. Cal Mugwort.

Artemisia vulgaris Californica Bess.

ARTEMISIA LUDOVICIANA Nutt.

"St simple and herbaceous; lower lvs incise, subpinnatifid, the upper lanceolate and entire, on both sides pubescent, beneath tomentose; fls ovate, erect and sessile, calix pubescent, panicle simple.—Hab. On the banks of the Mississippi, near St. Louis; also on the alluvial plains of the Missouri. Obs; per; st about 2 ft hi; lower st lvs lanceolate, irregularly and divaricately lacinate, seg entire, oblong-lanceolate and acute."—Nuttall, *Gen* 2:143 (1818).

Eastwood, *Erythea* 4:32. "near SF."

Coville, CNH 4:137.

Bingham says this is "recommended for the effects of poison oak."

British Columbia to San Pablo, Baja (Br); Rosa; Cruz.

ARTEMISIA PALMERI A. Gray.

"(Seriphidium, licet receptaculum paleis onustum.) Ut videtur elata et herbacea, cinereo-puberula; foliis 3-5-partitis, ramealibus integerrimis lobisque angusto-linearibus elongatis subtus tomentoso-incanis margine revolutis; panicula amplissima floribunda; involucri squamis ovatis subscarioso-membranaceis; acheniis immaturis disco epigyno majusculo.—SD Co, in Jamuel valley, 20 miles below SD, Dr. E. Palmer; habit nearly of A. Californica, but apparently herbaceous throughout, and with the lvs or lobes broader and flat, a li or more in diam; hds a li and a half in diam; fls all perfect; most of them subtended by paleae, the outer ones similar to the involucre scales, the inner shorter and smaller."—Gray, *Am ac pr* 11:79 (1876).

Jamuel valley. SD Co (Palmer); Baja.

ARTEMISIA PARISHII A. Gray.

"Seriphidium, frutescens, 3-4-pedalis, tomento minutissimo undique canescens; foliis (plerisque sesquipollicaribus) aut linearibus integerrimis (lineam latis) aut inferioribus apice dilatato tridentatis; panicula ampla laxa, ramis, gracilibus polycephalis; capitulis (lin. 2 longis) 6-7-floris; involucre campanulato; acheniis utriculatis glandulosi et pilis arachnoideis parce villosi.—Newhall (LA Co, and Cajon Pass, Cal, Oct, 1881, coll. S. B. and W. F. Parish. It has the habit and ample paniculate inflorescence of A. Palmeri."—Gray, *Am ac pr* 17:220 (1882).

Parish, *Zoe* 5:120.—"Cajon Pass is error, only at Newhall."

Interior of LA Co (Parish). Baja.

ARTEMISIA TRIDENTATA Nutt.

"Woody plant. Canescently tomentose; lvs cuneate, 3-toothed at the summit, upper ones entire and obtuse; fls

paniculate; capitulum sessile, ovate and tomentose, sm; inner sepals scarious, linear-oblong. Hab. Plains of the Oregon and Lewis river. A low, but rather stout shrub, w with a close tomentum; lvs rather more than an i long, about 2 li wide, more or less deeply 3-toothed, sometimes entire, the upper ones always so; panicle much branched, the fls sm. (I have not seen them in a perfect state, and therefore class this species by its apparent affinity with the last) [arbuscula]. Somewhat allied to *A. Chinensis*.—Nuttall, Am Phil soc tr, II, 7:398 (1841). C D; Baja; Wash.; Mont.; Colo.

Variety **ANGUSTIFOLIA** A. Gray.

"Lvs all narrow; lower spatulate-linear and barely 3-toothed at the rounded apex; upper entire and linear; hds rather smaller, exactly of *A. tridentata*, while the foliage is nearly that of *A. trifida*, except that it is not trifid.—Arid plains, S. Idaho and W. Nev to the Mohave Desert and the southern borders of Cal."—Gray, Am ac pr 19:49 (1883).

Mohave; CD; Idaho; N. M.

NEMOSERIS CALIFORNICA Greene.

Rather stout, glabrous; sts w, 6-9 dm hi; lvs oblong, pinnatifid, sessile and clasping, the upper reduced; hds many in a paniculate-corymbose infl, 1.5-2 cm hi; ligules rather short; outer ak pubescent; beak slender, equaling the body; pappus dull w.

Abrams, Fl LA 447.

Rafinesquia Californica Nuttall.

SD; Baja! Cruz; Arizona.

PTILORIA PLEUROCARPA Greene.

Taller and stouter than *P. virgata*, virgate-paniculate, glabrous, glaucous; hds rather sm, few-fl'd; ak fusiform, rugose-tuberculate between the salient riblike angles, intervening grooves 0; pappus-bristles num, distinctly plumose to base, bright w, soft, early decid.

Abrams, Fl LA 446. Common about Pasadena and SBer.

UROPAPPUS LEUCOCARPUS Greene.

"Plant of the size and habit of *U. Lindleyi*, but ak almost w, slenderly attenuate at summit, the narrow part vacant (not filled by the sd): w^{ish} paleae and slender awn each about 2½ li long; not rare in middle Cal."—Greene, Erythea 1:260.

UROPAPPUS LINDLEYI Nuttall.

Stout, 2-4 dm hi; peduncles scarcely thickened under the hd; lvs 3-5 mm broad; ak brownish, 10 mm long, slightly narrowed above; pappus dull brown or sordid, 12-14 mm long; awn nearly equaling the paleae, from a very shallow notch.

Nutt Am phil soc tr 7:425 (1840).

Abrams, Fl LA 445.

SF; SD (Or 1053); Baja; Rosa; Cruz.

Calais Lindleyi DC prodr 7:85 (1838); T-G Fl 2:471 (1843), excl; C. linearifolia.

UROPAPPUS LINEARIFOLIUS Nutt.

Sts on peduncles usually several

from the base, erect, 2-4 dm hi, in robust plants thickened and fistulose under the oblong hd; lvs linear, 7-15 cm long; 2-4 mm wide, with 2-several pairs of more, or less serrate salient attenuate lobes; ak attenuate above into a beak, 10 mm long; pappus silvery-w, 12-14 mm long, awn delicate, ½ as long as the deeply notched paleae.

Nutt Am phil soc tr 7:425 (1841).

Type Locality: "in California et circa Fort Vancouver."

Coville, CNH 4:142. Panamint mts.

Abrams, Fl LA 445.

Throughout Cal.; Baja; Nevada; Arizona; N. M.; Wash; Cruz; Rosa; Guad.

U. grandiflorus Nutt l c

Calais linearifolia DC prodr 7:85 (1838).

LACTUCA SCARIOLA L.

Bien, glaucous; sts lfy, paniculately branched, hirsute at the base or glabrous throughout, 6-15 dm hi; lvs oblong to oblonganceolate, spinulose-margined, denticulate or pinnatifid, sessile or auriculate-clasping, midrib spinulose or hispid; hds 4-8 mm broad, 6-12fld, very num, in an open panicle; inv cylindric; ligules y; ak obovate-oblong, about equaling the filiform beak; pappus w. Eu.

Abrams, Fl LA 450. Rather common in LA.

Genus **ANTHEMIS** Linnaeus.

Ann or per ill-scented branching herbs, with finely dissected alt lvs, and radiate hds solitary on terminal peds; inv hemispheric, its bracts imbricated in several series, scarious-margined, appressed, the outer shorter; receptacle convex or conical, chaffy at least toward the summit; the chaff subtending the disk-fls; ray-fls pistillate, fertile or neutral, w or y; disk-fls perfect, y, limb 5-cleft; ak oblong, ribbed or striate; pappus 0.

ANTHEMIS COTULA Linn.

L, sp Pl 2:894 (1753). Eu.

Ann glabrous or sometimes pubescent above, glandular, much branched, 2-6 dm hi; lvs mostly sessile, finely 1-3-pinnately dissected into narrow acute lobes; hds about 2 cm broad, including rays; these 10-18, w, neutral, mostly 3-toothed; receptacle conic, its chaff bristly, subtending the central fls; ak 10-ribbed, rugose or glandular-tuberculate.

Parish Zoe 1:59.

Abrams, Fl LA 434. Common in moist places in all our valleys. Native of Eu. Ap-My.

Genus **COTULA** Linnaeus.

Low an or per herbs with alt lobed or dissected lvs, and slender peduncled discoid short-hemispheric hds; inv bracts in about 2 sr, g^{ish}; receptacle naked, flat or nearly so; marginal fls pistillate and apetalous; disk-fls 4-toothed, fertile or sterile; ak pedicellate, compressed, spongy-margined or narrowly winged; pappus 0.

COTULA AUSTRALIS Hooker.

Parish, Zoe 1:58. SD.

Davidson, Erythea 1:61. LA Co.

Ann. slender and diffusely branched, pubescent with soft spreading hairs, not at all succulent, 5-12 cm long; lvs 1-2-pinnately divided into linear lobes; hds 2-3 mm broad; involucre bracts brownish tipped, scarious-margined; apetalous fls in 2-3 rows, pedicellate, their ak minutely hispid on both faces, the margins smooth.

Abrams, Fl LA 436. In waste places along streets, not common. Ja-Mr.
COTULA CORONOPIFOLIA Linn.

Per, usually subaquatic, somewhat succulent and glabrous; sts clustered, stoutish, decumbent, 25-30 cm long; lvs linear lanceolate, laciniate-pinnatifid or the upper entire, clasping or sheathing at the base; hds much depressed, 8-12 mm broad; apetalous fls in 1 row, their ak with a thick spongy wing; disk-fls y, their ak with wing reduced. L, Sp Pl 2:392 (1753).

Type locality: "in Aethiopia," etc.

Coville, CNH 4:137. Near SBer.

Parish Zoe 1:58.

Davidson, Erythea 1:60. LA Co.

Abrams, Fl LA 436. Common in wet places along streams and marshes, especially toward the coast. Flowering nearly throughout the year.

LASTHENIA MINIMA Suks.

Suksdorf, W 15:50.

Wie L. glaberrima DC., aber kleiner, nur 5-6 cm. hoch. Die obersten Blätter oft sparsam behaart. Köpfchenstiele etwa 2-3mal so lang wie die Köpfchen, meistens kürzer als die Blätter, ziemlich dicht bedeckt mit wulstigen Haaren. Die 5-6 Zähne des Hüllkelches ebenfalls behaart, auf beiden Flächen, aber dichter an den Rändern, Kronenröhre etwas drüsig. — In sehr dichten Massen an seichten Tümpeln nahe bei Dalles am Kolumbiastrom, 4. Mai 1898. (Meine Nr. 2683).

CICORIUM INTYBUS L.

Chicory. Per from a long deep taproot; sts slightly hispid, stiff, branched, 3-9 dm hi; basal lvs spreading on the ground, runcinate-pinnatifid, spatulate in outline, 8-16 cm long, narrowed into long petioles; upper lvs much smaller, lanceolate or oblong, lobed or entire, clasping or auricled at base; hds num, 25-40 mm broad, 1-4 together in sessile clusters on the nearly naked or bracted branches; fls bright bl, rarely w.

Abrams, Fl LA 444, occasional in waste places.

Genus MALACOTHRIX De Candolle.

Ann or per herbs with alt or basal mostly pinnatifid lvs and long-peduncled panicle or solitary hds of y, rarely w fls; inv campanulate, its principal bracts in 1-2 series, equal or nearly so,

with several series of short exterior ones: receptacle flat, naked or bristly; rays truncate and 5-toothed at apex; ak oblong or linear, glabrous, 10-15-ribbed, truncate or margined and 4-5 toothed at the summit; pappus bristles in 2 series, the inner naked or minutely serrulate, slender, coherent at the base and decid in a ring, the outer few, more persistent.

MALACOTHRIX CALIFORNICA DC.

Ann, scape, 3 dm hi or less; lvs basal, tufted, laciniately 1-2 pinnatifid into narrow linear lobes when young woolly with long, loose, soft hairs; hds solitary on naked scapes, large and showy, 5 cm broad or less; inv broadly campanulate, about 2 cm hi; outer bracts slender-subulate; fls pale y; ak narrow, faintly striate-costate; outer pappus of 2 persistent bristles, the inner capillary, decid.

Abrams, Fl LA 448.

Hall, U 130.

Sacramento valley to Baja!

MALACOTHRIX CLEVELANDI A. Gy.

Ann, paniculately branched, 5 dm hi or less; sts and branches rather naked; only some of the basal lvs pinnatifid; hds num; inv about 6 mm hi, narrow, fewfid; bracts usually p'ish-tipped; fls y; ak oblong-linear, minutely striate-costate, 4-5 of the ribs more prominent; outer pappus of 1 persistent bristle and a conspicuous circle of narrow w setulose teeth.

Hall, U 130.

Abrams, Fl LA 449. Gabriel mts.

Antioch, Cal; Cruz; CD! Guad.

MALACOTHRIX COULTERI A. Gray.

Ann, 1-2 ft hi, glabrous and somewhat glaucous, rather leafy; lvs laciniate-pinnatifid or toothed; the radical and lower cauline oblong or spatulate, sessile; upper auriculate-clasping and ovate lanceolate, gradually reduced to bracts; hds terminating the loose branches; ak acutely about 14-ribbed and 4-5-angled, the summit more or less denticulate by the projection of the ribs; 1-2 stouter bristles of the pappus nearly persistent.

Gray, Pl Fendl 113 (1849).

Type locality: "California."

Cruz; Mohave; Pt Loma, SD!; CD! Baja.

Genus MICROSERIS Don.

Acaulescent glabrous or slightly puberulent an, with basal tufted lvs pinnatifid with mostly linear and often falcate lobes or entire; hds solitary in long leafless scape-like peds, these nodding in bud, becoming erect in fr; inv narrowly oblong to ovoid or subglobose; ligules short, y; ak slender-fusiform or cylindrical, ribbed, mostly truncate; pappus paleae 5, mostly short, abruptly or gradually passing into the scabrous awn.

MICROSERIS CYCLOCARPHA A. Gray.

Scapes 2-4 dm hi; lvs narrow, 1-2 dm long; hds about 10 mm broad; ak oblong-turbinate, 5 mm long, outer ones w-villous; paleae of pappus ovate,

2-3 mm long, $\frac{1}{2}$ length of slender persistent bristles.

Abrams, Fl LA 445. Monica mts.
MICROSERIS INDIVISA Greene.

"Stoutish, the many scapes 1-1 $\frac{1}{2}$ ft hi; lvs ascending, 6 i long, mostly oblanceolate and entire, some of the earlier coarsely and saliently toothed. hds very large (the fls and achenes more than 100): outer row of achenes silvery-silky, the others glabrous, chestnut-brown, all about 2 li long, bearing a pappus 5 li long, the bristles 5. w'ish, barbellulate and persistent, the base dilated into a sm triangular-lanceolate palea. Plains of the Sacramento, about Elmira, Vacaville, etc."—Greene, Erythea 1:7.

Genus HULSEA Torrey & Gray.

Viscid or floccose-woolly leafy herbs with alt entire toothed or pinnatifid lvs, sessile or nearly so, and large solitary or scattered hds: inv bracts thin, herbaceous, linear to oblong, in 2-3-sr; receptacle flat: ray-fls y or p'ish: disk-fls with long narrow throat and 5 short lobes: ak linear-clavate or cuneate-oblong, villous: pappus of 4-5 hyaline paleae, either erose or lacerate at the summit or dissected into capillary bristles.

HULSEA HETEROCHROMA A. Gray.

An, stout, 6 dm hi or more: lvs oblong, saliently dentate: inv about 2 cm hi, its bracts linear-lanceolate, attenuate-acute: ray fls many, 6-8 mm long, rose-p, occasionally reduced or obsolete: paleae oblong, the 2 over the angles of the ak longer than the others, the shorter truncate-lacerate.

Hall, U 128.

Abrams, Fl LA 433. Gabriel mts, etc.

Genus AMBLYOPAPPUS Hook & Arn.

Rigidly erect panicle sm maritime an, with gummy sweet-scented very bitter herbage, narrow entire alt lvs, and sm discord hds of y fls: inv bracts 5-6, broadly obovate, their middle part becoming somewhat carinate-concave: receptacle sm conical: cor all short, tubular, these of the staminate fls minutely 2-3-toothed, of the perfect 5-toothed; the teeth soon connivent: ak abpyramidal, pubescent; pappus of 5-12 oblong obtuse paleae about equaling the cor.

AMBLYOPAPPUS PUSILLUS H. Arn.

Somewhat corymbose much pinnately 10-25 cm hi, the lowest lvs pinnately 3-5-parted and opp, their seg narrowly linear: inv 4 mm hi.

CHAENACTIS ASTEMISIAEFOLIA A G

Sts pinnately branched or nearly simple, 3-8 dm hi, furfuraceous-pubescent, somewhat viscid, above glandular-hirsute; lvs 2-3-pinnately divided or parted into short linear or oblong lobes; hds loosely cymose-paniculate, about 12-15 mm hi; inv bracts lanceolate, acute; fls all alike; ak clavate, flattened; pappus a sm minutely annular disk.

Abrams, Fl LA 432.

CHAENACTIS LANOSA D. C.

Sts short, branching, bearing few to many long, naked peduncles, 1-2 dm hi, the earlier scapiform; herbage floccose-woolly when young; lvs thickish, simply pinnately-parted into few narrowly linear lobes, or the uppermost entire; hds about 12 mm hi; outer fls only moderately enlarged, not surpassing the disk; inv bracts nearly linear; pappus of 4 equal long palae.

Abrams, Fl LA 431.

Hall U 125. Pin-cushion.

Genus SONCHUS Linnaeus.

An, succulent herbs with alt mostly auriculate-clasping entire or pinnatifid prickly-margined lvs and y fls in corymbose or paniculate hds: inv usually becoming thickened and more or smaller: receptacle flattened, ak less conic at base, its bracts imbricated in several sr, the outer successively flattened, 10-20-ribbed, truncate; pappus of copious soft w simple capillary bristles, usually falling away connected.

SONCHUS ASPER Vill.

Stout, sts distinctly angled, very lfy; lvs entire or pinnatifid, prickly-margined, auricles helicoid and appressed to st; ak 3-nerved on each side, otherwise smooth. Eu.

Abrams, Fl LA 450.

Parish, Zoe 1:58.

Brandege, Zoe 1:114 Cat.

SONCHUS OLERACEUS Linn.

Stoutish, 5-10 dm hi, sparingly leafy, glabrous or with a few glandular hairs on the pedicels and inv, glaucescent: lvs obovoid or narrower, runcinate-pinnatifid, toothed but not prickly-margined, amplexicaul, the auricles straight, acute: ak striate-nerved, transversely rugulose-scarious. Eu.

Abrams, Fl LA 449.

Parish, Zoe 1:58.

Hall, U 131.

McClatchie, Erythea 2:125, Cat.

Davidson, Erythea 1:60, LA Co.

Genus MADIA Molina.

Glandular and viscid heavy-scented herbs with at least the upper lvs alt entire or toothed: hds ax and terminal: inv angled by the salient carinate backs of the uniserial involucreal bracts, these usually completely inclosing the ray-ak, their tips herbaceous: receptacle flat or convex, bearing a single series of chaff united and forming a cup between the ray- and disk-fls, the inner portion naked or fimbriate: ray-fls v, rather short, 3-lobed, fertile: disk-fls sterile: pappus 0: ak laterally compressed, smooth, beakless.

MADIA DISSTITFLORA T & G.

Slender, loosely branching, 5-7 dm hi, viscid; hds scattered, broad-ovate, about 6 mm hi; cup of receptacle ovoid, not closed; ak thin, not angular.

Hall, U 130.

Abrams, Fl LA 420. Monica mts.

Genus ACTAEA Linnaeus.

Sep 4-6, nearly equal, pet-like, early decid; pet 4-10, sm; sta num; pistil 1; stig sessile, 2-lobed; fr a many-seeded berry: sds smooth, flattened, packed horizontally in 2 rows; per herbs, with 2-3-ternately compound lvs: rt com tuberous or thickened: fls in a terminal short raceme.

ACTAEA SPICATA Linn.

Raceme at first ovate or corymbiform; pet com rhombic-spatulate: berries slender-pedicelled, oval, bk at maturity. Eu; Asia.

Variety ARGUTA Torrey.

Fr w or r, in a loose more elongated raceme. Japan; Alk; SF; Eu; Sib; BC; NM.

Genus PAEONIA Linnaeus.

Per herbs with ternately or pinnately compound lvs and large showy fls: sep 5 or 6, herbaceous and persistent: pet of the same number, borne with the many sta on a fleshy disk: sty short or 0: follicles 2-5, thick, leathery, several-seeded. Peony.

PAEONIA BROWNII Douglas.

Glaucous and somewhat fleshy, 20-40 cm high; lvs mostly radical, ternately or biternately divided, the lobes obovate to linear-spatulate; peds 2.5-5 cm long; pet about equaling the sep, brownish r; follicles usually 5, broadly oblong, smooth, 2-4 cm long.

Abrams, Fl LA 152.—"Occasional in the foothills throughout our range. Mr.-Ap."

PAEONIA CALIFORNICA Nuttall.

Restricted in its distribution (Greene, Garden and Forest 3:356) to Southern and Lower California. Glabrous but not glaucous, leaves twice or thrice as large as in *P. brownii*, of rounded and pedate general outline. Grows in dry, rocky soil, from a few hundred, to two or three thousand feet altitude, where it is subjected to a light fall of snow (Orcutt W 7:215). Without much floral beauty, though the luxuriant foliage makes it useful in some situations.

Nuttall, in T & G Fl 1:41 (1838).

Bloch, Erythra 2:163, note on medicinal repute.

The root of the Pionia is considered valuable by the natives for the healing of sores on man or beast.

SBer and SD Co. Baja!

Usually distributed as *P. brownii*.

Davidson, Pl LA Co 1.

Type locality: "margins of bushy plains, and in valleys of the mountains, in the vicinity St. Barbara, Upper California."

PAPAVERACEAE.

Herbs or rarely shrubs with w, y or colorless sap and alt exstipulate lvs or the upper rarely opp. Fls solitary or in clusters, perfect, regular or ir: Sep distinct or united into a calytra, caducous, 2, rarely 3 or 4: Pet 4-6 or rarely 0; imbricated, deciduous: Sta num or few, hypogynous, distinct, fil fliform; anth opening by a longitudin-

al slit: Ova 1, many-ovuled, mostly 1-celled, the carpels rarely becoming distinct in fr; sty short, stig simple or divided; ovules anatropous: Fr a capsule, generally dehiscent by pores or valves.

Genus ESCHSCHOLTZIA Cham.

Smooth glaucous herbs, with colorless bitter juice, finely dissected lvs and bright orange or yellow fls. Sep coherent into a narrow pointed hood, deciduous atr anthesis from a dilated torus. Pet 4, borne on the torus. Sta numerous, with 2 nerve-like placenta; styles short; stigmas divided into 4-6 linear unequally divergent lobes. Capsule elongated, 10-nerved, 1-celled, dehiscent by 2 valves separating from placental ribs. Sds globose, reticulate or rough tuberculate. California Poppy, the state flower of California.

ESCHSCHOLTZIA CALIFORNICA

Chem, in nees Horae Physicae Berol 73 t 15.

"Per, glabrous, glaucescent, diffusely dichotomous, the branches com prostrate, forming a mat often a yard in width: lvs sm for the plant and remote, ultimate seg oblong and spatulate-oblong, obtuse, the middle one of the 3 broadest: ex ovoid, or even round-ovoid, abruptly and obtusely short-pointed, about $\frac{1}{2}$ i long: cor sm for the plant, nearly rotate, seldom $1\frac{1}{2}$ i broad, pet clear y from below the middle but with a well defined or spot at base: sta or: torus-rim deflexed under the fr and undulate: pods sm, seldom 2 i long: sds spherical, strongly reticulate. * * *

"This type species of the genus I now judge to be limited to the maritime hills, more or less sandy, of the SF peninsula. I can obtain no evidence of its ever having been under cult even in Am much less in Eu; and all the so-called *E. Californica* of the various illustrated journals of bot or of hort represents some other species in every instance. It has been figured only by Chamisso, and in that case from dried specimens; and this plate in the Horae Physicae, correct as to the impression it gives of the habit of the plant when well grown, is altogether misleading as to the cor; for this shows the pet as if rounded off to the round-obovate, and so spreading as to show open spaces between them, whereas in nature they are triangular flabelliform, overlapping one another in such wise that the cor as a whole appears as an unbroken circle. In coloring, too, the plate is false, for the upper part of each pet is made or-color, the lower part light-y, though in nature just the reverse of this is true. But in the dried specimens the whole pet is apt to turn to a kind of dull deep or, and the distinction of color vanishes."—Greene, Pittonia 5:221.

ESCHSCHOLTZIA MINUTIFLORA.

Sereno Watson, Am ac pr 11:122.
"Slender, branching, a ft hi: fls 3 li in diam or less: torus without border: cap $1\frac{1}{2}$ i long, very narrow: sds hardly $\frac{1}{2}$ li in diam, nearly smooth. Peculiar to the interior basin, ranging from northwestern Nev (Watson) to

Sitgreaves Pass in western Ar (Newberry) and So Ut, Parry."—Brewer & Watson, Bot Cal 1:23.

ESCHSCHOLTZIA CLEVELANDI.

"Diffusely dichotomous maritime ann, often forming a loose mat 2 ft wide, glabrous, or with some minute and obscure roughness on branches and petioles, glaucous rather than glaucous; lvs and fls sm; seg of lvs either broad, short and divergent, or narrower, longer and almost parallel on the same plant: ex oblong-conical, about $\frac{1}{2}$ i long, thin and translucent, the very short apiculation blunt: cor nearly rotate, $1\frac{1}{2}$ i broad, early and sparse fls y, later smaller, deeper y or orange: sta many, the fil very short and stout, p above, the anth linear, elongated: stig 4, slender, unequal: pod slender, $1\frac{1}{2}$ i long; torus under it sm, but with the spreading rim conspicuous: sds sm, not quite spherical, apiculate at one end, reticulate."—Greene, Pittonia 5:248.

Type locality:—"Abundant at and near SD along the seashore, thence southward apparently to Ensenada, on the peninsula of Lower California; also on Coronado Islands." * * *

ESCHSCHOLTZIA AUSTRALIS.

"Allied to E. Clevelandi; apparently as large and as widely spreading but with comparatively few lvs; the stout branches largely naked, with smallest lvs rather more glaucous: ex very different, ovate-conical, and with a distinct and not short apiculation; torus both larger and with broader rim: cor, the same as in E. Clevelandi: pod and sds not seen. Confined to shores of the Lower California peninsula below Ensenada, the type from San Quentin by Dr. Edward Palmer, on sheet n 2534, Cal ac herb."—Greene, Pittonia 5:249.

ESCHSCHOLTZIA ORCUTTIANA.

"Habit of E. isostigma, but not as large, stoutish but foliage sm and delicately cut, the petioles and rachis slender, all the seg short, narrowly linear, acutish: ex smaller, thin, slenderly almost conical, yet with evident and not very short apiculation: cor 1 i wide, or-color: torus long and narrow-funnelform, the thin herbaceous rim obvious: pods $1\frac{1}{2}$ or $1\frac{3}{4}$ i long. Type from Solada, Baja, C. R. Orcutt, 5 My 1886, the specimen in hb Field Mus. In US hb on sheet 3346 is a specimen by Miss Fink, from Todos Santos Island, that may or may not be the same. It has a somewhat different aspect and a wider torus-rim."—Greene, Pittonia 5:254.

CRUCIFERAE.

Herbs or rarely suffrutescent with acid juice, all lvs and racemous or corymbose fls: Sep 4, deciduous or persistent, the 2 outer narrow, the inner similar, concave or saccate at base: Pet 4, rarely 2 or 0, hypogynous, cruciate, nearly equal, generally clawed: Sta 6, rarely fewer, hypogynous, tetradynamous: Pistil 1, compound, consisting of 2 united carpels, the parietal placenta united by a dissepiment; sty generally persistent, sometimes 0; stig

discoid or more or less 2-lobed: fr a silicle or silicle, usually 2-celled, 2-valved or rarely indehiscent: Endosperm 0; cotyledons incumbent, accumbent or conduplicate.

Genus DRABA Linnaeus.

Low tufted mostly stellate-pubescent herbs, with scapose or leafy sts, simple lvs and racemose fls: silicles elliptic, oblong or rarely linear, compressed: stig entire or nearly so: valves dehiscent, nerveless: cotyledous accumbent.

DRABA CUNEIFOLIA Nuttall.

Loosely stellate-pubescent, usually branching from the base; branches leafy below and obovate to oblanceolate, acute or acutish, $\frac{1}{2}$ -2' long; receme pedunculate, at length elongated: fls sm: pods linear-oblong, usually acutish, 3-6 li long, 16-50-seeded, hispid with short sub-pressed simple hairs (very rarely glabrous), on spreading or divaricate pedicels 1-3 li long; stig sessile or nearly so. Ill; Ky; Ala; Ark; Tex; Ut; Cal; Baja!

Variety BREVIPES S. Watson.

Variety INTEGRIFOLIA S. Watson.

Watson, Am ac pr 23:256.

Coast ranges of southern Cal.

Smaller than the type, 2-5 cm high; lvs smaller, mostly entire; capsule glabrous; pedicels 2 mm long or less.

Abrams, Fl LA 176.—Same range as the type and apparently more common.

Variety PLATYCARPA S. Watson.

Pods oblong-oval, mostly obtuse, $2\frac{1}{2}$ -4" long, equaling or exceeding the pedicels. Tex; Ar.

Variety SONORAE Parish.

Much resembling the type in size and habit; racemes often nearly sessile; capules hispid with stellate hairs.

Abrams, Fl LA 176.—Same range as type, most common form with us.

Quintin (Palmer 611).

So Cal; Ar.

Type locality: "northwestern Sonora."

Draba Sonorae Greene, Cal ac b 2:59 (1886)(

DRABA UNILATERALIS M. E. Jones.

Branching from the base: branches spreading, elongated; lax, leafy below; lvs cuneate-obovate to oblanceolate, 1' or less long; racemes com nearly sessile: fls very sm: siliques round-oval, somewhat twisted, pubescent, distant, 2 or 3 li long, on pedicels 1 li long or less, 12-sds; stig sessile.

Jones, Torr Cl b 9:124.

Valle de las Palmas, Baja (Or 1392). Colusa Co, Cal.

Heterodraba unilateralis Greene, Cal ac b 1:72:

STREPTANTHUS LONGIROSTRIS

Watson.

Leaves not clasping nor auriculate; glabrous, glaucous, annual. Wash. to Baja Cal. Sonora, Utah.

STREPTANTHUS CAMPESTRIS Watson.

"Annual or biennial, glabrous and

glaucous, stout, 2-4 ft. high, branching: leaves rather thick, acute, often irregularly toothed, the teeth at first setose-tipped and the leaf sparingly setose-ciliate near the base; cauline leaves lanceolate or oblanceolate: fls more or less dark purple, 4 or 5 lines long, the sepals often hairy at the tip: filaments distinct: pods spreading and curved, 3-6 in. long by about a line broad, beaked with a stout style and shortly lobed stigma: seeds winged."—S. Watson, *Am ac pr* 24:125. Campo, Cal.

THYSANOCARPUS PUSILLUS Hooker.

See *Athysanus pusillus* Greene.

THYSANOCARPUS CONCHULIFERUS.

"Glabrous and glaucous, 3-10 i hi, rather stout and branching: uppermost lvs remotely toothed, the middle and lower as remotely linear-lobed (the lobes straight and divaricate), all except the lowest auriculate-clasping: racemes short and dense: pet spatulate-oblong, nearly 1½ li long, light p; samara 1½ li long, cymbiform, the somewhat conduplicate margin parted into spatulate lobes, or these coherent above, leaving narrowly oblong perforations: stg ½ li long beyond the margin of the fr: pedicels ½ i long, firm but recurved."—Greene, *Pittonia* 1:31; *Torr cl b* 13:218. Cruz.

K. Brandegee, *Zoe* 1:132.

Variety **PLANIUSCULUS** Robinson.

"Fr plano-convex or slightly concavo-convex, not perceptibly reticulated but hirsute upon both sides: pedicels 4-6 li long. Island of Santa Cruz with type, T. S. Brandegee, April, 1888."—Robinson, *Syn Fl* 1:113.

CAPPARIDACEAE.

Herbs or rarely shrubs or trees with pungent or acrid watery juice, simple or palmately compound alt lvs and axillary or terminal, solitary or racemose, mostly regular and perfect fls: Sep 4: pet 4, sessile or clawed: sta usually 6, equal, inserted on the receptacle; anth oblong, longitudinally dehiscent: Ovary sessile or stipitate, 1-celled; ovules many, borne on parietal placentae: Fr a capsule or berry: Sds mostly reniform: endosperm 0; cotyledons somewhat coiled.

Genus WISLIZENIA Engelmann.

"Characters nearly as in *Cleomella*, but the pod didymous; valves contracted upon the solitary sds and decid with them, nutlike, nerved or reticulated, open at the scar: sty elongated. Smooth erect branching ann with y racemose fls and 1-3 foliolate lvs."—Brewer and Watson, *Bot. Cal* 1:52.

Edward Lee Greene, in a "Revision of the Genus *Wislizenia*" (*Proceedings of the Biological society of Washington*, 19:127-132, 6 S 1906), recognizes ten species, some without reticulation in the valves, and one perennial.

WISLIZENIA REFRACTA Engelmann.

"On the upper crossing of the Rio

Grande, near El Paso; fls and fr in Ag. An interesting and quite anomalous plant, on account of its fr with an almost complete dissepiment, and of its stipules and bracts. Tuberculated valves of the cap separating from the placentae, and through open, retaining the only (rarely two) seed-placentae forming a complete dissepiment, which, in the perfectly ripe and dry state, finally becomes perforated in the centre."—Engelmann, *Wisliz Rep* 100 (16). 1848.

Mohave and Colorado deserts; Sonora; N. M.

The Cal plants hitherto referred to this are considered by Greene as distinct species.

RESADACEAE.

Ann or per herbs with alt lvs, gland-like stipules and racemose or spicate bracted unsymmetrical fls: Cx 4-7 parted, more or less irr: Pet 2-6, usually lacinate or dentate: Sta hypogynous, 3-10, borne on the base of the cx or on a dilated nectariferous and oblique disk, declined or unilateral: Ova 1, composed of 3-6 carpels, at least the tips distinct; ovules many: Fr capsular: sds reniform; endosperm 0; cotyledons incumbent.

Pet 4; disk present..... *Reseda*

Pet 2; disk 0..... *Oligomeris*

OLIGOMERIS SUBULATA Boiss.

See *Oligomeris glaucescens* Camb.

OLIGOMERIS GLAUCESENS Camb.

Orcutt, *Am pl* 1:126 D.

VIOLACEAE.

Violet family. Ours herbs with alt or basal simple entire or lobed lvs, and axillary or scapeose usually solitary perfect, ir fls; sep 5, unequal: pet 5, hypogynous, imbricated in the bud, the lower one spurred; perfect sta 5, hypogynous; anth erect, connivent in a ring, sessile or on short fl: Ova 1, 1-celled, with 3 parietal placentae; sty simple: capsule dehiscent by valves: sds anatropous with a crustaceous testa; embryo straight; endosperm copious.

Genus VIOLA Linnaeus.

Violet; characters of the family. The later fls often produced on runners or on short peduncles, and are apetalous or cleistogamous and abundantly fertile, while the early showy ones are often sterile.

VIOLA AUREA Kellogg.

See *Viola praemorsa* Douglas.

VIOLA CANINA L.

Mostly low and rather sm-lvd, spring fl'g and later cleistogamous: cor bl or vio (rarely a w, variety); pet inconspicuously lineate: spur cylindrical, from a third to more than half the length of pet: cap ovoid-oblong. Eu; Asia; NAM.

Variety **ADUNCA** Gray, *Am ac pr* 8:377 (1873).

Nearly glabrous, multicapital and mostly very short-stemmed from more indurated rt-stocks: lvs from ovate-or-

bicular to oblong-ovate, barely subcordate, rarely lower ones more deeply cordate; pet $\frac{1}{2}$ - $\frac{3}{4}$ i long; spur com almost as long as pet, either a little curved or hooked or straight. Colo; Mont; Ar; Alk.

Parish, Erythea 3:61.—San Ber mts at 5,000-7,400 ft.

Type locality: "west coast of North America."

Viola adunca Smith, in Rees, cycl xxxvii (1819).

VIOLA CUCULLATA Ait.

Rt-stock thick and branching, not producing runners: lvs long-petioled, smooth or more or less pubescent, cordate with a broad sinus, the lowest often reniform and the later acute or acuminate, crenately toothed, the sides rolled inward when young; peduncles 3-6 i hi: fls deep or pale vio or p (sometimes w): pet 3-8 li long, the lateral and often the lower ones bearded; spur short and thick. Atlantic states.

Cockerell w 5:6.

SBer (Parish 484).

VIOLA PRAEMORSA Douglas.

More or less pubescent with short spreading hairs: the sts ascending from a straight rt-stock, 2-6 i hi: lvs ovate to lanceolate, cuneate or sometimes truncate at base, obtuse, $\frac{1}{2}$ - $1\frac{1}{2}$ i long, coarsely crenate: stipules foliaceous, lanceolate, lacinate: peduncles a little longer than lvs: sep linear acuminate: pet 4-6" long, as in *V. pedunculata*, but lighter y: cap nearly globular, 3 li long, pubescent.

Cajon Pass, SBer Co! Hanson's ranch, Baja! Mendocino Co. SBer mts (Parish 841).

Douglas in hb, Lindl, Bot Reg xiv, t 1254 (1829).

Type locality: "in dry upland soils, under the shade of solitary pine-trees, on the banks of the Columbia, and the plains of the river Aguilar, in California."

Viola aurea Kell. Leaves ovate or narrower, crenate.

VIOLA PURPUREA Kellogg.

Kellogg, Cal ac pr 1:56.

Robinson, Syn Fl 1:200, refers this to *Viola praemorsa*.

Variety *PINETORUM* Greene, Fl Fr 243 (1891).

Viola pinetorum Greene, Pittonia 2:14 (1889); 3:42 (1896).

Robinson, Syn Fl 1:200, refers this to *Viola praemorsa* var. *venosa* Gray.

VIOLA CHRYSANTHA Hook.

Leaves pinnatifid: fls orange-y, brown on back.

FRANKENIACEAE.

Low per herbs or undershrubs with opp entire exstipulate lvs, sessile and often united at the membranous and somewhat sheathing base: Fls sm, perfect, solitary and sessile in the axils of the branches and branchlets: Cx tubular or prismatic, furrowed, its lobes 4-5, valvate: Pet as many as cx-lobes, hypogynous, narrowed to a claw which bears an appendage on its inner face:

Sta 4-7 or rarely more, hypogynous; anth 2-celled, longitudinally dehiscent: Ova 1-celled, with 2-4 parietal placenta; sty 2-4-cleft into filiform divisions: Capsule invested by the persistent ex: Sds few, on slender funiculi which are attached to the margin of the valves.

Genus FRANKENIA Linnaeus.

Characters of the family.

FRANKENIA GRANDIFOLIA.

St much branched from a somewhat woody base, more or less erect, slender, 1-3 dm high, glabrous or soft-pubescent, very lfy: lvs obovate to narrowly oblanceolate, revolute, 6-12 mm long, dull g; cx linear, 6 mm long, strongly furrowed, the lobes short, acute; pet sm, r, the blade 2 mm long or more, arose at the summit, appendages of the claw bifid; sta 4-7; sty 3-cleft; capsule shorter than the cx, linear, angular; sds num.

Abrams, Fl LA 252.—Common in saline marshes. Flowering all-summer.

Cham & Schlecht, Linnaea 1:35 (1826).

Type locality: "in sabulosis Novae Californiae ad portum St. Francisci." Variety *CAMPESTRIS* A. Gray.

FRANKENIA PALMERI.

A slender shrub, 1 ft high or less, the num fascicled lvs only 1-2 li long, thick and strongly revolute, canescent with a w encrustation: cx $1\frac{1}{2}$ li long: pet linear, a little exserted: sta 4: sty bifid: capsule 2-seeded.

Watson, Am ac pr 11:124.

Type locality: eastern side of Baja California.

National City, Cal (Or 33).

CARYOPHYLLACEAE.

Pink Family. Am or per herbs, rarely woody at base, with nodose sts and opp entire lvs: fls regular, perfect, or rarely unisexual by abortion: Sep 4-5, united into a tube or distinct: pet as many or 0, often emarginate-toothed or deeply bifid: sta usually as many as pet and alt with them; fl sometimes slightly cohering at the base, anth introrse: Sta 2-5, free or united below; ova free, 1-celled or imperfectly 2-5-celled at base; placenta axial; ovules usually num: fr a many-seeded capsule, opening by 2-5 entire or bifid valves, or 1-seeded and indehiscent: Embryo straight or curved; endosperm present.

Genus SILENA Linnaeus.

Catch-fly: Ann or per herbs with clustered or solitary sts and bright r or usually w fls: Cx more or less inflated, tubular, ovoid or campanulate, 5-toothed or 5-cleft, 10-many-nerved; pet 5, narrow, clawed: Sta 10, sty 3, rarely 4-5; ovary 1-celled or incompletely 2-4-celled: Capsule dehiscent by 6 or rarely 3 apical teeth: Sds usually spiny or tubercled.

SILENA CONOIDEA L.

Davidson, Erythea 1:58. Monica.

Brandege, Zoe 1:113 Cat.

Silena multinervia S. Watson.

SILENA VERECUNDA S. Watson.

Finely hoary pubescent, glandular-viscid above; sts several, usually erect, 20-40 cm hi, lfy below; lvs narrowly lanceolate, oblanceolate or spatulate to linear, acute, 3-5 cm long; fls terminal on the short branches or borne in 3-fid lateral cymes; cx in fr clavate or obovate; pet rose-color, blades shorter than the pubescent claws, 2-cleft, appendages oblong or lanceolate, obtuse and often toothed at the apex; capsule ovoid, stipitate.

Hall, U 78.

Abrams, Fl LA 145.—Gabriel: SBER mts.

Genus STELLARIA Linnaeus.

Tufted ann diffuse with cymose w fls: sep usually 5; pet 5, 2-cleft or 2-parted, rarely 0; Sta 10 or less, hypogynous; Ova 1-celled, several-many-ovuled: sty commonly 3, rarely 4-5, usually opp the sep; Capsule globose to oblong, dehiscent by twice as many valves as styles; Sds smooth or roughened.

Alsine Linnaeus.

Genus SAGINA Linnaeus.

Low tufted ann or per herbs, with subulate lvs and sm pedicelled whitish fls: Sep 4-5; Pet of the same number, entire, emarginate or 0; Sta of same number, twice as many, or fewer; Sty as many as the sep and alt with them; Capsule 4-5-valved, at length dehiscent to the base, the valves opp the sep.

Genus POLYCARPON Linnaeus.

Low diffuse, dichotomously branched ann with flat stipulate lvs and minute cymose fls: Sep 5, carinate-concave; pet 5, minute, hyaline; Sta 3-5; Ova 1-celled; sty short, 3-cleft; Cap 3-valved, several-seeded.

POLYCARPON DEPRESSUM Nuttall.

Very slender, prostrate, the many branches 2.5-5 cm long; lvs opp, spatulate, glabrous; stipules small, narrow; fls minute; the pedicels with small bracts; pet very narrow, shorter than the sep, entire; capsule globose, 6-12-seeded.

Jepson, Fl Mid Cal 171. Monterey Co.

Abrams, Fl LA 149.—"Not common."

Genus LOEFLINGIA Linnaeus.

Low much branched rather rigid and pungent-leaved ann: Lvs with adnate and connate setaceous stipules; Fls sessile in the axils of the lvs and branches: Sep 5, rigid, carinate; Pet minute or 0; Cap 2-valved, several-seeded.

LOEFLINGIA PUSILLA Curran.

Curran, Cal ac b 1:152. Tehachapi, 4000 ft alt.

"Glandular-pubescent, low and spreading; sts 2-3 l long; lvs subulate; sep narrowly lanceolate, abruptly acute, all entire, neither rigid nor squarrose; pet 0; sta 5; sty 0; cap triangular as long as the sep, many-seeded. My. A much more delicate plant than *L. squarrosa*."—Curran.

LOEFLINGIA SQUAREOSA Nuttall.

Much branched, prostrate or ascending, 5-15 cm high; herbage glandular-pubescent; lvs and sep subulate setaceous, rigid and recurved, lvs 4-6 mm long, the sep somewhat shorter; cap elongated, triquetrous, exserted, many-seeded.

McClatchie, *Erythea* 2:79, near Redondo, Cal.

Abrams, Fl LA 150.—Streets of Los Angeles and Pasadena, Davidson, McClatchie.

Calmalli, Baja (Br).

Jepson, Fl Mid Cal 171.

Genus SPAGUEA Torrey.

"Succulent herbs, with sm fls spicate-ly or capitate crowded at the ends of naked or leafy-bracted peduncles: sep nearly equal, emarginate at each end; pet 4, unguiculate; sta 3, opp the 3 larger pet, exserted."—Howell, *Erythea* 1:39.

SPAGUEA UMBELLATA Torr.

Torrey, Pl Fremont 4 t 1.

"Bien; sts all arising from a single crown: radical lvs spatulate to oblanceolate, with thick petioles 2-6 l long; fls in dense umbellate hds. Siskiyou and Sierra Nevada mts."—Howell, *Erythea* 1:39.

Calyptridium umbellatum Greene, Torr cl b 13:144.

Genus CARUM Linnaeus.

Cx-teeth sm: fr ovate or oblong, glabrous; carpel with filiform or inconspicuous ribs, strengthening cell 0; oil-ducts 2-6 on the commissural side; sd dorsally flattened, more or less sulcate beneath the oil-tubes; face plane or slightly concave: smooth erect slender herbs, with tuberous or fusiform fascicled rts, pinnate lvs with few linear lfts, inv and involucels of few-many bracts, fls w.

CARUM GAIRDNERI Benth. & Hook.

St 1-4° hi, from fascicled tuberous or fusiform rts: lvs few, usually simply pinnate, with 3-7 linear (sometimes almost filiform) lfts 2-6' long (the lower rarely pinnate); upper lvs usually simple; umbels 6-15-rayed, with inv of several bracts or 0, and involucels of linear acuminate bractlets; rays about 1½' long; fr ovate, sm, ½-1" long, with long sty; sd terete.

B & H, Gen Pl 1:891.—C-R 128.

Abrams, Fl LA 286.

Vancouver Island (Macoun).

Ut; Wyo; Mont.

Cuymaca! Ha U 98.

Edosmia Gairdneri T-G, Fl 1:612.

CARUM LEMMONI C & R

Resembling *C. Gairdneri*, but fr oblong, tapering somewhat at base and apex, 3 mm long and 2 mm broad, with conspicuous ribs, each of which contains a sm group of strengthening cells; cx-teeth prominent, concealing the stylopodium; sty long and slender.

Abrams, Fl LA 286. Occasional in marshes toward the coast.

Genus CAUCALIS Linnaeus.

Rough hispidulous ann with decompound lvs dissected into sm seg: fls w,

in simple or nearly simple umbels: ex-teeth prominent: fr flattened laterally: primary ribs 5, filiform, bristly; secondary ribs 4, prominent, winged, bearing barbed or hooked prickles: oil tubes 1 under secondary ribs, 2 on the commissural side.

CAUCALIS MICROCARPA H. & A.

Erect, slender, 6-9' hi; lvs 2-3 times ternate and much dissected, slightly hispid; ped solitary at ends of branches or in clusters of 2 or 3 at upper nodes, 1-2' long, bearing unequally rayed umbels: rays 3-6, 8" long or less; inv of foliaceous dissected bracts; involucels of entire or somewhat divided bractlets; fr oblong, 2" long, armed with rows of hooked prickles.

Abrams, Fl LA 282.

Wash to Baja; Arizona.

CAUCALIS NODOSA Hudson.

Knotted Hedge Parsley. Umbels sm and condensed, scattered along the sts opp the lvs, on ped 1-2" long. Eu. McClatchie, Erythea 2:123, Pasadena. Abrams, Fl LA 282.

Genus CICUTA Linnaeus.

Tall branching glabrous per growing in marshes or by streams: rt-stocks short and erect, or horizontal and branching: lvs pinnately or tenately compound; fls w in compound umbels: ex-teeth somewhat prominent: inv present or 0; involucels of sm bractlets: fr oblong to orbicular, glabrous: ribs corky, broad but low, the lateral in cross-section evidently larger than the intermediate and dorsal: oil-tubes 2 on the face, 1 in the intervals. Water Hemlock.

CICUTA BOLANDERII S. Wats.

A tall and conspicuous plant: rt-stock nearly or quite vertical; st branched above, 6-10' hi, with large radical and cauline bipinnate lvs 2' long or less; lfts lanceolate, serrate, 2' long; bracts and bractlets lanceolate, the former often scarious-margined; rays 1½' long, subequal, pedicels 2" long; fr orbicular, 2" long, prominently ribbed, the quite mature carpels rather strongly concave on the face, thus appearing somewhat lunate; oil-tubes broad, depressed in the channeled sd.

Davidson, Pl LA Co 7.

CICUTA MACULATA Linn.

SBER (Parish 975). Through the U. S.

CICUTA OCCIDENTALIS Greene.

Stout, 9-18 dm hi: rt-stock short, giving rise to slender rts above and a fascicle of thick and elongated rts below: lvs twice pinnate: lfts firm linear-lanceolate to lanceolate, 5-8 cm long, sharply serrate and conspicuously reticulate beneath: fr oblong, 3 mm long, constricted at the commissure, the ribs apparently equal, but laterals largest in section, intervals broad: oil-tubes large.

Abrams, Fl LA 265. Frequent in marshes toward the coast.

Genus CONIUM Linnaeus.

Poisonous bien, with spotted sts, large decompound lvs with lanceolate pinnatifid lfts, inv and involucels of narrow bracts, and w fls. Poison Hemlock. **CONIUM MACULATUM** Linn.

A large branching herb, in waste places, widely distributed. Eu.

McClatchie, Erythea 2:123, Pasadena.

Abrams, Fl LA 283.

Cruz (Greene). Naturalized.

Genus DAUCUS Tournefort.

Bristly or hispid ann or bien with dissected decompound lvs and w fls: umbels compound, concave, surrounded by cleft foliaceous bracts and borne on long ped; involucels of entire or toothed bractlets: ex-teeth obsolete: fr somewhat flattened dorsally: primary ribs slender, bristly; secondary ribs with a single row of prominent barbed prickles: oil-tubes 1 under the secondary ribs, 2 on the commissural side.

DAUCUS IUSILLUS Michx.

Rattlesnake weed: 4-7' hi; sts and ped retrorsely hispid; lvs finely dissected into linear seg; rays mostly 2-5" long, sometimes as much as 1-1½' long, somewhat unequal; pedicels very unequal, 1-2" long or almost wanting; fr 1½-2" long. Yerba del Vibora of the Spanish-Californians.

Abrams, Fl LA 292.

DAUCUS CAROTA L.

Carrot. Bien rt fleshy, conical; sts erect, branching, 2-3' hi, commonly smooth; lvs many times dissected into sm linear or lanceolate seg; seg of inv linear-lanceolate or subulate; rays very num, 1-2' long; umbels in fr 2-4' broad, concave and like a bird's nest; fr 2" long. Garden escape, sparingly naturalized in LA Co, to Alameda, Cal.

Abrams, Fl LA 292.

Davidson, Pl LA Co 7.

Genus FOENICULUM Adans.

Stout glabrous per with dark g aromatic herbage: lvs decompound, dissected into num filiform seg: fls y, in large compound umbels: inv and involucels 0; ex-teeth obsolete: fr oblong: ribs prominent: oil-tubes 1 in the intervals, 2 on the commissural side.

FOENICULUM VULGARE Gaertn.

Davidson, Erythea 1:59, LA Co.—Pl LA Co 6.

Parish, Zoe 1:10.

See *Foeniculum foeniculum*.

Fennel: Europe; LA (Hasse).

FOENICULUM FOENICULUM Karst.

Per branched, 7-20 dm hi; lvs very finely dissected into capillary seg; petioles broad, clasping; umbels large, 9-25 rayed; rays glaucous, 2.5-7.5 cm long, in fr; pedicels 2-8 mm long, slender; fr about 6 mm long. Eu. Sweet Fennel.

Abrams, Fl LA 283.

Foeniculum vulgare Goertn.

Genus OENANTHE Linnaeus.

Aquatic glabrous herbs with succulent st from thick rt-stock: lvs pinnately compound; fls w in compound umbels, terminating the branches: inv present or 0; involucels present: ex-teeth rather prominent: sty slender, at length elongated: fr globose-ovate, cylindrical or slightly flattened laterally: ribs broad, obtuse, corky; commissural face also corky: oil tubes 1 in the intervals, 2 on the face, sd furrowed beneath them. **OENANTHE CALIFORNICA** S. Watsor.

Jepson, Erythea 1:13.

Erect, 2-4' hi; lvs bipinnate; lfts elliptic-ovate in outline, 3-cleft or part-

ed and also coarsely toothed or incised, those of the upper lvs crowded on the rachis and sometimes tending to be conduplicate; rays less than 1-2" long; bracts few or 0; bractlets several to many, lanceolate and shorter than the pedicels; fr subcylindric, 2" long crowded.

See OE. sarmentosa Californica.

OENANTHE SARMENTOSA Presl.

Fr ovate-globose, 1" long. Monterey Co. Cal. north.

Parish, Zoe 1:9.

Variety **CALIFORNICA** C & R, 82

Abrams, Fl LA 287.

Oenanthe Californica S. Watson.

Genus **OSMORRIZA** Rafinesque.

Cx-teeth obsolete; fr linear to linear-oblong, more or less attenuate at base, acute above, glabrous or bristly on the ribs; carpels slightly flattened dorsally or not at all, nearly pentagonal in section, with equal ribs, thin pericarp, and a well defined group of strengthening cells beneath each rib; stylopodium sometimes depressed; sty long or short; oil-tubes obsolete in mature fr (often num in young fr); sd-face from slightly concave to deeply sulcate.

Washingtonia Raf, fide Britton.

OSMORRIZA BRACHYPODA Torr.

Sts rather stout, 3-9 dm hi, pubescent or sometimes glabrous; lvs ternately compound; lfts 2-3 cm long, acute, laciniately lobed or toothed; umbel 1-6-rayed; inv and involucl of linear bracts, the latter equaling or exceeding the fls; rays, 3.5-10 cm long; pedicels 1-2 mm long; fr 12-16 mm long, 4 mm wide, short attenuate at base, rough-bristly on the very prominent ribs; stylopodium and sty 3 mm long, the former broad and somewhat depressed; sd-face very concave, nearly inclosing a central cavity.

Torrey, Pac Ry R 4:93.

Brewer & Watson, bot Cal 1:262. Central Cal.

Davidson, Pl LA Co 7.

SBer Co (Parish 985, 1945); Nevada Co.

Washingtonia brachypoda Heller, Cat NA pl 99.

Abrams, Fl LA 281.

OSMORRIZA NUDA Torr.

Sweet cicely. Rather slender, 2-3° hi more or less pubescent with spreading hairs; lvs twice ternate; lfts ovate, 1-2" long, acute or obtusish, rather deeply cleft and toothed; umbel long-peduncled, 3-5-rayed, naked or with sm caducous inv and involucl; rays 2-3' long; pedicels 3-9" long; fr slender, 6-7" long, 1" broad or less, acutely ribbed; sty and stylopodium very short; the attenuated base 2" long; sd terete, sulcate on inner face.

Torrey, Pac Ry R 4:93.

Brewer & Watson, bot Cal 1:262. Mts SD Co; Ak; Colo.

Hall, U 98.

Osmorhiza brevistylis Hooker, Fl 1:272 in part, t 97.

Washingtonia nuda Heller, Cat N A pl ed 1, 5.—C-R Mon N A Umb 64.—Hall, U 98.

Genus **SIUM** Linnaeus.

Smooth per growing in water or wet

places, with pinnate lvs, serrate or pinnatifid lfts, inv and involucl of num narrow bracts, and w fls: cx-teeth minute: fr flattened laterally, ovate to oblong, glabrous; carpel with prominent corky nearly equal ribs; stylopodium depressed; sty short; oil-tubes 1-3 in the intervals; sds subangular, with plane face.

SIUM CICUTAEFOLIUM Bmel.

Stout, 6-8 dm hi; lfts 3-8 pairs, linear-lanceolate, sharply serrate and mostly acuminate, 5-13 cm long, lower lvs sometimes submersed and finely dissected; umbel many-rayed; rays 2.5-4 cm long; pedicels 2-6 mm long; fr 3 mm long, with prominent ribs; oil-tubes 2-6 on the commissural side.

Abrams, Fl LA 286. Oak Knoll (McClatchie).

SIUM ERECTUM Huds.

Davidson, Pl LA Co 7.

See Berula erecta Coville.

SIUM HETEROPHYLLUM Greene.

Sts stout, angular and flexuose, 1 m hi; lowest lvs with a single lamina which is rather broadly rhombic-lanceolate, serrate or lacinate-cleft, 5-20 cm long; petiole stout, fistulose; other lvs 3-lobed or divided and passing to the truly pinnate, with 2 pairs of broadly lanceolate, acute, serrate lfts; bracts broadly lanceolate, tapering at both ends; fr 3 mm long, strongly ribbed.

Abrams, Fl LA 286, near Pasadean (Davidson).

McClatchie, Erythra 2:123, Pasadena.

Genus **SPRENOSCIADIUM** Gray.

Nearly simple thick-rooted per, with stout sts glabrous up to the tomentose umbel, once or twice pinnate lvs with bladderly dilated petioles, and scarious w or p'lish fls sessile on an enlarged receptacle and forming a compact hd: cx-teeth obsolete; fr flattened dorsally, cuneate-obovate, hirsute; carpel strongly flattened at base, winged above, dorsal and intermediate wings narrow, lateral broader; stylopodium sm and conic or flat in fl; oil-tubes solitary in the intervals, 2 on the commissural side; sd-face plane.

SPRENOSCIADIUM CAPITELLATUM.

Gray, Am ac pr 6:536.

Very stout, 3-14 dm hi; lvs large and glabrous; lfts oblong to linear-lanceolate, 2.5-5 cm long, with rather few lacinate teeth or lobes, more or less entire below; umbel equally 4-15-rayed, with globose umbellets of sessile pubescent fls; bractlets few, decid; ray 2.5-5 cm long; fr cuneate-obovate, about 5 mm long.

Abrams, Fl LA 288. Clenega (Davidson).

Selinum capitellatum B & H. Gen 1:915.

Brewer & Watson, Bot Cal 1:265.

Genus **SELINUM** Linnaeus.

Tall branching per with pinnately decompound lvs; fls w in compound umbels; inv of few bracts: involucl of many bractlets: cx-teeth obsolete; fr oblong to obovate, flattened dorsally, glabrous or pubescent, with rather prominent disk; ribs winged, the lateral usually broadest; oil-tubes 1 in intervals, 2-4 on the commissural side.

SELINUM CAPITELLATUM B & H.

See *Sphenosciadium capitellatum*.
Oregon; Nevada; Jac (Parish 986).

Genus VELLAEA DC.

Cx-teeth obsolete or prominent: fr oblong to orbicular, glabrous or pubescent; carpel somewhat flattened laterally, with prominent equal filliform ribs (the intermediates somewhat distant from the laterals), and a thin pericarp with a very sm ill-defined group of strengthening cells beneath each rib: oil-tubes conspicuous, 3-6 in the intervals, 4-10 on the commissural side (sometimes almost continuous): sd terete; the face strongly involute, enclosing a central cavity.

VELAEA ARGUTA C & R.

Glabrous, 1-2° hi, rarely acaulescent; lvs simply pinnate; lfsts 5-7, ovate, 1-1½' long, lowest petiolulate, often subcordate, finely and sharply mucronate-seriate, the terminal often 3-lobed; umbel 12-16-rayed, mostly with no involucre, and involucl of few linear acuminate bractlets; rays 2-3' long; pedicels short: cx-teeth prominent: fr oblong, smooth, 2½-3½' long, acutely ribbed: oil-tubes 3-5 in the intervals, 4-6 on the commissural side.

Abrams, Fl LA 283.

Hall, U 99.

Coulter & Rose, Mon 79.

Arracacia arguta B & H, Gen Pl 1:885.

Deweya arguta T. & G.

VELAEA PARISHII C-R.

"Glabrous throughout, nearly acaulescent, about a foot hi: lvs thickish, ternate-pinnatifid, the segments ovate, irregularly cuspidate-toothed and lobed, with revolute margins: umbel about 20-rayed, with no involucre and involucl of few setaceous bractlets; rays 2' or more long; pedicels about 4" long: cx-teeth prominent: fr (immature) oblong, glabrous, about 3" long, with prominent ribs; oil-tubes 3 or 4 in the intervals, 4 or 5 on the commissural side.—C-R 121.

Sber mts (Parish 978 and 1827).

Drudeophytum Parishii C-R, M 82.—Ha U 99.—Abrams, Fl LA 284. *Monica*, Gabriel mts.

VELAEA VESTITA C. & R.

"Acaulescent, 2-4' hi, densely clothed throughout with w soft spreading hairs: lvs pinnately compound, with num crowded confluent oblong seg; umbel 10-15-rayed, with no inv, and involucl of num lanceolate bractlets; rays 4-8" long; fr sessile or nearly so, the sterile pedicels 6-9" long; fr ovate-oblong, pubescent, 2-2½" long, 1½" broad, with inconspicuous ribs: oil-tubes 3-4 in the intervals, 3 on the commissural side.—C-R 122 f 140.

Arracacia vestita, Watson, Am ac pr 22:415.

Sber mts (Parish 598); Tulare Co. (Palmer).

Deweya vestita Watson Am ac pr 17:373.

Genus PEUCEDANUM Linnaeus.

Acaulescent or short caulescent dry-ground per, with fusiform or tuberous rts, ternate sometimes pinnate to dissected lvs, no inv, and y, w or p fls: cx-teeth usually obsolete: fr strongly flattened dorsally, oblong to orbicular: car-

pel with filiform and approximate dorsal and intermediate ribs, and winged laterals coherent until maturity with those of the other carpel; pericarp thin with strengthening cells beneath each rib: stylopodium 0; oil-tubes 1-several in the intervals, rarely obsolete, 2-10 on the commissural side: sd dorsally flattened with plane or rarely slightly concave face.

Lomatium Rafinesque.

PEUCEDANUM UTRICULATUM Nutt.

Nuttall, in T & G, Fl 1:628.

Caulescent, suberect, branching at base, 12-16' hi, or near the sea low and decumbent; lvs pubescent, triternately dissected into linear seg 1-5" long; petioles conspicuously dilated; rays unequal, fertile 1-3' long; pedicels 3" long or less; inv of 1-3 bracts; bractlets several, lanceolate or obovate, scarious-margined toward the base, mucronate, sessile or with a petiole-like base; fr 2½-4" long, elliptical or oblong, glabrous; wings scarcely so wide as body; oil-tubes 4-6 on face, solitary in intervals, or with short accessory ones in dorsal intervals; sd-face slightly concave.

Jepson, Fl W Mid Cal 359.

Da T. S Ber (Parish 984); British Columbia; Idaho.

Lomatium utriculatum C & R.

Abrams, Fl LA 289.—"Frequent on the mesas and gravelly foothills."

PEUCEDANUM CARUIFOLIUM T & G.

T & G, Fl 1:628.

Nearly acaulescent; ped erect, 3 or 4 from 1 rt, 8-14' hi; lvs hispidulous, triternately and very much dissected into linear seg; seg 3-6" long, ½" wide or less; fertile rays 1-1½' long; pedicels 1½-2" long; inv 0; involucl of distinct or nearly distinct broadly ovate or oblong seg, entire or toothed at apex, often borne on a petiole-like base; fr glabrous, 3-5" long; wings ½ to almost as wide as body; oil-tubes 0 on the face, 0 in the intervals or indistinct. SF; Cruz; Rosa.

Davidson, Pl LA Co 7.

PEUCEDANUM DASYCARPUM T. & G.

Nearly acaulescent; ped several from a stout tap rt, erect or ascending, 6-15' hi; herbage with short stiffish pubescence; lvs ternately decomposed and dissected into sm narrowly linear seg; seg 1-2" long, less than ½" wide; fertile rays 6-11, 1-2½' long; pedicels in fr 3-6" long; involucl unilaterial, composed of several ovate or lanceolate more or less united bractlets; ova tomentose or conspicuously woolly; fr suborbicular, 4-5" long and nearly or quite as broad; wings quite as broad or broader than body; oil-tubes variable, 1-3 in intervals, 4 or 2 on commissural face.

Lomatium dasyacarpum C & R.

Abrams, Fl LA 290.

Peucedanum Pringlei C & R, Bot gaz 13:209.

SD to Lake Co.; NM (Greene).

PEUCEDANUM VASEYI C. & R.

C. & R. Bot gaz 13:144. Sber mesas and mts (G. R. Vasey; Parish).

Nearly acaulescent, ped erect or ascending, 3½-6' hi; petioles inflated; lvs 2-5½' long; lf-seg oblong, mucronulate,

1" long or less, hirsutulous on margins and rachis; rays 8-16, 1-2' long in fr; pedicels 4-5" long; bracts 1 or 0; bractlets few, obovate, crisped or toothed; fls y; fr broadly oblong, 6" long, 4" broad, emarginate; body of fr 4" long, raised on a stipe 2" long, both stipe and body with broad wings twice as wide as body; wings in mature fr usually reddish; oil-tubes solitary in intervals, 4 on commissural side. SBER mts.

Jepson, Fl W Mid Cal 359.
Lomatium Vaseyi C & R.
Abrams, Fl LA 289. Frequent in heavy soil on the mesas.

PEUCEDANUM VILLOSUM Nutt.
Nuttall, MS, in Watson, bot King Exp 131 (1871).

Davidson, Pl LA 7.
Type locality: "on the plains of the Platte."

More or less densely pubescent, 3-6' hi; lvs with very num somewhat crowded sm narrow seg; flg umbels dense: involucels of several sm linear bractlets: fr oval, pubescent; oil-tubes probably several in the intervals. Nev; Nebr; Ar; Ut; SD Co!

Watson, bot King Exp 131.
Brewer & Watson, Bot Cal 270.

PEUCEDANUM NEVADENSE S. Watson, Am ac pr 11:143.

Glaucous, puberulent: lvs less compoundly dissected, seg coarser than in *P. dasyacarpum*: rays often unequal, 1-2' long; involucels smaller, of several linear lanceolate bractlets, usually distinct; fr somewhat pubescent, nearly orbicular to ovate, 3-5" long, 2-4 wide; ribs prominent; cx-teeth obsolete: oil-tubes 2-3 in intervals, or 4 in the lateral ones (perhaps very rarely 1), 4-6 on the commissure. Son; NM; S Cal (Parish 1828).

Brewer & Watson, Bot Cal 1:270.
Peucedanum nudicaule Watson, bot King Exp 130, etc, not Nuttall.

PEUCEDANUM NEWBERRYI Watson.

"Acaulescent or nearly so, glabrous or somewhat viscid-pubescent; lvs ovate or oblong in outline, 1-2' long, shorter than the petioles, pinnately 3-folliolate; upper leaflet 3-lobed, the lower 2-lobed and sessile, lobes sparingly incised; peduncle exceeding the lvs; umbel naked, unequally 4-8-rayed; involucels foliaceous and unilateral, the 4-8 very unequal segments oblong, acute or obtuse, mostly exceeding the fls; cx-teeth ovate to linear-lanceolate, acute; pet y; disk broad; fr glabrous, ovate, exceeding the short pedicels.—Remarkable for its conspicuous foliaceous involucels. Fr immature, but sufficiently grown to show its character. NM (Dr. Newberry, on the Mexican boundary survey); Northern Ar, on stony soil (Mrs. E. P. Thompson). Ap."—S. Watson, Am nat 7:301 (My 1873).

PEUCEDANUM GRAVEOLENS B & H.

Davidson, Erythra 1:59. LA Co.

PEUCEDANUM MOHAVENSIS C. & R.
C & R, Rev Umb 62 (1888).

Mohave (Curran).
Lomatium Mohavense C & R Mon 234 (1900).

PEUCEDANUM HASSEI C. & R.

"Sub-aculescent, 16' hi; the very broad-winged fr 7" wide and 8" long; oil-tubes 4 in the face and 4 on the back, with occasionally an additional one in one of the lateral intervals."—Jepson.

Jepson, Erythra 1:10 Vaca mts, "lfts smaller and thicker".

Davidson, Pl LA Co 7.

Genus **PASTINACA** Linnaeus.

Tall branching bien with angular or fluted lfy sts from thick rts; lvs large, pinnate: fls y, in compound umbels: inv and involucels sm or commonly 0: fr oval, glabrous, strongly compressed: lateral ribs winged; dorsal and intermediate ribs filiform: oil-tubes 1 in intervals, 2-4 on commissural face.

PASTINACA SATIVA Linn.

3-5° hi; lfts ovate, serrate, somewhat incised or even widely 3-lobed, 3-4 long, rays 15-20, 1-2½' long; fr nearly orbicular, 2½-3" long; oil-tubes conspicuous. Escape from garden. LA; Sacramento, Cal.

Parish, Zoe 1:10.
Davidson, Erythra 1:59. LA Co. Pl LA Co 7.

Abrams, Fl LA 291.
C & R, Rev Umb 49.
Parsnip, naturalized at SBER (Parish).

Genus **ANGELICA** Linnaeus.

Stout per with ternately or pinnately compound lvs: fls w in large terminal compound umbels: inv scanty or 0: involucels of sm bractlets or 0: cx-teeth mostly obsolete: fr strongly compressed, elliptic-oblong in outline; ribs prominent, the lateral broadly winged, the others often narrowly winged: oil-tubes 1-3 in intervals, 2-4 on commissural face.

ANGELICA TOMENTOSA S. Watson.

Jepson Erythra 1:8.
Stout, 2-5° hi; herbage finely tomentose or roughish pubescent or nearly glabrous; lvs ternate, then pinnate; lfts 2-3' long, ovate or almost round, 3-lobed, or obliquely 2-lobed or not lobed and merely oblique, irregularly serrate; petioles very much dilated at base; rays 1-4' long; pedicels 2-3" long; fr oblong or elliptical, glabrous, 3-4½" long; dorsal and intermediate ribs sm and acutish.

Hall, U 98.
Mendocino Co. to SBER mts (Parish).

Genus **EURYPTEA** Nuttall.

Acaulescent or caulescent glabrous per, with elongated rts, branching only from the base, lvs once or twice compound, with usually broad sharply toothed lfts: fls y: cx-teeth minute or 0: fr strongly flattened dorsally, orbicular to shortly oblong; carpel with filiform ribs, and with broadly winged laterals, these often distinct at base and becoming cordate or emarginate, cohering until maturity with those of the other carpel; pericarp thin: stylopodium 0; disk impressed: oil-tubes 1-several in the intervals: sd strongly dorsally flattened, with plane face.

EUREPTERA LUCIDA Nutt.

Nuttall, T & G, Fl 1:629.
Short, caulescent, glabrous, rather stout, 1.5-5 dm hi; lvs ternate; lfts broadly cordate, somewhat lobed, coarsely mucronate-toothed, 1-2.5 cm long; umbel equally 8-15-rayed; bractlets lanceolate; rays 1-5 cm long; pedicels 12 mm long; fr nearly orbicular, emarginate at each end, glabrous, 10-14 mm in diam, with wings more than twice as broad as the body, and prominent dorsal and intermediate ribs; oil-tubes solitary in the intervals, 2-4 on the commissural side.

Abrams, Fl LA 290.

Pt. Loma, SD! Baja Arizona.

Genus MONARDELLA Benth.

An or per aromatic herbs, with fls in terminal hds which are subtended by hood often more or less colored inv bracts: cx tubular, narrow, 5-toothed, 15-nerved; cor glabrous within, upper lip erect, 2-cleft, lower 3-parted, all the lobes linear or narrowly oblong; sta 4, distinct; strongly or moderately unequal, exerted, straight; anth often divergent or divaricate.

MONARDELLA LANCEOLATA A. Gray.

An g and glabrous or the sts puberulent, brachiately branched, 3-6 dm hi, lvs rather few, lanceolate or oblong-lanceolate, 2.5-5 cm long, tapering below into a slender petiole, the upper acute; all with entire and even margins; bracts foliaceous or nearly so, ovate or oblong, mostly acute with many cross veinlets between the ascending or parallel veins; cx-teeth densely hirsute within, sparsely if at all so without, inconspicuously nerved; cor bright rose-p, sometimes with darker spots.

Abrams, Fl LA 347.

Gray, Am ac p 11:102 (1876).—Bot Cal 1:594.

Type locality: "Cal, from Plumas to SD Co."

Coville, CNH 4:175. Panamint mts. Common throughout Cal; Baja! L A (Davidson).

Variety MICROCEPHALA A. Gray.**MONARDELLA LINOIDES Gray.**

Minutely caulescent, but the pubescence imperceptible; sts more erect and rigid, 1° hi, slender; lvs sm (about ½' long), lanceolate, or the upper linear and sessile and the lowest oblong-spatulate, obtuse, the veins very obscure; bracts nearly as in *M. odoratissima* but barely ciliate: cx-teeth narrowly lanceolate, merely pubescent, Baja!

Gray, Am ac pr 11:101 (1876).—Bot Cal 1:594.

Type locality: "mts east of SD."

Coville, CNH 4:175. Panamint mts.

San Diego! Mohave.

VARIETY STRICTA Parish.

"Stems herbaceous, slender, branching only at the base, puberulent or glabrous, green; leaves linear to narrowly oblong, 15-18 mm long; floral bracts membranaceous, tinged with purple or red."—Parish, Erythra 7:96. San Bernardino Mts (Parish 2077).

MONARDELLA CANDICANS Benth.

San Bernardino (Parish 898).

MONARDELLA HYPOLEUCA A. Gray.

SD; San Juan Hot Springs (Nevin).

RAMONA STACHYOIDES Briquet.

Black Sage. Cinereous-tomentose or glabrate, shrubby, 1 m hi or more, branching and lfy; lvs oblong-lanceolate, narrowed at base or short-petioled, crenate, g and rugose above, cinereous-tomentose beneath; fls in interrupted spicate hds or whorls; floral lvs much reduced, these and the ovate or oblong bracts as well as the cx-teeth of the bilabiate cx cuspidate-acuminate or spinulose-aristulate; cor w or lilac-tinged, about 1 cm long, tube longer than limb; sty, and especially sta, little exerted; subulate appendages of the connective often manifest. SF to Quintin! Cruz; Rosa.

RAMONA VASEYI Heller.

Heller, Muhlenbergia 1:59 (22F1904), based on *Audibertia Vaseyi* Porter, Bot Gaz 6:207 (1881).

Type from Mountain Springs, SD Co (G. R. Vasey, 1880).

RAMONA PACHYSTACHYA.

Heller, Muhlenbergia 1:59 (22 F 1904).

Based on *Audibertia incana* var *pachystachya* G, Syn Fl 2, pt I, ed 2, 461 (1886).

Salvia carnoza var *compacta* Hall, U 111.

Audibertia pachystachya Parish, Erythra 6:91 (1898).

RAMONA PALMERI Briquet.

Audibertia Palmeri Asa Gray.

Minutely tomentulose-canescens; lvs oblong-lanceolate, acute (the larger 2 or 3' long); hd-like clusters of fls 5-8, remote in the elongated virgate naked spike; bracts oblong or lanceolate, acuminate into a slender cuspidate tip; lower cx-teeth subulate-setaceous.

Type locality: Near Tighes ranch in the mts northeast of SD.

RAMONA NIVEA Briquet.

Audibertia nivea Benth.

Shrubby, 3-4° hi, lfy, mealy-tomentose, and very w; lvs oblong-lanceolate, obtuse, very short-petioled, upper truncate at base; bracts ovate or oblong, much imbricated, cx splitting down the front and at length notched posteriorly; cor "light p"; the tube hardly longer than the lips; sta and sty conspicuously exerted.

Genus LYCOPUS Tournefort.

Herbs, per by slender stolons or suckers, with erect or diffuse sts, and sm w or p fls, bracted and verticillate in dense avy clusters: cx-campanulate, reg or nearly so, 4-5-toothed, naked in the throat; cor funnelform-campanulate to cylindrical, equaling or exceeding the cx, limb nearly equally 4-cleft, or 1 of the lobes broader and emarginate: perfect sta 2, anterior, the posterior pair rudimentary or 0; anth-sacs parallel; ova deeply 4-parted; sty slender, 2-cleft; nutlets truncate at summit, narrowed below, trigonous, smooth. Water hoarhound.

LYCOPUS LUCIDUS Turcz.

Sts stoutish, not so sharply angled, per by stolons; lvs broadly or narrow-

ly oblong, coarsely and incisely toothed, sessile, the lower 3' long, $\frac{3}{4}$ ' wide, the upper reduced; cx-teeth attenuate-subulate. Sib.

Abrams, Fl LA 348. S Ber valley (Parish).

Jepson, Fl W Mid Cal 466.

LYCOPUS AMERICANUS Muhl.

St erect, branching above, 2-3° hi, very acutely 4-angled, from creeping rt-stocks, not bearing stolons; herbage nearly glabrous; lvs broadly or narrowly-lanceolate, incisely toothed or laciniate-pinnatifid, narrowed at base into a slender petiole, $1\frac{1}{2}$ -2', long; cx-teeth acute; rudiments of sterile sta conspicuous; inner angle of nutlet granulose at apex.

Canada to Fla; Oregon to S Ber (Parish 1032).

Jepson, Fl W Mid Cal 466.

Lycopus sinuatus Ell.

Genus MENTHA Linnaeus.

Erect or diffuse aromatic herbs with simple mostly punctate lvs, and sm whorled fls, the whorls axy or in terminal dense or interrupted spikes; cx campanulate to tubular, 10-nerved, regular or slightly bilabiate, 5-toothed; cor-tube shorter than cx, the limb 4-cleft, somewhat regular, posterior lobe usually somewhat broader than the others, entire or emarginate; sta 4, equal, erect, included or exserted; fil glabrous; anth 2-celled, the sacs parallel; ova 4-parted; sty 2-cleft; nutlets ovoid, smooth.

MENTHA CANADENSIS Linn.

Per by suckers; sts often several ft long, simple or much branched; herbage tomentose-pubescent, sometimes almost hoary, more commonly g'ish; lvs oblong-lanceolate, sharply serrate, tapering at base into a petiole, $1\frac{1}{2}$ -2' long; whorls of fls often shorter than the petioles of lvs; cx pubescent, its teeth one-fourth to one-third as long as tube. SF: Nev.

Hall, U 108.

Type locality: "in Canada."

Coville, CNH 4:174. Yosemite valley.

Variety **GLABRATA** Bentham.

Comodon, Baja (Ber). Atlantic to Pacific, Canada to Mexico.

MENTHA SPICATA L.

Spear-mint. Lvs sessile or subsessile, oblong-lanceolate, acute, incisely serrate; bracts setaceous, and with cx-teeth somewhat hairy; spikes slender, interrupted, attenuate above. Eu; Can; U. S.

Mentha viridis L.

Genus MIRABILIS Linnaeus.

Per herbs, somewhat woody toward the base, with opp lvs and ax solitary or paniculate ped; inv cx-like, 5-cleft or 5-parted, herbaceous unchanged in fr, bearing 1-12 fls; cx tubular or narrowly campanulate, with somewhat spreading lobes; sta 5, equaling the cx; fil united at the base; fr globose to ovate-oblong, smooth or slightly ribbed or angled.

MIRABILIS FROEBELII Behr.

"Stout, spreading, very viscid-pubescent, the foliage in age somewhat sca-

brous; lvs thick, broadly ovate, the lower cordate, slightly decurrent on the short-petioles, 4' long and nearly as broad; inv 5-cleft about half way down into rather acute lobes; 5-6-fid; perianth funnelform, $1\frac{1}{2}$ ' long, the limb 1' across, dull p, pubescent and viscid outside; fr ovate-oblong, not tuberculate, light brown, marked by 10 lines of a higher color."—Greene, Cal. ac b 1:124 (1885).

Type locality: Warner's Ranch SD Co. Coville, CNH 4:177. Panamint mts. Colo. to Texas; mts San Diego (Or).

Oxybaphus Froebelii Behr, Cal ac pr 1:69 (1855).

Mirabilis multiflora var *pubescens* Watson, Bot Cal 2:2.

MIRABILIS LAEVIS Curran.

Nevada, Utah, to Southern Baja.

Curran, Cal ac pr sr 2, 1:235 (1889). Type locality: "Bay of Magdalena," Baja.

Coville, CNH 4:177. Ut; Nev; Cal.

Oxybaphus laevis Bentham, Bot Sulph 44 (1844).

Mirabilis Californica Gray.

Gray, Bot Mex B 173.

Sts ascending or spreading from a somewhat woody base, 3-6 dm long; herbage viscid-pubescent; lvs rather thick, 1-3 cm long, broadly ovate to cordate, obtuse or acute; petioles slender, 1-2 cm long; inv about 6 mm long, acutely 5-cleft to near the middle; cx narrowly campanulate, 10 mm long, lobes spreading, emarginate; sta equaling cx and nearly equaling sty; fr ovate, smooth, 3 mm long. Nev; Ut.

Abrams, Fl LA 137.

MIRABILIS MULTIFLOBA A. Gray.

Gray, Bot Mex B 169 (1859).

Watson, Bot Cal 2:2.

See *M. Froebelii* Behr.

Oxybaphus multiflorus Torrey, Ann Lyc NY 2:237 (1828). Type locality: "about the Forks of the Platte."

Variety **PUBESCENS** S. Watson.

Abrams, Fl LA 136.

See *Mirabilis Fraebelii* Behr.

MIRABILIS TENULOBA S. Watson.

San Borgla, Baja (Br).

Genus ABRONIA Jussieu.

Inv of 5-15 distinct somewhat scari-ous lfts, enclosing num sessile fls; perianth salverform, tube elongated, limb of 4 or 5 obcordate or emarginate seg; sta usually 5, unequal, included in tube and adnate to it; sty included; stig linear-clavate; fr coriaceous or indurated, 3-5-winged, mostly reticulately veined, enclosing a smooth cylindrical ak; embryo by abortion monocotyledonous; an or per herbs, often prostrate, com thick opp or less viscid-pubescent, with thick opp unequal lvs, and elongated axy and terminal peduncles; fls usually very fragrant and showy. Sand-verbena.

ABRONIA MARITIMA Nutt.

Sts stout, prostrate, somewhat pubescent and viscid; lvs thick, broadly ovate to oblong, cuneate or rounded at base, 1' long, on short stout petioles; peduncles usually a little exceeding the lvs; inv bracts short, ovate oblong; fls

dull deep r. 1½' long; fr viscid-pubescent, wings somewhat coriaceous.

Abrams, Fl LA 137.

SBar to Magdalena bay, Baja Cal.

ABRONIA UMBELLATA Lam.

Sts slender, prostrate and widely branching, 1-3° long, viscid-puberulent; lvs nearly glabrous, broadly obovate to oblong, margin rarely sinuate, 1-1½' long, narrowed to a slender petiole of unequal or longer length; peducles 2-6' long; involueral bracts narrowly lanceolate, 2-3" long, enclosing 10-15 fls, forming an umbel-like hd: cx-rose-p, rarely whitish, 6-8" long, lobes 5, emarginate; fr oblong, attenuate at each end, 4-5" long, glabrous; wings thin, broadest above and often truncate.

Abrams, Fl LA 137.

Columbia river to Baja Cal.

ABRONIA TURBINATA Torr.

Ann and slender, viscidly pubescent or only puberulent, sts ascending or procumbent, ½-1½° long; lvs ovate to oblong-lanceolate, ½-1½' long, usually truncate-cordate or rounded at base; ped slender, exceeding the lvs; inv bracts usually 5, linear or lanceolate, acuminate, somewhat scarious; perianth rose-colored, 6-8" long, tube very narrow, lobes deeply cleft; fr thin-coriaceous, 3-4" long, either reg winged and wings terminating in transverse circular disks, or unequally winged and disks 0; ak 1" long. Tex.

Watson, Bot King Exp 285 (1871).

Type locality: "NM; Ar; So Cal; Nev." Colorado Desert (Parish).

Genus **ACANTHOCYPHUS** Small.

Slender nearly glabrous acaulescent ann herbs, with erect wiry forking scapes; lvs basal firm denticulate with spinulose teeth, dilated at the base; bracts scale-like, ternate, united at the bases, inclined to one side of the axes; involucre turbinate, truncate, on wire-like peduncles, with 18-20 hard ribs, which are prolonged into as many rigid acicular awns, these surpassing the tube in length; fls 5-14, of 2 kinds, staminate included, pistillate exserted; pedicels substended by linear or linear-spatulate bractlets; perianth glabrous, seg 6; sta 9, inserted at base of perianth.

ACANTHOCYPHUS PARISHII Small.

Based on *Oxytheca Parishii* Parry, which see for description.

Abrams, Fl LA 115—"Common in the pine belt of the Gabriel and SBar mts."

Genus **ERIOGONUM** Michx.

Ann or per herbs or rarely shrubs, with basal, alt or verticillate lvs, without stipules, and perfect involucre fls; inv campanulate, turbinate or oblong, 4-8-toothed or 4-8-lobed, awnless, usually many-fld; the more or less exserted pedicels intermixed with scarious narrow setaceous bracts or bractlets; perianth 6-parted or deeply 6-cleft, petaloid; sta 9, inserted on the base of the perianth; sty 3; stig capitate; ak triangular, rarely lenticular.

ERIOGONUM CINERUM Benth.

Shrubby 8-15 dm hi, in dense clumps, hoary tomentose thruout; lvs orbicular

to oblong, 12-18 mm long, on very short petioles, obtuse, undulate, strongly nerved; peduncles elongated, sparingly dichotomously branched, bearing few rather loose hds; bracts short; inv 4 mm long; perianth very villous, rose colored, 2-3 mm long.

Abrams, Fl LA 117.

Curran once referred *E. giganteum* to this, but later published a variety of that species.

San Pedro and Monica on seashore.

ERIOGONUM ELONGATUM Benth.

Sts erect, rather slender, from a sparingly branched base; lvs usually somewhat scattered, oblong-lanceolate, 2-3 cm long, acute, narrowed to a short petiole, becoming glabrate above; bracts ovate-triangular to lanceolate, acute; inv distinct on the few elongated branches, 5-6 mm hi, obtusely toothed; fls w or pale rose, 2-3 mm long; ak glabrous.

Monterey to Baja; LA (Davidson).

ERIOGONUM FASCICULATUM Benth.

Hall U 73. Wild buckwheat.

Shrubby, 5 dm hi or more, more or less tomentose; lvs narrowly oblanceolate, revolute, tomentose beneath, glabrate above, 6-18 mm long, much fascicled; ped short or elongated, bearing a short cymosely divided umbel; bracts rather conspicuous; inv about 4 mm hi, glabrate; fls rose or whitish, glabrous or somewhat villous.

Abrams, Fl LA 117.

Bentham, Linn soc tr 17:411 (1837).

Type locality: "Upper California."

Coville, CNH 4:186. SBar.

"Buckwheat." Arizona; Utah; S Bar to Baja. Most excellent bee pasturage. Ha U 73.

ERIOGONUM GRACILE Benth.

Floccose-tomentose thruout, rather diffusely branched, 2-6 dm hi; lvs oblanceolate or broadly oblong, tomentose on both sides or less so above; bracts more or less elongated, the lower foliaceous; inv rigid, acute, often dark brown; perianth w or pale rose, 1.5 mm long.

S F; San Fernando, Baja (Br). Ha U 73.

E. grande Greene pitt 1:38. Cruz.

E. rubescens Greene, pitt 1:38. Cruz.

Abrams, Fl LA 119.

Variety **LEUCOCLADON** Torrey.

Less branched, branches strict, becoming glabrate; fls pale rose.

Abrams, Fl LA 119.

ERIOGONUM LATIFOLIUM Smith.

Caudex indurate, its branches few, short, very leafy; scapes not fistulose, 2-5 dm hi; lvs oblong to ovate, 2.5-5 cm long, often undulate and becoming glabrate above; bracts triangular; hds large, dense, 12-20 mm broad, solitary, terminal, or few in a simple umbel; inv tomentose, 4 mm long; fls glabrous, light rose color, 3 mm long. SF.

Abrams, Fl LA 117. Bluffs near Monica.

Curran, Cal ac pr, sr 2, 1:268. Cites as synonyms: *EE arachnoideum* Esch, affine et auriculatum Bentham, grande Greene nudum Dougl, et var pauciflorum S. Watson, oblongifolium Bentham, et rubescens Greene.

Davidson, Pl LA Co 14.

ERIOGONUM PARVIFOLIUM Smith.

Shrubby, about 3 m hi, more or less w-tomentose throught; lvs broadly ovate to oblong, 8-18 mm long, acute, abruptly narrowed at base to the very short petiole, revolute and undulate on the margins, becoming glabrate above; lower bracts conspicuous, the upper smaller; inv tomentose, about 3 mm long; perianth rose colored, glabrous, about 3 mm long.

Abrams, Fl LA 117. Common on the sand-dunes along the seashore.

Davidson, Pl LA Co 15.

SBar; Soledad, SD Co (Or 974).

ERIOGONUM SAXATILE S. Watson.

Caudex densely lfy, sparingly branched; lvs rounded or obovate, obtuse, 12-16 mm broad, cuneate at base, densely tomentose on both sides; petioles short and thick; branches of the cymose panicle 1-2 dm long, spreading; bracts subfoliaceous, triangular; inv 3-4 mm long, teeth acute; perianth rose color, 2-3 mm long, the lobes appressed to the nearly glabrous ak, this abruptly narrowed at base.

Abrams, Fl LA 118. Gabriel, SBar mts.

McClatchie, Erythea 2:78; Mt Lowe, LA Co.

Watson, Am ac pr 12:267 (1877).

Coville, CNH 4:188. Panamint mts.

Santa Lucia mts; SBar (Parry). Ha U 74).

ERIOGONUM SPECIOSUM Drew.

"Suffrutescent, sts densely clustere;d lvs sm, broadly oblanceolate, acute at both ends, densely tomentose beneath, glabrate above; petioles 3" long; ped erect, nearly a ° hi, bearing 2-4 elongated rays which are com again divided, the nodes all leafy-bracted; inv sm, the acute lobes deflexed; fls numerous, bright y tinged with p. 6" long including the slender stipe; sty and fil slightly hairy. Gravelly banks of the South Fork of Trinity river, in Hy-Am-Pum valley, Jl 23. Fls very num and showy." —Drew, Torr cl b 16:152. Humboldt Co, Cal.

ERIOGONUM NUDUM Dougl.

Caudex sparingly leafy; scapes rather slender, fistulose, 3-6 dm hi, sparingly branched above; lvs broadly ovate or oblong, obtuse, 1-5 cm long, on slender petioles, undulate, densely tomentose beneath, becoming glabrate above; inv usually 3-6 in each cluster, glabrous or nearly so, 4-6 mm hi; fls glabrous or somewhat villous, 2-3 mm long, w or rose color.

Douglas, MS, in Bentham, Linn soc tr 17:413 (1837).

Type locality: "plains of the Multoonah."

Coville, CNH 4:187. Tehachapi canon.

Abrams, Fl LA 117. Cat.

EUPHORBIAEAE.

Monocious or dioecious herbs, shrubs or trees with acrid, often milky juice; lvs opp, alt or whorled, entire or toothed, sessile or petioled, sometimes with glands at base; stipules present or 0; infl various: fls sometimes ap-

alous, often reduced and subtended by an inv, which resembles a ex; sta few or num, in 1 or many sr; fil distinct or united: ova usually 3-celled; ovules 1-2 in each cell, pedulous; sty equalling the cells in number, simple, divided or many-cleft: fr mostly a 3-lobed cap separating often elastically into 3 2-valved carpels from a persistent axis: sds anatropous; embryo straight or slightly curved; endosperm fleshy or oily; cotyledons broad.

Genus RICINIS Linnaeus.**RICINIS COMMUNIS** Linn.

L sp Pl 1007.

Davidson, Pl LA Co 16; Erythea 1:100, LA Co.

Parish, Zoe 1:124.

Castor bean. Cruz; SBar; SD! San Gregorio, Baja (Br). Thoroughly naturalized.

Abrams, Fl LA 234.

Castor bean; naturalized in the vicinity of SBar, and on Cruz (Greene).

Genus STILLINGIA Garden.

Glabrous herbs or shrubs with alt or rarely opp, entire or toothed lvs, often with 2 glands at base, and monoecious bracteolate apetalous fls in terminal spikes; bractlets 2-glandular: stam fls several together in axils of the bractlets; cx slightly 2-3-lobed: sta 2-3, exserted: pistillate fls solitary in the axils of the lower bractlets; cx 3-lobed; ova 2-3-celled; ovules 1 in each cell; sty short, somewhat united at the base: cap 2-3-lobed, separating into 2-3 2-valved carpels: sds ovoid or subglobose.

STILLINGIA ANNUA Mull.

Low, 2-6' hi, somewhat viscid, dichotomously branched, sts angled and lfy: lvs ovate to lanceolate, acuminate, narrowed to a broad winged petiole, stoutly 3-nerved from base of petiole, ciliate- or spinulose-dentate, 1' long: spikes shorter than lvs, with 1-3 naked pistillate fls at base: stam bracts minute, 1-nd; pistillate with sm glands on long stout pedicels: cap 2" in diam, with prominent gynophore; central column 0: sd oblong-ovate, 1½" long, smooth, with no caruncle or a very sm one. CD (Parish 706). Mohave; Ut; Baja!

DC, Prodr 15:1160.

Watson Am ac pr 14:297.

STILLINGIA LINEARIFOLIA S. Wat.

Herbaceous, branching from the somewhat woody base: sts and branches slender, terete, ascending, 3 dm hi or more: lvs linear, entire or rarely obscurely glandular-toothed, acute, 1.5-2.5 cm long; spikes slender, open, 2.5-4 mm long, with 2-7 scattered pistillate fls below; bracts very sm, ovate, acute, minutely glandular on both sides, 1-fld; staminate fls minute; cx turbinate: sta 2: pistillate cx 0; cap 3 mm broad; sd round-ovate, acute, 2 mm long, smooth, somewhat viscid. Baja!

Abrams, Fl LA 234. SBar; SD.

Davidson, Pl LA Co 16.

Genus EUPHORBIA Linnaeus.

Monocious herbs or shrubs with alt, opp or verticillate lvs, and cymose fls

borne in sessile or peduncled, turbinate or campanulate inv, subtended by bracts which are often brightly colored. Sinuses of inv usually bearing glands, naked or appendaged; staminate fls scattered over the inner surface of inv, consisting of a sta, jointed on a fil-like pedicel which is subtended by a minute bractlet, supposed to represent a ex: pistillate fls solitary, consisting of a 3-celled ova usually exerted on a stalk; sty 3, 2-cleft; cap often nodding, 3-lobed, separating into 3 2-valved carpels: sds sometimes caruncled, variously pitted, ridged or wrinkled.

EUPHORBIA ALBOMARGINATA T. G.

Glabrous; sts num from a woody per base, prostrate or decumbent, 5-20 cm long; lvs nearly orbicular, 4-8 mm broad, often retuse above and somewhat cordate at base, with a thin whitish edge; stipules united into a conspicuous membranous w triangular scale, entire or somewhat lacerate; inv mostly solitary, campanulate or turbinate, about 1.5 mm long; glands maroon color with a conspicuous entire w or rose-p dilated appendage; cap about 2 mm long, lobes angled on back; sds oblong, 4-angled.

T & G, Pac Ry R 2 pt, 174 (1855).

Type locality: "head-waters of the Colorado."

Coville, CNH, 4:194. Argus mts, etc.

Abrams, Fl LA 235.

Davidson, Pl LA Co 16.

Yuma, Arizona (Parish 697).

EUPHORBIA MELANDENIA Torrey.

Abrams, Fl LA 235. Gabriel mts.

Cinereous with a dense soft pubescence, much branched from the base, the branches ascending forming tufts; rt simple, somewhat lignescens, but apparently an; lvs mostly ovate, short-petioled, usually oblique at base, one side being somewhat cordate; stipules minute, ciliate, distinct; inv solitary; gland p, its appendages with a w or rose-colored margin; cap densely hirsute.

Euphorbia polycarpa vestita Watson.

EUPHORBIA NUTANS Lag.

Ann, glabrous or sparingly pubescent; sts branched, ascending or erect, 2-6 dm long, branches often recurved at ends: lvs opp; oblong-ovate to linear-oblong, oblique, 3-nerved, unequally serrate, short-petioled; stipules triangular, slightly lacerate; inv narrowly obovoid, 1 mm long; glands subtended by sm rounded reddish appendages; cap glabrous; sds oblong-ovoid, 1.5 mm long, 4-angled, transversely rugose.

Abrams, Fl LA 236. Santa Ana (Helen D Geis).

EUPHORBIA OCCIDENTALIS Drew.

"An, diffuse, decumbent or prostrate; branches 4-8' long, glabrous, pale g or glaucescent; lvs obovate-oblong, inequilateral at base, 2-4" long, conspicuously serrulate above the middle and across the obtuse or truncate apex; stipules whitish, lacerate, 1/2" long; inv sm, axillary, the glands with w or pish margins, crenulate or minutely lobed: sds 1/2" long, ask-gray or almost w, the faces irreg but not deeply wrinkled. In sandy soil, Hy-Am-Pum valley, Jl 23."

—Drew, Torr cl b 16:152. Humboldt Co Cal.

EUPHORBIA POLYCARPA Benth.

Glabrous or somewhat finely pubescent; sts num from a per woody base, prostrate or decumbent, 5-30 cm long; lvs round-ovate, obtuse, usually slightly cordate, 2-6 mm long; stipules minute, short-triangular to lanceolate, ciliate, distinct; inv mostly solitary, about 1 mm long; glands mostly dark p, the w or rose-p somewhat crenate margins often very narrow; cap sm with angled lobes; sds oblong, 4-angled, about 1 mm long.

Bentham, Bot Sulph 50 (1844).

Type locality: "Bay of Magdalena," Baja.

Coville, CNH 4:194.

Abrams, Fl LA 235. Santa Ana mts.

Variety MICROMERA Milsp.

CD (Cargo Muchacho, Or 2072; Dos Cabezas, Or 2198).

EUPHORBIA ERIANTHA Benth.

CD (Parish); Magdalena Island.

EUPHORBIA HIRTULA Engelm.

Southern and Baja California.

EUPHORBIA LEPTOCERA Engelm.

Davidson, Erythra 2:30. Catalina.

EUPHORBIA MISERA Benth.

A low rigid shrub, often densely covered with lichens; abundant on Point Loma, SD; Baja.

EUPHORBIA PEPLUS Linn.

Parish, Erythra 3:61.—"Occasionally in gardens at SBer."

EUPHORBIA SETILOBA Engelm.

Santa Ana, Cal. (Orcutt).

EUPHORBIA BAJA-CALIFORNICA Milsp.

Sand dunes near Quintin (Or 1321, distributed as *E. micromera*)

EUPHORBIA LONGICURRIS Scheele.

Euphorbia, peploides Nuttall.

Santa Ana, Cal (Orcutt)

EUPHORBIA CALIFORNICA Benth.

Hagenback, Erythra 1:9.—The Mexicans call this Golondrina, and consider it a cure for the bite of the rattlesnake.

The name Golondrina is derived from the resemblance of the plant to a swallow's nest fide Dr. Manuel Urbina.

EUPHORBIA PARISHII Greene.

Mohave (Parish 1384).

EUPHORBIA WRIGHTII T. & G.

Santa Ana Cal. (Orcutt)

EUPHORBIA DENTATA Mx.

Verde Co, Arizona (Orcutt).

EUPHORBIA DICTYOSPERMA F.&M.

Santa Ana, Cal. (Orcutt).

CALLITRICHACEAE.

Herbaceous aquatic or rarely terrestrial plants, with slender or capillary sts, opp exstipulate entire lvs, and minute perfect monococious axyl fls; perianth 0; bracts 2, sac-like or 0; sta 1; fil elongated, filiform; anth cordate, 2-celled, opening by lateral slits; pistil 1; ova 4-celled; ovules 1 in each cell; sty 2, filiform; fr compressed, lobed, lobes more or less winged or keeled on the margins, separating at maturity into 4 flat-tish 1-seeded carpels: sd anatropous, pendulous; endosperm fleshy; embryo straight or slightly curved. Water starwort family.

Genus CALLITRICHÉ Linnaeus.

The only genus in Callitrichaceae.

CALLITRICHE MARGINATA Torrey.

Usually rt'ing in the mud, sm, with linear-oblancoolate lvs, 4-6 mm long or less, sometimes floating with slender sts and the upper lvs spatulate; stys elongated, reflexed, decid; fr on slender spreading pedicels, 2-8 mm long, deeply emarginate above and below, the margins of the thick carpels widely divergent, narrowly winged.

Davidson, Pl LA Co 6.

Soldiers' Home (Hasse). Near SD in shallow pools on the mesa.

Abrams, Fl LA 237.

Peculiar to the Pacific coast, from Arizona to California. Also attributed to Chili.

CALLITRICHE VERNA Linn.

Per, with elongated sts and floating rosulate obovate often emarginate lvs, which are more or less narrowly petioled, the submerged ones from spatulate to linear; sometimes terrestrial and rooting, with short linear lvs; bracts often exceeding the fr, rarely 0; sty erect or spreading, usually shorter than fr, decid; fr orbicular or slightly obovate or more usually elliptical, nearly $\frac{1}{2}$ " long, emarginate, and with acute or very narrowly winged, slightly divergent margins.

Canada; nearly all parts of the United States; South America; Europe and Asia.

CERATOPHYLLACEAE.

Lvs crowded in verticils, linear or filiform, spinulose-serrulate, forked; stam and pistillate fls, generally at different nodes; sta 10-20; anth about equaling perianth; ova and fr slightly exceeding the sep, fr beaked with the long persistent sty. Hornwort.

Genus CERATOPHYLLUM Linnaeus.

CERATOPHYLLUM DEMERSUM Linn.

Sts 2-9 dm long, lvs 2-3-times forked, end of the seg capillary and rigid, 8-25 mm long, fr oval, 4-6 mm long, smooth or tuberculate, sometimes winged or with 2 basal spurs on each side.

Abrams, Fl LA 151.

Davidson, Pl LA Co 16.

Genus APIASTRUM Nuttall.

Very slender smooth branching ann, with finely dissected lvs having filiform or linear seg, and sm w fls in naked unequally few-rayed umbels; cx-teeth obsolete; fr ovate or cordate, with obscure or obsolete ribs, more or less tuberculate; carpel with thin pericarp; stylopodium minute, depressed; styles short; oil-tubes solitary in the intervals and beneath the ribs, 2 on the commissural side; sd-face narrowly concave or sulcate.

APIASTRUM ANGUSTIFOLIUM Nutt.

Slender, 0.5-3 dm hi, usually much branched; lvs 2.5-5 cm long, biternately or triternately divided, with linear or nearly filiform seg; umbels sessile; rays from 2.5 cm long to 0; pedicels 12 mm long or 0; fr with narrow commissure, cordate in outline, 1 mm long.

Abrams, Fl LA 282.

Brandegee, Zoe 1:114, Cat.

Mendocino Co to Quintin; Cruz.

Genus APIUM Linnaeus.

Ann or per glabrous herbs with pinnate or pinnately compound lvs and w or g'ish y fls in compound umbels; cx-teeth obsolete; stylopodium depressed or short-conic; fr ovate or broader than long, smooth or tuberculate; carpels mostly with prominent ribs, somewhat 5-angled; oil-tubes mostly solitary in the intervals, 2 on the commissural side; sd terete or nearly so.

APIUM GRAVEOLENS Linn.

Glabrous; sts erect, 3-9 dm hi, several leaved; lvs pinnate, basal and lower ones long-petioled, the upper short-petioled or nearly sessile, thin, broadly ovate to oval, coarsely toothed and often incised, 1-3 cm long; umbels opposite the lvs and terminal, 3-7-rayed; inv and involucls sm or 0; fls minute, w, very short-pedicelled; fr oval, scarcely 1 mm long, the ribs somewhat winged.

Davidson, Erythea 1:59, LA Co.

Parish, Zoe 1:9 (claims it is indigenous).

Abrams, Fl LA 284.

Wild celery; Europe, widely naturalized

Genus BERULA Hoffm.

Glabrous marsh per with pinnate lvs and serrate lfts; fls w, in terminal compound umbels; bracts narrow; bractlets unequal, 1 or 2 surpassing the fls; fr subglobose, glabrous, surrounded by a continuous corky covering of confluent rib; oil-tubes num and contiguous, in the mature fr more or less confluent, closely surrounding the sd cavity.

BERULA ANGUSTIFOLIA Koch.

Throughout the U. S.; Mexico; Europe. Da 7, Cruz.

BERULA ERECTA Coville.

Erect, 1.5-9 dm hi; lfts 5-9 pairs, linear to oblong, or ovate; serrate to cut-toothed, often lacinate-lobed, sometimes crenate, 1-7.5 cm long; umbels many-rayed; rays 5 cm long or less; bracts usually conspicuous; bractlets narrow; pedicels 4-6 mm long; fr scarcely 2 mm long.

Abrams, Fl LA 287.

Sium erectum Huds.

Sium angustifolium L.

Berula angustifolia Koch.

Water Parsnip, LA (Nevin), north.

Davidson, Pl LA Co 7.

Genus MALVA Linnaeus.

Pubescent or glabrate herbs with dentate lobed or dissected lvs, and axy or terminal solitary or clustered fls; cx 5-cleft; bractlets of the inv 3, rarely 0; pet 5; ova many-celled; cells 1-ovuled, sty-branches equal in number, linear, stigmatic along the inner side; carpels arranged in a circle, beakless, indehiscent, 1-seeded. Mallow; fr known as cheeses among children.

MALVA PARVIFLORA Linn.

Bloch, Erythea 2:163, note on medicinal use.

Sm fld Malva; widely branching, 1-6" hi; petioles and ascending branches stellate-hairy on the upper side, glabrous below; lvs roundish in outline,

with a r spot at base of blade, shallowly 7-lobed, 5' broad or less, on petioles twice as long as the blade; fls in rather close axillary clusters; bractlets linear; cor p'ish with notched pet, $2\frac{1}{2}$ " long, slightly longer than the cx; ex commonly spreading under or about the mature fr; carpels about 11, glabrous, sharply rugose-reticulated and pubescent on the back, the margin winged and denticulate.

Abrams, Fl LA 247.—"A common vernal weed."

Type locality: not stated.

L. Amoen ac 3:416 (1756).

Malva borealis Wallm.

MALVA FUSILLA Smith.

Much like *M. parviflora* in foliage and habit; pedicels longer, cx-lobes mostly closed over fr, pet bluish, 10-15 mm long, surpassing the cx-lobes; ak reticulate-rugose, margins acute, entire.

Abrams, Fl LA 247.—"Along Ballona creek near Mesmer."

MALVA ROTUNDIFOLIA A. Gray.

Dwarf Mallow: sparsely hispidulous or hirsute; st slender, procumbent, 1-2' long, from a large deep rt; lvs rounded, crenate, slightly or scarcely at all 5-7-lobed; cor surpassing the cx, pale bl; carpels 14 or 15, puberulent, not reticulated on the back or at least not obviously so.

Genus MALVASTRUM A. Gray.

Low ann herbs or shrubs, often densely stellate-pubescent; bractlets 1-3 or rarely 0; cx-lobes 5; pet 5, often showy; staminal tube simple, antheriferous at the summit; sty filiform; stig capitate; carpels 5 or more, 1-ovuled, rarely 2-valved; sd ascending.

MALVASTRUM DAVIDSONII Rob.

Tall shrub or tree-like, 2-4 m hi, densely stellate-tomentose thruout; bractlets stout; lvs deeply cordate, with narrow sinus, 5-angled or shallowly 5-lobed, varying to 3-lobed, ir crenate-dentate, e. 5-7.5 cm broad; infl a dense racemose panicle; bractlets much shorter than the cx-lobes; cx canescent-tomentose without more naked mucronate tips, faintly 1-nerved or enervose; pet rose-p, 1.5-2 cm long; carpels stellate-tomentose above. LA Co.

Abrams, Fl LA 249.

MALVASTRUM DENSIFLORUM S. W.

Num sm fls crowded in sessile hds, forming an interrupted spike. So Cal. CD.

MALVASTRUM EXILE A. Gray.

Sts decumbent, branching from the base, 2-4 dm long, pubescent; lvs 12-18 mm broad, broadly ovate, cordate or truncate at base, deeply 5-lobed, sparingly toothed, on slender petioles of about the same length; fls mostly solitary and axillary on slender pedicels, 2-3 cm long; bractlets 3, linear, persistent; cx-lobes lanceolate, acuminate; pet obovate, p, 4-6 mm long; carpels 12-15, orbicular, glabrous, transversely rugose-reticulated.

Abrams, Fl LA 248.—Chatsworth Park.

Nev; Ut; Merced Co to SD! Quintin (Palmer). Cruz (Br). Usually decumbent.

Genus HIERACIUM Linnaeus.

Per hispid or villous herbs, with alt or basal lvs, and solitary corymbose or paniculate, sm or middle-sized hds of usually y fls; inv with its principal bracts in 1-3 sr, the outer gradually smaller or abruptly much smaller; receptacle flat, naked or short fimbriate; ak terete or 4-5-angled, 10-15-ribbed, beakless; pappus copious, of 1-2 rows of simple rather stiff persistent brownish bristles.

HIERACIUM PARISHII A. Gray.

Puberulent above with no glandular hairs, lfy up into the narrowly oblong panicle, 3-6 dm hi; lower lvs shaggy-hirsute, lanceolate, 12-18 cm long, tapering to base or margined petiole, with 5-8 salient teeth to each margin; upper lvs linear-lanceolate, entire; peds seldom much larger and often shorter than the hds; inv pale, granulose-puberulent, oblong-campanulate, of rather num narrow acute or acutish bracts; fls 15-30, y; ak columnar, about 3 mm long; pappus sordid or dull w.

Abrams, Fl LA 451. Gabriel and Sber mts. Je-Ag.

Genus CICHORIUM Linnaeus.

Erect branching herbs, with alt and basal lvs, and large hds of usually blue fls peduncled or in sessile clusters along the branches; inv bracts in 2 series, herbaceous, the outer somewhat spreading, the inner erect and subtending or partly enclosing the outer ak; receptacle flat, naked or slightly fimbriate; rays truncate and 5-toothed at the apex; anth sagittate at the base; sty-branches slender, obtusish; ak 5-angled or 5-ribbed, truncate, beakless; pappus of 2-3 series of short blunt scales.

Genus PTILORIA Rafinesque.

Ann or per, mostly glabrous, often glaucous herbs, with erect simple or branched usually rigid sts, alt or basal entire or runcinate-pinnatifid lvs, those of the branches often sm and scale-like, and sm erect hds or usually pink fls paniculate or solitary at the ends of the branches; inv cylindric or oblong, its principal bracts few, equal, scarious-margined, slightly united at the base, with num short exterior ones; fls p'ish opening in the morning; receptical flat, naked; anth sagittate at base; sty-branches slender; ak oblong or linear, terete, 5-ribbed, truncate or beaked at summit; pappus of 1 series of rather rigid plumose bristles.

PTILORIA MYRIOCLADA Greene.

Greene, *Arcttonia* 2:130.

Parish, *Erythraea* 3:62.—"Colorado desert, near Whitewater, Riverside Co, Cal, alt, 1,500'. The rt appears to be at most only biennial." Greene questions the identity of this plant;—"P myrioclada is even half-shrubby, and could never be mistaken for a biennial."—*Erythraea* 3:62.

Genus NEMOSERIS Rafinesque.

Glabrous and slightly succulent branching an, with pinnatifid lvs and rather large hds of w or rose fls; inv

conic or cylindric, of 7-15 linear acuminate equalling bracts, somewhat fleshy at base, and a few loose calyculate outer ones: ak terete, somewhat, fusiform, obscurely few-ribbed, attenuate into a slender beak: pappus w, of 10-15 slender bristles, softly long-plumose from the base to near the tip.

Rafinesquia Nutt. 11.

NEMOSEERIS NEOMEXICANA Greene.

Greene, Pittonia 2:193 (1891).

Coville, CNH 4:145. Panamint mts.

Rafinesquia neomexicana Gray, Pl

Wright 2:103 (1853).

Type locality: "stony hills along the Rio Grande near El Paso, Tex."

Genus **LACTUCA** Linnaeus.

Tall lfy herbs with sm paniced hds: inv cylindric, its bracts imbricated in several series, the outer shorter: receptacle flat, naked: ak flattened, 6-10-ribbed, beaked: pappus of copious w or brownish capillary bristles.

CEANOTHUS ARBOREUS Greene.

Brandegee, Zoe 1:110, Cat.

"A sm tree, 15-25' hi, trunk 6-10' in diam, smooth, with a light-gray bark; branches soft-pubescent: lvs ovate, acute, serrate, or often rather crenate, 2-4' long, g and puberulent above, w'ish and soft-tomentose beneath: fis pale bl in a compound raceme: fr not crested. Island of Santa Cruz; common on northward slopes in the more elevated regions. The largest known species, with more ample foliage than is found in any other; but always tree-like in shape, with clean trunk and open but round hd, like a well kept orchard tree; in this particular most unlike any other Ceanothus." Greene, Cal ac b 2:144 (1886).

Sargent, Garden and Forest 2:364 and Sylva NA 2:45 refers this to *C. velutinus* as a variety.

K. Brandegee, Cal ac pr, sr 2, 4:192.

CEANOTHUS CORDULATUS Keil.

Type locality: "Washoe", Nev (J. A. Veatch).

"A shrub 4 or 5' in height, branches erect, flexuose; bractlets num, very short, divaricate, leafy at the base, terminating in a stout thorn; w'ish glaucous; sts strictly terete: lvs sm ($\frac{1}{4}$ - $\frac{1}{2}$ ' long, rarely $\frac{3}{8}$ broad) 3-ribbed (with 2 other outer obscure nerves) ovate-cordate, entire, often emarginate, reticulate, with translucent veins, short hirsute above and below, especially conspicuous along the nerves beneath; petioles short, hirsute, in the mature state stout, seldom 1-16' long, in the young state 2 or 3 times that length and very slender, minutely pubescent; lamina becoming thickened and coriaceous, persistent: stipules subulate, hirsute: lvs in fasciculate clusters, somewhat canescent beneath: fis in thyrsoid panicles 1 or 2' in length, springing from the summit or approximate lateral branchlets; peduncle and pedicels sub-glabrous: cx pet and pedicels w at the time of blossoming, but bright pea-g before expansion; panicles sometimes leafy at the base. The form of fis as usual in this genus; cx divisions inflexed turbinate; pet saccate or hooded; unguiculate pistil

2-parted about one-third its length: fr unknown. This species appears to be near *C. hirsutus* (Nutt.); but the lvs are not "nearly sessile," nor "glandularly serrulate," nor "panicles terminal." Nor does it answer to *C. divaricatus* (Nutt.), as the lvs are not "glandularly serrate," and seldom half the size; nor are the fis bl."—Kellogg, Cal ac pr 2:124 (1861).

K. Brandegee, Cal ac pr, sr 2, 4:187; Ore; Baja; Nev; Ut.

CEANOTHUS GREGGII Gray.

Parish, Erythea 7:93.—"Cushenberry springs, on the desert base of the SBER mts (Parish 1620); lvs elliptical, 6-8 mm long, all spinosely few-toothed."

Gray, Pl Wright 2:28 (1853).

Type locality: "Battlefield of Buena Vista", and "side of mountains near Frontera, NM."

K. Brandegee, Cal ac pr, sr 2, 4:208, considers this as *C. verrucosus* var *Greggii*.

CEANOTHUS IMPRESSUS Trel.

"Villous, with short spreading hairs: lvs broadly elliptical to nearly orbicular, 6-8 mm long, loosely villous, especially on the veins below, the upper surface deeply furrowed over the midrib and several pairs of lateral nerves, the slightly glandular margin very revolute, appearing there as if crenate: peduncles about 10 mm long, scaly toward the base: infl sub-globose, compact: fr not seen. SBER Co."—Trelease, Cal ac pr, sr 2, 1:112 (1888).

CEANOTHUS CRASSIFOLIUS Nutt.

Shrub 4-5' hi, much branched: lvs 1-1 $\frac{1}{4}$ ' long, remarkably thick and coriaceous, revolute on the margin when dry, pale dull g above and appearing rough like shagreen under a lens; petiole 2-3' long, thick: clusters of fis terminal, and in the axils of the upper lvs: cx and cor w: ova marked with 3 minute protuberances."—Torrey, bot Mex boundary, 46 t 11 (1859).

SBER; Guad; Cruz; mts S of LA (Parry).

Torrey, Pac Ry R 4:75 (1857).

Type locality: "Cajon Pass," Cal.

Davidson, Pl LA Co 4.

Coville, CNH 4:78.

Brandegee, Zoe 1:113. Cat.

Abrams, Fl LA 244.

CEANOTHUS HIRSUTUS Nutt.

Shrubby or arborescent, 3-5 m hi, with grayish or reddish, densely villous, rather flexible twigs; lvs ovate to broadly elliptic, rounded or subcordate at base, obtuse or acute, 2-4 cm long, hirsute with rather long appressed hairs above, loosely hirsute beneath especially along the veins; infl loosely puberulent, villous, 2.5-5 cm long; fis deep bl to p'ish; cap depressed, smooth, slightly lobed, strongly crested.

Abrams, Fl LA 244. Gabriel mts.

SBER (Parry); Quintin!

Ceanothus oliganthus Nuttall.

CEANOTHUS INTEGERRIMUS H. & A.

Tall, loosely branching and sometimes arborescent with g or at length somewhat brownish branches, slightly angled when young, not at all spinose; lvs ovate, 2-6 cm long, promin-

ently or sometimes indistinctly 3-veined, entire, somewhat loosely hairy above when young, paler beneath and glabrescent or with a few soft hairs; petioles slender, somewhat villous, 6-8 mm long; infl 6-16 cm long and 3-10 cm broad; fls bl, varying to w; fr 5-6 mm in diam, somewhat lobed at apex, nearly smooth and with low but broad, deeply dorsal evanescent crests.

Abrams, Fl LA 242.

Hooker & Arn, Bot Beechey 329 (1838-40).

Type locality: not given (type collected by Douglas, probably in northern California).

CEANOTHUS MACROCARPUS Nuttall.

Abrams, Fl LA 244. Monica; S Ana mts.

Nuttall, T & G, Fl 1:267.

Greene, Cal ac b 1:80. S Ber Co.

Shrub 8-12' hi, with naked, dark-barked trunk, and well rounded, tree-like hd: branchlets rusty-pubescent, and bearing conspicuous, dark, warty, stipular glands: lvs alt, coriaceous, ovate-oblong, retuse, entire, minutely tomentose-canescens beneath: fls in umbellate clusters: fr very large.

CEANOTHUS SOREDIATUS H. & A.

Shrubby or somewhat arborescent, 2-4 mm hi, with olive or at length p'ish twigs; lvs oblong-ovate, rounded or subcordate at base, glandular-dentate, 1-2 cm long, glabrous and glossy or sparingly pubescent above when young, glabrous or minutely pubescent beneath, silky-pubescent on the principal veins and petioles; infl at first villous, 2.5-5 cm long; fls deep bl; cap globose, 4 mm in diam, smooth or slightly wrinkled, slightly lobed, crested.

Abrams, Fl LA 243. "Gabriel mts."

CEANOTHUS SPINOSA Nutt.

Tall shrub or somewhat arborescent, with at length cinnamon-brown, more or less divaricate, sparingly slender-spiny glabrous twigs; lvs elliptic, very obtuse or emarginate, rounded or acutish at base, coriaceous, glabrous or cm long, entire, petioles glabrous or appressed-pubescent, 4-8 mm long; thyrus 10-15 cm long, 1/2 as broad; fls pale bl; carpels depressed, 6 mm diam, scarcely lobed, smooth, crested.

Abrams, Fl LA 242. Monica and Santa Ana mts.

CEANOTHUS TOMENTOSUS Parry.

Shrub 2-4 m hi, with slender gray or r'ish, at first tomentose and usually densely verrucose branches; lvs round-ovate or elliptic, conspicuously glandular-toothed, minutely velvety above, densely w or brownish tomentose beneath, 1-3 cm long, short-petioled; infl loosely tomentose, 2.5-5 cm long; fls deep bl or rarely w; cap 4 mm in diam, somewhat depressed, smooth, slightly crested, distinctly lobed. Gabriel, S Ber and Cuyamaca mts.

Abrams, Fl LA 243.

VITACEAE.

Grape family. Climbing or erect shrubs, with nodose joints, alt petioled lvs, and sm fls in panicles, racemes or cymes: cx entire or 4-5-toothed: pet 4-5, separate or coherent, valvate: sta 4-5,

opp the pet; fl subulate, inserted at base of the disk or between its lobes: disk sometimes obsolete or 0; anth 2-celled: ova 1, generally immersed in the disk, 2-6-celled; ovules 1-2 in each cell, ascending, anatropous: fr a 1-6-celled, commonly 2-celled, berry: testa bony; endosperm cartilaginous; embryo short.

Genus VITIS Tournefort.

Lvs opp the tendrils or fl-clusters: tendrils at least once-branched: cx-tube filled with the disk, which bears the sta and pet: ovules 2 in each cell.

VITIS CALIFORNICA Benth.

California wild grape: lvs roundish, tomentose, especially beneath, the tomentum in age flocculent, 2-5' broad coarsely or minutely dentate, cordate at base with open or closed sinus, slightly or not at all lobed, or frequently with a sinuately 3-5-lobed lf at the next node above or below an unlobed one; fr p, with a bloom, 3 or 4" in diam.

Type locality: "Rio Sacramento," Cal. Benth., Fl Hartw 302 (1848).

Vitex Californica Benth, bot Sulph 10 (1844).

VITIS GIBDIANA Munson.

"Strong climbing vine with thick diaphragms; lvs 15 cm broad or less, broadly cordate-ovate, with a rather deep and narrow sinus, obscurely 3-lobed, and with many sm and acute teeth, closely ashy tomentose beneath; fl-clusters large, very compound; berries sm, black, slightly glaucous; sds pyriform. Occasional along streams in the foothills. June."—Abrams, Fl LA 245.

ANACARDIACEAE.

Shrubs or trees with a resinous and usually acrid juice, alt simple or compound exstipulate lvs: fls sm, reg, mostly 5-merous, often polygamous or dioecious, variously clustered: sta as many or twice as many as pet: ova free, 1-celled, 1-ovuled; sty sometimes 3: fr drupaceous. Sumac family.

Genus RHUS Linnaeus.

Shrubs or sm trees with simple or pinnate decid or evergreen lvs, and sm fls in axy and terminal panicles or sometimes in racemes or spikes: sep and pet usually 5: sta with subulate fl inserted under the edge of a disk lining the base of the cx: fr a sm dry drupe: sd pendulous upon a slender funiculus rising from the base of the cell. Sumac.

RHUS TRILOBATA Nuttall.

Low branching decid aromatic shrub, more or less pubescent when young; lvs 3-foliate; the terminal lft 2.5-5 cm long, 3-lobed and coarsely toothed above the middle; the lateral pair 1-1.5 cm long, round-ovate, scarcely lobed, crenate; fls y'ish, appearing before the lvs in short spike-like clusters; drupes viscid-hirsute.

Nuttall, in T & G Fl 1:219 (1838).

Hall, U 93. Squaw bush.

Abrams, Fl LA 240.

Type locality: "in the central chain of the Rocky mts."

RHUS DIVERSILOBA T. & G.

Poison oak: stems erect or climbing by rootlets.

RHUS LAURINA Nutt.

Leaves glaucous, entire; panicles 2-4 in. long. Shrub 8-15 ft. high.

Genus TRIFOLIUM Linnaeus.

An or per herbs with palmately 3-foliate lvs; lfts usually denticulate; stipules adnate; fls in capitate racemes, spikes or umbels, rarely few or solitary, on more or less elongated axyl or terminal pedicels; cx 5-cleft with nearly equal teeth, persistent; pet persistent, all more or less adnate to the staminal tube by their claws, or the standard sometimes free; wings narrow; keel mostly obtuse; sta diadelphous; pods membranous, shorter or slightly exceeding the cx, 1-6-seeded, dehiscent or indehiscent.

TRIFOLIUM AMPECTENS T. & G.

Glabrous, erect, branching; lfts obovate-cuneiform, mucronately denticulate; stipules ovate, scarious, entire, aristate-mucronate; peduncles shorter than lvs; inv about half the length of the 5-6-fid hd, 4-5 parted; seg somewhat lobed, obtuse; cx much shorter than the cor, cleft almost to base; teeth subulate, very unequal; vexillum free, covering the wings; legume sessile, 6-seeded.

"California, Douglas!—Plant 4-6' hi: lfts very sm, on slender petioles; peduncles axyl; hds less than 1/2' diam; inv scarious; upper teeth of cx very short, about one-third the length of the others."—T & G, Fl NA 1:319 (1838).

Brandegee, Zoe 1:113. Cal.

Cruz; Guad; Sonoma Co to Chili.

TRIFOLIUM BIFIDUM A. Gray.

"Somewhat villose or glabrous; sts from sm (ann?) rt, slender, spreading; stipules ovate-lanceolate, setaceous-acuminate, entire; lfts linear-cuneate, lateral ones rarely dentate, bifid or incised at the apex with a mucronate point between the lobes; ped twice or three times as long as the lvs; hds naked, 6-12 fld, or more; fls pedicelled, at length reflexed; cx five-parted, dentate, subulate-setaceous, somewhat nirsute and nearly equal to the persistent, rose-colored scarious cor.

"Near Marsh's Ranch, between Monte Diablo and the San Joaquin (Contra Costa county, California) among grass in a ravine near the water, May 29 (collected by Brewer)"—Gray, Cal. ac pr 3:102 (1864).

Abrams, Fl LA 212. Morgans station (Davidson).

Brewer & Watson, Bot Cal 1:129. Oregon.

Davidson, Pl LA Co 4.

TRIFOLIUM CILIOLATUM Bth.

Abrams, Fl LA 212.—Common on grassy hillsides and in the valley.

Columbia river; Cruz (Greene); SBER hills (Parish 822); SD! Baja!.

Bentham, Pl Hartw 304 (1848).

Davidson, Pl LA Co 4.

Trifolium ciliatum Nuttall, Pl Gamb 152 (1848), not Clark.

Brewer & Watson, bot Cal 1:129. LA to the Columbia.

See T. ciliolatum.

"Ann: smooth and erect, but little branched; lower lvs on very long petioles; lfts cuneate-elliptic or oblong, obtuse, minutely and sharply serrulate; bracts adnate, subclilate, herbaceous,

entire and acutely acuminate; capituli axillar and terminal, rounded, many-fld, destitute of involucre, but subtended by a cicatrised circle of points; the fls attached to a cylindrical torus, often ending in a long subulate point beyond the capitulum; seg of the cx unequal, one of the teeth sm, the rest lanceolate, sharply acuminate and bristly ciliated with stiff hairs; vexillum enclosing the other pet, which are sm; legume flat, stipitate, about one-seeded: stipules herbaceous; lvs rather thick and strongly veined, with forked vessels; cx nearly the length of the ochroleucous fl. This is again a Physanthea, but without a proper involucre. Hab Pueblo de los Angeles, Upper California."—Bentham, Pl Hartw 304 (1848).

TRIFOLIUM DECODON Greene.

"Size of the foregoing (brachyodon) and nearly allied, the slender branches firmer, pish; lfts all broad and short, few exceeding 1/4' long, many much shorter, obcordate to cuneate-obovate and oblong cuneiform, emarginate to retuse, truncate or nearly obtuse in the uppermost, all with about 5 minute but salient teeth in each margin; slender wiry poduncles more than twice the length of the lvs; hds 1/4' broad at fl'ing, the cor dark-p; divisions of inv 7 or 8, oblong or oval; cx-teeth short, subulate-setaceous; corollas widely inflated in age.

"Collected by Brandegee at SD, 20 My, 1903, and distributed by C. F. Baker under n. 3371. Species remarkable among members of this section of Trifolium for its broad and short lfts."—Greene, Pittonia 5:108 (1903).

TRIFOLIUM DEPAUPERATUM Desvauz.

Abrams, Fl LA 215.

Low, diffuse, glabrous an, branching from the base, decumbent, flaccid, 6-15 cm long, few-leaved: lfts 1 cm long, cuneate-oblong, obtuse or emarginate, denticulate: hd long-peduncled, few-fld, inv much reduced, with truncate short lobes: cor less inflated, not at all truncate at apex; pod 1-2-seeded: sds somewhat angular, tuberculate-rugose. Sonoma Co; Chili.

Davidson, Pl LA Co 4.

TRIFOLIUM GRACILENTUM T. & G.

Trifolium denudatum Nutt; J ac Phila, II, 1:152, t 24 (1848).

"Nearly glabrous; st slender, erect or ascending; middle lvs on very long filiform petioles; lfts cuneate-obcordate, spinulose-serrulate; stipules rather foliaceous, the lower ones linear-lanceolate and setaceous-acuminate, the uppermost ovate-lanceolate and shorter: hds loose, 15-25-flw; cx glabrous; the teeth lanceolate-subulate, setaceous-acuminate, thrice the length of the tube and about one-third shorter than the cor; legume 1-seeded.

"California, Douglas!—Strictly ann: st 8-10' hi: petioles of the middle lvs 4' long; those of the lowermost and especially the uppermost lvs much shorter: hds as large as in T. repens; fls p."—T & G, Fl NA 1:316 (1838).

Variety **INCONSPICUUM** Fernald.

"Much smaller than type, slender, 2-6'

hi: lfts 3-4" long, on petioles $\frac{1}{2}$ -1 $\frac{1}{2}$ " long; hds 3" hi; cor shorter than or barely equaling the cx —, Roadside, Sber Cal, Parish No. 2647.

"Forms of the type approach this in habit, but the cor is conspicuously longer than the cx, as Orcutt's No. 1004 from Tia Juana, Lower California, and Palmer's No. 583 from Wickenburg, Ariz."—Fernald, Zoe 4:380 (1894).

TRIFOLIUM INVOLUCRATUM Willd.
Variety **HETERODON** S. Watson.
Sber (Parish 1151).

TRIFOLIUM MACRAEI H. & A.

Brandegee, Zoe 1:113 Cat.
H & A, bot Misc 3:179 (1833).—Bot Beechey 330.

Type localities: "Baths of Collina, Macrae. Sandy hills, near Valparaiso, Mathews (n 174). Valparaiso, Cuming (n 749)."

Somewhat villous with appressed or spreading hairs, erect, slender, $\frac{1}{2}$ -1° hi: stipules ovate to lanceolate; lfts obovate to narrowly oblong, obtuse or retuse; serrulate, about $\frac{1}{2}$ " long; fls dark p, 3" long, in dense ovate long-peduncled hds: cx very villous; the straight teeth as long as pet, often tinged with p; pod 1-seeded.

Variety **ALBOPURPUREUM** Greene.

Abrams, Fl LA 213.
Much branched, ascending or erect, 1-4 dm hi: stipules ovate to lanceolate; lfts cuneate-oblong, obtuse, denticulate above the middle, 12-20 mm long; hds long-peduncled, ovate; cx-teeth longer than the tube, slender, plumose, equaling the sm w-tipped p cor. LA (Davidson).
Davidson, Pl LA Co 4.

Trifolium alborpurpureum T & G, Fl 1:313 (1838).

TRIFOLIUM MICRODON H. & A.

Hooker & Arnot, Bot Beech 330 t 79.
Type locality:—"Valparaiso, Cuming (n 747)."

Resembling *T. microcephalum*: inv broader, nearly enclosing the hd; its lobes about 3-toothed: cx smooth, angled; the teeth rigid, broadly triangular, acute, with a narrow scarious serrulate margin. SF: Wash.

Torrey & Gray, Fl 1:691.

"Glabrum, inferne decumbens, ramosum, foliis obovatis acute serratis, stipulis ovatis acuminatis intergerimis, involucri striatis multifidis ovatis integerrimis, involucri striatis multifidis capitulo hemisphaerico parvo brevioribus, lacinis lanceolatis acuminatis 3-4-fidis subspinulosis, calycis dentibus brevissimis triangulari-ovatis acutis ciliato-serrulatis corolla brevioribus.—Valparaiso, Cuming (n 747).—No species of the beautiful tribe of involucrated Trifolia is more distinct than the present. The hds of fls are sm, though much larger than those of *T. microcephalum*."—H & A, Bot Misc 3:180 (1833).

Variety **PILOSUM** Eastwood.

"Entire plant, especially the young parts, pilose with soft, w, curly hairs; inv woolly both interiorly and exteriorly, with teeth of divisions almost equal, entirely without the long middle tooth of the typical form: cx viscid, but free from pubescence. The surfaces of the lvs are sparsely pilose. The plant is

les robust and has smaller hds and fls than the common form. This was compared with the description and figure in Bot Beech, p 330, T 79. *T. microdon* has been reported from Santa Cruz Island and collected on Santa Catalina by Mrs. Trask. As represented in the Herbarium of the Academy, this species is variable. The specimen most nearly like this is one from near Tennessee Cove, Marin Co, Cal, collected by the writer. This variety was collected in two localities on moist slopes (on San Nicolas Island, Ventura Co, Cal, by Mrs. Trask).—Eastwood, Cal ac pr, III, bot 1:100 (1898).

TRIFOLIUM MINUTIFLORUM Greene.
"Ann, very slender glabrous, the num branches decumbent, a few ' to almost a ° long; lfts $\frac{1}{2}$ to $\frac{3}{4}$ " long, the lowest exactly linear, truncate or emarginate, the others oblong-linear and abruptly acutish, all somewhat serrately and very evenly denticulate: peduncles filiform, much longer than the lvs: hds not much more than 2 or 3" broad in fl; inv parted into 6 or 7 oblong entire lobes: cx-teeth subulate-lanceolate, herbaceous almost throughout: corollas moderately inflated in age.

"An interesting species, allied to *T. truncatum* and *T. hydrophilum*, which latter it agrees with in having the lfts of its earliest lvs narrower than those of the later ones, in which respect these two differ from all other West American clovers. This one is of southern California and Guadalupe Island. Mr. Orcutt distributed it as "*T. gracilentum*."—Greene, Pittonia 3:215 (1897).

TRIFOLIUM MONANTHUM H. & A. Gray.

Trifolium pauciflorum (?) var parvum Kellogg Cal ac pr 5:54 (1873).
Trifolium multicaule Jones, Torr, cl b 9:31 (1832).

"Involucraria, pygmaeum, parce villosulum, e radice exili (annua?) ramosum; stipulis ovato-lanceolatis subfoliaceis integerrimis 3-5-nervatis cuspidato-acuminatis; folioliis obovato-cuneatis nunc retusis mucronato-dentatis; pedunculo folium haud superante; involucri unifloro (rarius bifloro) fere diphylo calyce cylindraceo dimidio brevior; corolla alborpurpurascens elongata.—Moist bank by Soda Springs, Tuolumne river, (California) alt 8,700". A very distinct little species, only about an

hi, the stem on branches terminated by a ped of 3-9" in length: lfts 2 or 3" long; cor $\frac{1}{2}$ " long, twice or thrice the length of the cx (the teeth of which are broadly lanceolate, spinulose-pointed, and shorter than the tube), somewhat glandular on the elongated tube, not scarious or inflated after fl'ing; legume stiptate, two-seeded: lvs of inv mostly two-cleft."—Gray, Am ac pr 6:523 (1865).

TRIFOLIUM OBTUSIFLORUM Hooker.

Ann; sts stout, erect, flexuose, p, with ascending branches; lvs dull g, soft pubescent throughout and very clammy, acidulous; stipules spreading or reflexed; lfts 2-3 cm long, linear-lanceolate, pectinately setulose; hds 2-3 cm broad on long peds; cx-tube with 10 prominent and as many lesser nerves; cor w'ish with a dark p center.

Abrams, Fl LA 214.

Hall, U 92.

Type locality:—"near Monterey, Cal."

Trifolium rosclidum Greene, Fl Fran 31 (1891).

Davidson, Pl LA Co 4.

TRIFOLIUM PALMERI S. Wats.

"A glabrous and diffuse ann, sts ascending, about a ° hi or less; stipules elongated, narrowly acuminate; lfts oblong or narrowly lanceolate, acute or acutish at each end, serrulate, ½ to 1' long; peduncles axy: hds naked, 10-20 fld; fl sessile, at length reflexed; cx 3" long, deeply cleft into narrow acuminate entire lobes; pet p'ish, exceeding the cx: pod 2-seeded.—Guadalupe Island; (Mexico) Dr. Palmer."—Watson, Am ac pr 11:132 (1876).

Brandegee, Zoe 1:113, Cat.

San Clemente Island.

TRIFOLIUM PAUCIFLORUM Nuttall.

Wash; Mont; Ut; Sber hills (Parish 749); SD!

Glabrous, very slender, sts usually ascending or decumbent: stipules ovate to lanceolate, lacinate; lfts obovate to oblanceolate or sometimes linear, usually obtuse or retuse, ½' long or less, serrulate: hds rather few-fld; inv sm; fls 3-4" long, not greatly exceeding cx, deep p or light rose-color: cx-teeth rigid, subulate and setosely acuminate, exceeding the tube, entire: pod 2-seeded.

T & G, Fl 1:319.

Trifolium variegatum Nuttall.

Trifolium oliganthum Steudel.

TRIFOLIUM PRATENSE L.

Rather stout, erect, per, 2-3 dm hi, pubescent: lfts oval or obovate, often retuse, 2-3 cm long; cor elongated-tubular, rose-p. An occasional escape from cult.

Abrams, Fl LA 213.

L, Sp Pl 768 (1753).

Type locality:—"Europae graminosis."

TRIFOLIUM PROCUMBENS L.

Parish, Erythea 3:60.—"well established along the banks of a stream in Potatocanyon, alt 3000", in the Sber mts."

St procumbent or ascending; lfts obtuse or retuse, denticulate, terminal one petiolulate; stip ovate-lanceolate acuminate, much shorter than the petioles; hds sm, subglobose; cor y; sty 3 or 4 times shorter than the 1-seeded leg. Eu. NH to VA. Yellow clover.

TRIFOLIUM REPENS Linn.

Per, diffuse, creeping, with erect long-stalked lvs and hds; lfts obcordate, denticulate; cx-teeth unequal, lanceolate-subulate, shorter than the tube; cor w; pods usually 4-seeded. White clover; shamrock.

L, Sp Pl 767 (1753).

Type locality:—"Europae pascuis."

Abrams, Fl LA 212.

Davidson, Erythea 1:59, Pl LA Co 4.

TRIFOLIUM RUSBYI Greene.

"Near *T. longipes*: sts num, rather stout, decumbent, a ° hi from a deep, somewhat fusiform per rt; sparingly villous-pubescent: lfts obovate to narrowly oblong, an ' or less long, obtuse, mucronate, serrulate, deep g above, pale beneath: spike oval or oblong, bracts of the rachis not bristly: fl salmon-color, distinctly pedicelled and in age reflexed:

cx-teeth linear-lanceolate, villous-pubescent.

"Northern Ar, collected by Lemmon and by Rusby; also in the Sber mts, So Cal, Parish. Well distinguished from *T. longipes* to which it has been referred, by its stout thick perpendicular rts, the pallid lower surface of its lvs and different infl: the rts of *T. longipes* are slender and creeping; its hd or spike is round-oval, the fls sessile and never reflexed, and the rachis has bristly bracts. This is probably the *T. longipes* var *latifolium* of Bot Cal, but has characters not credited to that."—Greene, Pittonia 1:5 (1887).

Hall, U 92.

Variety **ATOBUBENS** Greene.

Greene, Erythea, 4:66 (1896).

"Plant with the slender fusiform taprt and clustered decumbent sts of the type, but lfts smaller and narrower: flds sm, broader than hi; fls sessile, never reflexed: cx-teeth densely w-villous: cor of a dark r-p, only the keel with some w or pink.

"As a species *T. Rusbyi* rests, therefore, on its peculiar rt character and mode of growth. The plants grow singly, with tufted decumbent sts from a tap-rt. *T. longipes*, its nearest relative, forms a sod, its solitary sts arising from matted horizontal rt-stocks; and better specific characters are seldom found in this and allied genera."

TRIFOLIUM SPINULOSUM Douglas.

Per with rather slender decumbent or ascending sts, 2 dm long or more: lfts narrowly oblong, acute at both ends, spinulose denticulate, ending in a stiff spinulose cusp: stipules ovate-acuminate, spinulose-serrate: inv deeply cleft or divided, smaller than in *T. wormskjoldii*: cx-teeth narrowly subulate, stiff and pungent, about equaling the cor. Gabriel; Sber mts.

Abrams, Fl LA 213.

Douglas, Hook, Fl Bor Am 1:133 (1834).

Type locality:—"Very common near springs, in the vallies between Spokane and Kettle Falls, Wash."

TRIFOLIUM STENOPHYLLUM Nutt.

"Ann, branching from base; lvs ternate, smooth and linear, distantly serrulate; stipules subulate, sparingly denticulate; peduncles elongated, filiform: hds sm and nearly round, the vexillum, at length, forming a membranous inflated sac of equal breadth throughout, embracing the sm wings and sm carina, which is monopetalous, but with one broad claw attached to the vexillum.

"With all the aspect of the involucrate clovers: fls brownish, the keel deeper colored: sta diadelphous: pod stipitate, flat, two-seeded, sds obcordate: stig sm, capitate: about 4-6' hi: lvs 1 or 2" wide.

"Hab. The island of Santa Catalina and San Pedro, Upper Cal. Flowering in February."—Nuttall, J Phil ac II, 1:151 (1848).

Abrams, Fl LA 215.

Davidson, Pl LA Co 4.

TRIFOLIUM MICROCEPHALUM Pursh
Puget Sound; Cat; Cruz; Guad; Baja;

SD! Sber; San Clemente Island.

Pursh, Fl 2:478 (1814).

Type locality: "on the banks of Clark's river."

Per, ascending, pubescent; lvs obovate, dentate; hds sm, few-fld; fls sessile, exceedingly sm, pale p.

Coville, CNH 4:83, 274.

Abrams, Fl LA 214.

Hall, U 91.

TRIFOLIUM TRIDENTATUM Lindl.

Abrams, Fl LA 214.

Lindl, bot Reg t 1070 (1827).

Ann; erect, 2-4 dm hl, glabrous; stipules setaceously lacinate; lfts linear or lanceolate, sharply serrate, 2-6 cm long; hd 2-3 cm broad; inv lacinate, much shorter than the fls; fls about 1 cm long, bright p with darker center; tip of standard sometimes wish; ex-tube 10-nerved; teeth rigid, broad at base, abruptly narrowed to a subulate spinulose-tipped apex which is usually subtended by a short stout tooth on each side.

Variety **MELANANTHRUM** S. Watson.

"Arizona; So to middle Cal."

Variety **OBUSIFLORUM** S. Watson.

Sber hills (Parish 751): SD! to middle Cal.

TRIFOLIUM VARIEGATUM Nutt.

"T. variegatum (Nutt mss): glabrous, decumbent, branching; lfts obovate-oblong or somewhat obovate, minutely spinulose-serrate; upper stipules roundish, laciniately dentate with subulate-setaceous teeth; peduncles axyl, longer than the lvs; inv laciniately many-cleft, shorter than the subglobose hd; teeth of the glabrous cx equal, lanceolate-subulate, with setaceous points much longer than the tube, shorter than the cor; legume dehiscent, 1-2-seeded.

"Springy places near the mouth of the Wahlamet, Nuttall!—Biennial: st 8-12' long; lower lfts with a lunulate spot: hd about ½" in diam; cor dull p, wish at the tip."—T & G, Fl 1:317 (1838).

See T. pauciflorum Nuttall.

TRIFOLIUM WOERMSKJOLDII Lehm.

T. involuclratum Wild of Bot Cal in part.

Abrams, Fl LA 213.

Hall, U 92.

Per, spreading underground by slender rt-stocks; sts decumbent, often 3 dm long or more; herbage flaccid, glabrous; stipules obovate-oblong, obtuse, pectinate-denticulate, 2 cm long or more; inv 1-2 cm broad, lacinate-aristate: ex-tube scarious, 10-striate: teeth linear-subulate, much longer than the tube, all entire or 1 or more setaceously 2-3-parted; standard deeply emarginate, pale p, other pet darker.

LOTUS ARGOPHYLLUS Greene.

Abrams, Fl LA 219. Gabriel and Sber mts, in pine belt.

Densely silvery-silky throughout; sts herbaceous, decumbent or ascending, 3-6 dm long; lfts 3-7, obovate and rounded, or oblong and acute, 5-12 mm long, umbels dense, capitate, on short simple bracted pedis; fls 8-10 mm long; cx ½ as long; the teeth filiform, nearly as long as tube, silky. Cruz; Cat; San

Clemente Island; SD mts!

Greene, Pitt 2:149 (D 1890).

Lotus niveus Greene, Pitt 2:148 (non Watson).

Hosackia argophylla Gray, Am ac Mem 5:316 (1854).

Symatium argophyllum Greene, Cal ac b 2:147.

Symatium niveum Greene, Cal ac b 2:148, 394.

LOTUS GLABER Greene.

Abrams, Fl LA 218.

Suffrutescent, tufted and reedy, 5-10 dm hl, erect or decumbent, nearly glabrous; lfts mostly 3, oblong to linear-oblong, 6-12 mm long, obtuse or acute; umbels num, sessile; fls 6-8 mm long, y, turning rish; cx 3-5 mm long; teeth subulate, erect, slightly less than ½ as long as the tube. Fl'g nearly the year round.

Greene, Pittonia 2:148 (1890).

Type locality: not given (necessarily near SF).

Hosackia glabra Torrey.

Symatium glabrum Vogel, Linnaea 10:591 (1836).

LOTUS GRANDIFLORUS Greene.

Per; erect, 3-10 dm hl or more, slender, with few lvs and long internodes, nearly glabrous, or somewhat silky-pubescent; lfts 5-7 on an elongated rachis, obovate to oblanceolate, 12-18 mm long, acutish; ped slender, elongated, sm-bracted, 5-8-fld; fls 2 cm long, deep y, turning or; cx ½ as long; the subulate teeth nearly equaling the tube; pod slender, elongated, glabrous.

Abrams, Fl LA 218.—Rustic canyon, near Santa Monica, Hasse.

Guad (Palmer, Greene); SD and Sber mts (Parish)!

Hosackia grandiflora Benthalm, Linn Soc tr 17:366.

Hosackia? occulta Greene, Cal ac b 2:394. Cruz.

LOTUS HAYDONI Greene.

Based on Hosackia Haydoni Orcutt.

LOTUS HEERMANNI Greene.

Abrams, Fl LA 220.

Branches num flexuose, weak and prostrate, 3-10 dm long; pubescence spreading and slightly tomentose; lfts 5-7, obovate or cuneate-oblong, 4-8 mm long; umbels on short peduncles or sessile; fls 4-5 mm long; cx ½ as long, somewhat villous; the teeth filiform, about equaling the tube. SF; SD!

Greene, Pittonia 2:150.

Hosackia Heermanni Dur & Hilg, Pac Ry R 5:6 t 4.

LOTUS HUMISTRATUS Greene.

Greene, Pittonia 2:139, based on Hosackia brachycarpa Benthalm.

Abrams, Fl LA 217.

Middle and So Cal; So Ariz; CD; Cat. Hosackia brachycarpa Benthalm. Pl Hartw 306.

Lotus brachycarpus Watson, Bib Ind, 225 non Hochst.

LOTUS JUNCEUS Greene.

Much resembling Lotus glaber, erect, shrubby; lfts obovate to oblong, 4-8 mm long; umbels short-pedunculate to sessile; fls 6 mm long; cx 4 mm long or less; teeth short and blunt.

Abrams, Fl LA 219. LA Co?

LOTUS LATHYROIDES Greene.

Slender, branching and somewhat flexuose, 2.5-4 dm hi, minutely pubescent; lfts 5-7, linear-lanceolate, acute at both ends; stipules triangular, 2 mm long, scarious, ovate-acuminate; umbels 1-3-fld, with or without a linear-lanceolate bract; fls 10 mm long; cx-teeth linear, acute; pod as in *L. oblongifolius*.

Abrams, Fl LA 216.

Greene, Pittonia 2:146.

Hosackia lathyroides Dur & Hilg, Pac Ry R 5:6 t 3.

LOTUS LEUCOPHYLLUS Greene.

SBER? (Parish 1811); Monterey? (Douglas); Salinas valley (Brewer).
Abrams, Fl LA 219. Gabriel mts (Davidson).

Slender, 3-6 dm hi, much branched and ascending, having the habit of *Lotus glaber*, but silvery canescent, with a close short silky pubescence: lfts 3, cuneate-oblong to linear, 12-15 mm long; umbels few-fld, sessile or short-peduncled; fls 6 mm long; cx $\frac{1}{2}$ as long, with short slender teeth.

Hosackia sericea Benth, Linn Soc tr 17:367.

LOTUS MICRANTHUS Benth.

Abrams, Fl LA 217. Monica and Santa Ana mts.

Erect, slender, 5-20 cm hi, glabrous; lfts 3-5, obovate and sm to narrowly oblong and 12-16 mm long; peds filiform; bracts 1-3-foliolate; fls 4 mm long or less, y., turning r'ish; keel sharply incurved at apex, about equaling the wings; blade of standard cordate; pod 2.5 cm long, compressed, constricted between the sds; sds oval or roundish, slightly compressed, smooth. Cruz; Santa Maria, Baja (Br); British America (Greene). Cat (Gambel, Lyon); SD (Or; Cleveland); Monterey.

Benth, Linn Soc tr 17:367.

Hosackia micrantha Nutt in T & G Fl 1:324.

Syrmatium micranthum Greene, Cal ac b 2:147.

Hosackia parviflora Benth, Bot Reg t 1257.

Hosackia microphylla Nuttall in T & G Fl 1:326.

LOTUS NEVADENSIS Greene.

Hall U 90.

Greene, Pittonia 2:149 (1890).

Hosackia decumbens (?) nevadensis Watson, Bot Cal 1:138 (1876).

Abrams, Fl LA 219. SBER and San Antonio mts.

Branches mostly prostrate, wiry at base and more or less woody, 3-6 dm long; sparingly villous or somewhat tomentose; lfts 3-5, cuneate-obovate, acute, 6-10 mm long; umbel many-fld, short-peduncled; bract 1-foliolate; cx-tube 2 mm long; teeth slender, $\frac{1}{2}$ as long; pod strongly arcuate.

Donner Lake to SD Co, plentiful in open pine woods (Greene).

Type locality: "in the Sierra Nevada from the Yosemite to Sierra Co," Cal.

Syrmatium nevadensis Greene, Cal ac b 2:148.

LOTUS NUDIFLOEUS Greene.

Strigose-pubescent, decumbent or ascending; exceeding the lvs, usually 2-

fid and 3-foliate-bracted; fls y, 8-10 mm long, 3 mm broad; sds quadrate, seldom notched except at hllium, 2 mm broad, strongly mottled with bk.

Abrams, Fl LA 218. Gabriel mts.

Hosackia nudiflora Nuttall.

Hosackia strigosa Gray, partim, non Nuttall.

LOTUS OBLONGIFOLIUS Greene.

Erect, slender, 3-4 dm hi, somewhat appressed-pubescent; lfts 7-11, narrowly oblong or oblanceolate, 2.5-3 cm long, acute; stipules sm, acute; ped exceeding the lvs, 5-7-fld; bract subsessile, 1-3-foliolate; fls 15 mm long; cx-teeth subulate, nearly equaling the tube; cor y, turning purplish or brownish; pod slender, 5 cm long.

Abrams, Fl LA 216.

Greene, Pittonia 2:146 (1890).

Type locality: "in vicinibus Monterey," Cal.

Coville, CNH 4:84.

Hosackia oblongifolia Benth, Pl Hartw 305 (1848).

LOTUS RUBELLUS Greene.

Slender, prostrate, strigose-pubescent, or nearly glabrous, not at all succulent; lfts 6-10, linear-oblong, mostly acutish; early peds shorter than the lvs, bractless, 1-fld, the later bracted, 2-fld; cor usually reddish, 4-5 mm long; pod straight or slightly curved at tip, less than 2 mm broad, 2.5 cm long, 1-10-seeded; sds quadrate, minutely granulate, 1 mm long or usually less, light tawny. SF southward near the sea. LA (Davidson).

Abrams, Fl LA 217.

Greene, Pittonia 2:141.

Hosackia strigosa Gray, in part, non Nuttall.

Hosackia rubella Nuttall in T & G Fl 1:326.

LOTUS STRIGOSUS Greene.

Abrams, Fl LA 218.

Mt Diablo; Cal; Cruz; Rosa; Baja.

Hosackia strigosa Nuttall.

LOTUS WRANGELIANUS F & M.

Abrams, Fl LA 216.

Ann; much branched, decumbent or ascending, 1-3 dm long; sparsely or canescently villous, leafy; lfts usually 4, cuneate-obovate to oblong, 6-12 mm long; cx-teeth broadly subulate, equaling the tube; cor 6 mm long, y; standard broadly ovate, erect; pod pubescent, straight, 14-20 mm long, 5-7-seeded. Cruz; Baja (Br).

Fisch & Mey Ind Sem Hort Petrop 16 (1835).

Davidson, Pl LA Co 4.

Greene, Pittonia 2:138.

Hosackia subpinnata T & G, Fl 1:226 (not *Lotus subpinnatus* Lag.).

HOSACKIA DENTICULATA Drew.

"An, $1\frac{1}{2}$ - $2\frac{1}{2}$ " hi, stout, erect, sparsely branched, pale g throughout; lfts obovate, about 6" long, nearly all denticulate; the almost filiform lobes of the cx longer than the tube; cor pale y to nearly w, standard purplish; pods as long as the lfts, nearly glabrous, 3-seeded. Along Mad river, near Jarnigan's, Jl 10. This plant has hitherto been included in *H. subpinnata*, Torr and Gr, but is certainly a distinct species."—Drew, Torr cl b 16:151. Humboldt Co.

LUPINUS BREVICAULIS S. Watson.

Ann, hirsute; stems very short (1-2' hi); lfts 5-7, (usually 7), obovate, narrowed at base, very obtuse or retuse; peduncles about equaling the lvs; racemes usually very short and few-fl'd; fls sm, deep bl; cx often bracteolate, upper lip very short, truncate, obsoletely toothed, membranous, lower lip entire or obscurely toothed; keel slightly exceeding the wings; pods 2-3-seeded; sd about 1" in diam.—Near *L. pusillus*; distinguished especially by the characters of the cx: in the valleys and lower canyons of Western Nev to the East Humboldt mts, (more frequent than the last), (pusillus) and on the islands of Salt Lake; 5-8,000' altitude; My-Jl; also collected by Dr. Anderson (84) near Carson City. (222). A form of this was collected with some of the peduncles much elongated and bearing above the leaves loose racemes of reduced florets, apparently perfect in all their parts, but usually sterile, (223).—Serenio Watson, Bot King Exped 53 t 7 f 1-4 (1871).

Davidson, *Erythea* 6:72. Bear.

Mohave (Or 74); CD (Parish 96); Ariz; Nev.

LUPINUS BUBKEI S. Watson.

"Resembling *L. rivularis*, but distinguished by broader stipules, lower lvs long-petioled, raceme usually short and dense, with pedicels mostly but 1-2" long, bracts villous and subsistent, pubescence of cx somewhat villous and more or less spreading; pod 8-seeded.—On the east side of the Sierra; near Carson City (46 Anderson, 262 Stretch); "Snake Co" (Burke); Falls of the Yellowstone (Hayden).—S. Watson, Am ac pr 8:525 (1873).

Watson, Am ac pr 8:525.

Brewer & Watson, bot Cal 1:118. Nev; Mont.

SD mts (I. J. Gray, 17 Jl 1890).

Lupinus polyphyllus Watson, bot King Exp 55, not Lindl.

Genus CERCIS Linnaeus.

Judas tree: shrub: fls r-p, in umbel-like fascicles, appearing from winter buds in advance of the simple lvs: stipules caducous: cx in anthesis broader than long, with 5 broad obtuse teeth: cor obscurely papilionaceous; banner smaller than wings and enclosed by them in the bud; keel-pet larger than the wing-pet and not united: sta 10; distinct, declined, the fil clavate-dilated towards the base: pod oblong, very flat, the upper suture with a winged margin: embryo straight.

CERCIS OCCIDENTALIS Torrey.

Western Red-bud: 9-10' hi, branches rather wide-spreading; lvs round, cordate at base with nearly closed sinus, 2½-3½' broad; pods about 2' long and 8" wide. Mts SD Co; foothills of Sierra Nevada.

Genus LEWISIA Pursh.

Sep 6 or 8, distinct, marcescent-per-sistent. Pet 8-16. Sta num: cap circumscissile at base, then bursting irreg. Cotyledons accumbent.

LEWISIA BRACHYCALYX Engelm.

Lvs spatulate or nearly linear: scapes

not jointed, 2-bracted at the very base, shorter than the lvs: sep 4, mostly herbaceous, 3" long; pet 7-9, oblong, 2-3 times longer than cx: sta 10-15: cap shorter than cx. Fresno Co, Cal; U; Ar.

Engelmann, Am ac pr 7:400.

LEWISIA REDIVIVA Pursh.

"Lvs subterrate, rosulate at the crown of a thick fleshy rt: lfd scapes with a whorl of bracts making a joint near the middle; fl w or pinkish, large and showy. Wash; Cal; Rocky mts."—Howell, *Erythea* 1:31. BC; Ar; U; Mont. Pursh, Fl 368.

ERIOPHYLLUM CONFERTIFLORUM

Sts suffrutrescent, 4-6 dm hi, usually branched from the woody base, with a close dense, at length decid tomentum; fl'ng branches lfy; lvs 1-4 cm long, ternately or pinnately 3-7-parted into narrowly linear divisions; hds many in compact terminal clusters, 34 mm hi; inv obovoid-oblong, its bracts about 5, ovate; rays 4-5, 3-4 mm long; paleae 8-10, nearly equal, about half as long as the ak.

AUDIBERTIA PACHYSTACHYA Parish.

"*A. incana pachystachya* Gray, Syn Fl 2, 1, 461. One or 2 ft. high, woody at base only; leaves ovate or ovoid, 1-2 inches long, or the smaller obovate; inflorescence a dense terminal spike of approximate verticils, often with short lateral spikes from the axils of the upper leaves; bracts scarious, ovate or oblong, ½ in. long, purple, exceeding the fls; then as in *A. incana*. San Bernardino Mts., at about 7,000 ft. alt. Fls in Ag."—Parish, *Erythea* 6:91. Lower California (Orcutt).

See *Ramona pachystachya*.

LYCOPUS SINUATUS Ell.

See *Lycopus Americanus* Muhl.

MENTHA VIRIDIS Linn.

See *Mentha spicata* L.

PEUCEDANUM EURYPTERA A. Gray.

See *Euryptera lucida* Nutt.

AUDIBERTIA VASEYI Porter.

See *Ramona Vaseyi*.

AUDIBERTIA PALMERI A. Gray.

San Diego Co (Palmer); Cruz Baja.

See *Ramona Palmeri*.

RHUS AROMATICA Ait.

Variety **TRILOBATA** A. Gray.

Diffusely slender branched.

LUPINUS BREWERI Gray.

Sts 6' long or less, from a spreading branched woody caudex, very leafy pubescence dense, silky, appressed: lfts 7-10 obovate, obtuse, 4-6" long, at least ½ as long as the petiole: racemes very short, the peduncle equaling the lvs; bracts short: cx-lips nearly equal; the upper deeply bifid, the lower shortly and equally toothed: pet bl, equal, 3-4" long; standard orbicular."—Brew & Watson, bot Cal 1:122.

Gray, Am ac pr 7:334 (1868).

Type locality:—"Prostrate, trailing on the ground, or on rocks on the Yosemite trail, alt. 6000", Prof. Brewer."

Davidson, Erythra 6:72, Bear.
LUPINUS CHAMISSONIS Esch.

Shrubby, 4-8 dm hi, forming rather dense tufts, leafy throughout; lfts usually 9, cuneate-obovate, obtuse and mucronulate or acute, 1-3 cm long, very silky on both sides; racemes rather dense, mostly on short ped; fls subverticillate, 10-12 mm long; upper cx-lip cleft, lower entire; pet bl or lavender; standard with permanent y spot: keel naked, Cuyamaca! Ore; Rosa; Cat. Eschscholtz, ac Petrop mem 10:288.

Greene, Pittonia 1:87, Mig.—Cruz, as a "shrub of good size."
Abrams, Fl LA 209.—"Common on the sand-dunes along the seashore. Flg nearly year round."

Var **LONGIFOLIUS** S. Watson.

"Scarcely woody at base: sts less lfy and petioles more elongated: keel pubescent near the margin."—Brewer & Watson, bot Cl 1:17. SD (Cleveland). SD (Cleveland); SBar (Parish 95).

LUPINUS CONCINNUS Agardh.

Low, 10-15 cm hi, spreading, densely villous or hirsute; lfts 5-8, oblanceolate, 2-4 times longer; racemes short, dense, subsessile; bracts linear-setaceous persistent; upper cx-lip 2-parted, lower deeply trifid; pet 8 mm long, violet; standard shorter with a y spot in the center; keel scarcely falcate, naked, slightly exceeding the wings; pod 4-seeded.

LUPINUS CONFERTUS Kellogg.

SBar mts (Parish 429); Yosemite valley.

Erect or ascending, 1° hi or more; pubescence silky-villous, appressed or spreading; lfts 5-8, cuneate-oblong to narrowly oblanceolate, $\frac{3}{4}$ -1 $\frac{1}{2}$ ' long, acute; raceme usually dense, rather long peduncled; bracts persistent, setaceous, about equalling the cx: fls verticillate, nearly sessile, bl or rose-color; upper cx-lip 2-cleft: standard naked, rather narrow; the keel ciliate: pod $\frac{3}{4}$ ' long, 2-4-seeded; sds nearly round, w.

Kellogg, Cal ac pr 2:192, f 59.

Brewer & Watson, bot Cal 1:120.

Curran, Cal ac b 1:134.

LUPINUS CYTISOIDES Agardh.

1-2 m hi; sts striate; pubescence minute, appressed; stipules lanceolate-subulate; lfts 7-9, oblanceolate, 5 cm long or more; raceme much elongated, dense; fls not verticillate; pet usually rose-p, 12-14 mm long; keel strongly falcate, densely ciliate below the middle.

Abrams, Fl LA 209. Gabriel and SBar mts.

Hall, U 91.

Davidson, Erythra 6:71. Fl LA Co 5.

Agardh, Syn Lup 18 (1835).

Type locality: "In California."

Coville, CNH 4:82.

LUPINUS DENSIFLORUS Benth.

Sacramento valley; Baja! a showy an, less than 1° hi, with w or beautifully tinted fls arranged in umbel-like clusters on the terminal spike.

Bentham, Hort Tr ns 1:409.

Davidson, Erythra 6:72, Bear.

Parsons, w fls Cal 87.

Lupinus menziesii Agardh, Syn 2.

Lupinus menziesii aurea Kellogg, Cal ac pr 2:192 f, a form with light sulphur y fls.

LUPINUS DOUGLASII Agardh.

Slightly woody at base: pubescence short, tomentose or silky, appressed; lfts 7-9, oblanceolate or sometimes cuneate-oblong, 1-1 $\frac{1}{2}$ ' long, pubescent on both sides; racemes often long-peduncled; bracts linear-setaceous, exceeding cx: fls scattered or subverticillate, bl or p: cx with long setaceous bractlets, upper lip nearly 2-parted: keel ciliate: ovules 8-9; pod? SF; LA; Baja (Or 72?).

LUPINUS EMINENS Greene.

"Shrubby, 3-6" hi, with ascending stoutish and very lfy branches ending in a rather short and short-peduncled raceme: growing branches and both faces of the lvs somewhat silvery-canescens with a minute appressed pubescence: lfts 7-9, lanceolate-oblong, acutish, very unequal in size, the longest 1 $\frac{1}{4}$ ', the smallest 1' long, on petioles of 1 or more: fls scarcely whorled in the raceme: cx lobes subequal, the upper very broad, scarcely notched, the lower narrow, entire: cor about $\frac{1}{2}$ ' long, the banner shorter than the other pet, changing from whitish to tawny; keel naked: pod 1 $\frac{1}{4}$ ' long, villous, almost erect in maturity, about 4-seeded. Santa Inez mts, SBar Co, Cal, G. W. Dunn, June, 1891. Like L. albifrons in habit and pubescence, but very distinct in characters of fls and fr."—Greene, Erythra 1:125 (1893).

LUPINUS FORMOSUS Greene.

"Stoutish and suberect, 2-3° hi, sparsely silky-pubescent: stipules long, linear-setaceous, persistent: lfts 7-9, linear-lanceolate, very acute, 1-1 $\frac{1}{2}$ ' long, equalling the petiole: raceme subsessile, more or less whorled, but rather dense: fl 6-7" long, rich violet, the banner and wings equalling, the latter entirely enfolding the less elongated naked keel. The best type of the species is of the author's own collecting on Mare Island (Solano Co, Cal), 1874; next to that, No. 857 of the state survey. These are our very handsomest perennial lupines; L. albicaulis, with its small tawny wings and banner, and long-protruding keel, one of the homeliest: Ap-O."—Greene, Fl Fran 42 (1891).

Hall, U 91.

Variety **BBIDGESII** Greene.

Davidson, Erythra 6:71. Fl LA Co 5.

LUPINUS GRACILIS Agardh.

Low, slender, 6-15 cm hi, spreading, rather densely pilose; lfts 5-7, cuneate-obovate, 6-12 mm long; racemes short lax; bracts short; upper cx-lip bifid, lower 3-toothed; pet 6 mm long, bl and w; standard shorter; keel slightly exceeding the wings, nearly straight, naked; pod 1 cm long.

Monterey; Baja (Or 872).

Parish, Erythra 6:88, Witch creek (Alderson), and Jac (McClatchie).

Abrams, Fl LA 208.

LUPINUS GRAYI S. Wats.

"A span hi, densely hoary-tomentose throughout, usually with some silky hairs: lfts 5-9, cuneate-oblong or oblanceolate, obtuse or acutish, shorter than the petioles: racemes peduncled, short and loosely fld, with rather slender pedicels 1 or 2" long; bracts subulate, equalling the cx, deciduous: fls subverticillate, light bl, rather large (6-7" long), with broad wings and broad naked banner; keel ciliate: pod 5-6-seeded, 1" long or more. In the Sierra Nev; near Clark's ranch, Mariposa Co, Cal, Dr. Asa Gray; Indian valley, Plumas Co, Mrs. M. E. Pulsifer Ames. With the large fls and loose raceme of *L. ornatus*, but otherwise more nearly allied to the *L. leucophyllus* group."—S. Watson, Am ac pr 11:126 (1876).

Abrams, Fl LA 209. Gabriel; SBer and Cuyamaca mts.

Parish, Erythea 3:60, Bear.

LUPINUS HIRSUTISSIMUS Benth.

Rather stout, 2-3 dm hi, very hispid with viscid stinging hairs: lfts 5-7, broadly cuneate-obovate, retuse, obtuse, or rarely acute, mucronulate, 1.5-3 cm long; petioles twice as long; racemes loose; upper cx-lip deeply cleft; pet reddish-p, nearly equal, 12 mm long; keel ciliate on the claw only; pod hirsute, 2.5 cm long. Cruz; Sacramento; Bentham, Hort Tr n s 1:409.

Brandegge, Zoe 1:113, Cat.

Davidson, Erythea 6:71, LA Co.

Abrams, Fl LA 207.

LUPINUS LATIFOLIUS Agardh.

Rather stout, erect, branching, 6-12 dm hi, minutely appressed-pubescent; st not striate, shining, leafy: basal lvs long-stalked; stipules linear-lanceolate; lfts 5-7, broadly oblanceolate, 2.5-6 cm long; racemes slender-peduncled, loose; verticils often distinct; pedicels slender; cx-teeth elongated, the upper slightly notched at the narrow apex; pet bl, 12-14 mm long; keel ciliate below the middle.

Abrams, Fl LA 208. Monica mts (Hasse).

L. rivalaris latifolius S. Watson.

LUPINUS MICRANTHUS Dougl.

Rather slender and weak, branched from the base, 12-20 cm hi, pilose-pubescent, not at all succulent; lfts 5-7, narrowly linear to linear-spatulate, 1-3 cm long; petioles twice as long, racemes pedunculate; verticils 3-5, often indistinct; pedicels 3 mm long or in fr 6 mm long; upper cx-lip 2-cleft, the lobes divergent, lower longer entire; pet 4 mm long, bl except the w and dotted middle of the erect mucronulate standard; keel woolly-ciliate above the middle; pods 5-seeded. Puget Sound to Mexico; Rosa; Quintin (Palmer).

Abrams, Fl LA 208.

Lupinus umbellatus Greene, Cal ac b 2:145, 394, Cruz.

Variety **MICROPHYLLUS** S. Watson

"(*L. microphyllus*, Nutt, MS.) A lower and more hirsute form, with lfts but 3-6" long. SD."—S. Watson, Am ac pr 8:535 (1873).

LUPINUS PROPINQUUS Greene.

"Shrubby, much branched and bushy,

usually 2-4° hi, all the herbage except the glabrous upper surface of the lvs puberulent; racemes short and short-peduncled, the fls indistinctly whorled; bracts squarrose-spreading, very caducous: cx-seg subequal, the upper notched, often deeply so: cor 5" long; pet subequal, vio, the banner reddening in age; keel strongly ciliate."—Greene, Erythea 1:126. SBar; Cruz.

LUPINUS SITGREAVESII Watson.

Parish, Erythea 7:93. SBer mts.

Puberulent and somewhat silky-villose with spreading hairs: stipules setaceous; lfts 7-9, oblanceolate, acute, 1-3' long, usually glabrous above: raceme open, shortly peduncled; pedicels slender: cx appressed-silky, short; the upper lip rather broad, shortly toothed or nearly entire: standard rounded, naked; keel ciliate or naked: ovules 5. Ar.

LUPINUS SPARSIFLORUS Benth.

Slender, sparingly branched, 3-6 dm hi, villous with spreading hairs: lfts 5-9, linear, obtuse at apex, 1-2.5 cm long; petioles 2-4 times longer; upper cx-lip 2-parted; pet violet, 10 mm long; standard shorter; keel ciliate on the claws and on the lower ¼ of blade; pod 1-2.5 cm long. Near SD (Or 75); SBer (Parish 946); Sacramento.

Davidson, Erythea 6:71, LA Co.

Abrams, Fl LA 207.

LUPINUS STIVERI Kellogg.

Diffusely branched, about 1° hi, finely and rather sparingly pubescent; lfts 5-7, broadly cuneate-obovate, ½-1½' long, obtuse or acutish, mucronulate, scarcely more glabrous above, nearly equalling the petioles: racemes 2 or 3' long, 5-10 fld, rather long-peduncled; bracts short; pedicels 1 or 2" long; upper cx-lip 2-parted with broad acute lobes: pet 6 or 7" long; the y standard shorter than the rose-colored wings: pod 1' long, nearly glabrous. Nevada Co; Mariposa Co.

Kellogg, Cal ac pr 2:192 f 58.

Parish, Erythea 3:60.—SBar mts, Cal, 5000° alt.

Parson, W Fls Cal 166.

Curran, Cal ac b 1:135.—Folsom, on the rocky cliffs of the American river.

LUPINUS TRUNCATUS Nutt.

Com rather stout, sparingly branched, 3-6 dm hi, finely and sparsely pubescent, becoming, nearly glabrous; lfts 5-7, linear-cuneiform, apex truncate, entire or 3-toothed, 2-4 cm long, scarcely equaling the petiole; upper cx-lip 2-cleft; pet deep p, 8-10 mm long; standard shorter; keel 2-3 mm long. Cruz; SF; Baja!

Nuttall, in H. & A. Bot Beech, 336.

Brandegge, Zoe 1:113, Cat.

Davidson, Erythea 6:71, LA Co.

Abrams, Fl LA 207.

LUPINUS UMBELLATUS Greene.

"Ann, slender and much branched, 1° or more hi, canescent with a soft, villous pubescence: lfts 7-11, only a ½' long; ped slender: pedicels elongated, bearing the few sm fls in an umbellate cluster: cx-lips narrow, the upper deeply cleft: cor 2-3" long, light bl; pods 5-7-seeded. Cruz (1886). Near *L. micranthus*, but distinguished therefrom

by its dense w pubescence, sm, crowded lfts and almost umbellate infi."—Greene, Cal ac b 2:145 (1886).

Genus PSORALEA Linnaeus.

Punctate with dots and heavy-scented per herbs or rarely shrubby: stipules free from the petiole: lvs pinnately 3-foliolate or rarely palmately 3-5-foliolate: cx-lobes nearly equal, upper often connate: keel united with the wings, broad and obtuse above: sta diadelphous or monadelphous: anth all alike: pod ovate, indehiscent, 1-seeded.

PSORALEA CALIFORNICA S. Watson.

Leaflets 5-7: silky-gray.
Watson, Am ac pr 12:251 (1877).
Type locality: "at McGinnis' ranch, near head of Salinas river, 25 miles from San Luis Obispo, Cal."—Mts Baja (Or 1082).

PSORALEA MACROSTACHYA D. C.

Often 6 ft. high: peduncles exceeding the leaves: leaflets 3, rhombic-ovate to narrowly ovate: stems erect.

DC, Prodr 2:220.
Lindley, bot reg t 1769.
T & G, Fl 1:689.
Brewer & Watson, bot Cal 1:140.
Abrams, Fl LA 220.
Throughout Cal; Baja!
Psoralea strobilina var T & G, Fl 1:689.

PSORALEA ORBICULARIS Lindl.

Peduncles 1-2 ft. long: leaflets 3, orbicular.

PSORALEA PHYSOIDES Douglas.

Slender, erect, 3-6 dm hi, nearly glabrous: stipules linear-lanceolate: lfts ovate, acute, 2-3 cm long: peds about equaling lvs: racemes short, dense: bracts sm: cx with sessile glands and somewhat villous with black hairs, be-teth short, nearly equal: cor 1 cm long, twice as long as cx, orchroleucous, often coming enlarged and inflated in fr: with a deep p-tinge: sta monadelphous: Torrey & Gray, Fl 1:304.
Abrams, Fl LA 220.
Hooker, Fl 1:136.
Brewer & Watson, bot Cal 1:140.

Genus AMORPHA Linnaeus.

Glandular-punctate and heavy-scented shrubs with unequally pinnate lvs, caducous stipules, and sm p fis in terminal spikes: cx obconic-campanulate, 5-toothed, persistent: standard erect, concave, unguiculate; wings and keel 0; sta monadelphous at base: pod short, exceeding the cx, sessile, indehiscent, 1-2-seeded.

AMORPHA CALIFORNICA Nutt.

1-3 m hi, puberulent, the nascent parts villous-pubescent; lfts 11-15, elliptic-oblong, obtuse, 2 cm long; spikes slender, 5-15 cm long: cx-teeth acute, broadly triangular.

Abrams, Fl LA 221.
Hall, U 88.
Parsons, W Fls Cal 320.
Holzinger, Erythea 1:131-2.
Greene, Erythea 1:132-3.
A. hispida Greene Fl F 214 (1891).

Genus MELILOTUS Tournefort.

MELILOTUS ALBA Lam.

An: glabrous, erect, 6-20 dm hi, branching: lfts truncate: racemes many, elongated: fis w, the standard exceeding the other pet. Eu. Sweet clover.

Davidson, Erythea 1:58. LA Co.
Parsons, W Fls Cal 165.
Abrams, Fl LA 211.

MELILOTUS INDICA All.

An: glabrous, erect, 3-20 dm hi, branching: lfts mostly cuneate-oblong, obtuse, denticulate, 2.5 cm long or less: racemes many, bearing sm, nearly sessile, y fis. Eu.

All, Fl Ped 1:308 (1785).
Type locality: Indian.
Davidson, Erythea 1:58, LA Co.
Parish, Zoe 1:125.
Abrams, Fl LA 211. Common.
Parsons, W Fls Cal 165.
Mellilotus parviflora, Less, of Bot Cal.
Trifolium Mellilotus indica L, Sp Pl 2:765 (1753).

MELILOTUS PARVIFLORA Desf.

See Mellilotus indica All.

Genus MEDICAGO Linnaeus.

An or per herbs with pinnately 3-foliolate lvs and 2-3 or many fis in axypeduncles: stipules adnate, often lacinate: pet free from the diadelphous sta, decid: pod 1-several seeded, coiled into a spiral.

MEDICAGO APICULATA Willd.

Sts branched from base, spreading, 3-6 dm long: lfts deltoid, 10-12 mm long, denticulate except near the base: pod 3-5 mm broad, unarmed, strongly reticulated, the reticulations extending to the edge and appearing as a row of tubercles on either side of the margin. Eu.

MEDICAGO DENTICULATA Willd.

Slender, much branched, decumbent, glabrous an; lfts obovate to orbiculate, toothed above: fis sm, y, 2-3 or rarely more on axypeduncles: pods coiled, margins armed with hooked prickles. Burr-clover. Eu.

Davidson, Erythea 1:58, LA Co.
Abrams, Fl LA 210. Everywhere common.

MEDICAGO LUPULINA Linn.

More or less pilose-pubescent: sts procumbent or ascending, 2-4 dm long: lfts broadly obovate, denticulate above: fis in short spikes on slender peduncles, y, scarcely 2 mm long: legume 1-seeded, smooth, reniform, the acuminate tip coiled. Eu.

Abrams, Fl LA 211. Lytle creek.

MEDICAGO ORBICULARIS All.

Much branched and spreading: lvs orbiculate, denticulate above: stipules lacinate: peduncles 1-2-fid: pods unarmed, velvety, about 1 cm broad. Eu.

Abrams, Fl LA 211. Santa Ana (Helen D. Geis).

MEDICAGO SATIVA Linn.

Sts erect from a deep per tap-rt, glabrous, 8-10 dm hi: lfts cuneate-oblong to oblanceolate, toothed above: fis many in a short raceme, violet: pod spirally coiled, unarmed. An occasional escape.

L, Sp Pl 2:778 (1753).

bracts lanceolate, acuminate, pubescent, nearly equalling the villous cx: cx-teeth very villous, broad at base, acuminate, as long as the turbinate tube; pet dark p, 3" long."—S. Watson, Am ac pr 22:470. Near Quintin! Sierra Madre (Seemann).

DALEA SPINOSA A. Gray.

"A shrub, much branched and very spinose, 4-15' hi; hoary with a minute appressed pubescence: lvs scattered, cuneate-oblong or nearly linear, obtuse, nearly sessile, 4-8" long: cx $\frac{1}{2}$ as long, marked by a row of conspicuous glands, the broadly ovate obtusish teeth much shorter than the tube: ovules 6: pod twice longer than cx, 1-seeded."—Brewer & Watson, bot Cal 1:143.

Gray, Pl Thurber 315.

Torrey, Pac Ry R 7:9 t 3.

Arizona; CD; Calamujet, Baja (Br).

Asagraea spinosa Baillon, Adansonia 9:232.

ASTRAGALUS ANTISELLI Gray.

Sts slender, erect, 3-5 dm hi, cinereous-pubescent, lfts 21-29, linear-oblong, crowded, 4-8 mm long, glabrous above, pubescent beneath, raceme loosely few fld: fls sm, g'ish-w; cx-teeth half the length of the campanulate tube; pod thin, linear-oblong, compressed, glabrous, 1-celled, 15 mm long, 4 mm wide, tapering to a strip of about $\frac{1}{2}$ its length.

Abrams, Fl LA 223.—On grassy hillsides in our interior valleys. Ap.

ASTRAGALUS LEUCOPSIS T. & G.

Rattle-weed. Sts erect, 3-5 dm hi, Hooker, Fl 1:151.

Variety **FREEMONTII** Watson.

"More hoary-pubescent, with looser Astragalus diaphanus Douglas, in fld spikes, usually on a longer peduncle: st flexuous."—Brewer & Watson, bot Cal 1:147. Sber deserts (Parish 1278).

"The ordinary form well developed." Variety **FLORIBUNDUS** Gray.

—Brewer & Watson, bot Cal 1:147.

ASTRAGALUS BRAUNTONII Parish.

Sts lignescent at base, 1-1.5 m long, erect or reclining; herbage canescent throughout with a short soft pubescence; lfts 15-20 pairs, oblong, 2-5 cm long; fls and fr reflexed in compact many-fld spikes: cx-teeth slender, equaling tube: cor light p: pod sessile coriaceous, oblong, 1 cm long, 2-celled by the nearly complete infolding of the dorsal suture to near the apex; sds 2-3.

Abrams, Fl LA 223. Monica mts (Hasse, Braunton).

ASTRAGALUS LENTIGINOSUS Dougl.

"A span to 1' or so hi, the tufted sts soon diffusely spreading, from slightly to hoary-pubescent: lfts 11-19, from obovate or orbiculate to oblong, $\frac{1}{4}$ - $\frac{1}{2}$ ' long: peduncle short: fls and fr mostly crowded in the oblong spike or raceme: cor either w or p, nearly $\frac{1}{2}$ ' long: pod turgid-ovate and pointed, more or less incurved, usually puberulent, occasionally purplish-mottled, seldom 1' and sometimes only $\frac{1}{2}$ ' long. Wash; Sber mts (Parish 1496).

Brewer & Watson, bot Cal 1:147.

Astragalus ineptus A. Gray, Am ac pr 6:525.

Type locality: European.

Davidson, Erythra 1:58, LA Co.

Parsons, W Fls Cal 332 t.

Abrams, Fl LA 210.

San Miguel Island. Alfalfa. Cult. CD!

DALEA ARBORESCENS Torrey.

"A sm tree, much branched, somewhat spinose, the younger branches, lvs and cx densely hoary tomentose: lfts 1-3 pairs, obovate, approximate, 2 or 3" long: fls in short nearly sessile rather close spikes, p, 4 or 5" long: cx large, but shorter than the cor, the broader oblong or narrowly lanceolate teeth nearly equalling the tube."—Brewer & Watson, bot Cal 1:142. San Fernando mts (Fremont).

Gray, Pl Thurber 316.

DALEA CALIFORNICA S. Watson.

Shrubby, canescent with a fine appressed pubescence, sparingly glandular; the glands upon the peduncles sometimes prominent and prickle-like: lfts 1 or 2 pairs, decurrent upon the rhachis, 1-1 $\frac{1}{2}$ " long, linear-oblong: fls p, 4" long, on short pedicels: cx $\frac{1}{2}$ as long, the ovate acute teeth shorter than the tube."—Brewer & Watson, bot Cal 1:142.

Watson, Am ac pr 11:132.

Parish, Zoe 5:113, CD, not Cajon Pass. C D, near Banning (Parry).

DALEA EMORYI A. Gray.

"Shrubby, much branched, 2-5' hi, hoary tomentose throughout with a very fine pubescence: lfts 1-3 pairs, narrowly oblong to obovate, 2-4" long, the terminal lft much longer: spikes very short, pedunculate: fls 2 or 3" long, p: cx-teeth as long as the tube, a little shorter than the cor: ova pubescent."—Brewer & Watson, bot Cal 1:142.

C D; Baja; Arizona.

DALEA PARRYI Torr. & Gray.

"Herbaceous, very slender, puberulent or glabrate: lfts 6-10 pairs, obovate to oblong, 1-2" long, obtuse: fls 4" long, bright p, in loose elongated long-peduncled spikes: cx not $\frac{1}{2}$ the length of cor, canescent with short silky hairs; its teeth broadly ovate, acute, about equaling the tube: pod smooth."—Brewer & Watson, bot Cal 1:142.

Ft. Mojave (Cooper); CD; Arizona; So Baja.

DALEA SCHOTTII Torr.

"Shrubby, slender, nearly glabrous, somewhat spinose, the branches nearly glandless: lvs scattered, narrowly linear, 1' long: fls few, on short slender pedicels in an open raceme, sometimes solitary, p 4" long: cx $\frac{1}{2}$ as long, obscurely glandular; the teeth very short, acutish: ova pubescent, 2-ovuled: pod 4" long, with a single large sd."—Brewer & Watson, bot Cal 1:143.

Torrey, bot Mex B 53.

C D; Cajon de Santa Maria, Baja (Br).

DALEA SEEMANNI S. Watson.

"Near D. Greggii, shrubby, erect, diffusely much branched, the glandular-dotted branchlets finely tomentose: lfts 2-4 pairs, canescent with a very short subsilky pubescence, on a rhachis 1-6" long, cuneate-oblong, obtuse, distinctly shortly pedunculate, dense, $\frac{1}{2}$ -2' long; glandular beneath. 1-2 $\frac{1}{2}$ " long: racemes

tomentulose-canescens; lfts 10-15 pairs, oval or oblong, obtuse, 1 cm long or more; spike-like racemes, 3-6 cm long or sometimes more; fls 12 mm long; ex-tube campanulate, teeth subulate, more than half as long as the tube; pod thin, bladdery, oval, unequally sided, 2-3 cm long, tapering to a stipe 12 mm long or less.

Abrams, Fl LA 223.

ASTRAGALUS PARISHII A. Gray.

Nascent parts sparsely pubescent, becoming glabrous or nearly so; sts somewhat fistulose, much branched from the base and decumbent; lvs about 1 dm long, bearing about 32 lfts 10-25 mm long; racemes 2-4 cm long; fls g'ish-w, 1 cm long; pods sessile, 2-3 cm long, nearly as thick.

Abrams, Fl LA 223. Chatsworth Park. Hall, U 89.

ASTRAGALUS PYCNOSTACHYS Gray.

Stout, erect, 6 dm hi, more or less villous-hoary; lfts about 21, oblong, 12 mm long; fls y'ish, in dense cylindrical short-peduncled spikes; pods crowded, retrorsely imbricated, ovate, acute, laterally flattened, thin-coriaceous, glabrous, coarsely reticulate, 1-celled.

Abrams, Fl LA 223.

VICIA AMERICANA Muhl.

Nearly glabrous; sts 2-3° long, trailing or climbing by branched tendrils, sharply 4-sided or -winged at the angles; lfts mostly broadly oblong, often widest above the middle, usually obtuse, mucronulate, less than 1' long; ped shorter than the lvs, 4-8 fld; fls at first purplish, changing to bluish, 9" long ex-tube 2" long, the lower teeth longer (1" long), the upper approximate, incurved. Cruz; Rosaa.

Abrams, Fl LA 224. Notes only the 2 varieties as occurring in LA Co.

Davidson, Pl LA Co 5.

Muhl, Wildl sp 3:1096.

Variety **LINEARIS S. Watson.**

Lfts narrowly linear, acute, strongly veined beneath, 12-25 cm long.

Abrams, Fl LA 225.

Vicia linearis Greene.

Davidson, Pl LA Co 5.

Variety **TRUNCATA Brewer.**

Lfts oblong-elliptic or the lower broadly linear, 15-20 cm long, truncate or broadly retuse at summit, otherwise like the type. Occasional on shaded slopes in the chaparral belt.

Hall, U 92.

Brewer, bot Cal 1:158.

Abrams, Fl LA 225.

SBer Co (Parish): LA (Davidson); SD Co.

Vicia truncata Nuttall.

VICIA CALIFORNICA Greene.

Erect or decumbent, rather strict and seldom climbing, 1.5-4 dm hi, villous-pubescent; tendrils short, stiffish, seldom branched; lfts 8-12, subcoriaceous, delicately feather-veined, cuneate-obovate, truncate or retuse, 10-15 mm long, more or less dentate toward the mucronulate apex; racemes exceeding the lvs, 3-5-fld; cx-teeth all broad and short; cor 12-18 mm long, deep p.

Abrams, Fl LA 225.—Summit of Mt belt of the Cuyamaca mts.

Greene, Fl Fran 3 (1891).

Type locality: "Calaveras Co., Cal. Coville, CNH 4:88. Tehachapi valley (No. 1120).

VICIA EXIGUA Nutt.

California Vetch: very slender, 1-2° hi; lfts 4-12, oblong to narrowly linear, acute or obtusish; ped filiform, shorter than the lvs, 1½-2' long, 1 or 2-fld; fls 2 or 3" long, w or p'ish; pods glabrous, 4 or 5-seeded.

Variety **HASSEI Jepson.**

Jepson, Fl Midd Cal 296, based on Vicia Hassel S. Wats.

Abrams, Fl LA 225.

Nuttall in T & G Fl 1:272.

Cruz; San Miguel Island (Greene); Cat (Gambel); San Clemente Island. SD! Baja! LA (Bolander).

VICIA LINEARIS Greene.

Davidson, Pl LA Co 5.

Is Vicia Americana linearis.

VICIA SATIVA L.

Stoutish, erect or nearly so, 6-9 dm hi, somewhat pubescent; lfts 8-12, obovate-oblong, truncate or retuse, mucronate; fls 1 or 2, subsessile, 15 mm long, r-p. Eu. Rarely seen as an escape.

Abrams, Fl LA 225.

Davidson, Pl LA Co 5; Erythra 1:59, LA, rare.

VICIA THURBERI Watson.

"An, about 1° hi, the young lvs, etc, pubescent, becoming glabrous; lfts 4-12, narrowly linear, acute, 3-7" long; stipules sm, subulate-lanceolate or linear, not at all sagittate, entire; ped short (2-6" long), bearing 1 or rarely 2 sm w or purplish fls; cx nearly glabrous, the teeth rather short-acuminate; pods glabrous, sessile, oblong, obliquely acute at each end, about 9" long by 2½-3 broad, 5-7 ovuled. From So Ut and Colo to Ar and NM."—S. Watson, Am ac pr 25:129.

Genus PROSOPIS Linnaeus.

Trees or shrubs often armed with axyl spines or spinescent stipules; lvs bipinnate with 1 or 2 pairs of pinnae and usually num sm entire lfts: fls g'ish, reg, in cylindric or globose axyl pedunculate spikes; cx campanulate, teeth very short and valvate; pet 5, valvate, united below the middle or at length free, woolly on the inner side; sta 10, free and exserted; anth tipped with a decid gland; ova villous: sty filiform; pod linear compressed or nearly terete, straight, falcate or twisted, coriaceous and indehiscent, usually pulpy within; sds num, ovate, compressed.

PROSOPIS JULIFLORA DC.

Algaroba or Mesquit. A shrub or sm tree, much branched, the branches widely spreading; spines axillary; petioles glabrous or sparsely puberulent; lfts 8-12 pairs, the pairs about 1 cm distant, linear, 12-15 mm long, 2.5-4.5 mm wide, sparsely puberulent at least on the margins; spikes nearly sessile, 5-8 cm long, usually dense; fls very short-pedicelled, 2 mm long; pods straight or slightly falcate, only 1-3 developing, 10-15 cm long, 10-12 mm wide, longitudinally veiny, on stipes about 5 mm long, straw-colored and sweetish when mature.

Abrams, Fl LA 205. SBer; CD.

DC, Prodr 2:447 (1825).

Type locality: "In siccissimis campis Jamalcae."

Mimosa piliflora Swartz, Fl Ind Occ 2:986 (1800). Typographical error for *juliflora* fide Bentham.)

Genus **HORKELIA** Cham. & Sch.

Per herbs with a thick woody caudex or rt-stock covered with brown scales, pinnate lvs and cymose fls: Cx deeply campanulate to saucer-shaped, deeply 5-lobed, with 5 bractlets alt with the lobes: pet variable, unguiculate, w or rarely pale y: sta 5-20, inserted in the throat of the cx-tube and remote from the base of receptacle; fil dilated, petaloid: receptacle hemispheric or conic with num pistils: sty long and slender, generally thickened and somewhat glandular at base, decid: ovules and sds pendulous, anatropous.

HORKELIA PLATYCALYX Rydb.

St rather stout, 3-10 dm hi, glandular-pubescent, often tinged with red; stipules ovate, 1-2 cm long, often toothed; basal lvs several, more or less glandular-puberulent; lfts 5-7 pairs, obovate, crenate, 1-2 cm long; cauline lvs similar but with fewer lfts; cyme open and branched; pedicels often 2.5 cm long; fls 15-20 mm broad; cx-tube saucer-shaped; bractlets ovate, slightly exceeded by the ovate-triangular cx-lobes; pet oblong or spatulate, exceeding the cx-lobes by one-third.

Abrams, Fl LA 201. Claremont.

HORKELIA PUBERULA Rydb.

Sts mostly several, 3-6 dm hi, branched, finely glandular-puberulent, or glabrate; lfts 5-8 pairs, obovate or cuneate-oblong, 1-2.5 cm long; fls about 1 cm broad; cx-tube cupulate; bractlets broadly lanceolate, exceeded by the ovate-lanceolate cx-lobes; pet oblong-spatulate, scarcely exceeding cx-lobes.

Abrams Fl LA 201.—"Frequent in the foothills, mostly below 3000° alt. Mr-My.

HORKELIA SERICEA Rydb.

St rather stout, 3-6 dm hi, silky-pubescent, scarcely glandular; stipules ovate or lanceolate, 1-2 cm long, often toothed; basal lvs num, rather short-petioled; lfts 4-7 pairs, rather thick, densely and finely silky-canescens, obovate, 1-2.5 cm long, rather coarsely somewhat crenately toothed, the upper confluent; cauline lvs similar but smaller with 2-5 pairs of lfts; cyme rather dense; cx cupulate; bractlets entire, ovate or ovate-lanceolate; lobes similar, slightly exceeding the bractlets; pet w, spatulate, 5-6 mm long. SBar.

Abrams, Fl LA 201. Port Ballena.

Horkelia Californica sericea Gray.

Genus **ADENOSTOMA** Hook & Arn.

Unarmed evergreen shrubs with sm coriaceous entire fascicled stipulate lvs and sm w fls in terminal paniced racemes: cx obconic, 5-toothed, 10-striate; pet 5, orbicular: sta 10-15, inserted in bundles alt with the pet: pistil 1, simple; sty lateral; ova 1-celled, 1-2-ovuled; ak enclosed by the hardened persistent cx-tube.

ADENOSTOMA FASCICULATUM H.-G.

Foliage dark green, subulate, acute; bark gray.

ADENOSTOMA SPARSIFOLIUM Torr.

Foliage pale green, obtuse, scattered; bark reddish.

Genus **RUBUS** Linnaeus.

Low shrubs or trailing vines, usually prickly, with alt lvs, the stipules adnate to the petioles: fls terminal or axy solitary, racemose or paniced, w or p, mostly perfect: cx persistent, bractless, deeply 5-parted: pet 5: sta many, inserted on the cx, distinct: carpels many, inserted on a convex or elongated receptacle, ripening into drupelets and forming an aggregate fr: ovules 2, 1 abortive; sty terminal, slender: sd pendulous.

RUBUS PARVIFLORUS Nuttall.

Sts erect, 1-2.5 m hi, prickles 0: bark smooth or somewhat glandular-pubescent, becoming brown and shreddy: lvs palmately 5-lobed, cordate at base, unequally serrate, 10-15 cm broad, glabrous or somewhat tomentose on the veins beneath: petioles and peduncles hirsute glandular: fls few, corymbose, w, 2-4 cm broad: cx-lobes tipped with a long slender appendage: fr separating from receptacle when ripe, hemispheric, red. Salmon berry. Thimble berry. Alk to Baja.

Hall, U 88.

Abrams, Fl LA 197. San Antonio mts.

Nuttall, Gen 1:309 (1818).

Type locality: "on the island of Michilimackinac, lake Huron."

Parsons, W Fls Cal 24.

Rubus Nutkanus Mocino, Seringe in DC Prodr 2:566 (1825).

RUBUS LEUCODERMIS Douglas.

Sts erect, 4-8 dm hi, glaucous, armed with stout, straight or recurved prickles; lvs 3-foliolate or rarely 5-foliolate; lfts ovate to lanceolate-acuminate, doubly serrate, w-tomentose beneath; the veins, petioles and ped prickly; stipules setaceous; fls few, corymbose, 1 cm broad; sep lanceolate, long acuminate, exceeding the pet; ova tomentose; fr separating from the receptacle when ripe, y'ish-r with a w bloom and agreeable flavor. SBar mts (Parish 845), SD! Baja!

Abrams, Fl LA 198.—Occasional in all our mts in the pine belt. My-Je.

Brewer & Watson, bot Cal 1:172. Ore; Wash; Ut; Ar.

Torrey & Gray, Fl 1:454.

Regel, Gartenfl, 19:353 to 370.

Rubus glaucifolius Kellogg, Cal ac pr 1:67.

RUBUS VITIFOLIUS C. & S.

Bramble or Blackberry. Sts woody, weak and trailing or subject, somewhat glaucous, armed with straight, slender prickles, 1-6 m long; lvs pinnately 3-5-foliolate or those of the fl'ing branches only deeply lobed; lfts ovate to oblong, coarsely toothed, glabrous or more or less pubescent; fls imperfect, stam large with elongated pet; pistillate sm with broad pet; fr persistent on the receptacle, oblong, bk and sweet.

Cham & Schlecht, Linnaea 2:10 (1827).

Abrams, Fl LA 198.—Frequent in the foothills and valleys, mostly along

streams. Ja-Ap.

Type locality: "SF, Cal."
Parsons, W Fls Cal 26.

Genus PRUNUS Tournefort.

Trees or shrubs with alt decid or evergreen usually serrate lvs and w or rose-colored fls in terminal or axy racemes or corymbs: cx campanulate or turbinate, 5-cleft, decid; pet 5, spreading: sta 15-25, inserted with the pet: ova solitary, free; sty terminal; ovules 2, pendulous: fr a more or less fleshy drupe with a berry stone; sds 1 or rarely 2. Cherry.

PRUNUS DEMISSA Walp.

Shrub, 1-4 m hi; lvs ovate or oblong-ovate, acute or acuminate, rounded or cordate at base, sharply serrate, more or less pubescent beneath, 5-10 cm long, with 1 or 2 glands at the base of the blade; racemes 5, terminal, 7-10 cm long, many-flid; drupe globose, r or p, astringent; stone globose.

Choke cherry. Mts SD Co to the Columbia river. Rocky Mts.

Abrams, Fl LA 204. SBer mts.

Hall, U 88.

Parsons, W Fls Cal 36.

Cerasus demissa Nuttall, T & G Fl 1:411.—Watson, bot King Exp 80.

Prunus Virginiana var demissa Torrey, bot Wilkes 284.—Gray Am ac pr 8:381.

PRUNUS ILICIFOLIA Walp.

Shrubby or arborescent, 3-6 m hi, bark grayish brown; lvs coriaceous, glossy above, glabrous throughout, ovate to ovate-lanceolate, coarsely spinose-toothed, 2.5-5 cm long, on short petioles; racemes axillary, 2.5-5 cm long lf-less: fls sm; drupe 1 cm long or more, thick, slightly obcompressed, sweetish, scarcely astringent.

Abrams Fl LA 204.

Brandege, Zoe 1:111, Cat.

Brewer & Watson, bot Cal 1:168.

Parsons, W Fls Cal 63.

Cerasus ilicifolia Nuttall, Sylva 2:16 t 47.—H & A, bot Beechey 340 t 83.

Genus DRYMOCALLIS Tourn.

Erect more or less glandular or viscid herbs from per rt-stocks, with pinnate lvs and cymose y 5-merous bracteolate fls: cx saucer-shaped or hemispheric: pet obovate, elliptic or nearly orbicular, obtuse: sta 20-30 on a persistent disk at base of receptacle: receptacle hemispheric with num pistils which become dry akenes: sty basal slightly thickened and glandular below, tapering at both ends or nearly filiform, rather persistent: sd attached near the base, ascending, orthotropous.

DRYMOCALLIS GLANDULOSA Rydb.

St erect, 3-6 dm hi, rather slender, slightly striate, viscid and glandular hairy at least above, nearly simple below, branched above; lower stipules lanceolate, the upper ovate and usually deeply toothed; basal lvs petioled, pinnate: lfts 3-4 pairs, sparingly hairy, nearly glabrous above, obovate, mostly obtuse, simply or doubly serrate with broad teeth, 1-3 cm long, the upper generally somewhat larger; cauline lvs short petioled, with 1-3 pairs of lfts;

fls in an open many-flid cyme, 10-15 mm broad; bractlets linear-lanceolate, much shorter than the oblong or obovate-lanceolate acute sep; pet obovate, about equalling the sep, sta 25. Wash to SD Co!

Abrams, Fl LA 200.—Frequent in the chaparral belt in all our mts. Ours not typical, having usually smaller fls and less acute sep. Mr-Jl.

Potentilla glandulosa Lindl, bot reg 19 t 1583 (1833).

Type locality: "California."

Greene, Erythea 1:5. Pacific coast.

Davidson, Erythea 2:30. Cat I.

Variety **MONTICOLA** Rydb.

A more slender and smaller mountain form with smaller lfts, more open but smaller cymes, shorter sep, pale y pet, and often only 20 sta.

Abrams, Fl LA 200.—Frequent in the pine belt of our mts. My-Ag.

Rydb, mon NA Pot 199 (1898).

Potentilla glandulosa var. Nevadensis Watson.

Hall, U 87.

Genus ARGENTINA Lam.

Per herbs growing in damp ground and spreading by slender runners, sts thick and fascicled, lvs pinnate: fls borne on simple pedicels from ax of the lvs formed on the runners, anth 5, bractlets 5: cx nearly wheel-shaped: pet y, broadly elliptic to nearly orbicular, obtuse: sta 20-25, inserted closely around the base of the receptacle; fl filiform, rather short: receptacle hemispheric, bearing num pistils, these becoming dry ak in fr: sty filiform, lateral, attached at the middle of the ova, somewhat persistent: sds ascending and amphitropous.

ARGENTINA ANSERINA Rydb.

Main st inconspicuous, producing num long runners; lvs 1-2 dm long, abruptly pinnate with 9-31 larger lfts and with smaller ones interposed, usually prostrate, slightly silky and g above, w-silky and tomentose beneath; larger lfts oblanceolate, 1-3 cm long, deeply and sharply serrate; fls 1-2 cm broad, on pedicels 3-20 cm long, pet much exceeding the cx.

Abrams, Fl LA 199.—"Rather common in damp ground in the valleys. Flowering through the summer."

Potentilla Anserina L.

Cockerell, W Am Sci 5:11.

Brewer & Watson, bot Cal 1:180.

Parsons, W Fls Cal 179.

Genus POTENTILLA Linnaeus.

Ours per or rarely ann herbs with digitately or pinnately compound lvs and cymose y perfect fls: cx persistent, its tube concave or hemispheric, 5-bracteolate, 5-lobed: pet 5, mostly obovate and emarginate: sta commonly 20, inserted on an annular disk very near the base of the receptacle; fl filiform or spatulate but not flattened: pistils many, becoming dry ak in fr, inserted on a hemispheric or conic receptacle: sty terminal or nearly so, decid; ovules pendulous, anatropous.

POTENTILLA MULTIJUGA Lehm.

Per; sts erect, 3-7 dm hi, slightly

silky-strigose, more or less lfy; stipules large, 1-2 cm long, ovate, entire; basal lvs num, often 2-3 dm long, slightly hairy or glabrate, pinnate with 6-13 pairs of lflets; lflets obovate, cuneate, 1-4 cm long, coarsely toothed above the middle; cauline lvs smaller and with fewer lflets; fls about 15 mm broad, in rather narrow cymes; pedicels slender; bractlets oblong, about two-thirds as long as the ovate cx-lobes; pet broadly obovate, about one-third longer than the cx-lobes; sty filiform.

Abrams, Fl LA 198. Ballona (Hasse).
Genus HETEROMELES J. Roemer.

A sm evergreen tree or sometimes shrubby, with simple coriaceous toothed lvs and terminal corymbose panicles of sm w fls: cx turbinate, 5-parted, lobes at length inflexed over the carpels and becoming fleshy; pet rounded, concave; sta 10; fil dilated at base and somewhat connate: ova 2-3-celled, 4-6-ovuled; sty 2-3; fr a r ovoid berry-like pome; carpels free from the fleshy-like cx-tube above the middle.

HETEROMELES ARBUTIFOLIA Roem. Orcutt, Am pl 1:81.

Usually 3-6 m hi, nascent parts tomentulose; lvs narrowly oblong or oblong-lanceolate, 5-10 cm long, remotely serrate or dentate, dark g and shining; fr about 6 mm long. Christmas berry. Toyon.

Abrams, Fl LA 197.

Brandegee, Zoe 1:111. Cat.

Roem, Syn mon 3:105 (1847).

Parsons, W Fls Cal 92.

Brewer & Watson, bot Cal 1:188.

Crataegus arbutifolia Ait f Hort Kew ed 2, 3:202 (1811).

Type locality: "California."

Genus ALCHEMILLA Tournefort.

Ours sm ann herbs with lfy sts and minute g fls in the axils of the palmately lobed lvs: cx-tube urceolate, its limb 4-parted with alt minute bractlets; pet 0; sta 1 or 2, minute; pistils 1 or 2, slender; sty rising from near the base of the ova; ovule 1, ascending; ak ovate, compressed, enclosed in the persistent cx. Lady's Mantle.

ALCHEMILLA ARVENSIS Scop.

Slender simple or much branched from base, 4-10 cm hi: floriferous and hirsute throat: lvs 3-parted, seg 2-3-cleft; cx-tube much contracted under the 4-parted limb. Eu.

Abrams, Fl LA 203.

SD (Or 450): Ore; Id; Cruz; Guad.

Parish Zoe 1:9, "evidently indigenous."

Alchemilla cuneifolia Nuttall, in T & G Fl 1:432.

Alchemilla occidentalis Nuttall, in T & G Fl 1:432.

Genus CERCOCARPUS H. B. K.

Unarmed evergreen trees or shrubs with simple stipulate lvs and sm axy or terminal solitary or somewhat fascicled apetalous fls: cx salverform, the 5-lobed limb decid: sta num, in 2 or 3 rows on the limb of cx; pistil 1; sty terminal; ovule solitary, ascending; fr a coriaceous terete villous ak, included in

the elongated cx-tube; caudate with the elongated plumose twisted sty: sd linear; endosperm 0.

CERCOCARPUS LEDIFOLIUS Nutt.

"Mt Mahogany;" SBar mts.

Shrub, or sm tree, com 6-15° hi: lvs narrowly lanceolate, with the margins more or less revolute, thick-coriaceous and somewhat resinous, entire, more or less tomentose, but com glabrous above, 1/2-1 1/2' long, acute, narrowed at base to a short petiole; midnerve prominent; fls sessile, tomentose: cx-limb 2' long, deeply toothed: tube becoming 3-5' long; ak-tail at length 2-3' long. SBar mts; Ore; Mountain Mahogany.

Torrey & Gray, Fl 1:427.

Hooker, Ic Pl t 324.

Nuttall, Sylva 2:28 t 51.

Watson, bot King Exp 83.

Brewer & Watson, bot Cal 1:174.

Hall, U 85.

Type locality: "Rocky mts, in alpine situations on the summits of the hills of Bear river of Timpanagos, near the celebrated Beer Springs" (now Soda Springs, Bingham Co, Idaho).

CERCOCARPUS BETULAEFOLIUS Nutt

A shrub or sm tree, 2.5 m hi, with rather thin flaky gray bark and spreading or somewhat recurved branches; lvs thick, obovate, cuneate, entire below the middle, serrate toothed above, sometimes faintly so, distinctly veined on both surfaces, smooth above, pubescent beneath; cx open campanulate, 6 mm broad, the tube becoming 12-14 mm long in fr, somewhat contracted above; ak coriaceous, the plumose sty about 7 cm long. SBar; SD mts (Cleveland, Palmer)!

Nuttall, Hook Ic t 323.

Greene, Cal ac b 2:396.

Abrams, Fl LA 202.

Hall, U 85. Mt Mahogany.

Cruz; "trees often 18-25 ft high" (Greene).

Cercocarpus parifolius glaber, Watson, bot Cal 1:175.

Cercocarpus betuloides T & G, Fl 1:427.

Genus SAXIFRAGA Linnaeus.

St-less or short-stemmed herbs with alt or mostly basal lvs and corymbose, paniculate or rarely solitary sm fls: cx 5-lobed or 5-parted, its tube free or adnate to the base of the ova; pet 5, equal, entire: sta 10, inserted with pet; fil filiform; anth 2-celled: carpels 2 or rarely 3, distinct or more or less united into a 2-celled ova; sty distinct, persistent, at length divergent: fr of 2 follicles or a 2-lobed or 2-beaked cap, dehiscence down the beaks or the ventral suture; sds smooth.

SAXIFRAGA CALIFORNICA Greene.

"Per, fibrosa-rooted and propagating by sm oblong tubers produced at the ends of filiform subterranean branches: st scapeform, 6-18' hi, bearing a loose cymose panicle of bracteolate and few-fid racemes: lvs oval, oblong or elliptical, 1 or 2' long, on broad petioles half as long, the margin from coarsely crenate to somewhat repandy denticulate, or almost entire, both surfaces more or less pubescent and the margin ciliolate-

tomentose; ex free from all but base of ova, sep reflexed; pet w, narrowly elliptical or a little spatulate below, $1\frac{1}{2}$ " long, obtuse at apex; sta 10; fl filiform or flattened; anth roundish, dark-r; sty erect and approximate in fl, carpels at length divergent.—S. Virginensis, Boland, Catal. 11; Brew & Wats. bot Cal, 1:194, not L.—Greene, Pittonia 1:283.—Torrey cl b 23:363. Very common in the central parts of Cal; abundant on Mission Hills; SF; Humboldt Co; SD!

Abrams, Fl LA 190.

McClatchie, Erythea 2:79, LA Co.

Parsons, W Fls Cal 16 t.

Genus RIBES Linnaeus.

Erect branching shrubs with alt palmately lobed, often resinous-glandular or viscid lvs; stipules when present adnate to the petiole; fls racemose, rarely solitary on 1-2-leaved ax shoots; pedicels subtended by a bract and usually bearing 2 bractlets at about the middle; ex-tube adnate to the globose ova and more or less produced above it; pet 5 or rarely 4, erect, mostly smaller than the ex-lobes; sta equaling the pet in number and alt with them; ova 1-celled with 2 parietal placenta; sty 2, more or less united; stig terminal; fr a berry, crowned with the withered remains of the fl.

RIBES CEREUM Dougl.

Dougl bot Reg t 1263 (1829).

"This bush is of more humble stature and slender habit than (*viscosissimum*), growing erect, about 5 or 6° hi, with w smooth bark on the old branches. The young shoots which are curved and flexible, are covered with a brown, viscid, scentless, glutinous substance, which, when exposed to the sun, acquires a rough, hardened, waxy, warty, appearance. The lvs are nearly round, bluntly 3-lobed, crenate, scarcely 1' long, of a leathery texture, and almost veinless, clothed on the upper surface with w and (in dry weather) hardened waxy minute granulations, quite smooth below; footstalks somewhat longer than the lvs, 3 or 5-flowered, slightly pubescent, hanging in great profusion below the branches, with scarcely any partial footstalks; bractees wedge-shaped, glandular and toothed at the apex. The ex is tubular, imperfectly 4-sided, w. pink at the base, $\frac{3}{4}$ ' long, with rounded, short, reflected seg, double the length of the minute, somewhat kidney-shaped pet; fl same length as the pet; sty slightly cloven; berry spherical, sm. r and glossy, thin skinned, rarely containing more than 3 large sds, and a great quantity of insipid, viscid, r juice.

"On dry exposed decayed granite rocks or schist, throughout the chain of the river Columbia, from the great falls 45-46' 17" N. Lat. to the sources of that stream in the Rocky mts 52° 07' 0". This is a common shrub, fling in Mr and Ap, and ripening its fr in Ja.—Douglas, Hort Soc tr 7:512 (1830).

"This species, or probably aggregate of several species, is widely diffused, occurring throughout the entire Rocky mountain system, and through the Sierras of California, crossing from thence by way of the Tehachapi into the hi mts

of Ventura Co in the southern Coast Range."—Heller, Muhlenbergia 1:71-2. Parry, Pl Wyo 5.

Hall, U 84.

RIBES DIVARICATUM Dougl.

McClatchie, Erythea 2:79. LA Co.

Abrams, Fl LA 193.

Shrub, 1-2.5 m hi, spreading, glabrous, or nearly so, thorns single or sometimes triple; lvs roundish, 3-5-lobed, the lobes incisely toothed; peduncles slender, elongated, drooping, 3-9-fid; pedicels with broad bract at base; ex g without, purplish within, 5-7 mm long; tube short, campanulate, much exceeded by the oblong lobes; pet w, fan-shaped, margins convolute; filiform fl and sty much exserted; berry sm, glabrous, bk.

Gray, bot Cal 1:208.

Douglas, Hort Soc tr 7:515.

Landley, bot reg t 1359.

Ribes villosum Nuttall, in T & G Fl 1:547, "a soft downy form," fide Brewer & Watson.

S Ber (Parish 604); LA (Davidson); British Columbia.

RIBES INDECORUM Eastw.

"Shrub with erect sts, having dark brown, shreddy bark on the older growth, the younger parts tomentose and glandular; lvs 3-lobed, 2-4 cm long, 2-3 cm wide, finely rugose on the upper surface, clothed with stipitate glands, and a fine sparse, silky pubescence; lower surface w with a felt-like tomentum, and with a few gland-tipped hairs on the veins; margins irreg, doubly crenate; petioles stout, shorter than or equaling the blades, glandular and tomentose, the stipular dilation (as wide on each side as the petiole) fringed on the margin with uneven, gland-tipped hairs. Infl racemose, spreading or pendent, in fr surpassing the lvs; fls sessile but erect; peduncles short; bracts foliaceous, almost equaling the fls, lanceolate, 6 mm long, 2 mm wide, with the margins fringed with long, gland-tipped hairs. Peduncles stout, glandular, and tomentose; fls at base subtended by 2 membranous, glandular, and tomentose bracteoles, ex-tube more than twice as long as the broad, rounded divisions; these tomentose and glandular on both sides, almost 2 mm wide; pet orbicular, reniform, 1 mm wide, crenulate, on very short and broad claws; sta as long as the pet, on stout, short, deltoid fl; anth 0.75 mm long, longer than the fl; sty stout, hairy at base, 2-cleft at apex, with broad, y stig; ova tomentose and somewhat glandular.

"Collected by the author at Cajon Heights, near SD, Mr 14, 1891. There is also a specimen in the Hb Cal ac collected by Dr. George Thurber at San Pasqual, SD Co; it is labelled *Ribes sanguineum*, No. 605.

"*Ribes indecorum* is nearest to *Ribes malvaceum*, but differs most noticeably in the much smaller and sessile fls. The floral organs, too, are not the same."—Eastwood, Cal ac pr, ser 3, bot 2:243, t 23, f 3 a, 3 b (1902).

Heller, Muhlenbergia 1:78-0.

Santa Inez mts, San Jo (Eastwood).

RIBES LENTUM Coville & Rose.

Coville & Rose, Biol Soc Wash pr 15-26 (1902).

"*Ribes lacustre* Poirlet, var *molle* Gray: 1' or 2' hi, much branched; branches bristly-prickly or naked, armed with short triple or multiple thorns under the fascicles; lvs sm (usually about 1' in diam), downy-pubescent, roundish in outline, 5-parted, and the lobes incisely toothed and cleft; racemes 5-9-fld, short-peduncled; fls g'ish-w; the open ex 3" in diam, its short lobes rounded; sm pet and sta very short; berry light r, not larger than peas, acid (intermediate between a gooseberry and a currant), sometimes nearly or quite naked. In the Sierra Nevada at 6,000-10,000', from Mariposa Co northward.—A. Gray, bot Cal 1:206 (1876).

Ribes lacustre lentum Jones, Cal ac pr, sr 2, 5:681 (1895).

Ribes molle Howell, Fl N W Am 209 (1898), non Poepp (1858).

Ribes nubigenum McClatchie, Erythra 2:80 (1894), non Phil (1856).

Ribes montigenum McClatchie, Erythra 5:38 (1897).

Heller, Muhlenbergia 1:84-5.—** "throughout Cal in the hi Sierras, and, as mentioned before, in the southern Coast Range, and extends east into the Rocky mts."

Variety **VIRIDIFOLIUM** Abrams.

"Shrub 1-2 m hi, the young branches short-pubescent and more or less densely glandular with stalked glands: lvs rather thick, 3-7 cm broad, slightly or not at all rugose, minutely scabrous and somewhat glandular with sessile glands above, pale and glandular-pubescent beneath; petioles beset with stalked glands and more or less puberulent; inf glandular-pubescent, racemes rather long-peduncled, drooping, many-fld; bracts ovate, 1 cm long, ciliate-toothed above; pedicels 3-4 mm long; ex rose-colored below, becoming nearly w above, its tube cylindric, pubescent within, 12 mm long; its lobes broadly ovate, rounded at apex, 4-5 mm long; pet rounded, 2 mm broad; anth nearly sessile, 2 mm long; sty pubescent; berries becoming reflexed at maturity, on short pedicels, pubescent and rather sparsely beset with coarse gland-tipped hairs, purplish, 1 cm long. Occasional in the Monica and Gabriel mts, below 4000' alt. Mr-Ap."—Abrams, Fl LA 193.

RIBES MALVACEUM Smith.

Don, in British Fl Gard sr 2, t 340.

Ribes sanguineum var *malvaceum* Gray, bot Cal 1:207.—"The most tomentose form" **

RIBES MENZIESII Pursh.

"*R. sub geminis 3-plicato-aculeatum; ramis hispidiis. foliis basi truncatis sub 5-lobis incise-dentatis, lobis lateralibus brevioribus, subtus tomentosis, pedunculis subbifloris foliis subaequantibus, calycibus tubulosis: limbo patente, staminibus longitudine calycis, stylo exerto, baccis globosis aculeatis.* On the northwest coast, near Ft Trinidad. Menzies, U S in Herb Banks. The fls of the size and color of *R. sanguineum*."—Pursh, Fl Am Sept 2:732 (1814).

Heller, Muhlenbergia 1:85-6.—"*Ribes ferox* Smith (Rees Cycl 30:1819), is an undoubted synonym, as it is based on the same specimen, for Smith says: 'Gathered by Mr. Menzies, near Port Trinidad, in California.' Greene, in Fl Franciscana, 202, says this species occurs from Humboldt Co to SBar, but it hardly occurs south of SF bay, unless in places quite near the ocean. It is badly mixed in the Bot Cal, where it is made to include at least 3 other species in the coast region alone, and none of the forms credited to it from the Sierras belong with it, for it does not occur there at all. It extends into Ore, and perhaps into Wash on the north."

Gray, bot Cal 1:204. SD to Ore.

Farsons, Fls Cal 344.

SD; S Ber Co; Cruz; Oregon.

RIBES NEVADENSE Kellogg.

"*Ribes Nevadaensis*—Kellogg. St and branches glabrous, the membranous p bark of the older branches flakes and warps off like the nine-bark bush, or spiraea opulifolia: lvs about as long as the racemes, cordate, 3-5-lobed, doubly serrate, pubescent above and below; (neither glandular nor viscid), petioles puberulent and sparsely glandular; base somewhat expanded, ciliate; racemes from the same buds as the lvs, minutely puberulent and glandular; bracts r, like the fls, lanceolate, acute, num; ex globose campanulate, border expanding, pet roundish, shorter than the seg of the ex or sub-equal, pedicels very short; fr globose, glands few, bk, with a dense bloom, pulpy and very sweet."—Kellogg, Cal ac pr 1:65 (1855; reprint 1873).

The following remarks occur just before the description of this species: "Dr. Kellogg also exhibited a complete drawing of a species of wild Black mountain currant, together with specimens of the bush and ripe fr. The fr is very sweet and pulpy, and by a little culture would undoubtedly improve in every respect. The fr is large, bk, covered with a dense bloom, and the bunch appears to yield bountifully." At the bottom of the colored drawing of this species, made by Dr. Kellogg, and preserved in Hb Cal ac, is written: "from a specimen furnished by Mr. Garnett of Placerville.—Heller, Muhlenbergia 1:79.

Ribes sanguineum variegatum S. Watson, bot King Exped 100 (1871), in part, fide Hall, U 84.

Abrams, Fl LA 193.—Mt Wilson; S Ber mts, in the pine belt. My. Frequent along streams.

Curran, Cal ac b 1:137, cites as a synonym of *R. sanguineum* var *malvaceum* Gray.

RIBES SANGUINEUM Pursh.

"*R. inerme; foliis cordatis trilobis serratis venoso-lineatis supra glabris, subtus tenui tomento albicantibus, racemis laxis tomentosis foliis duplo longioribus, calycibus tubulatis, petalis oblongis longitudine calycis, bracteis obovato-spathulatis longitudine pedicellorum, geminis hirsutis.*

"On the Columbia river. M. Lewis, March, v s in Herb Lewis: fls beautiful, of a blood r or p; branches, p. It ap-

proaches near to *R. albinervium*. Fl peruv 3 p 12 t 232 f b.—Pursh, Fl Am Sept 1:164 (1814).

Heller, Muhlenbergia 1:74.

Gray, bot Cal 1:207. "Runs into indefinite varieties."

Douglas, Hort Soc tr 7 t 13.

Lindley, bot reg t 1349.

Hooker, bot mag t 3355.

Guad (Palmer); Baja! to British Columbia.

Variety **GLUTINOSUM** A. Gray, bot Cal 1:207.

Ribes glutinosum Bentham, Hort Soc tr n sr 1:476.

Variety **MALVACEUM** A. Gray, bot Cal 1:207.

Ribes malvaceum Smith; Don in Brit Fl Gard sr 2, t 340.

Variety **VARIEGATUM** A. Gray, bot Cal 1:207.

Ribes Wolfii Rothrock, Am Nat 8:358.—Wheeler Cat 38.

RIBES SPECIOSUM Pursh.

Evergreen shrub, 1.5-3 m hl, with leafy r bristly branches; subaxillary spines 3, united at base; lvs subcoriaceous, dark g, smooth and shining above, rounded, 3-lobed, lobes short, crenately toothed; ped pendulous, 2-5 fd; fls bright r, drooping; ex 12-18 mm long, its tube short, somewhat inflated, lobes oblong, not spreading; pet about two-thirds length of cx-lobes; fl filiform, much exceeding the cx; anth sm, oval; berry sm, densely prickly. Monterey; SD! Baja!

Abrams, Fl LA 194.

Gray, bot Cal 1:204.

Pursh, bot mag t 1557.—bot mag t 3530.

Monterey to Baja.

Ribes stamineum Smith.

RIBES TENUIFLOREM Lindl.

Abrams, Fl LA 192. Eaton's Wash, near Sierra Madre. F-Mr.

Shrub, 1-3 m hl, nearly glabrous, glandless; lvs light g, 3-5-lobed at apex, not cordate; racemes many fd; bracts g, conspicuous; fls bright y; ex salver-shaped, tube 1 cm long or more; lobes oval, one-third as long as tube; berry glabrous, amber color.

RIBES VIBURNIFOLIUM A. Gray.

Santos (Parry, Pringle, Orcutt).

"*Ribesia*, modo *R. nigri* resinoso-atomerifera; foliis ovato-rotundis utrinque obtusissimis (nec cordatis nec plicatis) incisisco-paucidentatis nunc obsolete trilobis glabris (petiolo excepto) demum coriaceis (policem longis); racemo subsessili corymbiformi plurifloro, pedicellis filiformibus, bracteis scariosis caducis; calycis tubo turbinato demum oblongo, limbo rotato 5-partito roseo, lobis ovalibus; petalis minimis patentissimis viridulis filamentisque brevissimis margini disco lato plano insertis.—Northern part of lower California, near All Saints bay, Parry, Pringle, and Marcus E. Jones, Ap 1882. A straggling bush, so peculiar that the acute collectors did not recognize the genus. Yet the fls have all the characters of the *Ribesia* section, and the conspicuous glands of the lvs, young shoots, pedicels, etc., are just like those of *R. ni-*

grum."—A. Gray, Am ac pr 17:202 (1882).

Heller, Muhlenbergia 1:83. Cat.

RIBES VISCOSISSIMUM Pursh.

"*R. inermis*; omnibus partibus pllis viscidia tectum; foliis cordatis obtuse trilobis serratis, racemis erectis brevibus, calycibus tubulatis, petalis oblongis, bracteis lineari-spathulatis pedicelo duplo brevioribus germinibus hirsutis."

—Pursh, Fl Am Sept 1:163 (1814).

Parry, Fl Wyo 18.

Heller, Muhlenbergia 1:72-3.

Douglas, Hort Soc tr 7:511.

Hooker, Fl 1:234 t 76.

Gray, Bot Cal 1:207.

SD mts (Parish 494); British Columbia; Rocky Mts.

Genus **THEROFON** Rafinesque.

Per herbs with creeping rt-stocks and lfy sts: lvs alt, round-reniform, palmately lobed and incised or toothed with callous glandular tips; petiole mostly with a stipular dilation at base: fls w, paniculate or in corymbose-cymes; cx 5-lobed, tube adherent to ova, at length globular or ovate; pet 5, entire: sta short, alt with pet; anth 2-celled: ova 2-celled: fr a capsule, dehiscent down the styliferous beaks: sds ovoid, minutely papillose.

THEROPO N ELATUM Greene.

Slender, 2-6 dm hl, glabrous or somewhat glandular-pubescent, dilated bases of the petioles with brown bristly hairs, otherwise smooth or nearly so; lvs thin membranous, 5-7 cm broad, deeply 5-7-lobed: cx-lobes lanceolate-triangular, often slightly toothed above, tube oval, urceolate in fr; pet cuneate-elliptic, obtuse, 3.5 mm long, much exceeding the cx-lobes; claw very short.

Abrams, Fl LA 189.—Topango canyon, Davidson.

Boykinia major Gray, bot Cal 1:196 (1876).

Type locality: "in Ore."

Boykinia occidentalis var *elata* Gray, Am ac pr 8:383.

Saxifraga elata Nuttall.

Saxifraga ranunculifolia Hooker, Fl 1:246 t 83.

THEROPO N ROTUNDIFOLIUM Wheelock.

St villous-pubescent and glandular, 4-8 dm hl, lfy; lvs 5-10 cm broad, crenately incised and toothed, thin, nearly glabrous above, petioles densely villous, the slightly dilated base with brown bristly hairs; peduncles axy and terminal: fls short-pedicelled, secund on the few elongated branches: cx campanulate; becoming broadly urceolate in fr, its lobes entire, acute: pet 2-2.5 mm long, scarcely exceeding cx-lobes, spatulate: claw twice as long as the rounded blade. SBER (Wright).

Abrams, Fl LA 189. Gabriel mts.

Boykinia rotundifolia Parry.

SAXIFRAGA REFLEXA Hook.

Saxifraga virginiana Wats, bot Cal 1:149 Cruz; SD! I.A. (Davidson).

SAXIFRAGA PARRYI Torr.

The edible tubers are known to children as wild cocoanuts: calyx and white petals brown or purple veined; the us ap-

pear with the first fall or winter showers abundantly on mesas near SD; Baja; C D (Parish).

Genus SEDUM Linnaeus.

Fleshy mostly glabrous erect or decumbent herbs with mostly alt entire or dentate lvs and perfect fls in terminal often 1-sided cymes; cx 4-5-lobed; pet 4-5, distinct; sta 8-10, perigynous, the alt ones usually attached to the pet, their fil filiform or subulate; scales of the receptacle entire or emarginate; carpels distinct or united at base; sty short.

SEDUM OBTUSATUM Gray.

Glaucous and often mealy, from a branched rooting caudix, 10-15 cm hi, simple; lvs very thick, obovate or spatulate flat, 15-20 mm long; cymes of rather num scattered branches; pedicels 2-4 mm long; pet oblong-lanceolate or obovate, acute, pale y, 6-8 mm long, little exceeding the sta and sty; cx broadly campanulate, sep 3-4 mm long, broad, obtuseish. S Ber mts (Parish); Yosemite.

Abrams, Fl LA 184. Mt Disappointment (Davidson).

Hall, U 83.

Brewer & Watson, bot Cal 1:209.

Gray, Am ac pr 7:342.

=*Gormania obtusata* Britton.

Genus TILLAEA Linnaeus.

Minute somewhat succulent and glabrous herbs with opp entire lvs and minute axillary mostly w fls; sep and pet 3-5, distinct or united at the base; sta as many; Carpels as many, distinct; sty short-subulate; ovules 1-many; sds striate longitudinally.

TILLAEA MINIMA Miers.

Diffusely branched, 2-6 cm hi, erect or ascending; lvs about 2 mm long, ovate, acute, connate at base; fls in short lfy axy panicles; sep 4, scarcely 1 mm long, oblong-ovate, acute, slightly exceeding the linear-lanceolate acuminate pet; carpels of about the same length, acute; sds usually solitary. Mesas SD! Guad; Chill; Sonoma Co.

Torrey & Gray, Fl 1:557.

Abrams, Fl LA 188.

Brewer & Watson, bot Cal 1:208.

Mesas, San Diego, California.

Variety SUBSIMPLEX Watson.

"Branchlets more elongated, mostly from the base; pedicels usually shorter. —T. leptopetala, Benth. Pl Hartw 310." —Watson, bot Cal 1:208.

Genus LYTHRUM Linnaeus.

Loose-strife: slender herbs: lvs sessile; fls solitary in the axils, p or w'ish; cx cylindrical, 8-12-ribbed, with 4-6 teeth and an equal number of accessory ones in the sinuses; pet 5 or 6, sta as many or twice as many; sty filiform; stig capitate; cap oblong or cylindrical, 2-celled.

Annual.

LYTHRUM HYSSOPIFOLIA L.

Sts slender and simple or with several branches from below the middle, 4-9' hi, herbage pale, glabrous; lvs linear or oblong, 3-7" long; fls sessile in the axils; cx 2" long; pet 1" long or less, pale p or w'ish.

**Perennial.

LYTHRUM ALBUM HBK.

Lythrum alatum Pursh, et var *linearifolium* Gray.

Lythrum lineare H & A, bot Beech 343 (not L).

Lythrum Californicum S. Watson.

Common loose-strife: sts erect, paniculately branching above, 2-6' hi; lvs broadly or narrowly linear, rarely lanceolate, ¾-2' long; fls distinctly pedicled; cx 2½-3½" long, its teeth sharply acute; pet 2-3" long, bright p.

Genus AMMANNIA Linnaeus

Glabrous ann with mostly 4-ang'ed sts; lvs opp, sessile or narrowed to a short-petioled base; fls p'ish, 2 or more in each axil: cx campanulate (in fr globose or nearly so), the tube 8-ribbed, 4-toothed and usually with sm accessory teeth in the sinuses; pet 4, purplish, sm and decid. or 0; sta 4-3; cap globular. Named for Johann Ammann, a German botanist of the 18th century.

AMMANNIA COCCINEA Rottb.

Erect, simple or branching below, 4-14' hi; lvs horizontally spreading, broadly linear or somewhat narrowed toward the apex, 1-2' long, sessile by a broad auricled base; fls in whorls of 2-5; cx in fl narrowly campanulate, strongly 8-ribbed, in fr distended and the ribs less obvious; cap 2" long.

Abrams, Fl LA 261. Soldiers Home (Hasse).

Genus HIPPURIS Linnaeus.

Aquatic herbs with simple erect sts and verticillate entire lvs: fls sm, axy, perfect or sometimes neutral or pistillate: cx-limb minute, entire; pet 0; sta 1, inserted on the margin of cx; sty filiform, stigmatic its whole length, lying in a groove of the anth; fr a sm 1-celled, 1 seeded drupe. Mare's Tail.

HIPPURIS VULGARIS L.

Brewer & Watson, bot Cal 1:215.

Abrams, Fl LA 273. S Ber mts.

S Ber mts Parl-h 143.

Genus MYRIOPHYLLUM Linnaeus.

Aquatic herbs with verticillate or alt lvs, the emersed ones entire, dentate or pectinate, the submerged ones pinnatifid into capillary seg: fls axy, often interrupted-spicate, commonly monoecious, 2-bracted; upper fls generally stam with very short cx-tube, limb of this 2-4-lobed or 0; pet 2-4; sta 4-8; intermediate fls often perfect: lower pistillate, cx more or less deeply 4-grooved, with or without minute lobes: ova 2-4-celled; ovules 1 in each cell, pendulous; sty 4, short, often plumose; fr splitting at maturity into 4 bony, 1-seeded, indehiscent carpels.

MYRIOPHYLLUM SPICATUM L.

Submerged lvs in whorls of 4's and 5's, dissected into capillary divisions; floral lvs ovate, entire or serrate, usually shorter than the fls or sometimes 0; spike 2.5-7.5 cm long; pet 4, decid; sta 8; fr about 2 mm long and 3 mm thick; carpels rounded on the back, with deep groove between them, smooth or rarely slightly rugose. Cal (Kellogg);

Wash (Lyall); Eu; Asia.

Brewer & Watson, bot Cal 1:215.

SBor mts (Parish 1433).

Abrams, Fl LA 274. Occasional in deep pools or lakes in all our mts.

BISCUTELLA CALIFORNICA.

Variety MARITIMA Davidson.

"More hoary-tomentose than the type: leaves thick, fleshy, sinuate; the radical oblong, broad at base; cauline very broadly cuneate and never quite sessile; recemes dense, elongating in fruit; fls usually over ½ inch long, limb purple in the bud becoming lighter; pedicels very dark purple; fruit as in type. Redondo, Cal. (Miss A. J. Merritt)."—McClatchie Erythra 2:179.

AGAVE AMERICANA Linnaeus.

American aloe; commonly called the century-plant, as it was formerly supposed to flower only after the lapse of a century. It produces a tall flowering stem at an age of 15 to 20 years, when it dies after maturing seed. It is the famed pulque plant of Mexico, the fermented juice forming an intoxicating liquor known as pulque. The juice of this, and various other species, when distilled, forms mescal—nearly pure alcohol. Extensive plantations are cultivated near Mexico City for the production of these drinks—the greatest curse of the nation: Various foliage varieties are widely planted in California for tropical effect, being a valuable decorative plant, withstanding drought and neglect.

Variety MACULATA Hort.

Foliage patched with yellow.

Variety MILLERI Hort.

Plain glaucous foliage.

Variety STRIATA Hort.

Foliage irregularly striped with yellow.

Variety VARIEGATA Hort.

Leaves richly bordered with yellow.

MENTHA FIFERATA.

Peppermint. Sts erect, strict and unbranched below the terminal inf; herbage glabrous; lvs ovate-oblong to oblong-lanceolate, acute, sparsely and sharply serrate, distinctly petioled; spikes dense, scarcely interrupted; ex resinous-glandular; cor w with a pink tinge. Eu.

Jepson, Fl W Mid Cal 467.

Davidson, Fl LA Co 14.

PHOENIX CANARIENSIS Hort.

The Canary Islands date palm is an elegant, hardy, ornamental species, often planted in Southern California lawns.

PHOENIX DACTYLIFERA Linn.

The well known date palm of northern Africa and Arabia, is often planted for quick tropical effect in Southern California, where space permits its luxuriant growth. On the Colorado Desert and in Arizona this palm has been planted more extensively, with a promise of becoming of commercial importance for its fruit.

PLATANACEAE.

Large trees with thin exfoliating bark, alternate petioled palmately

lobed lvs and small g monoecious fls in dense globular hds: receptacle somewhat fleshy; ex of 3-8 externally minute sep: cor of as many thin glabrous pet: staminate fls with sta as many as sep and opp them; fl short; anth longitudinally dehiscent: pistillate fls with 2-8 distinct pistils: ova linear, 1-celled; sty elongated, stig lateral: fr a dense hd, composed of numerous narrowly obpyramidal nutlets which are densely pubescent below with long hairs; sd pendulous; endosperm thin; cotyledons linear.

Genus PLATANUS Tournefort.

Characters of the family. Plane-tree, or sycamore.

PLATANUS BACIFLOSA.

Nuttall, Sylv 1:47 (1842-3).

Type locality: "Upper Cal, in the vicinity of SBor"

Coville, CNH 4:195.

Abrams, Fl LA 195.

A large widely branching tree, 10-25 m hi: lvs stellate-pubescent when young, becoming glabrate, 10-15 cm broad and scarcely as long, mostly 5-lobed, truncate or somewhat cordate at base; lobes acute, the lower smaller, bluntly cuspidate at the ends of the veins; petioles shorter than the lvs; stipules larger on young twigs; staminate hds several; pistillate hds 3-5. Sycamore

Genus SPHAEROSTIGMA F. & M.

Ann or per herbs with erect branching or spreading sts, bark often exfoliating and shiny: lvs alt, entire or dentate, petioled or sessile: fls solitary in the ax or in terminal spikes, usually y, rarely w or rose p, often with a brownish spot at base, turning g or rish in age: sta 8; anth versatile, oblong; sty filiform; stig capitate: ova 4-celled, usually linear, 4-angled, often contorted, membranous, sessile, dehiscent loculicidally: sds in 1 row in each cell.

SPHAEROSTIGMA ALYSSOIDES Small

Erect or with few ascending branches from the base, 1-3 dm hi, canescently puberulent; lvs oblong-lanceolate to oblanceolate, narrowed into a slender petiole, repand-denticulate or entire, 2.5-5 cm long; spike elongated, many-fid; pet rose p, 4-8 mm long, cap 2-5 cm long, slender, attenuate above, contorted: sds ash color, minutely pitted. Cal; Ut.

Abrams, Fl LA 272.

Coville, CNH 4:103.

Oenothera alyssoides H & A, bot Beech 340 (1840-1).

Type locality: "Pine creek, Snake Country" southwestern Wyo.

SPHAEROSTIGMA BISTORTA Walp.

Abrams, Fl LA 270.

Sts prostrate or ascending, 2-5 dm long; lvs thinner, narrowly lanceolate to ovate, the upper mostly sessile and rounded or cordate at base, all denticulate or dentate; ex hirsute; pet 8-14 mm long; cap 8-8 mm long, 2 mm wide or more; beak very short.

Oenothera bistorta Nuttall, in T & G, Fl 1:508 (1840).

Type locality: "St Diego, Cal." Coville, CNH 4:104. Near SBer. Parsons, W Fls Cal 142. Hall, U 97. Suncups.

SPHAEROSTIGMA CAMPESTRE Small
Branched from the base, 15-30 cm hi pubescent throughout: lvs linear-lanceolate, 2.5 cm long, dentate; pet 8-10 mm long, turning brick-r; anth linear-oblong, 1.5 mm long, fixed toward the middle and versatile; pods more than 2.5 cm long, narrowly linear, slightly incurved with a slender beak.

Abrams, Fl LA 271. SBer mts. *Oenothera dentata* Watson not Cav (bot Cal 1:226).

Variety **PARISHII** Abrams.

"Much resembling the type in habit; cinereous throughout with a short appressed pubescence, not at all hirsute; pet about 8 mm long; pods very slender, often much contorted. Plains about SBer (Parish)."—Abrams, Fl LA 272.

SPHAEROSTIGMA CONTORTUM Walp.
Abrams, Fl LA 271.

Slender, erect-spreading, 15-45 cm hi, somewhat pubescent with short appressed or incurved w hairs: lvs about 12 mm long, linear-lanceolate, acutish, denticulate; subsessile; pet 3 mm long, turning deep r; anth roundish, basifixed; cap about 2 cm long, sessile, straight or arcuate, scarcely attenuate at apex.

Oenothera strigulosa T & G.

Variety **GREENEI** Small.

Abrams, Fl LA 271.

Sts erect, usually simple below, more or less hirsute pubescent and somewhat viscid, otherwise as type.

Oenothera strigulosa epillobioides Greene.

SPHAEROSTIGMA HIRTELLUM Small
Abrams, Fl LA 271.

Sts stoutish, erect, simple or with a few ascending branches from the base, 15-30 cm hi, the herbage p'lish, short-hirsute; radical lvs oblanceolate, denticulate; st lvs ovate, sessile, coarsely toothed and more or less undulate-crisped; pet 4 mm long or more; cap hirsute, narrow, attenuate upwards, once or twice coiled.

Oenothera hirtella Greene.

SPHAEROSTIGMA MICRANTHUM Walp.

Abrams, Fl LA 271.

Sts prostrate or ascending, 1-4 dm long; lvs all narrowly oblanceolate to linear-oblong, hirsute, 3-5 cm long, dentate, acutish, somewhat undulate; pet 2-4 mm long, often emarginate; cap 4-angled, contorted, sparsely hirsute.

Oenothera micrantha Hornem.

Da 6. El Campo Aleman, Baja (Br).

SPHAEROSTIGMA BUTILA Parish.

Oenothera rutilla Davidson, *Erythraea* 2:62.

Parish, *Erythraea* 6:89. Mohave desert (Davidson).

Orcutt, Am pl 1:40 E.

SPHAEROSTIGMA SPIRALE Walp.

Abrams, Fl LA 270.

Sts herbaceous, prostrate or ascending, 3-6 dm long; lvs rather thick, spatulate to ovate-cordate, the lowest short-petioled, entire or dentate, more or less hirsute; cx-pubescent; pet 8-12 mm

long, turning r or tawny in age; anth linear-oblong, fixed in the middle; cap acutely 4-angled, hirsute.

Oenothera cherianthifolia Brewer & Watson, bot Cal 1:

Parsons, W Fls Cal 142.

SPHAEROSTIGMA VEITCHIANUM Small.

Sts decumbent or ascending, 2-4 dm long; lvs linear-oblong, lanceolate or ovate, more or less hirsute; cx hirsute; pet 10-15 mm long; cap 2.5-4 cm long 1-1.5 mm wide, attenuate into a long beak.

Abrams, Fl LA 270.

Oenothera bistorta Veitchiana Hooker.

SPHAEROSTIGMA VIRIDESCENS Walp.

Abrams, Fl LA 270.

Silvery-canescant, with a short and dense appressed pubescence; branches prostrate or ascending, 3-8 dm long, somewhat woody; lvs rather thick, spatulate-oblong or linear-oblong to ovate-cordate, sessile, usually entire, 2 cm long or more; pet 12-16 mm long, turning g'ish in age; anth linear-oblong, fixed below the middle; cap short-pubescent. Monterey to SD! Baja!

Hooker, Fl 1:214.

Oenothera viridescens Lehmann.

Oenothera cherianthifolia suffruticosa Watson, Am ac pr 8:592.—Bot Cal 1:225.

Genus **ONAGRA** Adams

Ann or bien caulescent herbs with mostly erect sts: lvs alt, undulate or toothed, sessile or somewhat petioled: fls y, nocturnal, in terminal spikes: cx-tube elongated, terete, gradually enlarged at the throat; seg narrow, the tips free in the bud; pet 4, spreading; sta many, equal in length; fl filiform; anth linear; ova 4-celled; sty united, filiform; stig 4-cleft; ovules num, in 2 or more rows, horizontal: cap 4-celled, 4-angled, more or less tapering, loculicidally dehiscent; sds more or less prismatic-angled.

ONAGRA CALIFORNICA Small.

Sts decumbent from a running r-stock, 1-2 dm long, branching; herbage hoary-pubescent and more or less villous; lvs narrowly oblanceolate, sinuately toothed or pinnatifid, 6-8 cm long; ova and cx villous: cx-tube about 2 cm long; pet w turning p, lobed at apex, with a rounded sinus: cap 4-6 cm long.

Abrams, Fl LA 452.

Small Torr-cl b 23:176 (1896).

Oenothera Californica S. Watson, bot Cal 1:223.

Oenothera albicaulis var *Californica* Watson, Am ac pr 8:582.

ONAGRA HOOKERI Small.

Bien; st r'ish, stout, angular, 1-2 m hi, herbage canescently pubescent and somewhat villous; lvs lanceolate, sessile, acute, obscurely denticulate, cx-tube 3 cm long; seg nearly as long; pet about 4 cm long, obcordate, pale y, turning to rose p; stig-lobes y, spreading; cap 2 cm long, sessile, canescent with a fine close pubescence; sds brown, 1 mm long, faintly striate, not wing-angled. BC to Mex.

Abrams, Fl LA 269.

Oenothera biennis hirsutissima A.

Gray, Pl Fendl 43; bot Cal 1:223.

Davidson, Pl LA Co 6.

Genus **LUDWIGIA** Linnaeus.

Aquatic or marsh per herbs, with the aspect of *Jussiaea*, but the lvs opp, parts of the fl in 4's, and the pet often 0; sta as many as the pet and ait with them; ova broad at apex and usually flattened, or crowned with a conical style; cap 4-celled, dehiscent by lateral slits or terminal pores; sds minute.

LUDWIGIA PALUSTRIS Eil.

Water purslane; glabrous, st 6-12' long; lvs obovate, acute or acuminate, narrowed at base into a rather long petiole, the whole 1/2-12" long; pet 0, or minute and r'ish; cap y'ish, erect, broadly oblong, 1 1/2" long, more or less 4-sided, with a narrow longitudinal band of tubercles on each side; the persistent sep g.

Jepson, *Erythra* 1:13.

Brewer & Watson, bot Cal 1:217.

Canada to Mexico; S D! Oregon. Da 6. **LUDWIGIA DIFFUSA** Greene.

Greene, Fl Fr 227, based on *Jussiaea diffusa* Forskaal; Muel, *Erythra* 1:61. Africa; Australia; Am; pet y.

Variety **CALIFORNICA** Greene.

Greene Fl Fr 227.

Jepson, *Erythra* 1:14. "In marshes near Lakeport."

LUDWIGIA NATANS Eil.

San Bernardino (Parish 682).

Genus **BOISDUVALIA** Spach.

Erect ann with alt lvs; fls sm, in leafy spikes or axly along the branches; ex-tube (above the ova), short, obconic, the lobes erect; pet 4, obovate, sessile, 2-lobed, p to w; sta 8, those opp the pet shorter; anth basifixed; cap 4-celled, 4-valved, sessile.

BOISDUVALIA DENSIFLORA S. Wat.

Erect, commonly 1 1/2' hi, branched above, lvs lanceolate, 2' long, the floral ovate, acute, 3-6" long; infl spicate, commonly elongated; pet about 2" long, about twice as long as the lobes of the ex, and exceeding the subtending lvs; cap 2" long, dehiscent; sds ovate or triangular ovate.

Jepson, *Erythra* 1:14.

Ha U 96. Hanson's; San Diego; Wash.

BOISDUVALIA CLEISTOGAMA Cur.

With stout rigid w branches or rarely simple, 4-8' hi, pilose-pubescent, somewhat glandular, glaucous; lvs linear or lanceolate, 1-1 1/2' long, remotely denticulate; fls axly along the branches, the earliest fertilized in the bud and never expanding, the later light pink; pet 2" long, bifid; cap 4-sided, the septal lines on each side distinct, sharply pointed, 5" long, hard coriaceous, very tardily dehiscent, if ever. Elmira, Cal.

Davidson, Pl LA Co 6.

BOISDUVALIA CLABELLA Walp.

Abrams, Fl LA 265.

Com much-branched, the branches decumbent or ascending, bluish-g, densely soft-villous to glabrous; lvs about 12 mm long or more, ovate-lanceolate, acute, serrulate, the upper similar; fls in a terminal cluster and a few shorter lateral spikes, also occasionally in the

lower axils, shorter than the subtending lvs; pet about 2 mm long, violet; cap rather slender, nearly straight, com acute, about 7 mm long, subterete, with 4 broad nerves or laterally somewhat 2-keeled, loculicidal; sds about 6 in each cell, subfusiform, about .35 mm broad, 1 mm long.

Monica, SD (Cleveland).

Genus **GAYOPHYTUM** Juss.

Erect very slender diffusely branching an, with alt linear entire lvs and and as broad, more or less hirsute-axy w or p'ish fls; ex-tube not prolonged above the ova, the 4-parted deciduous limb reflexed; pet 4; sta 8, the alt ones usually minute and sterile; fl filiform; anth subglobose, fixed near the middle; ova oblong or linear, compressed, 2-celled; stig capitate or clavate; cap membranous, clavate, 4-valved; sds few to num, in 1 row in each cell, smooth, naked, mostly oblong.

GAYOPHYTUM BAMOSISSIMUM T & G

St intricately dichotomous with filiform branches 15-60 dm hi, glabrous below, appressed canescent above or rarely with spreading hairs throughout; lvs mostly narrow, usually appressed against the branches; pet nearly w, turning rose p, 1-2 mm long; stig about 4 mm in diam; cap about 1 mm thick, oblong to subclavate, often torulose, erect or refracted on filiform pedicels; sds nearly erect in a single sr, papillate, .5 mm broad, 1.3 mm long. Common with pines on the mts.

Trelease, Mo bot gard r 5:111 t 20.

Hall, U 97.

Abrams, Fl LA 272.

Genus **EULOBUS** Nuttall.

A smooth erect an with alt lvs and middle-sized fls; sessile along the virgate branches; ex-tube scarcely at all produced beyond the ova, the limb 4-parted, reflexed; pet 4, rhombic-ovate, sessile, pale y turning r'ish; sta 8; anth oblong, attached near the middle; ova 4-celled; stig capitate; cap linear, elongated, 4-angled, 4-valved, imperfectly 4-celled, reflexed; sds num, ovate-oblong, naked.

EULOBUS CALIFORNICUS Nuttall.

Torr & Gray, Fl 1:515.

St 3-10 dm hi, rather stout, simple or with a few spreading virgate branches; lvs linear, 2.5-5 cm long, sinuately pinnatifid, with num unequal divaricate acute teeth; ex-tube prolonged less than 1 mm above the ova; pet 8-10 mm long, pale y or nearly w; cap 6-10 mm long; sds 3-angled. SBar; Baja! Ar.

Abrams, Fl LA 269.

Parish, *Erythra* 6:39.

Greene, Pittonia 1:302, as *Cenothera leptocarpa*.

Genus **JUSSIAEA** Linnaeus.

Glabrous per herbs; lvs ait; fls y, solitary in the axils, pedicel: ex-tube elongated, not produced beyond the ova, its lobes 5; pet 5; sta twice as many; sds num.

JUSSIAEA REPENS Linn.

Muel, *Erythra* 1:61. "Continental India only; pet w."

Davidson, Pl LA Co 6.

JUSSIAEA CALIFOENICA Jepson.

Per; sts stout, 3-12 dm long, floating or nearly prostrate on mud; lvs obovate to obovate-oblong, or on the floating sts sometimes lanceolate, obtuse or acute, 2.5-6 cm long, on petioles 1-2.5 mm long; stipules gland-like or somewhat scale-like; fls 12-16 mm broad, deep y; pet obtuse; fr 2.5 cm long, spongy, indehiscent; pedicel 1 cm long or more.

Abrams, Fl LA 262. In stagnant water or muddy bottoms, in marshes toward the coast. Cienega; Mesmer; Alamitos.

Jussiaea repens Californica Watson.
Ludwigia diffusa Californica Greene.

Genus ZAUSCHNERIA Presl.

Low per, with alt lvs (the lowest opp) and large scarlet fuchsia-like fls; ex above the ova colored like the cor, fls tube funnelliform with a globose base (nectariferous within), and appendaged within at the most constricted portion with several erect and deflexed scales; pet scarlet, inserted on the throat of the ex and rather shorter than its erect lobes, obovate or 2-cleft; sta 8, exserted, colored like the cor; anther linear-oblong, attached by the middle; sty long and exserted, stigma 4-lobed; capsule linear, obtusely 4-angled, 4-valved and imperfectly 4-celled; sds oblong, with a tuft of hairs at the apex. In memory of M. Zauchner, a Bohemian botanist.

ZAUSCHNERIA CALIFORNICA Presl.

Balsamea. Sts decumbent or erect, about 1' hi, woody at base, the herbage more or less villous or woolly; lvs oblong to linear-lanceolate, 1/2-1 1/2' long, the lowest opp; fr 1 1/2-2' long; ex-lobes 4' long. Dry stream-beds. Used as a vulnerary in rural medicine by Spanish-Californians.

Presl, Rel Haenk 2:28 t 52.

Davidson, Fl LA Co 6.

Parry, bot obs Wyo 13.

Bloch, Erythea 1:232. Balsamea.

Note on medicinal use.

Coville, CNH 4:163.

Brewer & Watson, bot Cal 1:218.

Parsons, W Fls Cal 372 t.

Zauschneria Mexicana Presl, Rel Haenk 2:28.

Variety LATIFOLIA Hook.

Sts herbaceous, 3-6 dm hi; herbage somewhat canescent; lvs ovate-lanceolate, nearly smooth.

Abrams, Fl LA 262.—"Common in the coniferous belt of the S Ber mts."

Hall, U 98.

Hooker, bot mag t 4493.

Greene; Pittonia 1:26, as *Z. latifolia*.

Variety MICROPHYLLA A. Gray.

Abrams, Fl LA 262.—"Frequent on dry hillsides in the foothills, mostly below 3000°."

Gray in herb, Brewer & Watson, bot Cal 1:218.—"Pubescence tomentose, scarcely or not at all villous; lvs linear, often very sm (3-4" long), fasciated in the axils. So Cal."

Greene, Pittonia 1:27, as typical *Z. Californica*.

Z. IGNEUM PARIBIII Trelease.

Rather stout and intricately branched

even from the base, 5-8 dm hi, glabrous below, the infl and capsules very sparingly, the young buds densely w-tomentose; lvs 1-3' long, lanceolate, very obtuse or the reduced uppermost acutish, somewhat unequally or abruptly narrowed to slender more or less elongated petioles, rather thin and glabrous; fls at length hum, rose-colored; fring peds about 1" long; sds short-beaked, 2" broad, 1/2" long.

Todos Santos bay; Baja; (Br); S Der Co (Parish 2094, 2095).

Trelease, Zoe 1:216.

Abrams, Fl LA 265.—"Common in damp land in the valleys and along streams below 4000°."

Genus QUERCUS Linnaeus.

Trees or shrubs with persistent or decid lvs and sm g or y'ish monoecious fls, the staminate num in slender mostly drooping aments, the pistillate solitary in many-bracted inv; staminate fls subtended by caducous bracts, consisting of mostly a 6-lobed campanulate perianth and 5-12 sta with filiform fls; pistillate with an urn-shaped or oblong 3-celled ova; ovules 2 in each cell; sty usually 3, short; fr (acorn) consisting of the imbricated and more or less united bracts of the inv (cup), subtending or nearly enclosing the 1-seeded coriaceous nut. Oak.

QUERCUS CALIFOENICA Cooper.

A middle-sized tree with large deeply toothed deciduous lvs; fr developing the 2d yr; cups deep, with thin scales. S Ber; Jac; Cuyamaca mts!

Cooper, SI r 1858, 261 (1859).

Type locality: "hillsides, Napa valley" Cal.

Coville, CNH 4:196.

Hall, C 71. Black or Kellogg oak.

Abrams, Fl LA 106.—"Common in the pine belt.

Quercus Kelloggii Newberry, Pac Ry R 6:28 t 6.

Watson, bot Cal 2:99.

Quercus Sonomensis Benthani, A DC Prodr 16 (2):62.

Quercus rubra, Benthani, M Hartw 337.

Quercus tinctoria var *Californica* Torrey, Pac Ry R 4:138 (1857).

QUERCUS AGRIFOLIA Nees.

Large widely spreading tree; lvs persistent, oval to oblong, 4-7 cm long, sinuately spinose-dentate, somewhat stellate-pubescent when young, in age mostly convex above, pale and nearly glabrous beneath; acorns an, sessile or nearly so; nut narrow and tapering, 2-3 cm long, 6-8 mm in diam; cup turbinate, rather deep with lanceolate slightly pubescent brown scales.

Nees, Ann Glenc Nat 3:271.

Nuttall, Silva 1:5 t 2.

Watson, bot Cal 2:98.

Abrams, Fl LA 106.

Beltr, Zoe 1:34.

Quercus oxyadenia Torrey in Sitgr R 172 t 17.

QUERCUS CHRYSOLEPIS Liebm.

Usually a large tree, with us sometimes a low-spreading shrub scarce 2' hi! lvs evergreen, oblong, acute or cuspidate, obtuse or subcordate at base, usually entire or spinose-denticulate,

pale and glaucous green above, more or less fulvous-tomentose beneath, becoming glabrate in age; acorns variable in size, usually largest of our Cal oaks; nut oval, obtuse, 15-30 mm long; cup hemispheric, very thick, its scales usually almost hidden by fulvous tomentum, 1-3 cm broad. Golden live oak.

Hall, U 71.

Abrams, Fl LA 106.—"Common above 2500"

Liebm, Danok Videnok Forhandl 1854, 173.

Type locality: California; near Monterey.

Coville, CNH, 4:196.

Watson, bot Cal 2:97. Thruout Cal.

Quercus fulvescens Kellogg, Cal ac pr 1:67, 71.

Quercus crassipocula Torrey, Pac Ry R 5:865, t 9.

QUERCUS DOUGLASSII H & A.

Blue oak. Middle-sized tree with rounded hd, branches num, erect-spreading; lvs decid, 5-6 cm long, oblong, sinuate or with shallow lobes, bluish-g above, pubescent beneath; acorn sessile or short peduncled; nut elongated-oblong, 2-3 cm long, mostly acutish; cup hemispheric, with ovate-lanceolate, thick or somewhat tubercled scales.

Abrams, Fl LA 105.

H & A, bot Beech 391 (1841).

Type locality: Californian (Douglas, Collector).

Coville, CNH 4:196.

Watson, bot Cal 2:95.

QUERCUS ENGELMANNI Greene.

"A tree of middle size, 25-40' hl, with light colored and rather smooth bark, a trunk 2-3' thick, branches spreading to form a well rounded scarcely depressed hd; lvs short-stalked, oblong, 2 or 3' long, entire or sometimes with a few coarse teeth, obtuse or retuse at apex, rounded or slightly cordate at base, those of young shoots sometimes acutish at both ends and coarsely serrate toothed thruout, texture coriaceous almost without reticulation, downy-pubescent when young, glabrous when old acorns sessile or peduncled; cup hemispherical, tuberculate; nut oblong, 1' long, lineate."

The Englemann, or Post oak, is a sm spreading tree 40' hl, with a trunk usually under 3' in diameter. Not rare near Pala, Fallbrook, the Potrero and into Lower Cal, 20 miles or so from the sea.

QUERCUS DUMOSA Nutt.

A straggling evergreen, 3-10' hl; twigs slender, woolly when young; the lvs very variable in shape and size, of leathery texture, oblong, obtuse, sinuate and spinose-toothed and more or less revolute, pubescent beneath, or on both sides; frutification annual; acorns sessile; cup hemispherical, strongly tuberculate; acorn oval, oblong, ½-1' long.

QUERCUS TUBBINELLA Greene.

"Shrub from 4-7' hl, with many rigid divergent branches, the branchlets rusty-tomentose, lvs oblong, about 1' long, on petioles of 2 or 3" in length, coriaceous, plane, the margins all around armed with short, spreading spine-tipped teeth,

pale on both faces, glaucous above, stellate-tomentose most obvious beneath; frutification annual; acorns solitary on peduncles from ½-¾" long; cup turbinate, thin, not tuberculate, 4-6" broad, embracing the base only of the slender nut, which is ¼ to one-third" thick and thrice as long."—Greene, W Am Oaks 37. Mts SD Col Baja!

QUERCUS PARVULA Greene.

"Near Q. Wislizeni, only 2-3' hl; lvs persistent, coriaceous, dark g, 1½-3" long, ovate-lanceolate, acute, mostly entire, no veins prominent except the middle one beneath; frutification biennial; acorns (immature) solitary, short-peduncled; cup deep, covered with brown, ovate-oblong, obtuse, ciliate scales which are appressed-pubescent up and down the middle. Northward slope of Cruz I; forming low clumps, chiefly along the borders of the pine woods; not frequent, but a clear n. sp."—Greene, Pittonia 1:40 (Mr 1887).

QUERCUS LOBATA Nees.

Valley Oak, Roble. Stately tree with slender, often long and pendulous branches; lvs oblong or obovate, 6-12 cm long deeply lobed or pinnatifid, pale g, acorns subsessile; nut long-conic, 3-6 cm long; cup deep-hemispheric, strongly tuberculate.

Abrams, Fl LA 105.

Behr, Zoe 1:34.

Nee, Annl Cienc Nat 3:278 (1801).

Watson, bot Cal 2:95.—"Roble" of the Mexicans. Com thruout Cal.

A DC; Prodr 16(2):24.

Torrey, bot Wilkes Exp t 15.

Quercus Hindsil Bentham, bot Sulph 55.—Newberry, Pac Ry R 6:29 t 1, f 7.

Quercus Ransomi Kellogg, Cal ac pr 1:25 fide Curran, Cal ac b 1:146.

QUERCUS UNDULATA Torrey.

"The common low oak of the Rocky mts and Wahsatch, ranging southward to NM and So Ut. An examination of considerable material shows that it is quite variable in its foliage and includes several reputed species and forms. The typical form has oblong lvs with acute or acutish entire divaricate mostly triangular lobes, the sinuses reaching half-way to the midrib. This is also Q. Fendleri Liebm. With large lvs and the lobes sometimes coarsely notched it becomes Q. Gambellii Nutt, and Q. Douglasii, var Neo-Mexicana, A. DC, with the lobes more obtuse it is Q. alba, var (?) Gunnisoni, Torr; and with the lobes less divaricate and more oblong, frequently notched at the apex, and the rounded or narrow sinuses reaching often nearly to the midrib, it is the more prevalent northern form, Q. obtusiloba, var depressa, Nutt, and var Utahensis, A DC. The extreme states appear quite distinct, but intermediate forms abound and there seems to be nothing in the fls or fr to distinguish them."—S. Watson, Am nat 7:302 (My 1873).

QUERCUS WISLIZENI A DC.

Spreading shrub or a sm tree in So Cal; lvs persistent, coriaceous, lanceolate or oblong-lanceolate, acute, entire, or somewhat spinose-dentate, usually plain, g on both sides, glabrous; acorns

biennial; nuts slender; cup turbinate, very deep. Sber Co!

Abrams, Fl LA 106.

DC, Prodr 16 pt 2, 67 (1864).

Coville, CNH 4:197.

Type locality: "the Am Fork of the Sacramento river," Cal (St Louis ac tr 3:396), not Chihuahua.

Watson, bot Cal 2:98.

Quercus Morehus Kellogg, Cal ac pr 2:36 (fide Curran, Cal ac b 1:146, this is a hybrid between Q. wislizeni and Q. Kelloggii).

GUTIERREZIA DIVERGENS Greene

Suffrutescent, 4-7 dm hi, glabrous or merely granular-scaberulous, the panicled branches nearly destitute of foliage at fl'g time; inv 6 mm hi, obovate-turbinate, their obovate obtuse bracts well-imbriated and with blunt g tips; disk fls 5-7; rays about 5; paleae of the pappus 9-12, very unequal, narrow and acute.

Abrams, Fl LA 394.—"Common on the interior plains and foothills."

GRINDELIA CAMPORUM Greene

Herbaceous; sts w and shining, tufted from a per root, about 6 dm hi, glabrous, very leafy up to the loosely corymbose hds, even the branches of corymb conspicuously lfy-bracted; basal lvs almost 0; st lvs oblanceolate-nervulate, sessile and clasping, 5 cm long, saliently serrate-toothed; bracts of inf branches nearly entire, spreading; inv 12-20 mm wide, its bracts with long linear recurved tips; ray-ak obscurely 3-sided with 3 or more pappus awns; disk-ak compressed, obliquely bilauriculate or unidentate at the summit.

Abrams, Fl LA 293.

GRINDELIA ROBUSTA Nutt.

Sts herbaceous, stout, ascending from a per root, about 5 dm hi; lvs broadly cordate-oblong, obtuse, coarsely serrate, about 3.5 cm long, often 2.5 cm broad, subcoriaceous, pubescent on the margins, otherwise glabrous; hds very few, large, corymbosely disposed; outer bracts of inv rather leafy, the others narrow and squarrose; pappus awns 2.

SD; Cruz; LA (Davidson).

BAERIA AFFINIS A. Gray.

Erect, sparingly branched, 10-15 cm hi, minutely pubescent, obscurely or not at all glandular; lvs with filiform divisions; rays 6-8, oblong, short; inv bracts ovate-oval; pappus of 8-10 oblong or lanceolate paleae with laciniate setulose margins, fully equaling the cor-tube, some or most of them produced into an awn almost equaling the disk-fls, or in the rays blunt and awnless.

Abrams, Fl LA 428.

BAERIA TENELLA A. Gray.

Pappus of 6-10 short and firm quadrate or broadly cuneate paleae with the truncate mucous summit denticulate or nearly entire, not surpassing the tube of the cor.

Abrams, Fl LA 428. Sycamore Grove, Greata.

Parish Erythea 6:92. Near LA.

BAERIA CHRYSOSTOMA F & M.

Sts slender, freely branching, 2 dm hi or less, hirsute pubescent; lvs narrowly linear, entire; hds 6-8 mm hi; bracts of inv 7-12; rays 7-12, 6-8 mm long; ak clavate linear, slightly contracted at the summit, glabrous; pappus 0.

Abrams, Fl LA 428. Monica mts.

VPNEGASIA CARPESIOIDES DC.

Sts widely branching, 1.5 m hi or less; glabrous; lvs thin, ovate-deltoid or ovate-cordate, acute, crenate, 7-10 cm long, petioled, resinous-dotted beneath; hds terminal and from the upper axils, short-petioled, about 2 cm broad; rays about 15, and about 2.5 cm long.

Abrams, Fl LA 427.—"Frequent in the Monica, Gabriel and Santa Ana mts."

Santa Barbara; Cruz; Rosa.

PLECTRITIS MACROCERA T. & G.

Slender, mostly simple, 3-3.5 m hi; lvs linear or narrowly oblong; spur of cor longer than tube; fr more or less hispid, dorsally carinate, the carina 2-sided; lateral wings broad, each with a more or less obvious lobe at apex, spreading or incurved. Napa mts; Cal to Baja!

Plectritis minor Abrams, Fl LA 382.

Plectritis congesta minor Hooker.

Valerianella macrocera A. Gray.

MILLA BIFLORA Cav.

Mexican star-flower: fls pure waxy-white, 2 in diam, usually borne in pairs on long slender stems—frequently lasting 2 weeks when cut and placed in vases of water.

Genus ABIES Link.

Evergreen trees with sessile lvs appearing 2-ranked by a twist of the petiole leaving a circular scar on the smooth branches, more or less flattened and emarginate, bearing stomata only or mainly on the lower surface, with 2 longitudinal resin-ducts mostly close to the epidermis on the lower side; stam cones oval or cylindrical, scales terminating in a knob, bearing 2 anths, these transversely dehiscent; pistillate cones erect, the bract much larger than the scale; fring cones erect, maturing the first year, scales and enclosed or exserted membranous bracts falling at maturity from the persistent axis; sds partly and permanently enclosed by the base of the wing; cotyledons 4-10. Fir. **ABIES CONCOLOR** Lindl.

White Fir. Often becoming a large tree with rough grayish bark; lvs obtuse, pale g, with stomata on both sides, 2-3 cm long or on young trees often 5 cm long, convex above, somewhat falcate; mature cones oblong-cylindric, 8-12 cm long, 3-4 cm thick, pale g; scales 24-30 mm broad, but little over half as long; bracts short enclosed, truncate or emarginate, with or without a short mucro; wing of sds oblique, as broad as long; cotyledons 5-7. Jac; Sber; Cuyamaca!

Abrams, Fl LA 6. Gabriel mts.

Hall, U 52.

Ables concolor Lowiana Lemmon. W
Am cone ed 3, 64 (1895).
Lindley & Gordon, London hort soc J
5:210 (1850).

Brandegee, Fl Colo 227, 231.

Engelmann, bot Cal 2:118.

Ables Lowiana Murr, fide Engelm.

PSEUDOTSUGA TAXIFOLIA Britton.

Douglas spruce, commercially known as Oregon pine, Douglas fir, or red or yellow fir. Large and valuable trees, forming the larger part of the great forests about Puget Sound southward, 300 to 400 ft high. 10-12" in diam; cones narrow, 2-3½' long, the feather-like bracts protruding ½-¾'.

Pseudotsuga Douglasii Carriere, 1855.

Pinus Taxifolia Lambert, 1803.

Genus PINUS Tournefort.

Evergreen trees with 2 kinds of lvs, the primary ones linear or scale-like, decid; secondary ones forming the ordinary foliage, narrowly linear, arising from the ax of the former in fascicles of 2-5, or solitary; subtended by the bud scales, some of which are united to form a sheath: stam cones borne at the bases of the shoots of the season, clusters of sta spirally arranged each in the axil of a minute scale; fl very short; anth 2-celled, longitudinally dehiscent; ovule-bearing cones solitary or clustered, borne on the twigs of the preceding year, composed of num imbricated minute bracts, each with an ovule-bearing scale in its axil, ripening into a large cone, which matures the following autumn, its scales elongating and becoming woody; sds 2 on the base of each scale, winged above, the testa crustaceous. Pine.

PINUS ATTENUATA Lemmon.

"Usually sm, early-bearing, slender trees on sunny slopes of the Cascade range to the northern Sierra and southward, rarely on the Coast ranges, to the Santa Cruz and SBER mts. Cones in circles, strongly declined, narrow and pointed, 3-7' long, remaining on the trees and unopened for an indefinite number of years. The outer scales with conical, quadrangular tubercles, terminated by a very short, deltoid, firm prickle; lvs in 3's, 3-6' long. Often called knob-cone pine**First detected in the Santa Cruz mts by Hartweg, 1846."—Lemmon.

Narrow-cone pine. Pinus tuberculata Gordon, 1849, non Don, 1836.

Abrams, Fl LA 5.—"Extending in a narrow belt along the southern slope of the SBER mts, 2500-4000° alt."

PINUS COULTERI Lamb.

Coulter's nut pine. A middle-sized tree, with thick rough bark; lvs crowded at the ends of the thick branches in clusters of 3, stiff and erect, 15-25 cm long, dark bl-g; staminate cones cylindrical, 35-40 mm long, with 8-10 involucrel bracts; fr'ing cones long-oval, pointed, 25-35 cm long, 10-12 cm thick, y'ish-brown, persistent; scales with a stout elongated umbo armed with thick incurved spines; sds oval, bk, 12-16 mm long; wing 20-30 mm long. Cuyamaca! Jac! SBER mts: 4500-7000° alt. Baja!

Abrams, Fl LA 5.

Hall, U 53.

Engelmann, bot Cal 2:127.

Don, Linn tr 17:440.

Pinus macrocarpa Lindl, bot reg 26 misc 61.

PINUS FLEXILIS James.

A middle-sized tree with furrowed gray bark; lvs 5, 3-6 cm long, thick and rigid; staminate cones oval, 12-14 mm long, inv bracts 8-9; anth tipped by a spur; fr'ing cones oval to subcylindric, 8-16 cm long, light brown, scales rounded or pointed at the apex; sds oval, compressed, 8-12 mm long; wing minute, scarcely exceeding 1 mm in width, usually remaining attached to the scale. Summits of San Geronio; San Jacinto and Santa Rosa mts.

Abrams, Fl LA 2.

Hall, U 53.—Lumber pine.

Parry, bot obs Wyo 5, 6, 10, 11, 19.

Brandegee, Fl Colo 227, 231.

Engelmann, bot Cal 2:124.

James, Long's Exp 2:27, 35.

PINUS MONOPHYLLA Torrey & Fremont.

Nut pine. A sm tree, 20-25° hi, with irr spreading branches and pale fissured or flaky bark; lvs rigid, spiny tipped, solitary and terete or rarely in pairs and semiterete, 1¼-2¼' long, the sheaths 4-5" long; stam fls oval, with 6 involucrel bracts; anth terminating in a knob or a few teeth; cones 1½-2¼' long, nearly as thick; sds oval, 6-10" long, thick-shelled, y'ish brown and mottled; cotyledons 7-10. Baja!

Pinus Fremontiana Endl, Conif 183, in part.

Fremont's R 319 t 4.

Watson, bot Cal 2:124.—Nev; Ut; Ar.

Abrams, Fl LA 3.—"Frequent on the desert slopes of the San Gabriel and SBER mts."

McClatchie, Erythea 2:77.—Mt Lowe, 6000°, LA Co.

PINUS PARRYANA Engelmann.

A sm tree 20-30° hi, 10-18" in diam, with a round top; lvs 3-5 in a sheath, 1¼-1½' long; male fls oval, with 4 involucrel bracts; cones subglobose, 1½-2' thick, with strongly elevated knobs; sds oval, 5-8" long, with a thin light-brown mottled shell; cotyledons 8.

Engelmann, bot Cal 2:124.

Engelmann, Am J Sci, ser 2, 34:332, note.

Parry's pinyone or nut pine. Baja mts! SD Co!

Or W 10:1.—SBER mts; Jac (R. H. Asher). Mts east of Quintin (R. J. Gregg).

Parish, Erythea 7:89.—Santa Rosa mt, Riverside Co, Cal (H. M. Hall).

Pinus Llaveana Torrey, bot Mex bound 208 t 53.

Pinus quadrifolia Parl.

PINUS MURRAYANA Orey Com.

Murray pine or Tamarack pine. Becoming a rather large tree, 15-40 m hi; bark rather finely furrowed, grayish-brown; lvs 2, 25-75 mm long, very stout and rigid; sheaths 8-12 mm long when young; stam cones with 6-8 inv-bracts, cylindrical, 10-15 mm long; fr'ing cones clustered or in pairs, oval or subcylindric, oblique, 2-5 cm long; scales armed

with slender recurved prickles; sds scarcely 2 mm long, dark br mottled with bk; cones light br, widest above the base, tapering to apex, 12-15 mm long.

Abrams, Fl LA 4.

Hall, U 53.—Lodge-pole pine.

Pinus contorta murrayana Engelm., bot Cal 2:126.

PINUS JEFFREYI Murray.

Abrams, Fl LA 4.

See *Pinus ponderosa* Jeffrey.

Variety **PENINSULARIS** Lemmon.

Peninsular Black Pine. Pinyo. On the San Rafael mts of Baja; bark dark brown, thick, deeply furrowed; cones remarkably abundant and large, 6-8 inches long.

Lemmon, Hdb Wam cone-bearers 35 (Jl 1895).

PINUS INSIGNIS Loudon.

See *Pinus radiata* Don.

PINUS PONDEROSA Douglas.

Yellow pine. A large tree with very thick r-b bark deeply furrowed, and split in large plates; lvs 3 in each cluster on stout branchlets, dark g, 15-25 cm long; stam cones cylindric, 35-50 mm long, inv-bracts 10-12; fr'ing cones oval, 7-12 cm long, rich br; scales thickened into a central knob terminating in compressed straight or recurved umbos, awned with slender spines; sds ovate, acute, about 8 mm long, coat nearly bk, rugose; wing thin, pale br, 25-30 mm long and about 20 mm wide below middle.

Abrams, Fl LA 4.

Hall, U 53.

Parry, bot obs Wyo 6, 11.

Brandege, Colo 231.

Engelmann, bot Cal 2:125.

Variety **JEFFREYI** Vasey.

Vasey, D-A r 1875:179. Ha U 53.

Pinus Jeffreyi Murr Oreg exped r 2: t 1 (1853).

Closely resembling *P. ponderosa* in foliage and habit; bark deeply furrowed, not split in large plates, dark; stam cones 3 cm long; fr'ing cones oval, rather rich br, 15-30 cm long; sds 8-10 mm long; wings about 25 mm long. Sber mts.

PINUS QUADRIFOLIA Parl.

Abrams, Fl LA 3.—"Santa Rosa mts (Hall)."

=*Pinus Parryana* Engelm.

PINUS SABINIANA Douglas.

Digger pine or Silver pine. A rather sm open-topped irregularly branched tree; lvs 3 in a cluster, drooping, light g or glaucous, 2-3 cm long; staminate cones oblong, about 2 cm long, with 10-15 inv bracts; fr'ing cones lateral, short oval, acutish, 15-25 cm long, 10-15 cm in diam, deep chestnut-br; scales produced into prominent knobs awned with stout straight or slightly incurved spines; sds subcylindric, dark, 15-24 mm long; wing about half as long.

Abrams, Fl LA 4.—"An'elope valley, ranging northward to the upper Sacramento. Confined to the foothills."

PINUS TORREYANA Parry.

Del Mar or Torrey pine: lvs crowded at the ends of the thick branchlets in the axils of lanceolate strongly fringed bracts; young sheaths 15-18" long, old

ones 6" long; cones patulous or deflexed on peduncles 1" long; umbo short and stout or sometimes elongated and inflexed; sds oval, 8-10" long, twice as long as the wing, which encloses the sd with a thick rim. cotyledons 13-14.

Parry, bot Mex bound 210, t 58, 59.

Watson, bot Cal 2:125.

Abrams, Fl LA 3.

ERYTHRAEA VENUSTA A. Gray.

Gray, Bot Cal 1:479 (1876).—"A span to a ft hl, simple and cymosely several-fl'd at summit, or corymbosely branched; lvs from ovate to oblong-lanceolate, rather obtuse ($\frac{1}{2}$ near 1 i long); ex-lobes very narrow down to the base; cor deep and bright pink with a v center; the lobes oval and obtuse, becoming oblong, 4-6 ll in length; fl rather longer than the oblong-linear anth.—E. chronioides, Torr. Bot. Mex. Bound, 156 t 42, excl syn E. tricantha, Durand in Pacif R Rep v t 9, not Griseb. Common through all the southern part of California, and extending (mostly in a smaller form) along the Sierra Nevada to Sierra Co., up to about 4000 ft. The name given in Coulter's collection, etc., 25 years ago, is now resumed for this, the handsomest and one of the largest-flowered species of the genus."

Coville, CNH 4:150.

Genus GILIA Ruiz & Pavon.

Herbs with alt lvs pinnately toothed or divided; ex-tube scarious below the sinuses, segments equal, entire; fls solitary in loose or capitate clusters or paniculate, bracted or bractless; cor funnelform to salverform, blue, y, or w, sta equally or unequally inserted on its throat; cap 3-celled and 3-valved. Named for Felipe Luis Gil, a Spanish botanist of the 18th century.

GILIA STAMINEA Greene.

Closely resembling *G. abrotanifolius* in habit; sts and lvs sparsely pilose; ex densely arachnoid-villous, mainly hyaline, its lobes recurved; sta well exerted, nearly w.

Abrams, Fl LA 314. San Joaquin valley.

Genus CONVULVULUS Linnaeus.

Twining or prostrate herbs; sep 5; cor funnelform to campanulate; sty entire, or cleft at the apex only; stig 2, ovate to linear; sta included; cap globose with 4 sds in 2 cells (or by abortion 1-celled), mostly 2-4 valved.

CONVULVULUS REPENS L.

Sts from a horizontal slender running rt-stock, 6-10 dm long, twining or more commonly prostrate; herbage from minutely to tomentose pubescent, lvs sagittate, obtuse or acutish, the basal lobes obtuse or rounded, entire; bracts ovate-cordate, acute, completely enfolding the ex; cor pinkish, 5 cm long or more; stig oblong.

Abrams, Fl LA 309.

Genus CRESSA Linnaeus.

Low canescent perennial herb with

erect or diffuse non-twining sts; sep 5, nearly equal; cor w, tube oblong-campanulate, equalling the sep; limb 5-parted into lightly convolute-imbricate lobes which are somewhat induplicate in the bud; fil filiform, exserted from the throat of the cor; ova 2-celled, 4-ovuled; cap by abortion often 1-seeded.

CRESSA CRETICA Linn.

Low tufted plants 3-6 m hl, densely branched from base. Especially abundant in saline or alkaline soil, often covering thousands of acres. Vacaville, Cal, to Baja!

CUSCUTA ARVENSIS Beyrich.

Sts filiform, pale y; fls nearly sessile in sm clusters; cx-lobes broad, obtuse; cor campanulate, its lobes as long as the tube, acute or acuminate, reflexed; scales large, ovate, equalling or exceeding the tube, densely fringed all around; cap depressed-globose.

Abrams, Fl LA 310. On various

CUSCUTA CALIFORNICA Cholsy.

Fls pedicelled in loose few-fl'd cymes; lobes of cx acute; lobes of cor lanceolate-subulate, delicate w; no scales below the sta.

Abrams, Fl LA 310.

NICOTIANA GLAUCA R. Gray.

Arborescent, 3-6 m hl, glaucous and glabrous; lvs long-petioled, ovate, subcordate; fls loosely paniculate; cor g'ish-y, 3-5 cm long, tubular, contracted at the throat, its limb erect, 5-crenate.

Abrams, Fl LA 354.

Davidson, Erythea 1:98 LA.

Parish Zoe 1:124.

PROSOPIS PUBESCENS.

Sm tree or shrub similar to the mesquit but smaller, more or less puberulent; stipules spinescent; lfts 5-8 pairs, pairs 3-5 mm distant, oblong, 5-8 mm long, obtuse at apex; spikes on peduncles about 1 cm long, 4-6 cm long, often lax; fls sessile, 3 mm long, pods com several-many developing, twisted into a straight cylinder, 25-35 mm long, about 5 mm broad, on stipes less than 2 mm long. CD! Baja!

Bentham, London J bot 5:82 (1846).

Abrams, Fl LA 206. SBer.

Type locality: "California between San Miguel and Monterey" (Coulter).

RAMONA POLYSTACHYA Greene.

White Sage—Shrubby below, 1 m hl or more, minutely tomentose-canescens, the branches virgate; lvs mostly very w on both surfaces, oblong-lanceolate, minutely rugose and crenulate, 5-8 cm long; infl raysoid-paniculate, 3-6 dm long; floral lvs, bracts and bractlets sm and loose, at length reflexed, lanceolate or subulate, cuspidate-tipped; fls sessile, loose, upper lip of cx truncate or 3-toothed, at length concave or galeate, longer than the triangular-subulate lower lip; cor w or nearly so, the lower lip much enlarged, middle lobe rounded, emarginate at apex, unguiculate, upper lip short; tube very short; sty and divergent sta long-exserted; filiform connective continuous with the fil, its low-

er end usually indicated by a minute tooth.

Abrams, FLA 345.

DRABA CORRUGATA.

Pubescent throughout with loose branching hairs; stems branching from the base, very leafy; leaves entire, oblong-oblancheolate; calyx pubescent; pods lanceolate to broadly oblong, acute or obtuse, much corrugated and twisted; style long, attenuate to a minute stigma. San Bernardino mts., Cal.

ERYTHEA ARMATA Watson.

The Tecos grandes is the fruit of the beautiful blue palm of Lower California, and forms an important article of food with the Indians, ripening in July and August. The fruit is the size of a common marble, with sweet mealy pulp surrounding the large stone ($\frac{1}{2}$ inch in diameter). The tree grows 40 feet high, bearing its fan-shaped glaucous leaves in a very graceful manner. This palm was first found in the Cantillas canyon, Lower California, which opens out onto the Colorado desert, by Dr. Edward Palmer. Dr. J. N. Rose has since found it in Mexico, east of Mazatlan, I believe. The seeds require from six months to three years in which to germinate—the older seeds germinating more quickly than when fresh from the tree. I have had them germinate readily when over ten years old.

GILIA ACHILLAEPOLIA Bentham.

Sts 3-5 dm hl, glandular-puberulent throughout; lvs mostly bipinnately dissected into linear, somewhat recurved seg; branches few, naked, bearing a dense cluster of usually deep blue fls; cx glandular-pilose, mainly hyaline, its lobes incurved in fr; cor-tube cylindrical; throat very short and broad; lobes oblong, scarcely spreading; sta exserted. Bentham, Bot Reg 19 sub t 1622 (1833).

Abrams, Fl LA 314.

Hall, U 103.

Coville, CNH 4:155.

Type locality: "California."

See Gilia multicaulis Benth.

CONVOLVULUS ARVENSIS Linn.

L. Sp Pl 153.

Per, prostrate; sts 3-10 dm long; lvs oblong, sagitate or hastate, 2.5-5 cm long, basal lobes short; pedicels 1-3-fl, with a pair of subulate bracts near the base; cor w with a tinge of p on outside, neither lobed nor angled; stig filiform. Eu.

Abrams, Fl LA 309. "Occasional in cult fields, and waste places. Mv-N."

CONVOLVULUS PENTAPETALOIDES

Diffusely branched from the base,

the branches 6-18 i long, puberulent or hairy; lvs linear or oblong oblanceolate, narrowed to a petiole, 1-3 i long; peduncle with a pair of small spatulate or subulate bracts below the fl, 1-fd, retrocurved in fr, $\frac{1}{2}$ -1 i long; sep more or less hairy with subsarcinose margin; cor p'ish, $\frac{1}{4}$ i long, deeply 5-cleft. Eu. SD! Baja! Cruz.

Breweria minima A. Gray.

CONVOLVULUS SOLDANELLA Linn.

Stems prostrate, $\frac{3}{4}$ -1 $\frac{1}{2}$ ft long; herbage glabrous and succulent; lvs thick, reniform, dep g, shining, 1-2 i broad, mostly broader than long, on stout petioles; cor short and rather broadly funnelform, 1 $\frac{1}{2}$ -2 i broad, pinkish or pale v; cap becoming 4-celled. Sandy seashores. Baja north to Puget Sound. Eu.

Abrams, Fl LA 309.

BROMUS PORTERI.

Variety *ASIMILIS* Davy.

Bromus Porteri lanatipes Shear, U S D-A agros b 23:37 (1900) in part. Mountain Brme. "Loosely tufted perennial; stems stout or slender, 7 $\frac{1}{2}$ -19 dm high, puberulent; sheaths densely retrorse-pubescent; legule 1-2 mm long, truncate, lacerate; blades flat, 10-23 cm long, 5-10 mm wide, pubescent on both surfaces; panicle long-exserted, 1-2 or rarely even 3 dm long, drooping but usually not heavy, the rachis branches and pedicels puberulent throughout; branches mostly in pairs below, long, slender, spreading or reflexed, bearing 1-3 or sometimes several spikelets near the end, remote, the lowest $\frac{1}{2}$ -8 cm apart; spikelets 23-40 mm long, narrow, sub-terete, 6-11-fl'd; empty glumes unequal, acute, 3-nerved, pubescent, the lower 6 mm, the upper 8 mm long; flng glume densely pubescent except at the extreme apex with appressed hairs, obtuse, terminating in a short awn 4-5 mm long."—Davy, Univ Cal pub bot 1:55. Jac (Hall 2228).

BROMUS TRINII Desv.

Robust, 6-12 dm high, panicle much elongated, 2-4 dm long; branches mostly 6-12 at the lower whorls, weak and spreading; leaves broadly linear lanceolate, smooth or somewhat sparsely pilose-pubescent, as are the sheaths.

Type from the Andes of southern Chili, Chollas valley, San Diego (Orcutt 1064), Pasadena (O. D. Allen, in 1885), and San Nicolas Island (Balche Trask 15), California.

Trisetum hirtum Trin *Linnæa* 10:300 (1835).

Trisetum barbatum Steud Syn Pl Gram 229 (1854).

Bromus barbatooides Beal Grass N A 2:614 (1896).

California; Colorado; Chili.

Var. *PALLIDIFLORUS* Desv.

Bromus barbatorides sulcatus Beal grass N A 2:615 (1896).

Trisetum barbatum major Vasey in herb; Beal Grass N. A. 2:615 (1896).

DESCHAMPSIA GRACILIS Vasey.

"Apparently annual; culms about 2 ft high, slender, smooth; lvs filiform, not rigid, the lower ones recurving, 3-4 in. long; sheaths smooth, loose and open, the

lower longer than the internodes; ligule conspicuous, 2-3 lines long, triangular-acuminate, sometimes split; upper half of culm leafless; panicle 6-8 in. long, lax and open, branches mostly in twos, the lower ones 2-3 in. long, slender, smooth, fl bearing to or below the middle, the lower joints 1-2 in. distant; spikelets small, outer glumes nearly 2 lines long, equal, linear-lanceolate, acute, 3-nerved, smooth, purplish, one-third longer than both fls; flng glumes $\frac{1}{2}$ -two-thirds line long, oblong, smooth, faintly nerved, apex broad and 4-toothed the awn from near the base 4 times as long as its glume, bent at the middle; palea as long as its glume, narrow, ciliate above; villous hairs at the base half as long as the fl; the rachilla also villous."—Vasey, bot gaz 10:224. S D mesas! Baja!

GLOSSARY.

(See also Abbreviations.)

acaulescent, apparently stemless; the proper stem being very short or subterranean.

accessory, something additional.

acrescent, increasing in size or length with age, as the calyx or pedicel after flowering.

accumbent, lying against a thing.

The cotyledons are accumbent when they lie with their edges against the caulicle.

aceroso, needle-shaped.

acicular, needle-shaped, more slender than aceroso.

aculeate, armed with prickles.

acuminate, taper-pointed.

acute, ending in a point.

adherent, sticking to, or growing fast to another body.

adnate, born adherent.

aestival, produced in summer.

aestivation, the arrangement of parts in a flower-bud.

alate, winged.

alliaceous, with the odor of onions.

alveolate, honeycomb-like.

ament, the scaly spike of trees, like the alder and willow.

amphitropous, attached by the middle and having the micropyle at one end and the chalaza at the other.

amplexicaul, clasping the stem by the base.

anotropous, inverted, when the micropyle is at the same end as the hilum.

ancipital, 2-edged.

androgynous, having both staminate

and pistillate flowers in the same cluster.
 anterior, in a flower, is the part next the bract.
 antheriferous, anther-bearing.
 anthesis, the period of flowering.
 antrorse, directed upward.
 apetalous, destitute of petals.
 apical, belonging to the apex.
 apiculate, tipped with a small point.
 apophysis, an irregular swelling.
 aquatic, growing in water.
 arachnoid, cobwebby.
 arborescent, tree-like.
 arcuate, bent or curved.
 areolate, marked out into little spaces.
 aristate, awned.
 aristulate, short-awned.
 articulated, jointed.
 ascending, rising obliquely upward.
 assurgent—see ascending.
 auriculate, with auricles or ear-like appendages.
 awl-shaped, sharp-pointed from a broader base.
 awn, a bristle or beard-like appendage.
 axillary, occurring in an axil.
 baccate, berry-like.
 barbate, bearded.
 berry, a fruit, pulpy or juicy throughout, as a grape.
 bifid, 2-cleft to about the middle.
 bifurcate, 2-forked.
 bilabiate, 2-lipped.
 bladderly, thin and inflated.
 blade, the expanded portion of a leaf or petal.
 bloom, a whitish powder.
 brachiate, in pairs, each pair arranged at right angles to the next.
 bract, the leaf of an inflorescence.
 bractlet, bracts that occur on flower-pedicels.
 bulb, a leaf-bud with fleshy scales, usually subterranean.
 bullate, appearing as if blistered or bladderly.
 caducous, dropping off very early.
 caespitose, growing in tufts.
 callous, hardened.
 calyptra, a hood.
 campanulate, bell-shaped.
 canescent, grayish-white, caused usually by a covering of fine whitish hairs.

capitate, having a head.
 capsule, a dry dehiscent fruit formed from a compound pistil.
 carinate, keeled.
 carpel, a pistil-leaf or sporophyll.
 caruncle, an excrescence at the hilum of some seeds.
 catkin, see ament.
 caudate, tailed.
 caudex, an upright stock.
 caudicle, the stalk of a pollen-mass.
 caulescent, having an obvious stem.
 caulicle, rudimentary stem of a seedling.
 cauline, belonging to the stem.
 cell, the cavity of an anther or ovary.
 chaff, small membranous scales on the receptacle of Compositae.
 chaparral, a thick growth of shrubs, such as manzanita or scrub-oak.
 chartaceous, of the texture of paper.
 ciliate, beset on the margin with a fringe of hairs or bristles.
 clavate, club-shaped.
 claw, the stalk-like base of some petals.
 cleistogamous, fertilized in closed buds.
 cleft, cut into lobes.
 comose, bearing a tuft of hairs.
 connate, united or grown together.
 connivent, converging.
 convolute, rolled up lengthwise.
 cordate, heart-shaped.
 coriaceous, leathery in texture.
 corm, a solid bulb.
 cornute, horned.
 corona, a crown.
 corymb, a flat or convex flower-cluster.
 corymbose, in corymbs.
 costa, a rib.
 cotyledons, the seed-leaves.
 creeping, growing flat on the ground and rooting.
 crenate, with rounded teeth.
 cruciate, hood-shaped or hooded.
 culm, the stem of grasses or sedges.
 cuneate, wedge-shaped.
 cuspidate, tipped with a sharp stiff point.
 cyme, a cluster of centrifugal inflorescence.
 cymose, with cymes.
 deciduous, falling off.
 decom-pound, several times compound.

decumbent, reclined on the ground, the summit tending to rise.
 decurrent, prolonged on the stem beneath the insertion.
 decussate, arranged in pairs, which successively cross each other.
 dehiscence, the regular splitting open of a capsule or anther.
 dentate, toothed, the teeth pointing outward.
 dichotomous, 2-forked.
 diffuse, spreading widely and irregularly.
 digitate—leaflets are digitate when they are all borne on the end of a petiole.
 dissected, cut deeply into many lobes or divisions.
 dissepiments, the partitions in a compound ovary.
 diurnal, expanded during the day, closed at night.
 distichous, 2-ranked.
 distinct, free.
 divaricate, widely divergent.
 divided, cut into divisions down to the midrib.
 drupe, a fleshy fruit containing a stone, as the plum.
 echinate, armed with prickles.
 elliptical, oval or oblong, with the ends regularly rounded.
 emarginate, notched at the summit.
 emersed, raised out of water.
 endocarp, the inner layer of a pericarp.
 endosperm, the nutritive matter in a seed, surrounding the embryo.
 ephemeral, lasting for a day or less.
 epigynous, upon the ovary.
 equitant, folded longitudinally, and each embracing the next within.
 erose, eroded as if gnawed.
 exocarp, outer layer of a pericarp.
 extrorse, turned outward.
 falcate, sythe-shaped.
 farinaceous, mealy in texture.
 fascicle, a close cluster.
 fastigate, close, parallel and upright.
 faveolate, favose—see alveolate.
 ferruginous, resembling iron-rust.
 filiform, thread-like.
 fimbriate, fringed.
 fistulose, hollow and cylindrical.
 flabelliform, fan-shaped.
 flavescens, yellowish.
 flexuous or flexuous, bending in op-

posite directions, zig-zag.
 floccose, woolly.
 foliate, provided with leaves.
 follicle, a pod composed of a single carpel, opening down the inner suture.
 frutescent, somewhat shrubby.
 fugacious, soon perishing or falling off.
 fulvous, tawny.
 funiculus, the stock of an ovule or seed.
 furfuraceous, bran-like.
 fusiform, spindle-shaped.
 galea, a helmet-shaped body.
 geniculate, bent abruptly.
 gibbous, somewhat swollen or enlarged.
 glabrate, becoming glabrous or almost so.
 glabrous, smooth, not hairy.
 glands, small cellular organs which secrete certain substances, such as oil.
 glandular, with glands.
 glaucescent, slightly glaucous.
 glaucous, covered with a bloom.
 glomerate, closely aggregated in a dense head.
 glume, floral bracts in grasses.
 gramineous, grass-like.
 habit, the general aspect of a plant.
 habitat, the place where a plant grows.
 hairy, beset with rather long hairs.
 hastate, halberd-shaped.
 herb, a plant that is not woody.
 hilum, the scar of a seed, the place of attachment.
 hirsute, with stiffish hairs.
 hirsutulous, minutely hirsute.
 hispid, beset with stiff hairs.
 hoary—see canescent.
 horn, a spur.
 hyaline, transparent or partly so.
 imbricate, overlapping one another, like shingles.
 immersed, growing wholly under water.
 incised, cut rather deeply and irregularly.
 incumbent—the cotyledons are incumbent when the back of one of them lies against the caulicle.
 inferior, growing below some other organ.
 insertion, the place or mode of attach-

ment.
 introrse, turned or facing inward.
 involucre, a small involucre.
 keel, a projecting ridge.
 lacerate, appearing as if torn.
 lacinate, slashed.
 lanate, woolly.
 lanceolate, lance-shaped.
 legume, a simple pod which dehisces in 2 pieces.
 lenticular, lens-shaped.
 ligneous, woody.
 ligulate, strap-shaped.
 limb, the border of a corolla.
 linear, narrow and flat, the margins parallel.
 loculicidal, dehiscent through the back of each cell.
 lunate, crescent-shaped.
 lyrate, lyre-shaped.
 marcescent, withering without falling off.
 maritime, belonging to the seacoast.
 membranous, thin and soft, like a membrane.
 merous, the number of parts in a circle.
 mesocarp, the middle part of a pericarp.
 monoecious, having stamens or pistils only.
 mucronate, tipped with an abrupt short point.
 mucronulate, diminutive of the last.
 muricate, beset with short prickly points.
 muticous, blunt, pointless.
 nectar, a sweet secretion in flowers.
 nectariferous, having nectary.
 nerve, veins, usually confined to those that are parallel.
 nervose, conspicuously nerved.
 nodose, knotty.
 oblong, 2-4 times as long as broad.
 obovate, inversely ovate.
 obtuse, blunt or rounded at the end.
 ochroleucous, yellowish-white.
 oculate, with eye-shaped markings.
 orbicular, circular in outline.
 orthotropous, straight, when the micropyle is on the opposite end from the hilum.
 oval, broadly elliptic.
 ovate, shaped like an egg, with the broad end downward.
 ovoid, ovate or oval.
 ovuliferous, ovule-bearing.

palea, chaff.
 palmate—see digitate.
 panicle, an open and branched cluster, a compound raceme.
 papilionaceous, butterfly-shaped.
 papilla, little ripple-shaped protuberances.
 papillate, papillose, covered with papillae.
 pappus, the bristles, scales, etc., at at the apex of the akenes in the Compositae.
 parasitic, living on another plant or animal.
 parietal, attached to the walls of the ovary.
 pectinate, pinnatifid into narrow divisions, like the teeth of a comb.
 pedate, like a bird's foot.
 pedicel, the stalk of each flower in a cluster.
 pedicellate, pedicelled.
 peltate, shield-shaped.
 pepo, a fruit like the melon.
 perfect, having both stamens and pistil.
 perianth, the floral leaves—the calyx and corolla.
 perigynium, bodies around a pistil.
 perigynous, the petals and stamens borne on the calyx.
 personate, masked; a bilabiate flower with a palate in the throat.
 petaloid, petal-like.
 petiole, a stalk of a leaf.
 petiolulate, a stalked leaflet.
 pilose, clothed with long slender hairs.
 pinnate, with leaflets arranged along the side of a common petiole.
 pinnatifid, cleft in a pinnate manner.
 pistil, the seed-bearing organ of a flower.
 pistillate, having a pistil, or pistils.
 placenta, the part of the ovary to which the ovules are attached.
 plaited, folded lengthwise.
 plumose, feathery.
 pollen, the fertilizing powder contained in the anthers; the microspores.
 polygamous, having some perfect and some unisexual flowers.
 pome, a fleshy fruit, such as the apple and pear.
 posterior, portion of a flower is that toward the axis.

- primordial, earliest formed.
 procumbent, trailing on the ground.
 prolific, where a new branch rises out of an older one, or one cluster of flowers out of another.
 prostrate, lying flat on the ground.
 pruinose, frosted.
 puberulent, with fine short pubescence.
 pubescent, with fine soft hairs.
 punctate, dotted with minute holes.
 puncticulate, minutely punctate.
 pungent, prickly-pointed.
 pyriform, pear-shaped.
 raceme, with 1-flowered pedicels arranged along a common peduncle.
 racemose, bearing racemes.
 rachis, the axis, especially of a spike.
 receptacle, the axis or support of a flower.
 regular, all the parts of a circle similar in shape.
 reniform, kidney-shaped.
 repand, wavy-margined.
 reticulated, netted.
 retuse, with a blunt somewhat indented apex.
 revolute, rolled back.
 rootstock, rootlike, usually underground stems.
 rosulate, in a rosette.
 rotate, wheel-shaped.
 rugose, wrinkled.
 runcinate, coarsely saw-toothed.
 runner, a slender prostrate branch rooting at the ends or joints.
 saccate, sac-shaped.
 sagittate, arrow-shaped.
 salsuginous, growing in brackish places.
 salver-shaped, with a border spreading at right angles to a slender tube.
 samara, a winged fruit or key.
 scabrous, rough or harsh to the touch.
 scape, a peduncle rising from the ground or near it.
 scapiform, scape-like.
 scarious, thin, dry and membranous.
 scorpioid, curved or circinate at the end.
 scrobiculate, pitted.
 scutellate, saucer-shaped.
 secund, 1-sided.
 septate, divided by partitions.
 septical, where the dehiscence is through the partitions.
 serrate, the margin cut into teeth pointed upward; saw-toothed.
 serrulate, minutely serrate.
 sessile, not stalked.
 seta, a bristle, or bristle-like.
 setaceous, bristle-like.
 silicle, a short silique.
 silique, capsule of the mustard family.
 sinuate, with margins alternately bowed inward and outward.
 sinus, the angle between two lobes.
 smooth, not rough, or same as glabrous.
 sordid, dirty in hue.
 spadix, a fleshy spike of flowers.
 spathaceous, resembling, or furnished with, a spathe.
 spathe, a bract which enwraps an inflorescence.
 spatulate, club-shaped.
 spike, flowers sessile on an elongated rachis.
 spinescent, tipped with a spine.
 spinose, spiny.
 spur, any hollow appendage which looks like a spur.
 squamate, furnished with scales.
 squarrose, where scales, leaves or any appendages spread widely from the axis on which they are thickly set.
 stalk, stem, petiole, peduncle, etc.
 staminate, furnished with stamens.
 staminodium, an abortive stamen.
 standard, the upper petal of a papilionaceous flower.
 stellate, star-like.
 stipe, the stalk of the pistil.
 stipitate, furnished with a stipe.
 stipules, appendages situated on either side of the base of some leaves.
 stolon, a trailing or reclined and rooting shoot.
 stomata, breathing pores of leaves.
 stramineous, straw-like.
 striate, marked with slender longitudinal stripes.
 strict, close and narrow; straight and narrow.
 strigose, best with stout appressed hairs or bristles.
 stylopodium, an enlargement at the base of the style.
 subulate, awl-shaped, tapering from

a broad base to a sharp point.
 suckers, shoots from subterranean branches.
 suffrutescent, somewhat woody or shrubby at the base.
 sulcate, grooved longitudinally.
 superior, above.
 suture, the line of junction of contiguous parts grown together.
 sympetalous, petals united.
 tawny, dull yellowish, with a tinge of brown.
 tendril, a thread-like organ used in climbing.
 terete, cylindrical.
 ternate, in 3's.
 testa, the outer seed coat.
 throat, the expanded portion between the lobes and the proper tube in a sympetalous corolla.
 thyrus, a compact and pyramidal panicle of cymes.
 torus, the receptacle of the flower.
 trifid, 3-cleft.
 trifololate, with 3 leaflets.
 triquetrous, sharply 3-angled.
 truncate, as if cut off at the top.
 tuberculate, bearing little pimple-like bodies.
 tunicate, coated, as an onion.
 turbinate, top-shaped.
 umbel, an inflorescence in which a number of pedicels of nearly equal length spring from the same point.
 umbellate, in umbels.
 unarmed, destitute of thorns or spines, etc.
 uncinate, hook-shaped.
 undulate, wavy-margined, or wavy.
 unguiculate, clawed.
 unisexual, having stamens or pistils only.
 urceolate, urn-shaped.
 utricle, a small thin-walled, 1-seeded fruit.
 valve, one of the pieces into which a dehiscent fruit splits.
 valvate, opening by valves; in aestivation when the parts just meet and do not overlap.
 venation, the veining of leaves.
 ventral, the opposite of dorsal.
 ventricose, inflated on one side.
 verrucose, warty.

versatile, attached by a point so that it may swing to and fro.
 verticil, a whorl.
 vespertine, appearing or expanding in the evening.
 virgate, having a glutinous surface.
 wedge-shaped, broad above, tapering to the base by straight lines.
 whorled, arranged in whorls or circles.

Genus *ALNUS* Tournefort.

Shrubs or trees with dentate or serrulate lvs & both staminate & pistillate fls in aments; the staminate pendulous; the pistillate erect, clustered: staminate fls 3-6 in each ax, consisting of a mostly 4-parted perianth, 1-4 sta & subtended by 2-4 minute bractlets; ova 2-celled; bracts woody, persistent, 5-toothed or erose; nut sm, compressed, winged or wings 1.
ALNUS RHOMBIFOLIA Nutt.

Branches slender, dark brown, scarcely dotted; lvs slight pubescent beneath, smoothish above, ovate or obovate to ovate-oblong, 2-3 inches long rounded at summit or acute, cuneate at base, irreg glandular-denticulate; fr'ng aments oblong, 6-8 li long, bracts rather thin above; nutlets a li long, very broad-obovate, with a thickened margin,

Genus *PÖPULUS* Tournefort.

Large trees with soft light wood: buds varnished with a fragrant resin: leaves broad, petioles long, often compressed vertically, & glandular: aments lateral, expanding before the leaves, cylindrical; bracts lacerately fringed; cx an oblique, discoid cup, its margin entire: sta 8-30: ova superior; sty very short, bifid; stig large, 2-lobed; cap 2-valved, 2-celled.—Latin: populus—the people, being often on the highways. Aspen, Cottonwood.
PÖPULUS FREMONTII S. Watson.

Tree with a broad hd of wide spreading branches, 6-15 m hi; lvs deltoid-orbicular, 4-10 cm long, somewhat broad-

er, crenate or sinuate-crenate, abruptly acute at apex, truncate or subcordate at base, g or y'ish-g on both surfaces; male aments 25-35 mm long; sta 60 or more, anth dark r; pistillate aments 5 cm long, loosely fld; ova glabrous; cap on pedicels 4 mm long, minutely rough-tuberculate. SBer! SD!

The common cottonwood of So Cal; Variety WISLIZENI Sereno Watson.

Lvs sharply acuminate, truncate or slight-cuneate at base; stam aments with shorter pedicels & less dilated thin discs, pist aments very slender, 2-6 li long; disc 2 or 3 li broad; cap ovate to ovate-oblg, somewhat angled, 3- or 4-valved, 4 or 5 li long, on slender pedicels 2-8 li long.

Baja! Cruz, LA, SD, SBer Co.

PUPULUS TRICHOCARPA T. & G.

Tree with a broad hd of ascending branches, 8-15 m hi; lvs ovate or oblong-ovate, rounded at base, acute at apex, serrulate, dark g & shining above, pale beneath, 5-8 cm long, on terete petioles, 3-5 cm long; male aments 3-5 cm long; disk oblique, bearing 40-60 sta, with p anth; pistillate aments 5 to 7 cm long, loosely fld; ova hoary tomentose; cap 3-valved

Black cottonwood; Cruz. Ha U 70. Da 16. Rosa.

Genus SALIX Tournefort.

Trees, shrubs and undershrubs, with com long narrow acute lvs & persistent or early decid broad or minute stipules; stam aments dense, erect, spreading or drooping, their fls with 1-11 sta with fl distinct or united below: pist com erect or spreading; ova sessile or short-stipitate; sty short or filiform, with 2 entire or 2-cleft stig; cap 1-celled, 2-valved; sd num, minute. Willow.

SALIX ARGOPHYLLA Nuttall.

Tree or large shrub forming clumps, young twigs puberulent, branches nearly glabrous & very tough; bark turning from brown to y or orange before fl'ng: lvs

narrow-lanceolate, 3 cm long, 1-2 wide, closely sessile, entire or rarely minutely & remotely denticulate, clothed equally on both sides with an appressed silky pubescence; stipules 0 or very minute on vigorous shoots; aments surpassed by their fls peduncles, 3-5 cm long 1-2 cm thick, often in pairs or in 3's at ends of branches: scales oblong, obtuse in stam aments, narrower & more acute in pist, glabrous on back, crisp hairy on margin & toward base, erose above; lower half of fl densely crisp hairy; cap lanceolate, covered with straight appressed silky hairs, closely sessile; stig sessile, oblong & about twice as long as thick; mature cap often becoming nearly glabrous.

Abrams, Fl LA 102.

SALIX EXIGUA Nuttall,

Sm shrub or becoming a sm tree; the branches light brown; lvs 4 cm long, 1-2 wide, y'ish, closely sessile, entire or nearly so, canescent when young, com becoming quite glabrous at maturity, very narrowly elliptic, veins very indistinct; stipules 0; aments 2-5 cm long, on ped about as long, appearing with lvs, rather densely & even-fld, sometimes the lower fls remote; scales of stam ament oblong to obovate, in pist narrower and longer, smooth or more or less crisp villous on margins; cap closely sessile, lanceolate, glabrous, light g; stig short & thick, sessile, sometimes even appearing slightly sunken in apex of cap.

Abrams, Fl LA 102.—Interior valleys.

Variety VIRENS Rowlee.

Leaves 10-12 cm long, 1 wide, nearly glabrous, veins very conspicuous on both sides, distinctly denticulate; stipules large, oblong denticulate; aments large, pist 4 cm long, 1 thick, sometimes in 3's at ends of the long lly shoots.

Abrams, Fl LA.—SBer (Wright).

SALIX LAEVIGATA Bebb.

Tree 10-15 m hi; branches r'ish-br;

lvs lanceolate to oblong-lanceolate, serrulate, glabrous above, more or less glaucous beneath, 8-12 cm long, glabrous; petioles about 1 cm long; puberulent above & somewhat grooved; male aments com flexuous, 5-7.5 cm long; bracts more or less elliptic, woolly at base, glabrous & pallid toward apex; sta 5-6; fil pubescent below; cap conic from a thick base, acute, glabrous, on pedicels 3-4 times as long as the gland; stig nearly or quite sessile, emarginate.

SBer (Parish 546); Cruz; Rosa. Da 16.
SALIX LASIANDRA Benth.

A middle-sized tree with rough bark; lvs rather broadly lanceolate, 7-15 cm long, abruptly tapering at base, acuminate at apex, sharply & closely serrulate, pale beneath, petioles glandular at base of blade; stipules sm, glandular-serrate; aments on long peduncles, the pistillate 5-7 cm long; bracts of the stam y, lish, toothed; sta com 5; ova glabrous; stigma nearly sessile, bifid; cap lanceolate, 6-8 mm long on pedicels 2 mm long.

Anderson, Zoe 1:41, 42, desc a hybrid form.

Abrams, Fl LA 101. LA river.
Da 16. San Francisco.

Variety LANCIFOLIA Bebb.

Lvs tapering reg from nr the roundish or subcordate base to a long attenuate point; petioles very glandular; stipules on vigorous young shoots large & glandular-serrate, on fl'g branches sm & decid; scales in stam ament acute, glab, in pist broader, hirsute & dentate.

SBer (Parish 546). Da 16.

SALIX LASIOLEPIS Benth.

SBer (Parish 675); Baja; Cruz; Da 16.
San Francisco.

SALIX LONGIFOLIA Muhl.

LA; Cruz; CD; Ba. la.

SALIX SESSILIFOLIA Nutt.

Variety HINDSIANA Anders.

SBer (Parish 640).

HOSACKIA HAYDONI Orcutt.

"Suffrutescent, 6-12' high or more, the slender stems woody at base, at first slightly spreading, then recurving inward and slightly intertwining, forming a loosely-compact bush, glabrous or near-

ly so throughout: leaflets 3 or less, oblong, obtuse, 1-2 mm. long: fl. single or more rarely in pairs, short pedunculate, 2 mm. long: calyx of equal length, the teeth narrowly subulate, erect, $\frac{1}{4}$ - $\frac{1}{2}$ as long as the tube: pod but slightly incurved, usually twice the length of the persistent calyx, 1-seeded: seed dark olive-green, $2\frac{1}{4}$ mm. long, slightly curved.

I take pleasure in dedicating this delicate species to Mr. Marion D. Haydon, in return for his hospitality and for his directing my attention to various forage plants whose valuable qualities had previously been unsuspected. Collected in April, 1889, growing among the rocks in a canyon leading into the Colorado desert, on the old stage line from San Diego to Ft. Yuma. With *H. glabra*, Torrey, this plant is commonly known as deer weed, but its smaller growth will render it less valuable for cultivation and it is apparently too limited in its distribution to assume importance as a wild forage plant."—Orcutt, West American Scientist, vi, 63, Jl 1889.
TRICHOSTEMA MICRANTHUM A. Gry.

Span hi, cinereous-pubescent; lvs lanceolate, not costate-veiny; peds about as long as the 3-7-fld cymule; cx-lobes exceeding the tube, 1 li long; sta exerted. Bear.

TRICHOSTEMA OVATUM Curran.

"Villous-pubescent, 1-2° hi, branching from the base, branches ascending, virgate, leafy: lvs short-ovate, mucronate, very shortly petiolate, about as long as the internodes, lower surface ribbed by 3-6 strong nerves which follow the outline of the lf & terminate before reaching the margin: cymes shortly peduncled: cx densely villous: tube of the cor slender about 3 li long, twice the length of the cx; lobes villous externally: sta 6-8 li longer than the cor: sds tuberculate, spatulate-obovate in outline, densely

villous.—Bakersfield, Jl, 1884. Readily distinguished from *T. lanceolatum*, by its very sm fls & nearly round lvs.”—Curran, Cal ac b 1:154 (7 Mr 1885).

MONARDELLA ODORATISSIMA Benth

Cinereous-puberulent or minutely tomentulose, or nearly glabrous, but pale; a span to a ft hi: lvs from narrowly oblong to broadly lanceolate, entire or nearly so short-petioled, or the upper subsessile, firm in texture, both sides alike; veins inconspicuous or obscure: bracts thin-membranaceous, w'ish or p, nervose: cx teeth hirsute without and within: odor of pennyroyal.

Wash—SD Co! Nevada; Utah. Ha U 111.

MONARDELLA PRINGLEI A. Gray.

“E grege *M. lanceolatae* et *M. undulatae*, e radice annua ultrapedalis, mox multicaulis; foliis oblongo-lanceolatis acutiusculis basi attonuatis vix petiolatis integerrimis plerumque pollicaribus ramisque tenuiter puberulis, venis obscuris; bracteis villosis lato-ovalis subito tenuiter acuminatis plurinervatis albidis purpureo tinctis, venulis fere nullis; calycis dentibus subulato-lanceolatis acutis intus extusque hirsutis: corolla laete purpurea”—Gray Am ac pr 19:96 (30 O 1883).

Colton, Cal (C. G. Pringle).

MONARDELLA THYMIFOLIA Greene.

“Shrubby, much branched, a ft hi, soft-pubescent: lvs ovate, entire, 2-4 li long, on petioles of less than a li: hds sm, 15-25-fld: bracts herbaceous, ovate, rather acute, parallel-veined, their margins hirsute-ciliate: cx-teeth lanceolate, pubescent: cor 5-7" long, p'ish, tube much exserted, somewhat trumpet-shaped, twice as long as the limb.”—Greene, Cal ac b 1:211 (29 Ag 1885).

Cedros Island (Greene).

MONARDELLA VILLOSA Benth.

Soft-pubescent, or the hds and lower face of lvs villous, or sometimes the whole herbage glabrate, a span to a ft hi: lvs ovate, 5-14" long, all petioled,

from sparsely crenate-dentate to nearly entire; veins conspicuous, widely spreading; bracts ovate, foliaceous, more or less pinnately veined.

Nearly throughout Cal, near the coast. Baja mts (var.)!

Genus **CALAMINTHA** Tournefort.

Herbs or undershrubs chiefly of warm temperate regions, of various habit, flg throughout the summer.

CALAMINTHA PALMERI A. Gray.

Ann, of δ Acinos, habit and odor of *Hedeoma*.

Guadalupe (Palmer, Greene).

Genus **ACANTHOMINTHA** Gray.

One sp of SD mesas.

ACANTHOMINTHA ILICIFOLIA A. G. Rigid, 3-6 in. high: leaves broad, often cuspidate-toothed.

Genus **POGOGYNE** Bentham.

Cal ann, of low stature, sweet-aromatic; with oblong-ovate or oblanceolate mostly entire lvs, the lower narrowed into a petiole, the upper diminished into bracts, these & the cx usually conspicuously ciliate-bearded with hirsute or hispid hairs; fls verticillate-glomerate & sessile, at least the upper glomerules spicate or capitate; cx-teeth mostly 3-nerved: cor bl or vio-p, or paler; flg spring & summer.

POGOGYNE NUDIUSCULA A. Gray.

Fls in whorl-like clusters: stigmias nearly equal.

SD mesas!

POGOGYNE SERPYLLOIDES A. Gray.

Fls in long interrupted spikes: stigmias very unequal.

Humboldt co to Monterey. Quintin!

POGOGYNE TENUIFLORA A. Gray.

Guadalupe (Palmer).

SPHACELE FRAGRANS Greene.

“shrub 6° high: leaves ovate-oblong, obtuse, coarsely and irregularly dentate-hastate at base, 2-4" long of thin texture, loosely white-woolly beneath, glabrate above not resinous, agreeably aromatic: calyx open-campanulate, more than an inch long, its lobes triangular-lanceolate, as long as the tube. nutlets large, glabrous.”—Ge pit 1:38.

UROPAPPUS CLEVELANDI Greene.

Greene, *Erythraea* 1:137, based on *Calceolaria clevelandi*, Greene, *Cal* as b 2:153; *C. Parryi*, Greene l. c. 49, but not of *A. abnormalis* state, *C. plurisetata*, rGreene, Gray. "Probably will include, as an *Pitt* 1:34."

FERRARIA. A genus of the *Iris* family, mostly natives of South Africa.

F. undulata Linnaeus, *Sp. Pl.* ed. II. 1353 Cape of Good Hope. Introduced in 1755 to European gardens; curiously spotted evanescent blossoms, of a greenish-brown, produced in March and April, suggestive of some orchid flower.

HOKKERA, ORCUTII Greene.

"Scape stout, 1° or more high; leaves linear, flat or conduplicate, not terete; pedicels 5-15 I 1-2' long; perianth-segments oblong-lanceolate, twice the length of the short tube; free portion of the filaments about 2' long, the linear anthers nearly as long; staminodia wanting (?)." —Greene, *Bull. Cal. Acad. Sci.*, ii. 133 (Nov. 13, 1886).

OXYRIA DIGYNA Camptd.

Alpine sorrel. Ha U 74.

ARCTOSTAPHYLOS MANZANITA

Parry.

Manzanita is a Spanish name, the diminutive of *manzana* (apple), hence means a "little apple." The name is generally applied to all the species of *Arctostaphylos*, and a writer in *Meehan's Monthly* (3:85) uses the name *Arbutus Menziesii*. The manzanita once so common on the mesas back of San Diego, is *Arctostaphylos bicolor*. The shrub to which the name more especially belongs in California, and which sometimes becomes a small tree, is that named *Arctostaphylos manzanita* by Dr. Charles Christopher Parry—the *A. pungens* of the earlier writers on California botany. This manzanita is common from Mexico to Oregon, through the foothills and mountains, in dry, rocky soil. The fruit is a dull red, mealy, and pleasantly sub-acid, well-named by the Mexicans the "little apple," though botanically a near relative of the cranberry instead of the apple. The Indians gather the fruit in September in great quantities for food, and it is eaten freely by animals and birds. It makes excellent jelly, and the finest flavored vinegar, as clear as water, may be prepared from the fruit. The numerous other varieties of manzanitas all produce more or less similar edible fruit, and are all mostly small, straggly evergreen shrubs,

graceful in their own peculiar way, and bearing in earliest spring time a profusion of lovely white blossoms, sometimes blushing a rosy red in a snow-storm.

QUERCUS ENGELMANNI Greene.

The Englemann, or Post oak, is a small spreading tree, 40 feet high, with a trunk usually under 3 feet in diameter. Not rare near Pala, Fallbrook, the Potrero, and into Lower California, 20 miles or so from the sea.

EPHEDRA CALIFORNICA S. Watson. "Canatilla", Mountain tea, and tepopote.

(*vide* Havard), are names applied to several of the genus *Ephedra*. "They are popular remedies among Mexicans and frontiersmen in the treatment of syphilis and gonorrhoea, especially the latter. The decoction or infusion of the stems has an acid reaction and an astringent taste resembling that of tannin. It is used as an injection and internally; some caution should be observed as it has been known to cause strangury." (Dr. V. Havard, *vide* Proc. U. S. Nat. Mus. VIII. 504.) The species Dr. Havard refers to are *E. antisiphilitica* C. A. Meyer and *E. trifurca* Torrey, but the same remarks seem to apply equally well to our Californian species. It is often used as a substitute for tea, and is scarcely distinguishable in taste, except for an after-flavor, not unpleasant, reminding one slightly of catnip tea. It is in great renown as a blood purifier and many have volunteered to me their opinion that it was "better than sarsaparilla" and without an equal. I have never heard of unpleasant effects following its use. It is a valuable sedative. Experiments and analyses prove it to be not superior to *E. antisiphilitica*—which already has a place among American drugs.

FOUQUIERA GIGANTEA Orcutt.

In February, 1899, the writer collected some small plants of the "curio" tree, near the gold mines at Calmalli, Lower California; May 2, 1900, the last two were planted in the ground in San Diego, having been in a box during the interim; the longest branchlets on one of these was over a foot long and bearing green foliage when at last planted in the ground. As there is no natural rainfall for two or three years

at a time in the region where it grows, it is naturally well adapted to survive a long continued drouth: it is one of the most curious productions of the plant world, forming a tree often over 30 or 40 feet high, resembling a great carrot with its roots in the air. Dr. Albert Kellogg named it *Idria Colamariana*; later it was recognized as belonging to the genus *Fouquieria*.

Genus *ORCUTTIA* Vasey.

"Panicle somewhat spicate, with short, simple, alternate, sessile spikelets, somewhat distant below, and crowded toward the summit: spikelets many-fl'd, compressed: empty and fl'ng glumes much alike, with many prominent straight nerves, strongly toothed or lobed at the apex: paleat equalling its glume, narrow, lim, green on the strongly angled keels; anthers 3, styles 2, fil and styles projecting beyond the apex."—Vasey, bot gaz 19: 145.

ORCUTTIA CALIFORNICA Vasey.

"Plant dwarf, 2-4 inches high, annual; growing in small clusters of 1-20 or more culms from one root; culms variable in length in the same cluster, generally producing some small flowering branches from the lower joints; leaves 2 or 3, the sheaths open and inflated, striate; ligule obsolete; blade rather rigid, about 1 inch long, acuminate; leaves and sheaths sparsely pubescent; panicle about 1 inch long, simple, usually of 4-6 alternate sessile spikelets, the lower 2 or 3 rather distant, the upper ones crowded; spikelets 5-10 flowered, empty glumes sparsely pubescent, broad, about 2 lines long, scarious-margined, mostly 3 lobed, the 2 outer lobes longer, the lobes each 3-nerved; flower glumes a little exceeding 2 lines long, with 5 nearly equal, acute lobes, each lobe 3-nerved; paleat as long as its glume, hyaline, narrow, strongly keeled, dentate at apex. Sometimes several spikelets are clustered together at the apex of the culm, with only 1 pair of empty glumes for all. A dwarf grass collected near Quintin, by C. R. Orcutt, an ardent young naturalist, for whom the genus is named."—Vasey, Torr cl b 13:219 t 60 (N 1836).

LICHENES.

The following were omitted from page

245.

PLACODIUM MURORUM DC.

Sweetwater canyon, SD, on rocks! Hasse, *Erythea* 4:106.

Variety *MINIATUM* Tuck.

Hasse, *Erythea* 3:42, Los Angeles Co.

Variety *GYALOLECHIOIDES* Muell.

Hasse, *Erythea* 4:176, Los Angeles Co.

P. CINNABARINUM Anz.

A common rock lichen throughout the U. S. San Diego (Or 2179).

PLACODIUM BOLACINUM Tuck.

Mesas, SD, on pebbles (Or 2116). Hasse,

Erythea 3:42, Los Angeles Co.

PLACODIUM CERINUM Hedw.

On *Malvastrum Thurberi*, SD! Hasse, *Erythea* 3:42, Los Angeles Co.

PLACODIUM LUTEO-MINIUM Tuck.

SD, on earth (J. G. Cooper). Hasse, *Erythea* 3:42, Los Angeles Co.

PLACODIUM VITELLINUM N-H.

Hasse, *Erythea* 3:42, Los Angeles Co.

PLACODIUM FULGENS DC.

Near San Quint n, Baja! Greenland, Nebraska, Wyoming, Nebraska, on calcareous soils.

PYRENULA LACTEA.

San Diego!

PYRENULA PUNCTIFORMIS N-H.

San Diego, on *Pinus Torreyana*!

PYXINE PICTA Tuck.

On *Sambucus gaucæ*, Baja! S. C., Texas, Mexico.

RAMALINA CALICAEIS Fr.

Eastern U. S. from Canada to Mexico. Variety *FARINACEA* Schaer.

Hasse, *Erythea* 4:98, Catalina on twigs.

RAMALINA CERUCHIS De Not.

Hasse, *Erythea* 3:41, LA Co; 4:96, on shrubs near the coast (forma *cephalota* Tuck).

RAMALINA CRINITA Tuck.

"Thallus caespitose, r'gd, compressed, sub-dichotomous, linear-laciniate, at length much dilated, greenish-glaucous, the divisions smooth, interruptedly white-striate, and becoming lacucae, attenuate at the summits, and clothed at the margins more or less thickly with strong, solitary or clustered, finally branched, black fibrils; apothecia middline-sized to large (3-10 mm in width), subterminal and lateral, subpedicellate, varying as to smoothness as the thallus, the margins blackened; spores oblong-ellipsoid 5-20-5-6 mic." Tuckerman, Torr cl b 1:43.

Pt Loma, SD on *Euphorbia misera*! Todos Santos bay, Baja (Parry and O cutt).

RAMALINA HUMAJEA A-h.

On *Euphorbia misera*, Pt Loma, SD (Or 220). Todos Santos bay, Baja (Or 2152, on shrubs). Coast of (a), on rocks (Mezes).

Hasse, *Erythea* 4:150, Los Angeles Co.

RAMALINA INTERMEDIA Del.

Hasse, *Erythea* 4:98 on shrubs, Catalina

RAMALINA MENZIESII Tuck.

Baja (Or 2152); on rocks and shrubs!

Hasse, *Erythea* 3:41, Los Angeles Co.

RAMALINA POLIUNARIA Ach.

San Diego (Palmer).

RAMALINA RETICULATA Kremp.

Vancouver's Island (J. Macoun). Near El Cajon valley, SD Co. on *Quercus agrifolia* (Or), and near Todos Santos bay, Baja (Or 2155). Hasse, *Erythea* 3:41, LA Co.

RINODINA ANGELICA Stiz.

"Thallus similar to *R. oreina* Mass, but differing in size of spores: these 16-20 by 8-10 mic., short ellipsoid, obtuse. Hymenial structures blue with iodine. Thallus yellow with potassium hydrate. Mr 1893. On rocks, Santa Monica range, Los Angeles Co., Calif."

—Hasse, *Erythea* 3:43.

Hasse, *Erythea* 4:167, LA Co, on rocks.

RINODINA BOLODES Tuck.
Baja! SD, on earth (Or 2149).

RINODINA CONRADI Kaerb.
Europe. SF (Bolander). SD mesas, on pebbles! Hasse, Erythea 4:97, 107, on earth and rocks.

RINODINA OREINA Mass.
Hasse, Erythea 3:43, Los Angeles Co.

RINODINA RADIATA Tuck.
Mesas, SD, on stones (Or 2117). Near San Quintin, Baja (Or 2113). Hasse, Erythea 3:43, Los Angeles Co.

RINODINA SOPHODES Nyl.
Baja, on *Sambucus glauca*! SD (Or 2172). Throughout N. A., on trees, stones and dead wood. Hasse, Erythea 3:43, LA Co; 4:107.

RINODINA SUCCEDENS Nyl.
Hasse, Erythea 4:107, LA Co, on bark.

RINODINA THYSANOTA Tuck.
Hasse, Erythea 3:43, Los Angeles Co.

ROCCELLA LEUCOPHAEA Tuck.
SD, on shrubs, (Or 2168). Hasse, Erythea 4:150, LA Co, on *Lycium Calceum*.
Variety **MINOR** Tuck.
Hasse, Erythea 4:150, Catalina, on rocks exposed to ocean spray.

ROCCELLA PHYCOPIS Ach.
SD; Cape of Good Hope; Peru; Madeira; Cuba.

ROCCELLA TINCTORIA D C
Mexico, on rocks (Krempelhuber); Baja (Or); SD (Palmer, Or).

SCHIZOPELTE CALIFORNICA Fr.
San Diego (Palmer).

STEREOCAULON ALBICANS Nyl.
Pt Loma, SD! Guadalupe Island (Palmer). Not rare on the ground under bushes, mesas or canyons. Rocky mts, Colo. (Brandege).

STYLOGRAPHA PARALLELA Nyl.
San Diego mesas.

THELOCHISTES LYCHNEUS Nyl.
Forma **LACINIOSA** Cchaer.
Hasse Erythea 3:41, LA Co.

TCHRYSOPTHALMUS Norm.
Cosmopolitan. SD; Baja (Or 2146), on *Prosopis pubescens*. Hasse, Erythea 3:41, Los Angeles Co.

Variety FLAVICANS Wallr.
S. C. Texas, Mexico. Near San Quintin bay, Baja, very large, abundant, homely specimens, incrusting with salt and usually detached from the earth (Or 2148). Near Colton, Cal, on *Adenostoma* (Parry),—very delicate and beautiful specimens! Hasse, Erythea 3:41, LA Co.

THELOCHISTES PARIETINUS Norm.
SD (Or 2144). Shores of Lake Superior. New England, New York.
Hasse, Erythea 4:107—"forma terrestris, on moist coast rocks," LA Co.
Variety **POLYCARPUS** Tuck.
Cosmopolitan, SD (Or 2145).

UMBILICARIA PHAEA Tuck.
Hasse, Erythea 3:42, LA Co.

UMBILICARIA SEMITENSIS Tuck.
Hasse, Erythea 3:42, Los Angeles Co.

UPCULARIA GYPSACEA Nyl.
Hasse, Erythea 4:107, LA Co, on earth, San Diego.

UPCULARIA SCRUPOSA Nyl.
Hasse, Erythea 3:43, LA Co; 4:107, on

earth. SD! Throughout N. A.

USNEA BARBATA Fn.
SD, sterile, on fences (Or 2169.—N. A. Baja.

Variety HIRTA Fn.
Hasse, Erythea 3:41, LA Co; 4:106. SD sterile on *Adenostoma fasciculatum* (Or 2170), and other shrubs.

Variety RUBIGINEA Michoe.
San Diego (Or 2171).

USNEA JUBATA Fn.

USNEA OCHROLEUCA Fn.

VERRUCARIA CERASI Schrad.
Hasse, Erythea 3:44, on *Malvastrum Thurberi*, Los Angeles County.

VERRUCARIA INTERCEDANS.

Variety AETHIOBOLOIDES Nyl.
Hasse, Erythea 3:44, Los Angeles Co.

VERRUCARIA NIGRESCENS.
San Diego mesas on pebbles (Or)?

VERRUCARIA PAPILLOSA Kaerb.

Variety TERRESTRIS Arnold.
Hasse, Erythea 4:150.—"On earth; with minute black apothecia."

VERRUCARIA PLUMBARIA Stiz.
"Thallus smooth, whitish gray and darkening, spores colorless, bilocular, ellipsoid, each cell slightly constricted, 12-16 by 4-6 mic. Paraphyses distinct. Reaction with iodine; yellow to bronze with potassium hydrate. On various bushes, Santa Monica Range; frequent."—Hasse, Erythea 3:44. (Los Angeles Co., Calif.).

VERRUCARIA PUNCTIFORMIS Ach.
Hasse, Erythea 4:150. "On *Heteromeles*."

VERRUCARIA VIRIDULA Schrad.
Hasse, Erythea 3:44, Los Angeles Co.

Lichens. These diminutive plants are found in a great variety of forms and in abundance in the vicinity of San Diego, and southward along the coast of Baja California. The shrubs and bushes are often covered, especially in the vicinity of the sea where subjected to the influence of frequent fogs or moist ocean breezes.

Euphorbia misera, species of *Atriplex*, *Lycium*, and other genera are thus decorated,—the trunks and branches with the microscopic fruits of *Lecanora* and still more inconspicuous genera, while the tops are festooned and often almost concealed by the luxuriant growth of foliaceous species, *Ramalina*, *Rocella* &c.

The mesas around San Diego are prolific in earth forms, the hard sun-baked ground being largely colored with the

bright red, yellow, black, or white fruits and thalli of *Biatora*, *Rinodina*, &c.

The pebbles and boulders freely scattered over these mesas (and these remarks apply with equal force to the mesas of Baja California, at least as far as Lagoon Head) are also brightly colored with the thick red fruits of *Placodium bolacinum*, the black specks known as *Verrucaria nigrescens*, with the large black fruit of *Lecanora atra* with its broad white thallus, or with various broad patches of some foliaceous species—white, yellow, brown, or of some other tint or shade that harmonizes with its surroundings,—contrasting pleasantly with the reddish brown earth or the grey colored stones upon which they are comfortably seated.

The weather-stained shingles that Stockton used to roof the old mission of San Diego were highly colored with the commoner species of lichens when I first knew that historic edifice. Other roofs and fences of more recent origin are similarly decorated, and often prove of great attraction to the botanist as furnishing data relative to their rapidity of growth.

The humble home of the trap-door spider (*Cteniza californica*), securely closed by a neat fitting door, tightly held against possible intruders, is often found further concealed by a luxuriant growth of lichens. Whether the sagacious lady of the house is to be credited with their transplanting, as is claimed by some naturalists, or whether they themselves selected the site of their abode, and reached full maturity after the spider's house was built, are questions which it would be interesting to have settled.

Turning away from the close proximity of the sea, we find the rocks in the rugged canyons which break through the foothills covered with a multitude of equally bright and pretty lichens, which often actually lend color to the whole landscape. Thus the rocks at the head of the celebrated Cantitas canyon, in northern Baja California, are rich yellow

while the rocks in the San Telmo canyon, near San Quintin, Lower California, are white with lichens—whitened as if they had been haunted by sea fowl for centuries!

FUNGI.

- AECIDIUM TISSAE E. & E.
 PERIDERMIUM EPHEDRAE CKL.
 On *Ephedra Californica*, Valle de Las Palmas, Baja Cal (Orcutt).
 PEZIZA SCUTULATA L.
 Cuyamaca mt (Orcutt).
 PHOMA CALIFORNICA E. & E.
 PHYLLLOSTICTA SPHAEROPSPORA E. & E.
 UREDO ERIOCMAE E. & E.

Abbreviations and Signs.

- alt-ernate, one after another.
 ann-ual, flowering and fruiting in the first year or season and then dying.
 anth-anthropology, anthropological.
 aes—Agricultural experiment station
 agr-agrostology (Division of)
 Am—America, American.
 an-annual.
 B=Bulletin.
 bi-en-nial, requiring two years to attain maturity, then dying.
 cir-cular.
 Co: County.
 Da: Alvah A. Davidson, Plants of L. A. Co.
 D-A-U. S. Department of Agriculture.
 diam-eter.
 FCM—Field Columbian Museum.
 f—Figure.
 opp-osite, on opposite sides of the stem, in pairs.
 per-ennial, living year after year.
 pr—proceedings.
 Quintin: San Quintin bay, Baja.
 R=Report.
 so-society.
 sr—Series.
 U—university.
 W=West American Scientist.
 Zo—Zoology, zoological.
 O, none or wanting.
 Bibliographical words:—ae-academy; an-nals; biol-ogy; bot-any; description; enc-cyclopaedia; fl-ora; gard-en; gaz-ette; gen-era; hort-iculture; mag-azine; mon-ograph; mus-eum; nat-ional; nat-ural; pl-antae; pr-ceedings; qr-quarterly; rev-iew; sci-ence; scr-ies; sp-ecies; syn-opsis; t-abula (picture, plate); tr-ansactions.
 CNH, contributions from the U. S. National Herbarium.

Californian localities:—

For compactness many localities are designated by a single word or abbreviation, which the following will explain:

Baja: Baja or Lower California.
Bear: Bear valley, S Ber Co, 6,000-6,500 ft alt.

Cmall: a mining camp about 50 miles east of Scammon's Lagoon, Baja.

Campo: 50 miles east of S D.

Cantilles: a deep canyon opening upon the CD in northern Baja.

Cat: Santa Catalina Island, Cal.

CD Colorado Desert, Calif.

Cedros: Island, off the west coast of Baja.

Chollas: a valley partly within the limits of the city of S D.

Cruz: Santa Cruz Island.

Cuyamaca: Mts east of S D, 6,000 ft alt.

Gabriel: San Gabriel, LA Co.

Guad: Guadalupe Island off west coast of Baja.

Hanson's: ranch, mts Baja, 6,000 ft alt.

Jac: San Jacinto mts, Cal.

LA: Los Angeles, Cal.

Mohave: Mohave or Mojave desert.

Monica: Santa Monica: LA Co.

Pasadena: LA Co.

Potrero: a valley near the southern boundary of S D Co.

Rosa: Santa Rosa Island, Cal.

Rosalia: Santa Rosalia, east coast of Baja.

Santos: Todos Santos bay, Baja.

SBar: Santa Barbara, Cal.

SBer: San Bernardino, Cal.

SD: San Diego, California.

SF: San Francisco, Cal.

Colors:—**bk**-black; **bl**-ue; **crim**-son; **g**-green; **ind**-igo; **mag**-enta; **orange**; **p**-purple; **r**-ed; **scar**-let; **violet**; **w**-hite; **y**-ellow.

Countries:—**Af**-rica; **Ala**-bama; **Alk**-Alaska; **Ark**-ansas; **Ar**-izona; **Australia**; **BC**-British Columbia; **Braz**-il; **Cal**-ifornia; **Can**-ada; **Chil**-uhua; **Ct**-Connecticut; **Del**-aware; **Eu**-rope; **Fla**-Florida; **Ga**-Georgia; **Ia**-Iowa; **Id**-aho; **Ill**-inois; **Ind**-iana; **Ky**-Kentucky; **La**-Louisiana; **Mas**-sachusetts; **Md**-Maryland; **Me**-Maine; **Mex**-ico; **Mich**-igan; **Min**-nesota; **Mis**-sissippi; **Mo**-Missouri; **Mont**-ana; **NC**-North Carolina; **ND**-North Dakota; **Neb**-raska; **Nev**-ada; **NH**-New Hampshire; **NJ**-New Jersey; **NM**-New Mexico; **NY**-New York; **Oh**-io; **Ok**-lahoma; **Ore**-gon; **Pa**-Pennsylvania; **RI**-Rhode Island; **SC**-South Carolina; **SDak**-South Dakota; **Sib**-eria; **Son**-ora; **Ten**-nessee; **Tex**-as; **US**-United States; **Ut**-ah; **Va**-Virginia; **Vt**-Vermont; **Wash**-ington; **WVa**-West Virginia; **Wisc**-onson; **Wyo**-ming.

Measurements:—**ft**-feet; **in**-ches; **li**-nes; (12 to an inch); **cm**-centimetre (0.39368 inch); **dm**-decimetre 3.9368 inches); **m**-etre (39.368 inches); **mm**-millimetre (0.03937 inch) **mic**-romillimetre (1-thousandth of a mm—the unite of microscopic measurement).

Months:—**Ja**-nuary; **F**-ebruary; **Mr**-March; **Ap**-ril; **My**-May; **Je**-June; **Jl**-July; **Au**-gust; **S**-eptember; **O**-ctober; **N**-ovember; **D**-ecember.

Plant organs:—

ak-ene (or achene), a dry indehiscent 1-seeded fruit.

anth-er, the sac or sacs containing the pollen, the essential part of the stamen.

cor-olla, the circle of petals in a flower, found outside of the stamens, within the calyx.

Cx-calyx, the outer, usually green, whorl of the flower.

fil-ament, a thread in case of a stamen the stalk supporting the anther.

fl-ower; **fls**-flowers; **flg**-flowering.

fr-uit, the matured or ripened ovary with all its appendages or accessory parts as well as contents.

hd-head, of flowers, flowers in a globose cluster, being sessile and collected at the same point on the peduncle.

infl-orescence, a flower-cluster, or in particular the mode of arrangement of the flowers.

inv-olucre, a circle of bracts subtending a flower cluster.

lf-leaf; **lvs**-leaves; **lft**-leaflets, one of the divisions of a compound leaf.

ova-ry, that part of the pistil containing the ovules.

ped-uncle, stalk of a flower or flower cluster.

pet-al, one of the parts or divisions of a corolla, usually colored.

rt-root.

sd-seed; **sds**-seeds.

seb-ment, a subdivision or lobe.

sep-al, a leaf or division of the calyx.

sta-men, one of the male organs of a flower.

stig-ma, the receptive part of the style which secretes a sticky or viscid

substance.

style, the contracted or slender portion of a pistil between the ovary and the stigma.

PLANT IDENTIFICATION.

Perhaps no greater service can be done the rising generation in America than the establishment of a bureau where specimens of plants, insects, minerals, etc., could be sent, with a fair prospect of securing the correct names. Scientific activity has never been greater, and institutions glad to render such aid have never been more numerous. Yet even a professional botanist, with an acquaintance with specialists, and the specialists themselves, with all the available facilities of modern institutions, find infinite difficulties in their way. Botany is not an exact science, and its literature has become so intricate and cumbersome that no one can hope to fully master it. As the late Thomas Meehan has remarked, the greatest need at the present time is not more literature, but an index to what we already have. To render the subject still more difficult, there has arisen much controversy over nomenclature, until no one can be quite sure as to the names that should be used.

One writer (Heller, Muhlenbergia 1:135) remarks that he "can see no object in burdening literature with varietal or form names." Hence every albino must be ranked as a species, or remain nameless. Every distinct variety must be raised to specific rank or ignored. Even this could be borne, if botanists would refrain from describing specimens as species, but each must be allowed individual freedom, to describe new species of thunder, if he likes, as one notable American botanist has done.

Such a bureau as is needed, would require for the naming of American plants alone a library that would cost far more than \$100,000, an herbarium that would require years to form, and trained specialists with unlimited leisure and patience, to solve the problems that would confront them. A botanical garden on no mean lines would also be found indispensable to

the proper conduct of the work. Fools rush in where angels fear to tread—and this magazine is not yet equipped for the work outlined. We shall, however, from time to time give practical directions and advice to those seeking to take up botanical work.

As a possible help to the student, we have decided to give carefully compiled descriptions of the plants of the southwest, bringing together the many scattering descriptions as far as possible, with the hope that in time the beginner, by saving up these pages, will be fairly equipped to identify the native plants of the Golden State, and be able to judge for himself as to the rightful names for our trees and flowers.

Genus **TETRACOCUS** Engelmann. **TETRACOCUS DIOICUS** Parry.

Shrubby, dioecious; staminate flowers involucre on slender pedicels in the axils of the upper leaves of recent shoots; inflorescence with a prolonged central axis a little shorter than the leaves, and usually 2 or more unequally developed opposite branches, bracteate at base; involucre in a double series, persistent, with 7-9 short, rounded segments; stamens 7-9 long, exsert, inserted at the base of the involucre scales, encircling an irregularly lobed, central disk; filaments densely ciliate-pubescent at base, anthers exserted, broadly 2 celled. Pistillate flowers in the axils of lower leaves on recent shoots single pedicellate, pedicels thickening upwards, and bracteate near the middle involucre of 7-9 oblong, unequal segments in 2 series with 4 glandular scales on the inner surface; segments fragile at maturity. Ovary 4 lobed, densely tawny hispid, with 4 long, recurved stigmas. Capsule orbicular, broadly 4 lobed and 4 celled, the thin epicarp separating in valves from rigid cocci which part at maturity, the separate cells dehiscing at both sutures. Ovules 2 to each cell pendant from the upper placental column which persists as a rigid central axis after the rupture of the cells. Seeds by abortion 1 to each cell, smooth, oblong, conspicuously carunculate. Embryo with broad cotyledons and short, straight radicle immersed in copious albumen. Leaves narrowly lanceolate, nearly sessile with a somewhat decurrent midrib, smooth, rather rigid and inclined to curve on the upper side, mostly opposite or in ternate whorles, often fasciculate in the lower axils, and with short reduced branches on the lower shoots.—Parry, West Am. S. f. 1. p. 185.

CYPRIPEDIUM MONTANUM Dougl.

Leafy, 1-2 ft. high; fis 1-3; sepals and waxy twisted petals brownish, narrow, 1½-2½ in. long; lip oblong, white, p-veined.

SYRMATIUM DENDROIDEUM Greene.

"Shrubby, erect, 4-7° hi, with roughish brown at an 1 or 2 in thickness, & many sh ascending branches: branchlets angular, their growing parts more or less minutely appressed-silky, the pl otherwise glab, lfts 3, narrowly oblong, obtuse; umbels num, on short peduncles, not bracted cx 3-4' long, the triangular-subulate teeth $\frac{1}{2}$ as long as the nearly cylindrical tube; cor 4-6' long; pod $\frac{3}{4}$ ' long, slightly curved, 3-seeded; sds terete & straight. Hilli tops, among other bushes, on the higher parts of Cruz. Near S glabrum, but of entirely different habit, with much larger fls & fr, on short, rigid, crowded branchlets.—Greene, pittonia 2 146—referred to *Hosackia glabra* by Br Ca ac pr II 1 208, who says:—"Some of its forms are exactly the mainland plants."

Genus ACACIA Willd.

Fls perfect or polygamous, cx 4-5-toothed, pet more or less united below, sta num, exerted, free or united at base, anther sam, sty filiform, pod 2-valved or indehiscent, many-seed, compressed & membranaceous or more or less rounded & thickened; sds compressed, albumen 0. Shrubs or trees, oft spinose or prickly, over 400 sp; fls sm, in globose hds or cylindric spikes.

ACACIA GREGGII A. Gray.

A sm tree 10-20° hi, pubescent with spreading hairs or glab, unarmed or with sh scattered stout hooked prickles; lvs sh, of 2 or 3 pairs of pinnae 1' lg; lfts 4 or 5 pairs, oblong or oblong-obovate, inequilateral, rounded or truncate at summit, narrower below, 2 or 3 li lg, rather thick & with 2 or 3 straight nerves; fls in cylindric spikes 1-2' lg, the peduncles equalling or exceeding the lvs; pods compressed, curved, 3-4' lg, 5-7 li broad, attenuate at base to a short stipe & acute above, more or less constricted between the sds; the thin-coriaceous valves reticulated; sds $\frac{1}{2}$ ' lg, elliptical. SD! Baja! Tex

Genus ANAGALLIS Tournefort.

Low herbs with square sts, lvs mostly opp; ped ax, solitary: cx 5-parted: cor rotate, deeply 5-parted, longer than the cx, tube 0: sta 5, hirsute: anther introrse: cap globose, membranous, circumscissile: sds minute, flat on the back. Pimpernel.

ANAGALLIS ARVENSIS Linn.

Ann, diffuse, com much branched: sts 1-3 dm long, 4-8 ded; lvs ovate or oval, num, opp, sessile or somewhat clasping, obtuse or acutish, 5-20 mm long, bk dotted beneath; peds filiform, 1-4 em long, curved in fr: cx lobes keeled, rather rigid, sh'er than the crenate glandular ciliate cor seg: fls scar or salmon, com with a dark center, 4-6 mm broad, cap glab Baja; SD! Poor man's weatherglass, scar pimpernel, Eu.

MEDICAGO SATIVA Linn.

Sts erect from a deep per tap-rt, glabrous, 0-10 dm hi: lfts cuneate-oblong to oblanceolate, toothed above: fls many in a short raceme, violet: pod spirally coiled, unarmed. An occasional escape.

L, Sp Pl 2:778 (1753).

Type locality: European.

Davidson, *Erythra* 1:58, LA Co.

Parsons, *W Fls Cal* 332 t.

Abrams, *Fl LA* 210.

San Miguel Island. Alfalfa. Cult.

CD!

DALEA ARBORESCENS Torrey.

"A sm tree, much branched, somewhat spinose, the younger branches, lvs and cx densely hoary tomentose: lfts 1-3 pairs, obovate, approximate, 2 or 3" long: fls in short nearly sessile rather close spikes, p, 4 or 5" long: cx large, but shorter than the cor, the broader oblong or narrowly lanceolate teeth nearly equalling the tube."—Brewer & Watson, bot Cal 1:142. San Fernando mts (Fremont).

Gray, *Pl Thurber* 316.

DALEA CALIFORNICA S. Watson.

Shrubby, caescent with a fine appressed pubescence, sparingly glandular; the glands upon the peduncles sometimes prominent and prickle-like: lfts 1 or 2 pairs, decurrent upon the rachis, 1-1 $\frac{1}{2}$ " long, linear-oblong: fls p, 4" long, on short pedicels: cx $\frac{1}{2}$ as long, the ovate acute teeth shorter than the tube."—Brewer & Watson, bot Cal 1:142.

Watson, *Am ac pr* 11:132.

Parish, *Zoe* 5:113, CD, not Cajon Pass.

C D, near Banning (Parry).

DALEA EMORYI A. Gray.

"Shrubby, much branched, 2-5° hi, hoary tomentose throughout with a very fine pubescence: lfts 1-3 pairs, narrowly oblong to obovate, 2-4" long, the terminal lft much longer: spikes very short, pedunculate: fls 2 or 3" long; p: cx-teeth as long as the tube, a little shorter than the cor: ova pubescent."—Brewer & Watson, bot Cal 1:142.

C D; Baja; Arizona.

DALEA PARRYI Torr. & Gray.

"Herbaceous, very slender, puberulent or glabrate: lfts 6-10 pairs, obovate to oblong, 1-2" long, obtuse: fls 4" long, bright p, in loose elongated long-peduncled spikes: cx not $\frac{1}{2}$ the length of cor, caescent with short silky hairs; its teeth broadly ovate, acute, about equalling the tube: pod smooth."—Brewer & Watson, bot Cal 1:142.

Ft. Mojave (Cooper); CD; Arizona; So Baja.

DALEA SCHOTTII Torr.

"Shrubby, slender, nearly glabrous, somewhat spinose, the branches nearly glandless: lvs scattered, narrowly linear, 1' long: fls few, on short slender pedicels in an open raceme, sometimes solitary, p 4" long: cx $\frac{1}{2}$ as long, obscurely glandular; the teeth very short, acutish: ova pubescent, 2-ovuled: pod 4" long, with a single large sd."—Brewer & Watson, bot Cal 1:143.

Torrey, bot Mex B 53.

C D; Cajon de Santa Maria, Baja (Br).

DALEA SEEMANNI S. Watson.

"Near D. Greggii, shrubby, erect, diffusely much branched, the glandular-dotted branchlets finely tomentose: lfts 2-4 pairs, caescent with a very short subsilky pubescence, on a rachis 1-6" long, cuneate-oblong, obtuse, distinctly

glandular beneath. 1-2½ long; racemes shortly pedunculate, dense, ½-2' long; bracts lanceolate, acuminate, pubescent, nearly equalling the villous ex: cx-teeth very villous, broad at base, acuminate, as long as the turbinate tube; pet dark p. 3" long.—S. Watson, Am ac pr 22:470. Near Quintin! Sierra Madre (Seemann).

DALEA SPINOSA A. Gray.

"A shrub, much branched and very spinose, 4-15' hi; hoary with a minute appressed pubescence: lvs scattered, cuneate-oblong or nearly linear, obtuse, nearly sessile, 4-8" long; cx ½ as long, marked by a row of conspicuous glands, the broadly ovate obtusish teeth much shorter than the tube; ovules 6; pod twice longer than ex, 1-seeded.—Brewer & Watson, bot Cal 1:143.

Gray, Pl Thurber 315.

Torrey, Pac Ry R 7:9 t 3.

Arizona; CD; Calamujet, Baja (Br).

Asagraea spinosa Baillon, *Adansonia* 9:232.

ASTRAGALUS ANTISELLI Gray.

Sts slender, erect, 3-5 dm hi, cinereous-pubescent, lfts 21-29, linear-oblong, crowded, 4-8 mm long, glabrous above, pubescent beneath, raceme loosely few fld: fls sm, gish-w; cx-teeth half the length of the campanulate tube; pod thin, linear-oblong, compressed, glabrous, 1-celled, 15 mm long, 4 mm wide, tapering to a strip of about ½ its length.

Abrams, Fl LA 223.—On grassy hillsides in our interior valleys. Ap.

ASTRAGALUS BRAUNTONII Parish.

Sts lignescent at base, 1-1.5 m long, erect or reclining; herbage canescent throughout with a short soft pubescence; lfts 15-20 pairs, oblong, 2-5 cm long; fls and fr reflexed, in compact many-fld spikes: cx-teeth slender, equalling tube; cor light p; pod sessile coriaceous, oblong, 1 cm long, 2-celled by the nearly complete infolding of the dorsal suture to near the apex; sds 2-3.

Abrams, Fl LA 223. *Monica mts* (Hasse, Branton).

ASTRAGALUS LENTIGINOSUS Doug.

"A span to 1' or so hi, the tufted sts soon diffusely spreading, from slightly to hoary-pubescent: lfts 11-19, from obovate or orbiculate to oblong, ¼-½' long; peduncle short: fls and fr mostly crowded in the oblong spike or raceme: cor either w or p, nearly ½' long; pod turgid-ovate and pointed, more or less incurved, usually puberulent, occasionally purplish-mottled, seldom 1' and sometimes only ½' long. Wash; SBER mts (Parish 1496).

Brewer & Watson, bot Cal 1:147.

Astragalus ineptus A. Gray, Am ac pr 6:525.

Astragalus diaphanus Douglas, in Hooker, Fl 1:151.

Variety **FREMONTII** Watson.

"More hoary-pubescent, with looser-fld spikes, usually on a longer peduncle: st flexuous."—Brewer & Watson, bot Cal 1:147. SBER deserts (Parish 1278). Variety **FLORIBUNDUS** Gray.

"The ordinary form well developed."—Brewer & Watson, bot Cal 1:147.

Genus ARALIA Linnaeus.

Herbs or shrubs, with alt digitate or compound lvs & sm fls in a com simple umbel, these either 1, racemed or panicled; pedicels jointed; bracts sm; cx 5-toothed or entire; pet 5, ovate, slightly imbricate; sta 5; disk depressed, rarely conical: ova 2-5-celled; sty free or united at the base, becoming divaricate; stig terminal; fruit laterally compressed, becoming 5-angled, fleshy externally; endocarp chartaceous.

ARALIA CALIFORNICA S. Watson.

Herbaceous, unarmed & nearly glab, stout, 2-4 m hi, from a large thick rt; lvs bipinnate or the upper pinnate, with 1-2 pairs of lfts, these cordate ova c. 10-20 cm long or more, sharply acuminate, simply or to less serrate with sh acute teeth; uppermost lvs ovate lanceolate; umb-1s in loose terminal ax. comp and or simple raceme: st panicles which are 3-8 dm long, more or less glandular-tomentose. rays num, 8-12 mm long; lvs of several linear bractlets: fls 3-4 mm long; disk & stylopodium obsolete; sty united to the middle; fr about 4 mm long, r'ish, becoming nearly bk.

Genus AZOLLA Lam.

Small moss-like plants with pinnately branched sts covered with minute lubricate, 2 lobed lvs & emitting rootlets beneath; sporocarps of two kinds, borne in the axils of lvs: smaller sporocarps ovoid, containing 1 macrospore at base; other sporocarps globose, producing from base many pedicelled sporangia, containing several masses of microspores.

AZOLLA CAROLINIANA Willd.

Plant 4-12" broad, much branched; lvs with ovate lobes, the lower r'ish, the upper g with a r'ish border; macrospores with a minutely granulate surface; masses of microspores barbed at tip.

A microphyllae Kaulf & A mexicana Sch. N. Y. to Fla.; Arizona; Cal.; Oregon. California.

AZOLLA FILICULOIDES Lam.

California; Washington; Florida.

Genus SELAGINELLA Beauvois.

Sporangia ax., minute, subglobose, opening transversely; some com containing 4 gl base macrospores, others, smaller & more num, filled with num microspores. Over 60 sp, of tropics in great part, moss-like with slender branching sts & sm lvs arranged in 4 or more ranks.

SELAGINELLA RUPESTRIS Spring.

Sts prostrate or ascending, rather rigid, 2-12' long, vaguely or subpinnately branchin: lvs glaucescent, close y imbricate & appressed, lanceolate, scarce 1" long, convex & grooved on back, bristly-tipped & acute; spikes 4-angular, macrosporangia abundant, intermixed with smaller ones, two microsporangia, Baja SD! Af. Ea. Asia—occurs in num f. rns.

SELAGINELLA BIGELOVH Underwood.

Parish, *Erythra* 6:85.—Montane region of southern California, abundant on dry soil, usually in the shelter of shrubs or stones, or on shaded banks, throughout the hill region, and ascending the Mts. to 7,000 ft. alt."

SELAGINELLA WATSONI Jnd.

Underwood, Torr cl b 25:127, Jac. Parish, Zee 5:71, Bear.

ASTRAGALUS LEUCOPSIS T. & G.

Rattle-weed. Sts erect, 3-5 dm hl, tomentulose-canescens; lfts 10-15 pairs, oval or oblong, obtuse, 1 cm long or more; spike-like racemes, 3-6 cm long or sometimes more; fls 12 mm long; ex-tube campanulate, teeth subulate, more than half as long as the tube; pod thin, bladderly, oval, unequally sided, 2-3 cm long, tapering to a stipe 12 mm long or less.

Abrams, Fl LA 223.

Genus SPECULARIA Helster.

Subgenus **DYSMICODON**. Flowers dimorphous. Capsule rather short, straight, not disposed to split.

SPECULARIA BIFLORA A. Gray.

Stem slender, simple or branched from the base; leaves sessile, ovate or oblong, crenately toothed, the upper reduced to lanceolate bracts; fls 1, rarely 2, in each axil, nearly sessile; corolla purple. Cat. **SPECULARIA PERFOLIATA A./D. C.**

Stouter, with clasping cordate leaves.

CEREUS. As recognized by many botanists, this genus contains over 200 species, natives of tropical America, the West Indies, and Galapagos Islands, including what others class as separate genera—*Echinocereus*, *Echinopsis*, and *Pilocereus*. Until better known, many of the varied forms cannot with certainty be referred to the proper sections of this great genus, which is characterized by Bentham and Hooker as follows:—Calyx tube produced beyond the ovary; lobes numerous, exterior scale-like, interior elongated, spirally imbricated; petals indefinite, larger than the calyx lobes, spreading, stamens numerous; filaments adnate to the base of the calyx, the inner free; ovary exserted, scaly; style filiform; stigmata 5 to indefinite; fruit scaly or tuberculated; flowers lateral, often night-blooming.

CEREUS ALAMOSENSIS Coulter.

Sina spinosa of Sonora; 2-8 feet high, 2-10 branches from the base with joints 1-4 feet long, flexuous or decumbent, often forming arches and rooting at the joints, and thus spreading over wide areas, sometimes 100 feet in diameter or more; ribs about 7, slightly tuberculated. The bright red flowers slightly resemble those of *C. flagelliformis*.

CEREUS BRANDEGEEI Coulter.

Caespitose, often 2 feet or more across, consisting of few to many cylindrical heads mostly 6 or 8 inches high, 1½-2 in diameter, with 8 or 9 interrupted, strongly tuberculate ribs. The young spines frequently tinged with brilliant magenta, the older spines variable in color, often of an ivory white with centrals of a deep magenta—making a very handsome effect. "Spines at first variegated, dark and reddish, becoming more or less ashy-

black; radials 10-16, rigid, terete, radiant, mostly uniform, 8-12 mm long; centrals almost always 4, very stout and prominent, 3-4 cm long, cruciate, conspicuously angled and compressed, sometimes twisted, the lowest usually the most flattened and sword-like (2-3 mm broad); flowers red, 4-5 cm long, with conspicuous woolly and spine-bearing areolae over the ovary and lower part of the calyx. Type in hb Brandegee, El Campo Allemand and San Gregorio, Baja California."—Coulter, Cont U S Nat hb 3:389 (1 Ap 1896).

This has much the same aspect as *Cereus Engelmannii*, with similar variations in the color of the spines, and bears a similar edible fruit.

C. Emoryi Engelmann, Am. Jour. Sci. II. 14:338. The Velvet cactus occurs in thickets often a hundred feet in diameter, near the seashore from Los Angeles county, California, south to Las Huevitas, in Baja California (Brandegee). In a San Diego garden it has attained a height of 10 feet, with unusually thick joints, but the stems are commonly prostrate, 2-3 feet long, 1½ inch in diameter; flowers abundant near the top of the branches, rather short, yellow, 2 inches or more wide; fruit 1½ inches in diameter, densely covered with numerous pulvilli, each bearing 20-25 stiff yellow spines, from 2-6 lines long, 3 of them stouter and longer than the rest, often an inch long; seed 1.2-1.4 line long, with a very prominent keel and linear hilum. (5-10)

C. Engelmannii. This beautiful Cushion cactus was discovered by Dr. C. C. Parry, who named it in honor of his life-long friend, Dr. George Engelmann, whose botanical studies had been especially directed toward the Cactaceae. It was found near San Felipe, in the mountains east of San Diego, California, and in Arizona, and also occurs in Utah, Nevada, and Baja California. In the Mohave desert large oval masses containing 75 or more heads from one root have been observed, but commonly 4-8 heads occur loosely in a cluster, 3-12 inches high, 2-3 in diameter; ribs 10-14, interrupted; spines usually whitish, often brown or varicolored, straight or flexuous, angular, radials 12-16, an inch long or less, the laterals longest, the 4-8 centrals 3 inches long or less; flower about 2 inches across, open night and day for about a

week before closing; scales of the ovary 45-50, the lower ones minute, the upper sepaloid, brownish, half inch long, nearly one-fourth wide at base; axils of the scales bearing 12-15 or more short white spines imbedded in wool, forming spiny areolae in fruit, easily detached at maturity but not deciduous; sepals 12-15, brownish along the midvein outside; petals of equal number, magenta color, 2 inches long, oblanceolate; stamens many, nearly an inch long, filaments magenta, stigmata 12, green, at first erect; flowers in May or June, fruit ripening in July, the crimson pulp of a delicious strawberry flavor; seeds black. (5-20)

CEREUS ERUCA Brandegee.

"Prostrate, very rarely branched, 13-ribbed, 3-4 feet long, 3-4 inches in diameter; rooting from the under side of the older growth, decaying at one end and growing forward at the other, generally in patches of 20-30, probably originating from a common center; areolae 4-6 mm in diameter, separated about the same distance; spines about 20, stout, ash-colored, less than an inch long, the exterior cylindrical, the interior stouter, angular, somewhat the lower central one much flattened, more than an inch long, angular, strongly reflexed. Common on the sand of Magdalena Island and about San Jorge, Baja California. Its local name is 'chilenola.' The manner of growth, with up-lifted heads and prominent reflexed spines, gives the plants a resemblance to huge caterpillars."—Brandegee, *Cal ac pr* sr 2, 2:163, t 7.

C. giganteus. "Erect, columnar, simple or with a few erect branches toward the upper part; ribs 18-21; areolae ovate-orbicular, woolly when young, bearing 12-16 exterior slender spines and 4-6 much stouter inner ones, the former $\frac{1}{2}$ -1 $\frac{1}{2}$ inches long, the latter 1-2 $\frac{1}{2}$ inches; flowers lateral near the woolly top of the stem and branches, 3-5 inches long and 2 or 3 in diameter, open day and night; stigmata 14-18, slender, greenish-yellow; fruit 2.5 or 3 inches long, beset with 30 or 40 small scales, woolly in their axils, bursting irregularly by 3 or 4 valves and dropping the greenish white pulp with its black seeds. Common along the Rio Colorado, on rocky slopes, and eastward through Arizona. The woody skeleton consists of long rods, corresponding to sinuses between the ribs, in younger plants distinct, in older ones connected by a network of

fibers and forming a hollow cylinder. The luscious fruit is an important article of food to the Indians."—Engelmann, *Botany of California* 2:450. (20-100)

The 'Suwarro' or giant cactus of Arizona and Sonora, 25-50 feet high, 1-2 in diameter, thickest about the lower third where generally the 2 or 3 alternate or sometimes opposite branches start, and from thence slightly taper toward the summit. Stems and branches marked by superficial transverse furrows, indicating, as it seems, the annual periods of growth, forming rings of 4-8 inches in height. Branches unequal, and always of less height than the main stem, mostly 5-6 feet long, with 12-18 ribs.

CEREUS MARITIMUS M. E. Jones.

"Caespitose, heads 5-20 in a bunch, which is often 2-3 feet in diameter and 8 foot high; each plant cylindrical, ovate or in small specimens almost round, 1 $\frac{1}{2}$ -4 inches long, three-fourths to 1 $\frac{1}{2}$ wide; principal spines 4, straight, angled and somewhat twisted at base, 1-1 $\frac{1}{2}$ inches long, beneath these are 8-10 very short spines which are either straight or hooked; spines light brown, except when young, then red at base, springing from a very short but copious wool; flowers light yellow, about 1 $\frac{1}{2}$ inches long and wide; petals oblanceolate or obovate, rounded, margin irregular; ovary obovate sessile or short stalked, covered with bunches of white or yellow, often hooked, short spines and crisped wool; fruit not mature. Encenada, Baja California."—Jones, *Am naturalist* 17:373 (S 1883).

Cereus gomeratus et *flaviflorus* E. C. Sanborn; *C. maritimus* Coulter, in part.

CEREUS PACIFICUS E.

Cereus phoeniceus var. *pacificus* Engelm. MS.

"Plant caespitose, 1-4 feet in diameter, few to 500 short stems (6-9 inches long and 2-2 $\frac{1}{2}$ inches in diameter) in each, forming dense oval cushions; stems with 10-12 obtuse ribs, shallow intervals, and an equal number of internal ligneous fibers; radial spines 1-12 and of an average length of one-fourth inch, the 4 central spines larger, three-fourths to 1 inch long, slender, white; flower an inch across, including the ovary 1 $\frac{1}{4}$ inches long, the oblong spatulate serals bright red with a broad purplish mid vein; ovary and fruit with 25-30 spiny areolae; fruit fleshy with numerous small seed; stamens slender, as long as anthers; anthers small, red; style three-fourths inch long; stigmata 6-8, greenish."—Or W 2:46 (Je 18'6).

Type locality, near Todos Santos bay, Lower California.

CEREUS PALMERI Engelm.

"Stems branching, 3 or 4 angled, 12-15 dm high; spines in greenish-brown bunches; fruit greenish-yellow. Its areolae linear 5-8 stout spines. Type, Palmer 70 of 1869 in hb Mo bot Gard. Sonora."—Coulter, *Cont Na hb* 3:101.

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