

## MISCELLANEOUS DIAGNOSES

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The present paper is devoted to the description of several unrecognized novelties collected by Mr. H. D. Ripley and the writer in the Southwest. In the preliminary studies the herbarium of Pomona College has, with the kind permission of Dr. P. A. Munz, been consulted on various occasions. The writer is also especially indebted to Miss Alice Eastwood, who has loaned indispensable and valuable material from the collections at California Academy of Sciences. These are more fully acknowledged in the text. Types of all proposed entities are deposited in the herbarium of the Academy.

*Psoralea* (*PEDIOMELUM*) *epipsila* Barneby spec. nov. *P. mephitica* S. Wats. varietatique suæ *retrorsæ* (Rydb.) Kearney & Peebles proxime affinis, sed ab ea calyce dimidio longiori, ab hac corolla haud exserta dentibus calycinis æquilonga, ab ambabus vero caulibus manifeste caulescentibus, stipulis infimis haud imbricatis, foliolisque superne discoloribus glaberrimis evidentius nigro-punctatis facillime separanda.

Perennis e radice elongato fusiformi farinaceo paucicipite, præter corollas atque superiorem foliolorum paginam undique sericeo-villosa: caulibus haud numerosis erectis simplicibus vel prope basin parce ramosis, 2—7 cm. longis, angulatis, ut pedunculi petiolique pilis brevibus subincurvis crispulis villisque longioribus patulis commixtis molliter strigoso- et villosocinerascentibus; stipulis membranaceis, late ovatis acutis vel acuminatis, 5—11 mm. longis, mox deciduis: petiolis circa 5 cm. longis, horizontaliter patentibus: foliis palmatim (3—) 5-foliolatis, foliolis breviter petiolulatis, obovatis obtusis vel acutiusculis haud raro mucronulatis, basi cuneatis, 1.5—2.5 cm. longis, obscure penninerviis, ciliatis et inferne pilis adscendentibus subappressis sericeo-cinereis, pagina superiori conspicue discolori, saturate viridi glaberrima, glandulis parvis fuscis impressis multipunctata: pedunculis petiolo folii suffulcrantis superatis erectis, in racemum 2—4 cm. longum abeuntibus: bracteis saltem inferioribus latissimis, 10—13 mm. longis, prope apicem sæpe 2—3-dentatis, dente terminali elongato-caudato, superioribus angustioribus plerumque integris, omnibus intus glabratis extus villosis ciliatisque: pedicellis filiformibus, circa 3 mm. longis, longe villosis: calycis intus glabri tubo membranaceo postice valde gibbo, 5—6 mm. longo, dentibus acutis adeo heteromorphis, superioribus 4 subæquilongis 7 mm. longis anguste lineari-lanceolatis, inferiori circa 8 mm. longo latius lanceolato ad medium 1.5—2.5 mm. lato: corolla dilute violacea dentibus calycinis æquilonga, præter magnitudinem ei *P. mephitica* omnibus partibus persimili: semine oblongo 4—5 mm. longo, 2.5 mm. lato, lævi nitido.

UTAH: red clay mesa 17 miles east of Kanab, towards Jepson Spring, Kane Co., alt. 5500 ft., 6 June 1942, Ripley & Barneby

\* Leaflets of Western Botany, Vol. III, pp. 193-208, February 18, 1943.



No. 4832, type, Herb. Calif. Acad. Sci. No. 300410. ARIZONA: Buckskin Mts., Coconino Co., 19 June 1890, *Marcus E. Jones* (Pomona Coll. Herb. Nos. 27985 and 27986, annotated as "*P. castorea*").

*Psoralea epipsila* is one of the group of species with enlarged tuberiform roots to which belong the Indian Breadroots or Pommés Blanches of the prairie states, and which were segregated by Rydberg as the genus *Pediomelum*. In general structure it resembles *P. mephitica* S. Wats. rather closely, but differs in being very distinctly caulescent and in the conspicuously bi-colored leaflets which are cinereous beneath but bright green, glabrous and punctate on the upper surface. In the size of the flowers *P. epipsila* is intermediate between *P. mephitica* and its variety *retrorsa* (Rydb.) Kearney & Peebles, but in both of these the corolla is manifestly, though in the former but shortly, exerted from the calyx-lobes, while in ours the banner barely equals the lowest and largest lobe. Jones' ample specimens from Arizona bear both flower and fruit and it is from them only that the character of the seed has been observed. They should perhaps have been regarded as the type, but the vague indication of locality, presumably somewhere in the northern foothills of the Kaibab Plateau south of Kanab, led me to discard them in favor of our own collection.

***Polygala subspinosa* S. Wats. var. *heterorhyncha* Barneby, var. nov.**  
*P. subspinosa* sensu Munz, Man. S. Calif. Bot. 282 (1935); Jepson, Fl. Calif. 2: 414 (1936); Jaeger, Desert Wildflrs. 123, fig. 267 (1940); Blake, Contrib. Fl. Nev. 18:2 (1941), omn. pro parte quoad loc. calif.; Barneby, Leaf. W. Bot. 3:111 (1942), non S. Wats.

A var. *typica* nob.\* carinæ rostro longiori ventraliter profunde emarginato nec integro, floribus majoribus, foliis caulinis mediis arcte sessilibus nec breviter petiolatis, præsertim late ellipticis basi cuneatis nec spatulato-ob lanceolatis inferne attenuatis diversa.

NEVADA: denuded alkaline calcareous foothills of the Spotted Range towards Frenchman Flat, southeastern Nye Co., alt. 3200 ft., 13 May 1941, *Ripley & Barneby* No. 3427, type, Herb. Calif. Acad. Sci. No. 286840; between Bonnie Clare and Beatty, Nye Co., *M. F. Gilman* No. 2549 (Pomona Coll. Herb.). CALIFORNIA: Chloride Cliff, Death Valley, Inyo Co., *Jaeger* No. 1101 (Pomona).

\* *Polygala subspinosa* var. *typica* Barneby, nom. nov. *P. subspinosa* S. Wats., Amer. Nat. 7:299 (1873), sensu stricto.



As will be seen from the bibliography already cited, *P. subspinoso* var. *heterorhyncha* is the plant which in recent years has passed as typical among California botanists, but, while in habit it very closely resembles the type, it may be separated by a number of significant details, chief among which is the structure of the keel. In *P. subspinoso* var. *typica* the keel is terminated by a straight or very slightly declined blunt and entire beak which is 1.5—2 mm. in length: the corresponding organ in var. *heterorhyncha*, on the other hand, is emarginate on the lower side at about the middle with a deep, rounded notch or fold 0.5—0.75 mm. in diameter, the margins of which are elevated and variously undulate. The whole beak is usually longer than in the type (up to 3 mm.) and occasionally a second smaller tooth is produced near the apex. In drying or in age the beak sometimes becomes strongly declined and the notch is thereby closed, but in the fresh flower it is always evident and may be discerned obscurely in Jaeger's figure (1. c.). In addition to this peculiarity the flowers of the variety are larger, 13 mm. long as opposed to a maximum 10.5 mm. in the var. *typica*, and the broadest cauline leaves, particularly those subtending the lower branches of the inflorescence, are perceptibly broader, strictly sessile at the cuneate base, and inclined to be elliptic in outline rather than oblanceolate or spatulate and narrowed to a very short petiole as in all other specimens examined. Also the fresh herbage of var. *heterorhyncha* is glaucescent, a character often lost in the herbarium. The altitude at which the variety occurs is considerably lower.

Through the kindness of Miss Eastwood, who loaned all the material of *P. subspinoso* at the California Academy together with authentic specimens of *P. lasseniana* Heller, it has been possible, in conjunction with the collections at Pomona College, to study the species throughout almost its entire known range, and the following observations have been made. Some variation is evident in the development and persistence of the spines, the former attributable probably to the age of the specimens and the latter to considerations of habitat, for, while plants growing on barren alkaline slopes or mesas (the usual environment) generally spring from a subterranean caudex and are truly herbaceous, those inhabiting stony slopes (e. g., Ripley & Barneby No. 3562) have an aerial caudex and growing stems intricately enlaced by



the persistent spiny branches of the preceding year. The flowers are somewhat variable in length (9—11 mm.) and the sepals may be obtuse, acute or acuminate. The only variation which has been found to be correlated with distribution, however, is that of pubescence on the exterior surface of the outer sepals. In all material from the Navajo Basin, including that from Kanab, Utah, the sepals are entirely glabrous: west of the Wasatch, however, and reaching through middle Nevada into Lassen County, California, occurs a race indistinguishable from the former save for the fact that the fine hirsutulous pubescence of the herbage and pedicels extends upwards along the midvein of the outer sepals, occasionally recurring along the dorsal edge of the upper petals. To this race belongs *P. lasseniana* Hel.

In publishing *P. lasseniana* (Leaflet West. Bot. 2:230,—1940), Mr. Heller gave no diagnosis beyond a brief indication that his species was related to *P. acanthoclada* A. Gray. No mention was made of *P. subspinosa*, but this must surely have been an oversight, for, although the plant is connected with *P. acanthoclada*, the affinity is comparatively remote, while I find that the isotype before me (*Heller No. 15213*) can be distinguished from *P. subspinosa* of New Mexico and Utah only in the puberulence, sometimes very obscure, of the exterior sepals, and not at all, by any detail of significance, from Nevada specimens of the species. It would seem therefore that *P. subspinosa*, as accepted hitherto, should be divided into two varieties, var. *typica* nob. from transmontane northern California, Nevada, Utah, and northern Arizona and New Mexico, and var. *heterorhyncha* which inhabits a much more restricted area in the deserts of southwestern Nevada and the adjacent Death Valley region of California. If it should be found desirable to separate the two races of *P. subspinosa* var. *typica* indicated above, the identity of the type, about which some ambiguity exists in the literature, will have to be established beyond question. That Watson's original specific concept included both forms is evident from the phrase in his description "sepals naked or ciliate" and may also be inferred from the provenance of the three collections (Silver City, Nevada, *Kellogg*; Arizona, *Palmer*; Kanab, *Mrs. Thompson*) from which the characters of the species were drawn. Dr. Jepson (Fl. Calif., l. c.) for unstated reasons took the Ellen Thompson



collection from southern Utah as the type, but, as this is cited last by Watson, the choice of Kellogg's gathering from Nevada as made by Wooton & Standley (Contrib. U. S. Nat. Herb. 19:392,—1915) is probably more correct. None of the three collections has been examined by the writer, but there is little doubt that at least the Kellogg element will prove to belong to the race with hirsutulous sepals, and therefore, that *P. lasseniana* is exactly synonymous with *P. subspinosu* var. *typica* in the most restricted sense.

Additional stations in California, all from Lassen County, are indicated by the following specimens in the herbarium of the Academy: Surprise Valley, *Monnet No. 898*; south of Secret Valley on the road from Susanville to Alturas, *J. Kelly in 1937*. To the distribution of the species in Nevada as elaborated by Blake (1941, l. c.) should be added Lincoln County (Highland Range, *Ripley & Barneby No. 3498*).

*Cryptantha* (OREOCARYA) *semiglabra* Barneby spec. nov. nuculis acutangulis lævissimis *Jamesianis* Pays. et corolla alba exserta nuculisque contiguis *C. capitatae* (Eastw.) I. Jtn. manifeste affinis, sed ab ea caulibus imis sericeo-subtomentosis, foliis superne glabratis nec strigoso-cinereis basalibus brevioribus in caulina æquilata sursum vix decrescentibus, thyrso fructifero laxo angusto minime capitato demum 4-plo longiori, calyce minus accrescenti limboque corollino permagno diversissima.

Herba perennis cæspitosa e radice lignosa valida caudiceque ramoso petiolis foliorum evanidorum persistentibus inferne induto caules brevissimos steriles crebre foliatos florigerosque elatos numerosos emittenti orta: caulibus validis demum circa 2 dm. altis erectis flexuosis sulcatis ad ipsam basin villis longiusculis sericeis subtomentosis superne strigosis vel inflorescentiam versus setisque horridis pallidis plus minusve dense obsitis: foliis basalibus in apice caudicis ramulorum congestis erectis oblanceolatis, 3—7 cm. longis, 3—6 mm. latis, inferne attenuatis sed imo in petiolum dilatatum vaginantem abrupte expansis, caulinis numerosis in inflorescentiam sursum paulo decrescentibus sessilibus latius lanceolatis, omnibus sæpissime conduplicatis, pilis appressis in pustula demum accrescenti crustacea insidentibus subtus strigosis, pagina superiori saturate viridi omnino glabrata vel ad margines setoso-ciliatas parce strigulosa: racemis numerosis pedunculatis paucifloris, in thyrso primum adeo congesto mox elongato fructifero angusto laxoque 10—14 cm. longo, circa 3 cm. lato, dispositis, infimis remotiusculis conspicue bracteatis supremis haud raro aliquantulum cymosis: pedicellis circa 3 mm. longis, ut racemorum axis calycesque setis 1.5—2 mm. longis patule urticaceo-horridis strigosisque: calyce ad anthesin circa 9 mm. longo, in lacinias 5 anguste lanceolatas fere ad basin abrupte obconicam fisso, fructifero ad 12 mm. usque longo accrescenti, laciniis erectis vel conniventibus nervo valido prominulo percursis: corollæ



albæ tubo exserto 11—12 mm. longo, 1.75 mm. diametro, sursum vix ampliato, limbi saltem 1 cm. lati lobulis suborbicularibus, fornicibus erectis obtusissimis flavis 1.25 mm. longis obscure papillois: antheris 1.5 mm. longis, nunc ad medium tubum nunc in faucibus ipsis affixis: nuculis 4 contiguis ovatis obtusis, 4 mm. longis, stylo persistenti multo superatis, undique lævissimis nitidis griseolis, lateraliter acutangulis vel subalatis, faciebus dorsali 3 mm. lata, leviter prorsus inflexa, lateralibus 2 mm. latis, cicatrice arcte clauso 3.25 mm. alto, marginibus haud elevatis.

ARIZONA: on detrital clay hills about 2 miles east of Fredonia, northern Coconino Co., south of Kanab, Utah, alt. 4900 ft., 6 May 1942, flor., *Ripley & Barneby No. 4363*, and *ibid.*, 5 June, fruct, *No. 4829*. Types in Herb. Calif. Acad. Sci., Nos. 300408 and 300409.

*Cryptantha semiglabra* has the white corolla with tube exserted from the calyx and the smooth and shining, ovate, contiguous nutlets which together characterize *C. capitata* (Eastw.) I. Jtn. (*Oreocarya capitata* Eastw.), a species known only from the Grand Canyon of the Colorado and evidently its nearest relative. Through the generosity of Miss Eastwood the writer has had the opportunity of examining three sheets of the latter, including the type, *Eastwood No. 5969*, and cotype, *Eastwood & Howell No. 1005*, and a careful comparison has shown that, although closely allied, *C. capitata* and *C. semiglabra* differ in several important particulars. The most immediately striking difference lies in the distribution of the pubescence. In *C. semiglabra* the base of the stems and the uppermost parts of the caudex-branches are densely clothed in long, fine, silky hairs which become somewhat matted and hence subtomentose; the stems are strigose and become setose in the inflorescence; the lower surface of the leaves is coarsely strigose with stout trichomes seated upon a pustular, at length enlarged and crustaceous base, while the upper surface is glabrous or bears a few closely appressed filiform hairs toward the hispid-ciliate margins. In *C. capitata*, on the other hand, the base of the stem is not at all tomentose nor more markedly pubescent than the extremities, and the leaves are uniformly canescent-strigose above. The shining green upper surface of the leaves of *C. semiglabra*, as recognized in the specific epithet, gives a characteristic aspect to the plant, but it can scarcely be regarded as of the first importance when it is remembered that the allied *C. Jamesii* (Torr.) Pays. varies in the



same respect into an extreme and similarly glabrate form which has been described as *Oreocarya pustulosa* Rydb., and more reliance has been placed on other criteria.

In *C. capitata* the flowers are loosely congested into an inconspicuously bracteate, head-like, cymose glomerule about 2 cm. in diameter, sometimes with one or two depauperate axillary racemes below, but in any case, even in fruit, the inflorescence does not exceed 3 cm. in length. The fruiting inflorescence of *C. semiglabra*, however, is a long narrow thyrsus of pedunculate, few-flowered scorpioid racemes, reaching a minimum length of 10 cm. at maturity and conspicuously leafy-bracted in the lower half. The leaves of *C. capitata* are linear-lanceolate, the broadest and longest being those clustered on the rootstock, while in ours the lanceolate cauline leaves are quite as broad and nearly as long as the basal, more numerous than in *C. capitata* and scarcely diminishing upwards as in that species. In addition *C. semiglabra* differs in the dimensions of the less markedly accrescent calyx, as well as in the broader limb of the corolla.

The flowers of *C. semiglabra*, as in many species of *Oreocarya*, are dimorphic in respect to the insertion of the stamens. In most of our specimens the anthers are attached at a point on the corolla-tube a little above or nearly at the middle, but in a few they are placed just within the orifice of the throat and immediately below the fornices. The tube itself is also somewhat variable in length, with limits of about 9 and 12 mm., but this is not correlated with the position of the stamens.

*Cryptantha semiglabra* was found quite locally in the badlands east of Fredonia where it occurs on sterile red hills, in gullies or on steep clay banks, associated with *C. echinoides* (M. E. Jones) Pays., the common *Oreocarya* of the region, *Asclepias cryptoceras* S. Wats., *Astragalus Pattersonii* A. Gray and *Phacelia Palmeri* Torr. All these species are commonly confined to stiff detrital soils of rather high alkaline content, and the *Cryptantha* is no doubt adapted to the same conditions.

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*Gilia salticola* Eastwood, nom. nov. This name is suggested to replace *G. alpina* Eastwood, Leaf. West. Bot. 2: 282 (1940), which is a later homonym of *G. alpina* (Wedd.) Brand, Das Pflanzenr. IV. 250: 107 (1907).—Alice Eastwood.