

PROCEEDINGS
OF THE
AMERICAN ACADEMY
OF
ARTS AND SCIENCES.

NEW SERIES.

VOL. IV.

WHOLE SERIES.

VOL. XII.

FROM MAY, 1876, TO MAY, 1877.

SELECTED FROM THE RECORDS.

BOSTON:

PRESS OF JOHN WILSON AND SON.

1877.

XIV.

CHARACTERS OF SOME LITTLE-KNOWN OR NEW
GENERA OF PLANTS.

BY ASA GRAY.

Read May 9, 1877.

CANOTIA, Torr., Genus *Rutacearum*.

Flores hermaphroditi. Calyx parvus, quinquelobus, persistens; lobis latis æstivatione imbricatis. Petala 5, hypogyna, oblonga, utrinque obtusissima, basi lata inserta, æstivatione imbricata, intus medio costa prominula instructa, decidua. Stamina 5, hypogyna, calycis lobis opposita: filamenta subulata, petalis parum breviora, persistentia: antheræ oblongo-cordatæ, introrsæ, sinu profundo apici acutissimo filamenti affixæ, mucrone parvo apiculatæ; loculis intus longitudinaliter dehiscentibus. Pollen madidum tricorne. Discus nullus. Ovarium gynobasi crassa eoque multo majore inferne leviter 10-sulcata impositum, 5-loculare, stylo crasso demum elongando superatum: stigma parvum, leviter 5-lobum; loculis ovarii oppositipetalis. Ovula in loculis sæpissime 6, angulo interno biserialiter inserta, subhorizontalia; micropyle infera. Capsula ovato-fusiformis, lignescens, epicarpio tenui subcarnoso induta, 5-locularis, ab apice 10-valvis (primum septicida, mox loculicida), portionibus styli persistens 10-fissilis superatis; columella nulla. Semina in loculis solitaria vel bina loculum impleantia, adscendentia, subovata, complanata; testa subcoriacea creberrime papillulosa inferne in alam latam membranaceam nucleo sublongiorem producta. Embryo in strato tenui albuminis carnosius rectus; cotyledonibus ovalibus planis; radícula breviuscula, infera. — Arbuscula 10–20-pedalis, prorsus aphylla, glaberrima; ramis alternis spartioideis viridibus rigidis nunc spinescentibus striatulis cicatricibus parvis remotis brunneis notatis; inflorescentia secus ramulorum racemiformi; pedunculis brevissimis fasciculatim vel cymoso-3–7-floris; pedicellis articulatis; bracteis parvis squamiformibus ovato-subulatis oppositis deciduis; corolla alba; glandulis ordinis evanidis.

CANOTIA HOLACANTHA, Torr. in Pacif. R. Rep. iv. 68; Benth. & Hook. Gen. i. 616 (where the radicle is inadvertently said to be *superior*); Brewer & Watson, Bot. Calif. i. 190. — Arizona, in the arid desert region, especially along mountain water-courses, Emory, Bigelow, and various other collectors, in fruit, first collected in flower by Palmer, and recently by Rothrock in Wheeler's Expedition.

A genus of hitherto undetermined affinity. Dr. Torrey, who knew only the fruit, with calyx and filaments persistent at its base, compared it with *Eucryphia*; upon which Bentham and Hooker appended it, along with that genus and *Euphronia*, to *Rosaceæ*, tribe *Quillajææ*. Whatever may be said of those genera, this is certainly not *Rosaceous*. Baillon, the first botanist to publish any thing upon the genus since the flowers were known, and who describes the "discum glandulosum incrassatum" under the ovary (but wrongly describes the calyx as valvate and the ovules as anatropous), refers *Canotia* without question to *Celastraceæ*.* This is better than *Rosaceæ*, and the inferior radicle tells in its favor, as against the view which I take, having now for the first time examined the flowers. But I am confident that the plant belongs to the *Rutaceæ*. The structure of the gynobase, as I should call it, points strongly in this direction. This large and fleshy or, when dry, rather corky body upon which the ovary is mounted is broader than the latter in the blossom, as well as of twice its height; and is so confluent with it that, upon superficial observation, it would be taken for a component part of it. But it is solid within, and has a papillose-glandular surface, unlike that of the ovary it supports, which is smooth. Its likeness to that of Rue is manifest; and in *Thamnosma* the same body becomes stipitiform. I find no trace in *Canotia* of a proper disk around the base of this, which is conspicuous in *Thamnosma*. As the fertilized ovary enlarges, it soon becomes broader than the gynobase as well as longer; in the fruit the latter so inconspicuous that it has been overlooked. The wood and bark are not bitter to the taste, in the manner of most *Simarubaceæ* (which in a comprehensive consideration of relationships must be taken along with *Rutaceæ*), nor is the surface at all pustulate- or tuberculate-glandular as in *Thamnosma*. But in the petals, and especially in the sepals and minute bracts of the inflorescence, I discern evident traces of the *Rutaceous* oil-glands. Faint and few though they be, they suffice to confirm the affinity.

There are four of these spartioid green-barked and mainly leafless shrubs in the dry Arizonian region. *Thamnosma montanum*, Torr.,

* *Adansonia*, x. 18, & *Hist. des Plantes*, vi. 43, 1875.

which is a genuine *Rutacea*; *Holacantha Emoryi*, Gray, an undoubted *Simarubacea*; *Kæberlinia spinosa*, Zucc., which has been referred to the same order, but is more anomalous; and finally *Canotia holacantha*, which, if I mistake not, must take its place among the typical *Rutaceæ*, notwithstanding some anomalies.

The pollen of *Canotia*, as pointed out to me by Prof. Rothrock, who has supplied the best flowering specimens we possess, is exactly represented by Sach's figure of that of *Epilobium*, viz., that in his *Lehrbuch*, fig. 349.

SYMPETALEIA, Nov. Gen. *Loasacearum*.

Calycis tubus globoso-obconicus; limbus 5-partitus, lobis tubo æquilongis. Corolla (alte gamopetala!) hypocraterimorpha; tubo elongato subclavato intus infra medium piloso-annulato; limbo 5-partito, lobis rotundatis æstivatione imbricatis. Stamina circiter 25, corollæ tubo sub fauce aut inordinate aut 5-seriatim inserta: filamenta brevissima, tenuia: antheræ subreniformes, uniloculares, bivalves. Ovarium uniloculare: stylus filiformis: stigmata 5, brevia, conniventia. Ovula indefinite plurima, placentis 5 parietalibus inserta. Capsula subglobosa, apice tantum dehiscens. Semina per plurima, oblonga; testa tenui conformi oblique striato-costulata. Embryo in albumine parco granuloso axilis, rectus, oblongus; cotyledonibus brevibus.

SYMPETALEIA AUREA. Herba annua, humilis, *Eucnidis* facie, viscoso-hirsutata et setis urentibus lævibus hispida; foliis longe-petiolatis rotundato-cordatis crenatis vel 3-5-lobatis; pedunculis terminalibus et supra-axillaribus, fructiferis elongandis recurvis; corolla aurea semipollicari. — Pulpito Point, Lower California, Dr. Thomas H. Streets, U. S. N. Coll. in February, 1875?

In this we have the anomaly of a Loasaceous plant with a truly gamopetalous corolla! In *Eucnide* of Zuccarini, — a genus which had been merged in *Mentzelia*, but which Mr. Watson, in the *Botany of California*, has properly reinstated, — the petals are united at the very base into a ring, which bears the stamens. Here they are combined into a long tube, and even to the base of the spreading limb, and the stamens are borne in and below the throat. The imbricated æstivation of the corolla is shared by *Eucnide*, *Mentzelia*, &c.; but the one-celled anthers, of the Malvaceous pattern, are peculiar. The tube of the calyx is completely adnate to the ovary, which is crowned by a flat disk; and the corolla is epigynous. The habit of the plant is wholly

that of *Eucnide*. The name chosen for the genus expresses its most striking character, viz., the union of the petals.*

LEMMONIA, Nov. Gen. *Hydrophyllacearum*.

Corolla brevi-campanulata, sepala angusto-linearia haud superans, 5-loba, intus nuda. Stamina brevia, tubo corollæ brevissimo æqualiter inserta: filamenta subulata, ad insertionem subito dilatata, quasi appendiculata: antheræ cordato-didymæ. Discus obscurus. Ovarium ovoideum, pilosum, biloculare, stylis 2 brevibus superatum: stigmata capitellata. Ovula in loculis binis, superposita, obovata, anatropa. Capsula ovoidea, retusa, 4-sperma, bivalvis; valvis membranaceis semisepta angusta firmiora ferentibus. Semina ratione capsulæ magna, obovata, grosse rariter ruguloso-impressa; testa tenui cæterum lævi. Embryo cylindricus, rectus, albumine carnosio paullo brevior.

LEMMONIA CALIFORNICA. Herbula annua, depressa, dichotoma, sericeo-canescens; foliis alternis basi apiceque ramorum confertis spathulatis integerrimis; floribus cymoso-congestis et in dichotomis infimis solitariis subsessilibus; sepalis albo-villosis angustissimis apice non latioribus, fructiferis (lineas 2 longis) capsulam superantibus; corolla lineam longa alba seu albida. — San Bernardino Co., California, on Bear Valley Creek, on the head waters of the Mohave River, May, 1876, J. G. Lemmon. This interesting little plant, which was sent to me in a letter by Mr. Lemmon at the time of its discovery, was passed over by me as a *Coldenia* § *Tiquiliopsis*, which it resembles in aspect and especially in mode of growth. But it proves to be the type of a new genus, somewhat related to *Draperia* among the *Phaceliæ*, yet belonging properly to the *Nameæ*. It is distinguished from *Nama* by the short campanulate corolla and correspondingly short styles and subulate filaments (the latter dilated and thickened at the very insertion in such manner as to form a sort of annulus to the corolla-tube), and

* In the small but interesting collection of plants of Lower California, made by the discoverer of this genus, occurs a new *Hemizonia*, the characters of which are here appended: —

HEMIZONIA STREETSII. § *Hartmannia*, *H. angustifoliæ* et *corymbosæ* sat affinis, humilis, ramosa e radice annua, pubescens, eglandulosa; foliis linearibus nunc integerrimis nunc inciso-4-5-dentatis; capitulis ramos terminantibus brevipedunculatis; ligulis ultra 12 biseriatis elongatis oblongo-spathulatis, tubo brevi glanduloso; paleis receptaculi convexo-conici circa flores disci plurimos steriles basi connatis; pappi paleis fl. disci 8-10 lineari-lanceolatis parum denticulatis corolla paullo brevioribus; acheniis radii lævibus. — San Benito Island, Lower California, Dr. Thomas H. Streets.

by the single pair of ovules to each cell, forming large seeds. The latter are very like those of *Nama demissa* and of *Conanthus*. As to *Phacelia*, which might be thought polymorphous enough to include almost any plant of this sort, even if we disregard the technical character of the distinct styles, yet the geminate ovules and seeds in this plant are characteristic, being superposed, while those of *Phacelia*, when reduced to single pairs, are collateral.

Of late years I have had frequent occasion to associate the name of Mr. J. G. Lemmon with species of his own discovery; and I seize with satisfaction the present opportunity of further commemorating the services of a most ardent and successful explorer of the Sierra Nevada region, by naming in his honor this interesting new genus which he alone has met with. By the specific name, *Californica*, I indicate the principal field of Mr. Lemmon's arduous explorations.

ECHINOSPERMUM, Sect. ECHINOGLUCHIN.

Nuculæ immarginatæ, ovato-trigonæ, dorso (medio carinulato) undique inordinate aculeolatæ, aculeis tota longitudine setulis retrorsis armatis; areola prope basim ovata. Corollæ lobi convoluto-imbricati. Pedicelli fructiferi erecti. Calyx fructifer patens, nec reflexus.

ECHINOSPERMUM GREENEI. *Eritrichio fulvo* sat similis, ultra-spithamæum, e radice annua laxè ramosum, pilis albidis striguloso-pubescens; foliis linearibus obtusis; racemis solitariis geminisve laxiusculis hic inde (basi præsertim) folioso-bracteatis; calyce fulvo-sericeo-hirsuto; lobis oblongo-linearibus obtusis corollam albam subæquantibus; nuculis (sesquilineam longis) calyce brevioribus inter aculeas sparsas teretes ($\frac{1}{3}$ – $\frac{1}{2}$ lineam longas) tuberculato-scabris intus acute carinatis. — About Yreka, Siskiyou Co., in the northern part of California, 1876, E. L. Greene. An additional and singular link between *Echinospermum* and *Eritrichium*, but technically belonging to the former, if not worthy of generic distinction; remarkable for having the prickles glochidiately barbed not merely at the apex, but for their whole length, and not at all arranged in lateral ranks.

ECHIDIOCARYA, Gray, char. reformatum.

Calyx 5-partitus; segmentis sub fructu parum apertis. Corolla rotato-hypocraterimorpha; tubo calycem subæquante lobis rotundatis breviorè, plicis faucialibus pl. m. intrusis. Filamenta brevissima medio tubo inserta: antheræ oblongæ, inclusæ. Stylus brevis: stigma capitatum. Nuculæ ovato-trigonæ, obliquæ, cristulato-rugosæ, dorso ventreque carinatæ, in stipitibus crassis aut discretis aut per paria coalitis

(areolis pl. m. cavis gynobasin late conicam claudentibus) incurvo-adscedentibus. — Herbæ annuæ, diffusæ, *Eritrichii* sect. *Plagiobothridis* facie; foliis omnibus alternis; floribus parvulis albis; pube hirsuta. — Gray in Benth. & Hook. Gen. ii. 854, & Proc. Am. Acad. xi. 89.

Two species are now known, of very similar aspect; and it may now be said of the genus that it should stand between *Eritrichium* and *Antiphytum*.

ECHIDIOCARYA ARIZONICA, Gray, l. c. Corolla fauce plicis minimis fere evanidis parum constricta; nuculis parce cristato-muricatis apice compresso-attenuatis basi productis in stipites crassos iisque æquilongos inferne connatos, areola (paris) excavata maxima cava. — This species was founded on a specimen collected by Dr. Smart, of such peculiar character of fruit that it might have been thought to be abnormal. But it is now confirmed by additional specimens, collected in March of this year, near Tucson, Arizona, by my indefatigable and sharp-sighted correspondent, Rev. E. L. Greene.* It is also confirmed essentially, and the character modified, by the detection of a second species, in which, however, each nutlet has a wholly separate stipe. This species may be named

ECHIDIOCARYA CALIFORNICA. Corolla majore (lobis rotundatis lineas circiter 2 longis) fauce plicis validis puberulis clausa; nuculis minoribus (lineam longis) minus acutatis dorso rugoso-alveolatis (rugis acutis echinulatis), stipitibus brevibus compressis angulo ventrali supra basim ortis discretis, areola carunculiformi parvula concava. — South-eastern California, in San Bernardino Co., 1876, Parry and Lemmon.

LEPTOGLOSSIS, Benth., subgenus BRACHYGLOSSIS.

Corolla plane hypocraterimorpha; tubo filiformi sub limbo rotato in faucem campanulatam brevem stamina claudentem subito modiceque ampliato. Antheræ fertiles 4, superiores 2-3-plo minores: filamenta quinta ananthera. Ovarium haud stipitatum, disco tenuiter cupulato subtensum. Stylus sub stigmate angustiuscule bilobo bialatus. Semina (*L. Texanæ*) subreniformia, grosse corrugato-rugosa. Embryo in albumine carnosio subincurvus. — Herbæ Texano-Mexicanæ, humiles, e radice perenni diffusæ; floribus majusculis ut videtur albis.

LEPTOGLOSSIS TEXANA. Multicaulis e basi firma ut videtur suffrutescente, viscido-pubescentis: foliis spathulato-ovalibus vel oblongis

* At the same station Mr. Greene likewise detected the most singular of all our *Borraginaceæ*, viz. *Harpagonella Palmeri*, before known only from Guadalupe Island, Lower California.

acutis plerumque in petiolum brevissimum marginatum attenuatis: calyce infundibuliformi-campanulato pedicello æquilongo vel brevioris 5-dentato, dentibus latis acutiusculis; stigmatis lobis spathulatis deorsum in apicem styli alato-decurrentibus. — *Nierembergia* (*Leptoglossis*) *viscosa*, & *Browallia* (*Leptoglossis*) *Texana*, Torr. Bot. Mex. Bound. 155, 156. — Western Texas, Wright, Bigelow. Adjacent Mexico, at San Carlos, Berlandier, no. 3194. The two names above-cited refer to the same plant. It was probably intended that the first should be cancelled.

LEPTOGLOSSIS COULTERI. Puberula; caulibus debilibus laxis; foliis ovatis oblongisve tenuiter petiolatis; pedicellis longioribus; calycis lobis triangulari-lanceolatis tubo turbinato æquilongis; corollæ fauce subgibbosa: stylo sub stigmatis lobis subito latissime alato. — Mexico, coll. Coulter, no. 1346.

In habit and foliage these two plants are not unlike *Bouchetia*, a genus established by Bentham and Hooker upon one of DeCandolle's two species. The corolla is that of *Nierembergia*, except that the limb is even flatter, or completely rotate, and the stamens are included in a short and abrupt but small faucial enlargement of the very summit of the tube. The five filaments are all short, not far from equal in length; the posterior destitute of anther; the upper anthers small, but polliniferous; the lower pair with far larger fertile anthers. These characters generally accord with *Leptoglossis*, Benth., except in the shortness and comparative smallness of the throat, which in true *Leptoglossis* is tubular-funnelform and continued downward for considerable distance, thus giving the filaments greater length and lowness of insertion. In the style, these plants partake of the peculiar character of the related genus *Reyesia*, Clos (*Pteroglossis*, Miers, which I know only from the two published figures), except that the stigma is manifestly two-lobed. The scarious-membranaceous wing, which is decurrent from these lobes down the apex of the style, was overlooked by Dr. Torrey in our scanty flowers of the Texan species. Its breadth on either side is not quite equal to the length of the thickish stigma lobe. But in the allied Mexican species the whole wing is much broader, and quadrate or slightly cordate, not flabelliform-obcordate as in *Reyesia*. The latter genus, of a single species, seems to be pretty well marked in habit, the complete absence of the fifth stamen, &c. But the two plants here described, notwithstanding their resemblance to *Nierembergia* in general form of the corolla and to *Reyesia* in the winged apex of the style, are probably best disposed of under a subgenus of *Leptoglossis*.