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LIST OF PLANTS COLLECTED BY DR. EDWARD PALMER IN LOWER CALIFORNIA AND WESTERN MEXICO IN 1890.

By DR. GEO. VASEY and J. N. ROSE.

Dr. Palmer spent some three months in Lower California in the early part of this year, and his work has proved very valuable in adding to our knowledge of the flora of this region. His work has been arduous, owing to the drought and heat, and the few accommodations to be had in this wild and sparsely inhabited country; this, added to his failing health, has made his work doubly trying.

The following are the places visited, with the date of collection and the numbers of the plants:

Places visited.	Date of collection.	Numbers (inclusive).
La Paz, Lower California	Jan. 20 to Feb. 5 ..	1-144
Guaymas, Mexico	Feb. 11	145-147
San Pedro, Martin Island	Feb. 13	148-150
Raza Island	Feb. 12	151-161
Guaymas, Mexico	Feb. 15 to 17.	162-176
Santa Rosalia	Feb. 24 to Mar. 3 ..	177-210
Santa Agueda	Mar. 4 to 5	211-264
Santa Rosalia	Mar. 15	265-273

In order that the fullest facility for the determination of the plants of the collection here described might be available, Mr. J. N. Rose, Assistant Botanist, spent some time at Cambridge, Mass., in investigating and comparing the plants with those contained in the herbarium of Harvard College. We gladly acknowledge the generous help of various botanists in the determination of difficult species, and especially that of Dr. Sereno Watson for his aid in studying many of the type plants in the Cambridge herbarium.

PLANTS COLLECTED AT LA PAZ, LOWER CALIFORNIA.¹

Great interest was felt in Dr. Palmer's trip to La Paz and vicinity this past winter and his rich collection has added much to our knowl-

¹ Read before the A. A. A. S. at Indianapolis, August 26, 1890.

edge of the flora of that region. Dr. Palmer left San Francisco December 25, by steamer, in company with Mr. T. S. Brandegee, who, landing at Magdalena Bay, proceeded overland to Cape St. Lucas, while Dr. Palmer continued to Guaymas, Mexico, and from there returned to La Paz. In about two weeks, from January 20 to February 5, one hundred and seventeen species were collected. Among these are two new genera, fourteen new species, and many more very rare ones. The southern half of the Californian peninsula has been almost unknown botanically until the last two seasons, when, through the energetic labors of Dr. Palmer and Mr. Brandegee, many new and rare species have been brought to the knowledge of science. The few collections that have been previously made in this region are well known to botanists. The first collection was made by Mr. R. B. Hinds on the voyage of H. M. S. *Sulphur* in 1839. Only about one hundred and fifty species in all were collected, the larger part being new. They were from Lower California, at San Quentin, San Bartolomé, Bay of Magdalena, and Cape St. Lucas. Of this number nineteen were collected at Cape St. Lucas, of which fifteen were described as new species.

No further collections were made in this region until 1859-'60, when Mr. L. J. Xantus spent several months at Cape St. Lucas making a collection of one hundred and twenty-two species, nineteen¹ of which Dr. Gray (Proc. Amer. Acad. V.) described as new. Quite a number of the others have since been separated from the species to which they were referred and are described as new. W. F. Fisher got a few things at the Cape in 1876, and Mr. W. H. Townsend in 1889. Major Rich² is the first person of whom we have any record who collected at La Paz. Three other valuable collections have been made in the central part of the peninsula, which ought to be mentioned here, on account of the numerous new species they contain (of which Dr. Palmer has re-collected many)—namely: the collections of Dr. Palmer in 1887, at Los Angeles Bay, and at Lagoon Head in 1889, and that of Mr. Brandegee in 1889, from Magdalena Bay to San Quentin. Of the one hundred and fifty species collected by Mr. Hinds, twenty-five were recollected and ten of the fifteen new species collected by him at Cape St. Lucas; forty-two of the one hundred and twenty-two species of Xantus were recollected, twelve of which were of the new ones of this collection; sixty-three of the species collected by Dr. Palmer at Guaymas and Los Angeles Bay were recollected, eight being of the new species described by Mr. Watson from that collection; seventy-six of the species were collected by Mr. Brandegee, six being his new species. Of the species collected fifty-six extend into the United States, mostly into the desert region of southern California and Arizona; seventy-six have been collected in Mexico (mostly from the western part); ten extend into Central America and eight are in South America.

¹ One was described by Dr. Englemann.

² Collected *Lycium Richii* Gray.

The following table will show the above facts in a condensed form :

	Number of species.	New species.	Number of genera.	Hinds. ¹	Xantus. ²	Watson. ³	Brandegee. ⁴	Lower Cal. fornia. ⁵	United States. ⁶	Mexico. ⁷	Central America. ⁸	South America. ⁹
Papaveraceæ	1		1		1	1	1	1	1	1	1	
Cruciferae	2		2		1	1	2	2				
Capparidaceæ	2		2			(2?) 1	(2?) 1	2	2	(2?) 1	1?	1
Violaceæ	1		1	1	1							
Polygalaceæ	1		1			1		1	1	1		
Caryophyllaceæ	1		1	1	1	1	1	1	1			
Portulacaceæ	1		1					1	1	1	1	1
Malvaceæ	6	1	4		1	4	5	5	1	3		
Sterculiaceæ	2	1	2		1	1	1	1	1	1	1	1
Malpighiaceæ	2		2	1	1	2	2	2	1	2		
Zygophyllaceæ	1		1					1	1	1		
Burseraceæ	1		1		1	1	1	1	1	1		
Olacineæ	1		1				1	1				
Rhamnaceæ	1		1		1			1	1	1		
Sapindaceæ	2	1	1	1?	2?							
Leguminosæ	19	2	13	1	5	10	9	12	8	12		
Loasaceæ	1		1	1		1	1	1				
Turneraceæ	1		1					1	1	1		
Cucurbitaceæ	3		3				1	2		1	1	1
Cactaceæ	1		1									
Ficoideæ	1		1			1		1	1	1	1	1
Rubiaceæ	3	2	1	1	1		1	1				
Compositæ	20	2	16	(8?) 7	10	8	(14?) 13	12	8	7		
Apocynaceæ	1		1	1	1	1	1	1	1	1	1	1
Asclepiadaceæ	1		1		1	1	1	1	1	1		
Polemoniaceæ	1		1							1	1	
Hydrophyllaceæ	1		1				1	1		1		
Borraginaceæ	5		4		1	(2?) 1	(2?) 1	3	(3?) 2	(3?) 2		
Convolvulaceæ	5		4	1	1	3	1	2	1	3	1	1?
Solanaceæ	6	1	4	1	1	2	2	4?	4?	3?		
Scrophulariaceæ	2		2	1		2	1	1	2	2		
Bignoniaceæ	1		1				1	1	1	1		
Acanthaceæ	7	2	6	1	2	2	5	5	2	4		
Verbenaceæ	2		1			1	1	1		1		
Labiatae	3		2	1	2	1		1	1	1	1	
Amarantaceæ	1		1		1		1	1				
Phytolaccaceæ	1		1	1	1	1	1	1		1		
Loranthaceæ	1		1									
Euphorbiaceæ	15	1	5	4	2	6	10	6	6	8		
Salicaceæ	1		1						1	1		
Palmæ	1		1		1	1				1		
Gramineæ	14	1	13		2	8	8	9	6	10	1	1
Total	143	14	110	25	43	63	76	88	57	77	10	8

¹ Hind's collection as reported by Bentham in "Botany of the Sulphur."

² Xantus's collection as reported by Dr. Gray in Proc. Amer. Acad. Vol. V.

³ Palmer's 1887 collection as reported by Mr. Watson in Proc. Amer. Acad. Vol. XXIV.

⁴ Brandegee's 1889 collection as reported by himself in Proc. Cal. Acad. 2d Ser. Vol. II.

⁵ Plants of Central and Northern California.

⁶ Plants extending into the United States.

⁷ Plants extending into Mexico.

⁸ Plants extending into Central America.

⁹ Plants extending into South America.

PAPAVERACEÆ.

Argemone Mexicana L. Called "*Cardo*"; very common in waste places. No. 55.

CRUCIFERÆ.

Cardamine Palmeri Watson. Proc. Amer. Acad. XXIV. 38. Only a few plants found growing in shade on mesas. Flowers white. No. 103.

Lyrocarpa Xanti Brandegee. Proc. Cal. Acad. 2nd Ser. II. 127. This is undoubtedly the same that Xantus (No. 2) got at Cape St. Lucas. A very common plant on lowlands in shade of trees and shrubs. Flowers, "light mauve." No. 73.

CAPPARIDACEÆ.

Wislizenia refracta Engelm. A common plant, 2 to 3 feet high, in alkali soil, near the sea-beach. The plant has a fetid odor. Our plant seems to belong to this species, having the trifoliolate leaves and small fruit. It seems distinct from the type of *W. Palmeri*, but recent specimens referred to that species by Watson and Brandegee seem to be intermediate forms uniting these species. Mr. Brandegee in a recent note (Proc. Cal. Acad. 2nd Ser. II. 128) says he thinks the distinction very slight. **No. 88.**

Atamisquea emarginata Miers. A small tree or bush 6 to 8 feet high, with few stems, but with many short lateral branches, very brittle and consequently very difficult to make into specimens. The flowers are white and "as finely scented as orange flowers." It was found contiguous to the ocean, on sandy mesas, just coming into bloom. **No. 58.**

VIOLACEÆ.

Ionidium fruticosum Benth. Bot. Sulph. 7. This plant is quite variable in its leaves. The lower part of the stem is often woody, developing considerable cork and seeming a true perennial. Our specimens seem to cover both the type and Gray's variety *dentata* made from Xantus's No. 4. Found abundantly under shade of trees. **No. 84.**

POLYGALACEÆ.

Krameria canescens Gray, var. *paucifolia* Rose, n. var. Slightly pubescent, with weak spreading branches: leaves very small (1 to 2 lines long) and distant: sepals (3 to 4 lines long) broad, merely acute.

Dr. Palmer collected at Guaymas and Los Angeles Bay, 1887, a plant much like this in habit and foliage, but with the narrower sepals and spatulate petals of the type and thus representing an intermediate form. It is proper to state here that Mr. Brandegee thinks the plant should go into *K. bicolor* Watson. While the plant has the petals and larger fruit of this species, it has different pubescence, smaller leaves, broader sepals, and smaller bracts to the pedicels. The following is Dr. Palmer's note: "Found upon mesas and edges of ravines among other plants, at the base of which they grow, and by which the weak stems are supported, making by the many interlacing branches a thick mass, which appears like a parasite. Not seen by itself. Found but one plant with seed; the seed-pods had sprouted upon the plant, forming three rather fleshy leaves like the leaves of the plant and of a bronze color. Flowers mauve." **No. 4.**

CARYOPHYLLACEÆ.

Drymaria crassifolia Benth. Bot. Sulph. 14. Abundant on sandy beach. No. 6 of Xantus. First collected by Hinds at Cape St. Lucas. **No. 142.**

PORTULACACEÆ.

Portulaca pilosa L. (f). Probably this species, but material insufficient for perfect determination. Common on beach and under trees contiguous to ocean. It is very tenacious of life, specimens before me having been in press for almost three months and still nearly as green as when collected. **No. 140.**

MALVACEÆ.

Sphæralcea Californica Rose, n. sp. Two to 4 and sometimes even 10 to 12 feet high, densely stellate-pubescent, becoming somewhat glabrate below: leaves triangular-oblong, $1\frac{1}{2}$ to $2\frac{1}{2}$ inches long, cordate or truncate at base, more or less 3-lobed, crenately-toothed, densely stellate-pubescent: inflorescence open paniculate; flowers orange-yellow: calyx 2 to $3\frac{1}{2}$ lines long, its lobes ovate-acuminate: petals 5 lines long, obovate: capsules small, depressed; carpels

12 to 16, strongly reticulated below, the sterile part a mere incurved acutish tip; ovule and seed one.

S. Coulteri Brandegee. Proc. Cal. Acad. 2nd Ser. II. 135.

One of the most common plants of Lower California. Dr. Palmer found it in the ravines and sandy spots contiguous to the beach at La Paz, growing 2 to 3 feet high. Mr. Brandegee writes me that in moist places it is 10 to 12 feet high. It is a rough, homely plant, avoided by all grazing animals. In habit and pubescence the plant resembles Xantus's (No. 10) plant from Cape St. Lucas, but the carpels are entirely different, in fact they are almost the exact counterpart of those of *S. Coulteri* Gr. This strong similarity has led Mr. Brandegee into the error of referring his specimens of last year to this species. While the carpels are so similar and like no other *Spharalcea*, still there seems a slight difference. *S. Coulteri* Gr. is less pubescent and the terminal part (wrongly called the "horizontal projection at base" by Watson and Brandegee) is very broad and obtuse. *S. Californica* is said by Mr. Brandegee to be an annual, but appears to be biennial or perhaps perennial. *S. Coulteri* Gr., originally described as perennial, is clearly an annual. It is also very different in habit; *S. Coulteri* Gr., is either procumbent or with branches ascending, while *S. Californica* is tall and erect. The pubescence is very different as well as the shape and toothing of the leaves, and the size and color of the flowers. **No. 18.**

Horsfordia Palmeri Watson. Proc. Amer. Acad. XXIV. 40. Six feet high, with single upright stem and many lateral branches: lower leaves 4 to 5 inches long. Common on sandy mesas, called "Mariola," and much used as a remedy in female diseases. **No. 96.**

Horsfordia rotundifolia Watson. Proc. Amer. Acad. XXIV. 41. Found sparingly on a stony ridge. **No. 117.**

Sida Xanti Gray. Proc. Amer. Acad. XXII. 296. Collected by Xantus 1859-'60, but not described until three years ago. The flowers are described as "apparently white but perhaps yellow." Dr. Palmer speaks of the "golden-colored bloom," but in the plants before us there is a purplish tinge. The few plants obtained are from a stony ridge. It grows 3 to 4 feet high, with two or three slender stems from the base and few lateral branches. **No. 27.**

Abutilon Palmeri Gray. **No. 90.**

Abutilon incanum Don. A plant 3 or 4 feet high, growing in sandy gulches among shrubs. **No. 120.**

STERCULIACEÆ.

Hermannia Pa'meri Rose n. sp. Stems perennial, weak, the long slender branches supported by other plants, densely stellate-pubescent: leaves deltoid in outline, cordate at base, 6 to 12 lines long, dentate, on petioles 4 to 8 lines long: peduncles slender, 6 to 15 lines long, 1 to 2-flowered, articulated at the upper bract, becoming reflexed: calyx 3 to 4 lines long, deeply cleft into lanceolate acute lobes, not enlarged in fruit: corolla golden yellow; petals 4 to 5 lines long, orbicular, cuneate at base, with an abrupt tip, spreading or reflexed: stamens 5; filaments very short; anthers erect, free but connivent as in *Solanum*: styles cohering: capsule 6 lines long, oblong, the dorsal crest of each capsule armed with long glochidiate spines; seeds 5 to 7 in each cell, somewhat incurved, the hilum end somewhat pointed, the surface dull with irregular depressions. Grows under shade of bushes on sandy mesas. Also collected at Todos Santos by Mr. T. S. Brandegee. **No. 29.**

Melochia tomentosa L. An upright growing shrubby plant, about 6 feet high, on mesas. Collected by Xantus (No. 13), and also at Magdalena Bay, etc., by Brandegee. **No. 121.**

MALPIGHIACEÆ.

Galphimia angustifolia Benth., var. *oblongifolia* Gray. Small plants under shade of trees, bloom yellow. This is the same as the more recent *G. linifolia* of Gray,

which Hemsley in Biol. Centr.-Amer. has retained, reducing Bentham's name to a synonym. Xantus (No. 15) collected the typical form. **No. 109.**

Janusia Californica Benth. Bot. Sulph. 8. Plant 4 to 6 feet high; hangs for support on other plants; along arroyos. Flowers yellow. **No. 42.**

ZYGOPHYLLACEÆ.

Larrea Mexicana Moric. Called "governadora," and is used in hot baths for the cure of rheumatism. **No. 54.**

BURSERACEÆ.

Bursera microphylla Gray. "Torote," a low tree 10 to 15 feet high, a foot or more in diameter, with a much-branching top. The bark is used for dyeing and tanning and is largely shipped to England. An injection made from the bark is used for gonorrhœa, and a drink prepared from the gum is taken for the same disease. **No. 64.**

OLACINEÆ.

Schœpfia Californica Brandegee. Proc. Cal. Acad. 2nd Ser. II. 139. **No. 143.**

RHAMNACEÆ.

Karwinskia Humboldtiana Zucc. Called "Cacachila;" a large bush 8 to 12 feet high. A decoction of the plant is used in common fever. **No. 67.**

SAPINDACEÆ.

Cardiospermum Palmeri Vasey & Rose. Proc. Nat. Mus. XIII. 147. A climbing plant not much seen. One plant only, found in bloom on the bank of a ravine. A part of the type. **No. 68.**

Cardiospermum tortuosum Benth. ? About 4 feet high, puberulent becoming glabrate and thorny; thorns 6 to 12 lines long, 2 to 3 forked at tip. Flowers few, white. Perhaps this species, but more glabrous and thorny than Mr. Bentham's form; it answers better Xantus's No. 19 referred as "*Cardiospermum* ? sp. nov." by Dr. Gray. **No. 2.**

LEGUMINOSÆ.

Coursetia glandulosa Gray. Proc. Amer. Acad. V. 156. The specimen of Xantus (No. 25) upon which this species was founded was merely in flower and it was doubtfully referred to this genus. Our plant has smaller leaves than the type and is much like larger-leaved forms of *C. microphylla* Gray, which perhaps will be referred to this species. A small tree, 15 feet high, with loose growing branches. "Bloom, lower part light yellow, upper white." Found in low places near a dry creek. **No. 38.**

Dalea chrysochiza Gray. Proc. Amer. Acad. V. 156. The type was first collected by Xantus (No. 22) at Cape St. Lucas; not collected since until last season, by T. S. Brandegee, at Cardon Grande. It is a trailing plant on sandy bottoms. Flowers "mauve-colored." **No. 71.**

Dalea maritima Brandegee *ined.* Very common on sandy beach near the ocean. **No. 79.**

Dalea Emeryi Gray. The plants grow on sandy beaches in masses covering very large spaces. The stems are procumbent and with interlacing branches hide the ground. They have a white appearance and at a distance look like dry hay. Occasionally a glabrous plant is found growing with others, a fact also noted by Mr. Brandegee. **No. 3.**

Cracca Edwardsii Gray. Found growing in shade of bushes. "Bloom, cream-colored; on the upper part red striped, turns reddish by age." **No. 51.**

- Æschynomene nivea** Brandegee. Proc. Cal. Acad. 2nd Ser. II. 150. Generally with one central stem or sometimes with a few lateral branches. "Bloom, sulphur color." Grows on stony ridges. Only collected before by Mr. Brandegee at Purisima, 1889. **No. 110.**
- Phaseolus filifolia** Benth. Bot. Sulph. 13. Small climbing plant along ravines. Flowers rose-colored. This is No. 13 of Xantus. **No. 82.**
- Cæsalpinia pannosa** Brandegee. Proc. Cal. Acad. 2nd Ser. II. 150. A very common shrub with two or three main branches. **No. 114.**
- Cæsalpinia** n. sp. A compact shrub 4 feet high, brown bark, younger parts somewhat pubescent and with stipitate glands: leaves small (the petiole and rachis with stipitate glands) with one pair of pinnae; leaflets 5 pairs, excentric, oblong, 2 to 4 lines long: racemes short-pedunculate, 1 to 3 inches long; bracts ovate, obtus, laciniate, caducous: pedicels slender, jointed near the summit: sepals 3 lines long, purple ("bronzed"), covered with stipitate glands: petals 5 to 6 lines long, yellow, more or less glandular: stamens somewhat villous: pods not seen.—On stony ridges. An abundant bloomer with fragrant flowers "as sweet as apple blossoms." Collected by Palmer in 1887 but not reported in Mr. Watson's list. **No. 95.**
- Hæmatoxylon boreale** Watson. Proc. Amer. Acad. XXI. 426. "Loose, thorny shrub, 8 to 10 feet high; has in the young leaves a peculiar bronze color; the older leaves fall when the new ones appear. The wood yields a dye." **No. 48.**
- Cassia Covesii** Gray. Called "Oyason;" the roots and stems are used as a blood purifier, and by the common people in the making of poultices and in hot baths for the cure of certain diseases. **No. 52.**
- Parkinsonia Torreyana** Watson. Called "Palo Verde." A low tree with branching top. "Just coming into flower" (Feb. 1). Perhaps this is the same plant collected by Mr. Brandegee in 1889. **No. 112.**
- Acacia Wrightii** Benth. A thorny shrub 6 feet high, with few stems. "The flowers have a pleasant honey-like aroma." **No. 94.**
- Acacia Farnesiana** Willd. Called "Vinorama." A small tree with loose branches. The outer bark when fresh is used to cure headache, and the pods were once used to make ink. "The flower very aromatic, honey-like." It is No. 34 of Xantus. **No. 60.**
- Acacia flexicaulis**¹ Benth. Stamens numerous, united into a tube longer than the corolla tube; pods curved, rough, black, an inch broad, 3 inches long. This is called "Palo fierro" (iron wood), and is a very useful plant. Although often a small tree, Dr. Palmer only found it at La Paz as a low thorny bush with rough scraggy branches. Flowers white. **No. 86.**
- Lysiloma candida** Brandegee. Proc. Cal. Acad. 2nd Ser. II. 153. Called "Palo blanco" (white wood). The bark is used for tanning purposes, while the wood is used in many ways. Only small trees, 12 to 15 feet high and 6 inches in diameter, were seen. Grows along arroyos. Flowers white. **No. 80.**
- Calliandra eriophylla** Benth. A small plant 2 feet high with compact top. The stamens are white tipped with red. On mesas. Not common. **No. 72.**
- Calliandra**, sp. Belonging to Bentham's series *Nitida*, near *C. Californica*, or it may be *C. Cumingii*. The pinnae are always 6 pairs, and leaflets about 20 pairs; the leaflets 2 to 3 lines long, midvein eccentric, a little pubescent, acute: peduncle 1½ to 2 inches long, with numerous flowers: calyx less than a line long: petals 3 lines long: pods 2½ to 3¼ inches long, considerably tapering at base, with thick margins, and a little puberulent. Only a single specimen collected, growing in a garden at La Paz. It is called "Tabardillo," by which name yellow fever was known to the Indians. The root of this plant is now used by the people of this region as a remedy for fevers. **No. 22.**
- Pithecolobium dulce** Benth. A large wide-spreading tree. Cultivated in most places in Mexico for its edible fruit, useful wood, and tan-bark. **No. 14.**

¹ This is *Pithecolobium Texense* Coulter Cont. Nat. Herb. I. 37.

LOASACEÆ.

Mentzelia adhærens Benth. Bot. Sulph. 15. Seen but sparingly; leaves stick to everything; flowers open at night. No. 57.

TURNERACEÆ.

Turnera diffusa Willd., var. *aphrodisiaca* Urban. Jahrb. Bot. Gart. Berl. II. 127. Dr. Palmer writes of this plant as follows: "This plant is widely known in this locality under the name Damiana. It has a wide medical reputation as a stimulant in exhausted vitality and for the cure of syphilis, and as a blood purifier used in the form of hot teas. All over the peninsula where it can be had it is used as a substitute for China tea; it has a pleasant flavor unlike any other plant. It is made into preparations with spirits and sold by druggists for its strengthening qualities. It refreshes one greatly when fatigued, alleviates nervous diseases, cures colic, and is an efficacious diuretic. It is put up at La Paz in large quantities. Flowers close at night." No. 11.

CUCURBITACEÆ.

Momordica Charantia L. Cultivated for its fruit, which is fed to tame birds. No. 59.

Maximowiczia (f). A trailing plant among rocks near sea-beach. The leaves are very hispid both above and below with stout appressed hairs. No. 102.

Echinocystis minima Watson. A common plant in creek bottoms and mesas; climbs over bushes. The leaves are deeply lobed, sometimes almost to the base. No. 65.

CACTACEÆ.

Mamillaria, sp. One foot to 18 inches high, with many bright crimson flowers; very fleshy scarlet fruit of rounded form. Perhaps a new species. No. 139.

FICOIDEÆ.

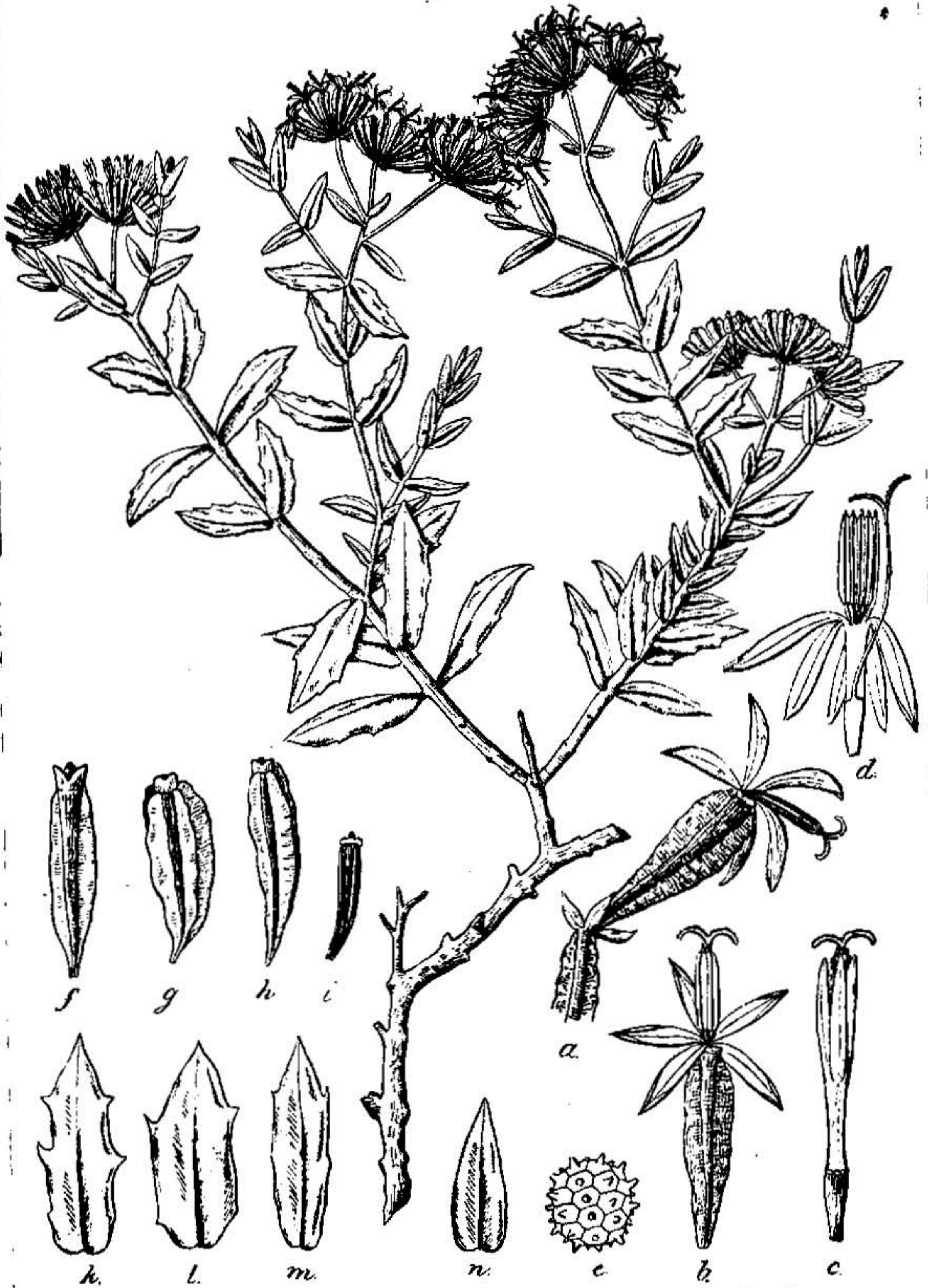
Mollugo verticillata L. Only three small plants were found, growing under bushes on mesas. The plants are small, with linear leaves. No. 36.

RUBIACEÆ.

Houstonia asperuloides Gray. Proc. Amer. Acad. V. 158. This species is quite variable. A good figure (No. 13) appears in Botany of the Sulphur. The corolla tube is sometimes slender filiform, as figured, in other specimens broader, gradually running into the calyx. Some (No. 31^a) are quite glabrous, with long filiform pedicels and slender branches; others are somewhat granulate, with capsules short and sessile or glomerate in the axils and the whole plant depressed. "Corolla pink." Collected first by Hinds of the Sulphur in 1837 and by Xantus (No. 43) in 1859-'60, both at Cape St. Lucas, and probably by Mr. Brandegee, 1889, at Magdalena Bay. Common on sandy plains and mesas. No. 24 (in part), 31^a.

Houstonia Brandegeana Rose, n. sp. Near the last but more erect, with slender branches: pedicels long and slender, sometimes 1½ inches long; calyx ¼ line long, with short erect obtuse lobes: corolla 3 lines long, with slender tube two or three times the length of the calyx, with broad funnel-form throat and obtuse lobes; the throat yellowish green; the limb violet: capsule globose (¼ line long), not tapering into a long, narrow base.—Habitat the same as the above. No. 31 and 24^a.

Houstonia arenaria Rose, n. sp. A taller species, much branching, glabrous: leaves lanceolate, 9 to 15 lines long by 2 to 3 lines broad; stipules laciniate: flowers numerous, either sessile in the forks, or along the rachis, or on filiform pedicels, 3 to 4 lines long: calyx-tube with small obtusish lobes: corolla "pure white."



COULTERELLA, nov. gen.

tinged with pink in drying, $1\frac{1}{4}$ lines long, with slender tube: capsule obtuse at base, free from calyx merely at the top, emarginate at apex; seeds 4, minutely reticulated.—Growing on sand. A very rare and well-marked species. **No. 28.**

COMPOSITÆ.

Hofmeisteria fasciculata Walp. Rep. VI. 106. Collected by Hinds, Xantus (No. 46), and Brandegee. It is illustrated in Bot. Sulph under Helogyne. Very abundant in crevices of rocky bluffs facing the ocean. Whole plant light green, about a foot high, leaves very fleshy, flowers rose-colored. **No. 137.**

Aplopappus arenarius Benth. It is undoubtedly a true Aplopappus and probably Bentham's species from Cape St. Lucas. It does not appear to be Xantus's species, referred here by Gray. The *A. spinulosus* of Brandegee, from San Gregoria, probably belongs with it. The style tips are deltoid and the akenes are turbinate, and 8 to 10-ribbed. Found on the mesas and exposed places. A compact plant and an abundant bloomer. **No. 17.**

Coulterella,¹ n. gen. (Plate I.) Heads 1-flowered (rarely 2), in cymose, glomerate clusters. Flowers tubular, fertile. Proper involucre tubular, of three united bracts, 3-toothed at apex, winged in fruit, inclosing the ovary and corolla tube and permanently investing the akene. Corolla regular, with narrow proper tube and deeply cut into lanceolate divisions longer than the tube. Stamens inserted high up in the tube; anthers wholly exerted, sagittate at base. Style branches elongated and obtuse, papillose. Akene linear-cuneate and terete; pappus a minute annular crown or obsolete.—A compact shrub, glabrous and succulent. Leaves opposite, entire or dentate, sessile. Corolla yellow. Probably belonging to the tribe *Helianthoideæ*, sub-tribe *Lagasceæ*, but possibly of the tribe *Inuloideæ*, and a relationship has been suggested with Gray's little *Dimeresia* of Oregon. The opposite leaves, broad style-branches and merely sagittate anthers seem to more properly refer it to the former tribe. Named in honor of John M. Coulter, editor of Botanical Gazette and author of numerous botanical works.

Coulterella capitata, n. sp. A shrub with many branches, forming a large bush 4 feet high: leaves very fleshy, about an inch long, with few spiny dentations: the glomerate clusters loose, 6 to 25-flowered, each head in the axil of a small setaceous bract: corolla lobes 3-nerved, 2 lines long: involucre in fruit 3 to 4 lines long, spongy, 3-angled or winged: akenes $1\frac{1}{4}$ lines long: the plant has a strong aroma of the oil of lemon.—Rare, on a sandy beach near the ocean. **No. 136.**

EXPLANATION TO PLATE I.

a. A head with the base of the receptacle, and three of the bracts. *b.* A flower. *c.* A flower; the involucre removed. *d.* A flower laid open, and the style withdrawn from the anther-tube. *e.* A pollen-grain. *f.* Involucre of a young flower. *g.* Four-winged involucre of an older flower. *h.* Three-winged involucre of an older flower. *i.* The achenium. *k, l, m, n.* Four leaves showing difference in form.

Parthenice mollis Gray *vide* Brandegee. **No. 66.**

Franseria tenuifolia Gray. "Instafiata;" a remedy for fever and ague. Collected by Xantus (No. 55). **No. 53.**

Viguiera deltoidea Gray. Proc. Amer. Acad. V. 161. Dr. Palmer has collected this species again, near the original station. He says "its several stems form a compact, shrubby plant, 8 to 10 feet high, blooming abundantly. It is very common along gulleys and among trees and shrubs on the mesas. This plant is much taller than was originally supposed. The leaves are either alternate

¹Read before the Biological Society of Washington, D. C., May 31, 1890.

- or opposite, even to the top. Very near to this is var. *Parishii* (*V. Parishii* Greene), of more northern range; the southern form passes into the type. **No. 30.**
- Viguiera tomentosa** Gray. Proc. Amer. Acad. V. 161. This is a very rare species in herbaria and is only known before from the collection of Xantus (1859-60), from the vicinity of Cape St. Lucas. An upright growing plant with several woody stems. It has a large, loosely hanging top; a very free bloomer. Common on arroyos and on mesas. **No. 83.**
- Encelia Palmeri** Vasey & Rose. Proc. Nat. Mus. IX. 535. These specimens have somewhat smaller leaves, either cordate or cuneate at base; the akenes obovate. Dr. Palmer says it is a very common plant here. It is 3 feet high, in compact masses, and is a very showy plant. It has been collected by Mr. Brandegee at Magdalena Island and San Gregoria. **No. 15.**
- Encelia farinosa** Gray. Only a single plant collected. It is called "Incienseo," because of the gum which the woody part yields being used by the priests in early times for incense. It is amber-colored and has a pleasant aroma. Not before collected so far south. Mr. Brandegee has referred here his *E. radians*. **No. 50.**
- Bidens Xantiana** Rose, n. sp. Stems terete, a foot to 15 inches high, slender and somewhat spreading at base, glabrous throughout: leaves much shorter than internodes, opposite, bipinnate with short linear segments: head on long peduncles: the outer involucre of short linear bracts, the inner longer, ovate and acute: disk about 3 lines high; rays 8, about 5 lines long, styliferous: akenes 2-awned.—We name this species for Xantus, who collected here in 1859-'60. It seems nearest *B. angustissima* H. B. K., but differs in its terete stem, shorter leaflets, and glabrous involucre. It differs from most *Bidens* in its styliferous rays. Only a single plant seen; this grew in a shady arroyo. **No. 5.**
- Leptosyne parthenioides**, var. **dissecta** Watson. Proc. Amer. Acad. XXIV. 56. Very similar in habit to this form. It is *L. heterocarpha* Gray, and if this species is not to be kept distinct, as is held by Mr. Watson and Mr. Brandegee, it should be referred to this variety and not to the species proper, where it is assigned by these authors. The akenes are smaller than in the species proper; the dissected wings thick and corky, and the awn retrorsely hispid; this was noticed by Mr. Brandegee, but in Bentham's figure (Bot. Sulphurt. 16) they are upwardly hispid. No. 62 of Xantus. Found in only a few places in the shade of trees. **No. 19.**
- Perityle Emoryi** Torr. A common plant in sandy, alkaline plains, near the ocean. Very succulent plant; difficult to dry. **No. 78.**
- Perityle microglossa** Benth. Grows abundantly under shade of trees. Collected by Xantus (No. 48) at Cape St. Lucas, 1856-'60. **No. 92.**
- Palafoxia arenaria** Brandegee. Proc. Cal. Acad. 2nd series, II. 178. Found very abundantly and just coming into bloom, upon a sandy beach near the ocean. **No. 100.**
- Porophyllum gracile** Benth. Dr. Palmer gives the common name "Yerba-del-venado;" it is used by the country people in preparing a tea to relieve pain in the stomach. No. 64 of Xantus. **No. 8.**
- Dysodia speciosa** Gray. Proc. Amer. Acad. V. 163. Rather plentiful, growing near and supporting itself upon other plants. Its bright amber flowers and strong bergamot aroma make it a very attractive plant. No. 65 of Xantus. **No. 32.**
- Pectis Palmeri** Watson. Proc. Amer. Acad. XXIV. 58. Stony ridge. Very rare. only known before from Palmer's 1887 collection from Guaymas, Mexico. **No. 113.**
- Pectis multisecta** Benth. A very common plant on sandy mesas, bright, with numerous yellow flowers. **No. 23.**
- Bebbia atriplicifolia** Greene. Very common; 6 to 8 feet high, with many stems, which hang loosely over other plants; flowers orange-yellow, with pleasant

odor. First collected by Xantus (No. 47) and recently by Brandegee. This southern form seems distinct from *B. juncea*. **No. 108.**

Trixis angustifolia DC. About 2 feet high. **No. 7.**

APOCYNACEÆ.

Vallesia dichotoma Ruiz & Pavon. A shrubby plant, 10 to 12 feet high, in alkali soil near sea-beach. Fruit white, "flowers white," drying orange. **No. 89**

ASCLEPIADACEÆ.

Asclepias subulata Decaisne. "Called Yamete." Only collected in flower. Xantus (No. 91) collected it in fruit. **No. 56.**

POLEMONIACEÆ.

Loeselia ciliata L. Only a few poor specimens seen on the edge of ravine, in sandy soil under bushes. Corolla blue. The leaves are not so spinosely toothed as in the specimens collected by Palmer in 1885. So far as known it has not before been reported from Lower California and is rarely collected in Mexico and Central America. **No. 9.**

HYDROPHYLLACEÆ.

Phacelia scariosa Brandegee. Proc. Cal. Acad. 2nd Ser. II. 185. Grows on sandy beaches near the ocean. A very handsome species. **No. 105.**

BORRAGINACEÆ.

Cordia sp. "Very much like *C. cylindristachya*, also near *C. Palmeri* but leaves too-crenate." S. Watson. **No. 39.**

Heliotropium parvifolium DC. Three to four feet high; flowers yellowish-white. In low creek bottoms in shade of trees. Not common. **No. 45.**

Bourreria Sonoræ Watson. Proc. Amer. Acad. XXIV. 62. A bush 10 to 12 feet high, with a few upright and many lateral stems. The large black fruit edible and of the taste of hawthorn. **No. 113.**

Krynitzkia micromeres Gray? This differs somewhat from the northern forms of this species, but it seems to be the same as Xantus's No. 76, made a part of this species by Gray. **No. 111.**

Krynitzkia lelocarpa F. & M. Perhaps this species, but material not sufficient. **No. 26.**

CONVOLVULACEÆ.

Ipomœa bracteata Cav. **No. 69.**

Jacquemontia abutiloides Benth. Common along ravines and among thick bushes on mesas, climbing about 5 feet high. **No. 35.**

Evolvulus linifolius L. Only a few plants seen. The leaves are very narrow and the flowers very small, about 2 lines in diameter. The specimens of Palmer's from Guaymas have much larger flowers (over 5 lines long) and seem to approach *E. Arizonicus*. Xantus collected *E. alsinoides* at Cape St. Lucas, but this species has much broader leaves. **No. 1.**

Cuscuta Palmeri Watson. Proc. Amer. Acad. XXIV. 64. Parasitic on *Euphorbia* sp.; found on sandy mesas. **No. 90.**

Cuscuta Americana L.? Perhaps new; the bracts are large and fimbriate. The seeds 4, etc. **No. 141.**

SOLANACEÆ.

Solanum Dulcamara L. "Cultivated, but said to be native." Fifteen feet long, climbing. It has long bunches of violet-colored flowers and chocolate-colored berries. **No. 74.**

- Solanum Hindsianum** Benth. Bot. Sulph. p. 30. This species was collected by Xantus (No. 84), and referred by Dr. Gray in Proc. Amer. Acad. vol. V, and also in Syn. Flora to *S. elæagnifolium*, but in a recent note he says "perhaps distinct." In habit the two are very similar, but in our species the flowers are much larger ($1\frac{1}{2}$ inches in diameter) as well as the fruit, and on shorter, thicker, and mostly erect pedicels. Dr. Palmer says of it: "A common upright growing plant with few stems and showy light purple flowers." Found on mesas. The following have been referred to this species: *Pringle* (1884), Sonora; *Palmer*, Guaymas; *Orcutt* (1886) San Quentin. **No. 25.**
- Physalis crassifolia** Benth. Flowers 6 to 8 lines broad. Yellow, with a dark eye. Anthers yellow, called "tomate capotillo." The fruit is edible. Mr. Brandegee thinks *P. glabra* should be referred to this species. Our plant is not the same as *P. glabra* of Xantus's collection from Cape St. Lucas. Only a few plants collected, growing under shade of bushes. **No. 76.**
- Lycium umbellatum** Rose, n. sp. Large, compact, shrubby plant, 8 to 12 feet high, with somewhat viscid pubescence: leaves fleshy, oblong to ovate-oblong, 1 to $1\frac{1}{2}$ inches long: flowers solitary in the axils of the leaves or in umbellate cluster at the end of the branches; pedicels 4 lines long: calyx $2\frac{1}{2}$ lines long, with acute lobes: corolla purple, 7 lines long, five-lobed: stamens included, glandular-pubescent at base.—Very common in alkali land or in sand near the beach. A species near *L. Fremonti* of Arizona. **No. 13.**
- Lycium Andersonii** Gray? A loose-growing plant, with many stems, 6 to 8 feet high: flowers white, berries red, edible: leaves narrowly spatulate, sometimes over an inch long; pedicels of variable length: corolla 4 lines long, the stamens exserted: fruit smaller than in *L. Andersonii*.—Grows in alkaline soil near the ocean. **No. 101.**
- Nicotiana trigonophylla** Dunal. This is called "tobacco cayotte," and was formerly used by the Indians. Common in the sandy arroyos. Formerly referred to *N. ipomopsisiflora* (Xantus, No. 88), but in Syn. Flora placed under this species. Mr. Brandegee, however, keeps it distinct. **No. 75.**

SCROPHULARIACEÆ.

- Antirrhinum cyathiferum** Benth. This plant has been collected at Magdalena Bay, *Hinds*, *Brandegee*; Guaymas, *Palmer* and *Echrenberg*; and in Arizona, *Palmer*. From the latter collection was made Gray's *A. chytrospermum* (Proc. Amer. Acad. vol. XII.), since very properly referred to the above species by Mr. Watson. The calyx teeth and length of corolla tubes upon which Gray's species was founded are variable characters. A good figure of this species appears in the Botany of the Sulphur (t. 19), but the calyx teeth are somewhat exaggerated. Grows in sandy spots not far from the ocean. "Purple flowers, fleshy stems." **No. 91.**
- Conobea intermedia** Gray. Plant very rare about La Paz on rocky ledges. Corolla purple. This is the only specimen we have seen from Lower California. **No. 81.**

BIGNONIACEÆ.

- Tecoma stans** Juss. A small tree 10 to 15 feet high and 6 to 8 inches in diameter. The wood used by the ancient Indians for their bows and arrows, and hence the name "Palo de arco." The large yellow flowers are very fragrant. Common along arroyos. **No. 70.**

ACANTHACEÆ.

- Elytraria tridentata** Vahl. Called "Cordoncello." Used as a hot tea for pains in the stomach. Grows on rocky ridges. **No. 6.**

Calophanes peninsularis Rose, n. sp. A compact shrubby plant 4 feet high, but young parts and inflorescence glutinous: leaves small (about 1 inch long), ovate to ovate-lanceolate on short petioles: flowers axillary or on short lateral branches: bracts small, deciduous: calyx 3 lines long, deeply cleft into five narrow acute divisions: corolla purple, 15 lines long, regular, with five short obtuse lobes, a broad open throat abruptly contracted into a distinct, slender tube 5 lines long: stamens didymous; anthers mucronulate: capsule, including the thick solid stipe, 9 lines long, covered with short stipitate glands, 4-seeded (two to each cell), these flat and thin.—Common on the mesas about La Paz. **No. 20.**

Carlowrightia cordifolia Gray. Proc. Amer. Acad. XXIV. 406. A rare plant, growing under shade of bushes on mesas. This plant differs from the poor specimens of the type in the National Herbarium, which has the flowers arranged unilaterally along the spike, and the leaves more strongly veined. The corolla also is described as being white, while Dr. Palmer writes that these are canary color. Mr. Brandegee also referred here a plant from farther north. Dr. Palmer got the type from Batopilas, Mexico. **No. 107.**

Beloperone Californica Benth. Only two plants seen. No. 98 from the edge of an arroyo. Only a few slender branches in bloom at the top of the plant, which is 5 feet high. No. 99, near the bank of a dry creek, was also in poor condition, but contained a few capsules as well as flowers. The seeds are smooth (as Mr. Brandegee has pointed out) and not "coarsely rugose," as stated in Syn. Flora. Our seeds are somewhat wrinkled. **Nos. 98 and 99.**

Justicia insolita Brandegee. Proc. Cal. Acad. 2nd ser. II. 195. Grows under shade of trees and bushes. A very handsome plant. **No. 40.**

Justicia Palmeri Rose, n. sp. About 3 feet high, cinereous, puberulent: leaves lanceolate, 2 inches long, on short petioles, glabrous, or with a little appressed pubescence: flowers few, on small axillary branches or forming terminal panicles: bracts 3, foliaceous, spatulate, 3 to 5 lines long, the central one longer and broader: calyx small, $1\frac{1}{2}$ lines long, deeply 5-cleft: corolla scarlet, about 1 inch long, deeply bilabiate, its tube 6 to 7 lines long; lower lip 3-cleft, its oblong lobes 3 to 4 lines long; upper lobe with a slight notch: stamens 2, inserted in the throat; anther cells 2, parallel, unequally inserted, the lower one mucronate: capsule glabrous, 7 lines long, the stout stipe a little more than half its length; seeds 4, 2 lines long, flattened, cordate orbicular rugose.—The seeds of this species are very similar to those of *Siphonoglossa Pilosella* Torr., but in other respects it is quite different. Found growing in shade on an arroyo. Very rare. **No. 97.**

Dicliptera resupinata Juss. Only a few specimens found. This is No. 69 of Xantus. **No. 119.**

VERBENACEÆ.

Lippia Palmeri Watson (Proc. Amer. Acad. XXIV. 67), var. **spicata** Rose, n. var. The flowers are arranged in spikes sometimes over an inch long and the whole inflorescence is more compact. It is called "Origaro" and is used in cooking much as thyme and sage is in the United States, and especially with fish and sausage, and sometimes in place of tea. **No. 62.**

Lippia sp. Probably new. **No. 104.**

LABIATÆ.

Hyptis laniflora Benth. Bot. Sulphur, p. 42. First collected by Mr. Hinds, and afterwards by Xantus (No. 71) at Cape St. Lucas, and not since collected until the present season. A good plate (t. 20) is found in the Bot. Sulphur. It is 6 to 8 feet high, with few upright stems and many lateral branches. It has a sage-like aroma and a decoction made from it is used in fevers. The people call it "Salvia." Very common. **No. 87.**

Hyptis tephrodes Gray. Proc. Amer. Acad. V. 164. A shrub 5 to 8 feet high, but described as "herbaceous." With much the habit of the preceding species. Found in sandy ravines. Before only known from Xantus's collection (No. 72).
No. 47.

Salvia privoidea Benth. Bot. Sulphur, p. 150. A Central American and Mexican plant extending into the United States; not before found in Lower California. Only a few poor specimens seen under shade of bushes on the edge of a ravine. The style branches are as described by Bentham. **No. 10.**

AMARANTACEÆ.

Celosia floribunda Gray. Proc. Amer. Acad. vol. V. 163. Eight feet high, with a few weak stems; lower leaves very different from upper, from 5 to 7 inches long. This species was described by Dr. Gray from Xantus's specimen (No. 98), and has not been collected until recently by Mr. Brandegee at Comondu. Common plant on borders of ravines and on mesas. Bentham & Hooker, vol. III. 25, wrongly credit this species to Moquin. **No. 6.**

PHYTOLACCACEÆ.

Stegnosperma halimifolia Benth. Bot. Sulphur, p. 17. A large bushy shrub, 10 feet high. It is commonly called Amole, as the powdered root is used as soap. The plant has the reputation of curing hydrophobia. **No. 49.**

LORANTHACEÆ.

Phoradendron, sp. Material insufficient for determination. Only a few leafless branches with terminal black berries collected. **No. 138.**

EUPHORBIACEÆ.¹

Simmondsia Californica Nutt. Dr. Palmer says "this common shrub is in full bloom (January 30) at Guaymas; in 1887 it was in bloom in October." **No. 93.**

Phyllanthus (Menarda) ciliato-glandulosus Millsp. Proc. Cal. Sci. 2nd series, II. 219; named from a specimen collected by Mr. T. S. Brandegee on Magdalena Island, off the coast. Very typical specimens from ravines in the shade of bushes, La Paz. **No. 37.**

Argythamnia sericophylla Gray. A compact plant growing on low sandy bottoms. **No. 44.**

Argythamnia lanceolata Müll. Arg. (l. c.) Named from a specimen collected at Magdalena Bay. *Sorophytum lanceolatum* Benth. Typical plants from La Paz. **No. 21.**

Euphorbia (Anisophyllum) setiloba Engelm., var. *dentata* Engelm. in litt. Named from a specimen collected in San Lucas, on the peninsula, by Xantus. Two specimens of this variety are in the collection, a very compact form (No. O), reminding one immediately of the species, and a much wider spreading individual with quite large dentate leaves. Mesas, under trees. **No. 34.**

Euphorbia polycarpa Benth. Bot. Sulph. p. 50; the form *E. micromera* Boiss. DC., Prodr., XV, pt. II, 44. Common on sandy beaches near the ocean. **No. 118.**

Euphorbia tomentulosa Watson. Proc. Amer. Acad. XXII. 476. Named from a specimen collected at Rosario, in the northern part of the peninsula, by Mr. C. R. Orcutt. Small compact plants 46-61^{cm} high, found growing upon a stony ridge near La Paz. **No. 41.**

Euphorbia involuta Millsp. Proc. Cal. Acad. 2nd series, II. 227. On the specimens of this gathering the larger leaves at the bifurcation of the branches (all lost from the type specimens collected by Mr. T. S. Brandegee at Comondu) are present. We therefore add to the description of the type, larger leaves, oblong, 1^{cm} long, 5^{mm} wide; petiolate, entire, obtuse, deeply marked in the center with a large red blotch similar to that upon the leaves of *E. maculata*. A.

¹The species of this family were determined by Dr. C. F. Millspaugh.

Euphorbia blepharostipula Millsp., n. sp. Fruticose; branches covered by a thin pinkish-white, irregularly shallow-fissured bark; internodes comparatively short: leaves short petiolate, ovate-elliptical, obtuse, emarginate or slightly apiculate-mucronate, pallid beneath; stipules blephariform dentate and ciliate on the free margin: involucres pedicellate in the axils of the leaves, campanulate, glabrous without and within; lobes somewhat triangular, ciliate glands transversely ovate, brownish-green, concave; appendages white, orbicular entire: ovary glabrous: carpels very strongly keeled: styles bifid to near the base, thrice the length of the immature ovary and recurved to its base.—A loosely growing shrubby plant. Branches 12-30^{cm} long (as collected); internodes $\frac{1}{2}$ -3^{cm}, leaves 5-12^{mm} long, 2-5^{mm} wide. Common on stony ridges, near La Paz. Near *E. collectioides*. No. 43.

Euphorbia Xanti Engelm. Named from a specimen collected by Xantus at Cape San Lucas. A form with variegated (white and rose) appendages and lanceolate leaves 2-3^{cm} long and 3-7^{mm} wide. Plants 2-3 $\frac{1}{2}$ ^m high, with a number of stems and but few branches, and having flowers white within and rose colored without. No. 12.

Euphorbia Comoduana Millsp. Proc. Cal. Acad. 2nd series, II. 229. Named from a specimen collected at Comodu, on this peninsula, by Mr. T. S. Brandegee. A rather compact plant 1-1 $\frac{1}{2}$ ^m high, found growing among underbrush upon mesas. Again we regret the absence of fruit upon the specimens collected, rendering the exact place of this species uncertain. No. 63.

Euphorbia dentata Michx., var. *lasiocarpa* Boiss. DC. Prodr. XV². 72. Named from a specimen in the Herb. Petrop. collected in Tanquesillos by Karwinsky. In shade of trees. No. 116.

Euphorbia eriantha Benth. Bot. Sulph. 51. Named from a specimen collected at Magdalena Bay, on the peninsula. A very slender, long-branched form, found growing among the underbrush of mesas. No. 46.

Euphorbia sp. No. 33.

Jatropha canescens Mill., *vide* S. Watson. No. 106.

SALICACEÆ.

Mr. M. S. Bebb kindly furnishes us the following notes on the only Willow collected:

Salix bonplandiana H. B. K., var. *pallida* Anders. Monog. Sal. 18, DC. Prodr. 16², 200. *Salix nigra* Marsh., *forma serotina* (?) This appears to bear the same relation to more northerly forms of *S. nigra* which the serotinous state of *S. lasiolepis*, at one time recognized as a good species, does to the normal development of typical *lasiolepis*. The appearance of the aments in the axils of the mature leaves is the result of climatic influences, and would seem to be in the former instance, as it is well-known to be in the latter, of no significance, not even as indicating a variety. The leaves are not thinly puberulous, as they are said to be in the type specimens from Mazatlan, but this character is so inconstant in forms of this group that its absence only calls for mention because of the undue prominence given it in describing *S. pallida* Kunth.

PALMÆ.

Washingtonia Sonoræ Watson. No. 144.

GRAMINEÆ.

Heteropogon contortus R. & S. One specimen found growing upon a rocky ledge. No. 122.

Panicum barbinode Trin. Cane-like grass, 3 to 4 feet high; the old stems lie upon the ground and root at the joints. Found in a garden. Cattle eat it readily. No. 131.

- Panicum Crus-galli** L., a form. Found only a few plants by a ditch of water in a garden. No. 130.
- Setaria caudata** Beauv. Cane-like grass, 4 to 5 feet high. Found in low places near dry creeks. No. 125.
- Cenchrus Palmeri** Vasey. Proc. Cal. Acad., 2nd series, II. 211. Common on low, sandy bottoms. No. 132.
- Aristida Californica** Thurb. Found among bushes on mesas. No. 128.
- Aristida dispersa** Trin. Habitat as 127. No. 127a.
- Aristida dispersa**, var.† Found upon rocky hillsides. No. 128.
- Muhlenbergia debilis** Trin. Grew in the shade of bushes and rocks. No. 129.
- Chloris elegans** H. B. K. Found in a garden by a water ditch. No. 133.
- Bouteloua polystachya** Torr. Found among bushes on mesas. No. 226.
- Monanthochloe littoralis** Engelm. Very common in salt marshes. No. 123.
- Diplachne imbricata** Thurb. Grew by a water ditch in a garden. No. 134.
- Eragrostis Purshii** Schrad., var. Habitat as 134. No. 135.
- Rhachidospermum Mexicanum** Vasey. Bot. Gaz. XV. 106, Pl. XII. Found on sandy bottoms at a short distance from the ocean, growing sparsely in small bunches. A few plants only had seed. No. 124.

LICHENS.

The following lichens were determined by Mr. Walter Evans:

- Ramalina complanata** Ach. No. 85a.
- Physcia tribacia** Tuckerman. Found near the ocean. No. 85b.

SAN PEDRO MARTIN ISLAND PLANTS.

Dr. Palmer visited this island¹ two years ago, making a collection of nineteen species, twelve of which were considered peculiar to the island. On February 13 of the present year he spent one day on this island and obtained but three plants, all Compositæ. One is the new genus *Pelucha* of Mr. Watson, now collected in splendid condition and in abundance. Another proves to be a new species of *Hofmeisteria*, and the third a *Perityle*, new to the island. Dr. Palmer makes the following note with reference to the flora of the island: These plants did not bloom during the rainy season of 1887, as they are winter bloomers. There is no especial flora making its appearance, as has been supposed, during the winter. No rain has fallen since early in November, and all plants except those deeply rooted are dry and dead. The following is a list of the twenty species known to inhabit the island. Those which are peculiar to the island are marked thus.*

* <i>Sphæralcea</i> , sp.	<i>Perityle Emoryi</i> Torr
<i>Abutilon aurantiacum</i> Wats.	<i>Trixis angustifolia</i> DC., var <i>latiuscula</i> Gray.
<i>Petalonyx linearis</i> Greene.	<i>Nicotiana trigonophylla</i> Dunal.
<i>Mentzelia adharens</i> Benth.	<i>Stegnosperma halimifolia</i> Benth.
<i>Echinopepon insularis</i> Wats.	<i>Euphorbia petrina</i> Wats.
<i>Cereus Pringlei</i> Wats.	<i>Ficus Palmeri</i> Wats.
<i>Opuntia</i> †	<i>Cyperus aristatus</i> Rottb.
<i>Hofmeisteria laphamioides</i> Rose.	<i>Muhlenbergia tenella</i> Trin.
<i>Baccharis sarothroides</i> Gray.	
* <i>Pelucha trifida</i> Wats.	

¹ For note concerning this island see Watson, Proc. Amer. Acad. XXIV. 37.

Hofmeisteria laphamioides¹ Rose, n. sp. Shrubby, 3 feet high, glandular pubescent: leaves opposite or alternate above, 6 or 8 lines long, on petioles somewhat longer, triangular, doubly crenate: flowers in small corymbose clusters, sometimes pedicels very short: involucre 4 lines long, of linear-acuminate bracts in about 3 series: flowers numerous: corolla white, 2½ to 3 lines long: style deeply cleft, much exserted: pappus of 8 to 10 scabrous setæ, alternating with as many paleæ.—Very common over the summit of San Pedro Martin Island. February 13.

Dr. Palmer says: "A compact plant with dense green leaves just coming into bloom." This plant was collected by Dr. Palmer on the same island (No. 406) in 1887, but in very poor condition. It is the *Laphamia* (f) sp., Proc. Amer. Acad. XXIV. 37. **No. 148.**

Pelucha trifida Watson. Proc. Amer. Acad. XXIV. 55. This plant was described as a new genus by Dr. Watson last year. Dr. Palmer has now collected it in great abundance. The stems are covered with a white tomentum, forming a strong contrast with the abundant golden-yellow flowers. It has a very strong aroma as of cloves and cinnamon, and so powerful is this at times that it causes persons to sneeze and cough. **No. 150.**

Perityle Emoryi Torr. This is the same form collected by Dr. Palmer at Los Angeles Bay (No. 562), 1887. Only two plants found at the south end of the island. **No. 149.**

RAZA ISLAND PLANTS.

Dr. Palmer spent one day (February 12, 1890) on this island, and collected eight species of Phanerogams with one lichen. The following is from his notes:

Isla Raza is an island 136 miles northwest from Guaymas, and from 45 to 50 miles west from San Pedro Martin Island. It is three-fourths of a mile long (from east to west) and half a mile wide; it rises about 100 feet above the water; being covered with a deposit of guano, it has a whitish appearance. The island is exceedingly rocky, except a few low places which seem to have been subjected to the action of large volumes of water; these spots produce a few varieties of plants which are usually found upon alkali soil (some of the same plants were found on the rocky surfaces also). Above these places were found three patches of Cactus. One plant of *Cerens Pringlei*, 10 feet high, stood among loose rocks above high tide. There had been no rain-fall on the island for more than a year.

Opuntia tunicata Lehm. Our plant seems the same as that of Parry and Palmer's distribution; fruit 6 to 10-jointed. A few small patches seen in exposed places among rocks. **No. 160.**

Opuntia echinocarpa Engelm. & Bigel. A few small patches among rocks. Not in flower, and but few scattered fruits. **No. 161.**

Sesuvium Portulacastrum L. A very common plant in large patches near the salt water. Dr. Palmer says this plant has been often mistaken for a low grass by persons passing the island. In its exposed position and dense green color on a barren island of almost total whiteness it would naturally command notice by passing vessels. **No. 153.**

Salicornia ambigua Michx. Only two small patches of this plant seen near the beach. **No. 152.**

¹ Dr. Palmer has since collected this species at Santa Rosalia, but a more glabrous form with the lower leaves oval and with cordate base. The plant is quite bushy, 2 to 2½ feet high, with fleshy leaves, just coming into bloom March 1.

Atriplex dilatata Greene. Pitt. I. 264. Grows on low places on the island without rocks. No. 155 is the fertile plant, and 156 is the sterile plant. Dr. Palmer says the sterile heads are purple before opening. **Nos. 155 and 156.**

Atriplex insularis Rose, n. sp. Diccions, woody below, 5 to 6 feet high, much branched, glaucous throughout: leaves 9 to 15 lines long, oval with cuneate base and broadly spatulate, on short petioles, obtuse or retuse: inflorescence of male plant almost naked and a dense panicle of glomerules; of female plant a dense somewhat leafy spike: bracts a line long, a little broader than long, with truncate apex and with small teeth, the sides with two conspicuous toothed crests.—One of the commonest plants of the island. It grows in the low places where there are no rocks, and in the rocky ledges wherever there is soil. No. 158 is the fertile plant and 159 the sterile. Our species seems nearest *A. Palmeri* of Guadalupe Island, but is very different in its bracts, etc. **Nos. 158 and 159.**

No. 157. An unknown shrub without flowers or fruit, and almost destitute of leaves. Only a few plants seen. It resembles *Pluchea borealis*.

No. 154. Also, in poor condition, a perennial with many small pubescent leaves.

SANTA ROSALIA AND SANTA AGUEDA PLANTS.

From San Pedro and Raza Island Dr. Palmer visited two places on the eastern side of the peninsula of Lower California, namely, Santa Rosalia and Santa Agueda. At the first-named place he spent ten days (February 20 to March 3), and after visiting Santa Agueda returned for another day (March 15). This locality is 92 miles nearly northwest from Guaymas. The country is hilly and rough, covered with rocks. Only two heavy rains have fallen this season; the strong northwest winds which prevail here soon destroyed any indication of rain. Only the most favorable circumstances admit of plants blooming at this season.

March 4–5 was spent at Santa Agueda, 10 miles from Santa Rosalia. Dr. Palmer says this locality is watered by springs and surrounded by low stony mountains, with a thin, diversified vegetation that now looks parched; even the cactus is without flowers. The small patches of land that can be cultivated afford but few plants, and the great number of domestic animals kept here (owing to the springs) devour everything outside of the inclosures except what is so absolutely bitter or thorny that they can not do so. All the vegetable used by the miners at Santa Rosalia are brought from this place.

CRUCIFERÆ.

Draba Sonoræ Greene. Bull. Cal. Acad. II. 59. In an abandoned garden. To this species Palmer's 611, from San Quentin, should have been referred. Santa Agueda, February 24 to March 3. **No. 237.**

Cardamine Palmeri Watson. The petals are 3-lobed. Found in shade at the edge of a garden, Santa Agueda, March 4 to 6. **No. 244.**

Sisymbrium canescens Nutt. Very common. Found in an abandoned garden at Santa Agueda, February 24 to March 3. **Nos. 238 and 243.**

Lepidium intermedium Gray. Very common in an abandoned garden, Santa Agueda, February 24 to March 3. Not before collected in Lower California. **No. 234.**

POLYGALACEÆ.

Krameria canescens Gray, var. *paucifolia* Rose. Dr. Palmer says it is a shrub with many branches, which interlace, forming a dense mass. The older wood is of a copper color, and the flowers of a plum color. The wood is said to yield a yellow dye. It imparts a cherry-red to water. It is commonly called "Mezquitilla." Santa Agueda, March 4-6. No. 252.

TAMARISCINEÆ.

Fouquieria spinosa H. B. K. A thorny bush 5 to 16 feet high, according to soil, with the trunk 1 to 2 feet long and 6 inches in diameter. The flowers are bright scarlet, clustered at the ends of the branches. In the old plant the bark breaks away and gives off a gummy substance. The wood is hard and makes a very good fire, and when burning gives off a pleasant odor. Santa Rosalia, March 15. No. 266.

MALVACEÆ.

Sphæralcea albiflora Rose, n. sp. Two to 2½ feet high; slender, densely covered with white stellate pubescence: leaves oval to ovate, 9 to 18 lines long, the petiole somewhat shorter, somewhat rugose, subcordate base, crenate margin: flowers white, 6 lines broad, in short axillary clustered racemes: calyx 3 lines long, with slender acutish lobes: carpel reniform, a full line long, the lower part strongly and finely reticulated, the upper and sterile part very small.—In a cañon growing in shade, near Santa Rosalia, March 3.

This plant mostly resembles *S. sulphurea* of Guadalupe Island in habit and carpellary structure, but the pubescence lacks the tomentum, the calyx lobes not so broad; the carpels, while similar, are easily separated; the carpel is slender and shorter, with stronger and finer reticulations and a shorter sterile part. In habit resembling *S. axillaris*, but with very different carpels. No. 205.

Sphæralcea violacea Rose, n. sp. Simple stems about 3 feet high, densely covered with a stellate pubescence: leaves ovate to lanceolate acuminate, 2 to 2½ inches long: calyx, 2½ lines long, its lobes ovate, acute: petals, 5 lines long, lilac: carpels 1 to 1½ lines long; the sterile part about half the length of the carpel, obtuse.—Growing in shade at Santa Rosalia, March 15, and seemingly not common.

Resembling in habit some specimens of *S. Fendleri* in the Gray Herbarium but with very different carpels. The carpels most resemble those of Xantus's plant (No. 10) from La Paz, but the sterile part of the carpel not so large. No. 206.

Horsfordia Newberryi Gray. Four to 6 feet high: lower leaves (including petiole) 5 to 7 inches long: flowers golden-yellow. Gravelly arroyos and sandy hillsides. Santa Rosalia, February 14 to March 3. No. 169.

Abutilon Dugesii Watson? Proc. Am. Acad. XXI. 447. Santa Rosalia, March 15. No. 199.

STERCULIACEÆ.

Ayenia microphylla Gray. Santa Rosalia, February 24 to March 3. No. 268.

MALPIGHIACEÆ.

Hiræa macroptera DC. "Gallinita." The roots of this plant are considered of medicinal value. Santa Agueda, March 4 to 6. No. 251.

ZYGOPHYLLACEÆ.

Fagonia Californica Benth. Stems terete; the upper part of the stem closely set with sessile glands. Only a few plants seen and mostly out of bloom and dry. On stony ridges. Santa Rosalia, February 24 to March 3. No. 180.

The same. In sandy spots in stony ravines. "Bloom, crimson-colored." Santa Rosalia, February 24 to March 3. No. 196.

Fagonia Palmeri n. sp. Stout perennial, woody at base, 1 to 1½ feet high, more or less glandular pubescent: leaves opposite, digitate; leaflets 5 to 7, linear, with spiny tips, 4 to 5 lines long; stipules long erect spines: petals 4 lines long, deep rose color.—Santa Rosalia, February 24 to March 3.

This species very much resembles *F. Californica* in fruit and flowers, but of very different habit, leaves, and upright stipules; and in its 5 leaflets differs from all the other described species of this genus. Dr. Palmer says of it: grows in a bunch from several stems 1 to 1½ feet high, the lower ones often lie on the ground. It is very spiny. The leaves, especially upon the lower two-thirds of the plant, have a decided golden hue, which is very noticeable at a distance. **No. 209.**

RHAMNACEÆ.

Colubrina glabra Watson. Proc. Amer. Acad. XXIV. 44. The plant is much larger than the one from Guaymas. It is here a small tree or bush 5 to 12 feet high, scrubby in character. The branches are often slender and pendant. Dr. Palmer thinks this is owing to the soil and moisture, for in dry and stony places they are short and straight. Only a single plant found in flower, and they of a yellowish-green color. It is very common in stony gulches. Santa Rosalia, March 15. **No. 267.**

SAPINDACEÆ.

Paullinia (?) sp. Climbing or trailing over bushes: leaves 3-foliolate: flowers in small clusters: petals 4: stamens 8. Agueda, March 4 to 6. Most of the leaves had fallen; the remaining ones closely resemble *B. Sonoræ*. The fruit (immature) is different and is apparently tuberculate. Only 3 plants seen in a sandy gulch at Santa Agueda, March 4 to 6. **No. 263.**

LEGUMINOSÆ.

Hosackia strigosa Nutt. The same form as collected by Palmer at Los Angeles Bay (602), in 1887. Only three plants found, in a cañon near Santa Rosalia, March 1. **No. 201.**

Dalea Parryi Gray. Santa Rosalia, February 23. **No. 181.**

Dalea mollis Benth. Not common. Santa Rosalia, February 23. **No. 200.**

Dalea Emoryi ? Gray. This seems to be the same glabrous form that Mr. Brandegee got at Santa Maria. Common in low, sandy places, growing about 3 feet high. It yields a yellow dye. Santa Rosalia, February 24 to March 13. **No. 179.**

Dalea megacarpa Watson. Proc. Amer. Acad. XXI. 359. A large bushy plant 2½ feet high; flowers yellow, with an agreeable honey-like odor. Common in arroyos. Santa Rosalia, February 24 to March 5. **No. 182.**

Tephrosia Purissimæ Brandegee. Proc. Cal. Acad. 2nd ser. II. 149. Hardly distinguishable from *T. Palmeri* except in the purple flowers. It was about past flowering March 1, when Dr. Palmer visited this region. It grows sparsely in a cañon near Santa Rosalia. **No. 198.**

Parkinsonia microphylla Torr. Called "Lebon" (?) Dr. Palmer says the young branches are much relished by domestic animals and are largely gathered by the natives for this purpose. **No. 265.**

Cassia Covesii Gray. Branching at base, 3 to 5 feet high; a free bloomer. The pods about 8 in a compact cluster. The stipules are longer than described, being 5 to 6 lines long. The pubescence is of a yellowish hue. Dr. Palmer says it differs from the Guaymas form and in appearance is somewhat different from our herbarium specimens. Palmer's Los Angeles plant (557 of 1887) is the same as this one. Santa Rosalia, March 5. **No. 192.**

Pithecolobium, sp. A large tree growing near water, with a trunk 5 feet long and 8 inches in diameter, with an immense top out of all proportion to the trunk, and a great profusion of yellow, rather sweet-scented, flowers. A useful wood. The flowers in capitate clusters on peduncles 1 to 2 inches long. The numerous short stamens are united into a very short tube; the ovary on a stipe of twice its length. The generic position of this species is doubtful, but its connate stamens forming a tube places it in Bentham's section *Ingeæ*. Santa Agueda, March 4 to 6. **No. 261.**

ONAGRACEÆ.

Oenothera cardiophylla Torr. One and one-half feet high; growing in shade. "Bloom yellow;" drying reddish. Santa Rosalia, February 24 to March 3. **No. 204.**

LOASACEÆ.

Mentzelia adhærens Benth. Only one plant seen and this in a garden. Santa Agueda, March 4 to 6. **No. 254.**

Petalonyx linearis Greene. A bushy plant 3 feet high. Common in the arroyos near the sea. Santa Rosalia, February 24 to March 3. **No. 189.**

RUBIACEÆ.

Houstonia brevipes Rose n. sp. About 1 foot high, branching, smooth: leaves filiform, 9 to 12 lines long; stipules small, with 1 or 2 setæ: pedicels 2 to 3 lines long or wanting: calyx in flower 1 line long; in fruit 2 lines long, with 4 acute divisions: corolla pink, with slender tube 3 lines long, and lobes 2 lines long: capsules globular, about one-third free from the calyx, about 40 seeded.—Only a single specimen collected near Santa Rosalia, in a cañon, February 24 to March 3.

This species seems nearest *H. longipes*, but with more numerous seed, etc. **No. 202.**

COMPOSITÆ.

Hofmeisteria laphamioides Rose. Grows in shade of rocks (see page 79) Santa Rosalia, March 1. **No. 208.**

Hofmeisteria pubescens Watson. Proc. Amer. Acad. XXIV. 54. Akenes often with 3 setæ. "A compact roundish plant growing in crevices of rocks and shady recesses of hills, mountains, and along shady sides of arroyos. When exposed the leaves are larger and more fleshy. The wood is brittle: bloom light pink, rather sweet scented; free bloomer. The very dry surroundings cause this plant to be very noticeable." Santa Rosalia, February 24 to March 3. **No. 178.**

Brickellia brachiata Gray. Proc. Amer. Acad. XXI. 385. This differs from the type in being glabrous. The plant is eaten readily by domestic animals, and it was hard to find good botanical specimens, although the plant is very common. Santa Rosalia, March 15. **No. 269.**

Pluchea camphorata DC. Commonly called "Canela," the Spanish of cinnamon, which the smell of the flowers is considered to resemble. When growing among bushes and on the outskirts of gardens where there is plenty of moisture it is 8 to 10 feet high. Just coming into bloom, Santa Agueda, March 4 to 6. **No. 253.**

Gnaphalium Sprengelii Hook. & Arn. In an old garden, Santa Agueda, March 4 to 6. **No. 235.**

Hymenoclea Salsola T. & G. A loose-growing bushy plant, 4 feet high. In cañon near Santa Rosalia, February 24 to March 4. **No. 197.**

Franseria ambrosioides Cav. Commonly called "Chicoria." The plant when cooked in oil is much used and esteemed for local application in rheumatism. Common in waste places along wet ditches. Santa Agueda, March 4 to 6. **No. 229.**

- Heliopsis bupthalmoides** DuRoi. Only a single specimen found in a moist spot at the edge of a garden, Santa Agueda, March 4 to 6. No. 230.
- Eclipta alba** Hasskarl. Santa Agueda, March 4 to 6. No. 228.
- Viguiera deltoidea** Gray, var. **Parishii** Rose. About two feet high. Collected at the edge of garden among rocks, Santa Agueda, March 4 to 6. No. 250.
- Leptosyne parthenioides** Gray, var. **dissecta** Watson. Only a few plants seen along the edge of ditches in a garden, Santa Agueda, March 4 to 6. No. 248.
- Perityle Emoryi** Torr. Santa Rosalia, March 4 to 6. No. 184.
- Perityle deltoidea** Watson. Collected growing with *P. Emoryi*. No. 185.
- Perityle aurea** Rose n. sp. About 10 inches high, much branched and spreading, somewhat pubescent and glandular: lower leaves broader than long, an inch broad, irregularly lobed and serrate; upper leaves becoming very small: rays yellow: disk corolla with slender tube abruptly passing into the swollen tubular campanulate throat: style broader, slender, with slender acuminate appendages: akenes small (a line long), linear and straight, with ciliate margins: the pappus of a crown of united squamellæ with fimbriate edge and a short awn.—Santa Rosalia, February 24 to March 3.
- It resembles *P. Emoryi* most in habit and akenes, but its yellow rays, more swollen corolla throat, slenderer, less granular corolla tube and style tips keep it out of this species. It grows with *P. deltoidea*, but of different habit, leaves, style tips, etc. No. 185^a.
- Perityle Fitchii** Torr. Only a single plant seen; this under an overhanging rock at the outer edge of a garden. This plant is evidently taller than the species has been described, as branches which Dr. Palmer has collected are 15 or more inches long; many of the leaves opposite. Santa Agueda, March 4 to 6. No. 247.
- Porophyllum crassifolium** Watson. Proc. Amer. Acad. XXIV. 57. The plant is deep-green, which attracts attention; as the few associated plants are now dry and dead. The leaves are very fleshy and the plant has a strong aroma of the cultivated *Rue*. Grows in cañons near the sea. Santa Rosalia, February 24 to March 3. No. 177.
- Bebbia juncea** Greene. The leaves are not entire, but strongly toothed or lobed. The involucre bracts are very short and ovate. Santa Agueda, March 4 to 6. No. 249.
- Encelia farinosa** Gray. Very common plant everywhere, but only in sheltered places, and where there was plenty of moisture, was the plant found in bloom. Rays bright yellow; free bloomer. No animal eats it. Santa Rosalia, February 24 to March 3. No. 186.
- Peucephyllum Schottii** Gray. The pappus in our plant is different from Gray's description; it is of two kinds; the outer and shorter is composed of numerous capillary bristles, the inner of long linear paleæ with strong mid rib. Santa Rosalia, March 1. No. 207.

PLUMBAGINACEÆ.

- Plumbago scandens** L. Only a single plant in an old garden, Santa Agueda, March 4 to 6. No. 233.

PRIMULACEÆ.

- Samolus ebracteatus** H. B. K. Santa Agueda, March 4 to 6. No. 256.

APOCYNACEÆ.

- Vallesia dichotoma** Ruiz & Pavon. Called "Welatave." Common; sea beaches, and near alkali spots. Santa Agueda, March 4 to 6. No. 260.

ASCLEPIDACEÆ.

- Philibertia linearis** Gray, var. *heterophylla* Gray. Only one small plant found in a garden at Santa Agueda, March 4 to 6. No. 231.
- Asclepias albicans** Watson. Proc. Amer Acad. XXIV. 59. Santa Rosalia, February 24 to March 3. Also collected by Orentt, 1889, from the Colorado Desert, California. No. 193.

HYDROPHYLLACEÆ.

- Phacelia scariosa** Brandegæe. Santa Agueda, March 4 to 6. No. 236.
- Nama demissum** Gray. In an old garden, Santa Agueda, March 4 to 6. No. 240.
- Ellisia chrysanthemifolia** Benth. Probably from an old garden at Santa Agueda. No. 239.

BORRAGINACEÆ.

- Coldenia canescens** DC. Flowers rose-colored. On stony mesas and arroyos. Santa Rosalia, February 24 to March 3. No. 195.
- Tournefortia capitata** Mart. & Gal. A shrub 4 feet high, with many branches and a profusion of white flowers which are as sweet scented as the cultivated heliotrope. "Berries of a waxy-white color, and pulpy." Only 4 plants seen in a garden, Santa Agueda, March 4 to 6. No. 246.
- Krynitzkia**, sp. In an old garden, Santa Agueda, March 4 to 6. No. 241.
- Krynitzkia**, sp. With the last. No. 242.
- Krynitzkia racemosa** Greene Santa Rosalia, February 24 to March 3. No. 188.
- Krynitzkia peninsularis** Rose, n. sp. Several feet high, compact, and bushy; older stem of grayish color, with a coarse, more or less compressed pubescence: leaves numerous, especially on the short lateral branches, linear, 9 lines or less long, pubescence papillose at base: spike more or less elongated, leafy bracteate: pedicels short, erect: calyx 3 lines long, deeply cleft into linear divisions: corolla white, 4 lines broad: nutlets 4, about a line long, with a large oval or triangular scar on the ventral side, below the middle; the ventral angle sharp.—A common plant in a peculiar cañon in a gypsum mountain near Santa Rosalia, February 23 to March 3.
- This is a peculiar species belonging to Gray's section *Amblynotus*. No. 203.

SOLANACEÆ.

- Lycium**, sp. Flowers 4-merous. A bush 5 to 6 feet high; flowers purple. In stony ravine, Santa Rosalia, February 24 to March 3. No. 183.

SCROPHULARIACEÆ.

- Mimulus luteus** L. In a waste field, Santa Agueda, March 3 to 5. No. 233.

ACANTHACEÆ.

- Calophanes Californica** Rose, n. sp. A very branching shrub, 3 to 4 feet high; older stems white; younger stems and leaves glutinous pubescent: leaves lanceolate, about an inch long entire: calyx deeply cleft into long slender lobes 6 to 8 lines long: corolla purple, 2 inches long with a broad open throat, abruptly contracted into a slender tube 1 inch long: stamens mucronate at base: posterior lobe of style short but evident, the anterior long filiform: capsule 9 to 10 lines long, including the style: seeds 4, flat and thin.—Collected at Santa Rosalia, February 24 to March 3.

The stickiness and odor is much like that of green tobacco. It has very large, handsome flowers. It resembles very much some species of *Ruellia*, but has the mucronulate anthers and 4-seeded capsule of *Calophanes*. No. 190.

Beloperone Californica Benth. About 3 feet high, growing in stony gulches. Grazing animals will not eat it. Santa Agueda, March 4 to 6, No. 255.

Berginia Palmeri Rose, n. sp. A foot and a half high, very shrubby: largest leaves broadly ovate to oblong, an inch long, 6 to 9 lines broad: spikes rather dense, 1 to 2 inches long, glandular: corolla pink: seeds flattened (not rugose) puberulent.

A careful comparison of the type specimens as found in the Gray Herbarium of *Pringleophytum lanceolatum* and *B. virgata* convinces us that they are the same species. Mr. Brandegee, in his paper on the plants from Baja California, suggested that the two were probably the same. No. 272.

VERBENACEÆ.

Lippia fastigiata Brandegee. Proc. Cal. Acad. 2nd series, II. 196. "Damiana." It has a wide medicinal reputation. It is much used by the common people in place of China tea. The flowers are pinkish and purple. Santa Agueda, March 4 to 6. No. 264.

NYCTAGINACEÆ.

Boerhaavia viscosa Lag. Only a few plants seen at the edge of a garden, Santa Agueda, March 4 to 6. No. 225.

Boerhaavia scandens L. Only two plants seen in a stony ravine. Flowers a creamy white. Santa Agueda, March 4 to 6. No. 262.

CHENOPODIACEÆ.

Atriplex Barclayana Dietr., form. But a single plant found, in alkali ground, Santa Agueda, March 4 to 6. No. 259.

POLYGONACEÆ.

Pterostegia drymarioides F. & M. Santa Rosalia, March 15. No. 271.

EUPHORBIACEÆ.

Euphorbia, sp. Very common. Santa Rosalia, March 3. No. 187.

Euphorbia, sp. Common in the outer edge of a garden, Santa Agueda, March 4 to 6. No. 245.

URTICACEÆ.

Ficus Palmeri Watson. Proc. Amer. Acad. XXIV. 77. The leaves somewhat larger than originally described; sometimes 4 inches long by 3 broad: found growing in a crevice in the pure gypsum, without any apparent soil: the trunk only about 6 inches in diameter. Santa Rosalia, February 27 to March 3. No. 210.

NAIADACEÆ.

Potamogeton pectinatus L. A very common plant at Santa Agueda. No. 226.

TYPHACEÆ.

Typha angustifolia L. Called Tule. Much used in covering houses and for which it is largely gathered and sold by the common people. The stems are often 15 feet high. Santa Agueda, March 4 to 6. No. 212.

PHYTOLACCACEÆ.

Stegnosperma halimifolia Benth. A large, loose-growing shrub, 5 to 10 feet high. Common near the sea beach. Santa Agueda, March 4 to 6. No. 258.

GRAMINEÆ.

- Paspalum distichum** L. This plant grows upon alkali soil along water ditches, and even in the water; much alkali causes the runners to become reddish. It grows freely where sugar cane is raised, if not destroyed by cultivation; most of the specimens were from an unfavorable situation. Commonly called "Gramma." It is considered of value as a medicinal plant, being used for kidney troubles and gonorrhœa. **No. 214.**
- Panicum sanguinale** L. Found upon the top of the embankment to a water ditch; only a few plants seen. **No. 222.**
- Panicum colonum** L. Found in a field where sugar cane had been raised at some past time, and which was being replanted. **No. 223.**
- Cenchrus echinatus** L. "Pests of every garden; no animal will eat it after it blooms." **No. 220.**
- Aristida bromoides** H. B. K, *form.* **No. 270.**
- Muhlenbergia debilis** Trin. Rather abundant in the shade of plants; in a moist place in a garden. **No. 217.**
- Sporobolus argutus** Kunth. Habitat same as 223. **No. 224.**
- Agrostis verticillata** Trin. Grows on banks of ditches, hanging over to the water. Only one specimen found in a garden. **No. 221.**
- Diplachne imbricata** Thurb. Found in a garden. Only these specimens seen. **No. 216.**
- Phragmites communis** Trin. "Near the water the cane grows from 20 to 25 feet high, the lower part being very slender for the height, as the specimens show. Domestic animals devour it. It is used for various purposes by the natives. They cut it to certain lengths, and having split it, beat it flat and then weave it in and out, making a large square mat, with which they form sides or ends of the houses; they place it over the rafters before the tule thatch is put on; they use it to cover verandas, and also for screens for doors." **No. 211.**
- Eragrostis major** Host. Found in garden. The only specimens seen. **No. 215.**
- Eragrostis Purshii** Schrad. Common among alfalfa; but few of the plants were in good condition. **No. 218.**
- Distichlis maritima** (†) *form.* "Grows in thick masses in wet alkali soils; saw much that was cut to feed animals, which was twice the size of these specimens, but they had no flowers or seed; these were the best to be had; found on a dry spot on the outer edge of a garden." **No. 219.**

PLANTS COLLECTED AT GUAYMAS.

The plants collected at Guaymas were obtained at several different times. No very extensive collection was made at this time, as this region was so thoroughly examined in 1887; yet in spite of this former almost exhaustive collection this region still yields some new species and others of great interest. Of this latter class is to be mentioned *Prosopis heterophylla* Benthams, now for the first time obtained in flower, and *Sphæralcea Coulteri* Gray.

Sphæralcea Coulteri Gray.¹ A little annual 2 to 6 inches high, growing scatteringly among other small plants on sandy plains near Guaymas. The flowers are small but quite showy, of "bright amber color," but in dried specimens rose-colored. The specimens are not in fruit, but Dr. Watson has kindly sent me

¹Dr. Palmer has since sent fruiting specimens of this species, leaving no doubt as to its identity.

the specimens of these species in the Gray Herb., and it is clearly the same *S. Coulteri*. It differs widely from all other *Sphæroleæ* in habit as well as carpels. The locality at which Coulter collected this species is doubtful, and it is as probable he got it at Guaymas as in either California or Arizona, February 13 to 17. **No. 171.**

Zizyphus obtusifolia Gray. A loose-growing, thorny shrub, generally found in mesquit thickets; fruit black. February 15 to 17. **No. 162.**

Sapindus marginatus Willd. In cultivation at Guaymas. **No. 176.**

Cæsalpinia Palmeri Watson. Proc. Amer. Acad. XXIV. 47. Dr. Palmer says: Abundant plant, blooming now (February 11) with as much freedom as it does in the rainy season. No. 70 of 1887 collection. **No. 146.**

Coursetia glandulosa Gray. In our remarks on this species from La Paz, p. 68, we mentioned that *C. microphylla* should probably be referred to this species. A careful examination of a large supply of material from Guaymas convinces us that the two species are the same. *C. glandulosa* was collected by Xantus from the extreme point of Lower California in flower, with merely the old leaves remaining. *C. microphylla* came from Pringle's Arizonian collection, and is somewhat more advanced with the small leaves, but the older and larger ones gone. The leaflets of this species are very variable, and the two forms are sometimes to be found on the same specimens. In most of the specimens sent the leaflets are as in *C. microphylla*, small (1 to 3 lines), long sericeous pubescent, while on the same plant we find the large (7 lines long by 3 to 4 lines broad) almost glabrous leaflets of the original *C. glandulosa*: the flowers are white, becoming rose-colored. A very common shrub in gravelly arroyos about Guaymas. It is 4 to 6 feet high, with several stems from the base and somewhat spreading. A very profuse bloomer. February 15 to 17. It seems also to have been collected here by Palmer without flowers or fruit in 1887, but not reported by Mr. Watson. **No. 163.**

Parkinsonia Torreyana Watson. About 15 feet high with large top: flowers yellow. Dr. Palmer says that as the flowers open the leaves fall and the plant remains without leaves until the seeds are mature. **No. 275.**

Acacia Willardiana Rose.¹ A slender tree, 10 to 15 feet high, with few drooping branches, glabrous, and without spines of any kind: leaves with minute, deciduous stipules; petioles phyllodia-like, 3 to 12 inches long by 1 line broad, either naked or with mostly 1, sometimes 2, and rarely 4 pairs of pinnæ at the tip; leaflets where present 4 to 5 pairs, sometimes 12 to 15, somewhat fleshy, indistinctly 1 to 2 nerved, 1 to 2½ lines long, abruptly acute, glabrous or minutely pilose, as also the petioles and younger parts of the stem: the inflorescence a panicle of slender spikes terminating the slender branches: spikes 2 inches long; flowers yellow: calyx companulate, about a line long, with 5 broad obtuse teeth: petals a little longer, distinct to the base, oblong to cuneate oblong, obtuse or abruptly acute: stamens 140 to 150. "Legumen planum, rectum, 4½ pollicare, 5 lin. laterum." *Prosopis* (†) *heterophylla* Benth. Lond. Jour. Bot.

¹ While reading the proof of this paper a letter comes from Dr. Palmer, under date of September 10, 1890, inclosing two mature legumes of this species, which now for the first time have been collected, and may be described as follows:

Legume glabrous, oblong to linear-oblong, 2 to 4 inches long, 5 to 7 lines broad, obtuse at tip, cuneate at base, extending into the short stipe; some constricted, others not at all, membranaceous, with delicate irregular reticulations; seeds brownish, oval to oblong, 4 to 5 lines long.

The numerous filaments are still present in these mature specimens, forming a white fringe surrounding the stipe, and it is a little strange that they had not been observed by Benthon, who had the immature legumes.

Only two mature legumes were found, all the others having been killed by the hot winds of June. Dr. Palmer says "this was confirmed by my own observation, for an entire day was spent among *Acacia Willardiana* and I only found two pods."

(1846), v. 82; Rev. Mim., 379. Watson, Index, 252; and Proc. Amer. Acad. XXIV. 48. Hemsley Biol. Centr.-Amer. I. 344.

Hab. "Sonora alta in Mexico, Coulter;" Guaymas, Palmer (No. 628), 1887, and now from the "rocky islands and ledges on the coast of Guaymas harbor."

The collection of this plant in flower for the first time enables us to decide its generic position. It was collected by Dr. Thomas Coulter fifty or more years ago, but only in fruit, and there is apparently but a single specimen in existence, which is in the herbarium of Trinity College, Dublin. It was found by Mr. Bentham when on a visit to this herbarium, and was described by him in 1846 in the Lond. Jour. Bot. as a new species of *Prosopis*. It was doubtfully referred here, however, and its possible reference to *Acacia* was mentioned. Palmer's specimen of 1887 was without flower or fruit, and Mr. Watson could do no more than identify it as Bentham's species. Although in habit the species of the two genera are similar, with the flowers the two are readily and clearly separated, *Prosopis* having always ten stamens, while in *Acacia* they are numerous, and in ours decidedly so, being 140 to 150. There are several little points of difference between Bentham's description and our plant, which should be noted here, but the general characters are so clear as to leave no doubt as to the identity of the two plants. Bentham says "stipulae obsoletae," while we find small but deciduous stipules; also "pinnae 2, rarius 4," while in none of our specimens do we find more than one pair; again "foliola 12 to 15 juga," while ours are mostly 4 to 6, a few are 10 to 15. The young branches are white, as mentioned by Bentham, but in age become a grey or reddish brown. Unfortunately a new name must be coined for the species, *A. heterophylla* having long before (1805) been used by Willdenow; neither can it be named for either of the collectors, Coulter or Palmer, as they both have species named for them in the genus; nor for Mr. Bentham, who, although not so fortunate, is represented in the synonymy of this genus. At the request of Dr. Palmer we have named this species for Mr. Alex. Willard, United States consul at Guaymas, Mexico, who has given every aid possible to him on his several visits at that place. **No. 164.**

Cereus pecten-aboriginum Engelm. in Watson, Proc. Amer. Acad. XXI. 429. The flowers of this species are collected now for the first time, and the following additional characters are supplementary to the description found in Mr. Watson's paper referred to above.

Flowers 2 to 3 inches long: ovary closely covered with dense soft hair, without spines or rarely a few: sepals purplish, succulent: petals white, fleshy: stamens very numerous: style with ten linear stigmas with spiny tips.

The plants grow 30 feet high and a foot or more in diameter, with many branches. The fruit is formed at or near the top. **No. 274.**

Hofmeisteria crassifolia Watson. Proc. Amer. Acad. XXIV. 53. Found on an island in the harbor at Guaymas, growing near the water. Very sweet scented. **No. 165.**

Hymenatherum coccineum Gray. The type collected by Pringle at Tucson, Arizona, (1884), and we believe not since obtained. Dr. Palmer finds it very common on a sandy, gravelly plain, in exposed places. It has a strong odor. February 15 to 17, near Guaymas. **No. 168.**

Pectis Coulteri Gray. Found in sandy, gravelly plains near Guaymas, February 15 to 17. **No. 173.**

Cordia Watsoni Rose, n. sp. Besides the differences given by Mr. Watson, the following characters furnished by the mature fruit clearly set this off from *C. Greggii*: The fruiting calyx of different shape, almost globose (4 to 5 lines in diameter) and not closely inclosing the fruit, but loosely and somewhat inflated: pubescent instead of strigose: the fruit much larger, with thick, bony walls instead of thin crustaceous.

Cordia Greggii Torr., var. *Palmeri* Watson. Proc. Amer. Acad. XXIV. 61.

Mr. Watson's varietal name can not be used, as it has already been given to another species. We take pleasure in dedicating this species to him, as he has partially pointed out the difference from *C. Greggii*, and I have no doubt would have separated it at the time had the fruiting material been at hand.
No. 174.

Krynitzkia, sp. Guaymas, February 15 to 17. No. 169.

Phacelia scariosa Brandegee. A few plants found on the edge of an island, February 15 to 17. No. 146.

Nama demissum Gray. Common on gravelly plains about Guaymas, February 15 to 17. No. 172.

Gilia (Eugilia) Sonoræ Rose, n. sp. A small annual, 1 to 3 inches high, branching and somewhat spreading, puberulent throughout: leaves alternate, pinnate; segments linear, acute: calyx 2 lines long; sepals green, connected by scarious margins $\frac{1}{2}$ their length: corolla of the same length or a little longer, but slightly spreading, white, with a pinkish tinge: stamens included, inserted very near the base of corolla: capsule 2 lines long, seeds 16 to 18 in the cell. Grows in great profusion on sandy plains near Guaymas. Perhaps nearest *G. companulata* Gray. February 15 to 17. No. 170.

Cryptocarpus (?) capitatus Watson. Proc. Amer. Acad. XXIV. 71. No. 175.

Amarantus Palmeri Watson. Proc. Amer. Acad. XXIV. 71. Some very small forms collected in a garden near Guaymas, February 11. No. 147.

Eragrostis Purshii Schrad. Growing near water-ditch. Guaymas, February 11. No. 145.

Aristida bromoides H. B. K. No. 273.

No. 167. This is 179 of Palmer's collection, also obtained by Xantus and Brandegee. Its generic position is not known.

The leaves are narrowly to broadly linear, 3 to 5 inches long, 2 to 6 lines broad: fruit round and black.

Dr. Palmer says the tree sheds its leaves just as it is ready to bloom; the young ones appear at the ends of the branches as the flowers expand, and are full grown when the fruit is ripe. At first he was of the opinion that the shedding of the leaves was caused by the trees growing in dry, rocky places, with little or no soil, as these being in full bloom (probably brought on by the heavy rains which had fallen a few weeks before), while those in deep soil were in full leaf and had yet not shown even a flower bud. He visited Guaymas a month afterward (March 15) and found the trees growing in deeper soil were then in bloom and had just dropped their leaves also; he believes, therefore, that the falling of the old leaves at blooming is a natural character.

It is surprising that a tree of such size and of such wide distribution has for so long been and still remains unknown to botanists. A letter from Dr. Palmer of recent date (September 10th) states that he has been unable to get fruit of this plant, the dry hot wind of June having killed the young fruit.