

CONTRIBUTIONS  
to  
WESTERN BOTANY,  
No. 13  
NEW SPECIES AND NOTES.

*Cheilanthes gracillima* var. *aberrans* Jones is a form of *C. Fendleri* with pectinate-toothed scales and approaches *C. myriophylla*.

*Gilia Wrightii*. Gr. My No. 5247, from Springdale, Utah, is a low shrub having the appearance of being biennial or short-lived. The heads are subcorymbose or single, and with leaves gradually reduced above to short bracts. The leaves are mostly entire on the upper stems but with short lobes near the root, rarely all entire. Flowers smaller than in the variety described below, about 4" long, bracts wider, mostly lanceolate, otherwise as in the variety. This also includes my No. 5297n from Pahria Canon Utah, also from LaVerkin Utah and probably the material from Elk Ranch on the upper Virgin river at 7000° alt. This species would seem to belong to the section *Elaphocera* with oval anthers, but *Gilia Gunnisoni*, *pumila* and *polycladon* belong in *Heugilia*. *Gilia densifolia* is closely allied to *G. Wrightii* though with linear anthers.

*Gilia Wrightii* var. *pectenisecta*. n. var. This is my No. 10464 from Mack Colorado May 27 1908, growing on shelving rocks among junipers. It is a low shrub, 6-12' high, tufted with many slender and erect stems 4-12' high, simple above, minutely woolly, leafy to the top and with a single leaf subtending the mostly solitary and dense head. Leaves all pinnately divided from the base or at least with no lobes arising

above the middle, terminal leaflet the longest, lobes 6"-2' long,  $\frac{1}{2}$ -1" wide, nearly smooth and green, acerose and rigid. The order of lobing is the reverse of that in *G. congesta* where the leaves are lobed above the middle. Bracts and bracteal leaves conspicuously white-woolly with long and pointed flat hairs, the edges of the nearly linear bracts seemingly pectinate because of the dense hairs along the edge, tips of the bracts and calyx lobes green and smooth and acerose. Calyx about 5" long. Corolla about 6" long, with widely spreading, entire, obovate, and water-lined lobes 3" long, white. Some specimens have leaves with lobes 1-3" long. Stems nearly equably leafy to the tip. My No. 10583 from Grand Junction May 22, 1895, is more condensed and more ashy.

*Gilia floccosa* var. *ambigua* n. var. Slender, erect, widely branched. Heads small. Flowers blue, 5-6" long. Anthers narrowly elliptical, exserted. Leaves entire, floccose-woolly mostly throughout. Plants about a foot high. Victor, California May 17 1903, N. 10011, also No. 9917 from Bear Valley, California, July 19, 1900.

*Gilia virgata* var. *Yageri*. n. var. Plants slender, widely and much branched. Heads small. Flowers blue, 6-9" long, with broad oval and lined lobes. Anthers broadly linear. Leaves entire or with one or two pairs of lobes at base. This is the desert form. Skull Valley Arizona No. 10250, Palm Spring California No. 10249 Wickenberg Arizona No. 10253, Franconia Arizona No. 9918, Moapa Nevada No. 9919, Hillside Arizona No. 10279, Congress Junction Arizona No. 10251. I regard the types as Nos. 10279 and 10253. Also I refer here No. 9936 from Yucca Arizona May 17 1884, La Verkin Utah No. 5189q and 5194, Springdale Utah No. 51211, Yager's north of Tucson Arizona No. 9935, Rio Tonto Basin Arizona No. 9934.

*Gilia arenicola* n. sp. Needles California May 3 1884 No. 10447, Kelso California May 2 1906 No. 9955, growing in sand. Also gathered by Mrs. Brandegee in the Mojave region. Section *Dactylophyllum*. Lower leaves opposite, upper alternate, all about 6" long, mostly forked above the middle, sometimes 3-lobed near the base, each lobe 1-nerved, and the base 2-3-nerved according to the number of lobes, rigid, acerose, green, ciliate. Internodes short and the whole plant congested, 1-2' high, with several slender branches which have single and short-pedicled flowers in all the axils but the lowest. Leaves not reduced above, bracteal ones the same. Flowers apparently

vespertine after the fashion of Section Linanthus, cream-colored, very slender corolla mostly shorter than the calyx and rarely a line longer. Calyx in fruit 3" long, lanceolate-oblong, hyaline except the 5 green ribs which end in rigid and slightly spreading teeth  $\frac{3}{4}$ " long, acerose, smooth, fringed. Stamens slender, not dilated, about as long as the white and narrowly ovate anthers which do not reach the sinuses. Pistil shorter than the stamens: style shorter than the stigmas. Pods elliptical, filling the calyx, many seeded. Seeds oblong, angular, very small, much curved, reticulate-lobulate, with a close coat and without mucilage or spiracles, reniform. Embryo white, strongly curved, in copious albumen. Radicle about twice as long and about as wide as the cotyledons. This appears just intermediate between the two sections Linanthus and Dactylophyllum. I refer to the type also No. 124572 Univ. of California from Waterman, Cal., collected, I suppose, by Mrs. Brandegee.

*Gilia campanulata* Gray. This evidently belongs to the Dactylophyllum section instead of Eugilia where Gray put it. Pedicels sometimes nearly 1' long. The species extends south to the Amargosa desert. Its relationship with *G. Parryi* and *demissa* is evident. *Gilia filiformis* also belongs between this and Linanthus and not in Eugalia.

*Phlox Douglasii* var. *salina* n. var. Whole plant whitish but smooth, bases of leaves mostly with a few hooked prickles or very stiff hairs which are reflexed. Leaves rigid, fleshy, 3-6" long,  $\frac{1}{2}$ -1" wide, with short and sharp prickle, edges a trifle revolute and so the leaf seems 3-nerved, linear or rarely some of them oblong-lanceolate, sometimes minutely roughened when young. Stems densely cespitose and with imbricated leaves. Flowers mostly single and terminal, on short and leafy branches. Calyx linear, 4" long, cleft to the middle, not at all hyaline except in a narrow line running down between the lobes which are green rigid acerose linear and erect. Corolla 9" long, with purple throat and white and nearly orbicular lobes 3" long. Stamens short-oblong. Stamens and style not exserted, style about half as long as the corolla tube. This grows in highly alkaline soil along with *Distichlis* and *Sueda*. Cherry Creek Nevada July 13 1891 and June 19 1906, Nos. 10474 and 9982.

In the following borage the writer is not convinced as to whether the genera split from Krynitzkia are valid or not, it is

his opinion that they are not valid. He is equally doubtful as to the validity of the proposed species, but they seem to be good.

**Krynnitzkia mensana n sp.** (*Oreocarya*). This may be a form of *Shockleyi*, Cæspitose perennial with many short stems and short and leafy-bracted racemes in a close panicle, 4-6' high, proper stems very short. The panicle begins at the end of the root leaves. Pubescence very dense on calyx, less so on the leaves, on the stems and inflorescence weakly and finely setose. Bracts 6-9" long, linear, surpassing the flowers. Corolla white, 3-4" long, linear, surpassing the flowers. Corolla white, 3-4" long and equaling the calyx, limb 2-4" wide. Fruiting calyx broadly ovate, 4" long with deltoid-triangular lobes not reflexed, with age. Nutlets ovate-oblong, 1½" long; back much arched and very convex; angles reduced to sharp and wavy lines; dorsal face deeply and sharply rugose in irregular transverse lines and forming pits, slightly tuberculate; ventral face very convex and deeply and bluntly rugose: groove broadly triangular-oblong deeply excavated and occupying about a quarter of the face, and bordered by a thick and white and pectinate ridge which goes to the base of the nutlet. Emery Utah No. 5445p May 16 1894.

**Krynnitzkia oblata n sp.** (*Oreocarya*). Tufted perennial, 1-1½° high. Leaves oblanceolate, acute, 3-5' long, on margined petioles longer than the blades, papillate, green, shortly pubescent with some fine and some coarse short and appressed hairs, stems and inflorescence shortly hispid with widely spreading hairs. Inflorescence a narrow thyrus with short and scorpioid racemes rarely an inch long. Flowers all bracted. Bracts lanceolate, 4-6" long. Corolla about a quarter longer than the calyx, limb 2" wide, tube 4-6" long. Fruiting calyx broadly ovoid, 3-4" long, lobes triangular, not reflexed nor opening. Nutlets abruptly arched in the middle to 80° (like those of *O. suffrutescens*), 1" high, forming an oblate sphere, back barely convex, very tuberculate and somewhat rugose in the middle, shining, angles very sharp and thin with a rudimentary and raised wing, ventral face strongly keeled nearly to the base, where it stops a little short and drops abruptly into the transverse groove, sides concave and minutely tuberculate. No. 3759 El Paso Texas, April 23, 1884. Peach Springs, Arizona, No. 6684, May 26, 1884.

**Krynnitzkia multicaulis** var. **setosa** n var. Pedicels stout

and about  $\frac{1}{2}$ " long. Sepals 3" long. Pubescence never yellow. Setæ about 1" long and less dense. Nutlets like the type but with a very faint line of scarcely visible tubercles near each margin. Plants 6-8' high, erect. Calyx explanate. Inflorescence of very short spikes, uniserial, of 3-5 flowers. Corolla very short and small, 2-3" long, white,  $1\frac{1}{2}$ " wide. Near Fort Cove Utah June 27 1901, growing under junipers.

**Krynnitzkia multicaulis** var. **abortiva**. (Greene Pitt. 3 114.). This is a well marked variety abundantly connected with the type by intergrades from New Mexico to Arizona. The peculiar incurving of the nutlets described by Greene is characteristic of the species as well, the "peculiar stipe-like projection" of the ventral side of nutlet does not exist, it is the usual abrupt ending of the ventral keel common in the whole multicaulis group. The keel rises higher as it approaches the base of the nutlet when it drops abruptly into the transverse scar which is set in a deep recess.

**Krynnitzkia glomerata** var. **Virginensis** n. var. Biennial, many-stemmed, erect. Pubescence of leaves very dense and compact, setose hairs very few. Thyrsoidally branched above. Nutlets broadly ovate, obtuse, nearly straight, 1" long, shiny, sparsely rugose and tuberculate, with raised central ridge somewhat transversely rugose, margin with distinct but narrow wing all around, ventral side rugose and with a raised white edge surrounding the subulate groove which ends in a transverse line a quarter of the way from the base. Pedicels 3-4" long. This is No. 5195a from La Verkin Utah May 8 1894 at 3500° alt. I would also refer to this No. 5124 from Diamond valley Utah.

**Krynnitzkia depressa** n sp. (Oreocarya). Densely cespitose perennial. Root leaves many, densely tomentose and appressed strigose, spatulate, 1-2' long, petioles very broad and as long as the blades. imbricated and long-hairy. Spikes nearly simple, barely surpassing the leaves, and with flowers appearing as if whorled, and on short and stout pedicels  $\frac{1}{2}$ -1" long. Calyx broadly ovate, 2" long, open, with triangular lobes, densely pubescent but not evidently setose. Corolla 2" long, white, as long as the calyx, limb 2" wide. Nutlets deltoid-ovate, a little incurved, with sharp edge and obtuse apex, back concave below and slightly keeled above, closely tubercled all over, a few of the tubercles raised but rarely rugose, shining, ventral face very deeply rugose, the deltoid-triangular

scar going to the base and occupying about a third the face, and open. This plant is readily mistaken for *K. fulvocanescens* but the broad and short calyx and lobes separate it. Aurum Nevada No. 6692, June 20 1893 at 7300° alt. on slopes. Also Muncey Nevada No. 6713, Vermilion Utah June 4, 1901, also Monroe Utah and Marysvale. The latter at 9000° alt.

*Krynnitzkia fulvocanescens* var. *Idahoensis* n. var. Racemes few flowered and loose. Pedicels 2-4" long. Calyx lobes linear, 4-5" long, apparently not opening when ripe. Nutlets finely and deeply petinate-rugose but not transversely rugose, dorsal groove not at all bordered by white ridge. Corolla not longer than the calyx. Inflorescence yellow. No. 6474, near Weiser Idaho April 28 1900. These short-flowered forms are so often found alongside of the normal ones that one must assume that there is a genetic connection between them. There are many forms in western Utah and Nevada that approach this form.

*Krynnitzkia mixta* n sp. This may be one of the multitudinous forms of *K. barbigera*. 1-2° high. Whole plant strigose with slender very long and ascending white hairs. Base of calyx densely white-hairy and shaggy as well as sparsely setose with slender setae from a small and pustulate base. Plants paniculately branched from the base, annual, erect. Spikes dense and scorpioid in age, the fruits contiguous, spreading. Flowers very narrow, with scarcely any limb, 1½" long. Fruiting calyx 4-6" long, with ovate base and short and spreading tips closely constricted below, linear, green above. Seeds usually 2, deltoid, with an acuminate tip, shining, 1" long, coarsely muricate, truncate below, scar deltoid, excavated, groove open to tip, attached half way up, forks of scar as long as the attachment in the groove. Mescal Mts. Arizona May 24 1890. This is the type. I also refer here material from the Needles Cal. May 3 1884. St. George Utah, No. 5106 April 26 1894, Silver Reef Utah May 3 1894, Hackberry Arizona April 25 1903, No. 3832 May 6 1884, Meadow Valley Wash Nevada April 28 1904. One nutlet is apparently firmly attached to the gynobase.

*Krynnitzkia decipiens* n. sp. (*Cryptanthe*). This seems to be intermediate between *dumetorum* and *angustifolia*, and closely approaches *intermedia*. Slender annual with filiform bractless spikes 3-8' long in twos or threes. Leaves linear, papillose, 1-2' long. Flowers not over 1" long and minute. It has the calyx of *K. oxycarya*, 1½-2" long, lobes filiform, green,

spreading at tip, erect, appressed, oblique. Nutlet 1, ovate-lanceolate, incurved, faintly papillose but more evident above, groove open at base, attached nearly to the top, 1" long, obtuse-angled. Pubescence appressed and short. The type is my material from Yucca Arizona May 14 1884. Other material is from Hackberry Arizona, Darwin Cal., Meadow Valley Wash Nevada.

*Plagiobothrys humifusa* n. sp. This may be an extreme form of *tenellus*. Annual, nearly prostrate, softly pubescent throughout. Radical leaves ovate, 6" long, nearly sessile. Stem leaves the same but sessile, 4-6" long. Proper stems very many and very short, ending in simple or geminate and slender spikes 3-4' long, all leafy-bracted and loosely flowered in fruit when the flowers are 6-9" apart below. Calyx nearly hemispherical, 2" long, open in fruit, lobes triangular and calyx cleft below the middle. Nutlets cruciform, incurved to a half circle, shining, faintly rugose, sparsely set with sharp papillæ, dorsal ridge evident, angles double and denticulate with sharp papillæ, otherwise as in *P. tenellus*. Plants 3-6' long. Chat California 5000° alt. June 18, 1897. The roots secrete the usual purple dye, but the stems and leaves do not.

*Lupinus prunophilus* n. sp. Habit of *L. Burkei*. Densely tufted, erect, stout and coarse, 2° high. Lower petioles often a foot long, upper often only an inch long. Stems and leaves sparsely pubescent with spreading hairs. Upper side of leaflets smooth. Leaflets about 7, 2-3' long, spatulate-ob lanceolate, strongly nerved, green. Stems simple. Spikes neatly sessile, very dense, about 6' long. Flowers purple, 6" long, very broad, keel not exserted; banner smooth. Calyx short-shaggy, spurred, on a slender and shaggy pedicel 6" long. Bracts linear-lanceolate, shaggy, 6-8" long, persistent. Pods about 18" long, 6" wide, 5-6-seeded, shortly-appressed-pubescent, fleshy, narrowly oblong, triangular-acute. Seeds 2½" wide, light-colored. This grows on dry mountain slopes Middle Temperate life zone along with *Amelanchier* and *Prunus demissa*.

*Astragalus lutosus* n. sp. White River Utah next the Colorado line, 5200° alt. May 25 1908. This grows on very poor soil in white shale in the barest places where there is very little soil. Perennial from a thick erect and fleshy root which at an inch or so beneath the surface puts out many slender and scaly stems 1-4' long. Flowers few, white, in a head which is nearly sessile in the axils. Banner white, 4" high, arched