

STUDIES IN THE BORAGINACEAE, XVI *
SPECIES CHIEFLY FROM MEXICO AND
WESTERN UNITED STATES

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Cordia coyucana, sp. nov.

Frutex 3 m. altus ramosus; foliis 4–7 cm. longis 1.5–3 cm. latis 3–5 mm. longe petiolatis saepe infra medium latioribus, apice acutis, basi acutis obtusisve, margine in tertiam partim inferiorem integris alibi evidenter dentatis (dentibus 0.3–1 mm. altis), supra viridibus subvelutinis pilos majores gracilis mollis 1–2 mm. longos ascendentis basi incrassatos et pilos perinconspicuos minutos basi conico-incrassatos gerentibus, subtus griseis tenuiter tomentosis evidenter costatis et nervatis; inflorescentia capitato-congesta in ambitu elliptica densissima ca. 50-flora maturitate 10–13 mm. crassa 15–25 mm. longa; pedunculo 3–4 cm. longo extra-axillari e latere caulis erumpenti; calyce ad anthesin 4–5 mm. alto hispidulo, lobis triangularibus 1 mm. longis 1–2 mm. latis acutis nullo modo appendiculatis; corolla alba 6 mm. longa extus glabra intus in tubo villulosa, limbo ad 5 mm. diametro, lobis ca. 2 mm. longis et latis apice emarginatis margine crispatis; filamentis ca. 3 mm. supra basim corollae affixis ca. 2 mm. longis.

GUERRERO: Coyuca, shrub 3 m. tall, on hill, 1935, *Hinton 8156* (TYPE, Gray Herb.).

A very well marked species of the Section *Varronia*. It is readily distinguished from all known species by the following combination of characters: large very dense ellipsoidal capitate-congested pedunculate inflorescence, indument of simple (non-stellate) hairs, unappendaged calyxlobes, and small corollas. None of its congeners in Mexico or Central America seem closely related to it.

Cordia passa, sp. nov.

Planta laxa suffruticosa; ramis fruticosis gracilibus, juventate foliosis simplicibus 5–15 cm. longis 1–1.5 mm. crassis ascendentibus e caudice ramos procumbentis efoliatis composito erumpentibus; foliis 3–10 mm. distantibus 2–15 mm. longe petiolatis; lamina 15–55 mm. longa 5–30 mm. lata infra medium latiore, basi obtusa vel acuta, apice acuta, margine utroque conspicue 5–8-dentata, subtus grisea (pilis 0.2–0.7 mm. longis e basi pustulata inconspicua erumpentibus donata) utroque latere costae nerviis evidentibus ca. 5 donata, supra viridi hispidula (pilis ascendentibus ad 0.5 mm. longis e basi pustulata inconspicua erumpentibus donata); pedunculo extra-axillari 0.5–3 vel rariter ad 7 cm. longo; inflorescentia capitata densa 10–25-flora corollis exclusis 0.8–1.2 cm. diametro; calyce sub anthesi ad 5 mm. longo, lobis 2.5–3 mm. longis 1.2–1.5 mm. latis sparse hispidulis e basi sursum gradatim attenuatis apice viridibus subliberis; corolla alba infundibuliformi 2.5–2.8 cm. longa, limbo ad 2 cm. diametro, tubo parte inferiore 1 cm. longo 1–1.5 mm. crasso deinde sursum gradatim ampliato, lobis emarginatis ca. 8 mm. latis et 4 mm. longis; filamentis ad 5 mm. longis, antheris ad 1 mm. longis.

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TAMAULIPAS: Near San Lucas, Jaumave, July 1932, *Rozynski* 563. HIDALGO: Jacala, mountainside, 4500 ft., July 1939, *Chase* 7461 (TYPE, Gray Herb.); Jacala, dry trailside at top of east wall of Barranca Seca, between Hilo Juanico and Pacula, fl. white, alt. 1400 m., Oct. 1946, *Moore* 1823. INDEFINITE: *Coulter* 1332.

A relative of *C. podocephala* Torr. of northeastern Mexico and adjacent Texas and occupying an area just south of that species. It is a sprawling plant with a large slender-tubed funnelform corolla with short broad lobes. Its calyx has a somewhat acuminate apex formed of the partially free tips of the lobes. On the other hand, *C. podocephala* is an erect-growing plant. Its smaller corollas have a short tube and a deeply lobed limb, and its calyx-lobes have no free tips. Though related, the species are undoubtedly distinct.

Bourreria Hintonii, sp. nov.

Frutex; ramulis horni ad 1.5 mm. crassis et 15 cm. longis pilulos rigidulos adpressos sparsissimos perinconspicuos 0.1–0.4 mm. longos gerentibus; foliis obovatis vel obovato-oblongatis 2.5–6 cm. longis 1–3 cm. latis supra medium latioribus deinde deorsum in petiolum 2–4 mm. longum supra sparse minuteque hispidulum attenuatis, margine anguste revolutis, subtus glaberrimis nullo modo asperatis, supra scabridis pilos sparsos inconspicuos rigidos perbrevis antrorse ascendentes basi silicosa erumpentis proferentibus, nervis primariis utroque latere costae subtus prominentis supra infra medium impressae prominulis 5–7 cum nervis secundariis et tertiariis conjunctis; cymis 5–10 mm. longe pedunculatis breviter furcatis sparsifloris; calyce 7–9 mm. longo, basi ca. 2 mm. crasso breviter crasseque substipitato, apice 3–4 mm. crasso, extus fere glabro sub lente pilis minutis sparsissimis praedito, intus supra medium plus minusve striguloso, lobis inaequalibus 2–3 mm. longis 1–1.5 mm. latis acutissimis erectis; corolla alba 2 cm. longa, limbo ca. 14 mm. diametro, lobis rotundis 5–6 mm. longis ad 5 mm. latis supra glandulis substipitatis minutissimis sparse praeditis extus sub lente glandulis et pilulis minutissimis sparse obsitis; tubo calycis 10–12 mm. longo basi 2 mm. crasso, apice ad 5 mm. crasso, intus glabro, extus apicem versus sparse minuteque glandulifero; antheris subexsertis 4 mm. longis; filamentis glabris 4 mm. longis ca. 3 mm. infra sinus affixis; ovario glabro; fructu ignoto.

GUERRERO: San Luis, dist. Galeana, shrub by beach, also a tree inland, fl. white, Oct. 1937, *Hinton* 10866 (TYPE, Gray Herb.).

A well-marked species of uncertain affinities. Among its notable features are its moderately small leaves very scabrous above, its sharply toothed elongate calyx strigose only inside and merely substipitate at base, its glabrous filaments, and its elongate exerted corolla-tube.

Bourreria longiflora, sp. nov.

Arbor 10 m. alta; foliis glaberrimis ellipticis 5–11 cm. longis 3–6 cm. latis 8–20 mm. longe petiolatis ubique obtusis supra subclucidis subtus opacis, nervis primariis utroque latere costae subtus prominentis ca. 9 prominulis cum nervis secundariis et tertiariis transverse conjunctis; cymis 3–10-floris congestis apice ramulorum 1–5 cm. longorum extra-axillarum paucifoliorum gestis, bracteis ovatis ad 8 mm. longis deciduis conspicue ciliatis; calyce sub anthesi campanulato ad 8 mm. longo extus glaberrimo intus supra medium dense conspicueque albo-villuloso, lobis triangularibus

acutis 2.5–3 mm. longis 2 mm. latis; corolla alba odorata ca. 25 mm. longa glaberrima, tubo ca. 20 mm. longo a basi 3 mm. crasso sursum gradatim ampliato apice 7–9 mm. crasso, faucibus haud differentiatis, lobis circularibus ca. 6 mm. diametro ascendentibus limbum ca. 15 mm. diametro formantibus; staminibus exsertis, filamentis 20–25 mm. longis ca. 6 mm. supra basim tubi affixis infra medium evidente villulosis; antheris 4 mm. longis medio affixis; fructu ignoto.

MICHOACAN: Tizupan, dist. Coalcoman, tree 10 m. tall, in barranca, fls. white, sweet-scented, 1941, *Hinton 15908* (TYPE, Gray Herb.).

A well-marked species perhaps most closely allied to *B. Rekoii* Standley of Oaxaca. From that species it differs in having glabrous obtuse leaves, elongate corolla with exserted tube, and also a smaller calyx with shorter teeth, glabrous outer surface, and practically non-stipitate base.

Bourreria panamensis, nom. nov.

Bourreria superba, var. *glabra* Schery, Ann. Mo. Bot. Gard. 29: 366 (1942).

A plant known only from a suite of collections made near Chiriqui Lagoon, prov. Bocas del Toro, in northwestern Panama, *Wedel* nos. 2472, type, 2949 and 2974. It shows many similarities with *B. superba* Johnston of western Mexico (Guerrero and Michoacan), but since it differs consistently in many details and comes from a region not only with a different climate but also geographically far removed from that of its relative, it seems best to give it specific recognition. Among the characters distinguishing *B. panamensis* are its glabrous twigs, its glabrous more elongate leaves, its glandular rather than hairy filaments, its shorter and broader anthers, and its shorter and stouter corolla-tube. Its calyx is not densely strigose inside but is glabrous except for some minute hairs on the lobe-margins. Its style is about half as long as that of its relative. As with *B. superba* its fruit remains unknown.

Heliotropium confertifolium Torr. var. *coldenioides*, var. nov.

Differt a varietate typica planta caespitosa vel prostrata; ramulis foliiferis strigosis saepe griseis (pilis contortis ascendentibus haud gestis); foliis et sepalis basim versus sparse strigosis sed margine evidenter ciliatis.

COAHUILA: Zacate near Muzquiz, *Marsh 521*; near La Azufrosa, Sept. 22, 1848, *Gregg 509*; base of hills near Saltillo, 1905, *Palmer 523*. NUEVO LEON: 11 mi. south of Sabinas Hidalgo, *Muller 2630*; east of Cerralvo, May 29, 1847, *Gregg*; Marin, Dec. 1852, *Thurber*; Monterrey, June 22, 1848, *Gregg 180*; Monterrey, *Dr. Edwards*; canyon 12 mi. west of Monterrey, *Painter & Barkley 14247*; Montemorelos, *Shreve & Tinkham 9816*; Linares, *Lundell 7284*; Marguerita, south of Monterrey, *Hitchcock & Stanford 6863*. TAMAULIPAS: San Carlos, *Berlandier 3199*; 4 km. west of Miquihuana, *Stanford et al. 744* (TYPE, Gray Herb.). SAN LUIS POTOSI: Rio Verde, stony ridge, 1904, *Palmer 5*; Minas San Rafael, 1911, *Purpus 4862A*; without locality, 1878, *Parry & Palmer 616*.

The present variety is the eastern form of the species and is best developed east of the Sierra Madre Oriental. Ranging south at low altitudes in Tamaulipas and Nuevo Leon it reaches eastern San Luis Potosi, and accordingly much further south than typical *H. confertifolium*. It is a prostrate or distinctly caespitose plant and does not develop the erect or ascending leafy stems of the typical form of the species. Its stems are

strigose and usually sparingly so, and are not clothed with both appressed hairs and abundant short contorted ones as in true *H. confertifolium*. The leaves and sepals are usually very sparingly strigose on the inner face especially below the middle, and their margins, especially towards the base, are evidently ciliate. In the erect-growing typical form of the species the leaves and sepals are densely clothed with appressed hairs and their margins are not noticeably ciliate. In general habit our plant much resembles species of *Coldenia* of the section *Eddya*.

Torrey, Bot. Mex. Boundary 138 (1859), apparently distinguished our plant from what was later called *H. confertifolium*, but mistakenly identified it as "*H. limbatum* Benth." Typical *H. confertifolium* Torr. ex Gray was first described as *H. limbatum* var. *confertifolium* Torr., l. c. It was based upon five collections: Leon Springs, Pecos Co., Texas, *Bigelow*; San Vicente, Coahuila, *Parry*; Cerralvo, Nuevo Leon, *Gregg*; Devils River, Val Verde Co., Texas, *Wright 481*; and hills of the Pecos, Pecos Co., Texas, *Wright 1547*. The Gregg specimens represent the variety *coldenioides*, but the remaining ones are all typical *H. confertifolium*. True *H. confertifolium* is known north of the Mexican boundary only in Texas where it has been found in Brewster, Pecos, Terrell, Val Verde, Maverick, Webb, Zapata, Starr and Hidalgo counties. In Mexico it occurs near the Rio Grande in northern Tamaulipas but extends far south into that country only in the state of Coahuila. One collection is at hand from extreme southeastern Chihuahua. In Coahuila it is scattered in occurrence and at many places seems to favor gypseous soils, especially those associated with beds of Upper Cretaceous age. Forms transitional to the variety *coldenioides* are found in Coahuila only at low altitudes in the eastern parts of the state.

Heliotropium queretaroanum, sp. nov.

Planta 2–4 dm. alta basim versus fruticosa; ramis foliiferis gracilibus sparse ramosis vel simplicibus 0.5–1 mm. crassis sparse strigosis (pilis 0.5–0.8 mm. longis pallidis donatis) internodiis 0.3–2 cm. longis; foliis 1–2 (–2.5) cm. longis 0.5–2.5 mm. latis linearibus vel anguste lanceolatis inconspicue costatis haud nervatis margine planis vel evidenter revolutis apice acutis basi in petiolum ca. 1 mm. longum contractis, facie superiori viridibus inferiori pallidioribus utrinque sparse strigosis; inflorescentia gracili racemosa secunda ebracteata laxiflora 5–10 cm. longa; calyce sub anthesi 2.5–3 mm. longo praesertim basim versus strigoso, lobis subulatis inaequilongis, pedicello 0.5–2 (–3) mm. longo; corolla alba ad 6 mm. longa, tubo extus strigoso, lobos calycis haud superanti, limbo 3–5 mm. diametro, lobis ovatis apice obtusis; nuculis 4, dorse alte convexis plus minusve villulosis; stylo quam stigmate 2–3-plo breviori; stigmate subulato ad 0.8 mm. longo.

QUERÉTARO: Near Higuierillas, Aug. 23, 1905, *Rose, Painter & Rose 9800* (TYPE, U. S. Nat. Herb.); Ciervo, Cerro de la Mesa, Aug. 20, 1905, *Altamirano 1589* (US).

A species very closely related to *H. angustifolium* Torr. and one occurring in a detached area well beyond the southern limits of that species. Its relative is a small bush with stiff woody stems and branches, and has linear leaves 1 mm. wide or less and corollas that have acute lobes. The

flowers are borne in usually abbreviated crowded racemes which at most reach only 5 cm. in length. The proposed species is noticeably different in habit of growth, leaf-width, length of inflorescence, and shape of corolla-lobes. Its slender, weak, elongate, somewhat flexuous stems are ascending and spring from a scanty fruticulose caudex formed of the persisting basal portion of stems of the previous season. The leaves of the Querétaro plant are obviously larger and broader than those of its northern relative. Its inflorescences are conspicuously more elongate and abundantly and loosely flowered, even at anthesis being 5–10 cm. long. Its corolla lobes are somewhat broader and are obtusish rather than acute or subulate.

Heliotropium texanum, sp. nov.

Herba annua erecta 1–3 dm. alta sparsiramosa; caule 1–1.5 mm. crasso sparse antrorseque strigosis (pilis pallidis ad 0.5 mm. longis donatis); ramis ascendentibus simplicibus ad 2 dm. longis; foliis pleraque alternis sed infimis 1–2 oppositis; lamina costata sed enervata viridi strigosa oblanceolata vel lanceolata 1–2 cm. longa 2–7 mm. lata, apice acuta, basi in petiolum 2–5 mm. longum attenuata, margine plus minusve revoluta; inflorescentia secunda multiflora elongata racemosa, fructifera ad 1 dm. longa bracteis foliaceis sparse ornata; calyce sub anthesi ca. 3 mm. longo ad 1 mm. longe pedicellato strigoso, fructifero ca. 5 mm. longo 1–2 mm. longe pedicellato, lobis 0.5–1 mm. latis inaequilongis lanceolatis; corolla alba infundibuliformi 8–10 mm. diametro, tubo ca. 3 mm. longo extus sparse strigoso, faucibus intus villulosis, lobis limbi 5 ovatis 2–3 mm. longis 2–2.5 mm. latis apice rotundis, sinibus latis plicatis fundite quisque lobulo triangulari 0.2–0.5 mm. alto donatis; antheris ca. 0.9 mm. longis apice cohaerentibus acutis hispidulis; filamentis perbrevibus ca. 1.5 mm. supra basim corollae affixis; ovario glabro; stylo 0.8–1 mm. longo; stigmatibus ca. 0.7–0.9 mm. longo elongato attentuato basi annulato incrassato ad 0.3 mm. diametro; fructu villuloso 1 mm. alto; nuculis 4 homomorphis, dorso alte convexis pilis mollibus erectis non rariter apice uncinatis vestitis, ventre angulatis faciebus fovea circulari conspicua donatis.

TEXAS: South of San Antonio, *Rose & Russell 24144*; 10.5 mi. NW of Falfurrias, Duval Co., 1935, *Cory 14746*; 8.3 mi. NE of Riviera, Kleberg Co., 1935, *Cory 17082*; Kenedy Co., June 26, 1941, *Tharp*; 3 mi. S of Sarita, King Ranch, Kenedy Co., on sandy plain, erect, corolla white with a yellow-orange eye, Oct. 1946, *Lundell 14721* (TYPE, Gray Herb.).

An annual species related to *H. assurgens* Johnston, of western Mexico. It differs in having a slightly coarser, lower, and less branched habit of growth, very much larger corollas, and fewer-flowered inflorescences. At the base of the broad sinus between the corolla-lobes there is usually a triangular lobule, in form generally broader than long, and in most cases proportionately better developed than in the corollas of *H. assurgens*. The plant at first glance bears some resemblance to the Texan *H. convolvulaceum* var. *racemosum* (Rose & Standley) Johnston and has actually been confused with it. The resemblance, however, is purely superficial, since the plants are not even closely related and, furthermore, differ in a host of details in flower and fruit structure.

Heliotropium Wigginsii, sp. nov.

Herba annua 1–4 dm. alta simplex vel sparsissime ascendenteque ramosa; caule 1–1.8 mm. crasso pilis pallidis rigidulis ca. 0.5 mm. longis antrorse adpressis sparse vestito; ramis 0–3, simplicibus 5–20 cm. longis; foliis basim versus caulis oppositis ceteris alternis saepissime 1–3 cm. distantibus; lamina oblanceolata 1–4 cm. longa 2–6 mm. lata supra medium latiori deinde basim versus in petiolum 1–3 mm. longum gradatim attenuata costata sed enervata, margine plana vel plus minusve revoluta, supra viridibus, subtus subpallida, facie utrinque strigosa (pilis pallidis rigidulis ca. 0.5 mm. longis basi pustulatis donata); inflorescentia secunda racemosa maturitate 1–3 dm. longa infra medium bracteis foliaceis 1–2.5 cm. longis ornata, supra medium bracteis inconspicuis subulatis 1–10 mm. longis gesta; calyce ad anthesin ca. 3 mm. longo apicem tubi corollae attingenti, lobis subaequilongis sparse strigosis margine rigido-ciliatis; calyce fructifero 0.7–1.2 mm. longe pedicellato, lobis cuneatis vel lanceo-cuneatis; corolla alba conspicua infundibuliformi extus sparse strigosa intus in faucibus villulosa alibi glabra; limbo 10–15 mm. diametro; lobis oblongis ad 6 mm. longis et 3 mm. latis apice obtusis, sinibus latis profundis plicatis fundite quisque lobulo 1–1.5 mm. longo triangulari apice caudato incurvato donatis; antheris ad 12 mm. longis apice encrassatis truncatis villulosis haud cohaerentibus; filamentis ad 0.2 mm. longis ca. 1.5 mm. supra basim tubi corollae affixis; ovario glaberrimo; nuculis 4 homomorphis glabris ad 2 mm. altis, dorse alte convexis medium versus plus minusve rugosis et tuberculo prominulo donatis, ventre angulatis in utroque facie marginem versus fovea parva elliptica donatis, apice in rostrum erectum compressum breve abrupteque attenuatis.

SONORA: 8 mi. west of Hermosillo on road to Kino Bay, near rain pools in clay on mesquite-covered flat, Aug. 27, 1941, *Wiggins & Rollins 115* (TYPE, Gray Herb.); 19 mi. north of Colorado, between Colorado and Mazatán, gentle gravelly grassy slope, Sept. 7, 1941, *Wiggins & Rollins 355*. BAJA CALIFORNIA: 5 mi. north of Comodu, open plateau thickly strewn with lava rocks, Oct. 3, 1941, *Hammerly 169*.

An erect, sparingly branched annual species with very distinctive corolla and fruit. The attractive white corollas have 5 large oblong lobes separated by broad, deep, plaited sinus. A distinct lobule arises from the bottom of each sinus. This lobule, usually folded, is triangular when spread and is contracted at the tip into a short strap-shaped incurving apical appendage. The spread corolla of the species, accordingly, appears to have a limb made up of alternating large and small lobes. The nutlets are entirely glabrous. Each has a high convex back that is usually somewhat ridged and above the middle is puckered up into a teat- or wart-like protuberance. The nutlet-tip is slightly prolonged, flattened, and upturned. The inner faces of the nutlet each bear a rather small, elliptic, submarginal perforation. The species is very well marked. I can suggest no close relative.

Macromeria guatemalensis, sp. nov.

Planta perennis multicaulis suffruticosa 3–15 dm. alta scabrida; ramis hornotinis viridibus foliatis ad 5 mm. crassis subsimplicibus vel ramulos axillaris ascendentis pluris ad 1 dm. longos gerentibus hispidis et minute adpresseque pubescentibus (pilis majoribus 1–2 mm. longis erectis rigidis

e basi bulbosa orientibus, minoribus 0.2–0.8 mm. longis antrorse adpressis); ramis et ramulis annotinis delapsu foliorum denudatis non rariter decorticatis apice ramulos foliatis novellos ad 2 dm. longos proferentibus; foliis lanceolatis 2.5–5 cm. longis 6–15 mm. latis subsessilibus vel ad 1 mm. longe petiolatis, apice attenuatis, basi rotundis ad acutis, margine anguste revolutis, supra viridibus venis et costa impressis evidenter notatis bases pilorum antrorse adpressorum rigidorum abundantium 0.2–0.8 mm. longiorum silicosas tuberculatas vel subconicas persistentis gerentibus, subtus griseis costa et venis salientibus donatis pilos gracilis adpressos 0.8–1.2 mm. longos pallidos e basibus pustulatis orientis juventute abundantis maturitate sparsiores proferentibus; floribus apicem versus ramuli gestis; calyce ad anthesin 1 cm. longo 3–8 mm. longe pedicellato, lobis inaequalibus linearibus ca. 1 mm. latis prominenter costatis bases pustulatas pilorum gracilium 0.4–0.8 mm. longorum ascendentium abundantis gerentibus; corolla lutescenti ca. 3.5 cm. longa extus hispidula intus glabra, tubo parte basali ca. 10 mm. longa 1–1.2 mm. crasso deinde sursum abrupte expanso, parte superiore cylindrico ca. 17 mm. longo ca. 5 mm. crasso; lobis corollae triangularibus 6–8 mm. longis 5–6 mm. latis summum ad apicem rotundis; filamentis 4–7 mm. longis ca. 3 mm. longe sub altitudinem sinus affixis; antheris 2.5–3 mm. longis elongatis oblongis medio-affixis; stylo filiformi exserto; nuculis albis osseis levibus ovoideis ad 3 mm. longis.

GUATEMALA: Above San Juan Ixcay, Sierra Cuchumatanes, dept. Huehuetenango, 2400 m., high bluff in upper reaches of barranco, subligneous and bushy, 1–3 ft. tall, corolla pale yellow, "te de monte," infusion of leaves used for colds, *Steyermark 50069*; dry upper southfacing slope of Volcan Tajumulco, between Las Canoas and top of ridge, 7 mi. from San Sebastian, dept. San Marcos, erect herb 4–5 ft. tall, fl. with yellow tube and green lobes, lvs. stiff, dull green above, gray beneath, "etama real," fruit used for "los cuentas," *Steyermark 35898* (TYPE, Gray Herb.).

A new species of a genus heretofore unknown from south of Mexico. It is related to *M. Pringlei* Greenm. of southern Mexico (Hidalgo, Guerrero and Oaxaca). Unlike its relative it has strong stems that become somewhat woody and function for at least two seasons. The hairs on the plant have excessively developed siliceous bases. They almost pave the upper leaf-surfaces and make the stems verrucose. The calyx-lobes are prominently ribbed and are rough with numerous hair bases. The corolla averages distinctly smaller than in *M. Pringlei*.

Dasynotus, gen. nov. Boraginaceae-Boraginoidearum.

Calyx 5-partitus longe pedicellatus segmentis elongatis in statu fructifero fere duplo accrescentibus donatus. Corolla hypocraterimorpha conspicua glabra; lobi 5 elliptico-oblongi imbricati patentes; tubus cylindricus calyce brevior, intus fere ad basim appendiculas 10 minima tumescentes gerens; fauces inconspicuae angustae abrupte expansae. Fornices corollae fundus faucium orientes magni exserti ligulati supra medium extrorse recurvati apice pendentis conspicue breviterque bilobati, medium versus puberulenti, apicem versus minute papillati, infra medium margine minute ciliolati. Stamina 5 inclusa fere ad apicem tubi corollae affixa; filamenta brevia compressa attentuata; antherae anguste oblongae obtusae paulo infra medium affixae. Ovarii lobi 4 distincti in gynobasi pyramidalis oblique affixi. Stylus filiformi-subulatus apice gynobasis inter apices nuculearum gestus a nuculis liber; stigma simplex disciformum minimum. Gynobasis maturi-

tate cartilaginea late pyramidalis magna excavationibus conspicuis ovatis apice attenuatis crasse marginatis ornata. Nuculae 4 conformes late ascendentes ovatae dorsi-ventraliter compressae laeves pro tribo Eritrichiae magnae, facie dorsali pilis albis simplicibus erectis gracilibus abundantibus obsitae margine erecto vel ascendenti angusto humuli inermi cinctae, facie ventrali glabrae cicatrice majusculo convexo prominulo medio vel paulo supra medium donatae in tertiam partem superiorum prominenter carinatae alibi valde convexae. Semina recta supra medium lateraliter affixa, cotyledones planae indivisae, radícula superior. — Herba perennis multicaulis erecta semi-metralis viridis. Folia alterna oblanceolata. Cincinni terminales pauci laxi sparsiflori solum basim versus paucibracteati. Pedicelli elongati maturitate saepe deflexi tandem basi ima disarticulati. — Nomen derivatur a *δαρσς* (hispidum) et *νωτον* (dorsum), quia nuculae dorse hispidulosae sunt.

Dasynotus Daubenmirei, sp. nov.

Herbae radice perenni valida oriens; caulibus numerosis fistulosis erectis ad 5 dm. altis simplicibus foliosis 2–5 mm. crassis sparse hispidulosis (pilis 0.5–2 mm. longos gerentibus); foliis caulinis infimis reductis, ceteris 1–2 cm. distantibus oblanceolatis evidenter costatis 9–13 cm. longis 1.5–3 cm. latis supra medium latioribus deinde basim sessilem 2–4 mm. latum versus attenuatis, ubique pilos 0.5–1.5 mm. longos antrorse appressos vel ascendentes non rariter e basi plus minusve pustulato haud conspicuo erumpentes vix abundantes gerentibus, subtus pallidioribus nervos primarios utroque laterae costae 5 gestos haud ramosos graciles inconspicuos proferentibus; inflorescentia apice caulis gesta racemosa laxissima basim versus folios parvos 1–2 ad 6 cm. longos et 1.5 cm. latos proferenti alibi ebracteata, rhachi in statu fructifero ad 10 cm. longa flores 0–3.5 cm. distantes gerenti; pedicellis sub anthesi 1–2.5 (–3) cm. longis erectis mox divaricatis vel decurvatis, maturitate divergentibus vel basi deflexis et tandem ibique disarticulatis; calyce plus minusve strigoso, lobis cuneatis vel cuneato-lanceolatis acutis sub anthesi 6–8 mm. longis 1–1.5 mm. latis erectis, fructiferis ad 14 mm. longis et infra medium ad 3 mm. latis evidenter costatis ascendentibus; corolla alba ad 22 mm. diametro, tubo 4.5–5 mm. longo 4–4.5 mm. diametro, lobis 6.5–8 mm. latis 8–9 mm. longis apice rotundis; fornicibus ad 4 mm. longis supra medium ad 0.8 mm. latis deinde deorsum basim 1.5–1.7 mm. latum versus latioribus, apice pendenti bilobulata 0.5 mm. profunde emarginatis; filamentis ad 1 mm. longis ca. 1 mm. infra apicem tubi corolla affixis, antheris 1.5–2 mm. longis; stylo 3–5 mm. longo; nuculis saepissime 4 ascendentibus 5–6 mm. longis 4–4.5 mm. latis 2–2.5 mm. crassis in ambitu late ovatis, facie exteriori dense hispidulosis (pilos 0.5–0.9 mm. longos uniloculares gerentibus) maturitate interdum subglabrescentibus margine rugae angustae 0.2–1 mm. altae erectae glabrae circumdatis, facie interiori sublucentibus cicatrice centrali vel supra centrali 1–1.2 mm. longa ad 1 mm. lata donatis; gynobasi fructiferi 2 mm. alta basi ima 3–4 mm. diametro deinde sursum abrupte contracto pyramidalis, faciebus pyramidis sub angulo 40° inclinatis excavationes basi 1–1.5 mm. latos supra medium abrupte contractos gerentibus.

IDAHO (Idaho Co.): Moist roadside in draw, vicinity of Walde Mt. L. O., open place in spruce-fir zone, June 24, 1945, *R. F. Daubenmire* 4535; near Walde Mt. L. O., July 14, 1945, *R. F. Daubenmire* 45131; near Walde Mt. L. O., clearing in forest, July 24, 1946, *R. F. Daubenmire* 46289 (TYPE, Gray Herb.).

The discovery of a plant representative of a new genus is always of interest. The recent discovery in the mountains of Idaho of this new monotype is not merely interesting but also a surprise. Among North American Boraginaceae well-marked new species continue to turn up from time to time, but with the sole exception of *Mimophytum* (a Mexican monotype discovered in 1905) all the hitherto recognized American genera have had representatives known to science for at least a century. The prospects have been that the only additional genera recognized would result from the segregation of old concepts or from the possible discovery of a new species set off from some old genus by one or more striking characters that might possibly justify the erection of a new genus. The discovery in Idaho of a new borage which is not merely a very well marked species obviously derived from some recognized genus, but rather a wholly new generic type of very uncertain relationships, is accordingly unexpected. The plant is so distinct, in fact, that, had it been presented to me devoid of geographical data, I would have failed to recognize it as American; I would probably have guessed that it was another one of those very distinct new genera that are from time to time detected in southeastern Asia. As a matter of fact, however, it is no more closely related to the Asiatic Boraginaceae than to the American ones.

In the system of genera the new genus seems best placed near *Hackelia* and *Eritrichium*, preferably just before the former. The plant in gross habit rather suggests *Hackelia* but is very different in inflorescence, nutlets, and faucal appendages. Only in a few details of nutlet structure does it much suggest *Eritrichium*.

The inflorescence of *Dasynotus* is a very loose racemose cyme of slenderly long-pedicellate flowers. In general appearance it is somewhat reminiscent of that of *Borago officinale* L., and so very different from the slender, elongate, secund, racemose flower-clusters of *Hackelia*. The pedicels may become very elongate and are spreading, decurved, or basally abruptly deflexed. At extreme maturity they disarticulate at the very base.

The faucal appendages are certainly unusual and apparently unique in the family. They are about 4 mm. long, ligulate, swollen, and above the middle gracefully and outwardly decurved with the pendent end distinctly cleft. The margin below the middle is ciliolate. The surface of the middle section is pubescent. On the arched outer portion of the appendage the minute pubescence becomes reduced and towards the distal end represented only by very minute papillae. Faucal appendages in some borage genera curve inward and partially close the throat of the corolla. The appendages of *Dasynotus*, however, are not only strongly decurved but they arch outward over the base of the corolla-lobe.

Seated on the cartilaginous pyramidal gynobase the nutlets of *Dasynotus* ascend at a wider angle and protrude more basally than is customary in members of the tribe *Eritrichieae*. In these details the plant simulates members of the *Cynoglosseae*. The nutlets of *Dasynotus*, however, are free from the style, devoid of appendages, and have a central (not apical)

attachment scar, all important details that clearly ally it with the *Eritrichieae*.

The individual nutlets are thickish but distinctly dorsi-ventrally compressed. They are broadly ovate in outline and are 5–6 mm. long and so large for one of the *Eritrichieae*. Ventrally they have a slightly protrudent, convex, ovate, central or somewhat supra-central attachment scar, and above the latter a prominent short ventral keel. The keel, formed of unbroken pericarp and bearing no groove nor thickened tissue, is distinctly elevated above the level of the scar. Except for the keel on its upper third most of the ventrum is convex. It is rather smooth, somewhat lustrous, and light in color. In general plan the ventrum of these nutlets is reminiscent of that in the nutlets of *Plagiobothrys* Sect. *Euplagiobothrys*. I doubt, however, if this resemblance can have any phylogenetic significance.

The dorsal surface of the nutlets of *Dasynotus* is nearly flat or slopes very gently on either side of the medial line. It bears an abundance of slender, white, single-celled hairs that are at first straight and vertical but later may become bent and disarranged. These hairs are neither hooked nor barbed. There may be a very slight swelling on the pericarpial surface where each is attached. When they fall away, as may happen on very old nutlets, the surface of the ventrum may accordingly be very obscurely and minutely tuberculate. Surrounding the hairy ventrum, like a tiny wall about a miniature grainfield, is a narrow glabrous elevated flange that rises vertically all around the margin. This erect flange is a tight projecting fold or wrinkle of pericarpial tissue. It is not differentiated in texture, color, nor surface from tissue adjoining, and has an even height and bears absolutely no appendages, teeth, or any sort of roughenings. It is accordingly very different from the marginal ridge in the nutlets of *Hackelia* and *Lappula*. Among the Boraginaceae nutlets with a dorsum simulating that in *Dasynotus* are to be found only in certain species of *Eritrichium*. In most species of the latter genus the nutlets have a toothed margin, but in some, e. g., *E. elongatum* (Rydb.) Wight of the northern Rocky Mts., the margin is unarmed, even, and seemingly only a protruding wrinkle in the pericarp, much as that found in the nutlets of *Dasynotus*. Also interesting is the fact that some Asiatic species of *Eritrichium* also bear numerous erect straight hairs on the margined dorsum of their nutlets. As a general rule most species of *Eritrichium* have a smooth lustrous pericarp rather similar to that found in *Dasynotus*. The similarities mentioned possibly may be indicative of some relationship between the two genera, though certainly it cannot be a very close one. *Dasynotus* and *Eritrichium* differ in habit of growth, inflorescence, and flower structure, as well as in form, scar, and ventral keeling of nutlets.

The region in Idaho where *Dasynotus* grows is one that exploration during the past decade has shown to be not only rich in local endemics but also notable for outlying inland congregations of species formerly thought to be confined to the coastal mountains of Oregon and Washington. Dr.

Daubenmire's discovery there of *Mertensia bella* Piper, formerly thought to be confined to the Siskiyou region of adjacent Oregon and California, is an example of this.

The particular place where the new genus was discovered lies 65–70 miles ESE from Lewiston in the watershed of the Lochsa River and about 5–10 miles northerly from the town of Lowell at the junction of the Lochsa and Selway rivers. It is in Idaho County near the northern boundary of Nez Perce National Forest and in the vicinity of Walde Mt. Lookout. On July 24, 1946, Professor Daubenmire made the following notes to accompany his no. 48289, the type collection: "A few plants observed in near-climax arbovitae forest 7.6 mi. east of Waldo Lookout on road towards Frenchman Butte. Plants growing in dense shade send up only a few stems from the crown. Those growing along trails and on cleared areas are much more robust. Eighty-nine stems were counted on one individual, these making a cluster about 25 cm. in diameter at the soil surface. The color of the corollas is pure white." Judging from the collections available the plant appears to flower in June and fruit in July.

Hackelia longituba, sp. nov.

Herba perennis 5–10 dm. alta pilis gracillimis mollibus brevibus adpressis incano-pubescentibus; foliis inferioribus oblanceolatis ad 15 cm. longis 10–18 mm. latis, infra medium in petiolum 2–3 mm. latum gradatim attenuatis, apice acutis, facie superiori medio costatis sed enervatis, facie inferiori pallidioribus obscure nervatis; foliis caulinis superioribus lanceolatis sessilibus numerosis saepissime 2–3 cm. distantibus ascendentibus majoribus supra basim 8–12 mm. latis, basi rotundis vel subcordatis, apice acutis; inflorescentia sub anthesi densiflora subcylindrica 3–4 cm. crassa 3–9 cm. longa, fructiferi laxa ramulis 6–15 cm. longis ascendentibus laxe 3–10-floris gesta; pedicellis ad anthesin 3–5 mm. longis, fructiferis ad 12 mm. longis; lobis calycis pilis adpressis mollibus incano-pubescentibus, sub anthesi 2–3 mm. longis 0.5–1.2 mm. latis oblongis vel cuneato-oblongis erectis, fructiferis reflexis triangularibus ad 2 mm. latis; corolla infundibuliformi caerulea, limbo 10–15 mm. diametro, tubo cylindrico conspicuo 2–3 mm. crasso 5–7 mm. longo quam lobis calycis duplo longiori, lobis ascendentibus late obovatis 5–7 mm. latis, appendiculis faucium erectis ad 2 mm. altis apice revolutis et conspicue transverseque dialatis pubescentibus subprotrudentibus; filamentis medio tubi affixis 0.2–0.5 mm. longis; nuculis 4 ovatis (sine aculeis ad 5 mm. longis) margine dorsequae aculeos 2–2.5 mm. longos apice glochidiatos saepissime distinctos armatis, cicatrice ovata.

CALIFORNIA: Leland Meadow, Tuolumne Co., 1940, *Quick* 5; Fahey Meadow, Tuolumne Co., 1935, *Quick* 1449; 3 mi. NE of Grohl, Tuolumne Co., 1935, *Roseberry* 262; Big Tree Grove, Calaveras Co., 1884, *Ball*; Big Tree Grove, *Mann*; near Big Trees, 1940, *Eastwood & Howell* 8593 (TYPE, Gray Herb.); Camp Echo, El Dorado Co., 1915, *Heller* 12185; Fallen Leaf Lake, Tahoe Region, 1906, *Eastwood* 1047; Lake Valley, Tahoe Region, 1911, *Abrams* 4766; Sunnyside, Tahoe Region, 1909, *Eastwood* 34; Cisco, Placer Co., *Rixford*.

A well-marked species which has passed as "*H. velutina* (Piper) Johnston." The type of that latter species, however, came from General Grant Park in Fresno County, and represents the plant with short-tubed subrotate corollas which ranges along the Sierra Nevada of California from

Yosemite Park south to Tulare County. Our present plant occurs in the Sierra Nevada only north of true *H. velutina* and is readily distinguished from that species by its very elongate corolla tube and narrower faucal appendages. An illustration of it, incorrectly identified, is given by Jepson, Fl. Calif. 3: 309, *f.* 413 (1943).

Hackelia stricta, sp. nov.

Herba biennis 5–10 dm. alta erecta; caulibus saepe solitariis 3–6 mm. crassis fistulosis infra medium pilos sparsos rigidulos minutos recurvos supra medium ascendentis gerentibus; foliis inferioribus oblanceolatis 5–10 cm. (petiolo incluso) longis 12–30 mm. latis apice acutis infra medium in petiolum 1–5 cm. longum gradatim attenuatis; foliis medialibus et superioribus sessilibus 2–5 cm. longis 1–2 cm. latis medium versus latioribus utroque acutis; lamina folii in facie superiori inconspicue sparseque strigosa (pilis e basi pustulata perinconspicua saepe orientibus), in facie inferiori pallidiori pilis rigidulis minutis erectis vel ascendentibus e pustula inconspicua orientibus donata; inflorescentia elongata, ramis strictis fructiferis 5–10 cm. longis; pedicellis 1–2 mm. longis, fructiferis ad 4 mm. longis strigosis; calyce 1.5–2 mm. longo, lobis oblongo-lanceolatis saepe fuscis; corolla 2–2.5 mm. longa, limbo 4–5 mm. diametro, lobis orbicularibus 1.2–1.7 mm. diametro azureis divaricatis, tubo 1.5 mm. longo ad 1 mm. crasso, appendiculis faucium trapaeziformis minutis; nuculis 4 heteromorphis ca. 3 mm. longis, 1–2 stramineis dorse aculeos congestos 3.5–4 mm. longos apice glochidiatos conspicue gerentibus, 2–3 griseis margine encrassatis dorse aculeis ad 0.5 mm. longis vel papillis apice glochidiatis sparse donatis.

MEXICO STATE: Nevada de Toluca, Oct. 1903, *Rose & Painter 7932* (TYPE, Gray Herb.); Las Cruces, Dist. Temascaltepec, fir forest, *Hinton 4901*; Meson Viejo, Dist. Temascaltepec, by river, *Hinton 1303*; Desierta Vieja, Valley of Mexico, *Bourgeau 881*; Sierra de las Cruces, *Pringle 5259* and *9318*; summit of Ajusco, *Harshberger 130*; Cañada de San Rafael, *Lyonnet 340*. MICHOACAN: Tancitaro, near stream, *Leavenworth 731*. GUERRERO: Teotepec, pine forest, *Hinton 14435*. OAXACA: Sierra San Felipe, *Pringle 4832* and *Nelson 1045*. INDEFINITE: *Coulter 1056*.

This is the widely distributed and repeatedly collected *Hackelia* of central Mexico, usually identified as *H. mexicana* (C. & S.) Johnston. That species, however, is actually known only from the mountains between Jalapa and Orizaba and is most closely related to *H. guatemalensis* Brand, of Chiapas and Guatemala. The present plant is distinguished by its erect stiff habit, biennial root, light green herbage, smaller narrower nutlets with more crowded aculeae, and small faucal appendages. The veins on the under surface of its larger leaves are not densely grayish strigose and so not so conspicuous as those in *H. mexicana* and *H. guatemalensis*. In gross habit our plant most resembles *H. floribunda* (Lehm.) Johnston, of western United States. Its close relationships, however, are with the congeners of Central and South America and particularly with *H. leonotis* of the mountains of Nuevo Leon.

Hackelia Skutchii, sp. nov.

Herba perennis 1–5 dm. alta; caulibus erectis 1.5–3 mm. crassis griseis retrorse strigosis; foliis (radicalibus ignotis) supra viridibus plus minusve antrorse strigosis medio-longitudinaliter sulcatis, subtus pallidis dense retrorse strigosis saepe plus minusve sericeis costa prominenti et non rariter

venis salientibus donatis; foliis inferioribus oblanceolatis 6–9 cm. (petiolo incluso) longis apice acutis et non rariter inconspicueque breviterque acuminatis ca. 2 cm. infra apicem 6–10 mm. latis deinde deorsum in petiolum 1–4 cm. longum 1–2 mm. latum gradatim attenuatis; foliis superioribus lanceolatis sessilibus 1–6 cm. longis basi rotundis; inflorescentia sparse ramosa, ramis fructiferis ad 2 dm. longis; pedicellis 2–4 mm. longis strigosis gracilibus, fructiferis 6–10 mm. longis recurvis; calyce strigoso, lobis ovatis 1 mm. longis fructiferis 1.5 mm. longis; corolla conspicua azurea 7–10 mm. diametro, lobis obovatis divaricatis, tubo ca. 2 mm. longo, appendiculis faucium gibbosis subquadratis minute pubescentibus albis vel flavis salientibus; nuculis 4 heteromorphis 2–2.4 mm. longis ca. 1.5 mm. latis, 3–2 brunneis muricatis dorse papillas sparsas 0.5–1 mm. altas apice glochidiatas gerentibus, 1–2 griseis muricatis aculeos coerulescentis 1–1.5 mm. longos compressos apice glochidiatos dorsaliter et marginaliter sparse proferentibus.

GUATEMALA: Sierra Cucumatanes, Huehuetenango, alpine meadow, 10,500 ft., fl. palest blue, yellow at center, Aug. 24, 1934, *Skutch 1103* (TYPE, Gray Herb.); near Tunimá, Sierra Cucumatanes, 3300–3500 m., leaves gray green, corolla pale blue with creamy white raised crown around center, *Steyermark 49257*; above San Juan Ixcay along trail to Tojquiá, Sierra Cucumatanes, 2800–3400 m., corolla pale blue with orange center, *Steyermark 50113*.

A very distinct species characterized by its large pale blue subrotate corollas with salient white, orange or yellow faucal appendages, its heteromorphic nutlets, and its relatively small leaves usually silky strigose beneath. The nutlets not only bear barbed papillae or spines but also numerous conic roughenings on back and sides. At times these pointed roughenings are even terminated in a short bristle. The plant is very well marked and has no obviously close relatives. Its general relationships, however, are with the congeners of Central America and southern Mexico.

Hackelia leonotis, sp. nov.

Herba biennis 3–5 dm. alta; caulibus 2–6 mm. crassis pilis gracilibus 1–2 mm. longis plus minusve retrorsicurvatis laxis vestitis; foliis supra strigosis subtus pilis gracilibus non rariter plus minusve retrorsis laxe vestitis, inferioribus oblanceolatis 5–15 cm. (petiolo incluso) longis lamina 10–18 mm. lata utroque acuta basi in petiolum 3–6 mm. longum 1–2 mm. latum attenuata donatis, superioribus anguste lanceolatis sessilibus 3–6 cm. longis 5–10 mm. latis apice acutis basi angulato-rotundis; ramis inflorescentiae sparsis strictis, fructiferis 10–15 cm. longis; pedicellis 2–4 mm. longis dense strigosis fructiferis 4–6 (vel rariter ad 9) mm. longis; calyce strigoso, lobis sub anthesi ovatis vel triangulari-ovatis obtusis 1–1.5 mm. longis, fructiferis ovato-deltoides vel late ovatis ad 3 mm. longis; corolla caerulea, limbo 2.5–4 mm. diametro, lobis ovatis divaricatis, tubo ad 1 mm. longo, appendiculis faucium trapaeziformis minutis pallidis; nuculis 4 heteromorphis ca. 3 mm. longis, 2–3 griseis tuberculas vel aculeos perbrevis apice glochidiatos sparse armatis, 1–2 dorse et marginem versus aculeos 1.5–3 mm. longos gracilis apice glochidiatos gerentibus.

NUEVO LEON: Peak of Cerro Potosi, scattered in upper pine wood, *Mueller 2255* (TYPE, Gray Herb.); near peak of Cerro Potosi, abundant in moist meadow in pine forest, 11,900 ft. alt., 1938, *Univ. Illinois Exped. 969*; Cerro Potosi, 1938, *Schneider 969*; ascent of Cerro Potosi, north hogback about 20 mi. NE of Galeana, common in top pine forest, alt. 11,300 ft., *Mueller 1250*; Canyon below Las Canoas, on Cerro Potosi among shrubs in moist arroyo, *Mueller 2228*.

A well-marked species known only from the peak of Cerro Potosi in the Sierra Madre Oriental of northeastern Mexico. Its relationships are with the species of central and southern Mexico and not with those of United States. In fruiting structures it is very similar to *H. Skutchii* of Guatemala, but very different otherwise, and especially in corolla and in foliage-indument. The plant of Cerro Potosi is especially notable for its erect simple or strictly and sparingly branched stems, its very loose somewhat shaggy indument on stems and lower leaf-surfaces, its evidently heteromorphic nutlets, and its very small corollas.

Cryptantha abata, nom. nov.

Krynitzkia depressa Jones, Contr. W. Bot. 13: 5 (1910), not *Cryptantha depressa* Nels. (1902).

Oreocarya depressa (Jones) Macbride, Contr. Gray Herb. 48: 32 (1916).

Cryptantha modesta Payson, Ann. Mo. Bot. Gard. 14: 278 (1927), not Brand (1924).

The name Payson applied to this well-marked species of southern Utah is invalid because of an earlier homonym, a fact overlooked until it was recently called to my attention by Mr. William A. Dayton.

Cryptantha Barnebyi, sp. nov.

Planta perennis 1.5–3 dm. alta pilis flavescentibus vestita; foliis caudicis oblanceolatis 5–8 cm. (petiolo incluso) longis costatis sed enervatis, 1–2 cm. infra apicem acutum vel anguste obtusum 7–14 mm. latis deinde deorsum in petiolum 1.5–2.5 mm. latum plus minusve 3–4 cm. longum gradatim attenuatis, pilis rigidis rectis numerosis 1.5–2 mm. longis valde appressis e basi pustulata orientibus et pilulis inconspicuis mollibus 0.1–0.5 mm. longis dense vestitis; foliis inferioribus caulinis oblanceolatis ad 5 cm. longis 5–8 mm. latis hirsutis (pilis rigidis ascendentibus e basi pustulata orientibus donatis); caulibus horni rigidis erectis costatis ad 5 mm. crassis hirsutis (pilis rigidis pungentibus divaricatis 1.5–3 mm. longis et pilulis abundantioribus plus minusve retrorsis perinconspicuis 0.1–0.5 mm. longis vestitis) e caudice denso ramulos crassos congestos brevis basibus foliorum annotinis crasse vestitos composito erumpentibus; inflorescentia maturitate ad 15 cm. longa, apice densissima ca. 4 cm. crassa deinde deorsum angustiore et cymas gradatim minoris gerenti, infra medium bracteis conspicuis foliaceis linearibus 15–30 mm. longis et 2–4 mm. latis donata; calyce fructifero ad 13 mm. longo 1–2 mm. longe pedicellato, lobis lanceo-subulatis infra medium ad 2 mm. latis extus setis divaricatis 1.5–3.5 mm. longis et pilulis inconspicuis abundantibus 0.5–1 mm. longis gestis; corolla glabra ad 14 mm. longa, tubo cylindrico 7 mm. longo 2–3 mm. crasso, faucibus 3.3–4 mm. longis sursum ampliatis apice ca. 4 mm. diametro, lobis rotundis 2–2.5 mm. longis 2.5–3 mm. latis, appendiculis faucium intrusis bigibbosis 0.7 mm. latis 0.5 mm. altis pilulis perbrevis obesis obsitis; antheris 1.5 mm. longis, filamentis perbrevis 1 mm. infra appendiculas faucium affixis; nuculis 4 griseis nitidis utrinque levibus 4 mm. longis 2.5 mm. latis, margine acutissimis, dorse convexis in ambitu ovatis, ventre late obtusis, sulco angusto lineari fere ad apicem nuculae attingenti.

UTAH: 30 miles southeast of Ouray, Uintah Co., white shale knolls 5550 ft. alt., growing with *C. Grahamii* but much less common, June 17, 1947, *Ripley & Barneby* 8748 (TYPE, Gray Herb.); 5 mi. west of Bitter Creek on Watson-Ouray road, knoll among junipers on light-colored shale, 6300 ft. alt., fl. pale yellow, May 26, 1935, *Graham* 8987.

A well-marked species and like *C. Grahamii* and *C. Rollinsii* apparently confined to the Green River Shales in the Uintah Basin of northeastern Utah. Among the distinctive features of the present plant are its yellowish indument, coarse dense caudex, large, long-tubed, protruding corollas, and lustrous, completely smooth, sharp-margined nutlets. The flower color appears to be either white or slightly yellow. One of the cited collections, *Graham* 8987, is immature and was previously listed, Jour. Arnold Arb. 20: 391 (1939) as representative of *C. Rollinsii* Johnston. It is now recognized as belonging to the species so beautifully represented by Mr. Barneby's ample flowering and fruiting material from southeast of Ouray. *Cryptantha Rollinsii* is a biennial plant with grayish or only slightly yellowish indument. Its basal leaves are neither so large nor so narrowly petiolate as those in the sterile leaf-clusters borne on the dense stout caudex of *C. Barnebyi*. Its nutlets are also very different. They are proportionately more elongate in outline, rarely surpass 2 mm. in width, and are always more or less roughened with broad low ridges and tuberculations, especially towards the apex and margins. The decidedly smooth nutlets of *C. Barnebyi* are more suggestive of *C. confertiflora* (Greene) Payson. They have, however, a more prolonged ventral groove and are merely sharp- and not wing-margined. The immediate relations of *C. Barnebyi* are with none of the species mentioned. As a matter of fact I can suggest no species with which it reveals close relationship. It is a very distinct species and one I find pleasure in associating with the name of Mr. Rupert C. Barneby. His very many discriminatingly selected and beautifully prepared specimens are evidence of his interest in this group of West American plants.

ARNOLD ARBORETUM,

HARVARD UNIVERSITY.



Johnston, I. M. 1948. "Studies in the Boraginaceae, XVI. Species chiefly from Mexico and western United States." *Journal of the Arnold Arboretum* 29(3), 227–241. <https://doi.org/10.5962/bhl.part.26200>.

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