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U. S. DEPARTMENT OF AGRICULTURE.
DIVISION OF BOTANY.

CONTRIBUTIONS

FROM

THE U. S. NATIONAL HERBARIUM.

Vol. I.

REPORTS ON COLLECTIONS, AND MISCELLANEOUS PAPERS.

LISTS OF PLANTS, WITH DESCRIPTIONS OF NEW SPECIES, COLLECTED CHIEFLY IN THE SOUTHWESTERN UNITED STATES, WESTERN MEXICO, AND ADJACENT ISLANDS; INDEXES OF NEW AMERICAN SPECIES AND PLANT NAMES PUBLISHED IN 1891 AND 1892; SPECIAL NOTES AND OBSERVATIONS.

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PREFATORY NOTE.

In the act of Congress making appropriation for the Department of Agriculture for the fiscal year ending June 30, 1889, provision was made for botanical exploration and the collecting of plants in little known districts of America in connection with the U. S. National Herbarium; and since that time a similar provision has been made annually. As a partial result of this appropriation the Division of Botany has issued heretofore two completed volumes, II and IV, of a series of publications entitled Contributions from the U. S. National Herbarium. The present volume, issued in nine parts, is made up chiefly of reports on collections made by Dr. Edward Palmer in the southwestern United States and adjacent portions of Mexico, together with other collections made by agents of the Government.

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PLANTS FROM SOUTHERN CALIFORNIA.

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

During June and July, 1888, Dr. Edward Palmer collected for the Department of Agriculture in the counties of Kern, Tulare, and San Bernardino. The early part of June he collected on the Green Horn Mountain and on the North Fork of Kern River, Kern County; the last of June was spent at Victor, in San Bernardino County, and the month of July was spent in Long Meadow and the surrounding country, in Tulare County.

Thanks are due to Dr. Sereno Watson for the determination of some new and difficult species, and to Mr. F. V. Coville for help in determining a number of species.

The following paper contains a list of the species with Dr. Palmer's field notes:

Nos. 18 to 31. Collected on the North Fork of Kern River, near Kernville, Kern County, Cal., June 7 to 15.

18. Equisetum lævigatum, A. Br.

19. Juncus effusus, L.

20. Juncus Nevadensis, Watson.

21. Juncus sp.

Nos. 18, 19, 20, and 21. Found at the border of river in wet locations.

22. Juncus, sp. Found in a damp meadow near river.

23. Elymus triticoides, Nutt. Common in rather low places near river, growing so thickly as to seem artificially sown. Cattle eat it only when young.

24. Sporobolus airoides, Torr. Grows in wet meadows and along water-courses. Cattle eat it green and as hay.

25. Panicum dichotomum, L. Found on sandy spot near river.

27. Festuca Myurus, L. Grows very thick in meadow near river.

28. Polypogon littoralis, Smith

29. Polypogon Monspeliensis, Desf.

30. Agrostis verticillata, Trin.

Nos. 28, 29, and 30 were found in a wet meadow near river.

Nos. 32 to 107 and 150 to 160 were collected under pines, at a height of 6,000 or 7,000 feet, upon the Green Horn Mountains, 10 or 12 miles west of Kernville, Kern County, Cal., June 7 to 15, 1888.

32. Nemophila parviflora, Doug. Grows close to the ground, under shade of bushes. Flowers light lilac.

33. Chænactis santolinoides, Greene. Large, compact plant, 2 feet high; blossoms freely. Flowers creamy white.

34. Comandra umbellata, Nutt. A loose, scraggy plant, growing sparsely upon hill-sides. Flowers dingy white.

35. Eriogonum vagans, Watson. Very common. Found under pines and oaks upon slopes and level places upon ridges.

36. **Gilia androsacea**, Steud. Very common, growing under trees, and also in unprotected places. Flowers white.
37. **Hemizonella Durandi**, Gray. Abundant in moist, rich soil. Flowers yellow.
38. **Ribes Menziesii**, Pursh. Forms thick bushes, 3 to 5 feet high, producing abundantly a spiny fruit of old-gold color, which is utilized by the inhabitants, who, by cooking and removing the hulls, make it into jam.
39. **Gilia androsacea**, Steud. Grows abundantly under trees. The white, fragrant flowers change to pink, which takes on a purple tinge in drying.
40. **Krynitzkia muriculata**, Gray. Grows sparsely on dry exposed places. Blossom white.
41. **Krynitzkia ambigua**, Gray. Common under oaks and pines. Flowers white.
42. **Mentzelia dispersa**, Watson. Habitat as 41. Flowers yellow.
43. **Hosackia sericea**, Benth. Not common. Grows upon sloping banks among other plants. Flowers yellow.
44. **Eschscholtzia peninsularis**, Greene. Only a few plants, nearly past blooming, were seen.
45. **Salvia** sp. Found upon exposed hill-sides, appearing as if artificially sown. The Mexicans and Indians call this "Chia." They make from the seeds a cooling beverage.
46. **Mentzelia congesta**, Torr. & Gray. Scattered thinly among grasses and other plants. Flowers yellow.
47. **Lathyrus Bolanderi**, Watson. Grows 2 or 3 feet high at the foot of bushes. Flowers are at first cream color, changing gradually to wood color, then to snuff color. All these changes may be observed upon one plant.
48. **Sanicula tuberosa**, Watson. Grows in the shade of other plants and bushes. Flowers yellow.
49. **Eriophyllum cæpitosum**, Dougl., var. **latifolium**, Gray. Found in exposed situations. Gaudy flowers of dark orange hue.
50. **Lemmonia Californica**, Gray. Very common on slopes of shady banks. Flowers white.
51. **Layia glandulosa**, Hook. & Arn. Grows in exposed situations. Flowers white.
52. **Trifolium pauciflorum**, Nutt. Grows in thick masses near springs. The wine-colored flower is tipped with white.
53. **Trifolium microcephalum**, Pursh. Habitat as 52. Flowers lavender.
54. **Chænactis heterocarpa**, Gray. Grows on exposed hill-sides. Flowers orange-colored.
55. **Convolvulus villosus**, Gray. Grows close to the ground in shady places upon hill-sides. Flowers canary yellow.
56. **Tellima Cymbalaria**, Walp. Common among other plants in rich, moist locations. Flowers white.
57. **Gilia achilleæfolia**, Benth. Found on level spots under oaks and pines among other plants.
58. **Chænactis Xantiana**, Gr. Habitat as 57. Flowers creamy white.
59. **Chamæbatia foliolosa**, Benth. Common; large numbers growing together in shade and in sunlight. From 1 to 1½ feet high. Flowers white, the petals falling soon.
60. **Erysimum asperum**, D. C. Grows sparsely. Flowers orange.
61. **Thysanocarpus curvipes**, Hook. Common upon hill-sides among other plants. Flowers white.
62. **Evax caulescens**, Gray. Found in clusters by themselves, in exposed localities.
63. **Geranium incisum**, Nutt. Grows in bunches in ravines. Flowers lilac.
64. **Polygonum imbricatum**, Nutt. Abundant in wet places, among grasses and other plants.
65. **Rubus Nutkanus**, Moc. Shrub 3 to 5 feet high growing in cañons. Flowers white.

66. Godetia viminea, Spach. Abundant in exposed situations. Showy plant. Flowers satiny white, blotched with plum color.

67. Collinsia grandiflora, Dougl. Abundant under shade of trees. Flowers creamy white.

68. Collinsia Wrightii, Watson. Proc. Amer. Acad., XXIV. (A part of the type). Habitat as 67. Flowers blue and white.

69. Monardella linoides, Gray. Grows in shade upon hill-sides, in clumps. Very few in flower. Color light purple. Fragrance like Bergamot.

70. Arabis repanda, Watson. Moist shady localities. Flowers white.

71. Pentstemon breviflorus, Lindl. Many stems, grows among rocks and bushes. Flowers creamy-white.

72. Delphinium simplex, Dougl. Found upon hill slopes at the roots of other plants.

73. Eriogonum virgatum, Benth. Grows in exposed localities. Flowers sulphur-yellow.

74*a*. Mimulus montioides, Gray.

74*b*. Mimulus nasutus, Greene. In shady places near springs. Flowers orange color with snuff-colored dots and markings.

75. Mimulus moschatus, Dougl. Found near springs. Flowers yellow, with strong odor of musk.

76 Madia elegans, Don. In shady places, among other plants. Flowers close in day.

77. Monardella villosa, Benth., var. **leptosiphon,** Torr. Found in shade upon hillsides. Flowers lilac, with mint fragrance.

78. Gilia glutinosa, Gray. Common in shady and exposed positions, among other plants. Flowers violet color.

79. Phacelia curvipes, Torr. Found in moist places near springs. Flowers violet.

80*a*. Viola pedunculata.

80*b*. Viola præmorsa, Dougl. Grows in level places among other plants.

81. Gilia tenella, Benth. Common in shade of trees upon hills. Flowers pink.

82. Brodiæa laxa, Watson. Bulbous plants growing in low places among other plants. Flowers bluish purple.

83. Brodiæa ixioides, Watson. Habitat of 82.

84. Gomphocarpus tomentosus, Gray. Plant grows with three or four stems and has an unusually white appearance. Flowers garnet color.

85. Gomphocarpus cordifolius, Gray. Grows in exposed places, throwing up several stems. The first leaves have a bronzed look which fades in drying. Calyx seal-brown, then cherry-red, petals dirty white.

86. Mimulus nanus, Hook. and Arn. Common in both exposed and in shaded localities. Flowers showy bright cherry-red, lower part of the tube yellow.

87. Symphoricarpus mollis, Nutt. Small bush, 3 feet high, found in ravines.

88. Vicia Americana, Muhl., var. **truncata,** Brewer. Grows among bushes, under trees. Flowers violet.

89. Lathyrus palustris, L., var. **myrtifolium,** Gray. Habitat as 88. Flower dark cherry-red.

90. Rhamnus crocea, Nutt. Compact evergreen shrub, 3 feet high, grows upon upper edge of a ravine.

92. Orthocarpus purpurascens, Benth. var. **Palmeri** Gray. Low places among plants. Flowers dark lilac.

93. Anisocoma acaule, T. & G. Found on exposed hill-sides. Plant very succulent. Flower yellow.

94. Iris Hartwegi, Baker. Grows upon level rich soil, several plants near each other. Flowers at first lilac, fading later to lavender.

95. Brodiæa capitata, Benth. Found in low moist places.

96. Habenaria Unalaschensis, Watson. Grows in the shade, in low moist places

97. **Œnothera gauræflora**, T. & G. Not common. Plant 2 to 3 feet high, growing in rather shady situations in rich soil. Flowers white.
98. **Cornus Californica**, Meyer. A loose growing shrub 3 to 5 feet high, found near springs in low moist soil. Flower white.
99. **Polygonum Bistorta**, L. Found in a swamp near spring. Flower white.
100. **Cynoglossum occidentale**, Gray. Grows on level ground with rich soil. Flower greenish snuff-color.
101. **Ribes sanguineum**, Pursh. Plant a shrub of loose branching habit, 5 to 6 feet high. In cañons.
102. **Ranunculus Californicus**, Benth. Grows in rich moist bottoms, near springs. Flower golden yellow.
103. **Aquilegia truncata**, Fisch. & Mey. Damp shady locations.
104. **Gilia grandiflora**, Gray. In shade on hill-sides. Very sparse. Flowers old-gold color.
105. **Helianthus (?) invenustus**, Greene. (Pitt. I, 284.) (The type of the species). Grows on level places in low rich soil, in large clusters. Flower golden yellow.
106*a*. **Balsamorrhiza deltoidea**, Nutt.
106*b*. **Helianthella Cymbalaria**, Pursh. Habitat as 105. No flowers.

Nos. 107 to 150. Plants collected on the North Fork of Kern River, near Kernville, Kern County, Cal., June 7 to 15.

108. **Ranunculus Cymbalaria**, Pursh. Wet valley near river; found it also in wet places upon Green Horn Mountains. Flower yellow.
109. **Horkelia**, sp. Grows in gravelly spot near river. Only one specimen with one spike of flowers found.
110. **Trifolium tridentatum**, Lindl. Found but one plant, in a wet grassy meadow.
111. **Rumex salicifolius**, Weinman. In a gravelly "washout" near river.
112. **Lupinus brevicaulis**, Watson. Same habitat as 111. Flower white above, blue at the lower part.
113. **Lupinus micranthus**, Dougl. Same as 112. Flower very small.
114. **Lupinus confertus**, Kell. On the edge of wet meadow. Flower at first lavender, then the standard becoming snuff-colored, and the keel, wood color.
115. **Lupinus Stiveri**, Kell. Found on a sandy spot in river bottom. Compact plant. Profuse bloomer. Flower standard yellow, keel silvery pink, which in drying fades to blue.
116. **Nicotiana Bigelovii**, Watson. Very common plant. Flower white.
117. **Hosackia decumbens**, Benth. Trailing, found on gravelly spots near river banks.
118. **Eriogonum saxatile**, Watson. Habitat as 117.
119. **Eriogonum virmineum**. Dougl. Habitat as 117.
120. **Eriogonum virgatum**, Benth. Habitat as 117.
121. **Erigeron cæspitosum**, Nutt. Habitat as 117. Flowers lilac.
122. **Erigeron divergens**, T. & G. Found in wet meadows, near river banks.
123. **Œnothera Californica**, Watson. Gravelly situations near river banks. Flower white.
124. **Ranunculus aquatilis**, L., var. **trichophyllus**, Gray. Abundant in river and water ditches. Flower white.
125. **Abronia turbinata**, Torr. Abundant in gravelly meadows near river. Flowers fragrant, white.
126. **Monardella candicans**, Benth. Grows sparsely in gravel near river. Flowers white, with mint fragrance.
127. **Gilia Matthewsii**, Gray. Grows plentifully on level places in gravel near river. Blossom pink with dark purple throat.
128*a*. **Krynitzkia muriculata**, Gray.
128*b*. **Krynitzkia circumscissa**, Gray. Habitat as 127.

130. Lessingia leptoclada, Gray, var. **microcephala**, Gray. Common on dry hillsides, in places that have been closely grazed by sheep.

131. Hemizonia Heermanni, Greene. Plant common where sheep have been pastured until all vegetation has been destroyed. It has an offensive odor.

132. Matricaria discoidea, D C. Found in low moist places. Odor like "dog-fennel."

134. Gilia floccosa, Gray. Scattered, on a sandy place near the river. Flower, white.

135. Galium trifidum, L., var. **latifolium**. Found among bushes on river bank.

136. Ranunculus Cymbalaria, Pursh. Grows in wet meadow.

137. Gilia inconspicua, Dougl. Found on sandy spots near river, also upon the Green Horn Mountains. Flower pink, with white throat.

138. Eriogonum angulosum, Benth. Found near the river upon sand gravel.

139. Glycyrrhiza lepidota, Nutt. Grows along river banks.

140. Castilleia stenantha, Gray. Found in wet places among grasses and other plants. Flower scarlet.

141. Boisduvalia densiflora, Watson. Found in wet meadows with other plants. Flowers white.

142. Trifolium involucratum, Willd. Abundant in wet meadows.

143. Hosackia Purshiana, Benth. Habitat as 142, with which it is mowed for hay.

144*a*. Stachys albens, Gray.

144*b*. Stachys ajugoides, Benth. Wet places beside river. Flower strong, weedy odor.

145. Lepidium intermedium, Gray. Gravelly soil near river.

146. Scutellaria angustifolia, Pursh. Found in damp, sandy soil near river. Flower navy-blue.

147. Erythræa Douglasii, Gray. Found in a damp, shady locality near banks of river.

148. Mimulus floribundus, Dougl. In moist, sandy soil near river.

149. Cuscuta decora, Chois. Grows in wet meadows in thick bunches. Flowers white; fragrant.

150. Krynitzkia angustifolia, Gray. Dry, sandy gravel near river bank.

152. Hieracium horridum, Fries. Grows in large clusters in exposed nooks in rocky masses, out of the direct rays of the sun. Flowers yellow.

153. Sagina occidentalis, Watson. Abundant in a wet gully formed by a spring.

154. Mimulus exilis, Durand. Grows thickly in a moist, grassy bottom. Flower yellow.

155. Gayophytum diffusum, T. & G. Found on mountain slopes in shade of bushes. Flower white, changing to pink at night as it closes up.

156*a*. Gayophytum racemosum, T. & G.

156*b*. Gayophytum pumilum, Watson. Very common on sandy or stony mountain ridges. Flower white.

157. Pentstemon glaber, Pursh. Found on mountain slopes. Flower purplish-blue.

158. Chænactis Douglasii. Hook. & Arn. Grows in good soil at the edge of a low run. Flower creamy-white.

159. Kelloggia galioides, Torr. Found in rather shady situation. Flowers white within, rose colored outside.

160. Apocynum androsæmifolium, L., var. pumilum, Gray. Grows in rich low ground. Found only one plant in flower.

Nos. 161–223. Collected at Long Meadow, July 7 to 14. Long Meadow, Tulare County, Cal., situated 8,000 to 9,000 feet above sea-level, 20 miles due north from Kernville, being two days' journey by a circuitous route in the Sierra Nevada Mountains. The meadow has water-courses of different extent, and the soil is more or less swampy. It is surrounded by an irregular, broken mountain country.

161. Mimulus primuloides, Gray. Common, growing in clusters in a grassy marsh. Corolla yellow; the throat has a few brown dots, with a larger one fully exposed above them; this has another upon either side.

162. Hosackia oblongifolia, Benth. Common in grassy swamp. Flower; keel, canary color; standard, orange color.

163. Stellaria longipes, Goldie.

164. Stellaria crispa, C. & S.

165. Galium trifidum, L.

163, 164, and 165 in moist, grassy bottoms among other plants.

166. Laurentia carnosula, Benth. Somewhat rare. Found by the side of a small stream that drains a grassy marsh. Flowers blue, with white center.

168. Bahia Palmeri, Watson. Proc. Amer. Acad., XXIV, 83. Growing sparsely at the base of slopes. Flower creamy. Type.

170. Horkelia fusca, Lindl. Very common on rather dry bottoms. Flower white.

171. Potentilla glandulosa, Lindl, var. **Nevadensis**, Watson.

173. Ivesia santolinoides, Gray. Very common on rocky slopes. Flowers white.

174. Spraguea umbellata, Torr. Found in rich, moist locations.

175. Hulsea vestita, Gray. In bunches on sloping sides of ridges. Flower cherry-red upon outside, orange-yellow in center.

176. Mimulus deflexus, Watson. Proc. Amer. Acad., XXIV, 84. Found on the dry borders of low, wet places. Flowers, lower part of petals, plum-color upper, orange. Type.

177. Polygonum tenue, Mx. Grows in clusters at the dry borders of a marsh.

178. Aster Andersoni, Gray. Found in wet bottoms. Flowers purplish-blue.

179. Eriogonum stellatum, Benth. Found on sides of stony ridges.

180. Trichostema oblongum, Benth. Plants clustered together, forming compact masses among thickly growing grasses. Very offensive odor.

181. Eriogonum spergulinum, Gray. Very common on low hill slopes.

182. Trifolium monanthum, Gray. Found in grassy swamps. Petals white, bronze blotch in center.

183. Krynitzkia affinis, Gray. Common, shady, rich location near water.

184. Draba stenoloba, Ledeb. Found on wet bottoms. Flowers white.

185. Silene Bernardina, Watson. Proc. Amer. Acad., XXIV, 82. Grows on shady slopes. Flower dingy-white. Type.

186. Heuchera rubescens, Torr. Found in large bunches, somewhat shaded by rocky ledges. Flowers white.

187. Spiræa discolor, Pursh., var. **ariaefolia**, Watson. A shrub 4 to 5 feet high, of irregular growth. Rocky soil.

188. Pentstemon Menziesii, Hook. Found in large bunches on rocky slopes. Flowers dark crimson, with white center.

189. Krynitzkia Californica, Gray. Found among other plants, bordering a wet, grassy bottom.

190. Krynitzkia Californica, Gray. Habitat as 189.

191. Lupinus Breweri, Gray. Found close to the ground, in round bunches, on rocky slopes. Flowers purplish-blue.

192. Arabis platysperma, Gray. In shade of pines.

193. Velæa vestita, Coulter & Rose. At the base of ridges in shade of trees and bushes.

194. Arnica foliosa, var. **incana**, Gray. Very common in the drier portions of grassy bottoms. Many plants growing together, forming irregular masses. Flowers yellow.

195. Arenaria pungens, Nutt., var. **gracilis**. Prostrate, numerous, in rounded masses. Flower white.

196. Eriogonum spergulinum, Gray. Common; found upon level places under shade of pine, so numerous that the white flowers attract attention.

197. Claytonia Chamissonis, Esch. Common along the edges of small rivulets that drain grassy swamps. Succulent plant. Flowers white.

198. Veronica Americana, Schwein. Habitat as 197. Flower blue.

199. Viola blanda, Willd. Common with grasses in swamp.

200. Ledum glandulosum, Nutt. Plant about 3 feet high, growing in clusters on the edge of a grassy swamp, surrounded by pines. Saw it in this locality only.

201. Zauchsneria Californica, Presl. Small plant found upon the slope of a ridge. Flower crimson.

202. Gilia sp. Found in bunches in the shade of pines upon slopes. Flower white, variegated with lilac.

203. Sidalcea Californica, Gray. Grows in grassy swamps. Flower rose-color, white base.

204. Eriogonum marifolium, T. & G. Abundant. Under pines, in a light soil in a bottom, surrounded by a rocky ridge.

205. Phacelia ramosissima, Dougl. Found growing among large rocky masses. Flower lavender color.

206. Solanum umbelliferum, Esch. Grows in groups among shrubs and rocks. Flower blue, shaded with lilac.

207. Eriogonum Wrightii, Torr. Grows on rocky ledges.

208. Pentstemon Bridgesii, Gray. Found on shady slopes. Flower scarlet.

209. Artemisia discolor, Dougl., var. **incompta**, Gray. Found in shady ravine. Strong odor.

210. Eriophyllum confertiflorum, Gray. In clusters among shrubs and pines. Flower golden-yellow.

211. Hypericum formosum, H. B. K. In grassy swamps. Flower golden-yellow.

212. Dodecathron Jeffreyi, Moore. In grassy swamps. Flower rose, with white base.

213. Hosackia crassifolia, Benth. Found in shady ravines. Flower bronze-color.

214. Galium multiflorum, Kell. Found among bushes and rocks.

215. Thalictrum sparsiflorum, Turcz. Growing in grassy swamp under shade of bushes.

216. Salix flavescens, Nutt. Straggling shrub, 6 to 8 feet high, growing near a grassy swamp.

217. Arabis perfoliata, Lam. Flower white. Found in grassy swamps.

218, 219, 220, 221. Epilobium alpinum, L. The last four are found in grassy swamps. Flower white-rose color at night.

222. Senecio triangularis, Hook. Found in a ravine near running water. Flower yellow.

223. Habenaria leucostachys, Watson. Grows in grassy swamps. Flower white.

Nos. 223–226. Collected at Victor, June 25 to 27. Victor is 45 miles north of San Bernardino, in San Bernardino County, on the branch road from this place to the junction of the Atlantic and Pacific road.

223½. Lycium Cooperi, Gray. A rough, thorny shrub, 4 feet high. Fruit orange-colored.

224. Kochia Americana, Watson. Plant 2 feet high. Found at the edge of alkali bottom.

225. Thelypodium integrifolium, Endl. Very abundant plant in the rich soil of a grassy bottom. Have found specimens 9 feet high, which is very unusual. The leaves are cooked and eaten by the Indians. Cattle do not seem to feed upon this. Flowers white.

226. Aphyllon Californicum, Gray. Found among salt grasses on alkaline bottoms. The Indians use this as an article of food.

Nos. 227–230. Grasses collected at Victor, San Bernardino County, Cal., June 25 to 27, 1888.

227. Paspalum distichum, L.
228. Phleum pratense, L. Found at the border of the Mojave River, above the reach of animals.
229. Elymus triticoides, Nutt. Found in large patches looking like grain, in good soil, near springs on alkali bottoms.
230. Sporobulus asperifolius, Thurb. Found in large plots among other plants, outside an alkali flat bordering a pond.

Nos. 231–247. Grasses collected at Long Meadow, Tulare County, Cal., July 7 to 14.

231. Deschampsia cæspitosa, Beauv., var. **confinis**, Vasey. Abundant in grassy marshes, so firmly rooted that it is difficult to obtain specimens with roots.
232. Stipa occidentalis, Thurb. Found in clusters with sparsely-growing pines, on low exposed divides.
233. Bromus Orcuttianus, Vasey. Widely dispersed upon slopes shaded by pines and oaks.
234. Alopecurus aristulatus, Michx. Rare; in large patches in moist, grassy bottom.
235. Glyceria arundinacea, Kunth. In the shade of bushes on the border of a swamp.
236. Deschampsia elongata, Munro. Very abundant in grassy swamps, on the borders of streams.
237. Deschampsia elongata, Munro.
238. Agrostis scabra, var. Common in wet meadows and on the banks of creeks.
239. Agrostis scabra, Willd. Found along streams of water; rare.
240. Melica stricta, Boland. Not common. Found in bunches under shade of trees upon mountain slopes.
241. Deschampsia calycina, Presl. Found upon grassy bottoms that had become dried.
242. Poa Bolanderi, Vasey. Somewhat dispersed through a grassy bottom.
243. Elymus Sitanion, Schultz. Rare, on slopes among other plants.
244. Stipa stricta, Vasey. Same habitat as 243.
245. Agropyrum glaucum, R. & S. A single plant found in a swampy place among other grasses.
246. Festuca microstachys, Nutt. Found at the base of a slope, in the shade of bushes.
247. Juncus Nevadensis, Watson. Found in grassy swamps along streams.

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834. Biscutella Californica B. & H. Mr. Watson thinks this may be distinct from *B. Californica*. Dr. Palmer reports it very common on the sandy hills and plain near the beach. The "yellowish white" becoming purple in drying.

815. Arabis pectinata Greene. Pitt. I. 287. This recently described species of Mr. Greene was collected this season by Lieutenant Pond at San Bartolome Bay and also on Cedros Island by Dr. Palmer. Collected on sandy spot among hills 40 miles back from the ocean. "Bloom white changed to mauve by age."

821. Sisymbrium Brandegeana Rose, n. sp. Annual, glabrous, slender, simple or branching, 6 to 15 inches high: leaves small (1 to 2 inches long), pinnately divided into a few filiform segments: petals one and one-half lines long, twice the length of the sepals, white: pods three-fourths of an inch long, terete, horizontal, or sometimes becoming reflexed, sometimes straight but mostly curving upward, tipped with a thick, obtuse style (one line long), on short pedicels. Common in shady soil about the beach.

767. Drymaria viscosa Watson. Proc. Amer. Acad., XX, 467. A very common plant on sandy places near the ocean. The plants grow in great mats covering the sand. Only before collected by Mr. C. R. Orcutt in northern Lower California and by Mr. Brandegee at Magdalena Island and San Gregoria. Dr. Palmer has collected a large quantity of this plant.

765. Erodium Texanum Gray. Common on gravelly hills.

818. Fagonia Californica Benth. Grows among rocks in a cañon 30 miles inland.

827. The same. But three plants found on the hills near the beach.

829. Phaseolus filiformis Benth. Very common on the sand hills near the beach.

797. Lupinus Arizonicus Watson. Common on the sand plains back of the beach. Some flowers are white, others are drab-colored.

790. Calliandra Californica Benth.

776. Astragalus triflorus Gray. Very abundant near the beach.

791. Hosackia glabra Torr. A very common plant 40 miles inland, grows compact.

777. Hosackia maritima Nutt. Sandy, level places, 15 miles from the sea; bloom yellow.

820. Hosackia rigida Benth. Stems flexuose, much branched at base; leaves sessile, with small leaflets. Peduncles long (2 to 4 inches). Pods almost terete, 1½ to 2 inches long. Found in a cañon 30 miles inland. The plant most resembles Palmer's (175), 1876, from Arizona.

813. H. Bryanti Brandegee. Proc. Cal. Acad., 2d. ser. II, 144.

769. Œnothera crassifolia Greene. Bull. Cal. Acad., I. 156. Stems annual or biennial, glabrous and very glaucous; leaves linear or narrowly lanceolate, entire or sinuately toothed. Capsule linear, much contorted. We have not seen Mr. Greene's type, but the plant does not seem to be the same as Orcutt's specimens. Very common on the sand hills and depressions near the beach. "Showy colored flowers," more or less purplish on drying.

772. Œnothera septrostigma Brandg. Proc. Cal. Acad., 2nd. ser. II, 156. Sandy plains; 10 miles inland. Part of type.

771. Œnothera angelorum Watson. Proc. Amer. Acad., XXIV. 49. Forty miles inland.

768. Filago Arizonica Gray.

773. Viguiera Purisimae Brandigee. 2d. ser. II. 173.

Franseria dumosa Nutt. This is the same as Palmer's 559 (from Los Angeles Bay, 1887). The leaves are much more coarsely cut, and the spines hardly flattened and hooked at tip. A compact plant 2 feet high, abundant on the hills near the sea.

770. Franseria Bryanti Curran.

793. Viguiera laciniata Gray. Three to four feet high. In stony ravines 30 miles back from the ocean, and there common.

826. Helianthus dealbatus Gray. Clearly an annual; quite common on the sand hill near the beach, growing thickly together. This is the most southern station of this species. Besides the station given in Syn. Flora, is to be added Orcutt's Locovrs (1886) plant; also at Ensenada and recently Santa Margarita Island, by Mr. Brandegee. For this species Mr. Brandegee takes up Bentham's old specific name of *Encelia nivea* and writes *H. niveus.*

822. Encelia frutescens Gray. Common on the hills 40 miles back from the ocean; 3 to 4 feet high.

828. Encelia Ventorum Brandegee. Proc. Cal. Acad., 2d. ser. ii, 175.

795. Leptosyne parthenioides Gray. Var. dissecta, Wat. Proc. Am. Acad., XXIV, 36. Dr. Palmer says this plant has a wide range on the sandy plains and hills. Seen 40 miles back from the ocean; bloom at first white, but soon becoming purplish. The margin of the akenes are incurved in age, with no pappus, muriculate on the back. The only other collection of the species, that we know of, is that of Palmer at Los Angeles Bay. This plant Dr. Watson took to be the *Acoma dissecta* of Benth., but the rediscovery of that species by Mr. Brandegee the past season shows that they are not the same. Therefore Palmer's Los Angeles plant is the type of *L. parthenioides* var. *dissecta Watson*, and is not to be confounded with *L. disecta Gray.*

787. Amblyopappus pusillus H. & A. Very abundant on hills.

782. Eriophyllum lanosum Gray.

778. Chænactis lacera Greene. Pitt., V, 29. This species was first collected by Lieutenant Pond, at San Bartholome Bay, in March, 1889. Dr. Palmer collected it about the same time in considerable quantity. It grows in low sandy places near the ocean. Said to be a very fleshy plant. The stems and leaves purplish. "Bloom white" or turned by age to rose.

786. Dysodia anthemidifolia Benth. First collected by the Sulphur, also Dr. Streets, recently by Lieutenant Pond, at San Bartholome Bay, and Brandegee. Very common on the sandy plains, near the sea-beach, and extending for miles back from the ocean. Dr. Palmer says it is a showy plant for cultivation, with bright amber-colored flowers and an odor like the African Marigold.

817. Malacothrix Californica D. C. Flowers "showy, yellowish white." Outer pappus three to four persistent bristles. Sometimes with branching scapes. Lemmon also collected such a form in 1875. So far as we know this species has not before been found out of California. Dr. Palmer reports it very common in the sand-hills about the bay.

814. Philbertia linearis Gray. A small trailing plant about 3 feet long, twining about bushes or prostrate on the ground, often rooting at the nodes. The older stems develop a very thick corky bark. The whole plant is glabrous, except the inflorescence, which is very pubescent. The flowers are "canary white."

774. Gilia Jonesii Gray. Only a few plants seen and these all collected in the hilly country, 40 miles from the ocean. This species is only known from Jones's specimen from the Needles, southeast California (1884). We have not yet seen the type, but the species certainly goes into the section *Linanthus*, and there is nothing in Gray's meager description to keep it out of G. Jonesii.

780. Krynitzkia intermedia Gray. A very common plant 25 miles from the ocean.

781. Krynitzkia maritima Greene. The nutlets often of two kinds, both maturing. The glabrous nutlets acute on the edge. The leaves often broader at the base.

829. Rumex hymenosepalus Torr. Called "Yerba Colorado." Much used as a medicine, especially in venereal diseases, flesh wounds, etc. The young tops sometimes used as greens in California.

788.* **Argythamnia serrata** Muhl. Var. **Magdalenæ**, Millsp. Proc. Cal. Acad. 2d. ser., ii, 221. Found in sandy places between the hills contiguous to seabeach; has very long roots.

785. **Stillingia linearifolia** Watson. Grows in the hollows between hills near the sea beach among shrubs and plants, loose grower.

783. **Euphorbia polycarpa** Benth., var. **vestita** Watson. Hills 40 miles back from the ocean. Plants quite scattering.

789. **Euphorbia Pondii** Millspaugh, sp. nov. Annual, prostrate, spreading from the base. Stems glabrous, (3 to 6 centimeters long), dichotomously branching. Leaves ovate, obtuse, entire, (1½ to 3 millimeters long, 1 to 2 millimeters broad); petioles hairy, (one-fourth to three-fourths the length of the blade); stipules large, bluntly triangular, margined with two to four fascicles of ciliæ. Inflorescence solitary in the upper axils, and terminal upon the youngest branchlets; involucres turbinate, sessile, slightly hairy; glands four, transversely ovate, minute, dark red; appendages minute, white, orbicular, deeply two crenate-toothed on the margin, or wanting; styles bifurcate to the middle. Capsule trisulcate; carpels carinate and slightly tuberculate; seeds elongated, quadrangular, ferruginous between the angles. Described from a specimen collected at Plaza Maria, Lower California, in 1889, by Lieut. Chas. F. Pond, U. S. Navy; also Gaudalupe Island by Palmer. A form with smooth capsules and more turgid seeds is in this collection. Hills 40 miles back from sea beach, the plants have a yellow shading when fresh.

792. **Euphorbia Xanti** Engl. Typical specimens of both sorts, the white and the red appendiculate, that prove the shrubbiness of the species. Abundant, 25 to 40 miles back from the ocean; loose grower, pinkish-white flowers. Sometimes old plants are met with that have deep, rose-colored flowers.

775. **Chorizanthe Vaseyi** Parry & Rose. Bot. Gaz., XV, 64. A figure of this plant accompanies the description. Among hills, 40 miles inland.

779. **Allium Californicum** Rose, n. sp. Bulbs cespitose, narrowly oblong with dark red coats, deep seated (3 to 4 inches), scapes terete, 3 to 5 inches high: leaves three to five, linear, mostly shorter than the scape: spathe two-valved and these ovate, acute: umbel somewhat open, four to five rayed: pedicels 5 to 8 lines long: flowers "dark mauve color," with lanceolate-acuminate segments: stamens and style included: capsule obtuse, with two ovules in a cell, but one (rarely two) of the ovules mature.

A species closely related to *A. hæmatochiton*, Wat. Hilly country 40 miles back from the ocean; "Grows in stiff clay; odor strong of onions."

654. **Aristida Californica** Thurb. This peculiar grass grows in small, compact bunches. It has a wide range on sandy soil and gravelly hills. It is the only grass in this section which affords forage for wild or domestic animals, and as it is generally found (as shown by many of these specimens) denuded of its leaves, while the flowers and seed-tops remain intact, the inference would be that wild animals (domestic animals are few here) crop the leaves while the grass is tender.

655. **Festuea tenella** Willd. Var. (very small.) A common grass, especially where water is retained in sandy arroyos and plains. Seldom found with the appearance of having been cropped by animals.

651. **Aristida bromoides** H. B. K. Common on sandy slopes and places where moisture is retained, growing so thickly that they seem sown for a lawn.

652. **Triodia pulchella** H. B. K. Found in tufts on a gravelly ridge.

653. **Muhlenbergia debilis** Trin. These, the only ones found, were associated with 651.

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* *Euphorbiaceæ* determined by C. F. Millspaugh.

CEDROS ISLAND PLANTS.

Dr. Palmer spent three days on the north end of this island, March 18 to 20, and made a large and valuable collection. His numbers run from 677 to 764, and unfortunately are partly duplicated in the San Quentin collection of the same year.

Mr. Greene has published (Pittonia, vol. 1, 200–208) a list of the known species of this island, and also a supplement (*l. c.* 266–269) listing ninety-one species. Dr. Palmer has added at this time forty-three species to the flora of the island. Dr. Streets, who visited this island in 1876, and made a small collection, found here *Abutilon Lemmoni*, which has not been since rediscovered. Mr. Belding has also collected here, but not very extensively. The species now known to the island are one hundred and thirty-five.

For convenience we give here all the species not given in Mr. Greene's list, and we also add in parenthesis, his number after species found in his list:

Draba Sonoræ Greene.
Lepidium Menziesii D. C.
Arabis pectinata Greene.
Thysanocarpus sp.
Polycarpon depressum Nutt.
Zizyphus Parryi Torr.
Abutilon Lemmoni Wats.
Lupinus sp.
Hosackia maritima Nutt.
Phaseolus filiformis Benth.
Astragalus sp.
Tillæa sp.
Mentzelia adherens Benth.
Apiastrum angustifolium Nutt.
Filago Arizonica Gray.
Gnaphalium Sprengelii H. & A.
Perityle Grayi.
Encelia Cedrosensis Rose, n. sp.
Amblyopappus pusillus H. & A.
Senecio sylvaticus Linn.
Rafinesquia Californica Nutt.
Microseris linearifolia Gr.
Sonchus tenerrimus Linn.
Sonchus oleraceus Linn.
Ellisia chrysanthemifolia Benth.
Phacelia Cedrocensis Rose.
Pectocarya linearis D. C.
Plagyobothrys Cooperi Gray.
Nicotiana Greeneana Rose.
Antirrhinum Watsoni Vasey & Rose.
Antirrhinum subsessile Gray.
Parietaria debilis Forst.
Pterostegia drymarioides F. & M.
Atriplex, n. sp.
Atriplex microcarpa Dietr.
Aphanisma blitoides Nutt.
Ephedra sp.
Trisetum barbatum Steud.
Melica imperfecta Trin.
Stipa eminens Cav.
Muhlenbergia debilis Willd. var.
Festuca tenella Willd.
Agrostis verticillata Trin.
Cheilanthes Brandegei Eaton.

723. Draba Sonorae Green. Only one plant seen on the side of a cañon. Not before found on the island.

726. Sisymbrium canescens Nutt. Only one small plant seen in a cañon. Mr. Greene found only a single specimen. (No. 2 of Mr. Greene.)

709. Lepidium Menziesii D. C. In exposed places. Not before reported from here.

717. Arabis pectinata Greene. Pitt., 1,287. Recently described by Mr. Greene from specimens from San Bartholome Bay, Lower California. Somewhat common but scattering.

686. Thysanocarpus sp. Smooth and a little glaucous, 3 to 12 inches high: leaves 5 to 10 lines long, ovate to narrowly lanceolate, entire or toothed, auricled at base: flowers rose-colored: sepals less than one-half line long: petals of same length as sepals, spatulate, obtuse: two of the stamens united, style wanting: pods oval, 2 lines in diameter, smooth or pubescent, the wings thin, not nerved, purple, emarginate at both ends.

Only a few plants found and these on a level place. First described and distributed as *T. Palmeri*, but since Mr. Watson has written that it is probably his "*T. erectus* described from miserable material."

747. Isomeris arborea Nutt. Plants about 4 feet high. (No. 3 of Mr. Greene.) Also collected by Lieutenant Pond this season. Mr. Greene considered that this species belongs to *Cleome* and calls it *C. isomeris*, Pitt. i, 200.

638. Frankenia Palmeri Watson. Common plant near the sea-beach. (No. 5 of Mr. Greene.)

713. Polycarpon depressum Nutt. Collected only by Nuttall and Lemmon, in southern California, although various things have been distributed as this species, even *Tillæa minima* and *Achyronychia Cooperi*. Found under pine trees at the highest point on the north end. (Altitude, 1,761 feet.)

699. Sphæralcea* fulva Greene. Pitt. i, 201. Only three specimens found and these in flower. Collected by Dr. Streets in 1876. (No. 6 of Mr. Greene.)

752. Ziziphus Parryi Torr. *fide* Trelease. The following is Dr. Palmer's note. "A very thorny shrub, 2 to 3 feet high, with numerous crooked branches, forming a compact plant, good for a hedge. The fruit when ripe may be yellow, as that color was indicated in some of the fruit seen." In cañons and mountain sides apparently not collected before.

738. Rhamnus crocea Nutt. "The more acute leaved sharply toothed form," Trelease in lit. An upright growing shrub 6 to 8 feet high. In cañons. (Probably No. 7 of Mr. Greene.)

730. Rhus Lentii Kell. Proc. Cal. Acad., ii, 16. A large shrub 5 to 6 feet high in cañons. "A profuse bloomer; crimson colored to white; fruit shiny, as if iced over." Fruit a half inch long. (No. 9 of Mr. Greene.) Also collected by Lieutenant Pond this season. By Dr. Veatch, in 1859.

735. Rhus integrifolia B. & H. Dr. Palmer says of this plant, "An irregular growing shrub, with short body and stiff limbs." Much used by the fishermen for fuel, for which it is very good. In cañons. (No. 10 of Mr. Greene.)

682. Veatchia Cedrosensis Gray. Dr. Palmer's notes are as follows: Not found in bloom or fruit. A dwarf tree 5 to 6 feet high, dotted here and there over the north end of the island. The wood is soft and spongy, shrinking when cut, leaving little but the bark. Mr. Brandegee has identified this plant with the *Schinus discolor* Benth. Bot. Sulph., p. 11, and has collected it from the original station (Magdalena Bay.) In Proc. Cal. Acad., 2d ser., 2, 140, he considers it a good Veatchia and taking up the oldest specific name, writes it *Veatchia discolor*. He also refers here *Bursera pubescens* Watson. (No. 8 of Mr. Greene.)

721. Lupinus sp. This is the same as our 666*a* (distributed as 708) of former paper. The plants are often smaller, the flowers larger (5 lines long), scattered or somewhat verticilate; the bracts tardily deciduous; pods four to six seeded. Found on hill sides and cañons. A very showy plant "bloom purple upper lobes yellow." As we noted before, our plant seems nearest *L. Arizonica*, but it hardly answers for that and perhaps should be made distinct.

736. Hosackia maritima Nutt. The flowers are only 2 lines long; the pods few seeded. This is the same as the San Quentin 669*a*. Not before found on the island.

698. Hosackia nudata (Greene). We have not seen Mr. Greene's type, and yet there is little doubt but that this is his *Syrmatium*. Our plant is larger, with many slender weak branches; the leaflets sometimes larger (3½ lines long), often obtuse, glabrate in age. Although many of the short peduncles bear but one to two flowers, yet it is not uncommon to find three, four, and sometimes five flowers in the umbel. The species of *Syrmatium* form a strongly marked

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* Another of the *Malvaceæ* belonging to the island not reported by Mr. Greene or found by Dr. Palmer, is *Abutilon Lemmoni*, collected by Dr. Streets in 1876.

section of *Hosackia*, and it is an open question whether it should not be kept distinct. Mr. Greene (in vol. ii, Bull. Cal. Acad.) thinks it should be, and ably defends Vogel's genus. Mr. Watson, while saying it might well be considered generically distinct, still retains it under *Hosackia*, and the same course is followed by Mr. Brandegee in his recent paper. The discovery of a number of species belonging to this in late years would seem to emphasize the independence of the section. If it is so to be considered, the two recent species of the authors (published in Proc. Nat. Museum, vol. XI, pp. 528, 529) should be referred to as *S. Watsoni* and *S. Palmeri*. However, in the present uncertain limitations of the genus, we accept the limits of Bentham and Hooker in Gen. Plant, followed by Mr. Watson, in Botany of California.

733. Phaseolus filiformis Benth. Bot. of Sulphur, p. 13. This was collected in 1875 by Dr. Streets, and this season by Lieutenant Pond. Found in exposed places facing the ocean; "Bloom, white." The plant has been collected near the United States boundary by Orcutt in northern Lower California; also at Carmen Island (Palmer, 1875); Guaymas, Mexico, Palmer, 1887; Xantus, 1859, and by Brandegee, in Lower California.

727. The same; mouth of cañon; "bloom rose-colored."

744. Dalea Benthami Brandg. Proc. Cal. Acad. 2nd ser. ii, 148. As already pointed out by Mr. Greene this plant differs from the *D. megacarpa* in its persistent stipular spines, the spikes are shorter and not so close, the terminal leaflet retuse; "bloom, yellow." A compact plant one foot high. (No. 16 of Mr. Greene.) Collected by Lieutenant Pond, 1889, and distributed by Mr. Greene as var. *binncifera* Greene, and also in this collection.

683. Astragalus fastidiosus Greene. Bull. Cal. Acad., I, 186. Common in cañons in moist places; bloom "canary-yellow." Mr. Watson writes, "one good character has not been noted, the articulation of the pod on the stipe, which also occurs in one or two other species." (No. 12 of Mr. Greene.)

685. Astragalus insularis Kell. Bull. Cal. Acad., I, 6. Before known only from the specimens collected by Dr. Veatch in 1859, the species not being described until 1877. Only a few specimens were obtained at this time, mostly in fruit. It is to be regretted that a larger collection had not been made of this rare and little known species. It grows in exposed places near the sea. (No. 13 of Mr. Greene's list, but not found by him.)

692. Astragalus sp. Annual; much branched and spreading at base, more or less pubescent; branches slender: leaflets seven to eleven, 1 to 2 lines long, retuse or sometimes linear, acute, and 3 lines long: flowers, one to three, minute, (less than 2 lines long): peduncles 10 to 20 lines long: pods 3 to 5 lines long, slightly pubescent; the dorsal suture intruded, except near the apex; one-celled, incurved and reticulated. We have distributed this as *A. Cedrocensis*, but Mr. Watson thinks it is A. *Nuttallanus*, D. C., but pods always one-celled, etc. Growing on level places facing the sea. "Bloom pale-blue.

708. Tillæa leptopetala, Benth.* It seems to us that this species should be separated from *Tillæa minima*. It is probably *T. leptopetala* of Bentham, but the

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*Collected also by Palmer at Guadalupe Island. "Among plants in cañons. The specimens are very red." (No. 900.) The typical form of *Tillæa minima* Miers was collected by Dr. Palmer, at San Quentin, in February, 1889, and distributed as No. 713 in part, and No. 714. A third species of *Tillæa* proper, *T. connata* Ruiz et Pav. Fl. Per and Chil. I, 70, is to be added to our North American flora. The plants are larger than *T. minima* and not diffusely branched. The sepals almost a line long, ovate acuminate; the petals almost filiform. Collected also by Dr. Palmer at San Quentin (713*a*), growing with *T. minima*. Our plant seems to be the same as the one collected under the United States exploring expedition of Captain Wilkes, in Peru, and referred here by Dr. Gray, page 688. He considered it distinct from *T. rubescens* H. B. K., but if the same it must still give place to *T. connata*, the older name.

stems are quite red, while Bentham says of this species "specimina haud rubescent," and was collected near the San Francisco Bay. The stems are mostly single and erect, or sometimes with a few branches; flowers glomerate in the axils of the connate leaves, nearly sessile; the sepals narrower and more acute; seeds always two in each carpel. Shady spots in cañons.

753. Eucnide cordata Kell. Curran, Bull. Cal. Acad., I, 137. A loose growing plant about 4 feet high; "bloom yellowish-white." At mouth of cañon. Collected by Dr. Veatch in 1859. (This is Mr. Greene's No. 20); he considers it a *Mentzelia*, to which genus Kellogg first referred it. Mr. Watson thinks, however, that the two genera should be kept separate.

751. Petalonyx linearis Greene. Bull. Cal. Acad., I, 188. Found in a ravine, apparently common. About 2 feet high; "bloom white." (No. 21 of Mr. Greene.)

712. Mentzelia adherens Benth. Both of Sulphur, p. 15. This plant differs somewhat from Palmer's 1887 plant, referred to this species by Mr. Watson. The sepals are larger, their margins involute in age and rigid. Capsule not angled, of a different texture; the seeds are grayish and much wrinkled. Not given in Mr. Greene's list, but collected by Dr. Streets in 1876. "Bloom canary color." In exposed places.

719. Echinopepon minima Wat. Proc. Amer., Acad. XXIV, 52. Stems glabrous slender, 4 to 5 feet long, climbing over small bushes: leaves thin, smooth below, white-papillose and scabrous above, triangular-cordate, more or less three-lobed, 1 to 1½ inches long. Sterile racemes (including peduncle) 3 to 4 inches long: limb of the flower 4 lines broad, peduncle 6 lines long: fertile flowers mostly solitary, the peduncle becoming 8 to 9 lines long, fruit 6 to 9 lines long (not including the beak), echinate with spine-like processes, two celled, dehiscing by a deciduous operculum: cells three to six seeded, 1½ lines long, compressed, dark-colored.

By a slip of the pen Mr. Watson has reversed the character of the surface of the leaf, and Mr. Cogneaux has copied the mistake into his monograph. Vol. III, 805. At the mouth of a cañon. Mr. Watson in Torry Bull., vol. XIV, has re-established Naudin's genus, separating it from *Echinocystis* into which B. & H. had thrown it, followed by Cogneaux, in *Monographiæ Phanerogamarum*, vol. III. Our plant is the same as Dr. Streets, from Cedros island (1866).

693. Mamillaria Goodridgii Scheer. Our specimen is doubtfully referred to this species.

679. Apiastrum angustifolium Nutt. Growing in shady cañons. Not before reported from here, and the only known Umbellifer on the island.

689. Bigelovia veneta Gray. Only a few plants collected. The whole plant very glutinous. (No. 34 of Mr. Greene.)

705. Filago Arizonica Gray. Side of cañon in moist shade. Not before found here.

750. Gnaphalium Sprengelii H. & A. A few specimens found in a deep cañon. Not before reported from here.

731. Franseria chenopodifolia Benth. Very common. (No. 36 of Mr. Greene.)

757. Franseria camphorata Green, var. leptophylla, Gray. Proc. Amer. Acad., XXII, 309. Very common; a foot or so high. No 37 of Mr. Greene. The variety also collected near San Fernando, Lower California, by Orcutt, (1886). First collected on Guadalupe Island.

743. Viguiera lanata Gray. Very common plant on the island, and a large quantity collected in full bloom. Collected by Veatch, Streets, Belding, and Greene (No. 42.)

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The Cedros Island plant differs from Orcutt's All Saints' Bay plant of the Syn. Flora, and Palmer's Coronados Island plant. The plant is smaller, less viscid; the corolla smaller, less open, the style and stamens included, the capsule shorter than the calyx, the appendages large, somewhat reflexed. Palmer's Coronados Island plant grows along the beach under the influence of the sea water. And Mr. Orcutt writes that the same is true of his plant.

715. Phacelia (Eutoca) Cedrosencis Rose n. sp. Very hispid with slender bristles, also a little viscid in the inflorescence: stems 1 to 6 inches high, simple or somewhat branched: leaves pinnate, the segments entire or few toothed, inflorescence somewhat crowded, mostly geminate: flowers almost sessile: calyx parted almost to the base, its lobes linear or oblanceolate, 3 lines long, delicately three-nerved: corolla bluish, campanulate, about the length of the sepals: stamens barely exserted; appendages long and narrow, united to the stamens at base: style cleft for one-third its length; capsule one and one-half lines long, obtuse: seeds twelve to eighteen. Seemingly nearest *P. hirtuosa* of Lower California. Found in the shade of bushes in cañons. Not very common. A species peculiar in its dense bristles.

691. Krynitzkia maritima Greene. Stems very much branched.

690. The same with longer narrowly-lanceolate leaves, much resembling the *K. ramosissima* of Palmer's, Los Angeles Bay, 1887. Always one glabrous nutlet, with one or all the others maturing, but different, as described by us in a former paper.

722. Pectocarya linearis D. C. A single specimen found under pines at the summit of the highest peak (1,761 feet), north end. New to the island. The nutlets differ somewhat from most specimens seen, but much resemble *P. linearis*, var. of Lemmon (1884), Arizona.

711. Plagyobothrys Cooperi Gray. A few plants found on the highest point of the island. The stipe to the nutlet, only about half as long as in our San Quentin plant. New to the island.

745. Physalis Greenei. Only one small plant found. This is very close to Palmer's 682, from San Quentin, and the close resemblance of the latter to Dr. Streets's Cedros Island plant, we pointed out in our former paper. Proc. U. S. Nat. Mus., vol. XI, 533. *P. pedunculata* Greene non Mart. et Gal. The San Quentin plant Mr. Greene writes is his *P. muriculata*.

740. Lycium Cedrosencis Greene? A few sterile branches.

732. Nicotiana Greeneana Rose n. sp. Somewhat viscid, pubescent, 4 to 9 inches high, simple or little branched at base: lower leaves oblong to lanceolate, 1 to 2 inches long, petioled: the upper ones linear: calyx lobes unequal, the longer about the length of the tube: corolla yellowish white, 5 to 8 lines long, a little constricted at the orifice, its limb 2 to 3 lines broad: the stamens equally inserted low down in the tube: capsule four-valved, longer than the calyx tube. This species seems nearest *N. Clevelandi* in its leaves and calyx, but the corolla is more like *N. trigonophylla*. It seems quite distinct from either. Not very common. Dr. Palmer says in his note respecting this plant, "All the plants seen were taken; not very sticky, nor had the plants but a faint odor like that accompanying the handling of tobacco."

714. Antirrhinum Watsoni Vasey & Rose. A small form, 3 to 8 inches high with linear leaves, "corolla purple." Very rare. At the north end in the shade of bushes in ravines. Not before collected on the island. Mr. Brandegee, in his paper on the "Plants of Baja, California" gives two additional stations, viz: Magdalena and Santa Margareta Islands. The species is doubtless common and of a wide range.

725. Antirrhinum subsessile Gray? Only three small plants found in the shade; 2 to 8 inches high. In fruit, no flowers. At least new to the island.

720. Galvesia juncea Gray. Collected by Dr. Streets in 1875 (No. 58 of Mr. Greene); Lieutenant Pond (1889). Grows in large bushes 5 feet high. Described in Syn. Flora as being only 2 feet high.

681. Mimulus cardinalis Dougl. Hort. Trans. XI, 70. Only a single specimen collected. (No. 56 of Mr. Greene.)

739a. Pentstemon cedrosensis Kellogg. Proc. Cal. Acad. XI, 19. Collected by Dr. Veatch in 1859, and the flowers described as yellow. Mr. S. Belding obtained it here in 1881, and Dr. Gray described it as *P. brevilabris* with a white (?) corolla. In dried specimens the corollas have a yellow or deep orange color Dr. Palmer's field-note says, "bloom scarlet; very showy," very common in cañons near the ocean. (No. 55 of Mr. Greene's list.)

728. Mimulus glutinosus Wendl. Only three plants seen; flowers only 1 inch long; "bloom amber color." Mr. Greene thinks this plant is distinct from those of the mainland. Collected by Dr. Veatch in 1859. (No. 57 of Mr. Greene.)

677. Verbena lilacina Greene. Bull. Cal. Acad., I, 212. Ravines; "rather showy plant, abundant bloomer of a lilac color and very fragrant." Collected first by Mr. Greene, 1885. (No. 62.)

684. Salvia cedrosensis Greene. Bull. Cal. Acad., I, 212. Common plant on the island. A mere fragment was collected by Dr. Veatch. (No. 61 of Greene.) Only known to the island.

746. Teucrium glandulosum Kell. Proc. Cal. Acad., II, 23. First collected by Dr. Veatch in 1859. (No. 60 of Mr. Greene.) Common in deep shady cañon. "Flowers white with pink shading." Only known from the island.

680. Parietaria debilis Forster. Among rocks and bushes in cañons.

703. Eriogonum fasciculatum Benth. *Fide* Watson. The same as 729 from San Quentin, of former paper.

706. Eriogonum Pondii Greene. Pitt I, 267. Compact plant about a foot high in exposed situations. (No. 85 of Mr. Greene's list.) Collected by Lieutenant Pond, 1889.

710. Pterostegia drymarioides Fich & Mey. Grows among bushes and rocks in shade. It seems not to have been collected before on the island.

704. Harfordia fruticosa Greene. Parry in Proc. Acad. Davenp., V., 28. This species, before little known, has now been collected in great abundance, both in flower and in fruit. The perianth is six parted and stamens nine in two rows. The flowers seem to be perfect and not diœcious. This is one of the most common shrubs of the island, growing in cañons and exposed places; 3 feet high. Collected by Dr. Veatch. (Mr. Greene's No. 63.) Lieutenant Pond, 1889.

737. Mirabilis Californica Gray. Collected by Dr. Streets in 1876. (No. 65 of Mr. Greene.)

754. Atriplex. n. sp. Diœcious, perennial and woody at base, 1 to 2 feet long, erect or ascending, glabrous and densely glaucous, becoming a little scurfy in age: leaves small (6 to 12 lines long) broadly ovate to oblong, tapering at base into a short petiole, abruptly acute at apex: bracts small (1½ lines wide by 1 line high) somewhat compressed, cuneate at base, scarcely marginal with a few small teeth above, sometimes a little muricate on the sides: sterile flowers densely glomerate, five parted. Grows in abundance near the beach. Perhaps nearest *A. dilata*, Greene, but smaller fruit, leaves, etc.

745. Atriplex microcarpa Dietrich.

742. Aphanisma blitoides Nutt. This plant has been collected this season, also at San Quentin, San Benito Island, Guadalupe Island. Not before found on this island.

756. Chenopodium murale Linn. (No. 83 of Mr. Greene.) Only a few specimens collected.

729. **Simmondsia Californica** Nutt. This is *S. fabulosa* of Kellogg, referred here by S. Watson, but without seeing specimens. It is only known from Dr. Veatch's collection and was not rediscovered by Mr. Greene. Dr. Palmer speaks of it as a large shrub at mouth of cañons.
676. **Juncus robustus** Wat.
764. **Juniperus Cerrosianus** Kellogg. "An irregular shrub, 3 to 6 feet high, on various parts of the north end, but of no particular use."
763. **Pinus muricata** Don. This plant grows on the highest peak 1,761 feet altitude.
695. **Ephedra** sp. It may be new. Not common; mouth of cañon.
748. **Notholæna candida** Hook. Grows in deep cañons in shade of rocks. (No. 82 of Mr. Greene.)
749. **Pellæa andromedæfolia** Fee. Common in cañons. (No. 81 of Mr. Greene.)
707. **Cheilanthes Brandegei** Eaton n. sp. ined.
659. **Trisetum barbatum** Stend. Often looks as if sown. Found upon the highest points of the island, on the slopes of shady ravines, and under bushes.
660. **Melica imperfecta** Trin. Found, not abundantly, upon hill-sides and ravines, growing more thriftily near small shrubs and among rocks, as if seeking shade or moisture.
661. **Stipa eminens** Car. Grows in large bunches on the lower part of slopes and ravines. A coarse grass, with the dead grass of last year still clinging to the bunches.
662. **Melica imperfecta** Trin. Found in one place only, in a deep cañon near a spring.
663. **Muhlenbergia debilis** Willd. var. Common at the mouth of cañons in exposed positions.
664. **Festuca tenella** Willd. var. Very abundant; growing in large patches, as if sown, upon the highest point of the island, and sparsely in the shade of plants and bushes.
665. **Festuca tenella** Willd. var.
666. **Agrostis verticillata** Trin. Found one plot 3 feet square on a wet place of what is known as the watering place of the island.

SAN BENITO ISLAND PLANTS.

Mr. E. L. Greene has very recently published (Pittonia, vol. 1, pp. 261–266) a very interesting little paper on the vegetation of the San Benito Islands with a list of the known plants. He has enumerated twenty-four species as belonging to the largest islet. His plants were collected by Lieut. Charles F. Pond at various times from December to February. Dr. Edward Palmer spent but a day (March 25) on West San Benito. His general notes of the island and its vegetation are very similar to Mr. Greene's, and need not be repeated here. He collected seventeen species, all of which are given in Mr. Greene's list. He has, however, collected some of the varieties in considerable abundance. He speaks, also, of two forms of Agave, neither in flower or fruit. No specimens were sent in, and nothing is known as to the species. If these should prove two distinct species, of course it will increase the number of species to twenty-six. We have included for convenience in a parenthesis, Mr. Greene's number.

909. **Eschscholtzia ramosa** Greene. Bull. Torr. Club, XIII, 217. This plant was collected in 1876 on these islands by Dr. Streets. (No. 1 of Mr. Greene.)
908. **Frankenia Palmeri** Watson. Abundant, especially on level places; a foot to 18 inches high; flowers white to pink. (No. 4 of Mr. Greene.)

917. Lavatera venosa Watson. Proc. Am. Acad., XII, 249. Poor specimens were collected by Dr. Streets in 1875. Not since collected until obtained by Lieutenant Pond. Dr. Palmer says of it: "The plant that leads in numbers all others on the island. Its bright green gives the island rather a fertile look. It is on all the level places in the arroyos and deepest cañons and reaches to the summit. A beautiful plant with white and purple flowers, much darker at night, 1 to 3 feet high. The petals are at first straight, and then turn under as they take on the purple color. A fine plant for cultivation in greenhouses and gardens of warmer latitudes." Dr. Palmer has collected it in great abundance, and has obtained a good supply of seed. (No. 3 of Mr. Greene.)

913. Hosackia maritima Nutt. But a few specimens collected. The pods are three to nine seeded. (No. 3 of Mr. Greene.)

922. Cotyledon linearis Greene. Pitt., I, 285. Very common plant, in bunches over the lower portion of the island. (No. 10 of Mr. Greene.)

921. Mammillaria Goodrichii Scheer.

Mesembryanthemum crystalinum L. Dr. Palmer says the "Ice plant" was very plentiful on the island, but sent in no specimens. Mr. Greene has, however, identified the species from this island. (No. 11 of Mr. Greene.)

920. Hemizonia Streetsii Gray. Collected quite abundantly. (No. 15 of Mr. Greene.) First collected here by Dr. Streets.

915. Amblyopappus pusillus Hook & Arn. (No. 16 of Mr. Greene.)

914. Perityle Greenei Rose. Bot. Gaz., xv., 117. (No. 17 of Mr. Greene.)

911. Krynitzkia ambigua Gray. Growing on the side of a cañon. The plant is clearly the one collected by Lieutenant Pond, but this, as well as Mr. Greene's type, has four nutlets. We have carefully compared both specimens with a very full set in the Gray Herbarium, and we have not been able to separate them. The nutlets are identical and there are specimens with the same habit. (*Cryptanthe patula* Greene.) (No. 21 of Mr. Greene.)

912. Krynitzkia maritima Greene. Only a few specimens were collected, as nearly all the plants were dead. The plants are found from 2 to 8 inches high and much branched. Growing on rocky sides of a cañon. (No. 20 of Mr. Greene.)

916. Lycium Californicum Nutt. (No. 19 of Mr. Greene.)

910. Plantago Patagonica Jacq. Quite common in sandy ravines. (No. 22 of Mr. Greene.)

919. Euphorbia Benedicta Greene. Pit., i, 263. Very common. (No. 7 of Mr. Greene.)

918. Atriplex deltata Greene. Pit., i, 267. The sterile plant.

907. The same species. The fertile plant. (No. 8 of Mr. Greene.)

906. Brodiæa capitata Benth. A very common plant on shady slopes. (No. 24 of Mr. Greene.)

GUADALUPE ISLAND PLANTS.

Botanists generally will be delighted to know that Dr. Palmer has again visited Guadalupe Island and brought back a large and interesting collection. Only a week was spent on the island, from March 27 to April 3, 1889, but he succeeded in laying in a good supply of a number of species only known from this island and sparingly represented in our herbaria. Besides these several new species were found. He began his collecting at the south end of the island, where the last three days of March were spent, and the first three days of April were spent at the north end of the island.

It will be remembered that in 1875 Dr. Edward Palmer spent three months (February to May) on this island. This was the first visit ever

made to Guadalupe Island by a botanist. The next year appeared Mr. Watson's admirable paper (Proc. Amer. Acad., vol. XI) on the flora of this island and a list of Dr. Palmer's plants, of which twenty-one were considered new.

Ten years afterward Mr. E. L. Greene spent a week (the last of April) adding to the flora fifteen species, describing seven new species, and publishing in 1885 (Bull. Cal. Acad., vol. 1) his notes, and a catalogue of the flowering plants and ferns of the island.

Mr. Watson separates the phænogamous plants into five groups as follows: (1) Introduced species, twelve; (2) species which range from the Pacific to the Atlantic States, nine; (3) those found in California as far north as San Francisco, forty-nine; (4) those only in southern California, eighteen; (5) those peculiar to the island itself, twenty-one. Add to these an undetermined *Heuchera* and six ferns makes a total of one hundred and sixteen Phænogams and Pteridophyta. Mr. Greene's list enumerates one hundred and thirty species, all except twenty-six he had observed in his short stay upon the island. Probably six of the fifteen added by Mr. Greene belong to the first group. Among the present additions at least four have very recently gained a foot-hold here, viz, *Melilotus Indica*, *Sonchus tenerrimus*, *Suaeda Torreyana*, and *Centaurea Melitensis*, making the total number of introduced species as twenty-two; one is to be added in the second group. In the third group, Mr. Greene's list adds five and ours three, viz, *Tissa macrotheca*, *Tissa pallida*, and *Trisetum barbatum*, making the number of distinctly Californian species fifty-seven.

In the fourth group the two *Cactaceæ* and two *Gramineæ* make the number of southern Californian species twenty-two. Of the fifteen additional species added by Mr. Greene but one he described as new, another probably new. Dr. Palmer has at this time collected seventy-two species, fourteen of which are additions to the flora of the island and four are new. The total number of species now known on the island is one hundred and forty-five. Of the thirty-four species first described from this island but three have since been found elsewhere. The following list so far as known is peculiar to the island:

1. *Eschscholtzia Palmeri* Rose.
2. *Lavatera occidentalis* Wat.
3. *Sphæralcea sulphurea* Wat.
4. *Sphæralcea Palmeri* Rose.
5. *Lupinus niveus* Wat.
6. *Lupinus Guadalupensis* Greene.
7. *Trifolium Palmeri* Wat.
8. *Hosackia ornithopus* Greene.
9. *Œnanthe Guadalupensis* Wat.
10. *Megarrhiza Guadalupensis* Wat.
11. *Galium angulosum* Gray.
12. *Diplostephium canum* Gray.
13. *Hemizonia frutescens* Gray.
14. *Hemizonia Greeneana* Rose.
15. *Hemizonia Palmeri* Rose.
16. *Perityle incana* Gray.
17. *Baeria Palmeri* Gray.
18. *Krynitzkia foliosa* Greene.
19. *Harpagonella Palmeri* Gray.
20. *Phacelia phyllomanica* Gray.
21. *Phacelia floribunda* Greene.
22. *Convolvulus occidentalis* Gray.
23. *Convolvulus macrostegia* Greene.
24. *Hesperelea Palmeri* Gray.
25. *Atriplex Palmeri* Wat.
26. *Erythæa edulis* Wat.
27. *Mimulus latifolius* Gray.
28. *Pogogyne tenuifolia* Gray.
29. *Calamintha Palmeri* Gray.

After those species collected by Dr. Palmer on his former trip, we have included the number and year in a parenthesis.

882. Eschscholtzia Palmeri Rose, n. sp. Small compact plants, from 1 to 2 inches high, annual, very glaucous: leaves compact, finely dissected into linear lobes: flowers large for the size of the plant, petals 5 to 6 lines long, yellow, orange at base: the peduncles (in fruit) 1 to 2 inches long: torus very thick, with no hyaline internal edge: pods 1½ to 2½ inches long, thick, straight, or slightly curved: calyptra oval, with short acute tip.

March 29 or 30. Only seen on a rocky ledge, but there common. On south end of Guadalupe Island.

875. Eschscholtzia ramosa Greene. Bull. Torr. Club, XXII, 217. In cañons, but not common on the south end of the island. March 29 and 30. Also at San Benito, March 25, No. 909. Probably No. 3 of Mr. Watson's list. "*E. hypecoides* Var." This is the way Dr. Gray has referred the plant in herbarium specimens.

880. Sisymbrium reflexum Nutt. Shady portions of cañons on south end of the island. March 29. (No. 4 of 1875.)

854. The same. Two small plants found on the south end of the island.

897. Lepidium Menziesii D. C. South end of the island. March 29. (No. 7 of 1875.)

851. L. lasiocarpum Nutt. Only two specimens collected in a cañon at the south end. (No. 8 of 1875.)

841. The same. In a similar locality. This species was not found by Mr. Greene. (No. 8 of 1875.)

892. Oligomeris subulata Bois. Grows scattering along the arroyos.

845. The same. Found about the sandy beach at the north end. April 1 to 3. (No. 10 of 1875.)

864. Tissa macrotheca Britton. Torr. Bull., vol. XVI, p. 129. Common on exposed sides of hills, in arroyos, and sides of cañon. Not before reported from this island, and extends the range of the species considerably southward.

864*a*. Tissa pallida Greene. Bull. Torr. Club, vol. XVI, 129. Collected with the preceding, but not so common. This species was described in the Torrey Bulletin of 1889 (p. 129); has previously only been found near San Francisco and Monterey (?). We are indebted to Dr. N. L. Britton for the determination of these two species.

837. Silene Gallica Linn. Abundant about the beach. (No. 11 of 1875.)

846. Claytonia perfoliata Donn. In cañon at north end, where there is much shade and moisture. The flowers are said to be white. (No. 15 of 1875.)

844. Calindrinia Menziesii H. B. K., var. **caulescens** Gray. At the north end. (No. 14 of 1875.)

869. Malva borealis Wallman. In the former collection, only found from the middle of the island, but now introduced all over the island. (No. 16 of 1875.)

897. Sphæralcea Palmeri Rose, n. sp. Stems 12 to 18 inches high, from a thick woody base, angled, covered with a dense, stellate pubescence: leaves broad-ovate, 2 to 2½ inches long, thick, crenulate-toothed, obtuse: calyx 3 lines long, with broad lobes: petals canary-yellow, with pink varieties: the carpels 2 to 2½ lines long. The upper margin is rather thick and broad and of different texture. The carpels are narrower and longer than in *S. sulphurea*, two ovules commonly maturing. Found in all exposed parts on the south end of the island. This species seems quite distinct from *S. sulphurea*.

861. Lupinus niveus Watson. Annual, 6 to 15 inches high; the ovate cotyledons (6 to 8 lines long) persistent; leaflets oblanceolate, obtuse; pods 1 to 1½ inches long, two to five seeded; seeds 3 lines in diameter. In flower and fruit, March 29, on the south end of the island. Growing in sandy bed of cañon. (No. 25 of 1875.)

859. Trifolium Palmeri Watson. Quite common on the south end in wet sand in cañons. (No. 26 of 1875.)

832. The same. Very common in large masses in cañons and plains at the north end. This plant is widely distributed over the island, and forms the main food supply for the goats.

831. Trifolium microcephalum Pursh. A very common plant at the north end in cañons and exposed places. It is much eaten by goats. April 1. (No. 27 of 1875.)

840. Melilotus Indica All. Not before reported from the island. Common along the beach, ascending into shady cañons and perhaps introduced with the goats. North end of island. April 1 to 3.

853. Hosackia ornithopus Greene. Only one plant found near the mouth of a cañon at the north end. Mr. Greene found it abundant in the middle of the island, 1885. We have not seen Palmer's 1875 plant.

847. Vicia exigua Nutt. Common in shady sides of ravines at the north end. Dr. Palmer on his first visit only saw a single small specimen. Mr. Greene says it was not uncommon.

893. Mentzelia dispersa Watson. Common among shady rocks in cañons. South end of the island March 29. (No. 32 of 1875.)

850. Galium aparine L. At north end. April 1. (No. 35 of 1875.)

900. Tillæa leptopetala Benth.

902. Opuntia prolifera Engl. Grows on both ends of the island on stony ridges and steep mountain sides. 3 to 5 feet high; not in flower. Collected by Mr. Greene.

Mesembryanthemum crystallinum Linn. Dr. Palmer wrote that this grew on the island, but collected no specimens. Mr. Greene also collected it.

901. Mamillaria Goodridgeii Scheer. With five to six globose heads. At first covered with a white wool but becoming glabrate. Common on south end of island. Not found by Dr. Palmer in 1875, but collected by Mr. Greene in 1885.

899. Amblyopappus pusillus H. & A. March 30. (No. 46 of 1875.)

849. Microseris linearifolia Gray. A few specimens only collected on the north end of the island. (No. 50 of 1875.)

895. Filago Arizonica Gray. South end of the island. March 30. (No. 38 of 1875.)

885. Gnaphalium Sprengelii H. & A. Only three plants seen, these in the bed of an arroyo. South end. March 29. Collected by Palmer in 1875, but without number.

874. Hemizonia (Hartmannia) Palmeri Rose, n.sp. Perennial, with thick woody base, forming small bunches; branches decumbent or ascending, with abundant, white, silky pubescence, not at all viscid: leaves numerous, silky, 9 to 12 lines long, linear to narrowly oblanceolate: heads numerous, somewhat corymbose: involucre 2 lines high: rays eight, three-toothed: the chaff forming a cup about the disk-flowers cleft to the middle, the divisions linear-acuminate: disk flowers about ten, the akenes sterile: pappus of six to twelve, linear-acuminate scales, the ray akenes barely a line long, the rostellum very short, and compressed closely against the top of the akene.

A peculiar species, and by far the most decided shrub of the genus. In many respects near to the following, but in leaves, pubescence, inflorescence, etc., very different. A very common plant on the south end of the island, in all exposed places Dr. Palmer writes that it is a very attractive plant in that dry latitude. The three species from this island seem to form a peculiar group by themselves.

865. Hemizonia (Hartmannia) Greeneana Rose, n. sp. Perennial, forming large round bunches 2 to 3 feet high, with sterile branches hanging down the sides, somewhat pubescent, more or less viscid throughout: leaves crowded, dark

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835. **Ellisia chrysanthemifolia** Benth. The stems are prostrate or ascending, divaricate, very pubescent. Leaves mostly opposite, pinnate; the oval lobes toothed; calyx very small, shorter than the capsule. Corolla white, about the size of calyx. Only found in cañon at north end. April 1. (74 and 75 of 1875.)

866. **Phacelia floribunda** Greene. Bull. Cal. Acad., i, 200. In shady cañon at the south end.

866*a*. A small, almost simple form, 3 to 5 inches high, growing with the last.

833. The same, from cañons at the north end. In all these cases the capsule is somewhat oblique, and only a single seed matures.

848. **Emmenanthe penduliflora** Benth. Found in cañons and hill-sides, at both ends of the island. April 1. On the north end.

898. The same, from the south end of island. March 30. (No. 73 of 1875.)

894. **Krynitzkia foliosa** Greene. Certainly very distinct from *K. ambigua*. Only known from this island, but here common, growing with *K. maritima*. First collected by Palmer (No. 68 of 1875) and afterwards by Greene. Found in sandy arroyos and shady cañons. March 29 and 30. South end of the island. No. 877 the same.

842. The same, from a cañon at the north end.

879. **K. maritima** Greene. A small compact form, growing with No. 877 (No. 67 of 1876) on south end of island.

860. **Solanum nigrum** Linn. var. About a foot high, glabrous; leaves dentate, small; flowers small (about two lines in diameter), violet. Only a single plant found growing among rocks in cañon, on south end of island. March 29. (No. 60 of 1875.)

839. **Mimulus latifolius** Gray. (No. 58 of 1875.)

878. **Plantago Patagonica** Jacq. South end of island; common. March 29. (No. 54 of 1875.)

888. **Pterostegia drymarioides** F. & M. (No. 84 of 1875.) At south end. March 30.

843. The same. Found in cañons among shady rocks at north end. April 1.

886. **Mirabilis Californica** Gray. Common. (No. 82 of 1875.) South end of island. March 30.

884. **Parietaria debilis** Foster. Common in shady cañons. (No. 87 of 1875.)

658. **Brodiæa capitata** Benth. In deep ravines and on hill-sides on the south end of the island. Not reported in Mr. Watson's paper, but Dr. Palmer says it is now quite plentiful. Also found by Mr. Greene.

857. **Polypodium Californicum** Kaulf. On the north end. (No. 103 of 1875.)

855. **Notholæna Newberryi** Eaton. (No. 103 of 1875.)

856. **Gymnogramme triangulare** Kauf.

656. **Muhlenbergia debilis** Trin. Found in the shade of rocky ledges and also in the exposed part of a cañon of the southern part of the island.

670. The same; collected at the northern end of the island. Goats do not eat this grass.

657. **Festuca tenella** Willd. Habitat as 656. Saw no indications of the feeding of goats (the only animals here) upon this grass.

674. The same; found the south of the island.

653. **Trisetum barbatum** Steud. Evidently an annual; beyond the frost line it may be perennial. In dry seasons very little seed is formed, as the goats crop this plant closely (there is but scanty vegetation on this, the southern end of the island), but this year rain has been frequent, and this plant is abundant, enabling us to get ripe seed. This may be improved by cultivation, plants found in favorable situations becoming quite large. It also makes good hay.

667. The same; from northern part of island. Very common grass, making the best forage upon this end of the island. In the cañons it is very large, growing so thickly that it looks like grain.

673. The same.

668. **Avena barbata** L. Found some specimens 4 feet high in the cañons and on the rough slopes.

669. **Aristida bromoides** H. B. K. In deep cañons among other grasses and plants.

675. The same.

671. **Hordeum murinum** L. Very abundant, bidding fair to exterminate other grasses and plants.

672. **Festuca Myurus** L. Not common. Grows in bunches in cañons among other grasses.

HEAD OF THE GULF OF CALIFORNIA.

Three days were spent at Lerdo, Mexico. This locality is 60 miles south-southwest from Yuma, latitude 31° 46′ 10″, and longitude 114° 43′ 30″.

The most interesting thing obtained here was *Ammobroma*, which for the first time has been collected in good quantity.

956. **Nasturtium palustre** D. C.

955. **Achyronichia Cooperi** T. & G. Places in river bottoms. Lerdo, Mexico.

934. **Dalea Emoryi** Gray. In the deserts of southeast California and western Arizona, and south to Los Angeles Bay. One of the two hosts of *Ammobroma*.

941. **Œnothera scapoidea** Nutt. Var. Stems 4 to 8 inches high, much branched at base, lateral leaflets very small, or none; calyx dark red within, petals less than 2 lines long, light yellow. Hemsley does not mention this plant as growing in Mexico in Biol. Cent. Amer.

933. **Franseria dumosa** Gray. Also collected here by Dr. Edward Palmer in 1885. This species is common in the desert regions of south Utah, Arizona, southeast California, and extending as far south as Los Angeles Bay, Lower California. This is one of the two species upon which *Ammobroma Sonoræ* is found, and its wide distribution leads us to expect that other stations of that parasite will yet be found.

957. **Gnaphalium Sprengelii** H. & A. Dry places in river-bottoms.

940. **Palafoxia linearis** Lag. On the dry sand-hills.

Ammobroma Sonoræ Torr. This was first discovered in 1854 by Col. A. B. Gray, in charge of a railroad exploring party, at the head of the Gulf of California. At this time a short notice of the discovery was published by Col. A. B. Gray in Memoirs of the American Academy of Science, but it was not until 1867 that a description of the genus was published by Dr. John Torrey in the Annals of Lyc. Nat. Hist. N. Y. Vol. VIII, p. 51, together with a good figure. So far as we can learn the plant was not collected again until Schuchard got it in Arizona. And now Dr. Palmer collected it in large quantities at Lerdo, Mexico. Until the present season its host plant has been unknown but Dr. Palmer has carefully examined into this, and collected two common plants of this arid region upon which it grows. These are *Franseria dumosa* and *Dalea Emoryi*. Dr. Palmer wrote that the plant grows in deep sand, the deeper the sand the larger and juicier the plants. The Cocopa Indians gather them for food, which they relish under all circumstances. They eat it raw, boiled, or roasted. The plant is full of moisture, and whites and Indians alike resort to it in traveling, as a valuable substitute for water. It has a pleasant taste, much resembling the sweet

potato. The stems are 2½ feet long and 1 to 4 inches in diameter, but almost buried, only the peculiar white tops appearing above the sand. The Cocopa Indians call it "Oyutch." Colonel Gray gave much the same report of this plant. He says the Papago Indians dry the stems and grind them with the mesquit beans, forming what they call "pinole."

937. Aphyllon Cooperi Gray. Parasitic on *Franseria dumosa*. The Cocopa Indians also use this plant for food. It is very bitter, but this is mostly removed by boiling. They call it "nep-cha-ga." It grows in the sand.

938. This is the same. Parasitic on *Ephedra*.

953. Amaranthus Palmeri Wat. Var. A peculiar cæspitose form, forming great mats, some stems with slender ascending or erect stems 4 to 10 inches long. At Lerdo, Sonora, Mexico, April 24 to 26, 1889. Grows in river-bottom, in rather dry places.

958. Probably the sterile of the same. Stems much branched at base and slender.

Sagittaria variabilis Engl. The bulbs of this plant are much used by the Cocopa Indians either raw or roasted. Lerdo, Sonora.

Ruppia maritima, Linn. Lerdo, Sonora. Hemsley says that this species had not been collected in Mexico, although it might be expected.

931. Scirpus maritimus, Linn. *fide* F. V. Coville.

924-931. Uniola Palmeri Vasey. This grass was collected 35 miles south of Lerdo and about 15 miles from the mouth of the Colorado River. It grows abundantly on the tidal lands and forms almost the principal food-plant of the Cocopa Indians. A full account of this plant, with plate, appears in the Garden and Forest for August, 1889.

948. Panicum colonum Linn. An annual grass of which the seeds are used for food by the Indians.

947. Panicum capillare Linn. var. **miliaceum,** V. A peculiar variety with a drooping panicle, of the habit of *P. miliaceum* but with smaller spikelets. This is also used as food by the Indians, who sow the seeds in the rainy season.

946. Lolium temulentum Linn. Introduced.

945. Diplachne imbricata Scrib. This extends into Arizona and southern California.

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UPON A COLLECTION OF PLANTS MADE BY MR. G. C. NEALLEY, IN THE REGION OF THE RIO GRANDE, IN TEXAS, FROM BRAZOS SANTIAGO TO EL PASO COUNTY.

By JOHN M. COULTER.

Mr. G. C. Nealley was engaged by the Division of Botany to make collections of plants during the seasons of 1887, 1888, and 1889, in the more unexplored parts of Texas, chiefly in the counties bordering the Rio Grande. It was hoped that many of the rarer plants of the Mexican Boundary Survey and other early collections would be re-discovered, that additional Mexican types would be found to be members of our flora, and that species new to science would be brought to light. How far these hopes have been realized is shown in the following report. It is to be regretted that in many cases the stations are no more definitely given, but they are given with all the fullness that the field-notes will justify.[1]

1. **Clematis crispa** L. Near Brazos Santiago in April, and later at Ballinger (Runnels county).
2. **Clematis Drummondii** Torr. & Gray. In great abundance along the Rio Grande near Roma (Starr county).
3. **Clematis Pitcheri** Torr. & Gray. Concho county.
4. **Aquilegia chrysantha** Gray. Southwestern Texas.
5. **Cocculus diversifolius** DC. (*C. oblongifolius* DC.) Southwestern Texas. Two forms of this species occur in Mr. Nealley's collections; one with ovate leaves, the other with narrowly oblong leaves.
6. **Castalia elegans** Greene (*Nymphæa elegans* Hook.). Along the lower Rio Grande near Santa Maria (Cameron county), and apparently in considerable abundance. This rare and beautiful species, remarkable on account of its light blue petals, was discovered by Charles Wright in 1849, "near the head of the Leona River," a Texan tributary of the Rio Grande. Grown from seed at Kew, it was described and figured by Hooker in *Curt. Bot. Mag., t.* 4604. Afterwards a single specimen was found by Berlandier in northern Mexico, and other specimens by Charles Wright in Cuba. For many years it was unreported, when it was re-discovered in 1887 at Waco, McLennan county, by Misses Trimble and Wright (reported by E. E. Stern in *Bull. Torr. Bot. Club*, xv, 13); and in 1888 by C. G. Pringle, in lagoons near Brownsville. *Bourgeau* 4, from Santa Anita, Mexico, referred in *Hemsl. Biol. Centr. Amer.*, i. 25, to this species, is probably *Castalia flava* Greene.

[1] In the case of sets distributed before the publication of this contribution, the numbers on the labels should be changed to the serial numbers of this paper. Some changes, also, have been made in determination, and hence a few names on already distributed labels are misleading.

7. **Castalia flava** Greene (*Nymphæa flava* Leitner). Rio Grande City (Starr county). To this must be referred *Bourgeau* 4, from Santa Anita, Mexico, as noted under the preceding species. The discovery of this Florida yellow water-lily along the Rio Grande in Texas, as well as in Mexico, is an interesting one. In Pringle's distribution of 1888, no. 1956, from lagoons near Brownsville, is labeled *Nymphæa Mexicana* Zucc., and it is undoubtedly the same as our specimens from Mr. Nealley. There seems to be so much uncertainty, however, as to what *N. Mexicana* is, and our plants so closely accord with the well-known *Castalia flava*, that we have ventured to so name them. It is but fair to say that none of the Nealley specimens are in fruit, and it may be discovered that all of these Texano-Mexican yellow water-lilies are *Castalia Mexicana*.
8. **Nelumbo lutea** Pers. (*Nelumbium luteum* Willd.) Along the lower Rio Grande, near Santa Maria (Cameron county).
9. **Argemone platyceras** Link & Otto, var. **rosea** Coulter *n. var.* Petals bright rose-purple. Corpus Christi. This includes also the form referred to by Watson (*Proc. Am. Acad.*, xvii. 318) under *Palmer* 20.
10. **Thelypodium linearifolium** Watson. Limpia cañon (Presidio county).
11. **Thelypodium micranthum** Watson. Limpia cañon and Chenate Mountains (Presidio county). Mr. Nealley's plants are quite small and sometimes simple, some of them being not more than 9 inches or 1 foot high. They are sometimes also quite glabrous, even as to the lower leaves, and the stigma seems sessile. This species is confused in herbaria with *T. longifolium* Watson, in which the flowers are twice as large.
12. **Thelypodium Vaseyi** Coulter, *n. sp.* Glaucous and glabrous throughout, 6 to 9^{dm} high, branching, with coarse stems: leaves thin, oblanceolate, becoming narrower above, entire or lower leaves somewhat repand-denticulate, clasping by rounded auricles (or the lowest merely sessile), 2.5 to 10^{cm} long, 1.25 to 3.75^{cm} broad: flowers very small, white, about 3^{mm} high: pods very slender, becoming distant and ascending or erect, 3.75 to 5^{cm} long, on pedicels 6 to 8^{mm} long.—Near Rio Grande City, Texas (*Nealley*); also collected in 1881 by G. R. Vasey (no. 29) in the mountains west of Las Vegas, New Mexico, in immature condition. Vasey's plants were too young to be characterized, although Mr. Watson, to whom the specimens were submitted, considered them as probably representing a new species. Mr. Nealley's specimens supply nearly mature pods, which may become longer than noted in the description. The species seems to be very distinct from any other Thelypodium.
13. **Thelypodium Wrightii** Gray. Limpia cañon (Presidio county). Specimens in fine fruiting condition show pods mostly 3 inches long or over.
14. **Lesquerella argyrea** Watson (*Vesicaria argyrea* Gray). Roma (Starr county) and Chenate Mountains (Presidio county).
15. **Lesquerella Engelmanni** Watson (*Vesicaria Engelmanni* Gray). Camp Charlotte (Ixion county). The collection includes two forms: one leafy, with very narrow and entire leaves; the other with nearly all the leaves rather broad and sinuate-dentate.
16. **Lesquerella gracilis** Watson (*Vesicaria gracilis* Hook.). Brazos Santiago.
17. **Sisymbrium canescens** Nutt. Limpia cañon (Presidio county).
18. **Sisymbrium diffusum** Gray. Limpia cañon (Presidio county) and Chisos Mountains (Foley county). This species was collected by Wright and the Mexican Boundary Survey in the southwest corner of Texas. G. R. Vasey and Rusby have collected it in adjoining New Mexico, and Pringle in Mexico. Mr. Nealley's Limpia cañon specimens were collected at Wright's original station.
19. **Erysimum asperum** DC. Limpia cañon (Presidio county).

20. Greggia camporum Gray. Chenate Mountains (Presidio county). This species is remarkably variable, a fact which is better known in herbaria than in publication. Very little seems to have been added to Gray's original description in *Pl. Wright.*, i. 8, but the immaturity of his specimens prevented him from discovering certain characters which seem generic. No mention is made of the fact, nor does it appear in the plate in *Pl. Wright.*, that the mature stamens are strongly sagittate and coiled, as in *Thelypodium*. The pod, instead of being short and allied to that of *Synthlipsis*, is a silique (a fact recognized by Bentham & Hooker), often quite elongated (an inch or more), and usually more or less curved at maturity. In fact, the persistent septum is always curved, often strongly so. The sepals also become strongly reflexed. The species *G. camporum* presents such great variations in the size and shape of its leaves that extreme forms are never recognized by a collector as forms of the same species. These specimens from the Chenate Mountains have broad and sinuate-dentate leaves, the leaves being sometimes an inch broad and so deeply sinuate-dentate as to appear almost pinnatifid.

21. Greggia camporum Gray, var. **angustifolia** Coulter, *n. var.* Leaves mostly entire (occasionally sinuate-toothed) and very narrow (but 2 to 4^{mm} broad).—Camp Charlotte (Ixion county). If certain intermediate forms were not common this variety would represent a fairly good species. The pods are also quite variable in length in the same specimen. Considering the great variability of the leaves and pods the following may be but another variety of this polymorphous species:

22. Greggia linearifolia Watson. Camp Charlotte (Ixion county), mixed with the last, to which it is closely related.

23. Lepidium alyssoides Gray. Camp Charlotte (Ixion county).

24. Synthlipsis Berlandieri Gray, var. **hispida** Watson. Brazos Santiago.

25. Cakile maritima Scop., var. **æqualis** Chapman. Brazos Santiago. A West Indian and Floridian species found along the Texan coast.

26. Polanisia trachysperma Torr. & Gray. Corpus Christi. Ballinger (Runnels county) and Limpia cañon (Presidio county).

27. Ionidium polygalæfolium Vent. Roma (Starr county).

28. Polygala alba Nutt. Brazos Santiago and Chenate Mountains (Presidio county).

29. Polygala ovalifolia DC. Western Texas.

30. Polygala puberula Gray. Santa Anna (Coleman county).

31. Silene laciniata Cav., var. **Greggii** Watson. Limpia cañon (Presidio county).

32. Stellaria prostrata Baldw. Santa Maria (Cameron county) and Chenate Mountains (Presidio county). The Chenate specimens are much smaller than usual.

33. Talinum parviflorum Nutt. Corpus Christi.

33a. Talinum lineare HBK. (*T. aurantiacum* Engelm.) Corpus Christi.

34. Malva borealis Wallm. Brazos Santiago. An Old World plant, apparently naturalized throughout our southern border from the Gulf coast of Texas to California.

35. Callirrhoe linearíloba Gray. Pena (Duval county).

36. Malvastrum coccineum Gray. Rio Grande City (Starr county).

37. Malvastrum spicatum Gray. Brazos Santiago. A Mexican species.

38. Malvastrum tricuspidatum Gray. Brazos Santiago. Specimens smaller in all dimensions than usual.

39. Malvastrum Wrightii Gray. Corpus Christi. A very small form, with unusually reduced bractlets.

40. Anoda hastata Cav. "Screw Bean" (Presidio county).

41. Anoda pentaschista Gray. Chenate Mountains (Presidio county). The lower leaves are rather larger than usual, some of them being broadly triangular

and 2 inches long by 1½ inches wide. The variation in the leaves passing up the stem is remarkable. In addition to the broad triangular leaves, some are 3-lobed, then above become narrower and hastate, finally narrowing to linear, but always hastate.

42. **Sida hederacea** Gray. Pecos flats, near Pecos City (Reeves county).
43. **Sida lepidota** Gray. Chenate Mountains (Presidio county).
44. **Sida longipes** Gray. Pena (Duval county). This seems to be the first recorded collection of this species since Wright's in 1851 and that of the Mexican Boundary Survey. It very closely resembles *S. Lindheimeri* Eng. & Gray, but the muticous carpels, as well as the elongated fruiting pedicels, serve well to distinguish it.
45. **Sida physocalyx** Gray. Pena (Duval county).
46. **Abutilon Berlandieri** Gray. Corpus Christi (Nueces county) and San Diego (Duval county); also found in 1882 by G. W. Letterman at Laredo (Webb county) and distributed as *A. holosericeum* Scheele. A Mexican species, Berlandier's 1550, 3050, and 3108, from northeast Mexico, being the same.
47. **Abutilon crispum** Gray. Rio Grande City (Starr county).
48. **Abutilon holosericeum** Scheele. Santa Maria (Cameron county).
49. **Abutilon incanum** Don. (*A. Texense* Torr. & Gray). Rio Grande City (Starr county). *A. incanum* is a species of the Sandwich Islands, but considered by Dr. Gray (Proc. Am. Acad., xxii. 301) identical with our *A. Texense*, "notwithstanding the disjointed range."
50. **Abutilon Nealleyi** Coulter, *n. sp.* Stem slender, erect, 6 to 12^{dm} high, soft puberulent above, becoming glabrous below: leaves broadly cordate and long acuminate, entire or slightly crenate, green and soft puberulent (becoming glabrous) above, white with fine dense stellate pubescence beneath, 6 to 10^{cm} long, 5 to 7.5^{cm} wide, becoming smaller above, on long petioles (2.5 to 9^{cm} long), the lower with axillary fascicles of small leaves: flowers in loose, few-flowered, long peduncled, upper-axillary and terminal panicles, very small, not more than 4^{mm} high: calyx stellate-pubescent, deeply cleft, the ovate acute lobes about half as long as the petals and very much shorter than the carpels: petals yellow or orange, hardly 4^{mm} long: carpels 5, becoming 6 to 8^{mm} long, puberulent, with a short acuminate beak, 2 or 3-seeded; seeds usually with a tuft of white hairs.—Near Hidalgo (Hidalgo county). This species is an addition to the group of herbaceous, large-leaved, rather naked paniculate and small-flowered forms, represented heretofore by *A. Sonoræ* Gray, *A. reventum* Watson, and *A. Xanti* Gray. *A. Nealleyi* has much the smallest flowers, and looks somewhat like a species of *Bastardia*, but the 2 or 3-seeded carpels are plainly those of *Abutilon*.
51. **Abutilon parvulum** Gray. Near Pena (Duval county) and in the Chenate Mountains (Presidio county).
52. **Abutilon Wrightii** Gray. Corpus Christi.
53. **Sphæralcea ambigua** Gray. Pena (Duval county). *S. Emoryi* in Ives Col. Exp. Bot. 8, and Bot. Calif. partly, not Pl. Fendl. nor Pl. Wright. Abundant on the arid plains of southern California, Nevada, and Arizona, and now found in southern Texas.
54. **Sphæralcea angustifolia** Spach., var. **cuspidata** Gray. Camp Charlotte (Ixion county).
55. **Sphæralcea Fendleri** Gray. Chenate Mountains (Presidio county).
56. **Sphæralcea subhastata** Coulter, *n. sp.* Low (7 to 22^{cm}), fruticose and branching, covered throughout with coarse almost scurfy stellate-pubescence: leaves thick, ovate to oblong, mostly obtuse and subhastate, rugose and more or less serrate, 1.25 to 3.75^{cm} long, 10 to 16^{mm} broad, on thick petioles 6 to 16^{mm} long: flowers mostly solitary and axillary on very short pedicels: calyx cleft about half way, the lobes acute or somewhat acuminate, little more than half as

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81. **Hosackia rigida** Benth. (incl. *H. puberula* Benth. and *H. Wrightii* Gray). Chisos Mountains (Foley county). In *Bot. Calif.* i. 136, Dr. Watson suggests that *H. puberula* Benth. and *H. Wrightii* Gray are but forms of *H. rigida* Benth. Botanists will testify to the impossibility sometimes of distinguishing these species. In Nealley's collection there are some remarkable specimens that combine in one plant all the important characters of these three so-called species. Some of the peduncles are short, and others very long; the calyx-teeth equal the tube or are shorter; the leaves are from obovate or oblong to narrowly linear. These specimens should be referred to *H. puberula* if the old specific distinctions are to be kept up. After examining a large series of specimens, however, it seems best to consider them all but as forms of a wide-spread and very polymorphus species, of which *H. Bryanti* Brandegee (*Pl. Baja Calif.* 144) seems to be but another form.
82. **Psoralea linearifolia** Torr. & Gray, var. **robusta** Coulter, *n. var.* Whole plant, in all its parts, more robust than the type: leaves linear-oblong, 4 to 6^{cm} long, 5 or 6^{mm} wide, thickly black-dotted above and below: flowers mostly in clusters of three, distant along the rhachis.—Clarendon (Donley county). Collected by Nealley in 1888.
83. **Psoralea tenuiflora** Pursh. Chenate Mountains (Presidio county).
84. **Dalea alopecuroides** Willd. Limpia cañon (Presidio county).
85. **Dalea aurea** Nutt. Santa Anna (Coleman county).
86. **Dalea Domingensis** DC., var. **paucifolia** Coulter, *n. var.* Whole plant more hairy: leaflets but three or four pairs and larger: inflorescence becoming more or less compact-clustered in the upper axils, and the calyx-tube nearly glabrous, making very prominent the large amber-colored glands.—Rio Grande City (Starr county). This is also *Palmer* 1049, collected in northern Mexico between San Luis Potosi and Tampico, and referred by Hemsley to *D. Domingensis* DC. The species has been found in S. Florida, and Mr. Hemsley (*Biol. Central Amer.*, i. 239) credits it to Texas and New Mexico, but from what collectors we are not aware. Mr. Nealley's collection brings the first Texan specimens we have seen.
87. **Dalea formosa** Torr. Chenate Mountains (Presidio county).
88. **Dalea frutescens** Gray. Devil's River (Val Verde county), and Chenate Mountains (Presidio county).
89. **Dalea mollis** Benth. Chisos Mountains (Foley county).
90. **Dalea nana** Torr. Roma (Starr county).
91. **Dalea pogonathera** Gray. Roma (Starr county), and Chisos Mountains (Foley county). The Chisos specimens have unusually broad cuneiform leaflets. A Mexican species, apparently extending northward only into southern Texas and New Mexico.
92. **Dalea Wrightii** Gray. Chisos Mountains (Foley county). With unusually broad bracts.
93. **Petalostemon emarginatus** Torr. & Gray. Pena (Duval county).
94. **Petalostemon multiflorus** Nutt. Corpus Christi.
95. **Petalostemon violaceus** Michx., var. **tenuis** Coulter, *n. var.* A slender low form rarely as much as a foot high, with round or roundish-oblong small often few-flowered heads on long slender peduncles, and shorter pointed bracts (not equaling the calyx, and hence not very apparent in the head).—Santa Anna (Coleman county). Apparently the form referred to in *Pl. Fendl.* under no. 138. The species is an exceedingly variable one, but the above variety is so distinct in character that it seems to deserve a name and description.
96. **Astragalus leptocarpus** Torr. & Gray. Brazos Santiago.
97. **Astragalus Nuttallianus** DC., var. **trichocarpus** Torr. & Gray. Brazos Santiago. Apparently very common.

98. Zornia tetraphylla Michx. Pena (Duval county).

99. Desmodium spirale DC. Limpia cañon (Presidio county). This seems to be the first record of this Mexican species occurring in the United States. It is quite variable in its pubescence, as well as its leaves. Our specimens are all 3-foliolate, and hence seem not to be the same as *D. annuum* Gray (described from Wright's Sonoran specimens), which Grisebach has included under *D. spirale* DC. However, they are clearly the same as the Mexican *D. spirale* of *Pringle*, no. 612, and of *Parry & Palmer*, no. 181, and accord well with all published descriptions.

100. Desmodium Wrightii Gray. Chenate Mountains (Presidio county).

101. Vicia Ludoviciana Nutt. Point Isabel.

102. Galactia heterophylla Gray. Pena (Duval county) and Chenate Mountains (Presidio county). This remarkable species was first collected by Lindheimer. Nealley's collection brings excellent specimens from both Pena in eastern Texas, and the Chenate Mountains of western Texas.

103. Cologania longifolia Gray. Chenate Mountains (Presidio county).

104. Phaseolus acutifolius Gray. Limpia cañon (Presidio county). This species has heretofore been collected only in Arizona, New Mexico, and Mexico. Our specimens represent the large-leaved Mexican form.

105. Phaseolus umbellatus Britton. (*P. helvolus* of Am. authors, not of L.) Corpus Christi.

106. Phaseolus macropoides Gray. Chenate Mountains (Presidio county). So far as the United States is concerned this species has only been found in New Mexico by Wright, in 1851; by the Mexican Boundary Survey; and lately (1881) by Rusby in the Mogollon Mountains. Mr. Nealley's discovery of it in extreme western Texas not only brings us more of a rare plant, but considerably extends its range. *Pringle* 1233 (1887), from plains near Guerrero, Chihuahua, referred to *P. heterophyllus* Willd., also seems to be this species.

107. Rhynchosia menispermoidea DC. Corpus Christi.

108. Rhynchosia Texana Torr. & Gray. Corpus Christi.

109. Hoffmanseggia Jamesii Torr. & Gray. Pena (Duval county).

110. Hoffmanseggia melanosticta Gray. Chisos Mountains (Foley county). So far as I know, this species has been reported but once from the United States side of the Rio Grande, and then by *Parry*, in the valley of the Rio Grande below Donna Ana, in the Mexican Boundary Survey. It was found originally, and but once since, in northern Mexico (by *Edwards* at Rinconada and Monterey, and by *Gregg* near Buena Vista and in a valley near Azufrora), and is altogether one of the rarest of species. This Chisos Mountain collection contains quite an amount of fruiting and flowering material. The specimens conform exactly to the original description. In the case of the Mexican Boundary Survey specimens Dr. Torrey speaks of the plants differing somewhat from the description of Schauer in having only two or three pairs of leaflets, and the vexillum destitute of glands and dots. In the Nealley specimens the leaflets are three and four pairs (mostly the former), and the vexillum is decidedly dotted; the single specimen of Parry that we have seen shows the same characters. This species is the only American representative of the section *Melanosticta*, the two other species being South African. The section is characterized chiefly by the densely black-glandular calyx-lobes. The species somewhat resembles our common *H. Jamesii* Torr. & Gray, but the leaflets are fewer, larger, and more distant, the whole plant more villous, and the legumes larger and much more muricate and glandular. As no description of the species has been published in English, and the Latin description is not very accessible, I append a translation of the description given in *Walp. Ann.* i. 257: "Fruticose: branchlets and racemes

canescent with short villous retrorse hairs: leaves with two pairs of pinnæ and a terminal pinna; pinnæ all abrupt, with a mucronate rhachis; leaflets three or four pairs, obliquely elliptical, very short petiolulate, very obtuse or retuse, together with the rhachis loosely villous, black-punctate beneath, as are the calyx and legume: racemes terminal or lateral, peduncled, loose-flowered: legume two to three-seeded, muriculate, the short muriculations stellate-pilose at apex."

111. **Hoffmanseggia oxycarpa** Benth. Western Texas, collected in 1888. This seems to be a very rare species, having been reported only by *Wright* from Texas in 1851, and by the botanists of the *Mex. Bound. Surv.* from extreme western Texas.

112. **Hoffmanseggia stricta** Benth. Corpus Christi (Nueces county) and Chenate Mountains (Presidio county).

113. **Parkinsonia aculeata** L. Hidalgo (Hidalgo county).

114. **Parkinsonia Torreyana** Watson. Hidalgo (Hidalgo county). The finding of this species along the lower Rio Grande was unexpected, as it has heretofore seemed restricted to southern and western Arizona and contiguous California. Its representative in the Rio Grande Valley is *P. florida* Watson, and they were thought to be as distinct in range as in characters, although the western type was for a time confused with that of the Rio Grande. Nealley's specimens, however, collected in both flower and fruit, show the characteristic inflorescence, the thick-edged pod with its double groove, and the leaflets of *P. Torreyana*. It is possible that the two forms should not be considered distinct species.

115. **Cassia bauhinioides** Gray. Roma (Starr county).

116. **Cassia nictitans** L. Chenate Mountains (Presidio county).

117. **Cassia procumbens** L. Pena (Duval county). This is a variable tropical-American species, first found in Texas by *Berlandier* (no. 2427), and afterward by the *Mex. Bound. Surv.* Berlandier's specimen is larger than the type. Nealley's specimens conform better in size, but have the decidedly larger stipules and flowers of the Berlandier specimen. In a species so widely extended and variable such variation counts for little.

118. **Cassia pumilio** Gray. Chenate Mountains (Presidio county).

119. **Desmanthus depressus** Humb. & Bonpl. Sante Maria (Cameron county). This species is abundant enough in southern Florida and the West Indies, also from northern Mexico southward, but has only occasionally been collected in Texas. The present collection indicates that it grows in abundance in Cameron county, the most southern coast county of Texas.

120. **Desmanthus reticulatus** Benth. Corpus Christi (Nueces county) and Pena (Duval county).

121. **Mimosa Berlandieri** Gray. Brazos Santiago. This rare species seems to have been collected heretofore only by Schott, along the lower Rio Grande in Texas, and by Berlandier (no. 3146) near Matamoras, on the Mexican side of the river. Both of these discoveries were reported in Bot. Mex. Bound. Survey (1859). Nealley's station, from which he has brought considerable material, is just north of the mouth of the Rio Grande.

122. **Mimosa biuncifera** Benth. Southwestern Texas. Collected in 1887.

123. **Mimosa dysocarpa** Benth. Limpia cañon (Presidio county). This species was collected by *Chas. Wright* in his New Mexican collection of 1851, and by *Emory* in the Mexican Boundary Survey. Since then, it was collected in 1874 in Arizona by *Rothrock*, and by *Pringle* in his Chihuahua collections. With the present collection in western Texas we have the range of this species extending throughout northern Mexico and adjacent parts of the United States.

124. **Mimosa Lindheimeri** Gray. Roma (Starr county).

125. Mimosa malacophylla Gray. Santa Maria (Cameron county).

125a. Mimosa strigillosa Torr & Gray. Brazos Santiago.

126. Leucæna retusa Benth. Limpia cañon (Presidio county). This species was collected by *Wright* (no. 171) in western Texas in 1849, and in New Mexico (no. 1046) in 1851; then by the *Mexican Boundary Survey* (no. 318) in the valley of the Rio Grande below Donna Ana; most recently by *Reverchon* (no. 1262) on rocky bluffs near Junction City (Kimble county).

127. Acacia amentacea DC. Roma (Starr county). This collection brings to hand, for the first time, the mature legumes of this species, at least Bentham, in his *Rev. Mimoseæ*, says "legumen ignotum," and I find no record of any subsequent discovery. The legume is short-stipitate, arcuate, 7.5 to 10^{cm}. long, and but 4 to 6^{mm}. wide. It thus differs from its congener, *A. flexicaulis*, in its stipitate and very narrow legume, as well as in its leaves with a single pair of pinnæ.

128. Acacia Berlandieri Benth. Hidalgo (Hidalgo county). Apparently quite common on the dry hills of the lower Rio Grande.

129. Acacia constricta Benth. Roma (Starr county.) An abundance of fine fruiting specimens.

130. Acacia Farnesiana Willd. Hidalgo) Hidalgo county) and Roma (Starr county).

131. Acacia filicina Willd. Chisos Mountains (Foley County). Our plants show an unusual reduction of the leaves of this abundant and exceedingly variable species, the pinnæ being 2 to 5 pairs, and the leaflets 5 to 10 pairs.

132. Acacia flexicaulis Benth. Santa Maria (Cameron county). This species seems to belong to both coasts, having been found by Dr. Palmer at Corpus Christi Bay, and by Mr. Nealley along the coast of Cameron county; also by Xantus along the coast of Lower California from Cape St. Lucas northward, and by Dr. Palmer at Los Angeles Bay.

133. Pithecolobium (Unguis-cati) Texense Coulter, *n. sp.* A shrub or small tree armed with short stout stipular spines, the inflorescence and branchlets puberulent: leaves with 1 or 2 pinnæ, the lower pair (if any) much the smaller; leaflets in the upper part of pinnæ 3 or 4 pairs, in the lower 1 or 2 pairs, obliquely elliptical and the terminal pair mostly obovate, venulose and with more or less excentric midrib, 6 to 10^{mm} long, 4 to 6^{mm} wide: peduncles (about 12^{mm} long) apparently in axillary clusters (in fact on very much reduced branches): spike rather loosely flowered, oblong, 2.5 to 4^{cm} long: the staminеal tube exserted: pod coriaceous, becoming very hard and more or less arcuate, with the thickened edges somewhat impressed between the seeds, 10 to 15^{cm} long, 18 to 25^{mm} wide, about 8-seeded.—Near Roma (Starr county). This species bears a somewhat striking resemblance to *Acacia flexicaulis*, and it is more than probable that it has been collected and referred to that species. If collected only in foliage and fruit it would most probably be referred to *A. flexicaulis*. However, the flowers not only show the indefinite monadelphous stamens of the tribe *Ingeæ*, but the staminеal tube is exserted. Belonging to the *Unguis-cati* section, it differs from those with oblong spikes in the leaves having usually a second and smaller pair of pinnæ. Its nearest allies belong to tropical America, some of them reaching north into Mexico.

134. Cowania plicata D. Don. Chisos Mountains (Foley county). A north Mexican species, reported for the first time within our borders.

135. Fallugia paradoxa Endl. Near Bone Spring (Foley county).

136. Sedum Wrightii Gray. Devil's River (Val Verde county).

137. Lythrum alatum Pursh, var. **linearifolium** Gray. Santa Maria (Cameron county).

138. Nesæa salicifolia HBK. Santa Maria (Cameron county).

139. Epilobium coloratum Muhl. Chenate Mountains (Presidio county).

140. **Œnothera Drummondii** Hook. Corpus Christi.

141. **Œnothera Hartwegi** Benth. Pena (Duval county). Petals purplish veiny outside.

142. **Œnothera Hartwegi** Benth., var. **lavandulæfolia** Watson. "Screw Bean" (Presidio county).

143. **Œnothera Jamesii** Torr. & Gray. Chenate Mountains (Presidio county).

144. **Œnothera rosea** Ait. Santa Maria (Cameron county). Some of the specimens are simply puberulent, while others are quite villous. They all have rather broad lanceolate leaves. This South American and Mexican species has heretofore been reported from Arizona and New Mexico, but not from Texas.

145. **Œnothera rosea** Ait., var. **parvifolia** Coulter, *n. var.* Low and diffusely branching, 7.5 to 15^{cm} high, villous: leaves very much smaller than in the species, seldom 12^{mm} long: calyx purple.—Limpia cañon (Presidio county). Quite different in appearance from the species, being much smaller in all its parts. The red purple of the calyx and the lilac-purple of the corolla give a fuchsia-like look to the flowers.

146. **Œnothera serrulata** Nutt. Brazos Santiago. Petals purplish-veiny outside.

147. **Œnothera serrulata** Nutt., var. **spinulosa** Torr. & Gray. Devil's River (Val Verde county).

148. **Œnothera speciosa** Nutt. Santa Maria (Cameron county).

149. **Gaura coccinea** Nutt., var. **parvifolia** Torr. & Gray. Santa Anna (Coleman county). This variety at best seems to be a poorly defined one, as there is much intermingling of lanceolate and linear, denticulate and entire leaves upon individual specimens.

150. **Gaura Nealleyi** Coulter, *n. sp.* Near to *G. suffulta* Engelm.; but lower part of the stem sparingly hirsute, the rhachis, calyx, and bracts glandular-pubescent: leaves rather crowded below, linear, acute, entire, closely sessile or somewhat tapering at base, glabrous except the minute and rigid more or less hooked hairs on the margins and midrib beneath, 12 to 36^{mm} long, but 2 or 3^{mm} broad: inflorescence few-flowered, rather loose: fruit as in *G. suffulta*, but with a tapering base or short stipe.—Chenate Mountains (Presidio county).

151. **Gaura parviflora** Dougl. Santa Maria (Cameron county).

152. **Gaura sinuata** Nutt. Camp Charlotte (Ixion county). Both the glabrous and hairy forms.

153. **Cevallia sinuata** Lag. Roma (Starr county), and Limpia cañon (Presidio county).

154. **Mentzelia multiflora** Gray. Camp Charlotte (Ixion county). A low form, with sharply acute petals and short turbinate capsules.

155. **Mentzelia oligosperma** Nutt. Limpia cañon (Presidio county).

156. **Mentzelia Wrightii** Gray. Limpia cañon (Presidio county).

157. **Eucnide bartonioides** Zucc. Devil's River (Val Verde county).

158. **Turnera diffusa** (?), var. **aphrodisiaca** Urban. (*T. aphrodisiaca* Ward.) Roma (Starr county). This is the first record of the discovery of the somewhat famous "Damiana" within our borders. It grows abundantly throughout western Mexico and Lower California, and more sparingly in eastern Mexico. The original description of Prof. L. F. Ward appears in the *Virginia Medical Monthly* for April, 1876.

159. **Passiflora fœtida** L. Near Rio Grande City (Starr county).

160. **Passiflora inamœna** Gray. Hidalgo (Hidalgo county).

161. **Passiflora tenuiloba** Engelm. Roma and Rio Grande City (Starr county).

162. **Melothria pendula** L. Santa Maria (Cameron county) and Hidalgo (Hidalgo county).

163. **Cyclanthera dissecta** Arnott. Limpia cañon (Presidio county).

164. **Sesuvium Portulacastrum** L. Corpus Christi (Nueces county) and Camp Charlotte (Ixion county).

165. Mollugo verticillata L. Limpia cañon (Presidio county). A remarkable form of this widely distributed and polymorphous species. The leaves are all very short and broadly obovate, but leaf contours can not be made to define even a variety in this species.

166. Daucus pusillus Michx. Brazos Santiago.

167. Eryngium Leavenworthii Torr. & Gray. Pena (Duval county).

168. Eryngium nasturtiifolium Juss. Santa Maria (Cameron county). A south Mexican species, found in northern Mexico by Palmer and now discovered within our southern border (in the southernmost Gulf county) by Nealley.

169. Eryngium Wrightii Gray. Chenate Mountains (Presidio county). Heads sometimes more than 12^{mm} high, and bracts not twice as long.

170. Ammoselinum Popei Torr. & Gray. Brazos Santiago.

171. Fœniculum vulgare Gærtn. Brazos Santiago.

172. Apium leptophyllum F. Muel. Brazos Santiago.

173. Bowlesia lobata Ruiz & Pavon. Brazos Santiago.

174. Ammi majus L. Brazos Santiago. This species was very probably collected on ballast, although possibly an introduced weed. It has been found on ballast at Philadelphia, and at Portland, Oregon.

175. Bouvardia triphylla Salisb., var. **angustifolia** Gray. Limpia cañon (Presidio county).

176. Houstonia acerosa Gray. Chisos Mountains (Foley county).

177. Houstonia angustifolia Michx. Chenate Mountains (Presidio county).

178. Houstonia angustifolia Mx., var. **filifolia** Gray. Corpus Christi (Nueces county) and Ballinger (Runnels county).

179. Spermacoce glabra Michx. Brazos Santiago.

180. Galium microphyllum Gray. Chenate Mountains (Presidio county).

181. Galium virgatum Nutt. Brazos Santiago.

182. Galium Wrightii Gray. Chenate Mountains (Presidio county). The bristles of the fruit are not always as long as its diameter.

183. Stevia serrata Cav. Limpia cañon (Presidio county).

184. Carminatia tenuiflora DC. Limpia cañon (Presidio county). Smaller plants than usual, some being not more than 6 inches high, with leaves proportionally reduced.

185. Eupatorium ageratifolium DC., var. **acuminatum** Coulter, *n. var.* Branchlets, lower leaf surface, and involucral bracts finely and often densely pubescent: leaves smaller (36 to less than 25^{mm} long), and sharply acuminate.—Point Isabel.

186. Eupatorium Greggii Gray. Chenate Mountains (Presidio county).

187. Eupatorium solidaginifolium Gray. Limpia cañon (Presidio county). The thyrsoid panicle becomes much larger and more lax and leafy than in the type specimens, and anything but "small," as in the original description. In the present specimens the panicle sometimes becomes 15 to 20^{cm} long and 14 to 18^{cm} across the base, being at the same time very lax and leafy. Associated with these large panicled specimens are others with panicles of the described dimensions.

188. Eupatorium Wrightii Gray. Chisos Mountains (Foley county). This beautiful species does not seem to have been reported within our border since Wright's original collection, the station of which was in the same general region as the present collection. Pringle collected it in 1885 in the mountains of Chihuahua.

189. Brickellia oliganthes Gray, var. **crebra** Gray. Chenate Mountains (Presidio county). This is the same as *Pringle* 635 (of 1885), from Chihuahua. The leaves are decidedly petioled and very different from those of the species.

190. Kuhnia rosmarinifolia Vent. Limpia cañon (Presidio county).

191. Liatris punctata Hook. Santa Anna (Coleman county).

192. **Gymnosperma corymbosum** DC. Limpia cañon (Presidio county).
193. **Gutierrezia Euthamiæ** Torr. & Gray, var. **microcephala** Gray. Screw Bean (Presidio county).
194. **Gutierrezia Texana** Torr. & Gray. Screw Bean (Presidio county). Ligules unusually short and heads few-flowered.
195. **Grindelia inuloides** Willd. Corpus Christi.
196. **Chrysopsis villosa** Nutt., var. **canescens** Gray. Santa Anna (Coleman county), and Screw Bean (Presidio county).
197. **Chrysopsis villosa** Nutt., var. **hispida** Gray. Pena (Duval county).
198. **Xanthisma Texanum** DC. Ballinger (Runnels county).
199. **Aplopappus Nealleyi** Coulter, *n. sp.*, § *Aplopappus* proper: From 3 to 6^{dm} high, somewhat branching above, glabrous or nearly so and somewhat glaucous, terminated by long (10 to 12.5^{cm}) naked (or minutely bracteate) peduncles which are enlarged beneath the large solitary heads: leaves narrowly linear or almost filiform, 2.5 to 5^{cm} long, entire or pinnatifid with two or three linear lobes: head about 2.5^{cm} broad; the involucral bracts oblong, obtuse, glabrous, dark-veined, loosely imbricated in about three successively shorter rows: rays ten to fifteen, narrowly linear, 12 to 18^{mm} long: disk-flowers with rather deeply lobed corolla: akenes 10-striate, the striæ rugulose and sparsely pubescent, about 3^{mm} long: pappus of numerous scabrous rufous bristles: style-tips with short ovate appendages.—Santa Maria (Cameron county). This species is apparently related to *A. tenuilobus* Gray, but the almost smooth akenes and very short style appendages, as well as the smooth oblong, obtuse and unequal involucral bracts, and leaf characters, serve well to distinguish it.
200. **Aplopappus rubiginosus** Torr. & Gray. Pena (Duval county), and Chenate Mountains (Presidio county).
201. **Aplopappus rubiginosus** Torr. & Gray, var. **phyllocephalus** Gray. Corpus Christi and Point Isabel. Collected at former station also by Palmer.
202. **Aplopappus spinulosus** DC. Screw Bean (Presidio county).
203. **Aplopappus Texanus** Coulter, *n. sp.*, § *Stenotus:* Low and somewhat lignescent at base, glabrous and somewhat glaucous, bearing a few medium-sized heads: leaves narrowly linear or almost filiform, 24 to 36^{mm} long, often fascicled in the axils: head 6 to 9^{mm} high; the involucral bracts oblong, obtuse or acutish, glabrous, yellowish tinged, loosely imbricated in about two nearly equal rows: rays few or none, exserted, ovate, not more than 3^{mm} long: disk-flowers with rather deeply lobed corolla: akenes 10-striate, the striæ sparsely pubescent, 3^{mm} long: pappus of numerous scabrous white bristles.—Chisos Mountains (Foley county). In foliage and akenes much resembling *A. Nealleyi*, but in size of heads, and character of involucral scales, rays, and pappus, very different. With the present grouping of species these differences refer the two species to different sections of the genus.
204. **Bigelovia Wrightii** Gray. Screw Bean (Presidio county).
205. **Solidago Missouriensis** Nutt. Screw Bean (Presidio county).
206. **Aphanostephus Arkansanus** Gray. Santa Maria (Cameron county).
207. **Aphanostephus Arkansanus** Gray, var. **Hallii** Gray. Point Isabel.
208. **Aphanostephus ramosissimus** DC. Santa Maria (Cameron county).
209. **Aster exilis** Ell. Screw Bean (Presidio county).
210. **Aster oblongifolius** Nutt., var. **rigidulus** Gray. Limpia cañon (Presidio county).
211. **Aster tanacetifolius** HBK. Screw Bean (Presidio county.)
212. **Erigeron repens** Gray. Santa Maria (Cameron county).
213. **Erigeron strigosus** Muhl. Pena (Duval county). A very peculiar form, that would deserve at least varietal rank in almost any other group. Its characters belong to both *E. strigosus* and *E. annuus*, species which vary and

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241. **Thelesperma gracile** Gray. Corpus Christi (Nueces county), Pena (Duval county), Santa Anna (Coleman county), and Screw Bean (Presidio county). In the Santa Anna specimens the heads are nearly always radiate, with deep yellow rays about 6^{mm} long, and the pappus can hardly be called "subulate." In fact, descriptions have hardly done justice to the very conspicuous pappus, which is composed of two lanceolate, retrose, bristly scales nearly as long as the corolla-tube.
242. **Thelesperma longipes** Gray. Screw Bean (Presidio county).
243. **Cosmos parviflorus** HBK. Limpia cañon (Presidio county). Many of the akene beaks are four-awned.
244. **Bidens Bigelovii** Gray. Limpia cañon (Presidio county).
245. **Perityle Vaseyi** Coulter, *n. sp.* Minutely glandular pubescent, simple or with short branchlets, from a slightly lignescent base, 2 to 3^{dm} high, leafy: leaves large for the genus, 3.5 to 6.5^{cm} long, including the petiole (which is somewhat shorter than the blade), with broad outline, palmately or pinnately divided into three long-stalked broadly cuneate divisions; the divisions three to five-parted; the ultimate segments mostly cuneate and three-lobed: heads rather few and scattered, on long or short peduncles, 10 to 12^{mm} high: involucral scales linear-oblong, acute or acuminate, with margins more or less ciliate at tip: rays 4 to 6^{mm} long, deep yellow, oblong, three-toothed at apex: disk-corollas funnelform, yellow, 5½^{mm} long: style-tips setaceous-filiform and hirsute: akenes oblong, pubescent on the faces, hispid-villous on the margins, 3.5^{mm} long, crowned with a pappus of bristle-like squamellæ and a single more or less barbellate awn as long as the akene.—Chisos Mountains (Foley county). Nearest *P. Parryi* Gray, but decidedly distinct, and in the shape of the disk-corolla not even a member of the same section.
246. **Baileya multiradiata** Harv. & Gray. Chenate Mountains (Presidio county).
247. **Riddellia arachnoidea** Gray. Chenate Mountains (Presidio county).
248. **Riddellia tagetina** Nutt. Screw Bean (Presidio county).
249. **Bahia absinthifolia** Benth. Rio Grande City (Starr county).
250. **Bahia absinthifolia** Benth., var. **dealbata** Gray. Screw Bean (Presidio county).
251. **Bahia pedata** Gray. Screw Bean (Presidio county.)
252. **Schkuhria Wrightii** Gray. Limpia cañon (Presidio county). A species of southern Arizona, whose range is thus extended across New Mexico into western Texas.
253. **Hymenothrix Wrightii** Gray. Chenate Mountains (Presidio county). Not reported before east of Arizona in the United States, but Pringle has collected it in Chihuahua.
254. **Florestina tripteris** DC. Point Isabel.
255. **Sartwellia Flaveriæ** Gray. Screw Bean (Presidio county).
256. **Flaveria chloræfolia** Gray. Screw Bean (Presidio county). Fine specimens of this imperfectly known species bring to light some additional characters. The plant becomes more than 6^{dm} high, with a thick stem, and the lower leaves become 7.5^{cm} long and 5^{cm} wide at the perfoliate base. The coarse glaucous stem, with its broad connate-perfoliate smooth and entire leaves, give the plant the look of an Asclepias. A more important fact is that all the Nealley material has pappus, composed of two to four thin paleæ, which are all on one side, leaving the other side naked. In the *Synopt. Flora* (p. 354) it is said that "a few flowers were once seen with a pappus of four thin paleæ." As this character appears in all of our abundant material the genus character should be amended in that character. It is impossible to admit these specimens into *Flaveria*, as defined by Bentham & Hooker or Gray, as "no pappus" is one of its distinctive characters.
257. **Porophyllum macrophyllum** DC. Limpia cañon (Presidio county).
258. **Porophyllum scoparium** Gray. Chisos Mountains (Foley county).

259. Hymenatherum acerosum Gray. Screw Bean (Presidio county.)
260. Hymenatherum Hartwegi Gray. Screw Bean (Presidio county).
261. Hymenatherum pentachætum Gray. San Diego (Duval county).
262. Hymenatherum tenuilobum DC. Pena (Duval county), and Rio Grande City (Starr county).
263. Hymenatherum Wrightii Gray. Corpus Christi (Nueces county).
264. Pectis filipes Gray. Chenate Mountains (Presidio county).
265. Pectis papposa Gray. Chenate Mountains (Presidio county).
266. Pectis tenella DC. Rio Grande City (Starr county).
267. Helenium amphibolum Gray. Devil's River (Val Verde county).
268. Helenium microcephalum DC. Rio Grande City (Starr county).
269. Amblyolepis setigera DC. Ballinger (Runnells county).
270. Gaillardia lanceolata Michx. Pena (Duval county). Differs from the ordinary type in the fact that the leaves are all more or less toothed or even lobed, rather than "entire or sparsely serrate."
271. Gaillardia pinnatifida Torr. Ballinger (Runnels county), and Screw Bean, Chenate Mountains, and Limpia cañon (Presidio county). The Chenate specimens have almost all the leaves narrowly linear and entire.
272. Gaillardia pulchella Foug. Point Isabel.
273. Actinella linearifolia Torr. & Gray. Santa Anna (Coleman county), and Limpia cañon (Presidio county).
274. Actinella scaposa Nutt., var. **linearis** Nutt. Pena (Duval county), Chenate Mountains and Screw Bean (Presidio county). In the Pena specimens the rays are larger than usual, sometimes becoming 14 to 16^{mm} long.
275. Artemisia filifolia Torr. Screw Bean (Presidio county).
276. Artemisia Ludoviciana Nutt. Camp Charlotte (Ixion county). With narrow leaves and completely white-tomentose.
277. Artemisia Mexicana Willd. Limpia cañon (Presidio county).
278. Artemisia redolens Gray. Chisos Mountains (Foley county). This species is new to our borders, having been described from Pringle's collection of 1885 (no. 296) in the mountains of Chihuahua.
279. Senecio Douglasii DC. Screw Bean and Limpia cañon (Presidio county).
280. Senecio lobatus Pers. Brazos Santiago.
281. Senecio multilobatus Torr. & Gray. Limpia cañon (Presidio county).
282. Cnicus altissimus Willd., var. **filipendulus** Gray. Point Isabel.
283. Perezia nana Gray. Pena (Duval county).
284. Trixis angustifolia DC. Chisos Mountains (Foley county).
285. Pyrrhopappus Carolinianus DC. Point Isabel.
286. Pyrrhopappus multicaulis DC. Brazos Santiago.
287. Lygodesmia aphylla DC., var. **Texana** Torr. & Gray. Screw Bean (Presidio county).
288. Lobelia Berlandieri A. DC. Brazos Santiago. These specimens are undoubtedly *Berlandier* 3177, which Dr. Gray suggests (*Synopt. Fl.* ii. 7) may be a depauperate form of *L. Cliffortiana* L. It also approaches *L. subnuda* in habit, the rosulate tuft of root-leaves being entirely unlike *L. Cliffortiana*, but the seeds are those of the latter species. If not entitled to specific rank it should probably become a variety or form of *L. Feayana* Gray.
289. Lobelia cardinalis L. Chenate Mountains (Presidio county). The narrow leaves suggest *L. splendens* Willd., but the plants are completely pubescent. These two species are too near together.
290. Lobelia fenestralis Cav. Chenate Mountains (Presidio county).
291. Campanula rotundifolia L. Chenate Mountains (Presidio county).
292. Samolus ebracteatus HBK. Camp Charlotte (Ixion county).
293. Menodora heterophylla Moricand. Dry hills, Roma (Starr county), and Ballinger (Runnels county).

294. **Menodora pubens** Gray. Camp Charlotte (Ixion county), and Chenate Mountains (Presidio County).
295. **Menodora scabra** Gray. Camp Charlotte (Ixion county), and Chenate Mountains (Presidio county).
295a. **Amsonia longifolia** Torr. Camp Charlotte (Ixion county).
296. **Philibertia cynanchoides** Gray. Pena (Duval county).
297. **Asolepias arenaria** Torr. Limpia cañon (Presidio county). A very glabrate form.
298. **Asclepias longicornu** Benth. Pena (Duval county).
299. **Asclepias perennis** Walt., var. **parvula** Gray. Limpia cañon (Presidio county).
300. **Metastelma barbigerum** Scheele. Corpus Christi (Nueces county), and Santa Maria (Cameron county).
301. **Gonolobus parviflorus** Gray. Pena (Duval county).
302. **Gonolobus reticulatus** Engelm. Hidalgo (Hidalgo county).
303. **Buddleia scordioides** HBK. Camp Charlotte (Ixion county). Specimens with the dense axillary flower clusters in contact with each other, giving the appearance of a long, thick spike from which the upper leaves project as bracts.
304. **Sabbatia calycosa** Pursh. Brazos Santiago.
305. **Eustoma Russellianum** Griseb. Pena (Duval county), and Hidalgo (Hidalgo County). In the Hidalgo specimens the petals are unusually narrow.
306. **Eustoma silenifolium** Salisb. (*E. exaltatum* Griseb). Hidalgo (Hidalgo county).
307. **Phlox Drummondii** Hook. Pena (Duval county).
308. **Phlox nana** Nutt. Chenate Mountains (Presidio county).
309. **Gilia Havardi** Gray. Chenate Mountains (Presidio county).
310. **Gilia incisa** Benth. Brazos Santiago.
311. **Gilia Macombii** Torr., var. **laxiflora** Coulter, *n. var.* Stems from a strong lignescent base: flowers very loosely cymose or scattered: corolla white (perhaps a little purplish-tinged), with tube 15 to 18^{mm} long, and ovate mucronulate lobes 4 or 5^{mm} long: stamens all included.—Camp Charlotte (Ixion county). The loose inflorescence, larger and white corolla with ovate lobes, and included stamens, distinguish this variety from the species, which has only been reported from the mountains of Arizona.
312. **Gilia rigidula** Benth., var. **acerosa** Gray. Camp Charlotte (Ixion county).
313. **Phacelia congesta** Hook. Limpia cañon (Presidio county).
314. **Phacelia patuliflora** Gray. Brazos Santiago.
315. **Nama dichotomum** Choix. Corpus Christi (Nueces county), Roma (Starr county), and Devil's River (Val Verde county). A species new to our boundary. The Corpus Christi and Roma specimens are typical; while the Devil's River specimens have narrower leaves, approaching the var. *angustifolium* Gray.
316. **Nama Jamaicense** L. Brazos Santiago.
317. **Nama origanifolium** HBK. Roma (Starr county), and Limpia cañon (Presidio County).
318. **Nama undulatum** HBK. Brazos Santiago.
319. **Cordia Boissieri** A. DC. Roma (Starr county).
320. **Coldenia Greggii** Gray. Chisos Mountains (Foley county). "Equally inserted stamens," is one of the published generic characters of *Coldenia;* but these specimens of *C. Greggii* have unequally inserted stamens, the whole flower structure conforming more closely to that of *Draperia*, a Hydrophyllaceous genus, than to *Coldenia*. In fact, it is a pertinent question whether this species should not be transferred to *Draperia*.
321. **Coldenia hispidissima** Gray. Camp Charlotte (Ixion county).

322. **Heliotropium angustifolium** Torr. Camp Charlotte (Ixion county). Our plants represent this species in every particular except that the corolla-lobes are not "ovate and acute." The lobes are those of *H. tenellum*. Much of the "acuteness" of the lobes of *H. angustifolium* is apparently the result of drying.
323. **Heliotropium confertifolium** Torr. Roma (Starr county).
324. **Heliotropium convolvulaceum** Gray. Pena (Duval county).
325. **Heliotropium Curassavicum** L. Pecos Flats, near Pecos City (Pecos county).
326. **Heliotropium inundatum** Swartz. Hidalgo (Hidalgo county).
327. **Heliotropium tenellum** Torr. Pena (Duval county).
328. **Krynitzkia floribunda** Gray. Limpia cañon (Presidio county).
329. **Lithospermum Matamorense** DC. Brazos Santiago.
330. **Ipomœa costellata** Torr. Limpia cañon (Presidio county).
331. **Ipomœa Nealleyi** Coulter, *n. sp.* Glabrous, with slender creeping or twining stems: leaves thin, triangular in outline, cordate at base with a broad sinus, angulately three-lobed (the lateral lobes resembling the basal lobes of a broadly hastate leaf, and often with an additional basal angle), 2 to 3^{cm} long and somewhat broader, angles all mucronulate, on slender petioles: peduncles slender, usually a little shorter than the petioles, one-flowered: sepals foliaceous, glabrous, loose, little if at all imbricated, linear-lanceolate, acuminate, conspicuous, nearly or quite as long as the tube of the corolla, 12 to 16^{mm} long, spreading in fruit: corolla broadly funnelform, 15 to 20^{mm} long, with purplish blue lobes and whitish tube: globose capsule glabrous.—Chenate Mountains (Presidio county). Related to *I. trifida* Don. and its allies.
332. **Ipomœa sinuata** Ortega. Pena (Duval county). Calyx shorter than usual.
333. **Ipomœa Texana** Coulter, *n. sp.* Apparently arborescent, glabrous, or minutely puberulent, with coarse branches: leaves thickish, entire or nearly so, sagittate, acuminate, the base with inconspicuous rounded lobes or truncate, 6 to 12^{cm} long, 3.5 to 5^{cm} broad at base, on petioles 3.5 to 7.5^{cm} long: peduncles mostly shorter than the petioles, bearing simple or compound few to several-flowered cymes: sepals short (6 or 7^{mm} long), somewhat coriaceous, minutely pubescent, broad and rounded or two-lobed at apex: corolla pink-purple, pubescent, 5 to 7.5^{cm} long.—Santa Maria (Cameron county.) A member of the arborescent group of Ipomœas, represented by the Mexican *I. murucoides* R. & S., to which our plant is related.
334. **Convolvulus hermannioides** Gray. Santa Maria (Cameron county).
335. **Evolvulus alsinoides** L. Pena (Duval county) and Roma (Starr county).
336. **Evolvulus sericeus** Swartz. Pena (Duval county). Flowers 10 to 12^{mm} in diameter.
337. **Dichondra argentea** Willd. Chenate Mountains (Presidio county).
338. **Cuscuta Californica** Choisy, var. **reflexa** Coulter, *n. var.* Flowers 4 to 5^{mm} long when the lanceolate subulate corolla-lobes are erect, but these soon sharply reflexed and as long as the tube: calyx-lobes acuminate, about equaling the corolla tube: scales somewhat prominent and lacerate: styles about as long as the ovary: corolla marcescent around the two to four-seeded capsule.—Roma (Starr county). *Pringle* 783 (collection of 1886), from Chihuahua, seems also to be a form of this variable species. Our variety has some important points of difference from the species and any published varieties, but it seems to be fairly included in the same specific relationship. If this conclusion is right the range of this Californian and Arizonian polymorphous species is extended through northern Mexico and into southern Texas.
339. **Solanum nigrum** L. Brazos Santiago. A pubescent, rather small, and entire leaved form of this exceedingly polymorphous species.

340. **Solanum triquetrum** Cav. Corpus Christi (Nueces county), Brazos Santiago (Cameron county), Ballinger (Runnels county), and Chenate Mountains (Presidio county).
341. **Solanum tuberosum** L., var. **boreale** Gray. Chenate Mountains (Presidio county).
342. **Nicotiana glauca** Graham. Roma and Rio Grande City (Starr county). Introduced.
343. **Nicotiana repanda** Willd. Corpus Christi (Nueces county), Brazos Santiago (Cameron county), and Chenate Mountains (Presidio county).
344. **Nicotiana trigonophylla** Duval. Chenate Mountains (Presidio county).
345. **Petunia parviflora** Juss. Corpus Christi.
346. **Leucophyllum minus** Gray. Santa Maria (Cameron county).
347. **Leucophyllum Texanum** Benth. Santa Maria (Cameron county).
348. **Stemodia lanata** Ruiz & Pavon. Brazos Santiago. A second species of this tropical genus which has reached our borders. Reported heretofore from south central Mexico (Tolucca) and Tampico, at the southern extremity of the northern Gulf State (Tamaulipas) of Mexico, it is now found in the contiguous Gulf county of Texas.
349. **Herpestis chamædryoides** HBK., var. **peduncularis** Gray. Brazos Santiago.
350. **Herpestis Monniera** HBK. Corpus Christi.
351. **Seymeria virgata** Benth. Chenate Mountains (Presidio county). Apparently new to our flora, but collected by Pringle and Parry in northern Mexico.
352. **Castilleia lanata** Gray. Near Pecos City (Pecos county).
353. **Chilopsis saligna** Don. Camp Charlotte Ixion county).
354. **Tecoma stans** Juss. Limpia cañon (Presidio county).
355. **Elytraria bromoides** Œrsted. Santa Maria (Cameron county). Confused with the next species, but very distinct. Collected also by Dr. Palmer (no. 2029) in 1879–'80 in northern Mexico.
356. **Elytraria tridentata** Vahl. Chenate Mountains (Presidio county).
357. **Calophanes linearis** Gray. Brazos Santiago (Cameron county), and Chenate Mountains (Presidio county).
358. **Ruellia tuberosa** L. Santa Maria (Cameron county), and Ballinger (Runnels county).
359. **Siphonoglossa Pilosella** Torr. Rio Grande City (Starr county).
360. **Dianthera Americana** L. Devil's River (Val Verde county). A curious form with sessile leaves which are broad at base, and not at all tapering. The same form was collected by the Mexican Boundary Survey (no. 724).
361. **Carlowrightia linearifolia** Gray. Chisos Mountains (Foley county). A very rare plant, not met with since its discovery by Mr. Wright, in 1849 (Gray in Proc. Am. Acad., xxi. 405). The leaves are longer and the bracts shorter than in the type.
362. **Lantana Camara** L. Brazos Santiago.
363. **Lantana macropoda** Torr. Brazos Santiago (Cameron county), Roma and Rio Grande City (Starr county) and Chenate Mountains (Presidio county).
364. **Lippia geminata** HBK. Brazos Santiago.
365. **Lippia lycioides** Steud. Corpus Christi (Nueces county) and Hidalgo (Hidalgo county).
366. **Lippia nodiflora** Michx. Pecos Flats, near Pecos City.
367. **Lippia Wrightii** Gray. Chenate Mountains (Presidio county).
368. **Verbena Aubletia** L. Brazos Santiago.
369. **Verbena ciliata** Benth. Brazos Santiago.
370. **Verbena officinalis** L. Brazos Santiago.
371. **Verbena Wrightii** Gray. Brazos Santiago.
372. **Duranta Plumieri** Jacq. Brazos Santiago.
373. **Mentha piperita** L. Limpia cañon (Presidio county). A hairy form.

374. **Micromeria Brownei** Benth., var. **pilosiuscula** Gray. Brazos Santiago.
375. **Hedeoma Drummondii** Benth. Pena (Duval county) and Rio Grande City (Starr county).
376. **Hedeoma plicata** Torr. Limpia cañon (Presidio county).
377. **Hedeoma thymoides** Gray. Chenate Mountains (Presidio county) and Chisos Mountains (Foley county).
378. **Poliomintha mollis** Gray. Chenate Mountains (Presidio county).
379. **Salvia angustifolia** Cav., var. **glabra** Gray. Limpia cañon (Presidio county).
380. **Salvia azurea** Lam. Limpia cañon (Presidio county).
381. **Salvia ballotæflora** Benth. Brazos Santiago.
382. **Salvia coccinea** L. Brazos Santiago.
383. **Salvia lanceolata** Willd. Limpia cañon (Presidio county). In some specimens the leaves are nearly entire.
384. **Salvia spicata** R. & S. Ballinger (Runnels county).
385. **Salvia Texana** Torr. Pena (Duval county).
386. **Monarda punctata** L., var. **lasiodonta** Gray. Pena (Duval county).
387. **Scutellaria Drummondii** Benth. Brazos Santiago (Cameron county) and Chisos Mountains (Foley county).
389. **Marrubium vulgare** L. Point Isabel.
390. **Stachys agraria** Cham. & Schlecht. Brazos Santiago.
391. **Stachys Drummondii** Benth. Brazos Santiago.
392. **Tetraclea Coulteri** Gray. Roma (Starr county).
393. **Teucrium Cubense** L. Brazos Santiago.
394. **Teucrium laciniatum** Torr. Pena (Duval county).
395. **Plantago Patagonica** Jacq. Brazos Santiago.
396. **Plantago Virginica** L. Brazos Santiago.
397. **Plantago Virginica** L., var. **longifolia** Gray. Brazos Santiago.
398. **Mirabilis longiflora** L. Limpia cañon (Presidio county).
399. **Mirabilis multiflora** Gray. Pena (Duval county).
400. **Oxybaphus albidus** Sweet. Chenate Mountains (Presidio county).
401. **Oxybaphus angustifolius** Sweet. Limpia cañon (Presidio county).
402. **Oxybaphus nyctagineus** Sweet. Chenate Mountains (Presidio county) and Devil's River (Val Verde county).
403. **Nyctaginia capitata** Chois. Roma (Starr county).
404. **Allionia incarnata** L. Brazos Santiago (Cameron county) and Roma (Starr county).
405. **Boerhaavia anisophylla** Torr. Chenate Mountains (Presidio county).
406. **Boerhaavia gibbosa** Pavon. Bone Spring (Foley county).
407. **Boerhaavia tenuifolia** Gray. Camp Charlotte (Ixion county).
408. **Boerhaavia viscosa** Lag. & Rodr. Pena (Duval county) and Limpia cañon (Presidio county). Varies greatly in amount of pubescence.
409. **Boerhaavia Wrightii** Gray. Chenate Mountains (Presidio county).
410. **Acleisanthes Berlandieri** Gray. Roma (Starr county).
411. **Acleisanthes longiflora** Gray. Roma (Starr county) and Ballinger (Runnels county).
412. **Selinocarpus angustifolius** Gray. Chenate Mountains (Presidio county).
413. **Selinocarpus chenopodioides** Gray. Chenate Mountains (Presidio county).
414. **Selinocarpus diffusus** Gray. Camp Charlotte (Ixion county).
415. **Paronychia dichotoma** Nutt. Chisos Mountains (Foley county).
416. **Celosia paniculata** L. Devil's River (Val Verde county).
417. **Amarantus fimbriatus** Benth. Chisos Mountains (Foley county).
418. **Amarantus Pringlei** Watson. Limpia cañon (Presidio county). This species was found by Mr. Pringle in 1886 growing abundantly on rocky hills of Chihuahua, Mexico. Mr. Nealley now finds it extending northward within our borders on the rocky hills of the Limpia.

419. Cladothrix lanuginosa Nutt. "Pecos Flats," near Pecos City.
420. Gomphrena nitida Rothrock. Corpus Christi. With rose-tinted heads.
421. Frœlichia Floridana Moq. Pena (Duval county).
422. Frœlichia gracilis Moq. Pena (Duval county).
423. Iresine alternifolia Watson, var. **Texana** Coulter, *n. var.* Leaves small, ovate to lanceolate, 12 to 25^{mm} long, tapering to a short petiole.—Chenate Mountains (Presidio county). This seems clearly the same species as that described by Dr. Watson from the mountains about Guaymas, Mexico, collected by Dr. Palmer. It seems hardly necessary to set up a new species on leaf characters, especially when the leaves of the species are very variable. Apparently the only alternate-leaved *Iresine*.
424. Atriplex canescens James. Pecos Flats, near Pecos City.
425. Salicornia ambigua Michx. Pecos Flats, near Pecos City.
426. Suæda suffrutescens Watson. Pecos Flats, near Pecos City.
427. Rivina lævis L. Pena (Duval county).
428. Eriogonum Abertianum Torr. Camp Charlotte (Ixion county).
429. Eriogonum annuum Nutt. Near Pecos City (Pecos county).
430. Eriogonum Havardi Watson. Camp Charlotte (Ixion county). Abundant specimens of a very rare and interesting species.
431. Eriogonum Jamesii Benth. Limpia cañon (Presidio county).
432. Eriogonum longifolium Nutt. Pena (Duval county).
433. Eriogonum Nealleyi Coulter, *n. sp.*, § *Ganysma:* Perennial, the woody caudex branched and leafy: the loosely branching (Ephedra-like) stems, as well as the pedicels and flowers, glabrous and leafless: leaves all at or near the base, more or less broadly spatulate, tapering into a long petiole, villous pubescent on both surfaces, 5 to 7.5^{cm} long (including the petiole): involucres few and long-pedunculate: flowers greenish, occasionally with a pinkish tint: sepals lanceolate to ovate, acute or obtuse, the inner ones usually shorter and broader.—Near Pecos City (Pecos county). A species nearly related to *E. ciliatum* Torr. and *E. atrorubens* Engelm., both of northern Mexico. It differs from *E. ciliatum* in its completely villous leaves and green flowers; from *E. atrorubens* in both these characters as well as the shape of the leaves; and from both in that the leaves are not all radical.
434. Eriogonum tenellum Torr. Pena (Duval county).
435. Eriogonum tenellum Torr., var. **caulescens** Torr. & Gray. Pena (Duval county).
436. Eriogonum Wrightii Torr. Chenate Mountains (Presidio county).
437. Rumex Berlandieri Meisn. Brazos Santiago.
438. Euphorbia acuta Engelm. Pecos City (Pecos county).
439. Euphorbia albomarginata Torr. & Gray. Rio Grande City (Starr county), and Limpia cañon (Presidio county).
440. Euphorbia campestris Cham. & Schlecht. Limpia cañon (Presidio county).
441. Euphorbia chamæsula Boiss. Chenate Mountains (Presidio county).
442. Euphorbia commutata Engelm. Brazos Santiago.
443. Euphorbia Fendleri Torr. & Gray. Pena (Duval county).
444. Euphorbia lata Engelm. Ballinger (Runnels county), and Camp Charlotte (Ixion county).
445. Euphorbia marginata Pursh. Ballinger (Runnels county).
446. Euphorbia montana Engelm. Limpia cañon (Presidio county).
447. Euphorbia polycarpa Benth. Rio Grande City (Starr county), and Chenate Mountains (Presidio county).
448. Eupharbia polycarpa Benth., var. **vestita** Watson. Chenate Mountains (Presidio county).
449. Euphorbia Vaseyi Coulter, *n. sp.*, § *Trichrostigma:* A shrub with straight branches, glabrous or the young branches puberulent: leaves minutely puberulent or glabrate, fascicled upon much reduced wart-like villous branchlets

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482. Heteranthera limosa Vahl. Limpia cañon (Presidio county).

483. Heteranthera Mexicana Watson. Devil's River (Val Verde county). This species was discovered by Dr. Palmer (no. 1324) in 1879–'80, in Coahuila, Mexico. The present collection extends its known range into southwestern Texas.

484. Commelyna Virginica L. Brazos Santiago.

485. Tinantia anomala Clarke. Pena (Duval county).

486. Tradescantia leiandra Torr. Limpia cañon (Presidio county). Excellent specimens of this rare Texano-Mexican species.

487. Tradescantia leiandra Torr., var. (?) **ovata** Coulter, *n. var.* Like *T. leiandra*, except that the leaves are short and rather broadly ovate (4 to 5^{cm} long, and 2 to 2.75^{cm} broad.—Chenate Mountains (Presidio County). Insufficient flowering material compels the reference of this form as a variety of *T. leiandra*.

The following species of *Juncus* were determined by Mr. F. V. Coville, and represent collections made by Mr. Nealley in 1888 and 1889. It is to be regretted that no more specific locality than "Western Texas" can be given for the collection of 1888, and hence that general locality is intended when that year is given:

488. Juncus acuminatus Michx. 1888.

489. Juncus acuminatus Michx., var. **legitimus** Engelm. 1888.

490. Juncus acuminatus Michx., var. **robustus** Engelm. 1888.

491. Juncus brachycarpus Engelm. 1888.

492. Juncus dichotomus Ell. 1888.

493. Juncus effusus L. 1888.

494. Juncus Elliottii Chapman. 1888.

495. Juncus marginatus Rostk. 1888.

496. Juncus marginatus Rostk., var. **biflorus** Engelm. 1888.

497. Juncus nodosus L., var. **megacephalus** Torr. Ballinger (Runnels county). 1889.

498. Juncus repens Michx. 1888.

499. Juncus scirpoides Lam., var. **macrostemon** Engelm. 1888.

500. Juncus scirpoides Lam., var **polycephalus** Engelm., forma **major** and **forma minor**. 1888.

501. Juncus setaceus Rostk. 1888.

502. Juncus tenuis Willd. 1888.

503. Juncus xiphioides Meyer, var. **montanus** Engelm. Chenate Mountains (Presidio county). 1889.

504. Sagittaria variabilis Engelm. Brazos Santiago.

505. Echinodorus radicans Engelm. Santa Maria (Cameron county).

506. Ruppia maritima L. Brazos Santiago.

The following species of *Cyperaceæ* have been determined by Mr. F. V. Coville and include Mr. Nealley's collection of 1888 and 1889. The year of collection is indicated with each species.

507. Cyperus acuminatus Torr. & Hook. In the vicinity of Sabine Pass (Jefferson county), 1888; Brazos Santiago (Cameron county), 1889.

508. Cyperus aristatus Rottb. Chenate Mountains (Presidio county), 1889.

509. Cyperus articulatus L. In the vicinity of Sabine Pass (Jefferson county), 1888.

510. Cyperus Buckleyi Britton. Chenate Mountains (Presidio county), 1889.

511. Cyperus compressus L. In the vicinity of Sabine Pass (Jefferson county), 1888.

512. Cyperus cyrtolepis Torr. & Hook. In the vicinity of Sabine Pass (Jefferson county), 1888.

513. Cyperus diandrus Torr., var. **capitatus** Britton. In the vicinity of Sabine Pass (Jefferson county), 1888; Chenate Mountains (Presidio county), 1889.

514. Cyperus dissitiflorus Torr. In the vicinity of Sabine Pass (Jefferson county), 1888; Chenate Mountains (Presidio county), and Chisos Mountains (Foley county), 1889.

515. Cyperus echinatus Britton. In the vicinity of Sabine Pass (Jefferson county), 1888.

516. Cyperus erythrorhizos Muhl. In the vicinity of Sabine Pass (Jefferson county), 1888

517. Cyperus esculentus L. In the vicinity of Sabine Pass (Jefferson county), 1888.

518. Cyperus esculentus L., var. **angustispicatus** Britton. In the vicinity of Sabine Pass (Jefferson county), 1888.

519. Cyperus esculentus L., var. **macrostachyus** Boeck. In the vicinity of Sabine Pass (Jefferson county), 1888.

520. Cyperus Fendlerianus Boeck. 1889, with no station.

521. Cyperus ferax Richard. 1889, with no station.

522. Cyperus giganteus Vahl. Brazos Santiago, 1889.

523. Cyperus Haspan L. In the vicinity of Sabine Pass (Jefferson county), 1888.

524. Cyperus Luzulæ Rottb., var. **umbellatus** Britton. In the vicinity of Sabine Pass (Jefferson county), 1888.

524a. Cyperus, *n. sp.*? Intermediate between *C. speciosus* and *C. oxycarioides*, distinct in appearance from both, but with few technical characters to distinguish it from the former. Rio Grande City (Starr county), 1889.

525. Cyperus ovularis Torr. In the vicinity of Sabine Pass (Jefferson county), 1888.

526. Cyperus oxycarioides Britton. In the vicinity of Sabine Pass (Jefferson county), 1888; Brazos Santiago (Cameron county), 1889.

527. Cyperus polystachyus Rottb., var. **leptostachyus** Boeck. In the vicinity of Sabine Pass (Jefferson county), 1888.

528. Cyperus reflexus Vahl. In the vicinity of Sabine Pass (Jefferson county), 1888.

529. Cyperus refractus Engelm. In the vicinity of Sabine Pass (Jefferson county), 1888; Brazos Santiago (Cameron county), 1889.

530. Cyperus rotundus L. In the vicinity of Sabine Pass (Jefferson county), 1888; Brazos Santiago (Cameron county), 1889.

531. Cyperus Rusbyi Britton. Chenate Mountains (Presidio county), 1889.

532. Cyperus Schweinitzii Torr. 1889, with no station.

533. Cyperus speciosus Vahl. Pena (Duval county), 1889.

534. Cyperus strigosus L., var. **compositus** Britton. In the vicinity of Sabine Pass (Jefferson county), 1888.

535. Cyperus strigosus L., var. **gracilis** Britton. In the vicinity of Sabine Pass (Jefferson county), 1888.

536. Cyperus Surinamensis Rottb. In the vicinity of Sabine Pass (Jefferson county), 1888.

537. Cyperus Torreyi Britton. In the vicinity of Sabine Pass (Jefferson county) 1888; Brazos Santiago (Cameron county), 1889.

538. Cyperus uniflorus Torr. & Hook. In the vicinity of Sabine Pass (Jefferson county), 1888; Brazos Santiago (Cameron county), Rio Grande City (Starr county), and Chisos Mountain (Foley county), 1889.

539. Cyperus uniflorus Torr. & Hook., var. **pumilus** Britton. 1889, with no station.

540. Kyllingia brevifolia Rottb. In the vicinity of Sabine Pass (Jefferson county), 1888.

541. Kyllingia cæspitosa Nees. In the vicinity of Sabine Pass (Jefferson county), 1888.
542. Eleocharis acicularis R. & S. Brazos Santiago, 1889.
543. Eleocharis capitata R. Br. Pena (Duval County), 1889.
544. Eleocharis montana R. & S. Point Isabel and Brazos Santiago.
545. Eleocharis palustris R. & S. Point Isabel, 1889.
546. Dichromena cephalotes Britton. In the vicinity of Sabine Pass (Jefferson county), 1888.
547. Dichromena latifolia Baldwin. In the vicinity of Sabine Pass (Jefferson county), 1888.
548. Fimbristylis autumnalis R. & S. In the vicinity of Sabine Pass (Jefferson county), 1888.
549. Fimbristylis capillaris Gr. Chenate Mountains (Presidio county), 1889.
550. Fimbristylis castanea Vahl. In the vicinity of Sabine Pass (Jefferson county), 1888.
551. Fimbristylis laxa Vahl. In the vicinity of Sabine Pass (Jefferson county), 1888.
552. Fimbristylis spadicea Vahl. (the type?) In the vicinity of Sabine Pass (Jefferson county), 1888.
553. Scirpus carinatus Gray. In the vicinity of Sabine Pass (Jefferson county), 1888.
554. Scirpus pungens Vahl. Pena (Duval county), 1889.
555. Fuirena squarrosa Mx., var. **breviseta** Coville. In the vicinity of Sabine Pass (Jefferson county), 1888.
556. Fuirena squarrosa Mx., var. **hispida** Chapm. In the vicinity of Sabine Pass (Jefferson county), 1888.
557. Hemicarpha micrantha Britton. (*H. subsquarrosa* Nees.) Chenate Mountains (Presidio county), 1889.
558. Rhynchospora caduca Ell. Near Sabine Pass, 1888.
559. Rhynchospora corniculata Gr. Near Sabine Pass, 1888.
560. Rhynchospora cymosa Nutt. Form. Near Sabine Pass, 1888.
561. Rhynchospora Elliottii Dietr. Near Sabine Pass, 1888.
562. Rhynchospora glomerata Vahl., var. **paniculata** Chapm. Near Sabine Pass, 1888.
563. Rhynchospora inexpansa Vahl. Near Sabine Pass, 1888.
564. Rhynchospora patula Gr. Near Sabine Pass, 1888.
565. Rhynchospora plumosa Ell. Near Sabine Pass, 1888.
566. Rhynchospora plumosa Ell., var. **intermedia** Chapm. Near Sabine Pass, 1888.
567. Rhynchospora pusilla Chapm. Near Sabine Pass, 1888.
568. Rhynchospora rariflora Ell. Near Sabine Pass, 1888.
569. Scleria oligantha Ell. Near Sabine Pass, 1888.

The following grasses have been determined by Dr. George Vasey, and include the collections made in southern and southwestern Texas by Mr. Nealley during the three seasons of 1887, 1888, and 1889. For the plants of the first two seasons no specific locality can be given, so that when no station is mentioned the general range of "southern and southwestern Texas" is intended, and the date of collection is either 1887 or 1888. The collection of 1889 may be recognized by having the stations specified, at least within a county. Special attention was given to the collection of grasses, so that the following list is a very complete one:

570. Tripsacum dactyloides L.
571. Tripsacum monostachyum Willd. Ballinger (Runnels county).
572. Imperata Hookeri Rupt.
573. Erianthus brevibarbis Michx.
574. Erianthus saccharoides Michx.

575. **Erianthus strictus** Baldwin.
576. **Rottbœllia cylindrica** Chapman.
577. **Hemarthria fasciculata** Kunth. Limpia cañon (Presidio county).
578. **Manisuris granularis** Swartz. Introduced.
579. **Trachypogon polymorphus** Hack.
580. **Elionurus barbiculmis** Hack. (*E. candidus* Torr.) Chenate Mountains (Presidio county).
581. **Elionurus tripsacoides** HBK. (*E. Nuttallii* Vasey.)
582. **Elionurus tripsacoides** HBK., var. **ciliaris** Hack. (*E. ciliaris* HBK.)
583. **Andropogon argyræus** Schult.
584. **Andropogon cirrhatus** Hack. Limpia cañon (Presidio county).
585. **Andropogon Elliottii** Chapm.
586. **Andropogon Hallii** Hack. Pena (Duval county) and Santa Anna (Coleman county).
587. **Andropogon hirtiflorus** Kunth. Chenate Mountains (Presidio county).
588. **Andropogon macrourus** Michx.
589. **Andropogon provincialis** Lam. (*A. furcatus* Muhl.).
590. **Andropogon saccharoides** Swartz, var. **submuticus** Vasey. Corpus Christi (Nueces county).
591. **Andropogon saccharoides** Swartz, var. **Torreyanus** Hack. Chenate Mountains (Presidio county).
592. **Andropogon scoparius** Michx.
593. **Andropogon tener** Kunth. Point Isabel.
594. **Andropogon Virginicus** Linn.
595. **Andropogon Wrightii** Hack.
596. **Sorghum Halapense** Pers. Introduced.
597. **Chrysopogon avenaceum** Benth.
598. **Chrysopogon nutans** Benth.
599. **Heteropogon contortus** R. & S. Chenate Mountains (Presidio county).
600. **Hilaria cenchroides** HBK., var. **Texana** Vasey, *n. var.* Differs from the type in its taller and more slender culm, longer leaves, longer more slender spike, with 7 to 9 narrower more distant spikelets.—Pena (Duval county). Possibly a distinct species.
601. **Hilaria Jamesii** Benth.
602. **Hilaria mutica** Benth. Pena (Duval county).
603. **Tragus racemosus** Hall. Introduced.
604. **Paspalum Buckleyanum** Vasey. Corpus Christi (Nueces county).
605. **Paspalum ciliatifolium** Muhl.
606. **Paspalum distichum** L. Corpus Christi (Nueces county).
607. **Paspalum Drummondii** Vasey.
608. **Paspalum Floridanum** Michx.
609. **Paspalum Floridanum** Michx., var. **glabratum** Engelm.
610. **Paspalum fluitans** Kunth.
611. **Paspalum furcatum** Flugge (*P. Digitaria* Chapman).
612. **Paspalum læve** Michx. Santa Maria (Cameron county).
613. **Paspalum læve** Michx., var. **angustifolium** Vasey (*P. angustifolium* Le Conte).
614. **Paspalum lentiferum** Lam. (*P. præcox* Walt.).
614a. **Paspalum lividum** Trin. Point Isabel.
615. **Paspalum monostachyum** Vasey.
616. **Paspalum platycaule** Poir.
617. **Paspalum plicatulum** Michx.
618. **Paspalum pubiflorum** Rupt. (*P. Hallii* V. & S.).
619. **Paspalum pubiflorum** Rupt., var. **glaucum** Scribner.
620. **Paspalum setaceum** Michx. Pena (Duval county).

621. **Paspalum vaginatum** Swartz. Near the coast.
622. **Paspalum virgatum** L., var. **pubiflorum** Vasey.
623. **Paspalum Walterianum** Schult.
624. **Eriochloa polystachya** HBK. Brazos Santiago (Cameron county) and Chenate Mountains (Presidio county).
625. **Eriochloa punctata** Hamil.
626. **Eriochloa sericea** Munro. Ballinger (Runnels county).
627. **Panicum agrostoides** Muhl.
628. **Panicum anceps** Michx.
629. **Panicum angustifolium** Ell.
630. **Panicum autumnale** Bosc.
631. **Panicum barbinode** Trin. Probably introduced.
632. **Panicum bulbosum** HBK. Ballinger (Runnels county) and Chenate Mountains (Presidio county).
633. **Panicum capillare** L.
634. **Panicum capillarioides** Vasey, *n. sp.* With the general habit of *P. capillare*, 30 to 45^{cm} high: panicle not as full, with fewer less divided and more rigid branches: spikelets twice as large, 5^{mm} long: first glume one-third as large as the second, three to five nerved: second and third glumes equal, as long as the spikelet, about fifteen-nerved, lance-oblong, smooth: palet of the sterile flower small (1 to 1.5^{mm} long): perfect flower less than 2^{mm} long, smooth and shining.—Point Isabel.
635. **Panicum ciliatissimum** Buckl. Hidalgo (Hidalgo county).
636. **Panicum colonum** L.
637. **Panicum commutatum** Schultz. (*P. nervosum* Ell).
638. **Panicum consanguineum** Kunth.
639. **Panicum Crus-galli** L.
640. **Panicum depauperatum** Muhl.
641. **Panicum dichotomum** L.
642. **Panicum diffusum** Swartz. Point Isabel. An addition to our flora.
643. **Panicum fasciculatum** Swartz.
644. **Panicum filiforme** L.
645. **Panicum gymnocarpum** Ell.
646. **Panicum Hallii** V. & S. Point Isabel.
647. **Panicum Havardii** Vasey.
648. **Panicum hians** Ell.
649. **Panicum lachnanthum** Torr. Point Isabel and Corpus Christi.
650. **Panicum latifolium** L.
651. **Panicum laxiflorum** Lam.
652. **Panicum microcarpon** Muhl.
653. **Panicum neuranthum** Griseb.
654. **Panicum nitidum** Lam.
655. **Panicum obtusum** HBK.
656. **Panicum paspaloides** Pers.
657. **Panicum pedicellatum** Vasey.
658. **Panicum platyphyllum** Munro.
659. **Panicum proliferum** Lam.
660. **Panicum prostratum** Lam.
661. **Panicum reticulatum** Torr.
662. **Panicum Reverchoni** Vasey.
663. **Panicum sanguinale** L.
664. **Panicum scabriusculum** Ell. ?
665. **Panicum scoparium** Lam.
666. **Panicum sparsiflorum** Vasey (*P. angustifolium* Chapman, not Ell.)
667. **Panicum sphærocarpon** Ell.

668. **Panicum stenodes** Griseb.
669. **Panicum subspicatum** Vasey. Hidalgo (Hidalgo county).
670. **Panicum Texanum** Buckley.
671. **Panicum virgatum** L. Ballinger (Runnels county).
672. **Panicum viscidum** Ell.
673. **Oplismenus setarius** R. & S.
674. **Setaria caudata** R. & S. Pena (Duval county).
675. **Setaria caudata** R. & S., var. **pauciseta** Vasey. Pena (Duval county)
676. **Setaria glauca** P. Br., var. **flava** Vasey.
677. **Setaria glauca** P. Br., var. **lævigata** Chapm.
678. **Setaria imberbis** R. & S.
679. **Setaria setosa** Beauv.
680. **Cenchrus echinatus** L.
681. **Cenchrus myosuroides** HBK. Chenate Mountains (Presidio county).
682. **Cenchrus tribuloides** L.
683. **Stenotaphrum Americanum** Schkr.
684. **Zizania aquatica** L.
685. **Zizania miliacea** Michx. (*Zizaniopsis* Doell.).
686. **Leersia hexandra** Swartz.
687. **Leersia monandra** Swartz.
688. **Leersia oryzoides** Swartz.
689. **Leersia Virginica** Willd.
690. **Phalaris intermedia** Bosc.
691. **Phalaris intermedia** Bosc., var. **angusta** Chapm.
692. **Aristida Arizonica** Vasey. Santa Anna (Coleman county).
693. **Aristida desmantha** Tr. & Rupt.
694. **Aristida dichotoma** L.
695. **Aristida dispersa** Trin. Chenate Mountains (Presidio county).
696. **Aristida gracilis** Ell.
697. **Aristida Havardii** Vasey.
698. **Aristida Humboldtiana** Trin.
699. **Aristida oligantha** Michx.
700. **Aristida palustris** Vasey.
701. **Aristida purpurascens** Poir., var. **minor** Vasey.
702. **Aristida purpurea** Nutt. Point Isabel.
703. **Aristida purpurea** Nutt., var. **Berlandieri** Trin.
704. **Aristida purpurea** Nutt., var. **Hookeri** Trin.
705. **Aristida purpurea** Nutt., var. **micrantha** Vasey. Pena (Duval county).
706. **Aristida Reverchoni** Vasey.
707. **Aristida Schiediana** Trin. Limpia cañon (Presidio county).
708. **Aristida Schiediana** Trin., var. **minor** Vasey. Limpia cañon (Presidio county).
709. **Aristida stricta**, var. **Nealleyi** Vasey, *n. var.* Culms cespitose, slender, erect, wiry, unbranched, 45^{cm} high: leaves erect, setaceous, 5 to 15^{cm} long, pungently pointed: panicle spike-like, very narrow, 10 to 15^{cm} long, two or three spikelets at each joint, one sessile, one or two short-pedicelled, appressed: spikelets about 8^{mm} long: lower empty glumes rather shorter than upper: upper one nearly equal to the flowering glume or to the furcation: flowering glume about 8^{mm} long beside the awns, scabrous, the short stipe pubescent: awns nearly equal, 10 to 12^{mm} long.—Chenate Mountains (Presidio county). Shorter and less rigid than the type.
710. **Stipa flexuosa** Vasey. Chenate Mountains (Presidio county).
711. **Stipa pennata**, var. **Neo-Mexicana** Thurber.
712. **Stipa setigera** Presl. Point Isabel.
713. **Stipa tenuissima** Trin.

714. **Stipa viridula** Trin., var. **robusta** Vasey, *n. var.* Culms densely tufted, 12 to 18^{dm} high, stout, leafy: lower sheaths loose and broad, longer than the internodes; blades flat and wide or involute above, often 6^{dm} long, scabrous: panicle dense and large, erect, 25 to 40^{cm} long: empty glumes 10^{mm} long, three to five nerved, callus short, densely hairy.—Chenate Mountains (Presidio county). Ranges from Colorado to Mexico.
715. **Oryzopsis fimbriata** Vasey.
716. **Oryzopsis membranacea** Pursh (*O. cuspidata* Benth.).
717. **Oryzopsis micrantha** Thurber?
718. **Muhlenbergia arenicola** Buckley.
719. **Muhlenbergia Berlandieri** Trin.
720. **Muhlenbergia Buckleyana** Scribner, *n. sp.* This is *M. Texana* Buckley (Proc. Phila. Acad., 1862), a name antedated by *M. Texana* Thurber. Pena (Duval county).
721. **Muhlenbergia capillaris** Kunth.
722. **Muhlenbergia diffusa** Schreb.
723. **Muhlenbergia distichophylla** Kunth.
724. **Muhlenbergia gracilis** Trin.
725. **Muhlenbergia gracillima** Torr.
726. **Muhlenbergia Lemmoni** Scribner, *n. sp.* Culms much branched below, slender, erect or decumbent, 30 to 45^{cm} high: leaves 2.5 to 7.5^{cm} long, 2^{mm} wide, acuminate: panicle spike-like, 5 to 12.5^{cm} long, interrupted below, the upper branches sessile, the lower pedicelled and subdivided, sometimes 2.5 to 5^{cm} long, erect: spikelets about 3^{mm} long without the awns: empty glumes ovate-lanceolate, awn-pointed, nearly equal and but little shorter than the flowering glume, which is hairy below and with an awn half or as long as itself.—Ballinger (Runnels County): also in New Mexico, Arizona, and Mexico. A member of a very variable group, resembling *M. sylvatica.*
727. **Muhlenbergia monticola** Buckley. Ballinger (Runnels county).
728. **Muhlenbergia setifolia** Vasey.
729. **Muhlenbergia Texana** Thurber.
730. **Muhlenbergia tricholepis** Torr.
731. **Muhlenbergia trichopodes** Chapman. Ballinger (Runnels county).
732. **Muhlenbergia virescens** Trin.
733. **Muhlenbergia Wrightii** Vasey.
734. **Lycurus phleoides** HBK.
735. **Alopecurus aristulatus** Michx.
736. **Sporobolus airoides** Torr.
737. **Sporobolus argutus** Kunth, var. **Arkansanus** Vasey. Point Isabel.
738. **Sporobolus asper** Kunth. Santa Anna (Coleman county).
739. **Sporobolus asper** Kunth, var. **Hookeri** Vasey. Santa Anna (Coleman county).
740. **Sporobolus asperifolius** Thurber. Pena (Duval county).
741. **Sporobolus asperifolius** Thurb., var. **brevifolius** Vasey. Pena (Duval county).
742. **Sporobolus Buckleyi** Vasey. Point Isabel.
743. **Sporobolus confusus** Vasey (*S. ramulosus* of authors). Limpia cañon (Presidio county).
744. **Sporobolus cryptandrus** Gray. Pena (Duval county) and Screw Bean (Presidio county).
745. **Sporobolus cryptandrus** Gray, var. **flexuosus** Thurber.
746. **Sporobolus cryptandrus** Gray, var. **robustus** Vasey, *n. var.* Culms erect, 6 to 9^{dm} high, stout, simple or with a few erect branches: leaves erect, rigid, scabrous on the margins, 15 to 30^{cm} long, 6^{mm} wide, attenuate; sheaths smooth, except the ciliate margins and hairy ligule; upper sheath long and

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785. Bouteloua breviseta Vasey, *n. sp.* Culms ascending from a decumbent rooting rhizome, almost woody below, 15 to 30^{cm} high, leafy below: leaves rigid, involute, spreading, pungent, 2.5 to 5^{cm} long, smooth or sparsely ciliate-fringed; ligule ciliate: spikes one to three, distant when more than one, 2.5 to 3.5^{cm} long, closely flowered, very narrow: spikelets 4^{mm} long or less, including the awns: empty glumes unequal, 2 to 2.5^{mm} long, the upper one pungently pointed: flowering glume about 3^{mm} long, including the awns, oblong, three-nerved, three-lobed near the apex, and with three short awns, more or less pubescent on the back: palet nearly as long, narrower, two-nerved: imperfect flower of three short awns on a short pedicel which is hairy tufted at top.—Screw Bean (Presidio county). Apparently growing in sand.

786. Bouteloua bromoides Vasey (*B. Humboldtiana* Kunth). Rio Grande City (Starr county).

787. Bouteloua Burkei Scribner. Ballinger (Runnels county).

788. Bouteloua eriopoda Torr. Devil's River (Val Verde county).

789. Bouteloua Havardii Vasey. Chenate Mountains (Presidio county).

790. Bouteloua hirsuta Lag.

791. Bouteloua hirsuta Lag., var. **major** Vasey.

792. Bouteloua hirsuta Lag., var. **minor** Vasey. Pena (Duval county).

793. Bouteloua oligostachya Torr. Screw Bean (Presidio county).

794. Bouteloua oligostachya Torr., var. **major** Vasey.

795. Bouteloua polystachya Torr. Pena (Duval county).

796. Bouteloua racemosa Lag. Ballinger (Runnels county).

797. Bouteloua ramosa Scribner. Chenate Mountains (Presidio county).

798. Bouteloua stricta Vasey.

799. Bouteloua Texana Watson. Point Isabel.

800. Bouteloua trifida Thurber. Pena (Duval county).

801. Eleusine Ægyptiaca Pers. Introduced.

802. Eleusine Indica Gærtn. Introduced.

803. Leptochloa Domingensis Link. Hidalgo (Hidalgo county).

804. Leptochloa mucronata Kunth.

805. Leptochloa Nealleyi Vasey.

806. Buchloe dactyloides Engelm.

807. Pappophorum apertum Munro. Rio Grande City (Starr county).

808. Pappophorum laguroideum Schrad. Rio Grande City (Starr county).

809. Pappophorum Wrightii Watson. Chenate Mountains (Presidio county).

810. Cottea pappophoroides Kunth.

811. Cathestechum erectum Vasey & Hackel.

812. Scleropogon Karwinskianus Benth. Pena (Duval county).

813. Monanthochloe littoralis Engelm.

814. Munroa squarrosa Torr.

815. Arundo Donax L. Probably introduced, but wild on the Rio Grande.

816. Phragmites communis Trin.

817. Triodia acuminata Vasey. Santa Anna (Coleman county) and Chenate Mountains (Presidio county).

818. Triodia albescens Vasey.

819. Triodia ambigua Vasey. Point Isabel.

820. Triodia avenacea HBK.?

821. Triodia cuprea Jacq. Point Isabel.

822. Triodia eragrostoides Vasey & Scribner, *n. sp.* Culms 6 to 9^{dm} high, leafy: sheaths longer than the internodes, roughish; ligule short, ciliate-toothed: blade flat, 2 to 3^{dm} long, scabrous, acuminate: panicle large and spreading, 3^{dm} long, the branches slender, rather distant, single or in twos, the lower ones 12.5 to 15^{cm} long, lax-flowered: spikelets short-pedicelled, alternate, and

mostly single, five to nine flowered, 5mm long: empty glumes nearly equal, lanceolate-acuminate, one-nerved: flowering glumes 2 to 2.5mm long, three-nerved, oblong, obtuse, emarginate, short-cuspidate, the lateral nerves and midrib pubescent below: palet one-fourth shorter, obtuse, and denticulate.—Florida (*Blodgett*), Texas (*Buckley, Nealley, Reverchon*). A beautiful species, having the aspect of an *Eragrostis*. There are several forms of this verging toward *T. ambigua*.

823. Triodia grandiflora Vasey, *n. sp.* Culms 3 to 5dm high: leaves narrow, rigid, plane or conduplicate, 5 to 10cm long, lower with the sheaths softly pubescent: panicle oblong, dense, 3.5 to 6cm long, branches appressed: spikelets 8 to 10mm long: empty glumes unequal, lanceolate, the upper 8mm long, one-nerved, the lower rather shorter, three-nerved: flowering glumes 7 to 8mm long, acute, apex two-lobed, lobes acute, the fissure less than 2mm long, awn about 2mm long, the lateral nerves densely ciliate the entire length, and the midrib below: palet narrow, a third as long as its glume, pubescent on the nerves, abruptly acute. --Chenate Mountains (Presidio county); collected also in Arizona and Chihuahua by Pringle. This has been distributed as *T. avenacea* HBK., but it does not agree with the description and figure given. The spikelets and flowers are larger than in any other *Triodia*.

824. Triodia mutica Vasey. (*T. trinerviglumis* Mun.) Ballinger (Runnels county).

825. Triodia Nealleyi Vasey. Chenate Mountains (Presidio county).

826. Triodia pulchella Vasey. Chenate Mountains (Presidio county).

827. Triodia purpurea Vasey.

828. Triodia stricta Vasey.

829. Triodia Texana Vasey. Point Isabel.

830. Diplachne dubia Benth.

831. Diplachne fascicularis P. Br.

832. Diplachne imbricata Thurber. Point Isabel.

833. Diplachne Reverchoni Vasey.

834. Diplachne rigida Vasey.

835. Eragrostis campestris Trin (*E. nitida* Chapman).

836. Eragrostis capillaris Vasey. Pena (Duval county).

837. Eragrostis conferta Trin.

838. Eragrostis curtipedicellata Buckl. Hidalgo (Hidalgo county).

839. Eragrostis lugens Nees.

840. Eragrostis major Host.

841. Eragrostis Neo-Mexicana Vasey.

842. Eragrostis oxylepis Torr. Point Isabel.

843. Eragrostis pectinacea Gray.

844. Eragrostis Purshii Schrad. Pena (Duval county).

845. Eragrostis Purshii Schrad., var. **diffusa** Vasey (*E. diffusa* Buckl.).

846. Eragrostis reptans Nees. Point Isabel.

847. Eragrostis tenuis Gray.

848. Eragrostis tenuis Gray, var. **Texensis** Vasey, *n. var.* Culm rigid, erect, 75 to 90cm high, leafy, simple: sheaths striate, smoothish or silky-hairy above and at the throat; blade rather rigid, nearly as long as the culm, scabrous and with a few scattered hairs on the upper surface, smooth below, upper sheath inclosing the base of the panicle, which is half the length of the plant, the branches erect-spreading: spikelets three to five-flowered, acute: empty glumes lanceolate, acute, longer than the lowest flowering glume.—Collected by both Reverchon and Nealley.

849. Eatonia obtusata Gray.

850. Eatonia Pennsylvanica Gray.

851. Koeleria cristata Pers.

852. **Melica diffusa** Pursh.
853. **Uniola gracilis** Michx.
854. **Uniola latifolia** Michx.
855. **Uniola paniculata** L. Point Isabel.
856. **Distichlis maritima** Raf. Chenate Mountains (Presidio county).
857. **Poa Bigelovii** Vasey & Scribner.
858. **Poa flexuosa** Muhl.
859. **Poa Texana** Vasey, *n. sp.* Dicœcious (?): rhizome stout, throwing out long stolons which take root at the joints, and from which the leafy culms arise to the height of 15 to 40^{cm}: lower sheaths loose, as long as the internodes or longer; blade 7.5 to 15^{cm} long: panicle narrow, 2.5 to 7.5^{cm} long, the upper part of a few simple sessile spikelets, the lower part with a few few-flowered short appressed branches: spikelets large (10 to 12^{mm}), seven to nine-flowered, compressed, smooth: empty glume, ovate, obtuse: flowering glumes oblong-ovate, three-nerved, 4 to 6^{mm} long, smooth except on the keel.—The specimens are all male.
860. **Glyceria fluitans** R. Br.
861. **Glyceria nervata** Trin.
862. **Festuca nutans** Willd.
863. **Festuca ovina** L.
864. **Festuca sciurea** Nutt.
865. **Festuca tenella** Willd.
866. **Bromus ciliatus** L. Chenate Mountains (Presidio county).
867. **Bromus Kalmii** Gray.
868. **Bromus secalinus** L. Introduced.
869. **Bromus unioloides** Willd.
870. **Lolium perenne** L. Introduced.
871. **Agropyrum glaucum** R. & S.
872. **Hordeum jubatum** L.
873. **Hordeum maritimum** With. Introduced.
874. **Hordeum pratense** Huds.
875. **Hordeum pusillum** Nutt.
876. **Elymus Canadensis** L.
877. **Elymus Canadensis** L., var. **glabriflorus** Vasey.
878. **Elymus Canadensis** L., var. **minor** Vasey. Santa Anna (Coleman county).
879. **Elymus Sitanion** Schultz. Chenate Mountains (Presidio county).
880. **Elymus striatus** Willd.?
881. **Elymus Virginicus** L.
882. **Elymus Virginicus** L., var. **minor** Vasey.
883. **Asprella hystrix** Willd.
884. **Juniperus occidentalis** Hook. Chisos Mountains (Foley county).
885. **Juniperus pachyphlœa** Torr. Chisos Mountains (Foley county). It is almost impossible to distinguish this species from *J. Mexicana*, and it is very probable that the two should be merged, representing a type which extends over the North Mexican plateau, and into the high lands of Arizona, New Mexico, and western Texas.

The following species were determined by Henry E. Seaton:

886. **Selaginella cuspidata** Link. Chenate Mountains (Presidio county).
887. **Selaginella lepidophylla** Spring. Chenate Mountains (Presidio county).
888. **Selaginella rupestris** Spring. Chenate Mountains (Presidio county).
889. **Gymnogramme hispida** Mett. Chenate Mountains (Presidio county).
890. **Gymnogramme triangularis** Kaulf. Chenate Mountains (Presidio county).
891. **Notholæna ferruginea** Hook. Limpia cañon (Presidio county).
892. **Notholæna Grayi** Dav. Chenate Mountains and Limpia cañon (Presidio county).

893. Notholæna Hookeri Eaton. Limpia cañon (Presidio county).

894. Notholæna Nealleyi Seaton, *n. sp.* Rhizome slender, with narrow black scales: stipe terete, reddish-black, 2.5^{cm} long: frond oblong-lanceolate, contracted below, tripinnatifid, 10 to 12^{cm} long, 3.5^{cm} wide, upper surface (especially when young) white-granular dotted, lower densely coated with a white powder but becoming less so with age: rhachises, like the stipe, white granular and conspicuously clothed with rigid brown hairs: pinnæ sessile, nearly opposite, triangular-ovate or ovate-lanceolate, pinnately divided into four to six pairs of sessile pinnatifid obtuse and oblong pinnules, confluent at the apex; margins unchanged but sometimes becoming reflexed: sori brown and copious, in a continuous marginal line.—Chenate Mountains (Presidio county). Most nearly resembling *N. Grayi* Dav.

895. Notholæna sinuata Kaulf. Chenate Mountains (Presidio county).

896. Cheilanthes Eatoni Baker. Limpia cañon and Chenate Mountains (Presidio county).

897. Cheilanthes microphylla Swartz. Limpia cañon (Presidio county).

898. Cheilanthes tomentosa Link. Chenate Mountains (Presidio county).

899. Cheilanthes Wrightii Hook. Limpia cañon (Presidio county).

900. Pellæa aspera Baker. Chenate Mountains (Presidio county).

901. Pellæa flexuosa Link. Limpia cañon (Presidio county). These specimens were collected under two numbers, one being typical *P. flexuosa* and the other not typical, but nearer this species than anything else, the rhachises being but little flexuose, if any, and the pinnules mucronulate.

902. Pellæa ternifolia Link. Limpia cañon (Presidio county).

903. Asplenium parvulum Mart. & Gale. Chenate Mountains (Presidio county).

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
Rasa 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, nineteen[1] 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 Rich[2] 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.

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[1] One was described by Dr. Englemann. [2] Collected *Lycium Richii* Gray.

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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 trifoliate 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 frutículosum 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. (?). 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, 1½ to 2½ 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 3½ 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 *Sphæralcea*, 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 Palmeri 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 "gobernadora," 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 gonorrhea, 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 chrysorhiza 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 Emoryi 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 pinnæ; leaflets 5 pairs, excentric, oblong, 2 to 4 lines long: racemes short-pedunculate, 1 to 3 inches long; bracts ovate, obtuse, 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 Virde." 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 *Nitidæ*, near *C. Californica*, or it may be *C. Cumingii*. The pinnæ 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 3½ inches long, considerably tapering at base, with thick margins, and a little pubernlent. 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.**

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[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.**

Maximowizcia (?). 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.

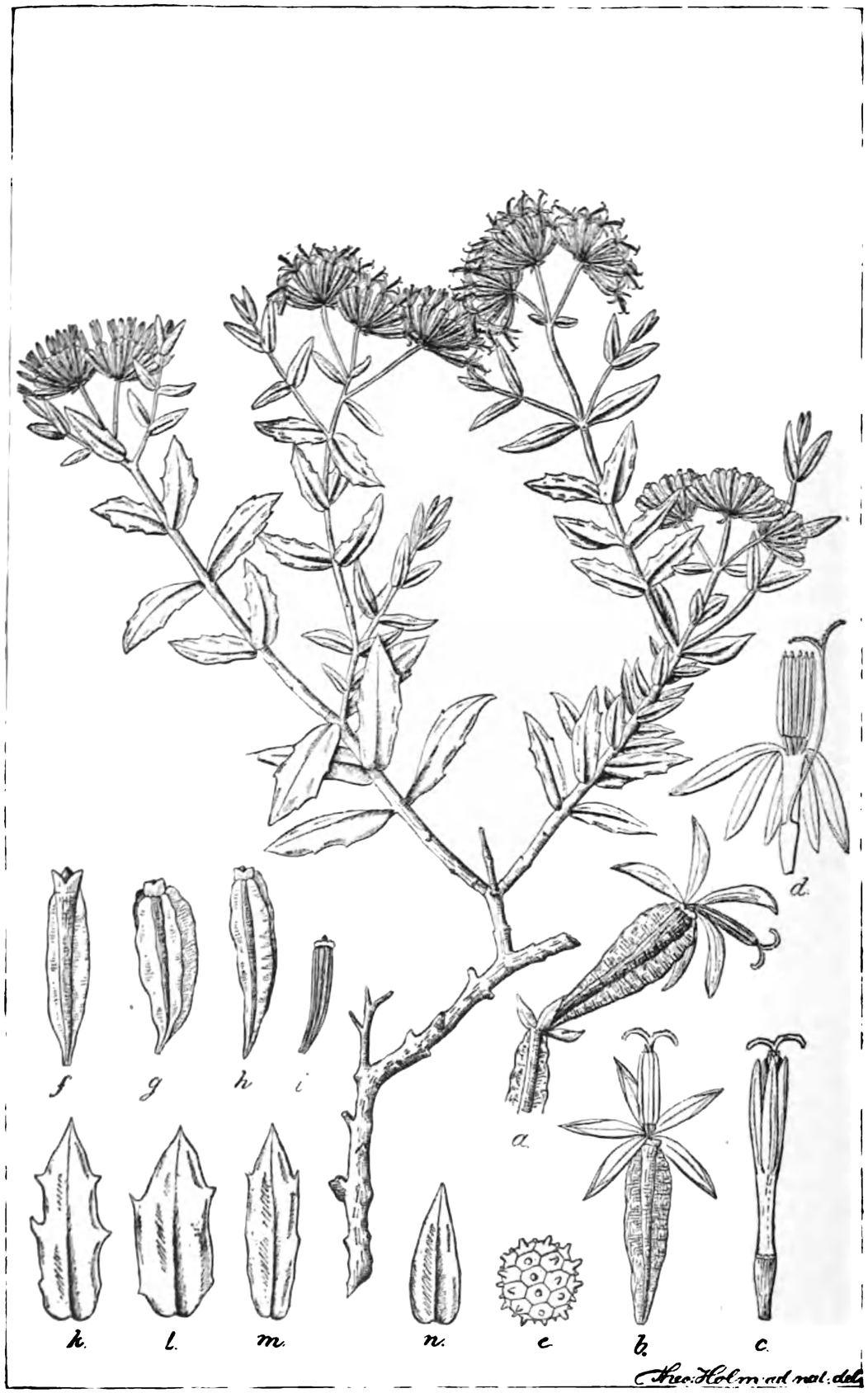
Mollugo verticillata L. Only three small plants were found, growing under bushes on mesas. The plants are small, with linear leaves. **No. 36.**

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. 31ª) 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), **31ª.**

Houstonia Brandegeana Rose, n. sp. Near the last but more erect, with slender branches: pedicels long and slender, sometimes 1½ inches long: calyx ½ 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 (½ line long), not tapering into a long, narrow base.—Habitat the same as the above. **No. 31** and **24ª.**

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,"



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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 "Incienso," 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 leiocarpa 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 (1½ 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 1½ 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 2½ 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. ipomopsiflora* (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, 1½ 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 privoides 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. 168. 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. 0), 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.

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[1] The 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 ½–3^{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 2–3½ ^{m} high, with a number of stems and but few branches, and having flowers white within and rose colored without. **No. 12.**

Euphorbia Comonduana Millsp. Proc. Cal. Acad. 2nd series, II. 229. Named from a specimen collected at Comondu, on this peninsula, by Mr. T. S. Brandegee. A rather compact plant 1–1⅓ ^{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. XV^{2}. 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 Müll., *fide* 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. 16^{2}, 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 Mazattan, 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. 127*a*.**

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. 85*a*.**

Physcia tribacia Tuckerman. Found near the ocean. **No. 85*b*.**

SAN PEDRO MARTIN ISLAND PLANTS.

Dr. Palmer visited this island[1] 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.*

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

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

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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. Dicœcious, 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.

Fouquiera 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 subsessile 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 Purisimæ 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 Angelos 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.

Œnothera 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 Dunal. 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 companulate 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. 185ª.**

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 involucral 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 akali 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 Orcutt, 1889, from the Colorado Desert, California. **No. 193.**

HYDROPHYLLACEÆ.

Phacelia scariosa Brandegee. 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.**

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the specimens of these species in the Gray Herb., and it is clearly the same *S. Coulteri*. It differs widely from all other *Sphæralceæ* 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 campanulate, 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. latum." *Prosopis* (?) *heterophylla* Benth. Lond. Jour. Bot.

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[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 Benthan, 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 "stipulæ obsoletæ," while we find small but deciduous stipules; also "pinnæ 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 synonomy 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 scarrous margins ⅓ 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. campanulata* 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.

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I wish to express here my thanks to Dr. George Vasey, Botanist of the Agricultural Department, under whose direction this report has been prepared, and whose ready familiarity with North American plants has been a great source of help; to Dr. Sereno Watson and his assistant, Dr. B. F. Robinson, for courtesies shown me while at Gray Herbarium; to Mr. Wm. M. Canby for the generous loaning of many plants, and for aid in difficult determinations; and to various specialists, both at home and abroad, who have given help in their separate lines, which is credited in the proper place in the text.

PLANTS COLLECTED AT ALAMOS.

Alamos or Los Alamos is a mining town of about 10,000 inhabitants, situated 180 miles southeast from Guaymas. Its altitude is 1,275 feet above sea level. Two visits were made here, one in the dry season, March 26 to April 8; the other during the rainy season, September 16 to 30. The flora of the two seasons is very different, and only 8 or 10 species are duplicated in the two collections. The collection in the spring yielded about 130 species (Nos. 276 to 414); of these, 18 are new. The fall collection contained about 120 species, 25 of which are new. The following interesting facts are gathered from Dr. Palmer's notes. The beginning and ending of the rainy season varies somewhat; generally it commences in July and lasts until the first week of October. After the first good rains vegetation springs up as by magic, grows rapidly, then disappears nearly as quickly as it came; it is at its best in August. The soil is mostly poor and rocky except in the valley.

While at Alamos, Dr. Palmer visited the Alamos Sierra or Sierra de los Alamos, a mountain 6 miles due south of the town of Alamos. Of the 75 species collected here 13 were indeterminable; of the 62 remaining ones 18, or more than one-fourth, are new. The total number of species collected at Alamos and vicinity was 263, of which 36 were indeterminable[1], and of the 227 remaining 43 are new. Among the plants of this collection are many very beautiful ones which should claim the attention of cultivators. Of these we cite: *Heteropterys Portillana*, a recent species described by Mr. Watson. This is especially attractive for its large clusters of red fruit. It is very common at Alamos and could easily be obtained for cultivation.

Galphimia Humboldtiana, a rare plant in herbaria, is a common and attractive shrub of the mountains here. It is 6 to 8 feet high, with a handsome top, large racemes of yellow flowers, and attractive foliage.

Cordia Sonoræ is a new species, a very beautiful shrub or small tree, and an abundant bloomer.

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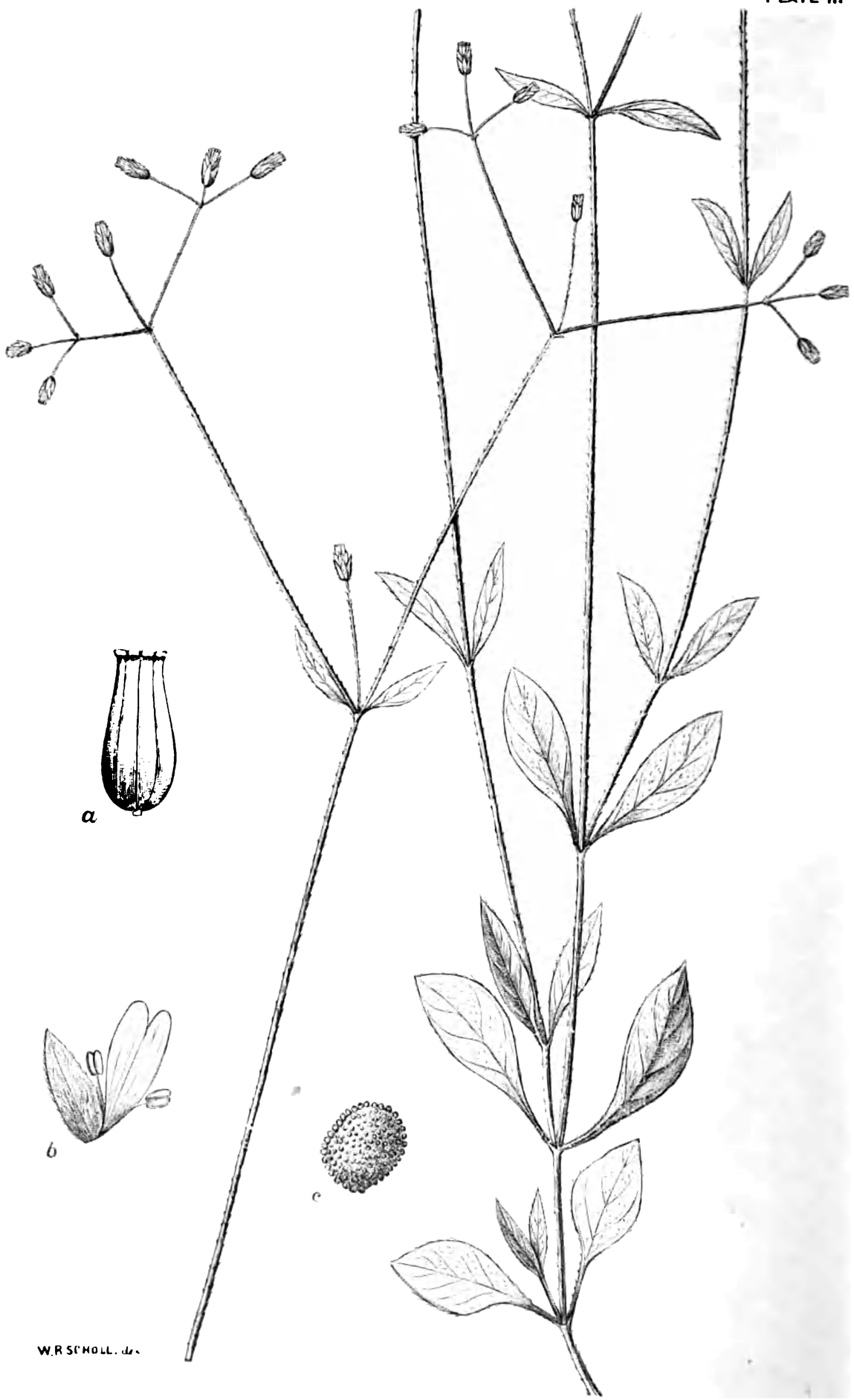
[1] It is proper to state here that the reason so many of these plants are not determined is because Dr. Palmer collected a number in the dry season, which were not in a proper condition, hoping to supplement them in the rainy season; but he was unable to recollet them.



STELLARIA MONTANA, n. sp.

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Abutilon incanum Don. Flowers lavender; common in shade of bushes and rocks along wooded hillsides; near Alamos. March 20 to April 8. No. 381.

Abutilon incanum Don. Two and one-half to three feet high; flowers very numerous and somewhat variable in color; petals mostly purple at base, but either white, orange, or purple above. A very common plant about Alamos. September 16 to 30. Nos. 650,651, 653.

Waltheria Americana L. About 3 feet high: flowers yellow. This plant is very common on the grassy bottoms about Alamos. September 16 to 30. No. 643.

Waltheria detonsa Gray. Flowers orange-colored. A small plant about a foot high. Alamos. March 26 to April 8. No. 390.

Ayenia pusilla L. Grows sparsely in shady woods near Alamos. September 16 to 30. No. 662.

With this is a very narrow leaved form. No. 661.

Ayenia paniculata, n. sp. A shrub about 2 feet high: leaves 2½ to 3 inches long (on petioles 1½ inches long), oval and obtuse to ovate and acute, truncate at base and coarsely serrate; pubescence beneath white, dense, close, and stellate; above green and scanty: flowers either in the axils of the leaves or in naked panicles above: sepals brown, linear to narrowly lanceolate, 3½ lines long: petals orbicular, 2-lobed, each lobe 2 to 3-dentate: anthers 3-celled: fruit 4 to 5 lines broad, 5 to 7-lobed, covered with short, blunt prickles, shorter than in *A. glabra*.—Very rare at Alamos. September 16 to 30. No. 644 in part.

Ayenia truncata, n. sp. Shrubby: leaves ovate, slightly acuminate, truncate at base, 1 to 1½ inches long, crenately toothed, nearly glabrous: pedicels 3 to 4 lines long: fruit about 3 lines in diameter, clothed with a fine stellate pubescence and short blunt spines: seeds oblong, black, 1½ to 2 lines long, less rugose than in *A. filifolia*.—Very rare at Alamos. September 16 to 30. No. 644a. It is nearest *A. glabra*, but has smaller leaves and these truncate at base and less acuminate at tip, etc.

Triumfetta semitriloba L. Grows under bushes about Alamos. September 20 to 30. No. 642.

Heliocarpus attenuatus Watson. Proc. Amer. Acad. xxi. 420. A small tree 10 feet high, 2 inches in diameter, with a compact top. On stony mountain side near Alamos. No. 732 (only in fruit). No 647 (just past flowering).

Another plant, of which but one specimen was seen, having the leaves and inflorescence of this species, seems to be the same, but it is a small bush with white flowers and 20 stamens. Collected on a hillside near Alamos. September 16 to 30. No. 733.

Heliocarpus polyandrus Watson. Proc. Amer. Acad. xxi. 420. A large shrub 8 feet high: the stem with brown flaky bark: larger leaves, 6 inches or more long by 4 inches broad, on petioles 3 to 4 inches long: sepals 3½ lines long, greenish yellow: petals 2 lines long: stamens 45, long and conspicuous.—Alamos. September 16 to 30. No. 629.

Bunchosia Sonorensis, n. sp. Five to ten feet high, with many woody branches; older branches glabrate and with reddish-brown bark; younger branches, leaves, and inflorescence with short soft pubescence: leaves glandless at base but with a few scattered glands on the lower surface, oval and obtuse to lanceolate and acute, 1½ to 2 inches long: racemes 1 to 4 inches long; peduncles 3 to 8 lines long; pedicels thick, 2 lines long, in fruit 4 lines long, glandular at base: calyx small with 5 ovate lobes, bearing 10 large glands: corolla yellow; petals 3 lines long, with long claws: stamens 10, glabrous, connate at base: styles united: ovary sericeous-pubescent: drupe ½ inch in diameter, somewhat 2-lobed, 2-pyrenous, "light amber," becoming dark red.—On level places and ridges where there is plenty of soil. Alamos. No. 322. Dr. Palmer says this plant is a large bush with numerous yellow flowers. It is considered poisonous and is not eaten by man, bird, or beast, but at night a large moth feeds upon its delicate juices.

Echinopterys Lappula Juss. The leaves of this plant are quite variable, sometimes obtuse, again the upper ones acuminate. This is the same as Palmer's Guaymas (1887) plant referred here by Watson, differing only slightly from his description. Our plant differs considerably in habit, being a climbing shrub covering the tops of surrounding bushes. Alamos. No. 404.

Galphimia Humboldtiana Benth. Dr. Palmer says: "It is the most beautiful plant of the mountain, forming a conspicuous object along the arroyos. It grows 6 to 8 feet high with one or more stems and a compact top of numerous racemes of bright yellow flowers as if polished, changing by age to light brown; this double coloring of the flowers contrasts strongly with the dark green of the leaves and gives it a just claim for cultivation." Mountains about Alamos. March 20 to April 8. No. 284.

Heteropterys Portillana Watson, Proc. Amer. Acad. XXII. 402. This species was described from flowering specimens only, and as both flowers and fruit are now at hand additional characters are here appended. Flower buds pink to rose-colored: styles 3: sámara puberulent, 1 to 3 mostly 2, rarely 3, with several lateral crests; the dorsal wing 9 lines long. Dr. Palmer says the fruit, which is of a shiny brick-red color, grows in large masses, making it very attractive, and he considers it a valuable plant for cultivation. A very common plant about Alamos growing over brush and bushes especially along water-courses and in cañons. September 16 to 30. No. 655 in flower and No. 656 in fruit. The only other time it has been collected was by Dr. Palmer at Baranca, Jalisco, in 1886.

Tribulus maximus L. Called "goeonduna" and is used for the cure of insect and reptile bites. Common at Alamos but not collected; grows on rich bottom at Agiabampo. October 3 to 15. No. 786.

Tribulus grandiflorus B. & H. Flowers orange with red blotches at base. In rich bottom, common at Alamos but not collected. Agiabampo. October 3 to 15. No. 783.

Geranium sp. The single specimen is without flower or fruit. Collected in a shady ravine near the top of the mountain. No. 357.

Wimmeria confusa Hemsley, Diag. Pl. Nov. Fasc. I. 6. A large shrub or small tree, sometimes 4 inches in diameter. Alamos. September 16 to 30. No. 648.

Ceanothus buxifolius Willd., *fide* Mrs. Brandegee. Alamos Mountain. March 25 to April 8. No. 336.

Gouania Domingensis L. A climbing shrub. Plants mostly in fruit, only a few flowers were found and those were canary color. Common along cañons and water-courses. Alamos. September 16 to 30. No. 675 (flowers). No. 676 (fruit). Collected also in fruit, March 25 to April 8. No. 323.

Serjania Mexicana Willd. A climbing plant with long slender stems with scattered short prickles: flowers sweet-scented, white, in racemes 3 to 4 inches long. Dr. Palmer says the Mexicans use the stem to tie wood, grass, etc., into bundles, its strength and pliability making it very applicable for such purposes. It is called "quirote culebra." Alamos. March 26 to April 8. No. 383.

Vitis Arizonica Engelm. Probably this species. Only collected in flower. The fruit is said to be of no value. Only two plants seen. Found climbing over rocks, along a water-course, half way up the Alamos Mountain. March 26 to April 8. No. 296.

Rhus Palmeri, n. sp. Large shrub or small tree, 5 inches in diameter, 6 to 15 feet high, with large loosely-hanging top; branches puberulent: leaves pinnate; rhachis not winged; leaflets 5 to 13 mostly 9 to 11, elliptical-oblong, 1½ to 2 inches long, acute, mucronate-tipped, appressed, pubescent: panicle terminal, 3 to 5 inches long: flowers unknown: berries glabrous, red, 3 to 5 lines in diameter, acid, very viscid.—Along a water-course half way up the Alamos Mountain, March 26 to April 8. No. 321. Although not in flower this is evidently a Rhus and seemingly nearest *R. juglandifolia* Willd. of Southern Mexico, but the leaflets are smaller and pubescent.

Crotalaria ovalis Pursh. Alamos. September 16 to 30. No. 712.

Indigofera Anil L. This is a small plant 1 to 1½ feet high with dark bronze colored leaves. Pods few, shorter than in our herbarium specimens, and almost straight. Collected under pines and oaks on the summit of the mountain March 26 to April 8. No. 358. Common along ravines at Alamos, March 25 to April 8. No. 311.

Hosackia Alamosana,[1] n. sp. Procumbent, rooting at the joints, glabrous or the younger parts with appressed hairs: leaves 3 to 5-pinnate; stipules 1 to 2 lines long, foliaceous, ovate, acute; leaflets obovate, obtuse, 2 to 5 lines long: peduncles slender, 2 to 4 inches long, 1 to 4-flowered, mostly 2: bracts 1, setaceous: flowers small 2 to 3 lines long: calyx tube less than a line long; its lobes almost as long and very narrow: corolla yellow: pods 10 to 15 lines long, terete, erect, 12 to 15-seeded; seeds turgid, oblong, lucid.—Half way up the mountain in a wet spot. Alamos. March 26 to April 8. No. 400. Dr. Palmer says: "The plant roots at every joint and forms a thick sod." The plant is nearest *H. angustifolia* of Mexico, but differs from it especially in its procumbent habit; its fewer and obtuse leaflets; smaller flowers and bracts. It is questionable, whether Seemann's (No. 121 of Botany Herald) broader leaved form from this same range of mountains may not really be our plant. Mr. Hemsley (Biol. Cent.-Amer. I. 234), who has probably seen Seemann's plant, however, kept it as a possible variety of *H. angustifolia* and refers to it Parry and Palmer's No. 140, which is a very different plant from ours.

It differs from *H. repens* Don. (which species Mr. Hemsley has omitted in the Biol. Cent.-Amer.) in its fewer leaflets (1 to 3 pairs), and these not mucronulate; heads fewer flowered (mostly 2, rarely 4); and glabrous calyx.

Hosackia puberula Benth. A slender plant, under oaks and pines. Alamos Mountain. March 26 to April 8. No. 343.

Eysenhardtia orthocarpa Watson, Proc. Amer. Acad. XVII. 339. A small tree 10 to 15 feet high, sometimes 6 to 8 inches in diameter: flowers white. Called "Palo dulce." The wood steeped in water makes a sweet, refreshing drink, much relished by fever patients. In the Alamos Mountain. March 26 to April 8. No. 354.

Dalea nutans Willd. Three to five feet high, with slender hanging branches. Very common in the upper portion of the mountain. The branches are often used by the Mexicans for brooms. Alamos. March 26 to April 8. No. 385.

Dalea Wislizeni Gray. Three feet high, with drooping tendency: flowers of a bright mauve color. Not common. Collected in the upper part of the Alamos Mountain, March 26 to April 8. No. 282.

Dalea Domingensis DC. Two to three feet high: leaflets somewhat larger than in type. Only a few plants seen near Alamos. March 26 to April 8. No. 380. Also September 16 to 30. Letter C.

Dalea calycosa Gray. It grows on stony ridges close to the ground, almost hidden from view in the grass. Flowers white at first, becoming pinkish when drying.

Dalea lævigata Gray. (?) Four to five feet high, without leaves: flowers white. Very common in the mountain. Dr. Palmer says that the branches are made into brooms by the Mexicans and sold in the markets at Alamos. March 25 to April 8. No. 853.

Dalea Parryi Torr. and Gray. A loose growing plant about 3 feet high. Common on hillsides about Alamos. September 16 to 30. No. 739.

Brongniartia podalyrioides H. B. K. A shrub 8 to 10 feet high, 3 to 4 inches in diameter: leaflets 5 to 7 pairs. Alamos. September 16 to 30. No. 658.

It differs from *B. galegoides*, which it resembles somewhat in the flowers being axillary not racemose; the leaflets larger, with cuneate base.

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[1] If Hosackia is to be referred to *Lotus* as advocated by Mr. E. L. Greene, Pitt. II. 133, this should be **L. Alamosanus.**

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DIPHYSA RACEMOSA, n. sp.

Brongniartia Palmeri, n. sp. Shrub, 1½ to 2½ feet high, glabrous; branches villous-pubescent: leaves 2 to 3 inches long; stipules large, 6 to 8 lines long, ovate; leaflets 6 to 8 pairs, oblong, appendiculate, glabrous above, with villous hairs along the margins and midrib below: inflorescence in a terminal raceme; flowers mostly 3 to 5 in the axils of stipular bracts: peduncles 9 lines long, enlarged below the calyx: calyx 6 lines long; its two upper lobes high connate: petals purplish: pods 1½ to 2½ inches long, glabrous and glaucous, oblong, tapering at base, 3 to 6-seeded: seeds 3 to 4 lines long.—Rare, only a few plants seen near the base of the mountain. Alamos, March 26 to April 8. No. 300. In *B. galegoides* the upper bracts are small, leaflets larger, etc.

Diphysa racemosa, n. sp.* Five to ten feet high, the younger parts, foliage and inflorescence, very viscid, granular: leaflets 9 to 17, oblong, small, 3 lines or more long: racemes axillary 8 inches or more long: pedicels 4 lines long: 2 bractlets at base of flowers, oval, 3 lines long: calyx about 6 lines long, the slender tube below the disk 2 lines long: legume on a stipe 6 lines long, oblong, 1½ inches long, ¾ inch broad.—Hill-slopes, in deep soil near Alamos. March 26 to April 8. No. 295. The wood is very hard and yellowish, covered with a dark-brown bark abundantly spotted with many horizontal lenticles. This is both in flower and fruit. It is almost gummy and emits a most disagreeable odor.

EXPLANATION OF PLATE III.—Shows racemes and foliage; *a*, legume; *b*, section of stem with lenticles. All natural size.

Coursetia glandulosa Gray. A large scraggy bush with several stems. The stems are often covered with a thick coating of gum. Dr. Palmer says it has great medical value. The gum dissolved in water with sugar is used as a drink in cases of colds and fevers, and as a remedy for consumption it is highly extolled. It is sold in the drug stores at a dollar per pound, under the name of "Guma Sonora." The plant is known as "Samo prieto." It grows at the base of the mountains in the gulleys. Alamos. March 26 to April 8. No. 333.

Willardia, n. gen. Calyx truncate with small equal teeth. Petals equal; vexillum orbicular spreading; wings falcate-oblong; keel slightly incurved. Vexillary stamen connate into a tube with the others except at base; anthers uniform. Ovary sub-sessile with several ovules; style incurved, glabrous or with a few hairs at base; stigma capitate, minute. Legume linear-oblong, strongly compressed, continuous within: seeds reniform, strongly compressed. A small tree: leaves imparipinnate; leaflets definite, entire, exstipellate. Stipules obsolete. Racemes axillary. Flowers "lilac."

This plant was first named and described as a *Coursetia* by Dr. Watson, to which genus it is closely related. The type specimens, however, were only in fruit and it was doubtfully referred as above. The collection by Dr. Palmer of an abundance of flowers shows a still greater divergence and demands the establishment of a new genus.

It differs from *Coursetia* especially in its truncate calyx and glabrous style. Its position, however (according to Dr. P. Taubert[1]), seems nearest Lennea, from which it differs in its style and more membranaceous pod.

It resembles *Sabinea* in its calyx but differs in having racemes of flowers, and also from this as well as all the other *Robinieæ* except the above two, in its connate stamens.

At the request of Dr. Edward Palmer I have named this genus for his old and valued friend, Hon. Alexander Willard, who for twenty-five years has represented our Government as consul at Guaymas, and has aided Dr. Palmer with his various collections from this region.

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[1] I am under many obligations to Dr. P. Taubert, of Berlin, who is preparing and will soon issue the Leguminosæ in Die Natürlichen Pflanzenfamilien, for confirming my observations and adding new information.

Willardia Mexicana. Small trees 10 to 30 feet high, very straight, with smooth bark and 1 foot or more in diameter: leaves (only a few of the old ones remaining) 4 to 7 pairs, oblong-elliptical, obtuse at each end or submarginate, 8 to 15 lines long, 6 to 8 lines broad, finely and softly pubescent, especially beneath: racemes somewhat paniculate many-flowered:[1] calyx 2 lines long with very short teeth: petals 5 lines long: stamen tube truncate at apex: ovules 8 to 10, pods very thin, narrowed at each end, 2 to 5 inches long, 4 to 6 lines wide, more or less constricted, dehiscent: seeds 5 lines long, smooth and shining, pale salmon color. —In flower March 25 to April 8 (No. 332), in fruit September 16 to 30 (No. 717). Also collected in SW. Chihuahua in 1884 by Palmer. *Coursetia* (?) *Mexicana* Watson. Proc. Amer. Acad. XXI. 424.

Called "Nesco" or "polo piojo."

Common in the Alamos Mountain, where it is much used by the miners for "props." Only two trees seen near the base of the mountain. The trees near the settlements are mostly destroyed.

Desmodium plicatum Schl. and Ch. The plant has two or three slender stems and a few loose, hanging branches: racemes axillary or terminal, 6 to 8 inches long: flowers in verticillate clusters, crimson, becoming dark purple when dry. On the side of a ravine in the upper portion of the Alamos Mountain. March 26 to April 8. No. 347. We have not seen a description of this plant, but it corresponds with Bourgeau's plant referred here by Hemsley.

Rhynchosia precatoria DC. (?) This plant seems to belong to this species and to be different from *R. phaseoloides*, to which it is often referred by authors. The latter species can be distinguished by its glabrous shining pods and large flowers. Several very similar forms have been referred to *R. phaseoloides* by Mr. Watson, and while the two, as represented in the National Museum, seem distinct, a fuller representation may show they are the same species. Along a river bank near Alamos. March 26 to April 8. No. 378.

Eriosema grandiflorum Seem. About 1 foot high. Only a single plant seen. At the base of the Alamos Mountain. March 26 to April 8. No. 360.

Nissolia Schottii Gray. A climbing shrub, glabrous, leaves alternate; leaflets 5, thin, oblong to obovate (6 to 10 lines long), obtuse with appendiculate tip: flowers axillary, 2 to 5 (?) in a cluster: fruit 10 lines long, 1 to 2-seeded. This shrub was found climbing over fences, etc., about Alamos. September 16 to 30. No. 638.

Piscidia mollis, n. sp. Apparently a second species of this genus. A tree 15 to 25 feet high, a foot in diameter: leaves 11 to 13 pinnate; leaflets elliptical or broad lanceolate, acute, hoary, veins prominent beneath, indistinct above: fruit 4-winged, 2 somewhat abortive.—Common on ridges and plains about Alamos March 26 to April 8. No. 355. Called "palo blanco," from the excessively white appearance of the tree.

Parkinsonia aculeata L. Called "Guacoporo." A shrub 10 to 15 feet high. Common along river banks, ravines, etc. Alamos. March 26 to April 8. No. 375.

Cassia Tora L. One of the commonest plants of the region and found everywhere in waste places, especially in sandy soil. Alamos. September 16 to 30. No. 738.

Cassia biflora L. One to one and a half feet high. Grows on wooded hills about Alamos. March 26 to April 8. No. 393. September 16 to 30. Letter B.

Cassia emarginata L. A small tree 10 to 15 feet high, with a very large top. The abundance of orange-colored flowers makes it an attractive tree. This is the same as Palmer's No. 210, Chihuahua, 1885. Near Alamos. March 26 to April 8. No. 299.

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[1] All the flowers were more or less infested by a little encysted insect which Mr. L. O. Howard has described as a new genus Tanaostigma. For a description and an interesting account of this insect see Insect Life, vol. II.

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Lysiloma Acapulcensis Benth., var. **brevispicata**, n. var. A large tree, 30 to 40 feet high, 1 foot or more in diameter: spikes very short, 6 to 10 lines long.—Our specimens are without fruit but seem to differ from this species only in the very short spikes of flowers. Near Alamos. March 26 to April 8. No. 317. Palmer's plant from Jalisco (1885) is a shrub only 12 feet high. Pringle (1889) has collected the species in fruit from the same region. The trees are fast disappearing. Dr. Palmer says it resembles the Mesquit and is a good durable wood and makes a fine shade tree. Called "Tepehuaje."

Pithecolobium Mexicanum, n. sp. Small tree, 15 to 20 feet high, 1 foot in diameter: leaves with straight stipular spines (sometimes wanting) 1 line long; pinnæ 2 to 5 pairs; leaflets 5 to 10 pairs, oblong, 2 to 4 lines long, midribs a little eccentric, puberulent, as is also the rhachis and branches: inflorescence paniculate; flowers in heads, pedicellate; pedicels 1 to 2 lines long: calyx ½ line long: corolla 1½ lines long; the petals spreading or reflexed: stamens long, numerous: legumes oblong, somewhat constricted, 3 to 4 inches long, 1 inch broad, straight, its valves not elastic nor revolute: seeds 2, oval, 2 to 4 lines long.—In the Alamos Mountain. March 26 to April 8. No. 297. Seeming nearest *P. albicans* Benth., but peculiar in its pedicelled flowers. Commonly called "Chino." The tree has much the habit of the Mesquit and is valuable for its wood; it is now rarely seen and is fast becoming exterminated.

Sedum Alamosanum Watson. Proc. Amer. Acad. xxv. 148. This is the type, the descriptions being drawn from the vegetative plant. The floral characters are here appended: Racemes 2 to 8-flowered: flowers pinkish; sepals 1 line long: petals 1½ to 2 lines long: stamens 10. Collected on the side of a ravine, half way up the mountain. Alamos. March 26 to April 8. No. 273.

Gronovia scandens L. This plant climbs over bushes and to the tops of the highest trees. Alamos. September 16 to 30. No. 630.

Cuphea calcarata Benth. (?) Alamos. September 16 to 30. No. 729.

Schizocarpum Palmeri Cogniaux and Rose, n. sp. Stem long and slender with short close pubescence, intermixed with long scattered hairs, or becoming glabrate: leaves 1 to 4 inches long, on petioles of about equal length, entire to deeply 3-lobed: male flowers on peduncles 1 inch or more long, large, solitary, axillary, yellow; calyx short, tubular below, its lobes filiform; corolla funnel-form; stamens 3 with distended filaments and with anthers elongated, more or less curved; pistil none: fertile flowers subsessile; calyx and corolla as in male-flower; ovary glandular-pubescent, oblique, oblong, long rostrate, two-celled, each cell with 10 locelli in two rows; style slender 2 to 3 lines long, with large bilobed stigma; ovules in the locelli, solitary ascending (!); fruit 1½ inches long, turgid, ovoid, indehiscent or bursting irregularly, glabrous; seeds 3 to 4 lines long, glabrous, black, flattened, tapering to an obtuse apex.—Climbs over fences and bushes along water-courses and in cañons near Alamos. September 16 to 30. No. 725.

Echinopepon[1] **cirrhopedunculatus**, n. sp. Stems slender, climbing over bushes, glabrous except a bunch of white hairs at the nodes: leaves variable from orbicular with deep sinus and shallow lobes, to ovate with deep lobes and almost truncate base; the lobes and apex spiny tipped; the upper surface white papillose with short spiny hairs on the veins, below somewhat scabrous; petiole about the length of the leaves, spinescent with a cluster of white hairs at the base of the

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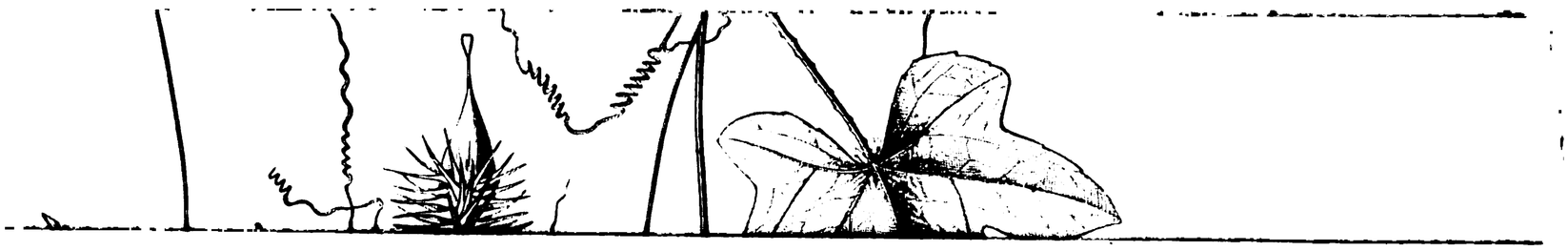
[1] There is still considerable difference of opinion among botanists as to the claims of this group to generic rank. As held by Cogniaux and other distinguished botanists this should be referred to **Echinocystis cirrhopedunculata**. He says, however, there is reason for either course—"vous verrez que j'ai été longtemps indécis avant de réunir ces deux genres dans ma monographie: on peut donner de bonnes raisons pour la réunion, et aussi pour la séparation." Still others would refer this to **Micrampelis cirrhopedunculata**., claiming that Rafinesque's genus should be substituted for *Echinocystis*. See Pitt. II. 127, etc.



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Eupatorium pauperculum Gray. Stem 18 inches to 2 feet high: inflorescence corymbose: flowers creamy white; proper tube of corolla long and slender. Grows in shade upon the upper part of the Alamos Mountain. March 26 to April 8. No. 281. According to Syn. Flora it is credited to Pringle alone from Arizona, but Parish collected it at Lowell, and Lemmon (Nos. 183 or 201) in 1881 found it at Santa Catalina Mountains, and distributed it as *E. pycnocephalum* Less.

Eupatorium Palmeri Gray. Proc. Amer. Acad. xxi. 383. Collected by Palmer in 1885 and recently (1890) by Pringle.

Barroetea subuligera Gray. Leaves serrate, not crenate. Alamos. Sept. 16 to 30. No. 677.

Brickellia Pringlei Gray. The plant grows from 1 to 1½ feet high; rare. Found in the higher part of the Alamos mountain. March 26 to April 8. No. 286.

Brickellia diffusa Gray. Found in the shade on the bank of a creek. Alamos. Sept. 16 to 30. No. 812.

Aster tanacetifolius H. B. K. Common on grassy creek bottoms. Alamos. Sept. 16 to 30. No. 654.

Erigeron Alamosanum, n. sp. Slender annual a foot or so high, simple, or more or less branched, slightly hirsute and granular: radical and lower leaves ovate to broadly spatulate, remotely toothed; upper leaves narrowly spatulate to linear: peduncles filiform: involucre 1 to 2 lines long, its bract slender, acute, with scarious margins and a brown gland along the back: rays about 50, slender, violet. —Grows half way up the mountan side in shade of rocks. Alamos. March 26 to April 8. No. 348. This is nearest *E. divergens*, but it has different pubescence, smaller heads, and fewer rays.

Baccharis glutinosa Pers. Six to eight feet high. Common along water-courses near Alamos. Sept. 16 to 30. No. 719.

Lagascea decipiens Hems. A common loose-growing plant 5 feet high: flowers orange-colored. Near Alamos. March 26 to April 8. No. 401.

Gnaphalium Sprengelii Hook and Arn. Collected near the top of Alamos Mountain, March 26 to April 8. No. 349. What appears to be the same species found Sept. 16 to 30. No. 678.

Milleria quinqueflora L. This plant is about 3 feet high. It grows along water courses in dense shade. Alamos. Sept. 16 to 30. No. 722.

Guardiola platyphylla Gray. A bushy shrub about 3 feet high. Common on the gravelly beds just above the river near Alamos. March 26 to April 8. No. 280.

Melampodium cupulatum Gray. Common along ravines, on hillsides, and in cañons. Alamos. September 16 to 30. No. 726. Also common at Agiabampo. It seems to have been collected by Palmer in 1869.

Franseria cordifolia Gray. A plant known only from the collections of Pringle & Parish. Dr. Palmer reports it as very common about Alamos on wooded hillside. It grows about 2 feet high and is quite bush-like. The young stems show an intense whiteness which disappears, somewhat, in drying. Alamos. March 26 to April 8. No. 391.

Tragoceros Mocinianus Gray. Proc. Amer. Acad. xxi. 388. Flowers creamy white. Very common on sandy bottoms and in cañons, but has only been collected before by Palmer in SW. Chihuahua in 1885. Pringle's No. 2450 from Jalisco distributed as this species answers better to *T. microglossus* DC. Alamos. September 16 to 30. No. 646.

Zinnia linearis Benth., var. **latifolia**, n. var. Low and somewhat spreading: leaves broader, lanceolate, 1 to 1½ inches long, 2 to 4 lines broad, 3-nerved: rays few, always 7: akenes with 2 unequal awns.—Alamos. March 26 to April 8. No. 352. Only a single specimen found near the base of the mountain. Although this plant does not seem to answer very well for *Z. linearis*, yet it is very similar in the color of the flowers and in its akenes, but on account of the scanty material it seems best to make it a form of this species.

Sclerocarpus spatulatus, n. sp. Several feet high with widely spreading branches: leaves alternate, 3 to 5 inches long including the petioles, coarsely serrate, a little scabrous above, appressed-pubescent below: involucre bracts 3 to 6 lines long, hirsute: rays yellow: central disk-flowers sterile.—Very common in woods and along streams about Alamos. September 16 to 30. No. 649.

Montanoa, sp. Three feet high with several stems: leaves opposite, ovate-lanceolate 3 to 5 inches long by 2 inches broad, acuminate, 3-nerved, sub-entire, hispid above, villous-pubescent beneath: involucre bracts very small (2 lines long) mucronate: chaffy bracts large (6 lines long), glabrous, with mucronate tip reflexed: rays not seen: disk-corolla 2 lines long; proper tube slender (1 line long), swollen at base, abruptly enlarged into the long slightly puberulent throat: style with bulbous base, hardened in age, attached or deciduous from the akenes: akenes glabrous, top-shaped, 1½ lines long, without pappus.—Alamos. March 26 to April 8. No. 361. A single plant found half way up the mountain side. It is called "Bolallaqui;" it exudes from the stem a gum which is much valued by the common people for its healing properties. Although the number of rays is not known, it clearly belongs to De Candolle's § *Acanthocaphae*. By comparing the flowers with those of *M. grandiflora* (Palmer's No. 492 of 1886), I find that the corolla is shorter and less pubescent and the latter lacks the bulbous style. *M. subtruncata* Gray has still shorter corolla (1½ lines long) with a very short proper tube and a more abrupt throat, but possesses the bulbous base of our plant. The akenes of *M. subtruncata* have a thick margin forming a low crown which is not possessed by the other two. *M. patens* has a corolla and akene with crown similar to *M. subtruncata*, but with or without a small bulbous style-base. There seem to be very good specific characters in the structure of the disk-flowers.

Montanoa (**Enocoma**), sp. Large, loose shrub, 8 to 10 feet high: leaves 2 to 6 inches long (including the ½ inch petiole), lanceolate, with acuminate tip and cuneate base, scabrous above, hirsute below, coarsely serrate or sub-entire: flowers in corymbose clusters: pedicels slender, hairy: involucre in one series of about 5 bracts: rays 2 to 4, very small, white: disk-flowers 3 to 5: chaff very hairy on the back, narrowed into a mucronate tip. Alamos. March 26 to April 8. No. 394. This is a loose-growing shrub with many stems, and the habitof the elder.

Zexmenia podocephala Gray. About 3 feet high. Only a single plant seen near the base of the mountain. Alamos. March 26 to April 8. No. 363.

Zexmenia fruticosa, n. sp. Upright shrub, 8 feet high: leaves lanceolate to ovate-lanceolate, 2 to 4 inches long sharply serrate, scabrous: heads terminating the branches, or in corymbs of 3 to 5: involucre bracts in 2 or 3 series, imbricate, hispid: rays small, yellow: akenes slender, 2 lines long, with awns as long or longer.—Common along streams and on mountain side about Alamos. September 16 to 30. No. 645.

Viguiera montana, n. sp. Two to three feet high, slender, scabrous: leaves opposite (except some upper bract-like ones), linear-lanceolate, 4 to 5 inches long by 3 to 7 lines broad, acuminate, sessile, 3-nerved, scabrous above, prominently reticulated below: head turbinate, 6 lines long, with bracts closely imbricated in 5 or 6 series: bracts oblong, obtuse, or abruptly mucronate, conspicuously ciliate, with soft white hairs: rays small, oblong, 5 or 6: disk-flowers 2 lines long: akenes 2 to 2½ lines long, villous-pubescent: pappus conspicuous, with two unequal awns and with several intermediate paleæ, laciniate, a line long.—Near the summit of the mountain, under shade of oaks; at the time of gathering, almost past blooming. Alamos. March 25 to April 8. No. 340. A peculiar *Viguiera*, differing from all other species we have examined, in its many series of imbricating involucre bracts; in this respect it is most like *V. Purisimæ*. The stems are slender and purplish and the base has a tuft of wool as in the native species of *Perezia*. Alamos. March 30 to April 8. No. 340. It resembles *V. blepharolepis*, but the heads are smaller, bracts more numerous and glabrous on the back.

Tithonia Palmeri, n. sp. Four to six feet high, more or less hispid-pubescent: lower leaves very large, over 1 foot long, 10 inches broad with a somewhat cordate base; upper leaves oblong with truncate or cuneate base coarsely serrate; petioles more or less winged, scabrous and hispid-pubescent: heads on long peduncles (little thickened above), small, 6 to 9 lines long: involucre bracts about 2 series, short; the outer ones narrow and acute; the inner ones broad and obtuse: akenes 3 lines long, with 1 or 2 awns and 3 intermediate paleæ: rays oblong, 6 lines long, "yellow to orange."—Along water-courses and in cañons. Alamos. September 16 to 30. No. 721. It resembles *T. tagetifolia*, but with different pubescence, involucre, rays, and pappus.

Tithonia (?) fruticosa Canby and Rose, n. sp. Shrubby, 5 to 10 feet high; younger part silky-pubescent: leaves alternate, lanceolate, acuminate, 6 to 8 inches long (including the petioles) cuneate at base, slightly crenately-toothed, somewhat reticulated and soft pubescent below; appressed and somewhat scabrous above: heads on short axillary or terminal peduncles, 1 inch high: involucre campanulate of 3 or 4 rows of broad, oblong, and obtuse bracts: ray-flowers pistillate and sterile, 12 to 15, the slender ligules 1½ inches long: akenes 3 lines long, pubescent: pappus composed of united scales forming a short crown.—Only two plants seen. Among bushes near a water-course. Alamos. March 26 to April 8. No. 303. Dr. Palmer says that at a distance this plant appears to be a beautiful shrub, with numerous, large, bright-colored flowers. The stem is 4 inches in diameter at the base and the wood resembles the Elder. This species is very different from the rest of the genus in its tall shrubby habit.

EXPLANATION OF PLATE V.—A branch showing leaves and head; natural size; *a*, section of woody stem.

Encelia Mexicana Mart. Flowers yellow, somewhat pinkish on drying. Grows along the creek bottom near Alamos. September 16 to 30. No. 741.

Bidens (Psilocarpæa) Alamosana, n. sp. Perrennial; 4 feet or less high, glabrous throughout: leaves mostly 3-parted, sometimes 5-parted, upper ones often simple; segments lanceolate, 2 to 3 inches long, acute, cuneate at base, sharply serrate with erect teeth: heads broad, 6 to 9 lines long: rays broadly oblong, 6 to 8 lines long, sterile (as in most of the species): disk-flowers 5 to 6 lines long: anthers yellow: style-branches broad, abruptly tipped with a linear appendage: ray-akenes abortive, 2-awned; disk-akenes very slender, 5 to 9 lines long, 4-angled, glabrous, becoming curved outward and with 4 to 5 retrorsely barbed awns.—Very rare; in the shade along a water-course near Alamos. March 26 to April 8. No. 278. September 16 to 30. Letter *E*. Dr. Palmer says it is a loose grower with many branches and abundant flowers, which have the strong odor of the marigold.

EXPLANATION OF PLATE VI.—Plant natural size; *b*, akene much enlarged.

Calea scabrifolia Benth. and Hook. A plant with two or more stems from the base, about 2 feet high: largest leaves 5 inches long and 2 inches broad: "flowers white:" ray-akenes without pappus: disk-akenes 1 line long. Along ravines in the higher portions of the Alamos Mountain. March 26 to April 8. No. 283. With this should be combined *Perymenium album* Watson.

Perityle effusa, n. sp. Slender annuals, much branched, more or less glandular or glandular-pubescent with some villose hairs: leaves mostly opposite, a few alternate, more or less deeply cleft: heads small: rays small, numerous, white: disk-flowers yellow with slender proper tube gradually passing into the throat: style-branches slender, acuminate-tipped: akenes small, ½ line long, oblong, straight or slightly curved, with callose and villose margin; pappus a delicate paleaceous crown, with two short unequal awns.—In the shade half way up the mountain near Alamos. March 26 to April 8. No. 350. Also very common along the river bank. No. 377. It has also been collected by Palmer in southwest Chihuahua (No. 238, 1885); and by Pringle in southern Arizona, 1882.

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Trixis obvallata H. & A. It grows about 2 feet high: the flowers are yellow, with a strong pine odor. It is commonly called "Yerba del aira," and is used extensively by the common people in preparing a medicine for colds. Alamos. March 26 to April 8. No. 290. The plant differs from the figure in Beechey's Report in having entire leaves, but it seems the same as Pringle's No. 2431, referred here by Mr. Watson. It is certainly very near *T. longifolia;* Parry and Palmer's No. 1121, referred here by Mr. Hemsley, is the same as our plant.

Lobelia laxiflora H. B. K. Only a few plants found in a deep ravine in a portion of the Mountain of Alamos. March 26 to April 8. No. 288.

Heterotoma tenella[1] Mart. & Gal. This little plant is very variable; our specimen being either simple, 1 to 2 inches high, 1 to few flowered; or taller, 10 to 12 inches high, and often branching. It grows in moist spots half way up the mountain side. Alamos. March 26 to April 8. No. 289. Here belong also Bourgeau's No. 1722, distributed as *Lobelia Cliffortiana*, and also so referred by Hemsley in Biol. Cent.-Amer. ii. 266. The Smithsonian Institute distribute under the same name a plant from Orizaba, collected by Botteri (No. 1191), which is also this species: this plant is tall, with long filiform branches. All of these specimens differ from the original description in being puberulent below.

Metastelma latifolia, n. sp. High climbing shrub, nearly glabrous: leaves oblong to lanceolate, roundish at base, obtuse with abrupt appendiculation, an inch long, shortly pedunculate, margin and midrib pubescent (especially above): umbel short-peduncled, 3 to 7-flowered: pedicels 1½ lines long: flowers very small, less than 1 line long: calyx lobes short, acute: corolla white, the oblong, obtuse lobes densely puberulent on their inner margins: column very short if any: lobes of the crown about equal the stigma.—Climbing over the tops of bushes, it forms a compact mass of sweet-scented flowers. Alamos. September 16 to 30. No. 665. According to the recent Revision of Dr. Gray (Proc. Amer. Acad. xxi.) it comes in the sub-section containing *M. Pringlei;* but the foliage is different.

Buddleia verticillata H. B. K. A large bushy plant, early glabrate, 5 to 8 feet high, with woody stems and rough bark: lower leaves ovate, 10 inches long and serrate; upper leaves lanceolate with cuneate base, entire: heads on peduncles 4 to 8 lines long: flowers yellowish with "honey-like odor." Common on good soil everywhere about Alamos. March 26 to April 8. No. 279.

Erythræa Madrensis Hemsl. Biol. Cent.-Amer. ii. 346. Collected on the top of Alamos Mountain. March 26 to April 8. No. 405. Seemann's plant is the only one referred here, but it seems to me that Parry and Palmer's No. 567 (collected in 1878) should also be referred here.

The variety (No. 2597) in Mr. Pringle's collection is lower and more spreading, and with more twisted anthers.

Gilia Sonoræ Rose. Contr. Nat. Herb. i. 90. This plant is reported as very abundant on the sandy river bottoms. Alamos. March 26 to April 8. No. 396.

Lœselia glandulosa Don. Common. Alamos, March 26 to April 8. No. 399.

Cordia (Sebestenoides) Sonoræ, n. sp. A small tree 10 to 20 feet high, 6 inches in diameter; younger parts puberulent: leaves elliptical, 2 to 4 inches long, obtuse, entire, a little scabrous above: racemes short and dense: calyx cylindrical, 5 to 6 lines long: corolla white, 15 lines in diameter: stamens 5 to 7, exserted.—A common tree in low places and on hillsides. About Alamos. September 16 to 30. No. 376.

Called Palo-de-Asta, and is one of the most beautiful of flowering trees; the whole tree is covered with large clusters of white flowers (becoming lavender by age), a short distance away entirely hiding from view the large shining leaves. The tree has a symmetrical top and is well worthy of cultivation.

EXPLANATION OF PLATE IX.—A flowering branch and showing flowers and leaves; natural size.

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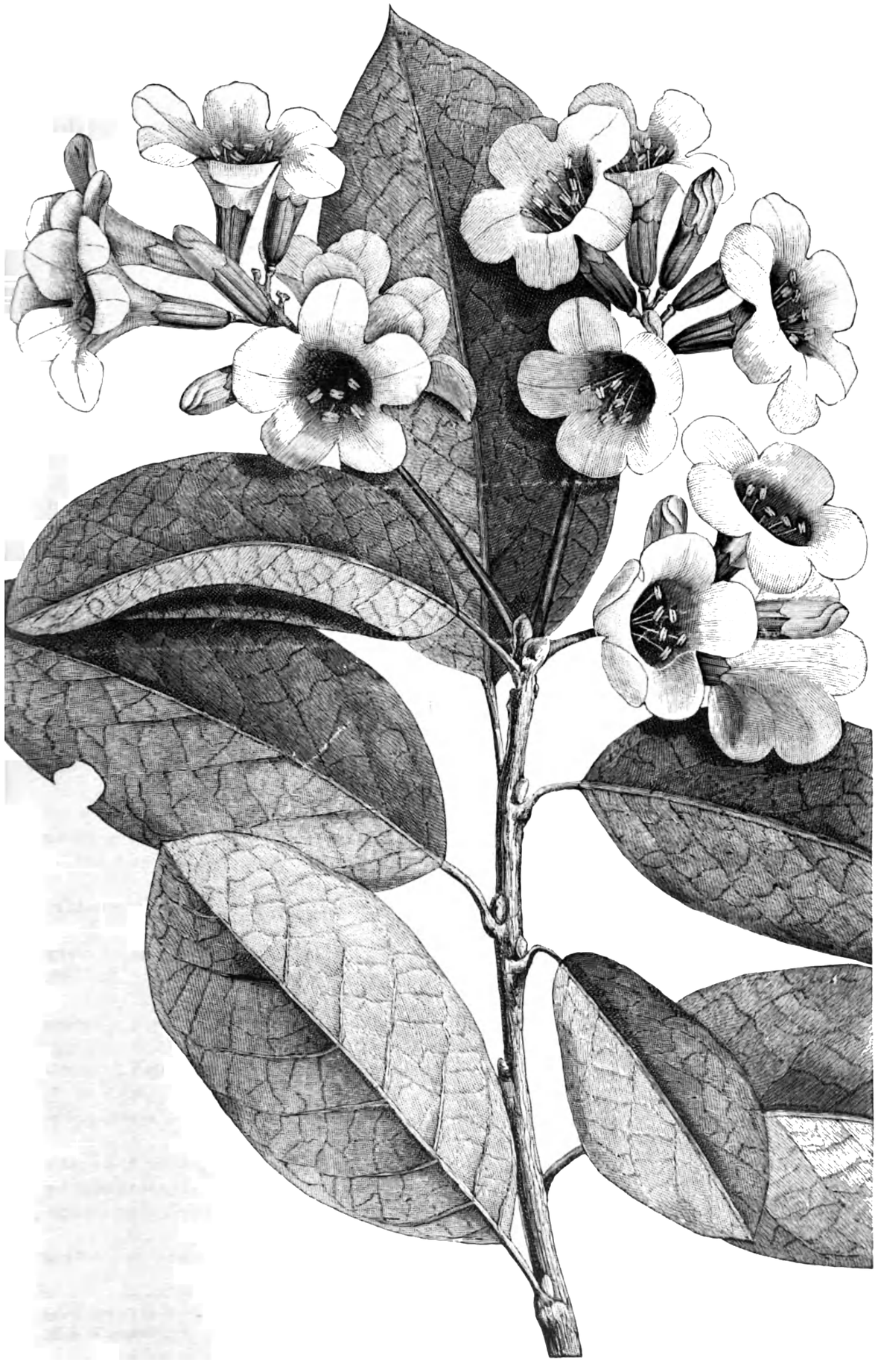
[1] Another species of this genus has been wrongly distributed, viz, Palmer's No. 43 (1886), from Jalisco, referred to *Lobelia subnuda* Gray, Proc. Amer. Acad. xxii. 433, which is *H. arabidoides* B. & H.



CORDIA PALMERI, n. sp.

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Ipomœa alata,[1] n. sp. Slender, climbing, glabrous throughout: leaves thin, triangular in outline, 2 to 3 inches long, with broad open sinus, acuminate: peduncles 2 to 4 inches long, somewhat winged, 1 to 3-flowered: pedicels 9 lines long, clavate thickened in fruit and deciduous with it: calyx "brick-red," 9 lines long, closely enveloping the ripe capsule: corolla "scarlet," salver-form: tube 2 inches long; limb 1 inch broad: stamens included or the anthers (2 to 4 lines long) barely protruding: style included: stigma 2-lobed: capsule globular, 6 lines in diameter, 2-celled, 4-seeded: seeds oblong, 3 to 4 lines in length, glabrous, black.—Collected along creek bottoms and in cañons. It climbs over fences and bushes at Alamos. September 16 to 30. No. 706. A peculiar species and seemingly nearest *I. rhodocalyx*. *I. alatipes* has a similar winged peduncle, but the flowers are 3 inches in diameter.

EXPLANATION OF PLATE X.—Natural size of plant shown; *a*, seed.

Ipomœa Quamoclit L. Very common at Alamos. September 16 to 30. No. 707.

Ipomœa Palmeri Watson. Proc. Amer. Acad. XXIV. 63. "Flowers creamy-white, open at night." Common about Alamos, climbing over trees, bushes, fences, etc. March 26 to April 8. No. 305. This species is only known from Palmer's (No. 75) 1887 collection at Guaymas.

Ipomœa, sp. Only a few plants found, climbing over bushes. The corolla is purple. Alamos. March 26 to April 8. No. 304.

Physalis, sp. A little viscid: flowers small, yellow with brownish eye. It grows in a shady cañon. Alamos. September 16 to 30. No. 709.

Solanum diversifolium Schl. About 6 feet high with loose branches: flowers white. Collected in a shady ravine near the summit of the mountain. Alamos. March 26 to April 8. No. 364.

Solanum Fendleri Van Huck. and Müll. About 3 feet high. Only a single plant found and this in poor condition. At the base of Alamos Mountain, March 25 to April 8. No. 364. This approaches nearest Fendler's No. 254, from Panama, of any specimen seen in Gray or National Herbarium, but the pubescence is redder, stems somewhat thorny, and racemes shorter.

Both these plants are merely tentatively referred as above as better material may place them quite differently.

Solanum (Androcera) Grayi, n. sp. A slender annual, 1 to 2 feet high, stems more or less thorny: leaves pinnately parted with ovate to oblong segments irregularly toothed or cleft: racemes few-flowered: pedicels of the flower very short: of the fruit 6 lines long, somewhat thickened: corolla small, 4 to 6 lines in diameter, white: stamens irregular, 4 short, 1 long and curved: fruit very prickly.—Only a few plants found in shade near Alamos. September 16 to 30. No. 633. Here should be referred *S. sisymbriifolium* Gray, Proc. Amer. Acad. XXI. 434. Although a larger plant than Palmer's present plant, the flowers are much smaller than in *S. sisymbriifolium*.

Solanum Amazonium Ker. A loose growing shrub 2 to 3 feet high with showy purple flowers. Here should be referred No. 237 (1885) of Palmer from SW. Chihuahua. It is *S. elœagnifolium* Gray, not Cav. Proc. Amer. Acad. XXI. 434. It differs conspicuously from *S. elœagnifolium* in its slender, curved and dissimilar stamens, and in its erect, fruiting pedicels: In the sterile flowers the calyx is naked and three of the anthers much longer (6 lines long); in the fertile and lower flowers the calyx is armed with prickles and the anthers nearly equal, or often longer. Near Alamos. March 26 to April 8. No. 314.

Solanum verbascifolium L. This is a shrub 4 to 5 feet high; its fruit is "orange-colored." Common along river banks among bushes. Alamos. March 26 to April 8. No. 392.

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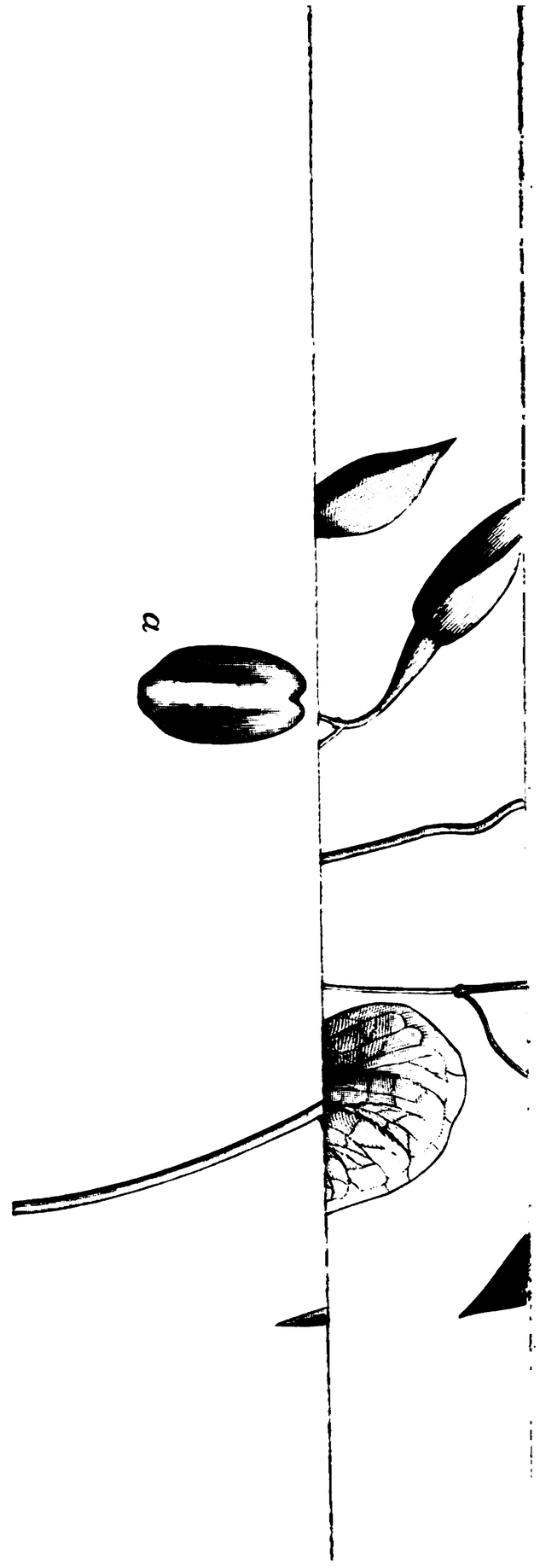
[1] From the above letter of Sir Joseph Hooker is also taken the following note: "Your *I. alata* may also, Mr. Hemsley thinks, be new and belongs to the same group a, *I. alatipes*.



IPOMŒA ALATA, n. sp.

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Nicotiana glauca Graham. At Alamos it is called "Maraquiana;" at Guaymas, "Don Juan." The leaves are laid upon the head of patients to relieve headache. About Alamos. March 26 to April 8. No. 331.

Nicotiana trigonophylla Dunal. Common at Alamos on hillsides and in old fields. March 26 to April 8. No. 308.

Linaria Canadensis Dumont. Abundant on the sandy river bottoms. Alamos. March 26 to April 8. No. 395.

Mimulus floribundus Dougl. This plant was found abundantly along a water-course, half way up the mountain. It has a strong odor like musk. Although common along the border we have no specimens from Mexico. Alamos. March 26 to April 8. No. 338.

Mimulus cardinalis Dougl. The calyx teeth are more slender and acuminate. Only two small plants seen. Found half way up the mountain. Alamos. March 26 to April 8. No. 328.

Mimulus luteus L. Common along a water-course near Alamos. March 26 to April 8. No. 276.

Stemodia Palmeri Gray. Proc. Amer. Acad. XXI. 403. The corolla is dark purple and the lobes of the lower lip are broad and retuse; the anther cells are unequal in size. Collected on a rocky ridge in the shade near Alamos. March 26 to April 8, No. 327, and September 16 to 30, No. 727.

Stemodia durantifolia Swartz. This plant was found along a water-course half-way up the mountain. Alamos. March 26 to April 8. No. 337.

Conobea intermedia Gray. Collected on a rocky ridge. Alamos. September 16 to 30. No. 728.

Aphyllon Californicum Gray. This plant was found growing under bushes in a low valley. The flowers are purple. Alamos. March 26 to April 8. No. 318.

Tabebuia Palmeri, n. sp. A large tree 18 to 25 feet high: leaves opposite; leaflets 4, 2 to 5 inches long, oblong, obtuse at base, somewhat acuminate glabrous or nearly so: flowers in close clusters at the ends of the naked branches: calyx small, 2 to 3 lines long, covered with a mealy pubescence: corolla 1½ to 2 inches long with ample tube, mealy-puberulent, white and purplish with yellow spots: capsules terete, 15 inches long, 8 to 10 lines in diameter, straight or nearly so, smooth and ribless: seeds very numerous in several series, oblong, 12 to 18 lines long by 6 lines broad, winged at the ends.—In ravines near the base of the mountain. Alamos. March 26 to April 8. No. 320. Called "Amapa." A beautiful flowering tree with its large Paulownia-like flowers, which Dr. Palmer describes as light-mauve at base, with white and yellow patches; they quickly fade. Only a few flowers were found at the ends of the naked branches. Two leaves, each with 4 leaflets, were found on the tree and Dr. Palmer says the new ones had not begun to appear; there was an abundance of long black pods. The trunk of the tree is covered with a thick, rough bark, resembling the oak; the wood is hard and durable and is generally used for rafters in the construction of houses in this region. That this is a *Tabebuia*, as considered by Benth. and Hook., there can be very little doubt, although the inflorescence is a little more compact than the known species of this genus. It is a little surprising that such a handsome tree of some economic value has until now remained unknown.

EXPLANATION OF PLATE XI.—Upper part shows flowers, lower part stem and leaves; natural size; a, seed; b, piece of bark; c, section of stem; d, pod.

Calophanes bilobatus Seem. Stem procumbent with branches ascending, glandular, pubescent throughout: leaves 1 to 2 inches long, including the petiole, acute, somewhat tapering at base: flowers in glomerate clusters with small, foliaceous bractlets shorter than the calyx: calyx 6 lines long, cleft to the base (or becoming so) into subulate lobes: corolla lilac, 8 lines long, its tube 5 lines long: style pubescent; stigma linear, hardly oblique: capsule 4 lines long, glabrous. Edge of a ravine at Alamos. March 26 to April 8. No. 402. The plant has a very offensive odor. Bourgeau's specimen also has the pubescent style. Collected recently by Pringle.

Justicia caudata Gray. Proc. Amer. Acad. xxi. 405. Flowers "mauve-colored:" capsule (including the short thick stipe) 6 to 7 lines long: seeds orbicular. Only a single plant found, in a shady ravine. Alamos. September 16 to 30. No. 666. This seems to be the same plant which Palmer collected in 1885.

Dicliptera resupinata Juss. But a single large plant seen. Alamos. September 16 to 30. No. 632.

Lantana vetulina Mart. & Gal. About 3 feet high: flowers white. Common on wooded hills and slopes. Alamos. March 26 to April 8. No. 379.

Lantana involucrata L. Alamos. September 16 to 30. No. 635.

Lantana macropoda Torr. Very common at Alamos. September 16 to 30. Nos. 636 and 740.

Bouchea dissecta Watson. Proc. Amer. Acad. xxiv. 68. The flowers in these specimens are blue. Collected at Agiabampo, October 3 to 15. Letter G.

Dr. Palmer says he obtained this plant at Alamos also.

Privà echinata Juss. Flowers "light purple." Only a single specimen seen, growing in shade in a creek bottom. Alamos. September 16 to 30. No. 745.

Castilleia tenuifolia Benth. The bracts and calyx are scarlet. Only a few plants seen near the summit of the mountain. Alamos. March 26 to April 8. No. 366.

Verbena Aubletia L. This plant is very common in old fields and valleys about Alamos. March 26 to April 8. No. 307.

Verbena ciliata Benth. This plant is used as a pot-herb by the Mexicans, who call it Verbena. March 26 to April 8. No. 326.

Hyptis suaveolens Poit. Flowers said to be white. Only one or two nutlets mature. Called by the Mexicans "confituria;" they use it as a tea to abate fevers. Alamos. Sept. 16 to 30. No. 734.

Hyptis Seemanni Gray. Proc. Amer. Acad. xxi. 407. Alamos. March 25 to April 8. No. 398.

Salvia (Calosphace) Alamosana, n. sp. Two or three feet high, with many lateral branches, more or less pubescent when young: leaves 2 to 3 inches long, on very short petioles, narrowly lanceolate, cordate at base, with very broad rounded crenatures, silky when young, slightly hispid or glabrate in age: calyx 2 lines long; upper lip entire; lower, 2 toothed: corolla blue, about 5 lines long; its upper lip short, erect, pubescent: lower portion of the connective deflexed, connate, and broad.—Grassy slopes half way up the mountain side. Alamos. March 30 to April 8. No. 345. This plant does not seem to agree with any of our Mexican Salvias.

Salvia privoides Benth. This plant is common in the shade along water-courses and cañons. Alamos. Sept. 16 to 30. Nos. 680, 681.

Salvia hyptoides Mart. & Gal. Flowers pale blue. Found in shade of bushes in a mountain cañon. Alamos. Sept. 16 to 30. No. 682.

Salvia elegans Vahl. This plant grows about 2½ feet high. It is a common plant throughout Mexico; only two plants were seen; these were found in the upper part of the mountain in a shaded ravine. Alamos. March 26 to April 8. No. 292.

Stachys coccinea Jacq. This plant has showy "salmon-colored" flowers. The filaments are nearly equal and villose as in *Physostegia*, although Dr. Gray says in Syn. Flora (p. 347) "filaments naked." Only a few plants were seen. Found in a shady ravine near the summit of the mountain. Alamos. March 26 to April 8. No. 365.

Teucrium Cubense L. Common in gardens and fields. Alamos. March 26 to April 8. No. 277.

Boerhaavia Alamosana, n. sp. Stems 12 to 15 inches high, branching throughout, glabrous or below somewhat scabrous-pubescent; leafy below; leaves linear to narrowly lanceolate, 1 to 2 inches long (including the petiole), whitish below: racemes slender, spike-like; bracts and bractlets purplish ovate-lanceolate, caducous: perianth white, drying yellowish, 2 lines broad: stamens (4) and

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styles 3, thrice dichotomous; seeds 3, 2 lines long: male flowers more numerous; calyx 5-parted, petals 5, white, glabrous without, villose within; stamens 12 to 13 with glabrous filaments.—On sandy ridges and along creek bottoms under shrubs near Alamos. March 26 to April 8. No. 324. Found in flower and fruit Sept. 16 to 30. No. 742. Belongs to the subsections *Cyclostigma*, perhaps near *C. heterocalyx*.

Acalypha polystachya Jacq. The larger leaves 4 to 5 inches long on petioles 5 to 6 inches long; the long filiform lobes of the involucre, ciliate with glandular-tipped hairs. Grows along water-courses near Alamos. Sept. 16 to 20. No. 724. This is *A. filifera* Watson, which seems to be only a form of the above species.

Acalypha subviscida Watson. Proc. Amer. Acad. xxi. 440. Leaves with shorter petioles than in the type; fertile spikes, sometimes staminate for half the length above; style-branches, long, purplish; staminate spikes, occasionally 2 or 3 from a common peduncle, generally with an abortive pistillate flower at tip. Collected in a cañon near Alamos, Sept. 16 to 30. No. 641.

Sebastiania Palmeri, n. sp. A loose-growing shrub 5 to 8 feet high, or sometimes a small tree 10 feet high, 5 inches in diameter, glabrous, dicœcious: leaves lanceolate, to narrowly lanceolate, 2½ to 4 inches long, including petiole 6 lines long, slightly dentate: female flowers solitary, sessile; calyx 3-parted, its lobes oval, serrate; petals none; styles 3, connate at base, entire; ovary 3-celled; valves contorted after dehiscence; seeds 1 in each cell, globose, 2 lines in diameter without a strophiole.—Seen in various places about Alamos. March 26 to April 8. No. 403; also in September. Letter A. The natives speak of it as "Palo de la flecha que de los semas brinca doras"—"the arrow-wood which produces the jumping beans." The generic position of the plant in which *Carpocapsa* is found has long puzzled the botanist and entomologist. This is partly due to the fact that the fruit which is stung (and this is the kind that is generally collected) appears very different from those developed naturally. While this is evidently a new species, still some uncertainty exists as to its position. Its relationship is doubtless with *Sebastiania*, but it has close affinities with both *Gymnanthus* and *Bonania;* in habit it seems closer to the latter than to either the other two, however its minute or obsolete calyx seems to be sufficient to keep it out of that genus. It has the rudimentary calyx and connate stamens of *Gymnanthus*, but has dehiscent and contorted carpels which are thin walled; carpophore wanting; leaves serrate: all of which is at variance with this genus, but corresponds with *Bonania*. Dr. Palmer says the boys gather these beans, for which they find a ready market at Alamos. None of the beans which had been stung were obtained, as they had all been carefully gathered before Dr. Palmer's visit and none of the so-called "jumpers" could be obtained at Alamos at this time. The plant produces an abundance of milk, which is said to be used by the Indians for poisoning their arrows. The milk readily crystallizes into a clear, rather brittle substance, and is a violent cathartic. The wood is very hard.

Ficus, sp. A large tree with many wide-spreading branches, 2 feet in diameter, with thick, corky bark: leaves alternate, oblong-lanceolate, acute at both ends, 4 to 6 inches long, on a petiole 9 to 16 lines long: fruit nearly globose, 10 lines in diameter on a very short pedicel (2 lines long). Near Alamos. March 26 to April 8. No. 367. The fruit is very abundant and edible and is called "Chalala." Dr. Palmer collected the same species at Hacienda San Miguel in southwest Chihuahua in 1885.

Tillandsia recurvata L. This plant was found growing on oaks. Alamos. March 26 to April 8. No. 372.

Heteranthera limosa Vahl. Alamos. September 16 to 30. No. 731.

Commelina Virginica L. Alamos. September 16 to 30. No. 663.

Tradescantia Palmeri, n. sp. Stems erect, 6 to 9 inches high, glabrous, or with a pubescent line: leaves lanceolate, 1 to 2½ inches long, glabrous except the ciliate margin (and sheath), sessile, acute: umbels pedunculate (1 to 2 inches long), 4 to 9-flowered: pedicels 3 to 5 lines long: sepals oval, 1½ lines long: petals white, 1½ lines long: stamens 6; filaments naked, the 3 longer with dilated filaments; the 3 shorter almost sessile: style short: cells 3, each with 2 ovules: seeds 3, triangular, 3-lobed, the margins revolute.—Found in moist shady places among rocks near Alamos. September 16 to 30. No. 737.

It differs from most species of *Tradescantia* in its one-seeded cells; the ovules however are two, the lower being abortive. The filaments differ considerably in length, but the anthers are but slightly different. It is perhaps nearest the *T. amplexicaulis* and yet I am not certain this is the proper section. It resembles *T. Disgrega* very much in habit.

Mr. Watson has suggested a relationship with *T. geniculata* from which species it differs in having the lower surface of the leaves glabrous (at least not villous): unequal stamens, with glabrous filaments: seeds of different shape, glabrous and alveolate.

Leptorhræo tenuifolia, n. sp. Slender annual, erect or a little spreading and rooting at the joints, glabrous or pubescent in lines: leaves linear, 1 to 1½ inches long, 1 to 2 lines broad, glabrous except a little pubescence at base: peduncles from the axils of the leaves, mostly in clusters of 3 or 4, 9 to 12 lines long: flowers in umbellets of 2 to 4, sometimes solitary, glabrous: sepals 1 line long: petals, 1 line long, blue: stamens 6, of two lengths: capsule 3-celled, 3-seeded. —It grows in shade along water-courses at Alamos. Sept. 16 to 30. No. 744.

This makes the second species for this genus and confirms the wisdom of separating it from *Tradescantia*, to which it is closely related and with which the type species had for nearly forty years been associated. It differs from *Tradescantia* chiefly in having but 1 ovule in each cell, and in the shape of the seeds and the central position of the hilum. It seems to be closely related to *L. filiformis* of Southern Mexico, but appears quite distinct, differing especially in its more erect habit, narrower and longer leaves, glabrous pedicels and calyx, and in the inflorescence.

Quercus, sp. Only sterile branches found: leaves glabrous, narrowly lanceolate, 2 to 3 inches long, with spiny-toothed margin. Alamos. March 26 to April 8. No. 368.

Quercus grisea Liebm. Alamos. March 26 to April 8. Nos. 369–370. "Nos. 369 and 370 probably belong to the same species, No. 369 being a vigorous shoot." C. S. Sargent.

Quercus Kelloggii (?) Newberry. "Probably a narrow leaved form of this species; certainly there is no other described species to which it can be referred." C. S. Sargent. Alamos. March 26 to April 8. No. 371.

The above oaks were found on the summit of the Alamos mountains and have neither flower nor fruit. They are mostly stunted forms 15 to 20 feet high and 1 to 1½ feet in diameter.

Eleocharis[1] **capitata** R. Br. The stems are about 3 inches high, and peculiar in being recurved. Alamos. March 26 to April 8. No. 411.

Eleocharis[1] **palustris** R. and S. var. **glaucescens** Gray. The achenia in these specimens are triangular, but in all other respects the characters are those of this form; and triangular achenia sometimes occur in *E. palustris*.

Fimbristylis diphylla[2] Vahl. Found in a moist place near a creek. Alamos. September 16 to 30. No. 699.

Cyperus incompletus[2] Link. Grows sparsely in wet places near Alamos. September 16 to 30. No. 701.

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[1] Determined by F. C. Coville. [2] Determined by N. L. Britton.

Cyperus Schomburghkianus[1] Nees. Found in a shady damp spot under bushes. Alamos. September 16 to 30. No. 703.

Cyperus.[1] Too young. No. 747.

Paspalum[2] **setaceum** Michx, var. **pubiflorum** Vasey, n. var. Spikelets somewhat glandular-pubescent. Grew in a swampy place, many plants together. Alamos. September 16 to 30. No. 704.

Eriochloa aristata Vasey. Bull. Torr. Bot. Club. xiii. 229. Found in a cultivated field, used for fodder, mixed with other grasses. Alamos. September 16 to 30. No. 692.

Panicum capillare L. var.? Alamos. September 16 to 30. No. 690.

Panicum fasciculatum Swartz. Alamos. September 16 to 30. No. 694.

Panicum Hallii Vasey. Bull. Torr. Bot. Club. xi. 61. Found in a ravine near Alamos. September 16 to 30. No. 695. Also at Agiabampo in low wet places. September. No. 750.

Panicum sanguinale L. Cultivated field near Alamos. September 16 to 30. No. 685.

Setaria pauciseta Vasey. Bull. Torr. Bot. Club. xiii. 230. The seed of these grasses had shelled out. The tops were very full. The seeds and stems had become a golden color. The natives pull these grasses from cultivated fields and sell them at stables at Alamos, near which they grow. September 16 to 30. Nos. 684 and 686.

Cathestechum erectum Vasey & Hackel. Grows in thick lawn-like patches often completely hiding the ground; on hillsides and level places near Alamos. September 16 to 30. No. 705.

Manisuris granularis Swartz. Found at one locality only; on a hillside near Alamos. September 16 to 30. No. 700.

Sorghum halepense Linn. Cultivated field near Alamos. September 16 to 30. No. 687.

Aristida scabra Kunth. Near the summit of the mountain. Alamos. March 26 to April 8. No. 410; also, in small bunches, many together, among underbrush on hillsides. September 16 to 30. No. 702.

Mühlenbergia Alamosæ Vasey. Bot. Gaz. xvi. 146. Perennial, culms closely tufted, 2 to 2½ feet high, slender, wiry, many (6 to 9) jointed, leafy, mostly unbranched: lower leaves approximate, erect, the upper distant, often overtopping the panicle, bud-like protrusions at the lower nodes: panicle capillary, spreading, 3 to 4 inches long, pyramidal, branches erect-spreading, 1 to 2 inches long, flowering nearly to the base: pedicels short to 2 or 3 times as long as the spikelets: spikelets purple, 1½ lines long, empty glumes half as long, ovate, acuminate or awn-pointed, 1-nerved: flowering glume lance-linear, 3-nerved, 1½ lines long, 2-toothed and with an awn 3 to 4 times as long: palet equaling its glume, bifid at apex; both palet and glume hairy at the base. Found in a shady arroyo in the mountain. Alamos. March 26 to April 8. No. 407. This is the type.

Mühlenbergia distichophylla Kunth. Collected near the summit of the mountain. Alamos. March 26 to April 8. No. 409.

Mühlenbergia dumosa Scrib. Common along water-courses in the mountain. Alamos. March 26 to April 8. No. 406.

Mühlenbergia ramosissima Vasey. Bull. Torr. Bot. Club. xiii. 231. In fields near Alamos. September 16 to 30. No. 691.

Mühlenbergia virescens Trin. Near the summit of the mountain. Alamos. March 26 to April 8. No. 408.

Sporobolus confusus Vasey. Grows in thick patches along water-courses. Alamos. September 16 to 30. No. 696. This is *Sporobolus ramulosus* of American authors, not of Kth. It is *Vilfa confusa* Fourn.

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[1] Determined by Dr. N. L. Britton.

[2] Gramineæ determined by Dr. Geo. Vasey.

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Adiantum emarginatum[1] Hook.

Adiantum thalictroides[1] Willd. Found near water-course at Alamos. March 26 to April 8. No. 344.

Cheilanthes microphylla[1] Swartz. Under shade of rock. Alamos. September 16 to 30. No. 672.

Indeterminable sp. "Papachi boraacho" is an upright growing shrub 8 to 10 fee, high with short branches and very thorny: leaves very small 3 to 4 lines long obovate: fruit very numerous, globose, about 10 lines in diameter, indehiscent: seeds numerous, black, flattened. Not found in flower, and the fruit was nearly destroyed by birds. Alamos. March 26 to April 8. No. 330.

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[1] These plants were determined by Mr. Henry E. Seaton.

LIST OF PLANTS COLLECTED BY DR. E. PALMER IN ARIZONA IN 1890.

By J. N. Rose.

Dr. Palmer, after having made large and valuable collections in Lower California and Mexico in the early months of the year, visited Arizona during the latter part of April, remaining there through May and June and a part of July. He made collections at Camp Huachuca, Willow Springs, and Fort Apache. A small collection made in 1889 at Camp Huachuca which Dr. Palmer purchased is included in this report; these plants are designated by letters only.

Camp Huachuca is about 15 miles from the Mexican border at the base of the Huachuca Mountains, in the extreme southeastern part of Arizona. Its elevation is 5,100 feet above sea level. The mountains are rough and rocky. The soil is of decomposed granite. Dr. Palmer was here from April 26 to May 21, and collected about one hundred species. The season was unfavorable for his work as no rain had fallen for seven months and the mountains and valleys were dry and barren, and the only plants found in proper condition for collecting were in the gardens and in two moist cañons. The plants of this collection are numbered from 416 to 478; unfortunately the numbers 450 to 459 were repeated, hence the latter are designated by the letter *a* in addition.

The only other important collection[1] made at this place is that of Mr. J. G. Lemmon and wife in 1882, a very large and valuable one, of which over fifty species were new.

Willow Springs is in the White Mountains near the pass leading to Fort Apache, at an altitude[2] of 7,600 feet. It is 75 miles south of Holbrook on the Atlantic and Pacific Railroad and is reached only by stage. The mountains here are covered with oaks and pines, and the two large meadows from which this collection was largely made, kept damp by the springs, were covered with vegetation. Dr. Palmer remained here from June 10 to 25; the nights at this season are very cool, often thin ice is

[1] Mr. Lemmon writes me that Dr. Palmer visited this place once before; as it was during the dry season nothing of importance was obtained.

[2] Dr. Rothrock gives the altitude of the pass 7,400 feet and of Willow Springs 7,195. Wheeler's Report, vi. 22.

formed. At this time he collected the plants numbered 479 to 574; on his return from Fort Apache he remained two days, July 5 and 6, collecting numbers 613 to 626.

Dr. Rothrock, in Wheeler's Report, vol. vi., has forty eight species from this place; most of these were recollected.

Fort Apache, upon the east fork of Salt River, in the Indian reservation of the valley of the White Mountains, has an altitude of 5,200 feet.[1] It is only reached after one hundred miles of rough mountain staging. The mountain here also is covered with oaks and pines, but the valley is dry, having little or no vegetation. Salt River supplies water for the fort and for irrigating the gardens and the farms of the Indians. The temperature is 10° warmer than at Willow Springs. Dr. Palmer was at Fort Apache from June 21 to 30, collecting plants numbered 575 to 613.

Dr. J. J. Rothrock made a small collection here in 1874. (Wheeler's Report, vi.)

Clematis Palmeri, n. sp. A peculiar form which we have not been able to place. It seems nearest *C. filifera* Benth. of Mexico. The leaves very thin and delicately nerved, pinnate-ternate; the leaflets obtusely 3-lobed, paler beneath: peduncles one-flowered, 6 to 7 inches long: akenes with long plumose tails.—Among bushes along river bottom. Fort Apache, June 21 to 30. No. 600.

Thalictrum Fendleri Engelm. Under bushes in a ravine near Willow Springs. June 10 to 20. No. 516.

Ranunculus affinis R. Br., var. **cardiophyllus** Gray. Proc. Phil. Acad. 1863, p. 56. Common in swampy meadows. Collected here by Rothrock also. This form was first published by Dr. Gray, under the above varietal name, followed by Rothrock, Watson, and others, but in his last revision he takes up a new name, var. *validus*. Willow Springs, June 10 to 20. No. 498.

Ranunculus macranthus Scheele. Very common in wet bottoms. Rothrock also collected it here. Willow Springs. June 10 to 20. No. 495.

Ranunculus hydrocharoides Gray. Common, in a marsh. This species was also collected here by Rothrock. Willow Springs. June 10 to 20. No. 485.

Aquilegia chrysantha Gray. Very common in the cañons along water courses. Fort Huachuca. April and May. No. 434.

Erysimum Wheeleri Rothrock. Only in flower, but apparently this species. Willow Springs. June 10 to 20. No. 483.

Capsella Bursa-pastoris Moench. Collected in a garden at Fort Huachuca. April and May. No. 444.

Ionidium polygalæfolium Vent. Collected in an old garden at the mouth of a cañon. Fort Huachuca. April and May. No. 445.

Cerastium nutans Raf. In swamps at Willow Springs. June 10 to 20. No. 515.

Claytonia Chamissonis Esch. Willow Springs. June 10 to 20. No. 570.

Sphæralcea Fendleri Gray. A peculiar form with very small flowers and carpels. Grows on open mesas at Fort Apache. June 21 to 30. No. 594.

Linum perenne L. Willow Springs. June 10 to 20. No. 529.

Linum aristatum Engelm. *fide* Trelease. Collected at the edge of rich bottoms and slopes under oaks and pines. Willow Springs. June 10 to 20. No. 497.

Ptelea trifoliata L. A loose growing shrub about 8 feet high. Fort Huachuca. April and May. No. 428.

Rhamnus Californica Esch., *fide* Trelease. Fort Huachuca. April 26 to May 21. No. 431. Willow Springs. June 10 to 20. No. 520.

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[1] Only 5,000 feet. Wheeler's Report, vi. 23.

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says is "very villous at the apex," while Lemmon's plant, seemingly a part of the type, has the style hairy as above. The species has only been reported from southwestern New Mexico and southeastern Arizona, while this variety is from New Mexico. Palmer's specimens were collected at Willow Springs July 5 and 6. No. 625.

Vicia pulchella H. B. K. Flowers white. Also collected here by Rothrock under various numbers. Willow Springs. July 5 and 6. No. 621.

Vicia Americana Muhl. Collected here also by Rothrock (No. 224 in part). Willow Springs. June 10 to 20. No. 530.

Lathyrus paluster L., var. **angustifolius** Gray. Grows sparsely on rich bottoms under pines. "Bloom white, upper part pink." Also collected by Rothrock (No. 224). Willow Springs. June 10 to 20. No. 534.

Robinia Neo-Mexicana Gray. A thorny bush or tree 8 to 12 feet high: a loose grower; "bloom rose color," drying purplish. Collected here by Lemmon in 1882. Very common in cañons about Fort Huachuca. April and May. No. 440.

Desmanthus Jamesii T. & G. Bloom lemon color with yellow anthers. Common on gravelly bottoms. Fort Apache. June 21 to 30. No. 606.

Desmanthus depressus H. & B. Flowers "at first canary color, by age becoming salmon color." No fruit obtained. Very common in rich bottoms. Fort Apache. June 21 to 30. No. 613.

Mimosa biuncifera Benth. A loose thorny bush 1 to 1½ feet high: "flowers white," but in Rothrock's report said to be purplish. Also collected by Lemmon at this station. Very common on the plain at the foot of the mountain at Fort Huachuca. April and May. No. 449.

Prunus salicifolia H. B. K., var. **acutifolia** Watson. Proc. Amer. Acad. XXII. 411. Ten to fifteen feet in height, 5 inches in diameter, with edible fruit. Fort Huachuca, April and May. No. 450*a*.

Fragaria vesca L. Grows among bushes on sloping rich bottoms at Willow Springs. June 10 to 20. No. 487.

Geum triflorum Pursh. Willow Springs. June 10 to 20. No. 506.

Potentilla Hippiana Lehm. Very common in rich moist bottoms. Willow Springs. June 10 to 20. No. 482.

Rosa Fendleri Crepin. This species was also collected at this station by Rothrock. What seems to be the same species from Fort Huachuca was collected from a garden, but the plant originally grew in a neighboring cañon. No. 435. Willow Springs. June 10 to 20. No. 505.

Amelanchier alnifolia Nutt. About 4 feet high. It was found in ravines, high up the mountains. Willow Springs. June 10 to 20. No. 504.

Heuchera rubescens Torr. Collected near Fort Huachuca 1889. Letter K.

Œnothera albicaulis Nutt. Collected at the outer edge of a garden near Fort Huachuca. April and May. No. 471.

Œnothera serrulata Nutt. Willow Springs. June 10 to 20. No. 481.

Œnothera Hartwegi Benth. Common on rich bottoms. Fort Apache. June 21 to 30. No. 582.

Œnothera triloba Nutt. "Flowers yellow." Grows in marshy meadows. This same form was collected at this station by Rothrock. Willow Springs. June 10 to 20. No. 568.

Gaura suffulta Engelm. Found in level places exposed and in the shade. Flowers white but soon change. Willow Springs. June 10 to 20. No. 508.

Gaura coccinea Nutt. Flowers at first white, then rose and sometimes crimson. Fort Huachuca. April and May. No. 417.

Gaura sp. Seemingly near *G. Nealleyi* Coulter. The lower part of stem and leaves glabrous (except a few stiff hairs), above puberulent. Not in fruit and but a single plant seen. Flowers white, changes to red. On hillside. Fort Huachuca. April. No. 420.

Cereus cæspitosus Engelm. The flowers are a bright red. Common on stony ridges and mountain sides. Fort Huachuca. April and May. No. 475.

Cereus sp. Not very common. A very free bloomer with bright showy scarlet flowers. Fort Huachuca. April and May. No. 429.

Cereus pectinatus Engelm. (?) A single fruiting specimen obtained. Fort Huachuca. April and May. No. 447.

Opuntia Engelmanni Salm. Flowers yellow. Fort Huachuca. April and May. No. 477.

Opuntia hystricina Engelm. and Bigel. "It grows about a foot high with several joints." Flowers yellow, lower third red. On stony ridges. Fort Huachuca. April and May. No. 474.

Opuntia arborescens Engelm. This cactus is 2 to 3 feet high with flowers of a beautiful crimson. On stony plains and hillsides at Fort Huachuca. April and May. No. 476.

Pseudocymopterus montanus var. tenuifolia Coult. & Rose. Rev. p. 75. (*Thaspium (?) montanum var. tenuifolium Gray.*) Common at Willow Springs. June 10 to 20. No. 500. Also collected here by Rothrock.

Cornus stolonifera Michx. *fide* Coulter & Evans. A shrub 4 feet high. Willow Springs. June 10 to 20. No. 518.

Lonicera ciliosa Poir. About 2 feet high with drooping habit. Found in ravines high up the mountain side. Willow Springs. June 10 to 20. No. 537.

Sambucus glauca Nutt. Also collected by Rothrock. Willow Springs. June 10 to 20. No. 292.

Symphoricarpos oreophilus Gray. Willow Springs. June 10 to 20. No. 521.

Galium trifidum L. Grows along creeks. Willow Springs. June 10 to 20. No. 514.

Houstonia Wrightii Gray. Grows in low places and on hillsides. "Flower white with pink tip and corolla." Willow Springs. June 10 to 20. No. 528.

Bouvardia triphylla Salisb. The corolla very slender. Collected near Fort Huachuca in 1889. Letter G.

Valeriana sylvatica Banks. Willow Springs. June 10 to 20. No. 526.

Valeriana edulis Nutt. A common plant. Willow Springs. July 5 and 6. No. 618.

Stevia Plummeræ Gray. Collected in a cañon near Fort Huachuca, Arizona. 1889. Letter A.

To the stations given in Syn. Flora we here add the following, viz: Mogollon Mountains, New Mexico, Rusby (1881), No. 152½; Mexico, Pringle (1887), No. 1260.

Stevia serrata Cav. Collected in a cañon near Fort Huachuca, 1889. Letter B.

Eupatorium occidentale Hook., var. **Arizonicum** Gray. A single specimen from near Fort Huachuca, Arizona. 1889. Letter D.

Carphochæte Bigelovii Gray. A single specimen from a cañon near Fort Huachuca, Arizona. 1889. Letter C. Pringle is the only collector who got the plant from Arizona, according to Syn. Flora. We have specimens from Rusby, 1881, collected at the San Francisco Mountains.

Aplopappus spinulosus DC. Collected in a cañon near Fort Huachuca, Arizona. 1889. Letter F.

Solidago Missouriensis Nutt. Var. Not very common, along river bottoms. Fort Apache. June 21. No. 602.

Aster ericæfolius Rothrock. Common on mesas and hillsides at Fort Huachuca. April 26 to May 21.

Erigeron divergens T. & G. The stems lie close to the ground. Upper end of a cañon under bushes. Near Fort Huachuca, Arizona. April 26 to May 21. Nos. 450, 494.

Erigeron flagellaris Gray. Willow Springs. June 10 to 20. No. 503.

Baccharis Wrightii Gray. Grown on second bottoms of Salt River. June 21 to 30. No. 580.

Baccharis pteronioides DC. Small shrub 3 feet high on stony mesas. Fort Huachuca, Arizona. April 26 to May 21. The female plant is No. 468. The male plant is a compact shrub 2 to 3 feet high on rocky sides of cañons. No. 443.

Zinnia grandiflora Nutt. Fort Apache. June 21 to 30. No. 583.

Rudbeckia laciniata L. Willow Springs. July 5 and 6. No. 620.

Lepachys columnaris T. & G. Fort Apache. June 21 to 30. No. 601.

Wyethia Arizonica Gray. The large roots yield a peculiar odor. Grows in rich bottoms under pines; rather common. Willow Springs. June 10 to 20. No. 543.

Viguiera cordifolia Gray. Grows in shade along river bottoms at Fort Apache. June 21 to 30. No. 593.

Thelesperma gracile Gray. Very common. Fort Apache. June 21 to 30. No. 396.

Hymenopappus filifolius Hook. Grows on rich bottoms. Fort Apache. June 21 to 30. No. 599.

Hymenopappus Mexicanus Gray. Found on sandy river bottoms. Willow Springs. June 10 to 20. No. 517.

Hymenopappus radiata, n. sp. Perennial from a long slender root, 1½ feet high, branching at base floccose-tomentose becoming somewhat glabrate above: leaves mostly radical, 1 to 2 pinnate into narrow linear segments: heads corymbose on peduncles 1 to 2 inches long: involucre bracts broad, little or not at all petaloid: rays about 5, white, 6 to 7 lines long: disk-flowers numerous; proper tube short, about ½ line long; throat swollen, campanulate, about 1 line long; lobes short, acute, about one-third the length of throat; anthers but not the filaments exserted: akenes 1½ to 2 lines long, obpyramidal, 4-angled with a delicate intermediate nerve, glabrous or a little puberulent: pappus of numerous very short paleæ.—Common in low rich bottoms under pines and oaks. Willow Springs. July 5 and 6. No. 615.

This species differs from all other species of *Hymenopappus* in the presence of ray-flowers, but in other respects corresponds with this genus. Its habit is perhaps more like *H. filifolius*, but the akenes and pappus are more like *H. flavescens*. Although it seems undoubtedly a *Hymenopappus*, yet in all its external appearances, including the rays, it resembles *Leucampyx;* the disk-flowers, akenes, and pappus are also similar. It has been a puzzle to me to separate this species clearly from *L. Newberryi*, and it is questionable whether they ought not to go together and be placed under *Hymenopappus*. The following are the slight differences I note between the two: In *H. radiata* the pappus is not so deciduous, the proper corolla tube is shorter, and the style-branches a little thicker and not so papillose. The absence of the bracts on the receptacle seems to be the only reliable character separating the two genera.

Actinella Bigelovii Gray. This species has been collected in Arizona by quite a number of collectors, but is only credited to New Mexico in Syn. Flora. Grows on stony ridge and slope under pines. Willow Springs. June 10 to 20. No. 486.

Gaillardia pinnatifida Torr. The entire-leaved form; a free bloomer. Collected in a garden, in good soil by a water ditch. Fort Huachuca, Arizona. April 26 to May 21. No. 430.

Pectis longipes Gray. Common on mesas and hillsides near Fort Huachuca, Arizona. April 26 to May 21. No. 425.

Achillea Millefolium L. Willow Springs. June 10 to 20. No. 524.

Senecio Actinella Greene. According to Syn. Flora only collected by Rusby at Flag Staff, but it was obtained at the original station by J. G. Lemmon and wife in 1884, and now collected and reported by Dr. Palmer as very common at Willow Springs. June 10 to 20. No. 488.

Senecio aureus L. form. Fort Huachuca, April 26. No. 438.

Senecio Neo-Mexicana *fide* S. Watson. Willow Springs. June 10 to 20. No. 480

Senecio lugens Richards. A very common plant under pines at Willow Springs. June 10 to 20. No. 479.

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Gilia aurea Nutt. Willow Springs. June 10 to 20. No. 496.
Krynitzkia Jamesii Gray. Fort Apache. June 21 to 30. No. 591.
Lithospermum multiflorum Torr. Common under trees. Willow Springs. June 20 to 30. No. 536.
Lithospermum Cobrense Greene. Collected near a ditch in a garden, at Fort Huachuca. April and May. No. 432.
Onosmodium Thurberi Gray. Willow Springs. July 5 and 6. No. 617.
Mertensia paniculata Don. Willow Springs. July 5 and 6. No. 619.
Apocynum cannabinum L. Willow Springs. June 10 to 20. No. 511.
Asclepias tuberosa L. In cañons about Fort Huachuca. May. No. 473. Also very common at Willow Springs. June 10 to 20. No. 538.
Asclepias speciosa Torr. This species grows along ravines and rich bottoms. Willow Springs. June 10 to 20. No. 544.
Asclepiodora decumbens Gray. On mesas and hill slopes about Fort Huachuca. April and May. No. 437.
Asclepias involucrata Engelm. On gravelly mesas. Fort Huachuca. April 26 to May 21. No. 454.
Acerates auriculata Engelm. This plant grows on river banks in shade of bushes. "Flowers old-gold." Fort Apache. June 21 to 30. No. 604.
Solanum umbelliferum Eschs. Along stony ridges. Fort Apache. June 21 to 30. No. 607.
Nicotiana attenuata Torr. "Flowers light-violet with white tinge at summit." Dr. Palmer says, "this is the tobacco once commonly smoked by the Apache Indians but is now only used by the very old men, the younger generation preferring that which is sold in the stores." Fort Apache. June 21 to 30. No. 610.
Evolvulus lætus Gray. Gravelly mesas and hillsides. Fort Huachuca. April and May. No. 442.
Veronica Americana Schwein. Willow Springs. June 10 to 20. No. 540.
Castilleia parviflora Bong. Willow Springs. June 10 to 20. No. 513.
Veronica peregrina L. Flowers white. Very common. Willow Springs. June 10 to 20. No. 489.
Pedicularis Parryi Gray. This plant differs somewhat from the Colorado forms; the floral bracts are callous-denticulate, the beak shorter and thicker. The flowers are lemon-colored. Very common in grassy swamps at Willow Springs. July 5 and 6. No. 622.
Mimulus luteus L. Willow Springs. June 10 to 20. No. 527.
Mimulus, sp. Perhaps a form of *M. cardinalis*, but with slender calyx tube with ovate-acuminate lobes; corolla salmon-red, 2 inches long, very slender. Common in cañons. Fort Huachuca. April and May. No. 441.
Chilopsis saligna Don. Dwarf trees resembling willows in habit; grow in stony ravines, coming from the mountains. Fort Huachuca. April and May. No. 448.
Erythræa Douglasii Gray. Near Fort Huachuca. 1889. Letter I.
Calophanes decumbens Gray. Collected on the parade ground at Fort Huachuca. April 26 to May 21. No. 472.
Jatropha macrorhiza Benth. Plant. Hart. p. 8. A small plant growing on stony mesas and ridges. It has a large root 8 to 9 inches long and 4 to 5 inches in diameter. Fort Huachuca. April and May. No. 469.
Pentstemon barbatus Nutt. var. **Torreyi** Gray. "Corolla scarlet, inside of tube orange." A very showy and abundant plant under trees and bushes. Fort Apache. June 21 to 30. No. 588.
Pentstemon spectabilis Thurber. "Corolla showy, magenta color. Fort Apache. June 21 to 30.
Pentstemon linarioides Gray. Only a few plants seen. Fort Apache. June 21 to 30. No. 585.

Pentstemon virgatus[1] Gray. "Corolla white with yellowish cast and a patch of purple on the upper part." Not common; in sandy places. Willow Springs. June 10 to 20. No. 493.

Pentstemon Wrightii Hook.? "Corolla beneath light-snuff color, the remainder violet." Grew on level places under pines and oaks. Willow Springs. July 5 and 6. No 614.

Verbena ciliata Benth. Collected near Fort Huachuca, 1889.

Dracocephalum parviflorum Nutt. Grows in rich moist bottoms. Willow Springs. June 10 to 20. No. 569.

Monarda fistulosa L., var. **media** Gray. Fort Apache. June 21 to 30. No. 579.

Monarda fistulosa L. Grows in profusion on grassy slopes and open level places. Willow Springs. July 5 and 6. No. 626.

Amarantus retroflexus L. Called "red-root." The White Mountain Apaches use the plant very much as food; the green herbage is cooked and the seeds gathered, parched and ground into flour, from which they make bread, mush, etc. Fort Apache. June 21 to 30. No. 587.

Chenopodium album L. Common. Used by the White Mountain Indians as a pot-herb. Fort Apache. June 21 to 30. No. 587.

Polygonum Bistorta L., var. **oblongifolium** Meisn. *fide, S. Coulter.* Willow Springs. June 10 to 20. No. 522.

Eriogonum alatum Torr. With more corymbose inflorescence than the type. Common on hillsides and river bottoms. Fort Apache. June 21 to 30. No. 597.

Comandra pallida A. DC. Willow Springs. June 10 to 20. No. 502.

Euphorbia montana Engelm. A very common plant along cañons. Fort Huachuca. April and May. No. 455.

Acalypha Lindheimeri Muell. Collected in an old garden. Fort Huachuca. April and May. No. 419.

Argythamnia mercurialina Muell. This plant is very common on dry and exposed places. Fort Apache. June 21 to 30. No. 581.

Tragia urticæfolia Michx. Willow Springs. June 10 to 20. No. 491.

Guilleminea densa Moq. Common in cañons. Fort Huachuca. April and May. No. 457.

Gomphrena cæspitosa Torr. Fort Huachuca. April and May. No. 423.

Juglans rupestris Engelm. Seen only in cañons. The young trees are quite ornamental. They grow here to a height of 30 feet, and are 1½ to 2½ feet in diameter. No. 416.

Alnus incana Willd., var. A large brushy topped tree 20 to 30 feet high and 12 to 18 inches in diameter. The Indians use the bark in tanning. Fort Apache. June 20 to 30. No. 602.

Quercus Emoryi Torr. The acorns of this oak are gathered in great quantities by the Mexicans and Indians. A small tree 30 feet high and 1½ feet in diameter. Fort Huachuca. April 26 to May 21. No. 459*a*.

Salix nigra Marsh., var. **venulosa** Anders, *fide* M. S. Bebb. "This varietal name is retained for forms which the species assumes in its distribution from Texas westward. Notwithstanding the inaccuracies of Anderson's description, these originated quite naturally from certain peculiarities in Wright's No. 1877, which peculiarities are now recognized as having resulted from an abnormal growth." M. S. Bebb.

Iris Missouriensis Nutt. Very common at Willow Springs. June 10 to 20. No. 499.

Sisyrinchium anceps L. Willow Springs. June 10 to 20. No. 490.

Sisyrinchium angustifolium Mill. Same habitat as the last. No. 490 *a*.

Allium Nuttallii Watson. Flowers white. The bulbs are eaten by the Indians and "settlers." Willow Springs. June 10 to 20. No. 574.

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[1] The specimens have on them an Æcidium, which Mr. J. W. Anderson tells me is a new species Æ. Palmeri.

Lilium Parryi Watson. A free bloomer with sweet-scented canary-colored flowers. Grows in the cañons about Fort Huachuca. Pringle also got it nea. this station in 1884, and beside the type we have specimens from California collected by Parish. April and May. No. 478.

Smilacina[1] **amplexicaulis** Nutt. Willow Springs. June 10 to 20. No. 572.

Lemna trisulca L. Common in creeks at Willow Springs. June 10 to 20. No. 531.

Juncus[2] **xiphioides** Meyer., var. **montanus** Engelm. The specimens have only unopened flowers, but they undoubtedly belong here. No. 571.

Juncus tenuis Willd. Flowers not yet opened. This is the typical form with flowers not secund and with the lowest involucral leaf much exceeding the panicle. No. 550.

Juncus Balticus Dethard, var. **montanus** Engelm. Flowers just beginning to open. No. 555.

Juncus longistylis Torr. Flowers just beginning to open. No. 556.

Juncus longistylis Torr. Fruit not yet mature. No. 624.

Juncus tenuis Willd. No. 461*f*.

Juncus xiphioides Meyer, var. **montanus** Engelm. No. 467*a*.

Eleocharis palustris R. & S., var. **glaucescens** Gray. The specimens are without fruit, but appear to be a 3-styled form of this plant. No. 554.

Eleocharis palustris R. & S. The achenes are not yet mature, and the spikes in their young state are less sharply acute than is usual. No. 155.

Eleocharis montana R. & S. Plant only in flower and the determination made only on its general resemblance to the species. No. 459.

Scirpus pungens Vahl. No. 460.

Carex[3] **hystricina** Muhl., var. **angustior** Bailey, n. var. Whole plant whitish-green, tall and slender but erect; spikes one-half narrower than in the species, erect or ascending: perigynium less inflated, ascending.—Willow Springs, Arizona. No. 464. Pringle's 222 from Santa Rita Mountains is the same.

Carex teretiuscula Gooden. No. 553.

Carex marcida Boott. No. 552t. No. 552b is a single immature specimen. Mixed with this is *Carex filiformis* L., var. *latifolia* Boeckl.

Carex filiformis L. var. **latifolia** Boeckl. No. 549.

Carex echinata Murr. No. 548.

Carex Nebraskensis Dew., var. **prævia** Bailey. No. 547.

Carex nudata W. Boott. No. 546.

Carex aurea Nutt., var. **celsa** Bailey. Perigynia distinctly beaked. No. 545.

Carex occidentalis Bailey. No. 467.

Carex teretiuscula, Gooden., var. **ampla** Bailey. No. 462.

Carex hystricina, form. No. 464.

Eatonia obtusata Gray. Var. **robusta** Vasey. No. 466.

Eatonia Pennsylvanica Gray, var. **longiflora** Vasey. No. 467.

Eatonia[4] **Pennsylvanica** Gray, var. **major** Gray. 517.

Eatonia Pennsylvanica var. Fort Apache June 10 to 20. No. 577.

Aristida purpurea Nutt. Fort Apache June 21 to 30. No. 575.

Stipa leucotricha Trin. Fort Apache June 21 to 30. No. 576.

Calamagrostis neglecta Kunth. A common grass in wet soil. Willow Springs. July 5, 6. No. 616.

Koeleria cristata Pers. No. 562.

Koeleria cristata Pers, var. Willow Springs. No. 564.

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[1] It is proper to state here that Mr. E. L. Greene, in a recent paper (Bull. Torr. Club, xv. 285 to 287), has replaced this genus by the older name *Uniflorum*, which makes this species *U. amplexicaule* Greene.

[2] The Juncaceæ and Cyperaceæ (except Carex) were determined by Mr. F. V. Coville.

[3] The CARICES were determined by Prof. L. H. Bailey.

[4] The Graminnæ were determined by Dr. Geo. Vasey.

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LIST OF PLANTS COLLECTED BY DR. EDWARD PALMER IN 1890 ON CARMEN ISLAND.[1]

By J. N. Rose.

This island is situated in the lower part of the Gulf of California, two-thirds of the way down the Lower California coast, almost in sight of land. It is 120 miles south of Guaymas. It is made up mostly of low mountains, or hills, which in the north are only about 200 feet high, but in the south rise from 800 to 1,000 feet, and are cut by many deep cañons. The surface is rocky, with very poor or no soil. No trees are found here; a few shrubs, sometimes 15 feet high, give the prominent floral features to the island. On the west side is a great salt bed covering about 640 acres to a depth of 12 feet, estimated to contain about 13,000,000 tons of a very fine quality of salt. This island is owned and controlled by a gentleman at La Paz, and a large quantity of the salt is shipped both to Guaymas and San Francisco, and, when the salt is ground, sells as the very best quality for table use. The source[2] of this vast salt deposit is said to come from the surrounding hills and mountains. All the creeks and cañons open into this lake and, from experiments made, their waters are found to be charged with chloride of sodium. After the rains have ceased, in about fifteen days, the water evaporates and the work of excavation can go on. The only botanist or collector, so far as I know, who has visited this island is Dr. Edward Palmer. He has made two visits and has very thoroughly collected the plants of the island. His first visit was January 1 and 2, 1870. I have not been able to learn the number of species collected, yet it was not large. No report was published on the plants, although most of them were then new species. One or more of them have been identified from time to time as belonging to new species and published as part of the type. Most of the others have been collected elsewhere by Mr. Brandegee or by Dr. Palmer himself, and published as new, without having seen the Carmen Island forms. Dr. Palmer made a second visit last November and remained a week (No-

[1] Read before Section F, of the A. A. A. S. August 22, 1891.

[2] In Bulletin No. 84 of the U. S. Hydrographic Office (p. 28) it is stated, however, that although the lake is separated from the ocean by a strip of beach a quarter of a mile wide, over which the sea never flows, yet the water rises and falls with the tide.

[September 20, 1892.]

vember 1–7, 1890). He visited all parts of the island and brought back a small but interesting collection. The flora is almost identical with that of the peninsula. Of this collection 49 species are known to be common to the peninsula and island; others will doubtless be found; 29 species are also common to Mexico, and 25 to the United States; of the latter, 9 are grasses; 19 of the species were collected by Dr. Palmer at La Paz in 1890; 7 species are, so far as known, local, 5 of which are here for the first time described. The island was so thoroughly explored that probably very few species will be added to the list, and a few details will not be out of place. The number of genera represented on the island is 60, and of species, 68. Of the species 21 are Polypetalæ, 24 Gamopetalæ, 10 Apetalæ, and 13 Monocotyledons. Of these, more than one-half (37) belong to 4 families, viz: Leguminosæ 7; Compositæ 12; Euphorbiaceæ 6; and Graminæ 12; one family belongs to each of the four groups mentioned above; and over one-third (24) belong to two families, viz: Compositæ and Graminæ. Orchidaceæ and Filices, the third and fourth largest families of Mexico, are not represented on the island.

	Polypetalæ.	Leguminosæ.	Gamopetalæ.	Compositæ.	Apetalæ.	Euphorbiaceæ.	Endogens.	Graminæ.	Total.
Number of species	21	7	24	12	10	6	13	12	68
Number of genera	21	7	21	10	8	4	10	9	60
Indigenous species	3	2	2	0	2	2	0	0	7
New species	3	2	1	0	2	2	0	0	5
Common to Mexico	.....	.....	.....	.....	.....	.....	.....	.....	29
Common to Lower California	.....	.....	.....	.....	.....	.....	.....	.....	49
Common to United States	.....	.....	.....	.....	.....	.....	.....	.....	25
Collected by Palmer at La Paz	.....	.....	.....	.....	.....	.....	.....	.....	19

Drymaria diffusa Rose, n. sp. Stems slender, much branched from a perennial base, somewhat glandular-pubescent throughout: leaves thin, broadly ovate to deltoid, 2 to 4 inches long (on petioles somewhat longer), truncate at base, acute or slightly acuminate at apex: inflorescence few-flowered cymes: pedicels filiform, 5 to 8 lines long: sepals equal, 1 to 1½ lines long, thin, oblong, acutish, delicately 1-nerved, scarious margin: petals twice as long as the sepals, 2-parted to the middle into oblong or spatulate segments: stamens 5, unequal, shorter than the petals: capsule globose, 1½ lines long, short stipitate, about 10-ovuled, 3-seeded.—Grows on the shady side of a cañon in roundish bunches. No. 819.

This is *D. glandulosa* Watson, Proc. Amer. Acad. xvii. 328, in part. Our plant differs from this species in its leaves not being so broad, and in having long petals: lower stipules wanting or deciduous, not lacerate: sepals smaller and not so strongly nerved.

Collected by Palmer in 1870 (No. 4) and distributed as *D. ramosissima*.

EXPLANATION OF PLATE XII.—The plant is shown natural size; *a*, capsule showing seeds and style; *b*, a petal: *c*, a stamen: *d*, a sepal: all somewhat enlarged.

Abutilon Dugesi Watson. Only a few plants seen in a cañon, and in poor condition. No. 840. Nearest the above species, but not very satisfactorily placed there.

Hibiscus denudatus Benth. A very poor specimen obtained, badly infested by an insect (Eriococcus. sp.). Also obtained in 1870 (No. 15). No. 826.

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DESMANTHUS FRUTICOSUS n. sp.

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The plant is called "Sandia de la Passion." The flowers bloom early in the morning and last but a part of the day; the ripe fruit, which has a sweetish taste, is much relished by the children of the island.

This species seems nearest *P. fœtida*, some forms of which have very similar foliage, but differs in its larger flowers, smaller crown, longer staminеal tube, and the peculiar tip of the sepal.

EXPLANATION OF PLATE XIV.—A branch with flowers and fruit shown; natural size.

Mamillaria Roseana Brandg. Zoe, ii. 19. Common on the hillsides and beach among loose coral rocks. Fruit of a "vermilion color," is edible. Said to be a very handsome species. No. 880.

Cereus gamosus Engelm. Stem 6 feet high, erect; ribs 8 or 9; spines straight and stout; branches numerous, often prostrate upon the ground: mature fruit large, dull red without, bright red within. Not in flower. No. 883.

The fruit is edible; it is used for preserves, jams, etc. It is called "Pitahaya acre."

Vaseyanthus Rosei Cogneaux. Zoe, i. 368. Grows in cañons in shady places and along the beach. No. 837.

This was first collected at La Paz and is No. 102 of Dr. Palmer's collection referred to *Maximowiczia* on p. 70.

Macrosiphonia Berlandieri Gray. About 3 feet high with few branches; only found in fruit. In cañons. No. 841.

Houstonia brevipes Rose. Contr. Nat. Herb. i. 83. In cañons. No. 836.

Houstonia (Ereicotis) fruticosa Rose, n. sp. Upright-growing shrub, 1 to 2 feet high, much-branched, glabrous throughout: leaves linear, 3 to 7 lines long, much fascicled, and with minute stipules: flowers cymose on short pedicels or sessile: corolla 4 to 5 lines long, salver form, the tube much longer than the lobes, "white:" the fruiting calyx 1 line long, with lobes of equal length: capsule a little over 1 line long, free from the calyx at the tip only: seeds oblong.—One of the commonest plants along the beach. No. 885.

Near *H. fasciculata*, but with larger flowers and leaves, and somewhat different in habit.

Hofmeisteria laphamioides Rose. Contr. Nat. Herb. i. 79. Neither in flower nor fruit, but evidently this species. Found on the side of a cañon. No. 850.

Hofmeisteria pubescens Watson. About a foot high with fleshy leaves and pinkish flowers. A compact plant, the numerous branches interlacing form an impenetrable mass. Found on the beach and in the cañons. No. 875.

This plant has somewhat less dissected leaves than the type and approaches near *H fasciculata*, from which it seems to differ only in being pubescent and in having the leaves more dissected.

Brickellia brachiata Gray, var. GLABRATA Rose, n. var. Glabrous throughout, but in other respects similar to the type. This is the glabrous form referred to on page 83, from Santa Rosalia. The finding of this glabrous form a second time indicates that it may be a common form along the Gulf, and being so much out of the range of the type we have thought best to give it a varietal name.—On side of rocky cañons. No. 849.

Aplopappus spinulosus DC. Only a single specimen seen. No. 848.

Bebbia juncea Greene. About 3 feet high. Found on the beach and cañons. No. 844.

Bigelovia diffusa Gray. Commonly called "Yerba del Jasmo." Two to three feet high. Grows on the beach. No. 833.

Viguiera deltoidea Gray, var. PARISHII Rose. Contr. Nat. Herb i. 73. Three to 4 feet high. In the cañons of the island, but not common. No. 828.

Alvordia glomerata Brandegee. Proc. Cal. Acad. ser. 2. ii. 174. About three feet high: flowers orange-yellow, with a strong oily odor. In the cañons; not common. No. 827.

Recently found by Mr. Brandegee at two stations not far away on the mainland.

W. SCHOLL. DEL

PASSIFLORA PALMERII n. sp.

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Simmondsia Californica Nutt. In cañons, but not common. No. 817.
Called "Jojo baberry."
Sporobolus argutus Kunth. No. 856.
Panicum lachnanthum Vasey and Scribn. No. 855.
Panicum fasciculatum Vasey and Scribn. No. 864.
Muhlenbergia debilis Trin. No. 853.
Setaria setosa Beauv. No. 857.
Aristida dipersa Trin. No. 858.
Bouteloua aristidoides Thurb. No. 859.
Bouteloua polystachya Torr. No. 854.
Bouteloua racemosa Lag. No. 861.
Heterpogon contortus R. and S. No. 860.
Diplachne Brandegei Vasey. No. 862.
Cenchrus Palmeri Vasey. No. 865.
Cyperus. Too young for determination. No. 863.
——— Indeterminable shrub. A shrub 3 feet high, 4 inches in diameter, with numerous horizontal branches: leaves fascicled. Neither in fruit nor flower. Common near the beach. No. 881. It may be *Japtropha spatulata* Muhl. A *Phoradendron* is parasitic upon it.
——— A long, slender, cactus-like plant. No. 794.

LIST OF PLANTS COLLECTED BY THE U. S. S. ALBATROSS IN 1887-'91 ALONG THE WESTERN COAST OF AMERICA.

The Division of Botany has from time to time reported upon collections made by the *Albatross* in its various cruises along the American coast and among the islands of the Pacific. The collections here enumerated were made at various times, extending as far back as 1887. The first and second parts are reports by Mr. J. N. Rose on collections made by Prof. Alexander Agassiz[1] on Cocos and the Galapagos islands; the third part is a list of ferns from southern Patagonia, which have been determined by Prof. Daniel C. Eaton, of Yale College; the fourth part is a report on the mosses from Fuegia and Patagonia, also by Prof. Eaton, giving notes, synonymy, and bibliography, besides the description of a new species; the fifth part is a list of Liverworts from southern Patagonia, by Mr. A. W. Evans, with descriptions and illustrations of two new species; the sixth part contains a short list of the lichens from southern Patagonia by J. W. Eckfeldt, of Philadelphia.

All the material upon which these reports are based has been mounted and preserved in the National Herbarium.

1. LIST OF PLANTS FROM COCOS ISLAND.

By J. N. Rose.

The few plants here enumerated were gotten by Mr. Alexander Agassiz in 1891, who seems to have spent but a single day (February 28) on this island.

This island lies southwest of Panama about 500 miles, in latitude 5° 35′ and longitude 87°.

Ipomœa pes-capræ Sweet.

Epidendrum sp. These specimens have neither flower nor fruit.

Paspalum vaginatum Swartz.

Polypodium sp. Three different species were obtained.

Nephrodium pectinatum Presl. I have not seen specimens of this species, and it is doubtfully referred here.

Meteorum patens[2] Dozy and Molkenboer. "This seems to be *M. patens* of Dozy and Molkenboer, judging by their figure; but it is *not* the same as the Wilkes expedition specimen nor C. Wright's from Cuba. These have a shorter, rounded, and flatter leaf. *M. aureum*, from Java, is a good deal like the Cocos Island specimen."—D. C. E.

[1] A full account of Prof. Agassiz's cruise is to be found in the Bulletin of Comparative Zoölogy of Harvard College, Vol. xxiii, No. 1.

[2] Determined by Daniel C. Eaton.

2. LIST OF PLANTS FROM GALAPAGOS ISLANDS.

By J. N. Rose.

These islands are ten in number, situated on the equator, and are 300 to 600 miles from the mainland of South America.

Two large collections have been made from these islands; First, that of Charles Darwin in 1835, who obtained about 200 species; and second, that of N. J. Andersson in 1851.

David Douglass, with Dr. Scouler, also spent several days on these islands in 1825. Of the 150 species obtained by Douglass only 50 were saved, and these in very poor condition. Hugh Cummings made a small collection in 1829. Mr. Macrae also made a large collection, and Mr. Edmonstone, in 1845, collected largely here. Admiral Du Petit-Thouars obtained a few species. In 1845 Sir Joseph Hooker published the first enumeration of the plants of these islands. He reports upon 265 species, of which 253 are phanerogams and ferns, and of this number 123 are described as new. In 1861 N. J. Andersson published the second enumeration, being a report upon his collection (made in 1852) and including all the previons collections. He enumerates 392 species, of which 372 are phanerogams and ferns, and of these 72 are described as new.

MALVACEÆ.

Gossypium purpurascens Poir. (?) Duncan Island, April 2. This is probably the same plant that both Hooker and Andersson referred to the above species. It is certainly near *G. Barbadense* L., but the leaves are more strongly black-dotted than in any of the species in the National Herbarium. The flowers appear to be yellow.

ZYGOPHYLLACEÆ.

Tribulus maximus L. Duncan Island. April 2.

I am not able to separate this from the many forms of this species. I suppose it is the same as the variety **adscendens** of Andersson, who obtained it from both Charles and Chatham islands.

Tribulus servicens Ands., var. HUMIFUSUS Ands. Leaflets 7 pairs: petals 5 lines long: carpels 5, one abortive.—Charles Island. April 1.

Also obtained here by Andersson. Only two small specimens were obtained, but these have both flower and fruit. The original description contains no reference to the flowers and their size is given above. The flowers are considerably larger than *T. terrestris*, to which it is nearly related.

GERANIACEÆ.

Oxalis (Hedysaroideæ) Agassizi Rose, n. sp. Annual, erect, simple or branched, glabrate; the younger parts hairy, 6 to 12 inches high: leaves on petioles 1 to 1½ inches long; leaflets 3, the odd one distinct, the lateral on short petiolules, broadly obovate, 6 to 9 lines long, 5 to 8 lines broad; surface finely reticulated, resembling a minute honeycomb: peduncle about the length or longer than the leaves: flowers few, yellow: ovary oblong, obtuse, 3 lines long.—Duncan Island. April 2.

Three other species have been found on these islands, viz: *O. carnosa* Molina, *O. Cornelli* Ands. and *O. Barreliari* Jacq., with none of which it agrees. It belongs to the same section as the last species, but differs in its annual habit, color of flowers, etc.

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CYPERACEÆ.

Cyperus confertus Swartz, fide N. L. Britten. Charles Island. April 2. **Chatham** Island. March 30.

GRAMINEÆ.

Panicum hirticaulon Presl. Chatham Island. March 30.
Panicum fuscum Swartz. Chatham Island. March 30.
Eleusine indica Gærtn. Chatham Island. March 30.
Dachyloctenium Ægyptiacum Willd. Chatham Island. March 30.
Distichlis. Chatham Island. March 30.

HEPATICÆ.

Plagiochila Anderssonii.[1] Angstr. in Ofver af Kongl. Vetensk.—Akad Jorbandl, 1873, No. 5, p. 114. On roots of *Parkinsonia aculeata.*

3. LIST OF FERNS FROM SOUTHERN PATAGONIA.

By DANIEL C. EATON.

Lycopodium Magellanicum Swartz. Mayne Harbor.
Gleichenia quadripartita Hook. Borja Bay and Island Harbor.
Alsophila pruinata Kaulf. Port Otway.
Hymenophyllum cruentum Cav. Island Harbor.
Hymenophyllum candiculatum Mart. Port Otway.
Hymenophyllum secundum H. and G. Port Otway and Mayne Harbor.
Hymenophyllum pectinatum Cav. Island Harbor and Mayne Harbor.
Hymenophyllum tortuosum H. and G. Island Harbor and Mayne Harbor.
Lomaria L'Herminieri Borg.
Lomaria procera Spreng.
Lomaria Boryana Willd. Borja Bay and Mayne Harbor.
Aspidium aculeatum Swartz.
Polypodium australe Mitten. Mayne Harbor.

4. LIST OF MOSSES FROM FUEGIA AND PATAGONIA.

By DANIEL C. EATON.

There are only 10 true mosses in this collection, while not less than 152 species are attributed to Fuegia. It is to be hoped that as United States Government vessels pass through the Straits of Magellan some person may be willing to gratify American bryologists by making large collections of these interesting plants.

Dicranum robustum Hook. f. et Wils. Fl. Antarct. 406 t. 152, f. 8. Port Churruca, Straits of Magellan. A form with nearly straight leaves. Var. PUNGENS Hook. f. Handbook of New Zealand Flora, p. 412, was collected at Island Harbor, Patagonia. It has the leaves more falcate and with even slenderer capillary points.

Dicranum imponens Montagne. Ann. d. sc. nat. t. xvi. 241. *D. involutifolium* Sulliv. in Hook. Journ. of Bot. 1850, p. 316. Borja Bay, Straits of Magellan. Two forms were collected, one with stems 6 inches long, the other only 2 inches high and of a darker color.

[1] Determined by A. W. Evans, New Haven, Conn.

Racomitrium rupestre Hook. f. et Wils. Fl. N. Z. ii. 75. *Dryptodon rupestris*, Hook. f. et Wils. Fl. Antarct. p. 402, t. 152, f. 1. Port Churruca, Straits of Magellan; barren plants. The plants have a yellowish brown color instead of the lurid brown of the original description, but seem to differ in no other respect.

Racomitrium lanuginosum Bridel. Mayne Harbor, Patagonia; not in fruit.

Ulota fulvella Mitten. Journ. Linn. Soc. iv. 75. Borja Bay, Straits of Magellan, growing on *Berberis ilicifolia*, in fruit. This is one of four species (*U. fulvella*, *U. eremitensis*, *U. glabella*, and *U. Fuegiana*) into which Mr. Mitten divided the *Orthotrichum luteolum* of the Flora Antarctica. The pedicels are 3 to 5 times the length of the capsules, while Mr. Mitten's description makes them only twice as long, but the leaves agree with his character of "margined with a single row of oblong hyaline cells." The inner peristome he was unable to find. These specimens show it to be composed of eight slender cilia, about half the length of the outer teeth, each of a single row of cells.

Bryum cœlophyllum, Eaton n. sp. Plant half an inch high, densely cespitose and matted with brown branching radicles; stems slender, mostly simple, not comose-capitate; leaves consimilar, loosely imbricated when dry, erect-spreading when moist, broadly roundish-ovate from a wide and scarcely decurrent base, very concave, obscurely pointed, margins erect or slightly incurved, entire, nerve rather stout, extending almost to the apex; cells of the leaf rhomboid-hexagonal, hyaline, those along the margin longer and narrower except near the base and the apex; flowers and fruit unknown.

Port Churruca, Straits of Magellan. A densely tufted plant with something the appearance of the specimens of *B. nivale* collected by the Wilkes exploring expedition, but the leaves here are shorter, broader, firmer, more concave, and comparatively pointless. They measure 1.65 to 1.75 mm. in length, and are nearly as broad, though it is difficult to measure their width, as under a cover-glass they are forced into several longitudinal folds. The average length of the leaf-cells is 0.05 mm. The color is a dull green, becoming brownish as the leaves grow older. *B. platyphyllum*, as figured by Schwægrichen (t. 324) has leaves much like those of this moss, but differs in having the ends of the stems and branches comose-capitate.

Cœlidium cochlearifolium Jaeg. et Sauerb. Adumbr. ii. p. 383. *Hypnum cochlearifolium* Schwaegr. Suppl. i. sect. ii. p. 221, t. 88. Port Otway, Patagonia; in fruit, the plant growing on a slender twig, and with long straggling branches like a *Meteorium*. The allied species, *C. auriculatum*, though originally discovered in the Straits of Magellan, is not in this collection. It has more decidedly auriculate leaves and a much longer pedicel than the present species.

Ptychomnion aciculare Jaeg. et Sauerb. Adumbr. ii. 616. *Hypnum aciculare*. Labill. Schwaegr. Suppl. t. 92. *Hypnum cygnisetum* C. Müll. Bryologia Fuegiana, in "Flora," 1885, p. 425. Port Otway, Patagonia; not in fruit. Müller has separated the American from the New Zealand plant on account of its greater robustness and its swan-necked pedicel. But some of the New Zealand specimens are even stouter than the Patagonian, and the curved pedicels are found also in New Zealand.

Hypnum fluitans L. Patagonia. Sterile specimen rather denser than the common forms of this species; possibly *Amblystegium Fuegianum* Mitten.

Hypopterygium Thouini Mont. in Ann. d. sc. Nat. ser. 3, iv. 86. *Hypnum Thouini*, Schwaegr. Suppl. t. 289. Port Otway, Patagonia; in fruit. C. Müller, in Bryol. Fuegiana, expresses a doubt as to this moss having been found by Commerson in Fuegia. In the Flora Antarctica it is stated that Capt. King gathered it at Port Famine. The present fine specimens amply confirm the southern range of the species.

5. LIST OF LIVERWORTS FROM SOUTHERN PATAGONIA.

By A. W. Evans.

Lejeunea Spruceana Massal. in Nuovo Gior. Bot. Ital. xvii. 246, t. xxiv, f. 27.

Porella fœtens Trevis. Nuov. Class. Ep. p. 25 (Madotheca fœtens De Not. in Mem. Acc. Tor. ser. ii. T. xvi. 231, f. 17).

Lepidolæna Menziesii Dum. Rev. des Genres, p. 13 (Jungermannia Menziesii Hook. Musc. Exot. t. cxviii: Polyotus Menziesii Gottsche in G. L. et N. Syn. Hep. p. 247).

L. Magellanica (Jungermannia Magellanica Lam. in Schwaegr. Prod. p. 14, t. i; Hook. Musc. Exot. t. cxv: Polyotus Magellanicus Gottsche in G. L. et N. Syn. Hep. p. 248). Straits of Magellan.

Herberta Chilensis Trevis. Nuov. Class. Ep. p. 15 (Sendtnera Chilensis De Not. in Mem. Acc. Tor. ser. ii. T. xvi. 228, f. 14: Schisma Chilense Massal. in Nuovo Gior. Bot. Ital. xvii. 251, t. xxv. f. 31). Mayne Harbor and Port Churruca.

Lepicolea ochroleuca Lindb. in Acta Soc. Sc. Fenn. x. 516 (Sendtnera ochroleuca Nees in G. L. et N. Syn. Hep. p. 240). Mayne Harbor and Port Churruca.

Isotachis Spegazziniana Massal. in Nuovo Gior. Bot. Ital. xvii. 220, t. xvi. f. 10. Port Churruca.

Cephalozia scabrella Massal. in Nuovo Gior. Bot. Ital. xvii. 233, t. xx. f. 19. Mayne Harbor.

Adelanthus unciformis Spruce in Journ. Bot. xiv. (Plagiochila unciformis Hook. f. et Tayl. in G. L. et N. Syn. Hep. p. 563: P. sphalera Hook. f. et Tayl. l. c. p. 563: Jungermannia (Plag.) unciformis Hook. f. et Tayl. Fl. Ant. ii. 425, t. clvi. f. 5: J. sphalera Hook. f. et Tayl. l. c. p. 427, t. clvi. f. 8). Borja Bay.

Schistocalyx chloroleuca Lindb. in Journ. Linn. Soc. xiii. 185 (Scapania chloroleuca Tayl. in G. L. et N. Syn. Hep. p. 662: Jungermannia (Scap.) chloroleuca Hook. f. et Tayl. Fl. Ant. ii. 433, t. clxi. f. 5: Blepharidophyllum vertebrale Ångstr. var. chloroleucum Massal. in Nuovo Gior. Bot. Ital. xvii. 208). Port Churruca.

Lophocolea obvolutæformis Massal. in Nuovo Gior. Bot. Ital. xvii. 223 (Jungermannia obvolutæformis De Not. in Mem. Acc. Tor. ser. ii. T. xvi. 220, f. 8). Borja Bay.

L. fulvella Massal. in Nuovo Gior. Bot. Ital. xvii. 227 (Jungermannia fulvella Tayl. in Hook. f. Fl. Ant. ii, 432, t. clviii. f. 1: Chiloscyphus fulvellus Nees in G. L. et N. Syn. Hep. p. 711). Island Harbor.

L. apiculata Evans n. sp. Loosely cæspitose, pale green, turning blackish-brown with age; stems mostly simple, rarely giving off one or two lateral branches; leaves alternate, approximate or arched-imbricated, dorso-ventrally compressed, the line of insertion being a sharp parabolic curve, broadly ovate-orbicular, entire, the dorsal margin abruptly decurrent, slightly cordate towards the base, the ventral margin more gradually decurrent, not cordate, the apex rounded, apiculate; amphigastria mostly subimbricated, strongly reflexed or revolute, about as large as the leaves, orbicular-reniform, entire, long-decurrent on both sides, the apex broad, apiculate; perianth terminal on a very short lateral branch, ovate, broadly 3-winged, the wings and mouth irregularly crenulate; involucral leaves one pair, similar in size and shape to the stem-leaves, slightly crenulate, scarcely decurrent; involucral amphigastrium reflexed, orbicular, crenulate, free from the involucral leaves; androecia not seen.

Plants 7–10 cm. long, with the leaves, 3–4 mm. wide; leaves and amphigastria 2–3 mm. wide; leaf-cells thin-walled, 5- or 6-sided, becoming larger and rectangular in the decurrent portions, in the middle of the leaf averaging 0.044 mm. in diameter, on the borders, 0.034 mm.—Port Churruca.

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F. Müller del.

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A. Fuegiensis (Riccardia Fuegiensis Massal. in Nuovo Gior. Bot. Ital. xvii. 255, t. xxvi. f. 34).

Anthoceros endiviæfolius Mont. in Voyag. au Pôle Sud, I, Bot. Crypt. p. 211; G. L. et N. Syn. Hep. p. 590. Borja Bay.

6. LIST OF LICHENS FROM SOUTHERN PATAGONIA.

By J. W. Eckfeldt.

Cladonia rangiferina var. SYLVATICA Hffm. Mayne Harbor.
Nephroma antarcticum Jacq.
Cora[1] **pavonia Web.** Island Harbor.
Pannaria subcincinnata Nyl.
Sphærophoron australe Laur.
Stricta Freycinetii Del.
Stricta Urvillei Del. var. FLAVICANS Hook.

[1] It is technically a lichen, having gonidia interspersed among the hyphæ, but it is usually classed among the *Fungi*. The genus stands next to *Thelephora* among the Hymenomycetes. The plant *has nothing to do* with *Padina pavonia*, though it resembles it in general appearance.—D. C. Eaton.

REVISION OF THE NORTH AMERICAN SPECIES OF HOFFMANSEGGIA.

By E. M. Fisher.

In this paper species of the United States and Mexico are included. Foreign species are omitted except where they extend into this country. The genus is taken as commonly defined, no attempt being made except to present a synoptical view of the species. This revision is based upon the material contained in the National Herbarium, in which nearly all the species are fully represented, and which has been placed in my hands through the kindness of Dr. George Vasey. I am also indebted to Dr. Sereno Watson, Dr. John M. Coulter, Dr. William Trelease, Mr. John Donnell-Smith, and Mr. I. C. Martindale, who have placed at my disposal the collections which they own or have in charge. I am especially indebted to Dr. Coulter for his many suggestions and his assistance at difficult points. The compound microscope was used continually throughout these observations, and is indispensable in testing many relationships.

Historical sketch.—This genus was established by Cavenilles, and published in his Icones iv. 63 (1797), as containing two species, *H. falcaria* and *H. trifoliata*. Two years later (1799), in Icones v. 1. t. 402, he published the genus *Pomaria*, including one species, *P. glandulosa*. De Candolle defined the genus *Melanosticta* and published it in his Memoires Leguminosæ xii (1835), including one species, *M. Burchellii*. Torrey and Gray (Fl. N. A. i. 392) united them all without hesitation. Up to that time (1840) there were only 3 or 4 species described in North America. At the present time 15 species and 9 varieties have come under my observation, of which 2 species and 4 varieties seem to have been undescribed.

Characters.—The glands furnish the first and most important group of characters, and in several instances furnish specific distinctions. They may be thrown into two different divisions: stipitate glands and black sessile (or subsessile) glands. The former belong to *Hoffmanseggia* proper (having petals with long claws) and the old genus *Pomaria* (having petals with short claws); while the latter are characteristic of the old genus *Melanosticta*. Another group contains both kinds. The Melanosticta group is further separated into three divisions by the characters of the glands on the flowers, which is sufficient to clear up

the confusion concerning *H. Jamesii* and *H. melanosticta*. The claws of the petals and the style furnish some important characters. The pod furnishes some of the most important specific distinctions, but can not be of prime importance in grouping, for the fruit of a species and its varieties may differ widely.

SYNOPSIS.

§ 1. *Stipitate-glandular (except No. 4): ovate stipules and ovate attenuate bracts membranaceous; leaflets oblong, nerveless: filaments straight, with short and thick hairs.*

* *Claws of petals long, densely glandular, that of vexillum thick and usually broadly dilated: filaments and oblong ovary glandular: style clavate, slightly beaked: pod falcate and with persistent sepals: herbaceous.*

1. **H. falcaria** Cav. Ic. iv. t. 392 (1797). Stems procumbent, 2 to 25 cm. high, from a creeping root (bearing now and then a tuber), puberulent, sparsely glandular, scarious at base: leaves with 7 to 11 pinnæ; leaflets 6 to 10 pairs, puberulent or glabrate; stipules broadly ovate, scarcely acute: peduncle usually short, bearing a raceme of few flowers on suberect pedicels: sepals scarcely acute, 4 to 5 mm. long: petals with inner edge of claw densely glandular as well as back of vexillum which has a thick dilated claw: outer stamens with copious clavate glands: pod falcate, 3 to 4 cm. long, with round apex and acute base, on recurved pedicel, more or less glandular, compressed between the 8 to 12 dark obovate seeds.

Habitat: From Southern Arizona through Mexico (San Luis Potosi) to Chili and Patagonia.

Specimens examined: Arizona (*Lemmon*, 1881, in part); San Luis Potosi (*Schaffner* 832, 1876); Argentine Republic (at Cordova, 1829; Patagonia, *Andrews* 333); Chili (*Morong* 1191; *Phillip's* distribution 1324); also specimens cultivated at the botanical gardens of Montpellier (1824) and Delile (1821).

This polymorphic species has a wide distribution, and has been heretofore divided into several species and varieties. The specimens found in the United States and Mexico have been called *H. stricta* with its var. *demissa*, and *H. densiflora*, while those of South America and those cultivated in France have been called *H. falcaria*. Mr. Bentham remarks that "the above species (*H. stricta*, *demissa* and *densiflora*) agree with *H. falcaria* in their most important characters," but does not state how they differ. The only difference yet noticed between the North and South American forms is that the latter have ovaries with fewer glands and the corolla is often a deeper yellow; otherwise they agree. Some of the Morong specimens are very low, erect, very glandular, with rather dense racemes; while others are 45 cm. high, with long loose racemes. It differs from var. *stricta* in being procumbent and having the mature fruit rounded at apex, approaching that of *H. drepanocarpa* in most respects. The Schaffner and Lemmon specimens agree with the description of *H. falcaria*, but they agree more with the plants themselves. The following seem to be well marked varieties:

Var. STRICTA. Erect, 10 to 30 cm. high: stipules obtuse, villous on margin: peduncles long, bearing a loose raceme of suberect flowers: sepals obtuse: vexillum with claw usually more dilated: pod long, obtuse or acute, usually on spreading pedicels; seeds 6 to 9.

H. stricta Benth. in Gray, Pl. Wright. i. 56.

From Kansas southwestward through the United States and northern Mexico to Zacatecas and Lower California.

Specimens examined: Kansas (*Bell*, 1867); Texas (*Reverchon* 162, 806; *Nealley* 112, 335, 478; *Vasey*, 1881, 1882, 132; *Wright* 1025; *Gerard* 48; *Leroy distribution*); Arizona (*Palmer*, 1885, 1889, 59 in part; *Rothrock*, 1875, 351; *Lemmon*, 1880, in part,

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sng pedicels, rounded at both ends, reticulated, compressed between the 7 to 11 broadly obovate seeds.

Habitat: From Colorado to Texas and throughout southwestern United States.

Specimens examined: Colorado (*Brandegee*, 1874, 1877, 527; *Porter*, 1874); New Mexico (*Vasey*, 1881; *Wright* 352, type, 1027, type in part); Texas (*Vasey* 132, 1881); Arizona (*Pringle* 43; *Lemmon*, 1881; *Rothrock* 1008; *Cous* and *Palmer* 513; *Le Roy's* distribution); California (*Vasey*, 1881).

Type in Herb. Gray and Missouri Botanical Gardens.

3. H. oxycarpa Benth. in Gray. Pl. Wright. i. 55 (1852). Plant, 10 to 20 cm. high, slender, villous, glandular, from a subfrutescent base: pinnæ, 7 to 11; leaflets 5 to 9 pairs, slender, glabrous or subvillous, glandular, stipellate; raceme rather dense, with several small and pendent flowers: sepals glandular on margin: petals almost naked: style glabrous, slender: pod broadly falcate, 25 by 7 mm., very acute, long stipitate, glandular, with 3 to 6 dark brown seeds.

Habitat: From western Texas to Arizona and through northeastern Mexico to Monterey.

Specimens examined: Texas (*Wright* 1024, 147; *Neally* 111, 798); Nuevo Leon (*Dr. Gregg*, 1847, type; *Edwards & Eaton* 12, type).

Types in Herb. Gray.

++ Style cylindrical, bell-shaped above: pod linear-oblong.

4. H. gracilis Watson Proc. Am. Acad. xvii. 347 (1882). Low (10 to 16 cm. high), puberulent, with very slender stems and branches, glandless: pinnæ 3 to 7; leaflets 5 to 8 pairs, glabrate, glandular, stipellate; stipules acute or attenuate: racemes loose, with a few suberect flowers on very long pedicels; sepals concave, oblong-obovate, blunt; vexillum with claw rather narrow: filaments with obtuse pubescence: style pubescent: pod slightly curved, 25 by 5 mm., acute, suberect on spreading pedicels, scarcely glandular, compressed between the 6 to 9 seeds.

Habitat: Coahuila, 40 miles south of Saltillo.

Specimens examined: Coahuila (*Palmer* 275, type).

Closely related to *H. oxycarpa*. Type in Herb. Gray, J. Donnell-Smith, Canby and Martindale.

The two following species I have not seen, but translate Mr. Bentham's description as given in Gray, Pl. Wright. i. 57. "The first (§ *Gladiatæ*), including *H. gladiata* and *H. platycarpa*, Herb. coll. Trin. Dubl., with the habit and foliage of *H. stricta*, without black dots on leaves, has the flowers nearly as in *H. Drummondii*, and a straight or slightly curved pod, blunt at apex, with the upper or seminal suture more or less convex, and usually broadest below the middle."

5. H. gladiata. Stipules ovate, acute; pinnæ 3 to 6 pairs and an odd one; leaflets oblong, nerveless and glandless: calyx acute, hirsute, glandular: petals oblong, with very short stipes; pod lanceolate, slightly incurved, minutely hirsute, and scarcely glandular. (Zimapan, Mexico, *Coulter*.)

6. H. platycarpa. Stipules ovate, acute; pinnæ 4 to 6 pairs and an odd one; leaflets oblong, nerveless, glandless: calyx acute, hirsute, glandular: petals ovate, scarcely stipitate: pod broadly oblong, pubescent scarcely glandular. (Mexico, *Coulter*.)

+ + Vexillum broad, sessile, glandular: style cylindrical: pod lunate (much curved), acute, attenuate below, glabrous: glandular-stipellate.

7. H. Drummondii Torr. and Gray, Fl. N. Am. i. 393 (1840). Plants 8 to 10 cm. high, glabrate, glandular, much branched, frutescent from a shrubby base: leaves small (15 to 25 cm. long); pinnæ 3 (seldom 5); leaflets 4 to 6 pairs, linear (4 mm. long); stipules small: flowers with conical bases: vexillum red spotted, nearly naked below: filaments with few very short and blunt hairs, the outer glandular: pods 2 cm. long.

Habitat: From Austin to El Paso, Texas.

Specimens examined: Texas (*Wright*, 1849).

The upper stamens are scarcely dilated and with very large stipitate glands.

8. H. Texensis. Suffrutescent, scarcely glandular, 20 cm. high, everywhere the grayish bark covered with a fine pubescence: stems intricately branched into many very slender branchlets: leaves many: very small (10 to 18 mm. long); pinnæ 3, deciduous; leaflets minute, 3 to 5 pairs; stipules minute, glandular: peduncles 2 to 4 cm. long, slender, with 2 to 5 minute flowers: vexillum with a dense tuft each side of base: stamens glandless, the pubescence rather short, thick, pointed, dense below on upper stamens: style very slender: pod 15 cm. long.

Habitat: Texas, on the Nueces.

Specimens examined: Texas (*Berlandier* 612, type).

Type in Herb. Gray.

This species is most nearly related to *H. Drummondii* in respect to the shape of leaflets, pod, petals, and style; otherwise its gray, pubescent, flexuous branches and branchlets (scarcely larger below than above), its many petioles without pinnæ and short branchlets, its very small leaves, leaflets and flowers, its vexillum much tufted at base, and its stamens not glandular but much pubescent, with the upper prominently setose-appendaged, makes this a very distinct species.

+++ *Vexillum with broad and thick claw, glandless as well as filaments: style very long and cylindrical: pod lunate, with thin, lanceolate, deciduous sepals: stems frutescent, greenish, virgate: leaves small; stipules and bracts lanceolate, caducous.*

9. H. microphylla Torr. Mex. Bound. 58 (1859). Plant 2 to 12 cm. high, velvety puberulent: pinnæ 3, the odd one twice as long and with 7 to 11 pairs of leaflets, the lateral with 5 or 6 pairs; leaflets 3 mm. long, pubescent: racemes many, much elongated, loose, with many flowers (buds blunt): sepals pubescent, the lower much broader, concave: style pubescent, inclined above: pod lunate, both ends acute, upper suture nearly straight, 20 by 7 mm., pubescent, 2 to 6-seeded.

Habitat: From southern California through western Sonora and Lower California.

Specimens examined: California (*Parish Bros.* 591; *S. B. Parish*, 1880; *Vasey*, 1880; *Palmer*, 1870); Sonora (*Pringle*, 1884; *Palmer*); Lower California (*Palmer* 543 in part).

Palmer's pubescent specimens of 543, from Sonora, are smaller in every respect, with fewer flowers, the leaflets often glandular on margin, and the stamens with longer pubescence. It is closely related to the next.

10. H. glabra. Glabrous throughout (except margin of stipules and calyx), 45 cm. (or more) high, rigid branched (usually from one side): lateral pinnæ 1 cm. long, with 5 pairs of leaflets, the terminal slightly longer and with 6 pairs: racemes slender, 12 to 17 cm. long, bearing 15 to 25 small small flowers (buds acute): filaments (upper) with appendage narrow, densely setose on top, projecting at right angles, the pubescence long and slender: style scarcely enlarged or inclined above: pod lunate, 15 by 6 mm., with upper suture curved, acute, base attenuate.

H. microphylla var. *glabra* Watson, Proc. Am. Acad. xxiv. 47.

Habitat: On Los Angeles Bay, Lower California

Specimens examined: Lower California (*Palmer* 543, in part type).

Type in Herb. Gray, J. Donnell-Smith and Canby.

Var. INTRICATA. Lower (about 45 cm. high), scarcely erect, with branches and branchlets more spreading, shorter and very rigid: pinnæ scarcely as long and with 4 or 5 pairs of leaflets: peduncles many, very short, with few flowers (6 to 8): pod larger (20 by 7 mm.).

H. intricata Brandegee, Proc. Cal. Acad. Sci. 2. ii.

Habitat: At El Campo Aleman, Lower California.

Specimens examined: Lower California (*Brandegee*, 1889, type).

Type in Herb. Gray and National Herbarium.

These two forms are distinct from *H. microphylla* by growing (somewhat) in clumps and being more or less intricately branched (even from below), in the rigidity of the stems, in being entirely glabrous, in the pointed flowering buds, and the strongly attenuate pod.

§ 2. *With both stipitate and black sessile glands: flowers suberect, with ovate bracts and deciduous sepals: stamens somewhat declined: pod broadly ascinaciform: suffrutescent.*

11. H. caudata Gray, Pl. Lindh. pt. ii. 179 (1850). Stems 30 to 45 cm. high, with small tack-shaped glands: pinnæ 3 to 9, 2 to 4 cm. long, with 5 to 7 pairs of leaflets, the terminal one twice as long and with 11 to 15 pairs; leaflets ovate subcordate, veined, sometimes minutely black punctate beneath: raceme sparsely 6 to 9-flowered: sepals oval, concave, with both stipitate and black sessile glands: petals sessile, elliptical, with sessile glands: filaments eglandular with blunt pubescence, the upper not dilated: style cylindrical: pod with upper suture nearly straight, with dark subsessile glands: seeds large.

Habitat: From southern New Mexico (on Rio Grande) through southwestern Texas.

Specimens examined: Texas (*Wright* 146, type; *Schott*, 1854); New Mexico (Mexican Boundary Survey, 279).

Type in Herb. Gray.

This species is related to *Cæsalpina* in respect to sepals, petals, and pod.

§ 3. *Parts with black sessile or subsessile glands: leaflets black punctate beneath; stipules setaceous (except No. 12): bracts ovate-attenuate: calyx oblique, with the lower segment much broader, carinate-concave, at last deciduous: petals glandless below, the vexillum smallest: filaments with dense and slender pubescence: style short, enlarged above: stigma turned to the upper side, somewhat hooded: pod with muricate-setose projections and black depressed sessile or subsessile glands, acute, 2 or 3-seeded.*

* *Flowers with black flask-shaped subsessile glands: pod ovate or rhombic.*

12. H. brachycarpa Gray, Pl. Wright. i. 55 (1852). Herbaceous, 18 to 30 cm. high, with several slender stems from a ligneous root, few sessile glands, leafy to the top: leaves short; pinnæ 5 to 7; leaflets 4 or 5 pairs, elliptical, large-punctate; stipules obovate, caducous: peduncle short, with few small flowers on non-jointed pedicels: sepals and petals with black flask-shaped subsessile glands: pod oval, cuspidate, with few glands, the margin beset with large projections: 2 broadly obovate seeds.

Habitat: From New Mexico through southwestern Texas.

Specimens examined: New Mexico (*Wright* 1023, type in part, 77, type, 179 type); Texas (*Reverchon* 36, 1510); Texas and New Mexico (*Wright*, 1851, type).

Type in Herb. Gray.

The oval pod distinguishes this species from all others.

13. H. multijuga Watson Proc. Am. Acad. xxi. 451 (1886). Herbaceous, stout, 60 to 90 cm. high, covered throughout (except leaflets) with flask-shaped subsessile glands: leaves large; pinnæ 13 to 21; leaflets 5 to 9 pairs, tipped with a flask-shaped gland: racemes opposite the leaves (longer), many-flowered: pedicels jointed in the middle: vexillum small, with lamina densely covered with black, slender, obclavate glands: pod oblong-rhombic, 3 by 1 cm., cuspidate, 2-seeded.

Habitat: Rocky hills near Chihuahua, Chihuahua.

Specimens examined: Chihuahua (*Pringle* 148 and 371, types).

Types in Herb. Gray, J. Donnell-Smith, Canby, Martindale and Missouri Botanical Garden.

* * *Flowers with pyriform glands, intermixed (on calyx) with few black sessile ones.*

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flowers: petals glandular; style with pubescence, glands, and short projections below and with the membranaceous portion split from stigma: pod sublunate, 20 by 8 mm., broadest above middle, with very short stellate projections: seeds 2 or 3, oblique, obcordate, 5 to 7 by 4 to 6 mm.

Pomaria glandulosa Torr. Ann. Lyc. N. Y. ii. 193, not of Cav.

Habitat: From Colorado and Texas to California.

Specimens examined: Colorado (*Fremont*, 1845; *Green*, 1872; *Parry* 409); New Mexico (*Wright* 1022; *Rothrock* 1874; *Parry* 62; *Fendler* 173, 187; *Wislizenus* 452. 35; *Rusby* 110; *Bigelow*; *Le Roy* Distribution); Texas (*Lindheimer* 603,286; *Jermy* 730; *Nealley* 320; *Wright* 145; *Reverchon* 7, 161, 803); California (*Thurber* 744).

Type in Herb. Gray.

Var. POPINOENSIS. Herbaceous, taller, with thick stems: upper stems and flowers black with large glands; pinnæ 7 to 9; leaflets more glandular: racemes denser: petals with villous veins: filaments larger, more villous.

Habitat: Kansas.

Specimens examined. Kansas (*Popinoe*, 1876, type).

Type in National Herbarium.

These forms are characterized mostly by the slit of stigma and the tapering base of the pod.

17. H. fruticosa Watson Proc. Am. Acad. xxi. 451 (1886). Chestnut-brown shrub, 120 to 180 cm. high, with branches, foliage, and inflorescence canescent with a fine pubescence: leaves 2 cm. long; pinnæ 3 to 5; leaflets 3 or 4 pairs, slightly punctate as also petioles; stipules and bracts lacinate: racemes many, terminal, short (5 to 6 mm. long), with 9 to 12 small flowers: pedicels slender, jointed near the base: sepals costate: vexillum with pyriform glands, the claw broadly dilated: upper filaments with large setose dilations: style short, curved, scarcely enlarged above: pod lunate both ends acute, cinereous with minute projections.

Habitat: Coahuila, mountains near Jimulico.

Specimens examined: Coahuila (*Pringle* 230, type).

Type in Herb. Gray, and J. Donnell-Smith.

SYSTEMATIC AND ALPHABETIC INDEX OF NEW SPECIES OF NORTH AMERICAN PHANEROGAMS AND PTERIDOPHYTES, PUBLISHED IN 1891.*

Compiled by JOSEPHINE A. CLARK.

The increasing interest which is to-day manifested in systematic botany demands some method of indexing which will bring together in convenient form the information necessary to a complete history of the investigations and discoveries which have been made in this line of research. In the Botanical Division of the U. S. Department of Agriculture a carefully made card index is kept, in which all new species and new combinations are recorded. It is thought best to publish this index which has been found so useful in our work, omitting the synonomy and making no attempt to pass judgment upon the value of any species. In other words, it is simply a record of the work accomplished during the year in this line, and designed in printed form to be a convenience to monographers and others in their investigations. To make this list still more useful, in cases of new species, the State or region of the country in which they are found is given. A double enumeration of the species is made, viz, systematic and alphabetic. In the former arrangement Durand's Index Generum Phanerogamorum has been followed for convenience, this being the arrangement adopted in the National Herbarium. In the case of the revival of an old generic name in place of the one now in use the name will be found under the genus, as given in Durand's Index; also when an author has substituted a new generic name for an old one it will be found under the latter. Where a genus has been transferred by an author to a different family from that commonly accepted it will be placed under both families. A new genus has, inclosed in brackets, the number of the genus it naturally follows, with the letter *a* added, the number under which it is found in the National Herbarium.

The author of the species, place of publication, with volume and page, and. as stated above, in cases of new species the locality are given.

* It is our purpose to publish an annual index, and also to complete an index now in preparation, covering preceding years back to 1885. That future issues of the index may be as complete as possible, it is desired that authors will send reprints or reviews to the National Herbarium of such of their publications as may not be readily accessible. The accompanying carefully prepared systematic and alphabetic lists have been made under the immediate direction of my assistant, Mr. J. N. Rose.—GEORGE VASEY, *Botanist.*

As a general rule, a single reference is cited, but exception is made in cases of list names accompanied by sets of plants, and in first publications which are obscure or doubtful; a few names, merely list names, so far as we know, have been included.

Otto Kuntze's Revisio Generum Plantarum, with its thousands of specific changes, has, thus far, been but partially indexed, and is, therefore, passed over for the present, as this list has already been long delayed.

A bibliography of the works cited in this index is here added.

Amer. Gard.=The American Garden, vol. xii. N. Y. 1891. 4°.

Ann. N. Y. Acad.=New York Academy of Science. Annals, vol. vi. N. Y. 1891. 8°.

Bot. Centralb.=Botanisches Centralblatt; hrsg. O. Uhlworm u. F. G. Kohl. bd. xlvii. Cassel, 1891. 8°.

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245. Nasturtium bracteatum Watson, Proc. Amer. Acad. xxvi. 131.—Mexico.
——— **dictyotum** Greene, Fl. Fran. 268.—California.
——— **occidentale** Greene, Fl. Fran. 268.—California.
247. Arabis Macounii Watson, Proc. Amer. Acad. xxvi. 124.—British Columbia.
——— **Virginica** Trelease in Branner and Coville, Bot. Geol. Surv. Ark. 1888. iv. 165.
250. Streptanthus Californicus Greene, Fl. Fran. 256.
——— **inflatus** Greene, Fl. Fran. 257.
——— **Mildredæ** Greene, Fl. Fran. 260.—California.
——— **orbiculatus** Greene, Fl. Fran. 258.
——— **Parryi** Greene, Fl. Fran. 257.—California.
——— **secundus** Greene, Fl. Fran. 261.—California.
251. Thelypodium aureum Eastwood, Zoe, ii. 227.—Colorado.
——— **Hookeri** Greene, Fl. Fran. 263.
——— **procerum** Greene, Fl. Fran. 263.
253. Cardamine Californica Greene, Fl. Fran. 266.
——— **cardiophylla** Greene, Fl. Fran. 266.—California.
272. Vesicaria.
Physaria montana Greene, Fl. Fran. 249.
290. Sisymbrium canescens, var. alpestre, Cockerell, Bull. Torr. Club, xviii. 168.—Colorado.
——— **crenatum** Brandegee, Proc. Cal. Acad. ser. 2. iii. 111.—Lower California.
——— **multiracemosum** Watson, Proc. Amer. Acad. xxvi. 132.—Mexico.
295. Erysimum arenicola Watson, Proc. Amer. Acad. xxvi. 124.—Washington.
——— **capitatum** Greene, Fl. Fran. 269.
300. Stanleya albescens Jones, Zoe, ii. 17.—Arizona.
——— **elata** Jones, Zoe, ii. 16.—Nevada.
309. Tropidocarpum gracile, var. scabriusculum Greene, Fl. Fran. 278.
333. Senebiera.
Coronopus Coronopus Britton, Bull. Torr. Club, xviii. 268.
336. Lepidium nitidum, var. **insigne** Greene, Fl. Fran. 274.—California.
372. Thysanocarpus curvipes, var. pulchellus Greene, Fl. Fran. 276.
——— ——— var. **involutus** Greene, Fl. Fran. 276.—California.

CAPPARIDEÆ.

425. Cleome ephemera Brandegee, Proc. Cal. Acad. ser. 2. iii. 112.—Lower California.
427. Cleomella Palmerana Jones, Zoe, ii. 236.—Utah.
430. Polanisia.
Jacksonia tenuifolia Greene, Pitt. ii. 175.
——— **trachysperma** Greene, Pitt. ii. 175.
——— **uniglandulosa** Greene, Pitt. ii. 174.

VIOLARIEÆ.

469. Viola palmata, var. **obliqua** Hitchcock, Trans. St. Louis Acad. v. 487.
——— **purpurea**, var. **pinetorum** Greene, Fl. Fran. 243.

BIXINEÆ.

516. Xylosma Pringlei Robinson, Proc. Amer. Acad. xxvi. 164.—Mexico.

POLYGALEÆ.

542. Polygala Boykinii, var. **sparsifolia** Wheelock, Mem. Torr. Club, ii. 121.—Southern Florida.
——— **Lindheimeri**, var. **parvifolia** Wheelock, Mem. Torr. Club, ii. 143.—Arizona.
——— **subalata** Watson, Proc. Amer. Acad. xxvi. 132.—Mexico.
——— **Tweedyi** Britton in Wheelock, Mem. Torr. Club, ii. 143.—Texas.

CARYOPHYLLEÆ.

575. Silene Macounii Watson, Proc. Amer. Acad. xxvi. 124.—British Columbia.
——— **Suksdorfii** Robinson, Bot. Gaz. xvi. 44.—Washington.
530. Cerastium erectum Britton, Bull. Torr. Club, xviii. 268.
581. Stellaria montana Rose, Contr. Nat. Herb. i. 93.—Mexico.
536. Sagina
Alsinella ciliata Greene, Fl. Fran. 126.—California.
——— **crassicaulis** Greene, Fl. Fran. 125.
——— **occidentalis** Greene, Fl. Fran. 125.
——— **saginoides** Greene, Fl. Fran. 125.
594. Spergularia.
Tissa Clevelandi Greene, Fl. Fran. 127.—California.
——— **salina**, var. **Sanfordi** Greene, Fl. Fran. 129.—California.
——— ——— var. **sordida** Greene, Fl. Fran. 129.—California.
535. Drymaria carinata Brandegee, Zoe, ii. 70.—Lower California.
——— **polystachya** Brandegee, Zoe, ii. 70.—Lower California.

PORTULACEÆ.

612. Talinum Coahuilense Watson, Proc. Amer. Acad. xxvi. 132.—Mexico.
615. Claytonia perfoliata, var. **amplectens** Greene, Fl. Fran. 179.—California.
——— ——— var. **angustifolia** Greene, Fl. Fran. 179.—California.
——— ——— var. **carnosa** Greene, Fl. Fran. 178.—California.
618. Montia Chamissonis Greene, Fl. Fran. 180.
——— **diffusa** Greene, Fl. Fran. 181.
——— **Hallii** Greene, Fl. Fran. 180.
——— **linearis** Greene, Fl. Fran. 181.
——— **parvifolia** Greene, Fl. Fran. 181.

HYPERYCINEÆ.

631. Hypericum anagalloides, var. **Nevadense** Greene, Fl. Fran. 113.—California.
——— **Canadense**, var. **boreale** Britton, Bull. Torr. Club, xviii. 365.

MALVACEÆ.

734. Sidalcea delphinifolia Greene, Fl. Fran. 105.
——— ——— var. **humilis** Greene, Fl. Fran. 106.
——— **secundiflora** Greene, Fl. Fran. 103.—California.
736. Malvastrum fasciculatum Greene, Fl. Fran. 108.
——— **multiflorum** Greene, Fl. Fran. 109.—California.
——— **orbiculatum** Greene, Fl. Fran. 109.—California.
——— **Parryi** Greene, Fl. Fran. 108.—California.
742. Sida Alamosana Watson in Rose, Contr. Nat. Herb. i. 93; Proc. Amer. Acad. xxvi. 133.—Mexico.
749. Sphæralcea subhastata Coulter, Contr. Nat. Herb. i. 32.—Texas, New Mexico, and Mexico.
773. Chorisia soluta Donnell-Smith, Bot. Gaz. xvi. 1; Pl. Guat. pt. ii. 7.—Guatemala.

STERCULIACEÆ.

799. Myrodia Guatemalteca Donnell-Smith, Bot. Gaz. xvi. 2; Pl. Guat. pt. ii. 8.—Guatemala.
828. Ayenia Jaliscana Watson, Proc. Amer. Acad. xxvi. 133.—Mexico.
——— **paniculata** Rose, Contr. Nat. Herb. i. 94.—Mexico.
——— **truncata** Rose, Contr. Nat. Herb. i. 94.—Mexico.
——— **Wrightii** Robinson, Bot. Gaz. xvi. 340.—Mexico.

MALPIGHIACEÆ.

912. Bunchosia Pringlei Watson, Proc. Amer. Acad. xxvi. 133.—Mexico.
——— **Sonorensis** Rose, Contr. Nat. Herb. i. 94.—Mexico.
932. Heteropteris retusa Donnell-Smith, Bot. Gaz. xvi. 2; Pl. Guat pt. ii. 9.—Guatemala.
957. Gaudichaudia Uhdeana Niedenzu in Engler, Bot. Jahrb. xiv. Beibl. nr. 30.3.—Mexico.

GERANIACEÆ.

984. Erodium Californicum Greene, Fl. Fran. 99.—California.
988. Flœrkea alba Greene, Fl. Fran. 100.
——— **rosea** Greene, Fl. Fran. 100.

RUTACEÆ.

[1064*a*]. Sargentia Pringlei Watson, Proc. Amer. Acad. xxvi. 134.—Mexico.
1076. Esenbeckia flava Brandegee, Zoe, i. 378.—Lower California.

BURSERACEÆ.

1155. Bursera cerasifolia Brandegee, Proc. Cal. Acad. ser. 2. iii. 121.—Lower California.

ILICINEÆ.

1265. Ilex Caroliniana Loesener not Dahoon, Bot. Centralb. xlvii. 163.

CELASTRINEÆ.

[1297*a*]. Gyminda Grisebachii Sargent, Gard. and For. iv. 4.—Florida.

HIPPOCRATEACEÆ.

1315. Llavea.
Neopringlea integrifolia Watson, Proc. Amer. Acad. xxvi. 135.

RHAMNEÆ.

1329. Rhamnus crocea, var. **ilicifolia** Greene, Fl. Fran. 79.
1332. Ceanothus cuneatus, var. **ramulosus** Greene, Fl. Fran. 86.—California.
——— **rugosus** Greene, Fl. Fran. 88.—California.

SAPINDACEÆ.

1369. Serjania rachiptera Radlkofer in Donnell Smith Pl. Guat. pt. ii, 11 A; in Donnell Smith, Bot. Gaz. xvi. 192.—Guatemala.
——— **rufisepala** Radlkofer in Donnell Smith Pl. Guat. pt. ii, 11 A; in Donnell Smith, Bot. Gaz. xvi. 191.—Guatemala.
——— **psilophylla** Radlkofer in Donnell Smith Pl. Guat. pt. ii, 11 A; in Donnell Smith, Bot. Gaz. xvi. 191.—Guatemala.

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1741. Nissolia setosa Brandegee, Proc. Cal. Acad. ser. 2. iii. 127.—Lower California.

1750. Æschynomene vigil Brandegee, Proc. Cal. Acad. ser. 2. iii. 128.—Lower California.

1761. Desmodium amans Watson, Proc. Amer. Acad. xxvi. 135.—Mexico.

——— **Jaliscanum** var. **obtusum** Robinson, Proc. Amer. Acad. xxvi. 164.—Mexico.

——— **Lindheimeri** Vail, Bull. Torr. Club, xviii. 120.—Texas and Mexico.

——— **prostratum** Brandegee, Proc. Cal. Acad. ser. 2. iii. 128.—Lower California.

——— **subspicatum** Watson, Proc. Amer. Acad. xxvi. 135.—Mexico.

1776. Vicia Californica Greene, Fl. Fran. 3.—California.

——— **leucophæa**, var. **mediocincta** Rose, Contr. Nat. Herb. i. 119.

——— **linearis** Greene, Fl. Fran. 3.

1781. Centrosema.

Cruminium Virginianum Britton, Bull. Torr. Club, xviii. 269.

1784. Cologania Jaliscana Watson, Proc. Amer. Acad. xxvi. 136.

1804. Galactia discolor Donnell-Smith, Bot. Gaz. xvi. 194; Pl. Guat. pt. ii. 15.—Guatemala.

1813. Phaseolus montanus Brandegee, Proc. Cal. Acad. ser. 2. iii. 130.—Lower California.

1848. Piscidia mollis Rose, Contr. Nat. Herb. i. 98.—Mexico.

Ichthyomethia Piscipula Hitchcock, Gard. and For. iv. 472.

1849. Muellera.

Coublandia Mexicana Taubert, Bot. Centralb. xlvi. 389.

1910. Cæsalpinia placida Brandegee, Proc. Cal. Acad. ser. 2. iii. 131.—Lower California.

1992. Neptunia virgata Trelease in Branner and Coville, Bot. Geol. Surv. Ark. 1888. iv. 178.

1993. Desmanthus Cooleyi Trelease in Branner and Coville, Bot. Geol. Surv. Ark. 1888. iv. 178.

——— **fruticosus** Rose in Brandegee. Proc. Cal. Acad. ser. 2. iii. 132.

——— **oligospermus** Brandegee, Proc. Cal. Acad. ser. 2. iii. 132.—Lower California.

1994. Mimosa affinis Robinson, Bot. Gaz. xvi. 341.—Mexico.

——— **Palmeri** Rose, Contr. Nat. Herb. i. 99.—Mexico.

1995. Schrankia Intsia Trelease in Branner and Coville, Bot. Geol. Surv. Ark. 1888. iv. 178.

1997. Acacia filicoides Trelease in Branner and Coville, Bot. Geol. Surv. Ark. 1888. iv. 178.

1998. Lysiloma Acapulcensis, var. **brevispicata** Rose, Contr. Nat. Herb. i. 100.—Mexico.

——— **Watsoni** Rose, Contr. Nat. Herb. i. 99.—Mexico.

2001. Pithecolobium Mexicanum Rose, Contr. Nat. Herb. i. 100.—Mexico.

ROSACEÆ.

2019. Prunus ilicifolia var. **integrifolia** Sudworth, Gard. and For. iv. 51.

Cerasus Californica Greene, Fl. Fran. 50.

2023. Nuttallia.

Osmaronia cerasiformis Greene, Pitt. ii. 191.

2024. Eriogynia Hendersoni Canby, Bot. Gaz. xvi. 236.—Washington.

2025. Spiræa discolor, var. **ariæfolia** Jack, Gard. and For. iv. 615.

——— **rubra** Britton, Bull. Torr. Club, xviii. 270.

Basilima millefolium Greene, Fl. Fran. 57.

2026. Neillia.

Physocarpus monogynia Coulter, Contr. Nat. Herb. ii. 104.

2042. Rubus Canadensis, var. invisus Bailey, Amer. Gard. xii. 84.—New York.
——— ——— var. roribaceus Bailey, Amer. Gard. xii. 83.—New York.
——— **Millspaughi** Britton, Bull. Torr. Club, xviii. 366.—West Virginia.
——— **nanus** Watson, Proc. Amer. Acad. xxvi. 162.—Ascension Island.
——— **occidentalis, var. grandiflora** Focke in Donnell-Smith, Bot. Gaz. xvi. 3.—Guatemala.
——— **villosus, var. albinus** Bailey, Amer. Gard. xii. 84.—New York.
——— **sativus** Bailey, Amer. Gard. xii. 83.—New York.
2047. Cercocarpus Arizonicus Jones, Zoe, ii. 14.—Arizona.
*——— **parvifolius, var. breviflorus** Jones, Zoe, ii. 245.—Utah.
2051. Geum canadense, var. flavum Britton, Bull. Torr. Club, xviii. 270.
2055. Potentilla biennis Greene, Fl. Fran. 65.—California.
——— **Californica, var. elata** Greene, Fl. Fran. 66.
——— **Donnell-Smithii** Focke in Donnel-Smith, Bot. Gaz. xvi. 3.—Guatemala.
——— **Douglasii, var. tenella** Greene, Fl. Fran. 67.
——— **glandulosa, var. lactea** Greene, Fl. Fran. 65.—California.
——— ——— var. **reflexa** Greene, Fl. Fran. 65.—California.
——— **Gordoni, var. lycopodioides** Greene, Fl. Fran. 69.
2058. Alchemilla arvensis, var. glabra Greene, Fl. Fran. 62.—California.
2062. Agrimonia parviflora, var. macrocarpa Focke in Donnell-Smith, Bot. Gaz. xvi. 3.—Guatemala.
2069. Rosa gratissima Greene, Fl. Fran. 73.—California.
——— **Sonomensis** Greene, Fl. Fran. 72.—California.
2074. Pyrus Ivensis Bailey, Amer. Gard. xii. 473.—Wisconsin, Illinois, Iowa, and Kansas.
——— **Soulardi** Bailey, Amer. Gard. xii. 472.—Minnesota, Missouri, and Texas.
2083. Amelanchier glabra Greene, Fl. Fran. 52.—California.
——— **pallida** Greene, Fl. Fran. 53.—California.

SAXIFRAGACEÆ.

2092. Saxifraga Howellii Greene, Pitt. ii. 163.—Oregon.
2095. Boykinia elata Greene, Fl. Fran. 190.
——— **ranunculifolia** Greene, Fl. Fran. 190.
2100. Tellima nudicaulis Greene, Pitt. ii. 162.—Montana.
——— **scabrella** Greene, Pitt. ii. 162.—California.

CRASSULACEÆ.

2173. Tillæa Bolanderi Greene, Fl. Fran. 183.
2182. Cotyledon nubigena Brandegee, Proc. Cal. Acad. ser. 2. iii. 136.—Lower California.

HALORAGEÆ.

2230. Myriophyllum Farwellii Morong, Bull. Torr. Club, xviii. 146.—Michigan.
2231. Callitriche longipedunculata Morong, Bull. Torr. Club, xviii. 236.—California.

MELASTOMACEÆ.

2370. Heeria axillaris Cogniaux in DC. Monogr. Phan. vii. 138.—Mexico and Guatemala.
2371. Arthrostemma parvifolia Cogniaux in DC. Monogr. Phan. vii. 143.—Guatemala.

* The use of my name in publishing *Cercocarpus breviflorus* as a variety of *C. parvifolius* was unauthorized, and the combination should be credited to its real publisher, Mr. Jones.—FREDERICK V. COVILLE.

2383. **Tibouchina Bourgæana** Cogniaux in DC. Monogr. Phan. vii. 264; Bot. Gaz. xvi. 4.—Mexico, Costa Rica, and Guatemala.
——— **Ferrariana** Cogniaux in DC. Monogr. Phan. vii. 1176.—Mexico.
——— **Galeottiana** Cogniaux in DC. Monogr. Phan. vii. 258.—Mexico.
——— **longisepala** Cogniaux in DC. Monogr. Phan. vii. 259.—Guatemala.
——— **Mexicana** Cogniaux in DC. Monogr. Phan. vii. 258.—Mexico.
——— **monticola** Cogniaux in DC. Monogr. Phan. vii. 263.—Mexico.
——— **Naudiniana** Cogniaux in DC. Monogr. Phan. vii. 264.—Mexico.
——— **rufipilis** Cogniaux in DC. Monogr. Phan. vii. 259.—Mexico.
——— ——— var. **hirsuta** Cogniaux in DC. Monogr. Phan. vii. 259.—Mexico.
——— **scabriuscula** Cogniaux in DC. Monogr. Phan. vii. 262.—Mexico.
——— **Schiedeana** Cogniaux in DC. Monogr. Phan. vii. 261.—Mexico.
——— **Trianæi** Cogniaux in DC. Monogr. Phan. vii. 261.—Mexico.

2402. **Monochætum angustifolium** Cogniaux in DC. Monogr. Phan. vii. 1181.—Mexico.
——— **Candollei** Cogniaux in DC. Monogr. Phan. vii. 396.—Mexico.
——— **diffusum** Cogniaux in Donnell-Smith, Bot. Gaz. xvi. 4. in DC. Monogr. Phan. vii. 395.—Guatemala.

2412. **Axinæa Costaricensis** Cogniaux in DC. Monogr. Phan. vii. 1182.—Mexico.

2454. **Leandra cornoides,** var. **hirtella** Cogniaux in DC. Monogr. Phan. vii. 1189.—Mexico.
——— ——— var. **latifolia** Cogniaux in DC. Monogr. Phan. vii. 1189.—Mexico.
——— **Costaricensis,** var. **angustifolia** Cogniaux in DC. Monogr. Phan. vii. 1187.—Costa Rica.
——— ——— var. **hirsutior** Cogniaux in DC. Monogr. Phan. vii. 1187.—Costa Rica.

2459. **Conostegia Bernoulliana** Cogniaux in DC. Monogr. Phan. vii. 698.—Guatemala and Costa Rica.
——— **Cooperi** Cogniaux in DC. Monogr. Phan. vii. 705.—Costa Rica.
——— **Donnell-Smithii** Cogniaux in DC. Monogr. Phan. vii. 700.—Costa Rica.
——— **hirtella** Cogniaux in Donnell-Smith, Bot. Gaz. xvi. 4; in DC. Monogr. Phan. vii. 711.—Guatemala.
——— **lanceolata** Cogniaux in DC. Monogr. Phan. vii. 708.—Costa Rica.
——— **Mexicana** Cogniaux in DC. Monogr. Phan. vii. 707.—Mexico.
——— **Monteleagreana** Cogniaux in DC. Monogr. Phan. vii. 1189.—Costa Rica.
——— **puberula** Cogniaux in DC. Monogr. Phan. vii. 703.—Central America.

2462. **Miconia biperulifera** Cogniaux in DC. Monogr. Phan. vii. 911.—Costa Rica.
——— **Bourgæana** Cogniaux in DC. Monogr. Phan. vii. 772.—Mexico.
——— **Carioana** Cogniaux in DC. Monogr. Phan. vii. 773.—Guatemala.
——— **Costaricensis** Cogniaux in DC. Monogr. Phan. vii. 887.—Costa Rica.
——— **glabrata** Cogniaux in DC. Monogr. Phan. vii. 875.—Mexico.
——— **Guatemalensis** Cogniaux in Donnell-Smith, Bot. Gaz. xvi. 5; in DC. Monogr. Phan. vii. 758.—Guatemala.
——— **humilis** Cogniaux in DC. Monogr. Phan. vii. 764.—Guatemala.
——— **Liebmannii** Cogniaux in DC. Monogr. Phan. vii. 821.—Mexico.
——— **paleacea** Cogniaux in DC. Monogr. Phan. vii. 757.—Costa Rica.
——— **Pittierii** Cogniaux in DC. Monogr. Phan. vii. 1191.—Costa Rica.
——— **Schlechtendalii** Cogniaux in DC. Monogr. Phan. vii. 804.—Mexico.
——— **Tonduzii** Cogniaux in DC. Monogr. Phan. vii. 1191.—Costa Rica.
——— ——— var. **cuneata** Cogniaux in DC. Monogr. Phan. vii 1191.—Costa Rica.
——— ——— var. **furfuracea** Cogniaux in DC. Monogr. Phan. vii. 1191.—Costa Rica.
——— ——— var. **latifolia** Cogniaux in DC. Monogr. Phan. vii. 1191.—Costa Rica.

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2528. **Œnothera compestris var. cruciata Greene, Fl. Fran. 216.**
——— **decorticans** Greene, Fl. Fran. 217.
——— **depressa** Greene, Pitt. ii. 216.—Montana.
——— **hirtella** Greene, Fl. Fran. 215.—California.
——— **Jepsonii** Greene, Fl. Fran. 211.—California.
——— **strigulosa, var. epilobioides** Greene, Fl. Fran. 216.—California.
Boisduvallia densiflora, var. imbricata Greene, Fl. Fran. 225.—California.
——— **stricta** Greene, Fl. Fran. 225.—California.
Godetia pulcherrima Greene, Pitt. ii. 217.—Southern California.

LOASEÆ.

2571. **Mentzelia nitens** Greene, Fl. Fran. 234.—California.

PASSIFLORACEÆ.

2584. **Passiflora allantophylla** Masters in Donnell-Smith, Bot. Gaz. xvi. 7.—Guatemala.
——— **clypeophylla** Masters in Donnell-Smith, Bot. Gaz. xvi. 6.—Guatemala.
——— **dicthophylla** Masters in Donnell-Smith, Bot. Gaz. xvi. 8.—Guatemala.
——— **ornithoura** Masters in Donnell-Smith, Bot. Gaz. xvi. 8.—Guatemala.
——— **transversa** Masters in Donnell-Smith, Bot. Gaz. xvi. 7.—Guatemala.

CUCURBITACEÆ.

2647. **Schizocarpum Palmeri** Cogniaux and Rose, Contr. Nat. Herb. i. 100.—Mexico.
2651. **Melothria Donnell-Smithii** Cogniaux Bot. Gaz. xvi. 9.—Guatemala.
——— ——— var. **hirtella** Cogniaux in Donnell-Smith, Bot. Gaz. xvi. 9.—Guatemala.
——— ——— var. **rotundifolia** Cogniaux in Donnell-Smith, Bot. Gaz. xvi. 9.—Guatemala.
2662. **Anguria diversifolia** Cogniaux in Donnell-Smith, Bot. Gaz. xvi. 10.—Guatemala.
——— **oblongifolia** Cogniaux in Donnell-Smith, Bot. Gaz. xvi. 9.—Guatemala.
2663. **Gurania Donnell-Smithii** Cogniaux in Donnell-Smith, Bot. Gaz. xvi. 10.—Guatemala.
2674. **Echinocystis cirrhopedunculata** Rose, Contr. Nat. Herb. i. 100.—Mexico.
Echinopepon cirrhopedunculata Rose, Contr. Nat. Herb. i. 100.—Mexico.
2676. **Cyclanthera testudinea** Brandegee, Proc. Cal. Acad. ser. 2. iii. 138.—Lower California.
[**2676** *a*.] **Vaseyanthus Rosei** Cogniaux, Zoe, i. 368.—Lower California.
2678. **Sicyos longisepalus** Cogniaux in Donnell-Smith, Bot. Gaz. xvi. 11.—Guatemala.
Micrampelis cirrhopedunculata Rose, Contr. Nat. Herb. i. 100.—Mexico.
——— **fabacea, var. agrestis** Greene, Fl. Fran. 236.—California.

BEGONIACEÆ.

2695. **Begonia Californica** Brandegee, Proc. Cal. Acad. ser. 2. iii. 140.—Lower California.
——— **Pringlei** Watson, Proc. Amer. Acad. xxvi. 136.—Mexico.

CACTEÆ.

2702. **Mamillaria Notesleini** Britton, Bull. Torr. Club, xviii. 350, 367.—Montana.
——— **Roseana** Brandegee, Zoe, ii. 19.—Lower California.
——— **striatus** Brandegee, Zoe, ii. 19.—Lower California.
2708. **Cereus Sargentius** Orcutt, Gard. and For. iv. 436.
2714. **Opuntia rotundifolia** Brandegee, Zoe, ii. 21.—Lower California.

FICOIDEÆ.

2730. Mollugo Cambessidesii Coulter, Contr. Nat. Herb. ii. 138.

UMBELLIFERÆ.

2758. Eryngium Mexicanum Watson, Proc. Amer. Acad. xxvi. 136.—Mexico.
2763. Sanicula Canadensis, var. Marylandica Hitchcock, Trans. St. Louis Acad. v. 497.
2782. Arracacia Mariana Watson, Proc. Amer. Acad. xxvi. 136.—Mexico.
——— **multifida** Watson, Proc. Amer. Acad. xxvi. 136.—Mexico.
2814. Pimpinella Mexicana Robinson, Proc. Amer. Acad. xxvi. 164.—Mexico.
2854. Crantzia.
Lilæopsis lineata Greene, Pitt. ii. 192.
2870. Cymopterus decipiens Jones, Zoe, ii. 246.—Utah.
——— **megacephalus** Jones, Zoe, ii. 14.—Arizona.
2886. Peucedanum lapsidosum Jones, Zoe, ii. 246.—Utah.

ARALIACEÆ.

2962. Oreopanax oligocarpum Donnell-Smith, Bot. Gaz. xvi. 194.—Guatemala.

RUBIACEÆ.

3222. Chomelia Pringlei Watson, Proc. Amer. Acad. xxvi. 137.—Mexico.
3286. Mapouria parviflora K. Schumann, in Engler u. Prantl, Pflanzenfam. iv. teil, 4 abt. 111.—Mexico and Central America.
3294. Uragoga.
Cephælis glomerulata Donnell-Smith, Bot. Gaz. xvi. 12.—Guatemala.
3347. Crusea megalocarpa Watson, Proc. Amer. Acad. xxvi. 137.—Mexico.

VALERIANEÆ.

3380. Plectritis major Höck in Engler u. Prantl, Pflanzenfam. iv. teil, 3 abt. 177.—California.

COMPOSITÆ.

3405. Vernonia gigantea Trelease, in Branner and Coville, Bot. Geol. Surv. Ark. 1888. iv. 189.
——— **graminifolia** Trelease, in Branner and Coville, Bot. Geol. Surv. Ark. 1888. iv. 189.
——— **marginata** Trelease, in Branner and Coville, Bot. Geol. Surv. Ark. 1888. iv. 189.
——— **Palmeri** Rose, Contr. Nat. Herb. i. 101.—Mexico.
——— **Salvinæ, var. canescans** Coulter, Bot. Gaz. xvi. 95; in Donnell-Smith, Pl. Guat. pt. ii. 33.—Guatemala.
[3448 *a*]. Biolettia riparia Greene, Pitt. ii. 216.—California.
3460 Eupatorium ageratifolium, var. purpureum Coulter, Bot. Gaz. xvi. 98.—Guatemala.
——— **Chapalense** Watson, Proc. Amer. Acad. xxvi. 138.—Mexico.
——— **Donnell-Smithii** Coulter, Bot. Gaz. xvi. 95; in Donnell-Smith, Pl. Guat. pt. ii. 34.—Guatemala.
——— ———, var. **parvifolium** Coulter, Bot. Gaz. xvi, 96; in Donnell-Smith, Pl. Guat. pt. ii. 34.—Guatemala.
——— **Espinosarum, var. subintegrifolium** Robinson, Proc. Amer. Acad. xxvi. 165.—Mexico.
——— **lyratum** Coulter, Bot. Gaz. xvi. 96; in Donnell-Smith, Pl. Guat. pt. ii. 34.—Guatemala.
——— **Madrense** Watson, Proc. Amer. Acad. xxvi. 137.—Mexico.
——— **Rafaelense** Coulter, Bot. Gaz. xvi. 97; in Donnell-Smith, Pl. Guat. pt. ii. 35.—Guatemala.

3465. Brickellia Pacayensis Coulter, Bot. Gaz. xvi. 98; in Donnell-Smith, Pl. Guat. pt. ii. 35.—Guatemala.

3468. Kuhnia eupatorioides, var. glutinosa Hitchcock, Trans. St. Louis Acad. v. 198.

3469. Liatris Helleri Porter, Bull. Torr. Club, xviii. 147.—North Carolina.

[3479 *a*]. Golionema heterophylla Watson, Bot. Gaz. xvi. 267.
Oligonema heterophylla Watson, Proc. Amer. Acad. xxvi. 138.—Mexico.

3488. Aplopappus stoloniferus, var. glabratus Coulter, Bot. Gaz. xvi. 98; in Donnell-Smith, Pl. Guat. pt. ii. 36.—Guatemala.

3491. Bigelovia glareosa Jones, Zoe, ii. 247.—Utah.

3493. Solidago juncea, var. ramosa Porter and Britton, Bull. Torr. Club, xviii. 368.—Eastern United States.

3513. Aphanostephus Pinulensis Coulter, Bot. Gaz. xvi. 98; in Donnell-Smith, Pl. Guat. pt. ii. 35.—Guatemala.

——— **skirrobasis** Trelease, in Branner and Coville, Bot. Geol. Surv. Ark. 1888. iv. 191.

3515. Achætogeron linearifolius Watson, Proc. Amer. Acad. xxvi. 139.—Mexico.

3537. Psilactis tenuis Watson, Proc. Amer. Acad. xxvi. 139.—Mexico.

3544. Aster Carnerosanus Watson, Proc. Amer. Acad. xvi. 139.—Mexico.

——— **Elmeri** Greene, Pitt. ii. 170.—California.

——— **Engelmanni, var. paucicapitatus** Robinson, Proc. Amer. Acad. xxvi. 176.—Washington.

——— **Orcuttii** Vasey and Rose, Bot. Gaz. xvi. 113.—California.

——— **venustus** Jones, Zoe, ii. 247.—Utah.

3561. Erigeron Alamosanum Rose, Contr. Nat. Herb. i. 102.—Mexico.

——— **aureus** Greene, Pitt. ii. 169.

——— **Californicus** Jepson, Bull. Torr. Club, xvii. 324.—California.

——— **Chihuahuanus** Greene, Pitt. ii. 169.

——— **coronarius** Greene, Pitt. ii. 167.—Mexico.

——— **Forreri** Greene, Pitt. ii. 169.

——— **fraternus** Greene, Pitt. ii. 169.

——— **Galeottii** Greene, Pitt. ii. 168.

——— **multiceps** Greene, Pitt. ii. 167.—California.

——— **Seemannii** Greene, Pitt. ii. 168.

——— **stolonifer** Greene, Pitt. ii. 169.—Colorado.

——— **strigulosus** Greene, Pitt. ii. 169.

——— **Wislizeni** Greene, Pitt. ii. 168.

3741. Clibadium Donnell-Smithii Coulter, Bot. Gaz. xvi. 98; in Donnell-Smith, Pl. Guat. pt. ii. 37.—Guatemala.

3751. Melampodium bibracteatum Watson, Proc. Amer. Acad. xxvi. 140.—Mexico.

——— **glabrum** Watson, Proc. Amer. Acad. xxvi. 139.—Mexico.

——— **sinuatum** Brandegee, Proc. Cal. Acad. ser. 2. iii. 144.—Lower California.

3756. Berlandiera pumila Trelease, in Branner and Coville, Bot. Geol. Surv. Ark. 1888. iv. 193.

3760. Parthenium repens Eggert, Cat. Pl. St. Louis, 16.

3777. Zinnia linearis, var. latifolia Rose, Contr. Nat. Herb. i. 102.—Mexico.

3797. Gymnolomia decumbens Robinson, Proc. Amer. Acad. xxvi. 165.—Mexico.

3798. Sclerocarpus spatulatus Rose, Contr. Nat. Herb. i. 103.—Mexico.

3804. Tetragonotheca Guatemalensis Coulter, Bot. Gaz. xvi. 99; in Donnell-Smith, Pl. Guat. pt. ii. 38.—Guatemala.

3819. Zexmenia dulcis Coulter, Bot. Gaz. xvi. 99; in Donnell-Smith, Pl. Guat. pt. ii. 38.—Guatemala.

——— **fruticosa** Rose, Contr. Nat. Herb. i. 103.—Mexico.

3822. Tithonia fruticosa Canby and Rose, Contr. Nat. Herb. i. 104.—Mexico.

——— **macrophylla** Watson, Proc. Amer. Acad. xxvi. 140.—Mexico.

——— **Palmeri** Rose, Contr. Nat. Herb. i. 104.—Mexico.

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4154. Perezia collina Watson, Proc. Amer. Acad. xxvi. 144.—Mexico.
——— **montana** Rose, Contr. Nat. Herb. i. 105.—Mexico.

4199. Troximon.
Agoseris alpestris Greene, Pitt. ii. 177.
——— **apargioides** Greene, Pitt. ii. 177.
——— **Arizonica** Greene, Pitt. ii. 176.
——— **aurantiaca** Greene, Pitt. ii. 177.
——— **barbellulata** Greene, Pitt. ii. 177.
——— **Chilensis** Greene, Pitt. ii. 178.
——— **elata** Greene, Pitt. ii. 177.
——— **glauca** Greene, Pitt. ii. 176.
——— **gracilenta** Greene, Pitt. ii. 177.
——— ——— var. **Greenei** Greene, Pitt. ii. 177.
——— **grandiflora** Greene, Pitt. ii. 178.
——— **heterophylla** Greene, Pitt. ii. 178.
——— **hirsuta** Greene, Pitt. ii. 177.
——— **laciniata** Greene, Pitt. ii. 178.
——— **lævigata** Greene, Pitt. ii. 178.
——— **major** Jepson, Pitt. ii. 179; Bull. Torr Club, xviii. 325.
——— **Marshallii** Greene, Pitt. ii. 178.
——— **parviflora** Greene, Pitt. ii. 176.
——— **plebeia** Greene, Pitt. ii. 178.
——— **Pœppigii** Greene, Pitt. ii. 178.
——— **purpurea** Greene, Pitt. ii. 177.
——— **retrorsa** Greene, Pitt. ii. 178.
——— **rosea** Greene, Pitt. ii. 176.
——— **scorzoneræfolia** Greene, Pitt. ii. 177.

4202. Pyrrhopappus.
Sitilias grandiflora Greene, Pitt. ii. 180.
——— **multicaulis** Greene, Pitt. ii. 179.
——— **pauciflora** Greene, Pitt. ii. 180.
——— **Rothrockii** Greene, Pitt. ii. 180.
——— **Sesseana** Greene, Pitt. ii. 180.

4206. Lactuca spicata Hitchcock, Trans. St. Louis Acad. v. 506.

4224. Rafinesquia.
Nemoseris Californica Greene, Pitt. ii. 193.
——— **Neo-Mexicana** Greene, Pitt. ii. 193.

LOBELIACEÆ.

4253. Laurentia Michoacana, var. **ovatifolia** Robinson in Pringle, Pl. Mex. 1890; Proc. Amer. Acad. xxvi. 167.—Mexico.
——— **ovatifolia** Robinson, Proc. Amer. Acad. xxvi. 166.—Mexico.

4262. Lobelia laxiflora, var. **insignis** Donnell-Smith, Bot. Gaz. xvi. 12.—Guatemala.
——— **novella** Robinson, Proc. Amer. Acad. xxvi. 167.—Mexico.

4264. Heterotoma aurita Brandegee, Proc. Cal. Acad. ser. 2. iii. 149.—Lower California.

4268. Nemacladus oppositifolius Robinson, Proc. Amer. Acad. xxvi. 168.—Mexico.

VACCINIACEÆ.

4302. Macleania cordata, var. **linearifolia** Donnell-Smith, Bot. Gaz. xvi. 12.—Guatemala.

ERICACEÆ.

4330. Arctostaphylos media Greene, Pitt. ii. 171.—Washington.
——— **patula** Greene, Pitt. ii. 171.—California.
——— **pungens**, var. **cratericola** Donnell-Smith, Bot. Gaz. xvi. 13.—Guatemala.
4375. Rhododendron Sonomense Greene, Pitt. ii. 172.—California.

PRIMULACEÆ.

4449. Steironema quadriflorum Hitchcock, Trans. St. Louis Acad. v. 506.
4457. Samolus Valerandi, var. **repens** Brandegee, Proc. Cal. Acad. ser. 2. iii. 150.—Lower California.

MYRSINEÆ.

4469. Parathesis pleurobotryosa Donnell-Smith, Bot. Gaz. xvi. 195.—Guatemala.
——— **sessilifolia** Donnell-Smith, Pl. Guat. pt. ii. 45; Bot. Gaz. xvi. 195.—Guatemala.

SAPOTACEÆ.

4508. Mimusops Floridana Engler in Engler u. Prantl, Pflanzenfam. iv. teil, 1 abt. 152.—Florida.

STYRACEÆ.

4527. Symplocos Benthami Gürke in Engler u. Prantl, Pflanzenfam. iv. teil, 1 abt. 172.—Mexico.
——— **Pringlei** Robinson, Proc. Amer. Acad. xxvi. 168.—Mexico.
4529. Styrax Jaliscana Watson, Proc. Amer. Acad. xxvi. 144.—Mexico.

OLEACEÆ.

4540. Fraxinus viridis, var. **pubescens** Hitchcock, Trans. St. Louis Acad. v. 507.

ASCLEPIADEÆ.

4739. Gomphocarpus.
Acerates Floridana Hitchcock, Trans. St. Louis Acad. v. 508.
4740. Schizonotus ariæfolius Greene, Fl. Fran. 58.
4745. Metastelma latifolia Rose, Contr. Nat. Herb. i. 106.—Mexico.
4801. Gonolobus parviflorus, var. **brevicoronatus** Robinson, Proc. Amer. Acad. xxvi. 169.—Texas.
4819. Frimbristemma calycosa Donnell-Smith, Pl. Guat. pt. ii. 48; Bot. Gaz. xvi. 196.—Guatemala.
4831. Nephradenia fruticosa Donnell-Smith, Pl. Guat. pt. ii. 48; Bot. Gaz. xvi. 196.—Guatemala.

LOGANIACEÆ.

4898. Buddleia Chapalana Robinson, Proc. Amer. Acad. xxvi. 169.—Mexico.
——— **Wrightii** Robinson, Bot. Gaz. xvi. 341.—Mexico.

GENTIANÆ.

4937. Erythræa Pringleana Wittrock, Bot. Gaz. xvi. 85.—Mexico.
4939. Sabbatia dichotoma Trelease in Branner and Coville, Bot. Geol. Surv. Ark. 1888. iv. 204.
4945. Schultesia Mexicana Watson, Proc. Amer. Acad. xxvi. 144.—Mexico.
4955. Gentiana quinquefolia, var. **occidentalis** Hitchcock, Trans. St. Louis Acad. v. 508.
4959. Frasera Utahensis Jones, Zoe, ii. 13.—Utah.

POLEMONIACEÆ.

4968. Collomia Pringlei Peter in Engler u. Prantl, Pflanzenfam. iv. teil, 3 abt. a 48

4969. Gilia Howardi Jones, Zoe, ii. 250.—Utah.

HYDROPHYLLACEÆ.

4978. Phacelia dubia Trelease in Branner and Coville, Bot. Geol. Surv. Ark. 188[illegible] iv. 205.

——— ——— var. **hirsuta** Trelease in Branner and Coville, Bot. Geol. Surv Ark. 1888. iv. 205.

——— **Eisenii** Brandegee, Zoe, ii. 252.—California.

BORAGINEÆ.

4992. Cordia Pringlei Robinson, Proc. Amer. Acad. xxvi. 169.—Mexico.

——— **Sonoræ** Rose, Contr. Nat. Herb. i. 106.—Mexico.

4998. Ehretia Mexicana Watson, Proc. Amer. Acad. xxvi. 144.—Mexico.

5006. Heliotropium Pringlei Robinson, Proc. Amer. Acad. xxvi. 170.—Mexico.

5016. Omphalodes acuminata Robinson, Proc. Amer. Acad. xxvi. 170.—Mexico.

5026. Echinospermum.

Lappula ciliata Greene, Pitt. ii. 182.

——— **deflexa** Greene, Pitt. ii. 182.

——— **diffusa** Greene, Pitt. ii. 182.

——— **floribunda** Greene, Pitt. ii. 182.

——— **hispida** Greene, Pitt. ii. 182.

——— **Mexicana** Greene, Pitt. ii. 182.

——— **nervosa** Greene, Pitt. ii. 182.

——— **pinetorum** Greene, Pitt. ii. 182.

——— **Redowskii** Greene, Pitt. ii. 182.

——— **ursina** Greene, Pitt. ii. 182.

——— **Virginiana** Greene, Pitt. ii. 182.

5027. Eritrichium.

Krynitzkia glomerata, var. acuta Jones, Zoe, ii. 250.—Utah.

CONVOLVULACEÆ.

5077. Ipomœa alata Rose, Contr. Nat. Herb. i. 108.—Mexico.

——— **Bernouilliana** Peter in Engler u. Prantl, Pflanzenfam. iv. teil, 3 abt. a 30.—Guatemala.

——— **brevipes** Peter in Engler u. Prantl, Pflanzenfam iv. teil. 3 abt. a 30.—Guatemala.

——— **Grayi** Rose, Contr. Nat. Herb. i. 107.—Mexico.

——— **Leonensis** Robinson, Proc. Amer. Acad. xxvi. 170.—Mexico.

——— **macrantha** Peter in Engler u. Prantl, Pflanzenfam. iv. teil, 3 abt. a 31.—Guatemala.

——— **nuda** Peter in Engler u. Prantl, Pflanzenfam. iv. teil, 3 abt. a 31.—Guatemala.

——— **rostrata** Peter in Engler u. Prantl, Pflanzenfam. iv. teil, 3 abt. a 30.—Guatemala.

——— **Schrenkiana** Peter in Engler u. Prantl. Pflanzenfam. iv. teil, 3 abt. a 30.—New York.

——— **sericophylla** Peter in Engler u. Prantl, Pflanzenfam. iv. teil, 3 abt. a 31.—Guatemala.

——— **Tortugensis** Peter in Engler u. Prantl, Pflanzenfam. iv. teil, 3 abt. 31.—Guatemala.

5088. Breweria tenella Peter in Engler u. Prantl, Pflanzenfam. iv. teil. 3 abt. 16.

5106. Solanum Donnell-Smithii Coulter in Donnell-Smith, Pl. Guat. pt. ii. 51; Bot. Gaz. xvi. 144.—Guatemala.

——— **Grayi** Rose, Contr. Nat. Herb. i. 108.—Mexico.

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ACANTHACEÆ.

5512. Mendoncia cleistophylla Donnell-Smith, Pl. Guat. pt. ii. 57.
5611. Justicia Pringlei Robinson, Proc. Amer. Acad. xxvi. 173.—Mexico.
5621. Dianthera ovata Trelease in Branner and Coville, Bot. Geol. Surv. Ark. 1888. iv. 210.
5623. Carlowrightia fimbriata Brandegee, Proc. Amer. Acad. ser. 2. iii. 161.—Lower California.
——— **pectinata** Brandegee, Proc. Cal. Acad. ser. 2. iii. 160.—Lower California.
5640. Dicliptera formosa Brandegee, Proc. Cal. Acad. ser. 2. iii. 162.—Lower California.
5641. Tetramerium.
Henrya imbricans Donnell-Smith, Pl. Guat. pt. ii. 59; Bot. Gaz. xvi. 198.—Guatemala.

VERBENACEÆ.

5680. Lippia formosa Brandegee, Proc. Cal. Acad. ser. 2. iii. 163.—Lower California.
——— **montana** Brandegee, Proc. Cal. Acad. ser. 2. iii. 163.—Lower California.
5694. Citharexylum Berlandieri Robinson, Proc. Amer. Acad. xxvi. 174.—Mexico.
——— **Cinaloanum** Robinson, Bot. Gaz. xvi. 342.—Mexico.

LABIATÆ.

5744. Hyptis collina Brandegee, Proc. Cal. Acad. ser. 2. iii. 164.—Lower California.
5780. Calamintha glabra Trelease in Branner and Coville, Bot. Geol. Surv. Ark. 1888. iv. 211.
5793. Salvia Alamosana Rose, Contr. Nat. Herb. i. 110.—Mexico.
5810. Scutellaria hispidula Robinson, Proc. Amer. Acad. xxvi. 174.—Mexico.
5829. Stachys aspera, var. tenuiflora Hitchcock, Trans. St. Louis. Acad. v. 513.

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5870. Mirabilis exserta Brandegee, Proc. Cal. Acad. ser. 2. iii. 165.
5874. Bœrhaavia Alamosana Rose, Contr. Nat. Herb. i. 110.—Mexico.
——— **octandra** Watson, Proc. Amer. Acad. xxvi. 145.—Mexico.
——— **Sonoræ** Rose, Contr. Nat. Herb. i. 111.—Mexico.
5886. Pisonia aculeata, var. macranthocarpa Donnell-Smith, Bot. Gaz. xvi. 198.—Guatemala.
5889. Neea psychotrioides Donnell-Smith, Pl. Guat. pt. ii. 63; Bot. Gaz. xvi. 199.—Guatemala.

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5901. Paronychia monandra Brandegee, Proc. Cal. Acad. ser. 2. iii. 115.—Lower California.

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5952. Cladothrix cryptantha Watson, Proc. Amer. Acad. xxvi. 125.—California.

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5971. Monolepis Nuttalliana Greene, Fl. Fran. 168.
5979. Atriplex corrugata Watson, Bot. Gaz. xvi. 345.—Colorado.
6014. Salicornia occidentalis Greene, Fl. Fran. 173.

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6070. **Eriogonum agninum** Greene, Pitt. ii. 165.—Southern California.
——— **dasyanthemum,** var. **Jepsonii** Greene, Fl. Fran. 150.—California.
——— **deserticola** Watson, Proc. Amer. Acad. xxvi. 125.—Southern California.
——— **elegans** Greene, Pitt. ii. 173.—California.
——— **flexum** Jones, Zoe, ii. 15.—Arizona.
——— **minutiflorum** Watson, Proc. Amer. Acad. xxvi. 125.—Southern California.
——— **Nortoni** Greene, Pitt. ii. 165 —California.
——— **vimineum,** var. **caninum** Greene, Fl. Fran. 150.—California.
6071. **Oxytheca hirtiflora** Greene, Fl. Fran. 153.
——— **spergulina** Greene, Fl. Fran. 153.
6072. **Chorizanthe Nortoni** Greene, Pitt. ii. 164.—California.
6084. **Polygonum Kelloggii** Greene, Fl. Fran. 134.—California.

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6125. **Apodanthes globosa** Watson in Robinson, Bot. Gaz. xvi. 83.—Mexico.
——— **Pringlei** Watson in Robinson, Bot. Gaz. xvi. 83.—Mexico.

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6135. **Aristolochia nana** Watson, Proc. Amer. Acad. xxvi. 145.—Mexico.

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6141. **Piper Donnell-Smithii** C. DC. in Donnell-Smith, Pl. Guat. pt. ii. 95.—Guatemala.
——— **Jaliscanum** Watson, Proc. Amer. Acad. xxvi. 145.—Mexico.
——— **santa-rosanum** C. DC. in Donnell-Smith, Pl. Guat. pt. ii. 96.—Guatemala.
——— **Tuerckheimii** C. DC. in Donnell-Smith, Pl. Guat. pt. ii. 96.—Guatemala.
——— **Yzabalamum** C. DC. in Donnell-Smith, Pl. Guat. pt. ii. 66.—Guatemala.
6145. **Peperomia albidiflora** C. DC. in Donnell-Smith, Pl. Guat. pt. ii. 66.—Guatemala.
——— **Cobana** C. DC. in Donnell-Smith, Pl. Guat. pt. ii. 66.—Guatemala.
——— **Jaliscana** Watson, Proc. Amer. Acad. xxvi. 145.—Mexico.
——— **Tuerckheimii** C. DC. in Donnell-Smith, Pl. Guat. pt. ii. 96.—Guatemala.

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6195. **Persea Donnell-Smithii** Mez in Donnell-Smith, Pl. Guat. pt. ii. 67.—Guatemala.

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6275. **Daphnopsis Tuerckheimiana** Donnell-Smith, Bot. Gaz. xvi. 13; Pl. Guat. pt. ii. 68.—Guatemala.

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6370. **Euphorbia biserrata** Millspaugh, Zoe, i. 347.—California.
——— **digitata** Watson, Proc. Amer. Acad. xxvi. 146.—Mexico.

6370. Euphorbia incerta Brandegee, Proc. Amer. Acad. ser. 2. iii. 171.—Lower California.
——— **misella** Watson, Proc. Amer. Acad. xxvi. 146.—Mexico.
——— **rugulosa** Greene, Fl. Fran. 92.
——— **tuberosa** Rose, Contr. Nat. Herb. i. 111.—Mexico.
——— **subpeltata** Watson, Proc. Amer. Acad. xxvi. 146.—Mexico.
——— **Watsonii** Millspaugh, Zoe, i. 347.—California.
6404. Phyllanthus Pringlei Watson, Proc. Amer. Acad. xxvi. 147.—Mexico.
[6455*a*]. Zimapania Schiedeana Engler and Pax in Engler u. Prantl, Pflanzenfam. iii. teil, 5 abt. 119.—Mexico.
6460. Croton Alamosanum Rose, Contr. Nat. Herb. i. 111.—Mexico.
——— **calvescens** Watson, Proc. Amer. Acad. xxvi. 147.—Mexico.
——— **elæagnoides** Watson, Proc. Amer. Acad. xxvi. 147.—Mexico.
6488. Manihot Pringlei Watson, Proc. Amer. Acad. xxvi. 148.—Mexico.
6502. Acalypha aliena Brandegee, Proc. Cal. Acad. ser. 2. iii.—Lower California.
——— **dissitifolia** Watson, Proc. Amer. Acad. xxvi. 148.—Mexico.
——— **flavescens** Watson, Proc. Amer. Acad. xxvi. 149.—Mexico.
——— **longipes** Watson, Proc. Amer. Acad. xxvi. 149.—Mexico.
——— **multispicata** Watson, Proc. Amer. Acad. xxvi. 148.—Mexico.
6555. Dalechampia scandens, var. **trisecta** Donnell-Smith, Bot. Gaz. xvi. 190.—Guatemala.
6570. Sabastiania Palmeri Rose, Contr. Nat. Herb. i. 112.—Mexico.
——— **Pringlei** Watson, Proc. Amer. Acad. xxvi. 149.—Mexico.
6572. Gymnanthes Pringlei Watson in Pringle, Pl. Mex. 1890.—Mexico.

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6621. Ficus Guadalajarana Watson, Proc. Amer. Acad. xxvi. 151.—Mexico.
——— **Jaliscana** Watson, Proc. Amer. Acad. xxvi. 150.—Mexico.
——— **Pringlei** Watson, Proc. Amer. Acad. xxvi. 150.—Mexico.
——— **radulina** Watson, Proc. Amer. Acad. xxvi. 151.—Mexico.
6661. Pilea glabra Watson, Proc. Amer. Acad. xxvi. 152.—Mexico.
6681. Myriocarpa brachystachys Watson, Proc. Amer. Acad. xxvi. 152.—Mexico.
——— **longipes**, var. **Yzabalensis** Donnell-Smith, Bot. Gaz. xvi. 13.—Guatemala.

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6695. Carya Fernowiana Sudworth, Trees of Washington, D. C. [6].—In cultivation.
Hicoria Fernowiana Sudworth, Trees of Washington, D. C. [6].—In cultivation.
6696. Juglans Mexicana Watson, Proc. Amer. Acad. xxvi. 152.—Mexico.

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6710. Castanea Castanea, var. **Americana** Sudworth, Trees of Washington, D. C. [7].—In cultivation.

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6712. Salix Brownii, var. **petræa** Bebb, Bot. Gaz. xvi. 107.—California.
——— **macrocarpa**, var. **argentea** Bebb, Bot. Gaz. xvi. 105.—California.

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6754. Microstylis tenuis Watson, Proc. Amer. Acad. xxvi. 152.—Mexico.
Achroanthes corymbosa Greene, Pitt. ii. 184.
——— **Floridana** Greene, Pitt. ii. 183.

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7587. Tinantia modesta Brandegee, Proc. Cal. Acad. ser. 2. iii. 175.—Lower California.

7588. Tradescantia Palmeri Rose, Contr. Nat. Herb. i. 113.—Mexico.

——— **Pringlei** Watson, Proc. Amer. Acad. xxvi. 157.—Mexico.

7594. Leptorhœo tenuifolia Rose, Contr. Nat. Herb. i. 113.—Mexico.

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7668. Chamædorea Pringlei Watson, Proc. Amer. Acad. xxvi. 157.—Mexico.

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7806. Philodendron Donnell-Smithii Engler in Donnell-Smith, Pl. Guat. pt. ii. 77.—Guatemala.

——— **Guatemala** Engler in Donnell-Smith, Pl. Guat. pt. ii. 77.—Guatemala.

7828. Syngonium Donnell-Smithii Engler in Donnell-Smith, Pl. Guat. pt. ii. 77, 78.—Guatemala.

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7860. Triuris brevistylis Donnell-Smith, Bot. Gaz. xvi. 14.—Guatemala.

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7887. Zostera Oregana Watson, Proc. Amer. Acad. xxvi. 131.—Oregon.

——— **Pacifica** Watson, Proc. Amer. Acad. xxvi. 131.—Puget Sound, Monterey, and Santa Barbara.

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7891. Eriocaulon articulatum Morong, Bull. Torr. Club, xviii. 353.

——— **Jaliscanum** Watson, Proc. Amer. Acad. xxvi. 157.—Mexico.

7895. Lachnocaulon anceps Morong, Bull. Torr. Club, xviii. 360.

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7988. Carex hystericina, var. **angustior** Bailey, Contr. Nat. Herb, i. 126.—Arizona.

——— **monile**, var. **Pacifica** Bailey, Proc. Cal. Acad. ser. 2. iii. 105.—California.

——— **obnupta** Bailey, Proc. Cal. Acad. ser. 2. iii. 104.—California.

——— **quadrifida** Bailey, Proc. Cal. Acad. ser. 2. iii. 104.—California.

——— ——— var. **lenis** Bailey, Proc. Cal. Acad. ser. 2. iii. 105.—California.

——— **straminea**, var. **festucacea** Hitchcock, Trans. St. Louis Acad. v. 525.

——— **trichocarpa**, var. **læviconica** Hitchcock, Trans. St. Louis Acad. v. 524.

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7990. Zea canina Watson, Proc. Amer. Acad. xxvi. 160.—Mexico.

8020. Andropogon macrourus, var. **pumilus** Vasey, Bot. Gaz. xvi. 27.—Texas.

8027. Hilaria cenchroides, var. **ciliatus** Scribner, Proc. Acad. Phil. 1891. 293.—Mexico.

8045. Paspalum setaceum, var. **pubiflorum** Vasey, Contr. Nat. Herb. i. 114.—Mexico.

8050. **Panicum fasciculatum**, var. **disitiflorum** Vasey, Proc. Cal. Acad. ser. 2. iii. 177.

——— **hians**, var. **purpurascens** Scribner, Proc. Acad. Phil. 1891. 296.—Mexico.

8089. **Aristida Californica**, var. **glabrata** Vasey, Proc. Cal. Acad. ser. 2. iii. 178.

8096. **Muhlenbergia Alamosæ** Vasey, Bot. Gaz. xvi. 146.—Mexico.

——— **articulata** Scribner, Proc. Acad. Phil. 1891. 298.—Mexico.

——— **Schaffneri**, var. **longiseta** Scribner, Proc. Acad. Phil. 1891. 297.

8111. **Sporobolus complanatus** Scribner in Pringle, Pl. Mex. 1890; Proc. Acad. Phil. 1891. 299.

——— **pilosus** Vasey, Bot. Gaz. xvi. 26.—Kansas.

8124. **Calamagrostis densus** Vasey, Bot. Gaz. xvi. 147.—Southern California.

——— **kœlerioides** Vasey, Bot. Gaz. xvi. 147.—Southern California.

8145. **Deschampsia Pringlei** Scribner, Proc. Acad. Phil. 1891. 300.—Mexico.

8155. **Danthonia Mexicana** Scribner, Proc. Acad. Phil. 1891. 301.—Mexico.

8167. **Schedonnardus paniculatus** Trelease in Branner and Coville, Bot. Geol. Surv. Ark. 1888. iv. 236.

8169. **Bouteloua Alamosana** Vasey, Contr. Nat. Herb. i. 115.—Mexico.

——— **Americana** Scribner, Proc. Acad. Phil. 1891. 306.

——— **stolonifera** Scribner, Proc. Acad. Phil. 1891. 302.—Mexico.

——— **Triæna** Scribner, Proc. Acad. Phil. 1891. 307.

——— **uniflora** Vasey, Bot. Gaz. xvi. 26.—Texas.

8181. **Leptochloa Mexicana** Scribner, Proc. Acad. Phil. 1891. 302.—Mexico.

——— **spicata** Scribner, Proc. Acad. Phil. 1891. 304.

8195. **Orcuttia Greenei** Vasey, Bot. Gaz. xvi. 146.—California.

Eragrostis interrupta Trelease in Branner and Coville, Bot. Geol. Surv. Ark. 1888. iv. 237.

——— **Pringlei** Scribner in Pringle, Pl. Mex. 1890; Proc. Acad. Phil. 1891. 304.

——— **spicata** Vasey, Bot. Gaz. xvi. 146.—Lower California.

8224. **Melica multinervosa** Vasey, Bot. Gaz. xvi. 235.—Texas.

8225. **Diarrhena diandra** Hitchcock, Trans. St. Louis Acad. v. 529.

8260. **Brachypodium pinnatum**, var. **cæspitosus** Scribner, Proc. Acad. Phil. 1891. 305.—Mexico.

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8309. **Pinus Donnell-Smithii** Masters in Donnell-Smith, Pl. Guat. pt. ii. 72; Bot. Gaz. xvi. 199.—Guatemala.

——— **monophylla**, var. **edulis** Jones, Zoe, ii. 251.—Colorado.

8313. **Picea nigra**, var. **cœrulea** Sudworth, Trees of Washington, D. C. [9].—In cultivation.

8339. **Torreya.**

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——— **grande** Greene, Pitt. ii. 194.

——— **nuciferum** Greene, Pitt. ii. 194.

——— **taxifolium** Greene, Pitt. ii. 194.

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30.* **Pellæa Pringlei** Davenport, Gard. and For. iv. 555.—Mexico.

38.* **Asplenium Ascensionis** Watson, Proc. Amer. Acad. xxvi. 163.—Ascension Island.

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[1] As Durand's index includes only the Phanerograms, the Pteridophytes are arranged in the National Herbarium according to Hooker's Species Filicum. These numbers being duplicates of Durand's are distinguished in the National Herbarium and in this paper by means of an asterisk *.—J. N. Rose, *Acting Botanist.*

38.* Asplenium dubiosum Davenport, Gard. and For. iv. 483.—**Mexico.**
——— **Pringlei** Davenport, Gard. and For. iv. 449.—Mexico.
44.* Nephrodium ascendens Donnell-Smith, Bot. Gaz. xvi. 14.
——— **viscidum** Watson, Proc. Amer. Acad. xxvi. 163.—Ascension Island.
50.* Notholæna Lemmoni, var. **straminea** Davenport, Gard. and For. iv. 519.—Mexico.
——— **Nealleyi**, var. **Mexicana** Davenport, Bot. Gaz. xvi. 54.—**Mexico.**
——— **rigida** Davenport, Gard. and For. iv. 519.—Mexico.
59.* Hemionitis elegans Davenport, Gard. and For. iv. 484.—**Mexico.**

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Amorpha
hispidula.
Andropogon
macrourus, var. pumilus.
Anemone
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Hepatica, var. acuta.
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trichocarpa, var. læviconica.
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pectinata.
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Echinocystis
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Echinopepon
cirrhopedunculatus.
Ehretia
Mexicana.
Encelia
nutans.

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pulcherrima.
Golionema
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Gonolobus
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Govenia
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Gurania
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Hepatica.
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Laphamia
Gilensis.
Lappula
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Leptorhœo
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Manihot
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Mapouria
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Melampodium
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glabrum.
sinuatum.
Melica
multinervosa.
Melothria
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var. rotundifolia.
Mendoncia
cleistophylla.
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nitens.
Metastelma
latifolia.
Miconia
biperulifera.
Bourgæana.
Carioana.
Costaricensis.
glabrata.
Guatemalensis.
humilis.
Liebmannii.
paleacea.
Pittierii.
Schlectendalii.
Tonduzii.
var. cuneata.
var. furfuracea.
var. latifolia.
var. oblongifolia.
var. serrulata parvifolia.
Tuerckheimii.
Micrampelis
cirrhopedunculata.
fabacea, var. agrestis.
Micranthemum
micranthemoides.
Microstylis
tenuis.
Mimosa
affinis.
Palmeri.

Mimulus
Congdonii.
filicaulis.
gracilipes.
Mimusops
Floridana.
Mirabilis
exserta.
Mollugo
Cambessidesii.
Monochætum
angustifolium.
Candollei.
diffusum.
Monolepis
Nuttalliana.
Montia
Chamissonis.
diffusa.
Hallii.
linearis.
parvifolia.
Mouriria
Muelleri.
Muhlenbergia
Alamosæ.
articulata.
Schaffneri, var. longiseta.
Myriocarpa
brachystachys.
longipes, var. Yzabalensis.
Myriophyllum
Farwellii.
Myrodia
Guatemalteca.
Nasturtium
bracteatum.
dictyotum.
occidentale.
Neea
psychotrioides.
Nemacladus
oppositifolius.
Nemoseris
Californica.
Neo-Mexicana.
Neopringlea
integrifolia.
Nephradenia
fruticosa.
Nephrodium
dualc.
viscidum.
Neptunia
virgata.
Nissolia
setosa.
Notholæna
Lemmoni, var. straminea.
Nealleyi, var. Mexicana.
rigida.
Œnothera
arguta.
campestris.
var. cruciata.
decorticans.
depressa.
hirtella.
Jepsonii.
strigulosa, var. epilobioides.
Oligonema
heterophylla.
Omphalodes
acuminata.
Opuntia
rotundifolia.
Orcuttia
Greenei.
Oreopanax
oligocarpum.
Osmaronia
cerasiformis.
Otopappus
acuminatus.
alternifolia.
Oxytheca
hirtiflora.
spergulina.
Panicum
fasciculatum, var. dissitiflorum.
hians, var. purpurascens.
Parathesis
pleurobotryosa.
sessilifolia.
Paronychia
monandra.
Parrya
Menziesii.
Parthenium
repens.
Paspalum
setaceum, var, pubiflorum.
Passiflora
allantophylla.
clypeophylla.
dicthophylla.
ornithoura.
transversa.

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Rosa
gratissima.
Sonomensis.
Rubus
Canadensis, var. invisus.
var. roribaceus.
Millspaughi.
nanus.
occidentalis, var. grandiflora.
villosus, var. albinus.
var. sativus.
Russelia
coccinea.
Sabbatia
dichotoma.
Salicornia
occidentalis.
Salix
Brownii, var. petræa.
macrocarpa, var. argentea.
Salmea
Palmeri.
Salvia
Alamosana.
Samolus
Valerandi, var. repens.
Sanicula
Canadensis, var. Marylandica.
Sargentia
Pringlei.
Saxifraga
Howellii.
Schedonnardus
paniculatus.
Schizocarpum
Palmeri.
Schizonotus
ariæfolius.
Schrankia
Intsia.
Schultesia
Mexicana.
Sclerocarpus
spatulatus.
Scutellaria
hispidula.
Sebastiania
Palmeri.
Pringlei.
Senecio
Cobanensis.
Donnell-Smithii.
Ghiesbreghtii, var. pauciflorus.
Guadalajarensis.
Senecio—Continued.
Hesperius.
Jaliscana.
Rawsonianus.
Serjania
psilophylla.
rachiptera.
rufisepala.
Sicyos
longisepalus.
Sida
Alamosana.
Sidalcea
delphinifolia.
var. humilis.
secundiflora.
Silene
Macounii.
Suksdorfii.
Sisymbrium
canescens, var. alpestre.
crenatum.
multiracemosum.
Sisyrinchium
platyphyllum.
Sitilias
grandiflora.
multicaulis.
pauciflora.
Rothrockii.
Sesseana.
Solanum
Donnell-Smithii.
Grayi.
Solenophora
erubescens.
Solidago
juncea, var. ramosa.
Sommera
sabiceoides.
Sphæralcea
subhastata.
Spilanthes
Botterii.
Spiræa
discolor, var. ariæfolia.
rubra.
Spiranthes
Jaliscana.
Pringlei.
Spondias
Radlkoferi.
Sporobolus
complanatus.
pilosus.

Stachys
aspera, var. tenuiflora.
Stanleya
albescens.
elata.
Steironema
quadriflorum.
Stellaria
montana.
Streptanthus
Californicus.
inflatus.
Mildredæ.
orbiculatus.
Parryi.
secundus.
Styrax
Jaliscana.
Symplocos
Benthami.
Pringlei.
Syngonium
Donnell-Smithii.
Tabebuia
Palmeri.
Talinum
Coahuilense.
Tellima
nudicaulis.
scabrella.
Tephrosia
cana.
Tetragonotheca
Guatemalensis.
Thalictrum
dioicum, var. coriaceum.
Thelypodium
aureum.
Hookeri.
procerum.
Thysanocarpus
curvipes, var. involutus.
var. pulchellus.
Tibouchina
Bourgæana.
Ferrariana.
Galeottiana.
longisepala.
Mexicana.
monticola.
Naudiniana.
rufipilis.
var hirsuta.
scabriuscula.
Schiedeana.
Trianæi.

Tillæa
Bolanderi.
Tillandsia
cucaënsis.
cylindrica.
Pringlei.
remota.
Tinantia
modesta.
Tissa
Clevelandi.
salina, var. Sanfordi.
var. sordida.
Tithonia
fruticosa.
macrophylla.
Palmeri.
Topobea
Maurofernandeziana.
Pittierii.
Watsonii.
Tradescantia
Palmeri.
Pringlei.
Trifolium
amœnum.
Macræi, var. albo-purpureum.
roscidum.
tridentatum, var. scabrellum.
trilobatum,
variegatum, var. melananthum.
Triuris
brevistylis.
Tropidocarpum
gracile, var. scabriusculum.
Tumion
Californicum.
grande.
nuciferum.
taxifolium.
Vaseyanthus
Rosei.
Verbesina
crosa.
scaposa.
Vernonia
gigantea.
graminifolla.
marginata
Palmeri.
Salvinæ, var. canescens.
Vicia
Californica.
leucophæa, var. mediocincta.
linearis.

Viguiera
leptocaulis.
montana.
Viola
palmata, var. obliqua.
purpurea, var. pinetorum.
Willardia
Mexicana.
Withania
melanocystis.
Xylosma
Pringlei.
Xylothermia
montana.

Zea
canina.
Zexmenia
dulcis.
fruticosa.
Zimapania
Schiedeana.
Zinnia
linearis, var. latifolia.
Zostera
Oregana.
Pacifica.

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HISTORY

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POLYGALEÆ.

Polygala alba Nutt. Gravelly hills, west of Paul's Valley. Not seen elsewhere. July. No. 152.
Polygala incarnata L. Colbert. Abundant in rich prairies easterly. June. No. 31.
Polygala sanguinea L. Atoka. Low ground. June. No. 59.
Polygala verticillata L. Prairies along Cash Creek, near Fort Sill. July. No. 161.
Polygala ambigua Nutt. Sans Bois Mountains. Rocky ridges. July. No. 92.
Krameria secundiflora DC. Colbert; Wichita Mountains. Rich woods. August. No. 3.

CARYOPHYLLEÆ.

Arenaria Michauxii Hook. Stonewall. Gravelly stone hills. July. No. 138.

PORTULACEÆ.

Portulaca pilosa L. Quanah's ranch. Low ground. July. No. 208.
Talinum parviflorum Nutt. Sans Bois Mountains. Frequent on rocky hills throughout the Territory.

MALVACEÆ.

Callirrhoë digitata Nutt. Sans Bois Mountains. Rich open pine woods. July. No. 102.

LINEÆ.

Linum rigidum Pursh. Caddo. Dry limestone hills. June. No. 43.
Linum sulcatum Riddell. Caddo. Prairies. Common throughout. June. No. 56.
Linum Virginianum L. Sans Bois Mountains. Rich open woods. Flowers small, of a light straw color. July. No. 105.

GERANIACEÆ.

Oxalis violacea L. Rocky places on a mountain near Quanah's ranch. Abundant on Mount Scott and probably throughout Wichita Mountains. July. No. 228.
This plant has the scaly bulb of the species to which it is here referred. The flowers are, however, rather larger, and no plants could be found with leaves. The Indians familiar with it claimed that it never had leaves. But this is probably an error. In dry seasons plants in bloom and having no leaves are found in Minnesota.

RUTACEÆ.

Ptelea trifoliata L., **var.** mollis Torr. and Gray. Signal Mountain. Westward. Rocky hills. July. No. 247.

ILICINEÆ.

Ilex decidua Walt. McAlester. Along creeks. East. August. No. 296.

RHAMNEÆ.

Rhamnus Caroliniana Walt. McAlester. Along creeks. August. No. 295.
Ceanothus Americanus L. Colbert. Not seen in the western part of the Territory. June. No. 7.

AMPELIDACEÆ.

Vitis cordifolia Mx. Chickasaw Creek, near Stringtown. June. No. 74.
Vitis rupestris Scheele. Quanah's ranch. Banks of Sandy Creek. Common westward. July. No. 219.
Ampelopsis quinquefolia Mx. Quanah's ranch. July. No. 240.
Cissus Ampelopsis Pers. Mount Scott. Creek banks. August. No. 253.
Cissus incisa Desmoul. Quanah's ranch. Climbs over Symphoricarpos, Juniperous, etc. July. No. 189.

ANACARDIACEÆ.

Rhus Canadensis Marsh, var. **trilobata** Gray. Quanah Mountain.[1] Rocky slopes July. No. 200.

Rhus copallina L. McAlester. Hills and prairies. Abundant eastward. July No. 123.

LEGUMINOSÆ.

Baptisia sphærocarpa Nutt. Colbert. Sandy soil. June. No. 17.

Crotalaria ovalis Pursh. Colbert. Sandy banks. June. No. 115.

Hosackia Purshiana Benth. Quanah's ranch. July. No. 214.

Psoralea cuspidata Pursh. Caddo. Rocky hills. Not noted elsewhere. June. No. 50.

Psoralea simplex Nutt. Atoka. Low ground. Not uncommon throughout. June. No. 60.

Dalea aurea Nutt. Five miles west of Stonewall. Prairies. Very abundant. July. No. 133.

Dalea laxiflora Pursh. Paul's Valley. Prairies and hills. July. No. 148.

Petalostemon candidus Mx. Colbert and Stonewall. Upland prairies. Abundant. June, July. Nos. 12, 268.

Petalostemon multiflorus Nutt. Wichita Mountains. Abundant west of the Chickasaw Nation on prairies and rocky slopes. August. No. 259.

Petalostemon violaceus Mx. Colbert and Stonewall. Gravelly prairie. June, July. Nos. 13, 31.

Indigofera leptosepala Nutt. Erin Springs. Frequent westward to Green County. In sandy soil, along streams. July. No. 155.

Tephrosia onobrychoides Nutt. Atoka. Sandy prairies. June. No. 67.

Tephrosia Virginiana Pers. Colbert. Upland prairies. Abundant as far west as the Santa Fe Railroad. June. No. 11.

Sesbania macrocarpa Muhl. McAlester. Evidently introduced. August. No. 320.

Astragalus Canadensis L. Sans Bois Mountains. Creek banks. July. No. 100.

Stylosanthes elatior Swartz. Colbert. Dry, sandy prairies. Common in the eastern part. June. No. 20.

Desmodium acuminatum DC. Erin Springs. Open thickets. July. No. 176.

Desmodium Dillenii Darl. Sans Bois Mountains. Not common. August. No. 315.

Desmodium Illinoense Gray. Fort Sill. Frequent in sandy soil in low ground. August. No. 260.

Desmodium paniculatum DC. Along Cress Creek, 12 miles north of Fort Sill. August. No. 261.

Desmodium sessilifolium Torr. and Gray. Sans Bois Mountains. Rich woods. Frequent. July. No. 104.

Vicia exigua Nutt. Quanah Mountains. Common. July. No. 187.

Clitoria Mariana L. Sans Bois Mountains. Rocky pine woods. Common throughout in similar situations. July. No. 91.

Galactia mollis Mx. Quanah's ranch. Rich soil, in low ground. July. No. 210.

Phaseolus helvolus L. Quanah's ranch and Fort Sill. July. Nos. 220, 246.

Rhynchosia latifolia Nutt. Colbert. Rich prairies. Infrequent eastward. June. No. 112.

Cassia Chamæcrista L. Colbert. Abundant throughout. June. No. 19.

Cassia nictitans L. Sans Bois Mountains. Gravelly hills. August. No. 332.

Cassia Tora L. Sans Bois Mountains. Rich soil along creeks. Frequent, especially eastward. August. No. 282.

Prosopis juliflora DC. Fort Sill. Prairies. The "mesquit" of the Spaniards and Indians. July. No. 243.

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[1] Quanah Mountain is one of the Wichita Mountains. Mr. Sheldon gives it this name because it lies back of Quanah Parker's ranch. Quanah Parker is head chief of the Comanches. The Wichita Mountains are all very rocky, with cedars scattered over them.

Neptunia lutea Benth. Colbert. Abundant throughout. June. No. 30.
Desmanthus brachylobus Benth. Caddo. Common throughout. June. No. 38.
Acacia filicina Willd. Colbert. June. Nos. 5, 109.

MELASTOMACEÆ.

Rhexia Mariana L. Sans Bois Mountains. Rich, open ground. August. No. 311.

LYTHRARIEÆ.

Lythrum alatum Pursh. Atoka. Frequent in low ground east. June. No. 58.

ONAGRARIEÆ.

Ludwigia cylindrica Ell. McAlester. Muddy creek banks. June. No. 81.
Œnothera Missouriensis Sims. Quanah's ranch. Gravelly and rocky slopes. July. No. 237.
Œnothera serrulata Nutt. Colbert. High, dry, sandy prairies. June. No. 18.
Œnothera speciosa Nutt. Caddo. Gravelly, dry soil. June. No. 45.
Gaura biennis L. Gaines Creek. Prairies. August. No. 300.
Gaura sinuata Nutt. Cash Creek. Sandy prairies. July. No. 172.
Stenosiphon virgatus Spach. Stonewall. Common to Wichita Mountains. Gravelly and sandy prairies. July. No. 144.

LOASEÆ.

Mentzelia oligosperma Nutt. Quanah's ranch. Rocky slopes. July. No. 231.

CUCURBITACEÆ.

Cucurbita fœtidissima HBK. Fort Sill. Roadsides and waste places. Apparently introduced. The fruit is somewhat smaller than a nutmeg melon. July. No. 183.
Cyclanthera dissecta Arn. Quanah's ranch. Rocky places. July. No. 229.

FICOIDEÆ.

Mollugo verticillata L. Signal Mountain. Near Fort Sill. Common in hard soil. August. No. 248.

UMBELLIFERÆ.

Eryngium diffusum Torr. Cash Creek. In a prairie-dog town. A prostrate, spreading plant. July. No. 169.
Zizia aurea Koch. Stringtown, along Chickasaw Creek. Low, sandy ground. June. No. 73.
Discopleura Nuttallii DC. Colbert and McAlester. June, July. Nos. 9, 122.
Eurytænia Texana Torr. and Gray. Anadarko. Gravelly soil. July. No. 167.
Bifora Americana Benth. and Hook. Caddo. Dry, gravelly soil. June. No. 41.
Trepocarpus Æthusæ Nutt. Sans Bois Mountains. Creek banks, in black soil. July. No. 101.
Daucus pusillus Mx. Colbert. Sandy soil. June. No. 2907.

CORNACEÆ.

Cornus candidissima Marsh. McAlester. Low ground, along streams. June. No. 85.
Cornus florida L. Banks of Chickasaw Creek, near Stringtown. June. No. 72.

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Chætopappa asteroides DC. Stringtown. Rich pine woods, in gravelly soil June. No. 76.

Boltonia diffusa Ell. Sans Bois Mountains. In rich soil along streams. August. No. 240.

Aster paludosus Ait. Along Sans Bois Creek bottoms. Also frequent in oper. prairies through Choctaw Nation. August. No. 323.

Aster patens Ait., var. **gracilis** Hooker. Rocky woods near Hartshorn. Frequent eastward. September. No. 338.

Engelmannia pinnatifida Torr. and Gray. Caddo. Dry, gravelly hills. Infrequent. June. No. 44.

Iva angustifolia Nutt. Sans Bois Mountains; also at McAlester. Sandy uplands. August. No. 328.

Iva ciliata Willd. Sans Bois Mountains. Low ground. Not seen far westward, August. No. 330.

Ambrosia bidentata Mx. McAlester. Abundant everywhere. August. No. 314.

Echinacea angustifolia DC. Erin Springs and westward. Gravelly hills. Not common. July. No. 154.

Rudbeckia amplexicaulis Vahl. Caddo. Dry, gravelly soil. Common. June. No. 46.

Rudbeckia maxima Nutt. Stringtown. Low ground, in peaty soil. June. No. 70.

Helianthus hirsutus Raf. At the foot of the mountain near Quanah's ranch. Along streams. Common westward. July. No. 232.

Helianthus strumosus x decapetalus. Rocky banks along Sans Bois Creek. August. No. 326.

Verbesina Virginica L. Sans Bois Mountains. Along streams. Common from there westward through Choctaw Nation. Hardly in flower as yet. August. No. 316.

Coreopsis grandiflora Nutt. Colbert and McAlester. High prairies. June. Nos. 8, 88.

Coreopsis tinctoria Nutt. Colbert. Prairies. Common throughout, and variable in size, coloring, and divisions of leaves. June. No. 2.

Thelesperma filifolium Gray. Stonewall. Summit of limestone hill, where it is invariably dwarf and lacks the dark base to the rays; also at Quanah's ranch, along sandy creek banks. The plants are glaucous and the leaves invariably pellucid punctate. July. Nos. 135, 215.

Hymenopappus artemisiæfolius DC. Colbert. Common on dry prairies in the eastern part. June. No. 22.

Hymenatherum tagetoides Gray. Quanah's ranch. Open gravelly places. July. No. 204.

Helenium tenuifolium Nutt. McAlester. Roadsides and everywhere abundant. August. No. 289.

Helenium tenuifolium Nutt., var. **badium** Gray. Quanah's ranch and throughout Wichita Mountains. June. No. 198.

Gaillardia lanceolata Mx. McAlester and Stonewall. Sandy prairies. July. No. 125.

Polypteris Texana Gray. Quanah's ranch. Mostly along creeks, in sandy and gravelly soil. July. No. 197.

Actinella linearifolia Torr. and Gray. Stonewall. Common west to Wichita Mountains. July. No. 128.

Cnicus altissimus Willd. Sans Bois Mountains. Along creeks. Frequent, but not yet in flower. August. No. 292.

Cnicus undulatus Gray. Stonewall. July. No. 132.

Centaurea Americana Nutt. Colbert. June. No. 1.

Hieracium longipilum Torr. Stringtown. Gravelly hills. June. No. 71.

Pyrrhopappus Carolinianus DC. McAlester. Common along roadsides and creeks. August. No. 313.

LOBELIACEÆ.

Lobelia puberula Mx. Sans Bois Mountains. Rich open ground. Not seen westward. August. No. 310.

Lobelia spicata Lam. Atoka. Low ground. Not seen elsewhere. June. No. 57.

OLEACEÆ.

Fraxinus pubescens Lam. Quanah's ranch. Sandy creek banks. July. Nos. 203, 221.

Fraxinus viridis Mx. Sans Bois Mountains. Along creek banks. Frequent. August. No. 275.

APOCYNACEÆ.

Amsonia angustifolia Mx. Quanah's ranch. Rocky hills. July. No. 224.

ASCLEPIADACEÆ.

Acerates viridiflora Ell. Caddo. Frequent west, less so eastward. June. No. 51.

Asclepias stenophylla Gray. McAlester. Prairies. June. No. 77.

Asclepias tuberosa L. Colbert. Frequent on prairies. The flowers are occasionally almost straw colored. June. No. 10.

Asclepias verticillata L. Sans Bois Mountains. Open woods, July. No. 89.

Asclepiodora viridis Gray. Colbert. Common on prairies. June (in fruit). No. 106.

GENTIANEÆ.

Erythræa Beyrichii Torr. and Gray. Erin Springs. Thins oil on gravelly hills. July. No. 153.

Sabbatia angularis Pursh. Sans Bois Mountains. Rich woods. July. No. 117.

Sabbatia campestris Nutt. Caddo. Universal and abundant, on prairies. June. No. 55.

Eustoma Russellianum Griseb. Prairie hillsides, near Paul's Valley. July. No. 146.

POLEMONIACEÆ.

Gilia coronopifolia Pers. Sans Bois Mountains and Quanah's ranch. Frequent. July. Nos. 103, 225.

HYDROPHYLLACEÆ.

Hydrolea ovata Nutt. Sans Bois Mountains. Not frequent. Boggy places on rocky hillsides. Found as far west as the western border of the Choctaw Nation. August. No. 307.

BORAGINEÆ.

Heliotropium tenellum Torr. Rocky hills near Caddo. June. No. 52.

Onosmodium Carolinianum DC.[1] Between Stonewall and Paul's Valley. Frequent. July. No. 141.

CONVOLVULACEÆ.

Ipomœa leptophylla Torr. Anadarko. Dry prairies. July. No. 177.

Convolvulus incanus Vahl. Quanah's ranch. Rocky slopes. July. No. 230.

Evolvulus argenteus Pursh. Caddo. June. No. 53.

Cuscuta glomerata Choisy. Cress Creek. Abundant on Composites. August. No. 263.

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[1] The characterization of the size of flowers of this species and of *O. Bejariense* in the Synoptical Flora is not correct and needs revision. The western and southwestern forms of *O. Carolinianum* have corollas as described for the other species, viz, 6–8 lines long, with lobes ⅓ the length of tube.

Cuscuta decora[1] Engelm. Colbert. On dry prairies, growing preferably on **Cassia** Chamæcrista. June. No. 21.

Cuscuta decora[1] Engelm., var. **indecora** Engelm. On limestone hills near **Stone** wall. July. No. 134.

SOLANACEÆ.

Solanum Carolinense L. Colbert. Common along railroads east and on prairies west. June. No. 107.

Solanum elæagnifolium Cav. Colbert. Same distribution as **S. Carolinense**. June. No. 108.

SCROPHULARINEÆ.

Conobea multifida Benth. Boggy places in high prairies west of Paul's Valley. July. No. 147.

Herpestis rotundifolia Pursh. In a pool on the rocky summit of the mountain near Quanah's ranch. July. No. 227.

Buchnera Americana L. Colbert. Prairies. Common. June. No. 4.

Gerardia grandiflora Benth. Sans Bois Mountains. Rocky hills. Frequent through out Choctaw Nation. August. No. 325.

PEDALINEÆ.

Martynia proboscidea Glox. Wichita River. Low, sandy prairies. This plant appears as if introduced. July. No. 150.

ACANTHACEÆ.

Ruellia ciliosa Pursh, var. **longiflora** Gray. Colbert. Common on dry prairies. June. No. 14.

Dianthera Americana L. McAlester. Muddy creek banks. June. No. 80.

VERBENACEÆ.

Lippia lanceolata Mx. Wichita River, near Anadarko and Fort Sill. Wet banks of creeks. July, August. Nos. 166, 262.

Verbena angustifolia Mx. Caddo. Dry, gravelly hills. Frequent. June. No. 49.

Verbena Aubletia L. Colbert. Common along railroads, especially westward. June. No. 26.

Verbena bipinnatifida Nutt. Caddo. Dry prairies. Common east. June. No. 48.

Verbena officinalis L. Colbert. Prairies. Infrequent. June. No. 23.

LABIATÆ.

Pycnanthemum linifolium Pursh. Atoka. Frequent in low ground. East. June. No. 64.

Hedeoma Drummondii Benth. Stonewall. Limestone hill. July. No. 137.

Salvia farinacea Benth. Sans Bois Mountains. Common in gravelly soil throughout. August. No. 317.

Monarda punctata L. Colbert. Roadsides and prairies. Abundant eastward. The form with white bracts is invariably larger. June. No. 110.

Monarda citriodora Cerv. Colbert. Common on dry prairies. June. No. 25.

Monarda fistulosa L. McAlester. Low ground. July. No. 121.

Monarda Russelliana Nutt. A slender form. Couch's Mills, Sans Bois Mountains. In rocky pine woods. July. No. 98.

Scutellaria versicolor Nutt. Colbert, Caddo, Sans Bois Mountains, and as far west as the western boundary of Chickasaw Nation. June, July. Nos. 6, 47, 97.

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[1] I am aware that Choisy's original specific name, altered by Engelmann, should be restored. But the uncertainty as to Choisy's plant being type of Engelmann's *C. decora*, or of his var. *indecora*, has led me for the present to retain here the old names.

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Phyllanthus Carolinensis Walt. Rocky hills near Quanah's ranch. Common there, but not seen westward. July. No. 235.

Phyllanthus polygonoides Spreng. Quanah Mountain. Common on sandy and rocky slopes. July. No. 201.

Phyllanthus Niruri L.,[1] var. **tenuicaulis** Muell. Quanah's ranch. Low, sandy ground. July. No. 218.

Jatropha Texana C. Muell. Erin Springs. Frequent along banks and in thickets throughout the western part, from Paul's Valley to Wichita Mountains. July. No. 156.

Croton glandulosus L. Quanah's ranch. Common, especially westward. July. No. 217.

Croton Lindheimerianus Scheele. Gravelly roadsides near Gaines Creek. Common east. August. No. 301.

Croton monanthogynus Mx. Fort Sill. Abundant throughout, along roadsides and waste places. August. No. 271.

Croton Texensis Muell. Fort Sill. Common, especially westward, with the last. August. No. 272.

Argithamnia mercurialina Muell. Caddo. Rocky hills. June. No. 54.

Acalypha Caroliniana Ell. Quanah's ranch. Sandy Creek banks. Common, especially westward. July. No. 216.

Tragia stylaris Muell. Stonewall. Gravelly limestone hills. Not seen elsewhere. July. No. 139.

Tragia urticæfolia Mx. Prairies near Fort Sill. July. No. 160.

Stillingia sylvatica L. Colbert. Low prairies. Abundant eastward. Ir frequent west of Chickasaw Nation. June. No. 27.

URTICACEÆ.

Celtis Mississippiensis Bosc. McAlester. On low ground along streams. June. Nos. 78, 79.

Mr. Sheldon sent in the two numbers under the same date and from the same locality, with the note that No. 78 has leaves larger and lighter colored and the fruit nearly twice the size of 79. Both fruits are not yet mature. And it is possible to account for the difference in size of leaves and fruit on the ground of difference of subsoil on which the trees stand, etc. At any rate our present state of knowledge of the two forms does not seem to warrant us in making anything more of these two numbers than simply *Celtis Mississippiensis*.

CUPULIFERÆ.

Quercus aquatica Walter. Sans Bois Mountains. Along streams. Common throughout. August. No. 306.

Quercus coccinea Wang. Shawnee Hills. Abundant along streams throughout the eastern Territory. August. No. 287.

Quercus macrocarpa Mx. Gaines Creek, Sans Bois Mountains. August. No. 302.

Quercus nigra L. Sans Bois Mountains. Common throughout in rocky and gravelly regions. August. No. 305.

Quercus stellata Wang. Stringtown, Shawnee Hills, and Sans Bois Mountains. Abundant on rocky hills. June to August. Nos. 69, 288, 303.

ORCHIDEÆ.

Spiranthes cernua Richard. Atoka. Generally in sandy soil in low ground. Growing 1–1½ feet high. June. No. 62.

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[1] See note on pages 214 and 215.

ZINGIBERACEÆ.

Thalia dealbata Roscoe. Sans Bois Mountains. July. No. 90.
This plant has only the inflorescence "dusted over with powder." Further, Mr. Sheldon reports this as 7–10 feet high, when, according to Chapman, p. 465, it is usually only 3–5 feet high. There are two other specimens of this species in the National Herbarium, Dr. Bigelow's Rio Grande plant, collected in 1853 near the Choctaw Agency, and Elihu Hall's Texan plant No. 629. Hall's plant, however, differs from Bigelow's and Sheldon's in that it has a ring or beard of hairs on the rachis at the base of each flower, while the others are glabrous at that point. Some close field work is necessary to reconcile and explain these discrepancies.

AMARYLLIDEÆ.

Cooperia Drummondii Herb. Quanah Mountain. In wet, sandy soil among rocks. July. No. 186.
Agave Virginica L. In rich, sandy woods, near Stringtown. June. No. 75.

PONTEDERIACEÆ.

Heteranthera limosa Vahl. In shallow water and pond borders near Fort Sill. August. No. 257.

COMMELINACEÆ.

Commelina Virginica L. Along the banks of Cash and Medicine Creeks, Fort Sill. July. Nos. 159, 184.

JUNCACEÆ.

Juncus acuminatus Mx. McAlester. Borders of shallow streams. June. No. 83.
Juncus Engelmanni Buchenau. Atoka. Low, wet ground. June. No. 66.
Juncus marginatus Rostk. Colbert. Common on low prairies. June. Nos. 36, 37.
Juncus tenuis Willd. Colbert. With the last. Junc. No. 35.

CYPERACEÆ.

Cyperus acuminatus Torr. Colbert. In wet situations. Abundant east. June. No. 32.
Cyperus aristatus Rottb. Quanah Mountain. In wet sand in the shade of rocks. July. No. 199.
Cyperus filiculmis Vahl. Common on prairies along Cash Creek. July. No. 163.
Cyperus Hallii Brit. Along creek banks west of Stonewall. July. No. 145.
Cyperus ovularis Torr. Colbert. Everywhere. In dry soil. June. No. 116.
Cyperus Schweinitzii Torr. Colbert. Common in dry, sandy soil. June. No. 34.
Eleocharis ovata R. Br. Pond borders near Fort Sill. August. No. 256.
Fimbristylis capillaris Gray. On a rocky hill near Quanah's ranch. July. No. 242.
Fuirena squarrosa Mx., var. **hispida** Chapm. Low ground near Atoka. June. No. 63.
Rhynchospora cymosa Nutt. Banks of Sans Bois Creek. July. No. 94.
Rhynchospora macrostachya Torr. McAlester. Frequent throughout, along muddy banks of streams. June. No. 82.

Scleria pauciflora Muhl., var. **Elliottii** Wood. Colbert. Low ground on prairies. Not common. June. No. 16.
Carex lupulina Muhl. Banks of Sans Bois Creek. July. No. 95.
Carex lurida Wahl. With the last. July. No. 96.

GRAMINEÆ.

Tripsacum dactyloides L. Prairies along Cash Creek near Fort Sill. July. No. 162.
Andropogon provincialis Lam. Rocky woods near Hartshorn. Common everywhere. September. No. 347.
Andropogon saccharoides Swartz. Chickasaw Nation, and near Fort Sill along banks of Cash Creek. Common throughout. July. Nos. 130, 179.
Andropogon scoparius Mx. Rocky woods in Sans Bois Mountains. Not collected elsewhere. August. No. 331.
Paspalum Floridanum Mx. Rich soil along streams in Sans Bois Mountains. August. No. 276.
Paspalum læve Mx., var. **angustifolium** Vasey. Shawnee Hills. Low ground along creeks. August. No. 284.
Panicum agrostoides Muhl. Low ground along Gaines Creek and wet borders of small lake near McAlester. Common east. August. Nos. 279, 290.
Panicum anceps Mx. Low ground on Gaines Creek. Common east. August. No. 278.
Panicum capillare L. Quanah Mountain. Common in rocky hills in rich loamy soil. July. No. 188.
Panicum filiforme L. Sans Bois Mountains. Clay and gravelly soil. August. Nos. 327, 334.
Panicum hians Ell. McAlester to Stonewall. Frequent. July. No. 127.
Panicum sanguinale L. Gravelly soil in Shawnee Hills. Common east. August. No. 285.
Panicum virgatum L. Fort Sill and Shawnee Hills. Common throughout, along streams and on rocky open slopes. August. Nos. 274, 283.
Panicum viscidum Ell. Atoka. Low ground. Infrequent. June. No. 65.
Cenchrus tribuloides L. Colbert. Throughout, on sandy prairies. Known as "sand burs" or "grass burs." June. No. 33.
Aristida dichotoma L. Gravelly woods in Sans Bois Mountains. The only locality noted. August. No. 335.
Aristida oligantha Mx. Quanah's ranch. Gravelly open woods near creek banks. July. Nos. 202, 223, 266.
Aristida purpurea Nutt., var. **Fendleri** Vasey. Gravelly limestone hill west of Stonewall. July. No. 136.
Aristida purpurea Nutt., var. **Hookeri** Trin. Fort Sill. This is the characteristic grass in prairie-dog towns. July. No. 182.
Muhlenbergia glomerata Trin. Rocky hills near Quanah's ranch. Common in Wichita Mountains. July. No. 238.
Muhlenbergia glomerata Trin., var. **ramosa** Vasey. The commonest grass, on rocky slopes. August. No. 251.
Cinna arundinacea L. Common on low ground in Sans Bois Mountains. August. No. 291.
Buchloë dactyloides Engelm. Cash Creek and Fort Sill. Usually found in prairie-dog towns. July. Nos. 164, 180.
Boutelcua hirsuta Lag. Dry prairies near Fort Sill. Much more frequent than Buffalo grass, and with a similar range. July. No. 181.
Bouteloua racemosa Lag. In gravelly soil near Stonewall. July. No. 129.
Triodia cuprea Jacq. Creek banks, near Fort Sill. Infrequent there, but common eastward. August. No. 270.

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II.—M. A. CARLETON'S COLLECTION.

Mr. Carleton started in at Vinita. From there he went westward through the Creek and Seminole nations, Oklahoma, the Cheyenne country, the southern tiers of counties in Kansas (April to July). Then he went through the Cimarron Valley, Neutral Strip, into the northwestern counties of Texas, returning through the Indian Territory into Kansas (August, September).

RANUNCULACEÆ.

Anemonella thalictroides Spach. Vinita. Wooded hills. April. No. 40.
Ranunculus abortivus L., var. **micranthus** Gray. Muscogee. Woods. April. No. 75.
Ranunculus fascicularis Muhl. Vinita. Prairies. April. No. 9.
Ranunculus septentrionalis Poir. Vinita. Woods. April. No. 29.

MENISPERMACEÆ.

Cocculus Carolinus D. C. Logan County, Okla. August. No. 474.

FUMARIACEÆ.

Corydalis aurea Willd. Vinita. Stony hills. April. No. 35.
Corydalis micrantha Gray. Muscogee. Stony Point. April. No. 49.

CRUCIFERÆ.

Nasturtium sphærocarpum Gray. Ford County, Kans. Shore of a lake. July. No. 325.
Streptanthus hyacinthoides Hook. North Canadian River, Cherokee Outlet. June. No. 203.
Contr. Nat. Herb. ii. 19, reads: "One pair of the longer filaments connate." It should read: "The four longer filaments connate in pairs."
Cardamine hirsuta L., var. **sylvatica** Gaud. Vinita. Prairies. April. No. 11.
Selenia aurea Nutt. Vinita. Prairies. April. No. 8.
Lesquerella gracilis Watson. Cimarron Valley, Cherokee Outlet. Gypsum hills. June. No. 214.
Draba cuneifolia Nutt. Vinita. Woods. April. No. 39.
Erysimum asperum DC. Ford County, Kans. July. No. 319.
Biscutella Wislizeni Benth. and Hook. Moore County, Tex.; also, Comanche County, Kans. August. Nos. 419, 231.

CAPPARIDEÆ.

Cleome integrifolia Torr. and Gray. Ford County, Kans. July. No. 324.
Polanisia trachysperma Torr. and Gray. Cimarron Valley. June. No. 232.

CISTINEÆ.

Lechea tenuifolia Mx. Stafford County, Kans. In road wastes. July. No. 299.

VIOLARIEÆ.

Viola palmata L. Vinita. April. No. 25.
Viola pedata L. Vinita. April. No. 37.
Viola pubescens Ait., var. **scabriuscula** Torr. and Gray. Vinita. April. No. 2.
Ionidium polygalæfolium Vent. Cheyenne country. June. No. 193.

POLYGALEÆ.

Polygala verticillata L. Reno County, Kans. Alkali spots. July. No. 286.
Krameria secundiflora DC. Oklahoma; also Morton County, Kans. July. No. 173.

CARYOPHYLLEÆ.

Silene antirrhina L. Guthrie, Okla. May. No. 145.
Cerastium nutans Raf. Vinita. Prairies. April. No. 10.

This plant is doubtfully referred here as a small form of this species. Its reflexed pedicels are longer than the sepals, as are the petals. It is the same as Jermy's No. 134 from Gillespie County, Tex., and Dr. Palmer's No. 30, collected in the Indian Territory in 1868. This form, so far as the three collections show, grows only 3 to 5 inches high. The younger plants are simple, erect, with 3 to 5 pairs of leaves below the branching inflorescence, while the older plants branch at the base.

Stellaria Nuttallii Torr. and Gray. Okmulgee. Woods. April. No. 96.
Arenaria Pitcheri Nutt. Muscogee. April. No. 69.
Sagina decumbens Torr. and Gray. Vinita. Prairies. April. No. 12.

PORTULACEÆ.

Portulaca pilosa L. Dallas County, Tex; August. No. 399.
Talinum calycinum Engelm.[1] Cheyenne country. June. No. 185.
Talinum parviflorum Nutt. Hartley County, Tex. In sand. August. No. 403.
Claytonia Virginica L. Vinita. April. No. 1.

MALVACEÆ.

Callirrhoë involucrata Gray. Neutral Strip; North Canadian River. August. No. 338.
Callirrhoë pedata Gray. Cimarron Valley. June. No. 226.
Malvastrum angustum Gray. Reno County, Kans. July. No. 288.
Malvastrum coccineum Gray. Comanche County, Kans. June. No. 238.
Hibiscus lasiocarpus Cav. Hemphill and Moore counties, Tex. August. Nos. 426, 436.

LINEÆ.

Linum Berlandieri Hook. Oklahoma City. May. No. 128.
Linum perenne L., var. **Lewisii** Eaton and Wright. Cheyenne country. June. No. 192.
Linum sulcatum Riddell. Black Bear Creek, Cherokee Outlet. September. No. 481.

ZYGOPHYLLEÆ.

Tribulus maximus L. Upper Cimarron. Becoming a noxious weed in cultivated ground. July. No. 362.

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[1] This species and *T. teretifolium* look very much alike. When in flower they can be separated by the number of stamens, *T. calycinum* having 30, *T. teretifolium* 20. In fruit the separation is more difficult. The only tangible distinction that I could make out is in the duration of the sepals, which fall with the corolla in *T. teretifolium*, but are somewhat persistent after the corolla falls in *T. calycinum*. The sepals are also produced below the point of insertion in *T. calycinum* and not produced in *T. teretifolium*. Coherently stated, the matter stands thus:

1. Talinum calycinum has 30 or more stamens, has sepals persistent after the corolla falls, and has them produced below the point of insertion.

2. Talinum tercifolium has 20 stamens; its sepals fall with the corolla and are not produced below the point of insertion.

RUTACEÆ.

Xanthoxylum Americanum Mill. Vinita. Woods. April. No. 16.
Ptelea trifoliata L., var. **mollis** Torr. and Gray. Cheyenne country. June. No. 196.

ILICINEÆ.

Ilex decidua Walt. Muscogee. Arkansas River. April. No. 71.

AMPELIDACEÆ.

Vitis Arizonica Engelm. Cimarron Valley. June. No. 234.

SAPINDACEÆ.

Sapindus marginatus Willd. Barber County, Kans. June. No. 257.

STAPHYLEACEÆ.

Staphylæa trifolia L. Vinita. April. No. 31.

ANACARDIACEÆ.

Rhus Toxicodendron L. Guthrie. Woods. May. No. 146.

LEGUMINOSÆ.

Trifolium Carolinianum Mx. Okmulgee. Woods. April. No. 88.
Trifolinum reflexum L. Southern Seminole Nation. May. No. 114.
Psoralea campestris Nutt. Kingfisher, Okla. June. No. 184.
Psoralea cuspidata Pursh. Oklahoma; also Reno County, Kans. July. No. 178.
Psoralea esculenta Pursh. Sacred Heart Mission. May. No. 112.
Psoralea lanceolata Pursh. Guthrie, Cimarron Valley and Cherokee Outlet. May, June. No. 151.
Dalea alopecuroides Willd. Comanche County, Kans. September. No. 515.
Dalea lanata Spreng. Cimarron Valley, Neutral Strip. July. No. 356.
Dalea nana Torr. Seward and Stevens counties, Kans. In sand. July. No. 333.
Petalostemon gracilis Nutt. Cimarron Cañon, Neutral Strip. August. No. 369.
Petalostemon violaceus Mx. Stafford and Morton counties, Kans. July. No. 307.
Petalostemon violaceus Mx., var. **tenuis** Coulter. With the preceding.
Petalostemon villosus Nutt. Reno County, Kans. Shady districts. July. No. 291.
Indigofera leptosepala Nutt. Guthrie; Cimarron Valley; Cherokee Outlet. May, June. No. 152.
Tephrosia Virginiana Pers. Oklahoma. June. No. 172.
Astragalus caryocarpus Ker. Cheyenne country. June. No. 202.
Astragalus distortus Torr. and Gray. Vinita. Prairies. April. No. 30.
Astragalus leptocarpus Torr. and Gray. We-wo-ka, Seminole Nation. May. No. 101*a*.
Astragalus lotiflorus Hook. Guthrie. Sand hills. May. No. 139.
Astragalus lotiflorus Hook., var. **brachypus** Gray. Cimarron Valley; also Pawnee and Ford counties, Kans. June, July. Nos. 227, 314.
Astragalus Mexicanus DC. Vinita. April. No. 38.
Astragalus microlobus Gray. Cimarron Valley; Cherokee Outlet. June. No. 218.
Astragalus mollissimus Torr. Cheyenne country. June. No. 190.
Astragalus Nuttalianus DC. We-wo-ka, Seminole Nation. May. No. 101. Fruit at Guthrie.
Astragalus procumbens Watson. Guthrie and Oklahoma City, Oklahoma. May, Nos. 125, 140.
Astragalus racemosus Pursh. Cimarron Valley; Cherokee Outlet. June. No. 221.

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ONAGRARIEÆ.

Jussiæa repens L. Sumner County, Kans., on Territory line. Aquatic. September. No. 500.
Gaura biennis L. Cherokee Outlet, near Arkansas City. September. No. 480.
Gaura coccinea Nutt. Seward and Stevens counties, Kans. July. No. 334.
Gaura Nealleyi Coulter. Oklahoma City, Okla. May. No. 129.
Gaura sinuata Nutt. Guthrie and Oklahoma City, Okla. May. Nos. 122, 142.
Gaura villosa Torr. Guthrie, Cimarron Valley. May. No. 155.
Œnothera albicaulis Nutt. Neutral Strip and Beaver County, Okla. July. No. 354.
Œnothera biennis L. Stafford County, Kans.; Cimarron cañons; Neutral Strip. July. No. 309.
Œnothera canescens Torr. Ford County, Kans. July. No. 326.
Œnothera Hartwegi Benth. Clark County, Kans.; Cherokee Outlet Cheyenne country. June, July. Nos. 200, 204.
Œnothera linifolia Nutt. Muscogee. April. No. 53.
Œnothera Missouriensis Sims. Pottawatomie and Cheyenne counties; also Sumner County, Kans. May, June. Nos. 117, 272.
Œnothera pinnatifida Nutt. Stevens County, Kans. July. No. 344.
Œnothera serrulata Nutt. Morton County, Kans. July. No. 350.
Œnothera sinuata L. Oklahoma City, Okla. May. No. 127.
Œnothera sinuata L. var. **grandiflora** Watson. Edwards County, Kans. July. No. 308.
Œnothera sinuata L., var. **minima** Nutt. Okmulgee. Woods. April. No. 95.
Œnothera Spachiana Torr. and Gray. Sacred Heart Mission. Country of the Pottawatomies. May. No. 111.
Œnothera speciosa Nutt. Muscogee; Arkansas River. April. No. 74.
Œnothera triloba Nutt. Reno County, Kans. July. No. 289.

LOASEÆ.

Mentzelia multiflora Gray. Cimarron cañons, Neutral Strip. August. No. 378.
Mentzelia nuda Torr. and Gray. Gray County, Kans. July. No. 328.
Mentzelia oligosperma Nutt. Cimarron cañons, Neutral Strip. June. No. 216.

CUCURBITACEÆ.

Cyclanthera dissecta Arn. Cimarron cañons, Neutral Strip, August. No. 375.

CACTEÆ.

Mamillaria dasyacantha Engelm. Kingman County, Kans. September. No. 551.
Mamillaria vivipara Haworth. Meade County, Kans. September. No. 530.
This is the form called var. *radiosa* Engelm., and *M. radiosa*, var. *Neo-Mexicana* Engelm. Nos. 120, 233, from near Oklahoma City and Cherokee Outlet, respectively, are other forms of the same species.
Opuntia arborescens Engelm. Neutral Strip. Rocky mesas. July. No. 358.
Opuntia leptocaulis D C. Oldham County, Tex. August. No. 410.
Opuntia Missouriensis DC. Gray County, Kans. July. No. 329.
Probably this species. There was not enough material to determine it with certainty.

FICOIDEÆ.

Sesuvium Portulacastrum L. Cherokee Outlet. Great Salt Plains. July. No. 230.

UMBELLIFERÆ.

Eryngium diffusum Torr. Cheyenne and Arapahoe countries; Salt Fork, Cherokee Outlet. Comparatively rare. August. No. 454.
Berula angustifolia Koch. Reno County, Kans. July. No. 294.
Chærophyllum procumbens Crantz. Big Cabin Creek and Muscogee. April. Nos. 4, 68.
Polytænia Nuttallii DC. Muscogee. April. No. 56.

CORNACEÆ.

Cornus florida L. Okmulkee. Woods. April. No. 93.

CAPRIFOLIACEÆ.

Viburnum prunifolium L. Vinita and Muscogee. Woods. April. No. 44.

RUBIACEÆ.

Houstonia patens Ell. Vinita. April. No. 3.
Galium virgatum Nutt. Oklahoma City, Okla. May. No. 133.

VALERIANACEÆ.

Valerianella Nuttallii Walp. Vinita. April. No. 23.
No. 51 was another *Valerianella* not sufficiently developed for specific determination.

COMPOSITÆ.

Vernonia Jamesii Torr. and Gray. Cimarron Valley, Neutral Strip. July. No. 355.
Elephantopus Carolinianus Willd. Logan County, Okla. August. No. 462.
Eupatorium cœlestinum L. Logan County, Okla. August. No. 465.
Eupatorium hyssopifolium L. Kansas City, Kans. September. No. 493.
Eupatorium serotinum Mx. Logan County, Okla., and Ponca Agency. August. No. 463.
Liatris punctata Hook. Morton County, Kans.; Cherokee Outlet. July, August. Nos. 353, 437.
Liatris squarrosa Willd. Reno and Morton counties, Kans. July. No. 290.
Gutierrezia Euthamiæ Torr. and Gray. Morton County, Kans. July. No. 346.
Amphiachyris dracunculoides Nutt. North Canadian River, Cherokee Outlet. August. No. 451.
Grindelia squarrosa Dunal. Meade County, Kans. September. No. 538.
Grindelia squarrosa Dunal, **var. grandiflora** Gray. North Canadian River, Cherokee Outlet. August. No. 449.
Heterotheca Lamarckii Cass. Hemphill County, Tex., and Cherokee Outlet. August. No. 438.
Chrysopsis pilosa Nutt. Cimarron Valley, Cherokee Outlet. June. No. 215.
Chrysopsis villosa Nutt., **var. canescens** Gray. Logan County, Okla. August. No. 469.
Aplopappus divaricatus Gray. Reno County, Kans.; Texas line of Cherokee Outlet. July. No. 292.
Aplopappus rubiginosus Torr. and Gray. Hemphill County, Tex.; Cherokee Outlet, near Salt Fork of Cimarron River. September. Nos. 435, 504.
Aplopappus spinulosus DC. Oldham County, Tex. In sand. August. Nos. 411, 416.
Bigelovia Wrightii Gray. Oldham County, Tex. August. No. 408.
Solidago leptocephala Torr. and Gray. Canadian River, Hutchinson County, Tex. August. No. 427.

Solidago Missouriensis Nutt. Small form. Ford County, Kans. July. No. 313.

Solidago Missouriensis Nutt., var. **fasciculata**, Holzinger, n. var. One to 2 feet high; leaves narrower than in the species, becoming linear upward; in axils of upper leaves, shortened branches in the form of fascicles of linear leaves. Hemphill County, Texas, and Cherokee Outlet, near Arkansas City [No. 430], to Missouri (Blankenship). Intergrades with the species occur as far east as Illinois.

Solidago nemoralis Ait. Cherokee Outlet, on Guthrie and Arkansas City trail. September. No. 478.

Solidago radula Nutt. Clayton, N. Mex.; Barber County, Kans.; Cherokee Outlet. August and September. Nos. 393, 446.

Solidago ulmifolia Mühl. On Walnut River, Arkansas City, Kans. September. No. 482.

Aphanostephus Arkansanus Gray. Guthrie. May. No. 165.

Bellis integrifolia Mx. Muscogee. April. No. 70.

Townsendia grandiflora Nutt. In sand. Hartley and Moon counties, Tex. August. No. 407.

Chætopappa asteroides DC. Muscogee; Stony Point. April. No. 57.

Boltonia latisquama Gray. Sumner County, Kans., near line of Territory. September. No. 499.

Aster ericæfolius Roth. Comanche County, Kans.; Hartley County, Tex. June; August. Nos. 239, 406.

Aster exilis Ell. Wolf Creek, in Cherokee Outlet, near Texas line. August. No. 440.

Aster multiflorus Ait. Kiowa County, Kans. September. No. 540.

Aster oblongifolius Nutt., var. **rigidulus** Gray. Salt Creek in Cheyenne and Arapahoe counties; also in Barber and Ford counties, Kans. August and September. Nos. 457, 509, 539.

Aster patens Ait. Logan County, Okla. August. No. 476.

Aster sagittifolius Willd. Logan County, Okla. August. No. 461.

Aster tanacetifolius HBK. Englewood and Ford counties, Kans. July, September. Nos. 323; 526.

Erigeron divaricatus Mx. Clark County, Kans. June. No. 242.

Erigeron divergens Torr. and Gray. Cherokee Outlet; Arkalon, Kans. June, September. Nos. 209, 535.

Erigeron Philadelphicus L. Vinita and Muscogee. April. No. 46.

Baccharis salicina Torr. and Gray. Oldham County, Tex. August. No. 414.

Baccharis Wrightii Gray. Clark County, Kans. June. No. 241.

Evax multicaulis DC. Cheyenne country. June. No. 189.

Evax prolifera Nutt. Oklahoma City, Okla. May. No. 132.

Gnaphalium purpureum L. Wewoka, Seminole Nation. May. No. 42.

Melampodium cinereum DC. Seward County, Kans. July. No. 331.

Berlandiera lanata Benth. Morton County, Kans.; also Neutral Strip. July. No. 349.

Berlandiera Texana DC. Stevens and Morton counties, Kans.; also Cherokee Outlet. July. Nos. 219, 341.

Engelmannia pinnatifida Torr. and Gray. Guthrie and Western Oklahoma. May and June. No. 164.

Iva xanthiifolia Nutt. Arkalon, Kans. September. No. 536.

Franseria discolor Nutt. Arkalon, Kans. In sand. September. No. 534.

Franseria tenuifolia Gray. Clayton, N. Mex. August. No. 390.

Franseria tomentosa Gray. Meade County, Kans. Bed of a small marsh. September. No. 527.

Zinnia grandiflora Nutt. Comanche County, Kans. June. No. 255.

Lepachys Tagetes Gray. Edwards, Seward, and Ford counties, Kans. July. No. 310.

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Krigia occidentalis Nutt. Guthrie. May. No. 150.
Krigia occidentalis Nutt., var. **mutica** Torr. and Gray. Vinita. Prairies. April. No. 28.
Krigia Virginica Willd. Muscogee. April. No. 62.
Troximon cuspidatum Pursh. Vinitia. Prairies. April. No. 32.
Pyrrhopappus scaposus DC. Creek Nation. May. No. 47.
Lactuca acuminata Gray. Arkansas City, Kans. September. No. 495.
Lygodesmia juncea Don. Cimarron Valley; Edwards County, Kans. June, July. Nos. 222, 311.

LOBELIACEÆ.

Lobelia splendens Willd. Cimarron Cañon, Neutral Strip; Moore County, Tex. August. No. 371.
Lobelia syphilitica L. Kingman County, Kans. September. No. 550.

CAMPANULACEÆ.

Specularia leptocarpa Gray. Oklahoma. July. No. 176.
Specularia perfoliata A. DC.[1] Guthrie, Cimarron Valley. May. No. 167.

PRIMULACEÆ.

Samolus ebracteatus HBK. Cimarron Valley, Cherokee Outlet. June. No. 224.
Samolus Valerandi L., var. **Americanus** Gray. Moore County, Tex. August. No. 424.

ASCLEPIADEÆ.

Acerates viridiflora Ell. Comanche County, Kans. June. No. 249.
Asclepias arenaria Torr. Cimarron Valley, Cherokee Outlet. June. No. 235.
Asclepias Jamesii Torr. Ford County, Kans. July. No. 321.
Asclepias incarnata L., var. **longifolia** Gray. Hemphill County, Tex. August. No. 434.
Asclepias stenophylla Gray. Comanche County, Kans. June. No. 248.
Asclepias verticillata L., var. **pumila** Gray. Edwards County, Kans. July. No. 315.
Asclepiodora decumbens Gray. Oklahoma. July. No. 179.
Gonolobus cynanchoides Engelm. Guthrie; also Cimarron Valley, Cherokee Outlet. May. No. 154.

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[1] The other specimens of this form of *S. perfoliata* in the National Herbarium are: No. 679, of Mexican Boundary Survey; Dr. Palmer's No. 168, from Indian Territory; and a plant collected by C. Thomas in the Rocky Mountains, in 1869. The Mexican Boundary plant was first named *Dysmicodon ovatum* Nutt., but was subsequently changed to *Specularia biflora* Gray, with a question mark. The other two plants were both found with Specularia perfoliata.

The capsules of this form are about ½ longer than in the common form; the seeds, on the other hand, are ½ smaller, and more oval, the ratio of the two diameters being as 3 to 2. *Specularia leptocarpa* has seeds of about this shape, but just double this length. The seeds of *Specularia biflora* the Syn. Fl. ii, 11, describes as lenticular, but on examining some ripe seeds of Reverchon's Texan plant under this name, I find it to be oval, and of about the same size as in the plants under consideration. The characteristic difference between *Speculatia perfoliata* and *biflora* is in the leaves, which are broader and more amplexicaule in *S. perfoliata*, narrower and more distant on the stem in *S. biflora*, but still amplexicaule; the length of the capsule varies some in both, so does the position of the valves, certainly in *perfoliata;* the Syn. Fl. ii. 11, places these "at or below the middle," but both the figure in HBK. nov. gen. et sp. iii. t. 265, and the National Hebarium specimens show valves in this species above the middle. The plants under consideration have the valves of the capsules above the middle, but have the leaves of *S. perfoliata*. On the other hand, Mr. F. V. Coville collected a plant in Pennsylvania which has the more slender aspect, in leaves and stem, of *S. biflora*. There is other material in the National Herbarium tending to show that *Specularia perfoliata* and *biflora* are only variations of one good species, variable in width of leaf, length of capsule, and position of valvular openings on the same.

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IPOMŒA CARLETONI Holzinger, n. sp.

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Convolvulus incanus Vahl. Morton County, Kans.; Clayton, N. Mex. July. No. 351.
Evolvulus argenteus Pursh. Oklahoma City. May. No. 131.
Cuscuta cuspidata Engelm. On Ambrosia. Moore County, Tex. August. No. 421.

SOLANACEÆ.

Solanum elæagnifolium Cav. Guthrie. May. No. 171.
Solanum Torreyi Gray. Cherokee Outlet; also Sumner County, Kans. June. No. 162.
Solanum triflorum Nutt. Neutral Strip; also Dallas County, Tex. August. No. 382.
Physalis hederæfolia Gray. Comanche and Clark counties, Kans. June. Nos. 237, 518.
Physalis lanceolata Mx. We-wo-ka; Guthrie; also Reno County, Kans. June and July. Nos. 108, 159, 298.
Physalis lobata Torr. Cheyenne country. June. No. 198.
Physalis mollis Nutt. Cimarron Valley. May. No. 169.
Physalis Peruviana L. Guthrie. May. No. 161.
Physalis viscosa L. Guthrie. May. No. 170.
Chamæsaracha sordida Gray. Cherokee Outlet; Seward County, Kans. In sand. July. No. 211.

SCROPHULARINEÆ.

Linaria Canadensis Dumont. Muscogee; Stony Point. April. No. 55.
Pentstemon albidus Nutt. Cherokee Outlet. June. No. 213.
Pentstemon ambiguus Torr., var. **Thurberi** Gray. Hartley County, Tex. In sand.
Pentstemon pubescens Solander. Okmulgee; Guthrie. April; May. Nos. 85, 147.
Collinsia violacea Nutt. Vinita. April. No. 33.
Mimulus glabratus HBK., var. **Jamesii** Gray. Stafford County, Kans. Sand Hills. July. No. 306.
Conobea multifida Benth. Kingman County, Kans. In sandy soil. September. No. 545.
Herpestis rotundifolia Pursh. Cherokee Outlet. June. No. 266.
Gratiola Virginiana L. Muscogee. April. No. 83.
Veronica arvensis L. Muscogee; also Vinita. April. Nos. 22, 60.
Buchnera Americana L. Cherokee Outlet. September. No. 477.
Gerardia aspera Dougl. North Canadian River, Cherokee Outlet; Cheyenne and and Arapahoe countries. August. No. 450.
Gerardia densiflora Benth. Logan County, Okla. August. No. 470.
Gerardia tenuifolia Vahl, var. **macrophylla** Benth. Cherokee Outlet, near Texas line. August. No. 439.
Castilleia purpurea Don. Cheyenne country. June. No. 195.
Pedicularis Canadensis L. Muscogee. April. No. 72.

OROBANCHACEÆ.

Aphyllon Ludovicianum Gray. Comanche County, Kans. June. No. 247.

ACANTHACEÆ.

Dicliptera brachiata Spreng. Arkansas City, Kans. September. No. 485.

VERBENACEÆ.

Lippia cuneifolia Steud. Guthrie. May. No. 149.
Verbena Aubletia L. Vinita. April. No. 7.
Verbena bipinnatifida Nutt. Oklahoma. May, July. Nos. 134, 177.
Verbena hastata L. Cañons of the Upper Cimarron. July. No. 360.

LABIATÆ.

Mentha Canadensis L. Clayton, N. Mex. August. No. 389.
Lycopus sinuatus Ell. Moore County, Tex. August. No. 425.
Salvia lanceolata Willd. Sedgwick and Clark counties, Kans. July. Nos. 243, 287.
Salvia lyrata L. Okmulkee. Woods. April. No. 87.
Monarda citriodora Cerv. Guthrie; Cheyenne country. May, June. Nos. 166, 191.
Monarda punctata L. A form. Kingfisher. June. No. 183.
Brunella vulgaris L. Logan County, Okla. August. No. 464.
Isanthus cærulens Mx. Arkansas City, Kans. September. No. 492.
Teucrium laciniatum Torr. Cheyenne country. June. No. 186.

PLANTAGINEÆ.

Plantago Patagonica Jacq., var. **aristata** Gray. Kingfisher. June. No. 182.
Plantago pusilla Nutt. Muscogee. April. No. 64.
Plantago Virginica L. Vinita; Oklahoma City. April, May. Nos. 21, 130.

NYCTAGINEÆ.

Oxybaphus angustifolius Sweet. Cimarron Valley; Oldham County, Tex.; Cherokee Outlet; Caldwell, Kans. June, September. Nos. 223, 501.
Oxybaphus hirsutus Sweet. Cañons of the Upper Cimarron. July. No. 361.
Oxybaphus nyctagineus Sweet, var. **oblongifolius** Gray. Guthrie, Cimarron Vlaley. May. No. 166.
Oxybaphus nyctagineus Sweet, var. **pilosus** Gray. Barber County, Kans. Gypsum hills. June. No. 256.
Abronia fragrans Nutt. Morton County, Kans.; Cimarron cañons; Neutral Strip. August. No. 352.

This plant is described as having white bracts; our plants, as well as a plant collected in 1879 by Mr. Ball in Wichita County, Tex., has red bracts. Whether this is a form or variety can not be ascertained from the material at hand.

ILLECEBRACEÆ.

Paronychia Jamesii Torr. and Gray. Comanche County, Kans. June. No. 250.

This plant is the same as Nealley's plant of 1889 (referred to *P. dichotoma*) and as Austin's No. 50 (referred to *P. setacea*). The four so-called species *P. dichotoma*, *Jamesii*, *Lindheimeri*, and *setacea*, seem hardly deserving of specific rank.

Paronychia sessiliflora Nutt. Neutral Strip. August. No. 379.

AMARANTACEÆ.

Cladothrix lanuginosa Nutt. Seward County, Kans. Sandy soil. July. No. 332.
Frœlichia gracilis Moq.[1] Barber County, Kans. June. No. 259.

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[1] After an examination of the material in the National Herbarium of the five species belonging to the section *Oplotheca* of this genus, I am led to think that they should be reduced to two or three species. The section *Dilopha* is not represented in the collection, making a comprehensive examination of all the species of this genus impossible at this time. The crests of the ripened fruit appear to furnish the most satisfactory guide to the determination of these plants. The forms which have these crests spiny we may, for convenience, designate as the *Gracilis* group, including *F. gracilis*, *Floridana* and *Drummondii*, with the last two reduced to varieties of *gracilis*. The forms which have the crests in the form of entire or barely crenulate wings may be designated as the *Alatæ*, including *F. interrupta*, *tomentosa*, and Dr. Watson's Mexican *F. alata*.

Frœlichia gracilis Moq., var. **Floridana**. Wichita, Kans. June. No. 279.
Iresine celosioides L. Arkansas City, Kans. September. No. 486.

CHENOPODIACEÆ.

Cycloloma platyphyllum Moq. Comanche and Seward counties, Kans. June, September. Nos. 253, 533.
Corispermum hyssopifolium L. Salt plains of the Salt Fork in Cherokee Outlet, southeast of Kiowa, Kans.; Hartley County, Tex. August, September. Nos. 401, 506.

POLYGONACEÆ.

Eriogonum alatum Torr. Dallas County, Tex. In sand among rocks. August No. 397.
Eriogonum annuum Nutt. Reno County, Kans. Sandy districts. July. No. 293.
Eriogonum Jamesii Benth. Cimarron cañons, Neutral Strip; also on Rabbit Mountains, New Mexico. August. No. 373.
Eriogonum lachnogynum Torr. Morton County, Kans. July. No. 348.
Eriogonum longifolium Nutt. Seward and Stevens counties, Kans. In sand. July. No. 337.
Eriogonum tenellum Torr. Clayton, N. Mex., in Apache Cañon. August. No. 395.
Rumex Acetosella L. Muscogee; Stony Point. April. No. 54.

LAURINEÆ.

Lindera Benzoin Blume. Vinita. Woods. April. No. 24.

These specimens have pistillate flowers barely developed, and yet the leaves are ¾ inch long, which with the young shoots are pubescent. In this pubescence and the simultaneous appearance of flowers and leaves this western form seems distinct from the eastern.

EUPHORBIACEÆ.

Euphorbia strictior Holzinger n. sp. An erect perennial herb, from a thick deep root: diffusely branched from the base, 15 to 25 inches high, glabrous except the inflorescence; branches simple to the inflorescence, straight and rigid, grooved: leaves alternate, 1 to 2½ inches long, 1 line or less wide, generally more than twice the length of the internodes, becoming relatively shorter toward the inflorescence, sessile by a tapering base, the margin entire and revolute; texture thick and leathery; no venation apparent except the midrib on the under side; branches of the bi- or trifurcate inflorescence subtended by opposite or whorled leaves toward the extremities reduced, and there surpassed by the involucre-bearing pedicels; pedicels ¼ inch long, erect; involucral cup as broad

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The subjoined disposition of these forms is suggested.

Froelichia, § *Oplotheca*.

I. *Graciles*. Crests spiny.
a. Crests 2, the alternate ones reduced each to a basal tubercle.
1. Branching diffusely from the base: F. gracilis Moq.
2. Larger, more erect, less branching: P. gracilis Moq., var. Floridana.
aa. Crests 5, the alternate ones each of 1 to 3 sharp spines: F. gracilis Moq., var. Drummondii.
II. *Alatæ*. Crests in the form of entire or barely crenulate wings: F. interrupta, tomentosa, alata.

I am not prepared to differentiate these last three species. With more material than is at present available they may be found reducible to two, or *one*, good species. Certainly they look puzzlingly alike, so far as the present material shows.

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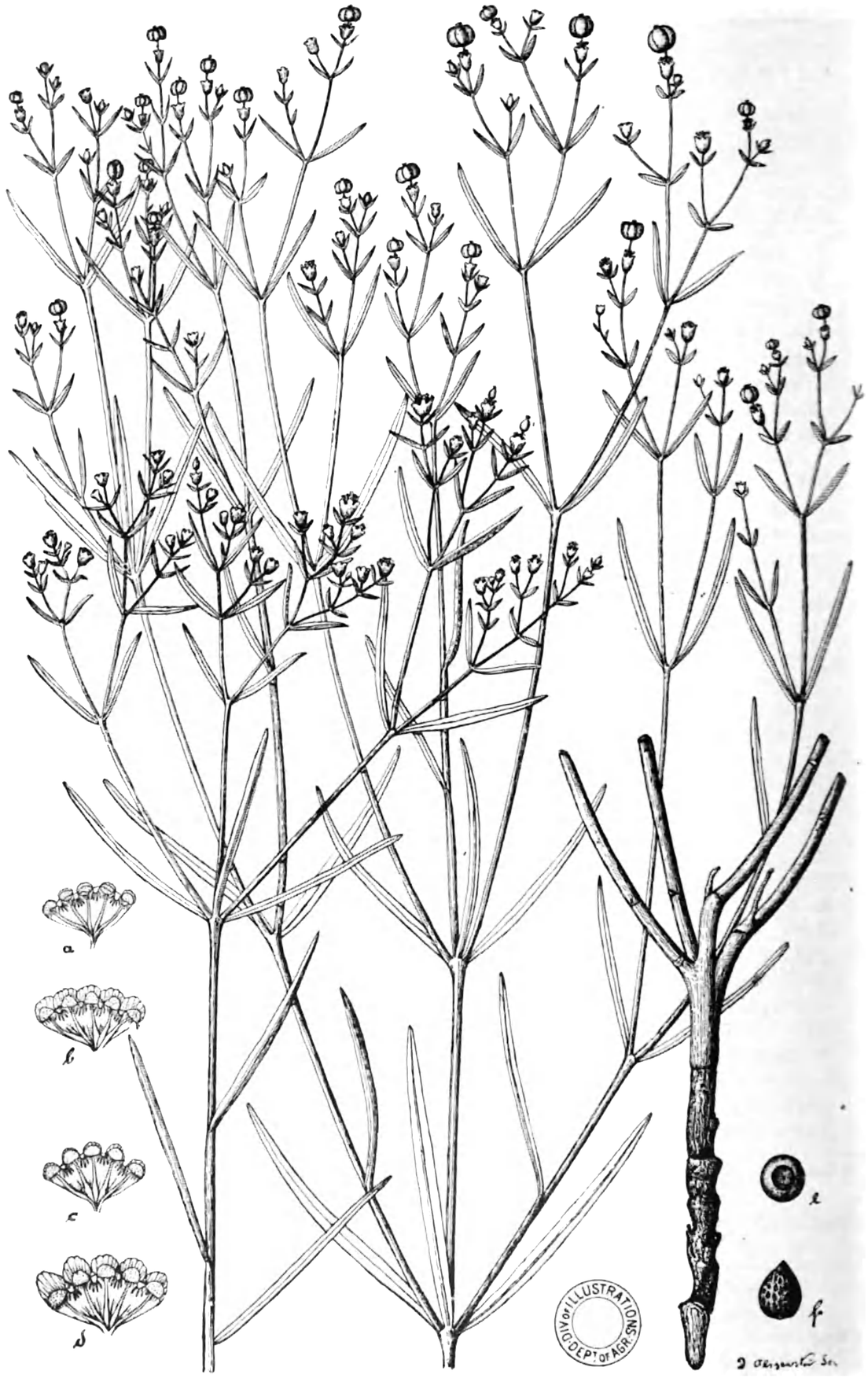

EUPHORBIA STRICTIOR Holzinger, n. sp.

as high, minutely puberulent: glands 4 or 5, yellowish, the petaloid appendage reduced to a narrow, minutely scalloped margin; the pedicels carrying the yellow anthers on short filaments raised above the cup; ovary raised on an erect pedicel 1 line long, puberulent when young, becoming glabrate with age; the three short styles slightly bifid; fruit when mature spherical in outline, nearly 2 lines in diameter, grooved between the carpels, crowned by the short persistent styles, tardily dehiscent; seed oval, 1¼ lines long, grayish-green, obscurely pitted, pointed at small end, marked at large end with a circular depressed area. Oldham County, Tex. August. No. 409.

EXPLANATION OF PLATE XVIII.—Lower and upper part of plant natural size. Figs. *a*, *b*, *c*, *d*, involucres, laid open, respectively of *E. polyphylla*, discoidalis, strictior Wrightii, seen from the inside. Fig. *e* end view, Fig. *f* side view of seed of *E. strictior*, 3.

This differs from the type of *E. Wrightii* in the National Herbarium in being less diffusely branched, with the branches more erect and more rigid; leaves shorter, those in the inflorescence markedly reduced, shorter than the subtended pedicels; petaloid appendages much narrower than the glands; fruit and seeds larger. *E. Wrightii* is described as having 4 glands; one of the first involucres examined from the type specimen had 5.

These two western species of Euphorbia are singularly paralleled by two closely related Florida species, *E. discoidalis* Chapman and *E. polyphylla* Engelm. In *E. discoidalis* the leaves of the inflorescence surpass the ultimate pedicels; in *E. polyphylla* they are shorter than the pedicels and bract-like. There is no appreciable difference in their seeds.

Dr. Chapman, on a recent visit to the National Herbarium (May, 1892), stated that he considered his own *E. discoidalis* and Engelmann's *E. polyphylla* one and the same species; that he had had correspondence with Dr. Englemann on this point, but was not sure that he had convinced that gentleman. Subsequent study and comparison of these plants by the writer tend to establish the claim of *E. polyphylla* to a distinct species. The only mention of it in the author's works is on page 535: "*Euphorbia polyphylla* Engelm. Patterson, Check List, p. 115 (name only)." Search for the description has proved fruitless. The only publication known is through Curtiss' plant No. 2498,* accompanied by a printed label, "*Euphorbia polyphylla* Eng., n. sp. Dry, sandy soil. Indian River, Florida," found in the herbaria at Columbia College, New York City, at Cambridge, Mass., and at the Department of Agriculture. I therefore give here a description of this species:

Euphorbia polyphylla Engelm. in herb. An erect perennial, 6 to 12 inches high, with usually several branches or primary stems from the base, simple for 5 to 10 inches; leaves alternate, crowded, numerous (somewhat as in *Asclepias verticillata*), linear, succulent; those of the inflorescence opposite and always shorter than the subtended pedicels; inflorescence bi- or trifurcate, its branches elongated at maturity, and spreading; color of glands of the involucre purplish; ovary, fruit, and seed not appreciably different from those of *E. discoidalis*.

Thus, while these two Florida plants are certainly closely related, *E. polyphylla* differs in the short bracts of the inflorescence and the numerous, succulent leaves of the stem. The glands in both vary from "5" to 4.[1]

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[1] These species may be distinguished as in the subjoined arrangement:

a. Glands yellowish

1. **Euphorbia Wrightii** Torr. and Gray. Pac. R. R. Rep. ii. 1855, 174.
   Leaves of inflorescence longer than subtended pedicels.
2. **Euphorbia strictior** Holzinger. Petaloid appendage quite narrow.
   Leaves of inflorescence shorter than subtended pedicels.

b. Glands purplish.

3. **Euphorbia discoidalis** Chapm. Fl. S. States, 1865, 401.
   Leaves of inflorescence longer than subtended pedicels. Stem leaves relatively broad.

Euphorbia corollata L. Guthrie. Wooded hills. May. No. 136.
Euphorbia dentata Mx. Neutral Strip; Cimarron Cañon. August. No. 372.
Euphorbia dictyosperma Fisch. and Mey. Muscogee; Sacred Heart Mission. April. No. 20.
Euphorbia Fendleri Torr. and Gray. Comanche County, Kans. June. No. 251.
Euphorbia glyptosperma Engelm. Cherokee Outlet; Stevens County, Kans. In sand. June and July. No. 263.
Euphorbia heterophylla L. In woods. Arkansas City, Kans. September. No. 483.

This species is the same as *E. cyathophora* Jacq.; and *E. barbellata* Engelm. is probably not even a good variety of *E. heterophylla*. In aspect and variability of leaves Engelmann's plant agrees exactly with *E. heterophylla*. The only character indicated in the specific name *barbellata* is found in varying degree in the Linnæan species and is not constant in all the leaves of any one plant. Plants with strong bunches of hairs at the base of the leaves may at most be designated by *E. heterophylla* L., var. *barbellata*.

Euphorbia hexagona Nutt. Wolf Creek, Cherokee Outlet, near Texas boundary. August. No. 441.
Euphorbia lata Engelm. Cherokee Outlet. June. No. 263*a*.
Euphorbia maculata L. Edwards County, Kans. July. No. 316.
Euphorbia peplidion Engelm. Oklahoma City. Stony wastes. May. No. 126.
Euphorbia zygophylloides Boiss. Comanche County, Kans. June. No. 236.
Reverchonia arenaria Gray. Oldham County, Tex. August. No. 415.
Jatropha stimulosa Mx. Guthrie. Sand hills. May. No. 137.
Croton capitatus Mx. Cherokee Outlet; near Caldwell, Kans. September. No. 502.
Croton monanthogynus Mx. Oklahoma proper. July. No. 180.
Croton Texensis Muell. Barber County, Kans. June. No. 260.
Acalypha Virginica L. Arkansas City, Kans. September. No. 489.
Tragia nepetæfolia Cav. Guthrie. May. No. 143.
Stillingia sylvatica L. Little Salt Marsh, Stafford County, Kans. July. No. 158.

URTICACEÆ.

Urtica gracilis Ait. Clayton, N. Mex. August. No. 391.
Pilea pumila Gray. Arkansas City, Kans. September. No. 488.

CUPULIFERÆ.

Betula lutea Mx. f. Okmulkee. Woods. April. No. 92.

ORCHIDEÆ.

Spiranthes cernua Richards. Pratt County, Kans. September. No. 552.

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4. **Euphorbia polyphylla** Engelm. Curtiss' Herbarium specimen, No. 2498,* 1879 (!), and name cited in Engelmann's Works, p. 535, and in Patterson's Check List.

Leaves of inflorescence always shorter than subtended pedicels. The erect, simple stems crowded with short, linear, succulent leaves.

[Mr. Simpson sent in the following description of this plant as observed in the field: "Perennial; stems several from the same root, or branching from the ground; ascending, slender, very leafy, smooth, 6 to 10 inches high; leaves linear, fleshy, semiterete, smooth, entire, alternate, obtuse, sessile, 8 to 12 lines long, a line or less wide," corroborating the impression that the leaves are succulent.]

These species of Euphorbia belong to the section *Adenopetalum* Benth., and the subsection *Tithymalopsis Glotzsch et Garke* (as genus). See Engler u. Prantl., Nat. Pflanzenfam. iii teil, 5 abt., 101.

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Carex granularis Muhl. Muscogee. April. No. 82.
Carex grisea Wahl., var. **globosa** Bailey. Muscogee and Wewoka. April, May. Nos. 81, 104.
Carex laxiflora Lam. Vinita. April. No. 15.
Carex microdonta Torr. Cimarron Cañon, Neutral Strip. August. No. 113*a*.
Carex Muhlenbergii Schkuhr, var. **australis** Olney. Muscogee. April. No. 79.
Carex riparia W. Curtis. Muscogee. In a marsh. April. No. 84.
Carex rosea Schkuhr, var. **retroflexa** Torr. Muscogee. April. No. 78.
Carex rosea Schkuhr, var. **Texensis** Torr. Vinita. April. No. 45.
Carex stricta Lam. Guthrie. May. No. 144.
Carex tetanica Schkuhr, var. **Meadii** Bailey. Vinita; Muscogee. April. Nos. 36, 65.
Carex triceps Mx. Muscogee. April. No. 80.
Carex varia Muhl. Muscogee and Okmulkee. April. Nos. 77, 91.

GRAMINEÆ.

Tripsacum dactyloides L. Cimarron Valley. June. No. 225.
Andropogon Hallii Hack. Stevens and Clark counties, Kans.; Neutral Strip. June, July. No. 343.
Andropogon saccharoides Swartz, var. **submuticus** Vasey. Comanche County, Kans. June. No. 252.
Hilaria Jamesii Benth. Clayton, N. Mex. August. No. 396.
Paspalum setaceum Mx. Wichita, Kans. July. No. 278.
Eriochloa punctata Hamil. Clark County, Kans. September. No. 520.
Panicum anceps Mx. Kingman County, Kans.; Logan County, Okla. July, August. Nos. 467, 548.
Panicum autumnale Bosc. Comanche County, Kans. Sandy soil. September. No. 512.
Panicum depauperatum Muhl. Creek Nation. Stony hill. April. No. 98.
Panicum obtusum HBK. Cheyenne country. June. No. 197.
Panicum scoparium Lam. Wewoka. May. No. 107.
Panicum virgatum L. Ford County, Kans.; Moore County, Tex. July, August. Nos. 322, 422.
Setaria glauca Beauv. Moore County, Tex. August. No. 423.
Leersia oryzoides Swz. Sumner and Pratt counties, Kans. In sloughs. September. No. 498.
Phalaris intermedia Bosc. Wewoka. May. No. 110.
Aristida basiramea Engelm. Kingman County, Kans. September. No. 542.
Aristida dispersa Trin. and Rup. Clark County, Kans. Saline soil. September. No. 516.
Aristida Humboldtiana Trin. and Rup. Seward and Meade counties, Kans. September. No. 537.
Aristida oligantha Mx. Clark County, Kans. September. No. 521.
Aristida purpurea Nutt., var. **Hookeri** Trin. Ford County, Kans. July. No. 312.
Muhlenbergia gracillima Torr. Neutral Strip; Clark County, Kans. August. Nos. 387, 525.
Muhlenbergia Mexicana Trin. Kingman County, Kans. September. No. 549.
Lycurus phleoides HBK. Cimarron cañons. Rocky mesas. August. No. 364
Alopecurus geniculatus L., var. **aristulatus** Munro. Muscogee. April. No. 60.
Sporobolus airoides Torr. Reno County, Kans. July. No. 296.
Sporobolus asper Kunth. Arkalon; also Meade County, Kans. September. No. 532.
Sporobolus asper Kunth. A variety. Clark County, Kans. Sandy saline soil. September. No. 522.
Sporobolus asperifolius Thurber. Clark County, Kans. September. No. 523.

Sporobolus cryptandrus Gray. Seward, Stevens, and Comanche counties, Kans.; Dallas County, Tex. July, August, and September. Nos. 335, 400, 513.
Sporobolus Texanus Vasey. Contr. Nat. Herb., iii, 63. Clark County, Kans. Sandy, saline soil. September. No. 524.
Sporobolus vaginæflorus Vasey. Meade County, Kans. Sandy soil. September. No. 531.
Calamagrostis longifolia Hook. Stevens and Comanche counties, Kans. July. Nos. 342, 513.
Danthonia spicata Beauv. Okmulkee. Woods. April. No. 90.
Chloris verticillata Nutt. Cherokee Outlet. June. No. 210.
Schedonnardus Texanus Steudel. Gray County, Kans. July. No. 330.
Bouteloua eriopoda Torr. Oldham County, Tex. Sand.
Bouteloua hirsuta Lag. Neutral Strip. August. No. 374.
Bouteloua oligostachya Torr. Ford County, Kans. July. No. 320.
Bouteloua racemosa Lag. Cherokee Outlet. June. Nos. 264, 265.
Munroa squarrosa Torr. Edwards County, Kans. July. No. 318.
Triodia cuprea Jacq. Sand soil, in Black-jack forest. Comanche County, Kans. August, September. Nos. 455, 511.
Triodia purpurea Hack. Comanche County, Kans. September. No. 514.
Redfieldia flexuosa Vasey. Stafford County, Kans. Sandy hills. July. No. 305.
Diplachne fascicularis Beauv. Clark County, Kans. September. No. 517.
Diplachne rigida Vasey. Seward County, Kans.; Kiowa; Englewood, Kans. July, September. No. 339.
Eragrostis curtipedicellata Buckl. Clark County, Kans. September. No. 519.
Eragrostis oxylepis Torr. Cherokee Outlet and Neutral Strip. June, August. Nos. 207, 384.
Eragrostis pectinacea Gray, var. **spectabilis** Gray. Barber County, Kans. September. No. 510.
Eragrostis Purshii Schrad. Haskell County, Kans. July. No. 327.
Eragrostis reptans Nees. Near Salt Fork, Cherokee Outlet. September. No. 505.
Eragrostis tenuis Gray. Cherokee Outlet, near Texas line. August. No. 442.
Uniola latifolia Mx. Logan County, Kans. August. No. 471.
Distichlis maritima Raf., var. **stricta** Torr. Guthrie; Stafford County, Kans. July. Nos. 156, 303.
Poa annua L. Muscogee. April. No. 58.
Poa arachnifera Torr. Wewoka, Oklahoma. May, July. Nos. 100, 180.
Festuca tenella Willd. Creek Nation; Oklahoma City; Cherokee Outlet. May, June. Nos. 41, 121, 206.
Bromus unioloides Willd. Wewoka. May. No. 43.
Agropyrum glaucum R. and S. Comanche County, Kans. June. No. 245.
Hordeum jubatum L. Comanche County, Kans. June. No. 240.

FILICES.

Woodsia Mexicana Fée. Cimarron Cañon. Rocky mesas. August. No. 365.
Cheilanthes lanuginosa Nutt. Neutral Strip. Rocky mesas. August. No. 368.
Cheilanthes Lindheimeri Hook. Neutral Strip. Rocky mesas. August. No. 367.
Pellæa atropurpurea Link. Neutral Strip. Among rocks. August. No. 363.
Asplenium ebeneum Ait. Neutral Strip. August. No. 366.
Notholæna nivea Don., var. **dealbata** Dav. Arkansas City, Kans. September, No. 494.

CHARACEÆ.

Chara gymnopitys A. Br. var. Stafford County, Kans. July. No. 302.
T. F. Allen considers this form a new variety.

OBSERVATIONS ON THE NATIVE PLANTS OF OKLAHOMA TERRITORY AND ADJACENT DISTRICTS.

By M. A. CARLETON, *assistant botanist, Kansas Agricultural Experiment Station.*

In order to make out anything like a complete statement of the distribution and variations of the native plants of the above-named country, it would, of course, be necessary to survey systematically the entire territory included, visiting each district at all seasons of the year and taking two or three years of time for the purpose. The following notes are taken from a sojourn of less than six months in the regions mentioned during the summer of 1891, although several of the districts were visited two or three times during the summer. However, I have taken pains to investigate all distributions and variations of plants that seemed to be in any way significant, and it is hoped the following summary of results may prove interesting.

I shall first give some notes on the plants of the different districts of this region, and then direct attention to certain groups.

The entire region over which I have worked is approximately included between the Arkansas and Canadian rivers, west of Arkansas and east of Colorado and New Mexico, but some of my notes will refer to the northeast portion of the Indian Territory and of New Mexico and the southeast portion of Colorado. For convenience I divide the whole region into five parts: (1) Oklahoma proper and eastern Indian Territory (or the Indian Territory east of the 98th meridian); (2) western Indian Territory (west of the 98th meridian), excluding No Man's Land; (3) southwest Kansas (that part of Kansas cut off by the Arkansas River); (4) No Man's Land or Neutral Strip; and (5) Texas Panhandle north of the Canadian River.

OKLAHOMA PROPER AND EASTERN INDIAN TERRITORY.

The greater part of this district I have visited but once, and then early in the spring, and therefore can not say much about its flora from my own knowledge. But I believe I have made sufficient observations to justify me in expressing the opinion that it is a country in the main

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what distinct from each other in the character of their predominant species. The natural boundary, it is true, would follow a zigzag course, crossing this line many times, but its average course would lie just about on this meridian. Going westward, such species as the following first make their appearance at this line: *Astragalus mollissimus* Torr. ("loco"), *Gaillardia pulchella* Foug., *Malvastrum coccineum* Gray, *Artemisia filifolia* Torr. ("sagebrush"), *A. Wrightii* Gray, etc., while others, though occasionally found east of this line, now become more largely predominant, as *Gaillardia lanceolata* Mx., *Yucca angustifolia* Pursh ("Mexican soap-plant"), *Solanum elæagnifolium* Cav., *Evolvulus argenteus* Pursh, the grama grasses and several of the Drop-seed grasses.

And so, almost immediately after passing the meridian near Kingfisher, the flora of this district begins to exhibit the distinctive character common to the western Great Plains.

During the season of 1891 there was an excellent growth of grasses nearly all over this district, consisting mainly of the blue-stems (*Andropogon provincialis* Lam., *A. nutans* Linn., and *A. Hallii* Hack., v. *flaveolus* Hack.), interspersed throughout with a rich carpet of Buffalo grass. But the season was an exceptionally wet one.

A very brilliant eryngium (*Eryngium diffusum* Torr.) gives pleasing variety in some places to the usual monotony of this district; while there are densely grown patches of the following species, scattered here and there: *Rudbeckia hirta* L., *Monarda citriodora* Cerv., *Hosackia Purshiana* Benth., *Solanum elæagnifolium* Cav., and *Phaseolus pauciflorus* Benth. The last three are often found growing together in prairie-dog towns, sometimes with *Callirrhöe involucrata* Gray, and occasionally *Martynia proboscidea* Glox.

In the North Canadian Valley a curious velvet-flowered crucifer (*Streptanthus hyacinthoides* Hook.) appears as a species rather rare in this district, so far as I have observed, and on the south side of the same river, where the country is much different from the north side, *Lespedeza reticulata* Pers. is occasionally found mingling with the more common *L. capitata* Mx. Then the Gypsum Hills have their peculiar flora, to which I shall refer again. Although the greater portion of this district will probably continue to be adapted only to the practice of stock-raising, still there is no good reason why the eastern part may not become a fine wheat-growing country, especially since it lies mainly south of the counties of Harper and Barber, in Kansas, which have already made a good record as a wheat-producing region. Besides, the amount of rainfall, in the same longitude, seems to increase toward the south.

SOUTHWEST KANSAS.

Until during the last three years the plants of this district have been very little known to botanists, and now the results of recent collections disclose to us a flora rich in interesting forms, both in the way of add-

ing to our list many species new to Kansas, and exhibiting very strikingly the transition from the eastern to the western plains flora. Prof. W. A. Kellerman and Mr. B. B. Smyth have preceded me in making collections of the plants of this district, and reported quite a number of the species that I shall mention in these notes.

Here we find species that would be wholly out of place in eastern Kansas, but which become very familiar to the collector in the "Panhandle" or Neutral Strip, and which are invariably characteristic of sandy barren regions.

But, going westward, before we reach the more barren portions of the district we first find in Kingman, Pratt, Barber, and Comanche counties an extension from the Territory of the outcropping "red beds." Here there is not such a continuity of the flora as in the sandy regions, but there are certain unusual forms quite local and broken in their range, such as the following species: *Oxytropis monticola* Gray, found so far only at Kingman, *Gaillardia simplex* Scheele., *Astragalus bisulcatus* Gray, *Senecio Douglasii* DC. and *Aster oblongifolius* Nutt., var. *rigidulus* Gray. Gypsum hills, too, are numerous here, and are accompanied by their peculiar flora. *Juniperus Virginiana* L. and *Celtis occidentalis* L. occur among these hills, the former probably as an extension of its range from the Territory, rather than from eastern or northern Kansas.

Aside from the plants of the "red beds" and sandy regions, there are a few others that become familiar forms in western Kansas, distributed quite generally over the high prairies. Of these, besides various cacti, buffalo-grasses, and the grama grasses (*Bouteloua racemosa* Lag., *B. oligostachya* Torr. and *B. hirsuta* Lag., there are the following species: *Lepachys Tagetes* Gray (both purple and yellow-rayed forms), *Gaillardia pulchella* Foug., *Engelmannia pinnatifida* Torr. and Gray, *Erysimum asperum* DC., *Astragalus lotiflorus* Hook., *A. mollissimus* Torr., *Ipomœa leptophylla* Torr., *Œnotherà Hartwegi* Benth, etc.

The prevailing sunflower for all this district, and in fact for the entire Arkansas Valley of the Great Plains, is *Helianthus petiolaris* Nutt., although *H. annuus* L. is quite common.

Throughout this district, as in western Indian Territory, the most important forage grasses are the buffalo-grass, blue-stems, switch grass (*Panicum virgatum* L.), and the grama grasses. Along the Cimarron River *Sporobolus asperifolius* Thurb. and *Muhlenbergia gracillima* Torr. are also rather common, occurring in dense patches. One of the worst weeds among the grasses is *Schedonnardus Texanus* Steudel, which grows so thickly from Gray County westward as to become quite an annoyance in the fields, particularly in those not constantly cultivated, and is very provoking to the teamsters, by gathering mud on the wheels of the wagon after a rain.

In Seward County, the common "tumble weed" is *Cycloloma platyphyllum* Moq. I saw specimens of this species on exhibition at Arkalon which measured as much as 3 feet across. It is common in sandy wastes.

There are some interesting species in the extreme southwestern portion of this district that, as far as yet known, seem barely to have crossed the Kansas line in their distribution northward. A particularly interesting locality, in which alone some of these species have so far been found in Kansas, is the Point of Rocks, a series of rocky bluffs jutting out on the north side of the Cimarron River, near the Territory line, in Morton County, at which place the headquarters of a number of cattle men have been established for some time. I shall mention some of these species that I noted at this place and in a few other localities.

Krameria secundiflora DC. is common from Guthrie to Kingfisher, Okla., and westward, but collected in Kansas only at Point of Rocks, The following have also been found so far only at Point of Rocks: *Eriogonum lachnogynum* Torr., *Berlandiera lyrata* Benth., and *Petalostemon violaceus* Mx., var. *tenuis* Coulter. The last one, described by Coulter in his Manual of the Phanerograms and Pteridophytes of western Texas, is common farther south and west in Neutral Strip and Texas. A singularly dwarfed form of *Œnothera serrulata* Nutt. is also found at Point of Rocks, which is common on gypsum hills in Indian Territory and in Neutral Strip and Panhandle, but seen nowhere else in Kansas. *Convolvulus incanus* Vahl also has so far been found only in Morton County, and *Pectis angustifolia* Torr., and *Franseria discolor* Nutt. only in Seward County, besides others.

NEUTRAL STRIP (BEAVER COUNTY, OKLA.).

This district exhibits more fully the prevailing species of the southwestern Great Plains. Following the Cimarron River westward, the species already mentioned as barely crossing the Kansas line first become more common, then other new species appear, and finally, the valley of the Cimarron assuming cañon form, and reaching the mesas terminating the spurs of the mountains, the flora presents an appearance quite similar to that of eastern New Mexico and the cañons of Texas Panhandle.

About 50 miles up the river from Morton County, Kans., two or three species of "tree cactus" are first found, also a new Mentzelia, *M. multiflora* Gray, *Paronychia sessiliflora* Nutt., *Desmanthus Jamesii* Torr. and Gray, several interesting ferns among the mesas, a new grass, *Lycurus phleoides* HBK., etc. Besides, nearly all the species found in Morton, Stevens, and Seward counties, Kans., now become very common.

On the divide between the Cimarron and North Canadian great patches of *Hymenopappus flavescens* Gray occur, filling the air with their pungent odor. In the same region *Eragrostis oxylepis* Torr. and *Muhlenbergia gracillima* Torr. are quite common, as well as *Gaillardia pinnatifida* Torr., and a variety of *Chrysopsis villosa* Nutt., while *Hoffmanseggia stricta* Benth. grows in patches scattered about.

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Tascosa. The fruit is brilliant red, and at a distance looks like flowers. It furnishes an acid juice that is quite refreshing to the tired traveler. *Bouteloua eriopoda* Torr. grows in abundance near Tascosa. At Canadian City a splendid malvaceous plant (*Hibiscus lasiocarpus* Cav.) is common in the Canadian Valley (which here loses its cañon form); also *Asclepias incarnata* L. var. *longifolia* Gray was collected in the same locality.

One of the foxtails (*Setaria glauca* Beauv.) forms a good part of the hay in the Canadian Valley, and is considered to be of good quality.

The button bush (*Cephalanthus occidentalis* L.) is a very common shrub in this valley and along streams in western Indian Territory.

This district is, on the whole, one vast cattle range, with a few cultivated fields in the Canadian cañons, watered by springs in the mesas.

PLANTS CHARACTERISTIC OF SANDY REGIONS.

Having given some attention to the distribution of plants for several years, I have become especially interested in the fact commonly known that certain plants are usually associated with particular soils and climates. However, I can not hope to give anything new in this line, except in so far as I may be able to present some additional observations, that may be of interest, from a study of the flora of the above districts.

It has been noted by nearly all observers, I suppose, who have had opportunity, that the plants of sandy or desert regions are usually, and uniformly, protected against rapid transpiration by thickened leaves and epidermis, absence or narrowness of leaves, or an unusual amount of wooliness or hairiness. Now, as one would expect, we find such characters commonly belonging to the species prevailing in the western Great Plains. Of course the Great Basin and other regions farther west and south than these districts that have come more immediately under my own observations would probably furnish still better examples of this peculiarity in plant distribution; but various circumstances do not permit me to include any notes upon those regions, although I have been over a portion of the Great Basin.

It is particularly interesting to trace the gradually increasing tendency to assume these protective characters on the part of those species inhabiting both the eastern and western portions of the Great Plains in their distribution westward. The very common evening Primrose (*Œnothera serrulata* Nutt.) furnishes a good illustration. I have seen specimens of this species in eastern Indian Territory growing more than 2 feet tall, with flowers nearly 2 inches across, while in Panhandle, Texas, Neutral Strip, and at Point of Rocks, Kans., it becomes peculiarly dwarfed, often not more than 6 inches tall, with flowers little more than half an inch across, and the leaves and branches become more whitish, narrower, and yet thicker, and the entire plant more massive in proportion to its height. Between these extremes in-

termediate forms can be traced. *Chrysopsis villosa* Nutt. and *Aplopappus spinulosus* DC. are well known to be quite variable, but their variations, to the eastward and westward especially, will nearly always be found to be in the line of a greater or less presence of protective characters. Of the former, the very names of many of the described varieties ought to, and do, indicate these facts, such as *canescens*, *hispida*, *foliosa*, *stenophylla*, *viscida*, etc., while there are innumerable intermediate forms not worthy of varietal rank. *Riddellia tagetina* Nutt. becomes much more woolly farther westward, and *Engelmannia pinnatifida* Torr. and Gray more hairy and somewhat dwarfed.

Besides *Chrysopsis villosa* Nutt. a number of other species become so modified as to produce distinct varieties. *Petalostemon violaceus* Mx. changes into its dwarfed but stouter variety *tenuis Coulter*. *Oxybaphus nyctagineus* Sweet, becoming more and more hairy, finally produces the variety *pilosus* Gray (Barber County, Kans.). *Oenothera Hartwegi* Benth. becomes the variety *lavendulæfolia* Wats., dwarfed and more hairy, and *Aster oblongifolius* Nutt. gives place to its dwarfed but stouter and more rigid variety *rigidulus* Gray.

Just so, species with thickened or hairy epidermis and fleshy, narrow leaves take the place of other species of the same genus farther westward in the sandy or desert regions. Soon after passing the 98th meridian we find *Astragalus mollissimus* Torr. and *A. lotiflorus* Hook. taking the place of other species of the genus, and they finally become the dominant astragali of southwest Kansas. These species are well known to be quite hairy. In my own experience the latter species is almost invariably the only one of the genus found in sand hills. *Astragalus pectinatus* Dougl. and *A. pictus* Gray, var. *filifolius* Gray, species with very narrow or finely dissected leaves, and *A. Parryi* Gray, a very hairy species, also become quite common, especially in eastern Colorado. *Lepachys Tagetes* Gray becomes dominant in place of *L. columnaris* Torr. and Gray in extreme southwestern Kansas, and *Oxybaphus hirsutus* Sweet replaces largely the other oxybaphi in the Neutral Strip. *Gaura villosa* Torr. already begins to replace other gauras in sand hills at Guthrie, Okla., and becomes quite common farther westward. *Solanum elæagnifolium* Cav. becomes the dominant member of its genus in southwest Kansas and Neutral Strip. It has very much thickened whitish woolly leaves and epidermis. It also takes the place of *Solanum rostratum* Dunal in furnishing food for great numbers of the Colorado potato beetle in Barber County, Kans. *Oenothera albicaulis* Nutt., with sparsity of leaves and much-thickened stem and leaves, and *Oe. pinnatifida* Nutt., with finely divided leaves and hairy all over, become common in place of others of this genus in southwest Kansas and southwestward. *Gaillardia pinnatifida* Torr., almost before one recognizes the fact, appears in place of *G. pulchella* Foug., as the two species resemble each other very much, but the former is really more ashy pubescent, with leaves usually more finely divided. *Artemisia filifolia*

Torr. and *A. Wrightii* Gray replace other artemisias, and *Dalea nana* Torr. and *D. lanata* Spreng. are found common in place of other members of that genus. All of these have either finely dissected leaves or great woolliness, or both.

Of the sedges *Cyperus Schweinitzii* Torr. seems to be the most common in sandy wastes. From what I am able to learn from other sources, however, it is a species that seems to be quite generally distributed everywhere. In this connection it may be of interest to note a difference in habitat between *Cyperus Schweinitzii* Torr. and *C. Houghtoni* Torr., which two species have only recently been separated by Dr. Britton. (Bulletin Torr. Bot. Club, vol. xviii. p. 368.) I have noted both species in many places all over the Southwest, and, while the former is quite common in sandy wastes, I have never once noted *C. Houghtoni* in such localities.

Bouteloua hirsuta Lag. is the dominant grama grass in the Neutral Strip; and in western Texas and eastern New Mexico the "black grama" grass, *B. eriopoda* Torr., becomes quite common. Of the ferns *Cheilanthes Lindheimeri* Hook. is a good example of a characteristic western form. It is extremely villous to tomentose, found growing in abundance among the rocks of the mesas in the Cimarron cañons.

To name all other species characteristic of these sandy regions, taken at random from various genera and orders, would require a long list, which would probably be both needless and uninteresting. Hence I shall name only a few of the most striking examples: *Heliotropium convolvulaceum* Gray, a species covered with stiff, appressed hairs, which I have invariably found growing in almost pure sand; *Redfieldia flexuosa* Vasey, a grass with slender, rigid leaves, seemingly restricted even to "blow outs" in sides of sand hills; *Diplachne rigida* Vasey, a grass having, as the name implies, a very rigid, thickened stem and a few short, narrow, rigid leaves; *Hymenopappus flavescens* Gray, a species white tomentose, common in southwest Kansas and Neutral Strip; *Franseria discolor* Nutt., hispid hairy, in Seward County, Kans.; *Polypteris Texana* Gray, *Aplopappus rubiginosus* Torr. and Gray, and *A. divaricatus* Gray, all viscid-pubescent or woolly, with rather narrow leaves; *Krynitzkia Jamesii* Gray, and *K. crassisepala* Gray, both extremely rough, hispid, or tomentose, in southwest Kansas and southwestward; *Lycurus phleoides* HBK., a grass somewhat similar in texture to the grama grasses, among the mesas in Neutral Strip; *Portulaca pilosa* L., common in the Panhandle and in sandy wastes at Wichita, Kans.; *Biscutella Wislizeni* Benth. and Hook., a densely woolly crucifer, common in the Panhandle and found in southwest Kansas; *Eriogonum annuum* Nutt., *E. alatum* Torr., *E. lachnogynum* Torr., *E. Jamesii* Benth., in fact, nearly all the eriogonums of the Great Plains, all pubescent to densely tomentose, with few narrow leaves; besides all the various cacti, with fleshy stems and no leaves; the mentzelias, with rough, thickened leaves and hard stems; the aristidas, stipas, yuccas, etc.

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Switch grass (*Panicum virgatum* L.) is also a common and well-known grass in the cañons. The value of this grass for hay is also increased by early mowing. It is called a very good forage plant by the ranchmen.

Yellow foxtail (*Setaria glauca* Beauv.).—The ranchmen in the South Canadian cañons call this a very good grass for hay. I have seen them mowing it in considerable quantity. It is rather common there. It may possibly seem the more valuable simply because there is a lack of other good species.

PLANTS CHARACTERISTIC OF GYPSUM HILLS.

It seems to be pretty well understood that the meaning of the Indian word Oklahoma is "home of the red earth" (Okla=red, homa=home); which, if true, makes it a very appropriate name, since a large portion of the Indian Territory north of the South Canadian River is plainly distinguished by outcropping "red beds," which also extend northward into Barber, Pratt, Comanche, and Kingman counties, Kans.

Now, gypsum and salt are also associated with the "red beds," outcropping at the surface in the form of gypsum hills and salt marshes, especially along the valley of the Cimmarron and in central Kansas. The gypsum deposits, being a little harder than the surrounding soil, have been left standing by the eroding action of streams until they have become very prominent hills, in some places forming what are called *glass mountains*, from the glistening appearance of the mica-like gypsum covering their sides.

All these gypsum hills invariably have their characteristic plants. The special characters of the plants are very much the same as those of the plants of sandy regions. This is explained by the fact that they have to contend with the same general adversities of environment—a dry, gravelly soil, from which the water is rapidly drained away through the sides of the hills.

At the summits of these hills, near Kingfisher, Okla., certain species are found which do not occur in the surrounding lower country within a radius of 100 miles, so far as my experience goes. Of these, *Riddellia tagetina* Nutt. is one of the most common, found on various hills along the Cimarron River. The dwarf form of *Oenothera serrulata* Nutt., already mentioned, is also quite as common, as well as *Oe. Hartwegi* Benth., *Gaura villosa* Torr., *Yucca angustifolia Pursh*, *Gilia longiflora* Don., *Mentzelia nuda* Torr. and Gray, and *M. oligosperma* Nutt., are frequent on gypsum hills from Caldwell to Barber County, Kans. *Portulaca pilosa* L. occurs on similar hills in the Cherokee Outlet, Ind. T.

The following species I have not seen in other localities than gypsum hills: *Lesquerella gracilis* Wats., *Nama demissum* Gray, and *Astragalus microlobus* Gray, in Cherokee Outlet, and *Oxybaphus nyctagineus* Sweet, var. *pilosus* Gray, in Barber County, Kans. I suppose, however, they may be found, in other places. They are not very common, and this

fact may possibly account for my not having seen them in other localities. Of course it is not necessary that any species should be entirely limited to a certain locality in order to be properly characteristic of that locality.

PLANTS CHARACTERISTIC OF SALT MARSHES.

Experiments have shown that solutions of salt have a retarding influence upon the assimilative processes in plants; and now in a recent contribution to botanical science ("Ueber Schutzmittel des Laubes gegen Transpiration besonders in der Flora Javas," A. F. W. Schimper; Sitzungsberichte der Berl. Akadem. der Wissenschaften, 1890, S. 1045), the writer maintains that the presence of salt also interferes with the water supply, much to the same extent as a relatively dry soil. Hence it is argued that the thick, fleshy leaves, sunken stomata, and hairiness of salt-marsh plants are all protective characters against too rapid transpiration, just as they are in the case of plants of desert regions. If this view is correct, there are probably other characters distinguishing salt-marsh plants from those of desert regions, for I have yet noted but two species that are at all common to both localities.

The two species that I have found to be common to salt marshes and barren sandy regions are *Corispermum hyssopifolium* L. and *Cycloloma platyphyllum* Moq., belonging to the goosefoot order (*Chenopodiaceæ*). The former I have collected in abundance in sandy districts in Texas Panhandle and various places in southwest Kansas and in salt marshes all along the Salt Fork, in Cherokee Outlet; the latter, in a number of Kansas salt marshes, and in sandy wastes in extreme southwestern Kansas, where it is a common tumble weed.

Atriplex expansa Wats., belonging to the same order to which the above belong, is a common alkali and salt marsh plant in southern Kansas, although this is its first publication as a Kansas plant. It is also common along the Salt Fork in Indian Territory. It is well known to possess thick, scurfy leaves. *Kochia Americana* Wats., another member of the goosefoot order, and possessing unusually thick, terete, fleshy leaves, is also a common salt-marsh plant throughout southern and western Kansas. I have myself found it at Wichita and in salt marshes at Geuda Springs (Sumner County) and in Stafford County. It is according to my experience that a majority of the genera of the orders Chenopodiaceæ and Amarantaceæ represented in the Great Plains furnish species peculiar to salt marshes and sandy wastes.

Of the sedges *Scirpus maritimus* L. and *Scirpus Torreyi* Olney are invariably found associated with salt marshes throughout Kansas and Indian Territory. *Distichlis maritima* Raf., var. *stricta* Thurber, and *Sporobolus airoides* Torr. are such common grasses in salt marshes that it would be quite strange to see a salt marsh without them. The latter is also found in various alkaline and other barren soils.

Sesuvium portulacastrum L., belonging to an order (*Ficoideæ*) characterized by fleshy, succulent plants, is very frequent in Kansas salt marshes and on the Great Salt Plain of the Cimarron, and is strictly characteristic of such localities, according to my observations. *Glaux maritima* L. is also reported from Kansas and known to be a characteristic salt-marsh plant. I have not observed it myself.

Cleomella angustifolia Torr. is common in alkaline soils, but not at all limited to such localities.

PLANTS CHARACTERISTIC OF SANDSTONE OUTCROPS.

In the central and eastern portions of the Indian Territory are small surface outcrops, usually of sandstone, at the summits or on sides of hills, or even scattered over the general level of the country, which are always clothed by a vegetation entirely distinct from that of the surrounding soil. But I have only observed this peculiarity in the Indian Territory, and probably have not yet the required facts to make it a matter of very much importance.

I shall name a few of the species most strikingly characteristic of these localities that have come under my observation. These outcrops are especially noticeable about Guthrie and Oklahoma City, where I have collected the following species: *Nama hispidum* Gray, *Evax prolifera* Nutt., *Euphorbia peplidion* Eng., *Linum Berlandieri* Hook., and several others of less importance. In these same outcrops and in the eastern part of the Territory I have collected some others, which are also found in the western Great Plains, such as *Actinella lincarifolia* Torr. and Gray, and *Evolvulus argenteus* Pursh, both at Oklahoma City, and *Œnothera linifolia* Nutt., *Rumex acetosella* L., *Phacelia parviflora* Pursh, *Phacelia strictiflora* Gray, and others, in the Creek Nation.

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Scient. Amer.=Scientific American; a Weekly Journal of Practical Information, Art, Science, Mechanics, Chemistry, and Manufactures. N. Y. Sept. 3, 1892. F.

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Zoe=Zoe; a Biological Journal. Vol. ii, no. 4, iii, no. 1-3. San Francisco, 1892. 8°.

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3. **Thalictrum cæsium** Greene, Fl. Fran. 309.—California.
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1761. **Pleurolobus canescens** MacMillan, Metasp. Minn. Val. 320.
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1815. **Vigna luteola angustifolia** Robinson, Proc. Amer. Acad. xxvii. 167.—Mexico.
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1910. **Cæsalpinia multiflora** Robinson, Proc. Amer. Acad. xxvii. 167.—Mexico.
1911. **Hoffmanseggia canescens** Fisher, Contr. Nat. Herb. i. 149.—Mexico.
——— **falcaria capitata** Fisher, Contr. Nat. Herb. i. 145.—Arizona.
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1997. **Acacia californica** Brandegee, Proc. Cal. Acad. ser. 2, iii. 231.—Lower California.
2000. **Albizzia occidentalis** Brandegee, Proc. Cal. Acad. ser. 2, iii. 222.—Lower California.

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2054. **Fragaria americana** Britton, Bull. Torr. Club, xix. 222.
2055. **Potentilla eremica** Coville, Proc. Biol. Soc. Wash. vii. 76.—Nevada.
——— **purpurascens pinetorum** Coville, Proc. Biol. Soc. Wash. vii. 77.—Colorado.
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2111. **Hydrangea arborescens kanawhana** Millspaugh, Fl. West Va. 363.—West Virginia.
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——— **subcæsium** Greene, Pitt. ii. 295.
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——— ——— **pilosella** Small and Heller, Mem. Torr. Club, iii. 26.—North Carolina.
2533. Lopezia angustifolia Robinson, Proc. Amer. Acad. xxvii. 168.—Mexico.

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2571. Mentzelia reflexa Coville, Proc. Biol. Soc. Wash. vii. 74.—California.

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2714. Opuntia basilaris ramosa Parish, Bull. Torr. Club, xix. 92.—California.
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3093. Houstonia fruticosa Rose, Contr. Nat. Herb. i. 132.—Carmen Island.

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3493. Solidago boottii yadkinensis Porter, Mem. Torr. Club, iii. 27; Bull. Torr. Club, xix. 129.—North Carolina.
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——— **nemoralis mollis** MacMillan, Metasp. Minn. Val. 510.
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3525. Bellis purpurascens Robinson, Proc. Amer. Acad. xxvii. 172.—Mexico.
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3561. Erigeron calvus Coville, Proc. Biol. Soc. Wash. vii. 69.—California.
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3603. Stylocline arizonica Coville, Proc. Biol. Soc. Wash. vii. 79.—Arizona.
3658. Ereminula howellii Greene, Pitt. ii. 248.
3751. Melampodium longipilum Robinson, Proc. Amer. Acad. xxvii. 173.—Mexico.
3782. Rumfordia connata Brandegee, Zoe, iii. 241.—Lower California.
3794. Sabazia michoacana Robinson, Proc. Amer. Acad. xxvii. 173.—Mexico.
3797. Gymnolomia canescens Robinson, Proc. Amer. Acad. xxvii. 174.—Mexico.
3822. Tithonia brachypappa Robinson, Proc. Amer. Acad. xxvii. 174.—Mexico.
3832. Verbesina potosina Robinson, Proc. Amer. Acad. xxvii. 175.—Mexico.
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4955. Gentiana americana MacMillan, Metasp. Minn. Val. 421.
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4959. Frasera tubulosa Coville, Proc. Biol. Soc. Wash. vii. 71.—**California.**

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4969. Gilia maculata Parish, Bull. Torr. Club, xix. 93.—California.
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5077. **Ipomœa carletoni** Holzinger, Contr. Nat. Herb. i. 211.—Indian Territory.
——— **ornithopoda** Robinson, Proc. Amer. Acad. xxvii. 183.—Mexico.
5088. **Brewerla mexicana floribunda** Villada, La Naturaleza, ser. 2. ii. 127.—Mexico.
5104. **Cuscuta gronovii saururi** MacMillan, Metasp. Minn. Val. 430.

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5467. **Tabebuia donnell-smithii** Rose, Bot. Gaz. xvii. 418.—Mexico.

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5874. Bœrhavia anisophylla paniculata Coulter and Fisher, Bot. Gaz. xvii. 348.—Texas.
5882. Abronia carletoni Coulter and Fisher, Bot. Gaz. xvii. 349.—Eastern Colorado.
——— **suksdorfii** Coulter and Fisher, Bot. Gaz. xvii. 348.—Washington.

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5898. Neckeria aurea Millspaugh, Fl. West Va. 327.
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5960. Gomphrena nealleyi Coulter and Fisher, Bot. Gaz. xvii. 349.—Texas.
——— **pringlei** Coulter and Fisher, Bot. Gaz. xvii. 349.—Mexico.
5961. Frœlichia gracilis drummondii Holzinger, Contr. Nat. Herb. i. 214.
——— ——— **floridana** Holzinger, Contr. Nat. Herb. i. 197, 214.
——— **texana** Coulter and Fisher, Bot. Gaz. xvii. 350.—Western Texas.

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5979. Atriplex cordulata Jepson, Pitt. ii. 304.—California.
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——— **fruticulosa** Jepson, Pitt. ii. 306.—California.
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6042. Sarcobatus baileyi Coville, Proc. Biol. Soc. Wash. vii. 77.—California and Nevada.

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6070. Eriogonum davidsonii Greene, Pitt. ii. 295.—California.
——— **pringlei** Coulter and Fisher, Bot. Gaz. xvii. 351.—Arizona.
——— **texanum** Coulter and Fisher, Bot. Gaz. xvii. 350.—Western Texas.
6084. Polygonum alpinum foliosum Small, Bull. Torr. Club, xix. 360.
——— **bistortoides linearifolium** Small, Bull. Torr. Club, xix. 352.
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——— **hydropiperoides strigosum** Small, Bull. Torr. Club, xix. 355.—Canada, Indiana, and West Virginia.
——— **mexicanum** Small, Bull. Torr. Club, xix. 356.—Mexico.
——— **microspermum** Small, Bull. Torr. Club, xix. 366.
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——— **pringlei** Small, Bull. Torr. Club, xix. 357.—Mexico.
——— **punctatum leptostachyum** Small, Bull. Torr. Club, xix. 356.
6088. Rumex geyeri Trelease, Rev. Rumex, 78.

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6145. Peperomia inquilina Hemsley, Gard. chron. ser. 3, xii. 428.—Mexico and Guatemala.

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6193. Cinnamomum cinnamomum Cockerell, Bull. Torr. Club, xix, 95.
6195. Persea persea Cockerell, Bull. Torr. Club, xix, 95.

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7553. **Trillium erectum declinatum** Millspaugh, Fl. West Va. 453.—West Virginia.

PONTEDERIACEÆ.

7563. **Heteranthera dubia** MacMillan, Metasp. Minn. Val. 133.

XYRIDACEÆ.

7563. **Xyris montana** Rics, Bull. Torr. Club. xix. 38.—Montana

COMMELINACEÆ.

7588. **Tradescantia angustifolia** Robinson, Proc. Amer. Acad. xxvii. 185.—Mexico

JUNCACEÆ.

7611. **Cypcrella campestris multiflora** MacMillan Metasp. Minn. Val. 143.

PALMÆ.

7668. **Chamædorea stolonifera** Wendland in Hooker, Bot. Mag. cxviii. 7265.—Mexico.

LEMNACEÆ.

7859. **Grantia brasiliensis** MacMillan, Metasp. Minn. Val. 134.
——— **columbiana** MacMillan, Metasp. Minn. Val. 135.

ERIOCAULACEÆ

7891. **Eriocaulon bilobatum** Morong, Bull. Torr. Club. xix. 226.—Mexico.

CYPERACEÆ.

7923. **Cypcrus diandrus elongatus** Britton, Bull. Torr. Club. xix. 226.—New York and New Jersey.

7934. **Scirpus americanus longispicatus** Britton, Trans. N. Y. Acad. xi. 78.—New Mexico and Colorado.
——— **californicus** Britton, Trans. N. Y. Acad. xi. 79.
——— **cylindricus** Britton, Trans. N. Y. Acad. xi. 79.
——— **cyperinus eriophorum** Britton, Trans. N. Y. Acad. xi. 82.
——— **mexicanus** Clarke, in Britton, Trans. N. Y. Acad. xi. 77.
——— **nanus anachætus** Britton, Trans. N. Y. Acad. xi. 75.
——— **peckii** Britton. Trans. N. Y. Acad. xi. 82.—New York and Connecticut.
——— **sylvaticus microcarpus** MacMillan, Metasp. Minn. Val. 97.
——— **triangularis** MacMillan, Metasp. Minn. Val. 99.

7955. **Rhynchospora alba macra** Clarke in Britton, Trans. N. Y. Acad. xi. 88.—Florida and Texas.
——— **axillaris microcephala** Britton, Trans. N. Y. Acad. xi. 89.—New Jersey to Florida and Louisiana.
——— **corniculata macrostachya** Britton, Trans. N. Y. Acad. xi. 84
——— ——— **patula** Britton, Trans. N. Y. Acad. xi. 84.
——— **corymbiformis** Britton, Trans. N. Y. Acad. xi. 86.
——— **corymbosa** Britton, Trans. N. Y. Acad. xi. 84.
——— **cymosa compressa** Clarke in Britton, Trans. N. Y. Acad. xi. 91.
——— **distans tenuis** Britton, Trans. N. Y. Acad. xi. 90.

7955. **Rhynchospora fuscoides** Clarke in Britton, Trans. N. Y. Acad. xi. 89.
——— **glomerata discutiens** Clarke in Britton, Trans. N. Y. Acad. xi. 89.—New Jersey, Pennsylvania, North Carolina, and District of Columbia.
——— ——— **leptocarpa** Chapman in Britton, Trans. N. Y. Acad. xi. 88.—South Carolina, Florida, and Alabama.
——— ——— **minor** Britton, Trans. N. Y. Acad. xi. 89.—New Hampshire and Massachusetts.
——— **intermedia** Britton, Trans. N. Y. Acad. xi. 87.
——— **schœnoides** Britton, Trans. N. Y. Acad. xi. 92.
——— **setacea** MacMillan, Metasp. Minn. Val. 104.
——— **tracyi** Britton, Trans. N. Y. Acad. xi. 84.
7988. **Carex bella** Bailey, Bot. Gaz. xvii, 152.—Colorado, Utah, and Arizona.
——— **herbariorum** Bailey, Bot. Gaz. xvii. 150.
——— **lupulina longipedunculata** Sartwell in MacMillan, Metasp. Minn. Val. 129.
——— **montanensis** Bailey, Bot. Gaz. xvii. 152.—British America.
——— **pringlei** Bailey, Bot. Gaz. xvii. 151.—Mexico.
——— **varia australis** Bailey, Bot. Gaz. xvii. 153.—Texas.
——— **xerantica** Bailey, Bot. Gaz. xvii. 151.—British America.

GRAMINEÆ.

7991. **Tripsacum floridanum** Porter in Vasey, Contr. Nat. Herb. iii. 6; Bull. Torr. Club, xix. 130.—Florida.
——— **lemmoni** Vasey, Contr. Nat. Herb. iii. 6.—Arizona.
8020. **Andropogon argyræus tenuis** Vasey, Contr. Nat. Herb. iii. 12.—Texas.
——— **macrourus pumillus** Vasey, Contr. Nat. Herb. iii. 11.—Texas.
——— **mohrii** Hackel in Vasey, Contr. Nat. Herb. iii. 11.—Florida, Alabama, and Mississippi.
Chrysopogon wrightii Munro in Vasey, Contr. Nat. Herb. iii. 9.—Florida.
8045. **Paspalum drummondii** Vasey, Contr. Nat. Herb. iii. 18.—Florida and Texas.
——— **furcatum villosum** Vasey, Contr. Nat. Herb. iii. 16.—North Carolina, Florida, and Texas.
——— **læve brevifolium** Vasey, Contr. Nat. Herb. iii. 18.—Massachusetts to Texas.
——— **pubiflorum glaucum** Vasey, Contr. Nat. Herb. iii. 19.
——— **setaceum ciliatifolium** Vasey, Contr. Nat. Herb. iii. 17.—Maryland to Florida and Texas.
8048. **Eriochloa longifolia** Vasey, Contr. Nat. Herb. iii. 21.
——— **punctata minor** Vasey, Contr. Nat. Herb. iii. 21.—Texas.
——— **sericea** Munro in Vasey, Contr. Nat. Herb. iii. 21.—Texas and New Mexico.
8050. **Panicum crus-galli muticum** Vasey, Contr. Nat. Herb. iii. 37.
——— **sanguinale simpsoni** Vasey, Contr. Nat. Herb. iii. 25.—Florida and Mississippi.
8059. **Chamæraphis viridis** Millspaugh, Fl. West Va. 466.
8085. **Phalaris intermedia microstachya** Vasey, Contr. Nat. Herb, iii. 42.—Florida to Texas.
——— **lemmoni** Vasey, Contr. Nat. Herb. iii. 42.—California.
8089. **Aristida californica fugitiva** Vasey, Contr. Nat. Herb. iii. 49.—Colorado.
——— **divergens** Vasey, Contr. Nat. Herb. iii. 48.—Texas to Arizona.
——— **floridana** Vasey, Contr. Nat. Herb. iii. 48.
——— **humboldtiana minor** Vasey, Contr. Nat. Herb. iii. 47.—Texas, Arizona to California.
——— **nealleyi** Vasey, Contr. Nat. Herb. iii. 45.—Texas.

8089. Aristida palustris Vasey, Contr. Nat. Herb. iii. 45.—Florida.
——— **purpurascens minor** Vasey, Contr. Nat. Herb. iii. 46.—Southern States to Texas.
——— **purpurea californica** Vasey, Contr. Nat. Herb. iii. 47.—Texas to California.
——— ——— **fendleriana** Vasey, Contr. Nat. Herb. iii. 46.
——— ——— **micrantha** Vasey, Contr. Nat. Herb. iii. 47.—Texas.
——— **reverchoni angusta** Vasey, Contr. Nat. Herb. iii. 46.—Texas.
——— **simplicifolia texana** Vasey, Contr. Nat. Herb. iii. 44.—Texas.
——— **stricta condemnata** Vasey and Scribner in Vasey, Contr. Nat. Herb. iii. 45.—Florida.

8090. Stipa caduca Scribner in Vasey, Contr. Nat. Herb. iii. 54.—Montana.
——— **eminens andersonii** Vasey, Contr. Nat. Herb. iii. 54.—Lower California.
——— **pringlei** Scribner in Vasey, Contr. Nat. Herb. iii. 54.—Mexico and Arizona.
——— ——— **lemmoni** Vasey, Contr. Nat. Herb. iii. 55.—California.
——— **stricta sparsiflora** Vasey, Contr. Nat. Herb. iii. 51.—Oregon and Washington.
——— **viridula lettermani** Vasey, Contr. Nat. Herb. iii. 50.
——— ——— **minor** Vasey, Contr. Nat. Herb. iii. 50.
——— ——— **pubescens** Vasey, Contr. Nat. Herb. iii. 50.—Nevada and Oregon.

8096. Muhlenbergia capillaris trichopedes Vasey, Contr. Nat. Herb. iii. 66.
——— **dumosa** Scribner in Vasey, Contr. Nat. Herb. iii. 71.—Arizona, Mexico, and southern California.
——— **emersleyi** Vasey, Contr. Nat. Herb. iii. 66.—Arizona.
——— **huachucana** Vasey, Contr. Nat. Herb. iii. 69.—Arizona.
——— **parviglumis** Vasey, Contr. Nat. Herb. iii. 71.—Texas.
——— **pringlei** Scribner in Vasey, Contr. Nat. Herb. iii. 71.—Arizona.
——— **reverchoni** Vasey and Scribner in Vasey, Contr. Nat. Herb. iii. 66.—Texas.

8097. Brachyelytrum aristosum glabratum Vasey in Millspaugh, Fl. W. Va. 469.—West Virginia.

8107. Alopecurus pratensis alpestris Vasey, Contr. Nat. Herb. iii. 86.—Colorado, Idaho, and Montana.

8111. Sporobolus asper drummondii Vasey, Contr. Nat. Herb. iii. 60.
——— **asperifolius major** Vasey, Contr. Nat. Herb. iii. 64.—Texas.
——— **auriculatus** Vasey, Contr. Nat. Herb. iii. 64.
——— **cryptandrus flexuosus** Thurber in Vasey, Contr. Nat. Herb. iii. 62.—Colorado, New Mexico, Arizona to Texas.
——— **minor** Vasey, Contr. Nat. Herb. iii. 60.—Virginia, Illinois, Missouri, South Carolina, and Texas.
——— **vaginæflorus** Vasey, Contr. Nat. Herb. iii. 60.—Maine to Texas.

8112. Epicampes ligulata Scribner in Vasey, Contr. Nat. Herb. iii. 58.—Texas to Arizona, and Mexico.

8119. Cinna pendula bolanderi Vasey, Contr. Nat. Herb. iii. 57.
——— ——— **mutica** Vasey, Contr. Nat. Herb. iii. 57.—Oregon.

8120. Agrostis alba minor Vasey, Contr. Nat. Herb. iii. 78.—United States.
——— **canina stolonifera** Vasey, Contr., Nat. Herb. iii. 75.—Oregon.
——— **densiflora** Vasey, Contr. Nat. Herb. iii. 72.
——— ——— **arenaria** Vasey, Contr. Nat. Herb. iii. 72.
——— ——— **littorale** Vasey, Contr. Nat. Herb. iii. 72.
——— **diegoensis foliosa** Vasey, Contr. Nat. Herb. iii. 74.
——— **hallii** Vasey, Contr. Nat. Herb. iii. 74.—Oregon, Washington, and California.

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II.—ALPHABETIC INDEX.

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Acer
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Agave
decipiens.
engelmanni.
Agrimonia
mollis.
Agrostis
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densiflora.
densiflora arenaria.
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Dalea
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Delphinium
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Desmanthus
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Dianthera
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Flaveria
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suædæfolia.
Gentiana
americana.
linearis.
Gilia
macalata.
setosissima punctata.
Gomphrena
nealleyi.

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Lithospermum
calcicola.
carolinense.
revolutum.
Lobelia
inflata simplex.
Lopezia
angustifolia.
Lotus
biolettii.
sulphureus.
Lutkea
hendersonii.
Lycopus
lucidus obtusifolius.
Manihot
manihot.
Meibomia
arizonica.
canadense hirsuta.
incana.
lindheimeri.
lineata polymorpha.
obtusa.
paniculata angustifolia.
paniculata pubens.
tweedyi.
Melampodium
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Mentzelia
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Micrampelis
leptocarpa.
Mirabilis
angustifolia.
hirsutus.
nyctagineus.
Muhlenbergia
capillaris tricopodes.
dumosa.
emersleyi.
huachucana.
parviglumis.
pringlei.
reverchoni.
Myosurus
aristatus sessiliflorus.
breviscapus.
breviscapus californicus.
pringlei.
Myrrhis
ambigua.
aristata.
brachypoda.
nuda.
Nasturtium
nasturtium.
Neckeria
aurea.
flavula.
glauca.
micrantha.
Nelumbo.
nelumbo.
Odontoglossum.
platycheilum.
Œnothera
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fruticosa pilosella
Oldenlandia
pringlei.
Opuntia
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Ostrya
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Physalodes
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Pimenta
pimenta.
Pinus
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campestris.
Platystemon
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nudiflorus.
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hydropiperoides strigosum.
mexicanum.
microspermum.
phytolaccæfolium.
pringlei.
punctatum leptostachyum.
Porophyllum
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purpurascens pinetorum.
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Rhus
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hirta.
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axillaris microcephala.
corniculata macrostachya.
corniculata patula.
corymbiformis
corymbosa.
cymosa compressa.
distans tenuis.
fuscoides.
glomerata discuticns.
glomerata leptocarpa.
glomerata minor.
intermedia.
schœnoides.
setacea.
tracyi.
Ribes
rubrum.
Ricinella
vaseyi.
Robinia
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Rosa
virginiana arkansana.
Rubus
odoratus columbianus.
Rumex
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Rumfordia
connata.
Sabazia
michoacana.
Salvia
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leucophylla.
mellifera.
mohavensis.
palmeri.
sonomensis.
spathacea.

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maritima.
Sarcobatus.
baileyi.
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integrifolia sierræ.
Scirpus
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californicus.
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nanus anachætus.
peckii.
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triangularis.
Scolochloa
arundinacea.
Scoria
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Senecio
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millefolium memmingeri.
ovatus.
reniformis.
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acuta garckeana.
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palmeri.
spinosa salviæfolia.
Sidastrum
quinquenervium.
Sieglingia
cuprea.
Silene
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Sisyrinchium
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Smilax
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Solidago
boottii yadkenensis.
humilis microcephala.
missouriensis fasciculata.
nemoralis mollis.
puberula monticola.
roanensis
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speciosa pallida.
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Tigridia
pulchella.
Tissa
rubra perennans.
Tithonia
brachypappa.
Tradescantia
angustifolia.
Trautvetteria
palmata coriacea.

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III. ADDITIONS TO THE INDEX FOR 1891.

SYSTEMATIC.

RANUNCULACEÆ.

4. **Anemone.**
Syndesmon thalictroides Britton, Ann. N. Y. Acad. vi. 237.

POLYGALACEÆ.

542. Polygala costaricensis Chodat, Bull. Soc. Bot. Belg. xxx. 298.—Costa Rica.
——— **durandi** Chodat, Bull. Soc. Belg. xxx. 300.—Costa Rica.
——— ——— **crassifolia** Chodat, Bull. Soc. Bot. Belg. xxx. 301.—Costa Rica.
——— **paniculata verticillata** Chodat, Bull. Soc. Bot. Belg. xxx. 302.—Costa Rica.
554. Monnina costaricensis Chodat, Bull. Soc. Bot. Belg. xxx. 304.—Costa Rica.
——— **crepini** Chodat, Bull. Soc. Bot. Belg. xxx. 302.—Costa Rica.
——— **pittieri** Chodat, Bull. Soc. Bot. Belg. xxx. 303,—Costa Rica.
——— **sylvicola** Chodat, Bull. Soc. Bot. Belg. xxx. 303.—Costa Rica.

ACERACEÆ.

1493. Acer californicum Greene, Fl. Fran. 76.

LEGUMINOSÆ.

1653. Trifolium bifidum decipiens Greene, Fl. Fran. 24.—California.
1682. Tephrosia nitens lanata Micheli, Bull. Soc. Bot. Belg. xxx. 286.—Costa Rica.
1702. Cracca micrantha Micheli, Bull. Soc. Bot. Belg. xxx. 286.—Costa Rica.
1994. Mimosa pittieri Micheli, Bull. Soc. Bot. Belg. xxx. 294.—Costa Rica.

ROSACEÆ.

2019. Prunus.
Amygdalus andersonii Greene, Fl. Fran. 49.
——— **fasciculata** Greene, Fl. Fran. 49.
2074. Pyrus.
Sorbus occidentalis Greene, Fl. Fran. 54.

MELASTOMACEÆ.

2383. Tibouchina œrstedii subsessiliflora Cogniaux in D. C. Monogr. Phan. vii. 269.—Costa Rica.
2402. Monochætum carazoi Cogniaux in D. C. Monogr. Phan. vii. 401.—Costa Rica.
——— **diffusum eglandulosa** Cogniaux in D. C. Monogr. Phan. vii. 395.—Guatemala.
——— **vulcanicum** Cogniaux in D. C. Monogr. Phan. vii. 401.—Costa Rica.

2454. Leandra costaricensis Cogniaux in D. C. Monogr. Phan. vii. 658.—Costa Rica.

——— **fulva** Cogniaux, in D. C. Monogr. Phan. vii. 658.—Costa Rica.

——— **grandiflora** Cogniaux, in D. C. Monogr. Phan. vii. 690.—Costa Rica.

——— **lasiopetala** Cogniaux, Bull. Soc. Bot. Belg. xxx. 249.—Costa Rica.

2459. Conostegia bigibbosa Cogniaux, Bull. Bot. Belg. xxx. 252.—Costa Rica.

——— **lanceolata subtrinervia** Cogniaux, Bull. Soc. Bot. Belg. xxx. 253.—Costa Rica.

——— **pittieri brevifolia** Cogniaux in D. C. Monogr. Phan. vii. 704.—Costa Rica.

2462. Miconia biperulifera rigida Cogniaux in D. C. Monogr. Phan. vii. 1192.—Costa Rica.

——— **costaricensis pittieri** Cogniaux in D. C. Monogr. Phan. vii. 888.—Costa Rica.

——— **chrysoneura angustifolia** Cogniaux in D. C. Monogr. Phan. vii. 817.—Mexico.

——— **mexicana conostegioides** Cogniaux in D. C. Monogr. Phan. vii. 763.

——— **pedicellata** Cogniaux in D. C. Monogr. Phan. vii. 875.—Costa Rica.

2468. Maieta tococoidea watsonii Cogniaux in D. C. Monogr. Phan. vii. 979.—Guatemala.

2470. Clidemia purpureo-violacea Cogniaux, Bull. Soc. Bot. Belg. xxx. 263.—Costa Rica.

——— **sessiliflora angustifolia** Cogniaux, Bull. Soc. Bot. Belg. xxx. 263.—Costa Rica.

2472. Bellucia costaricensis Cogniaux, Bull. Soc. Bot. Belg. xxx. 264.—Costa Rica.

2476. Ossæa tetragona Cogniaux, Bull. Soc. Bot. Belg. xxx. 265.—Costa Rica.

2478. Blakea gracilis longifolia Cogniaux, Bull. Soc. Bot. Belg. xxx. 266.—Costa Rica.

2479. Topobea durandiana Cogniaux, Bull. Soc. Bot. Belg. xxx. 268.—Costa Rica.

CUCURBITACEÆ.

2647a. Pittiera longipedunculata Cogniaux, Bull. Soc. Bot. Belg. xxx. 272.—Costa Rica.

2658. Corallocarpus emetocatharticus Cogniaux, Bull. Soc. Bot. Belg. xxx. 279.

2676. Cyclanthera pauciflorum Cogniaux, Bull. Soc. Bot. Belg. xxx. 276.—Costa Rica.

——— **pittieri** Cogniaux, Bull. Soc. Bot. Belg. xxx. 275.—Costa Rica.

——— ——— **quinqueloba** Cogniaux, Bull. Soc. Bot. Belg. xxx. 276.—Costa Rica.

——— **tonduzii** Cogniaux, Bull. Soc. Bot. Belg. xxx. 274.—Costa Rica.

2678. Sicyos sertuliferus Cogniaux, Bull. Soc. Bot. Belg. xxx. 277.—Costa Rica.

2681. Sicydium tamnifolium dussii Cogniaux, Bull. Soc. Bot. Belg. xxx. 277.—Costa Rica.

ARALIACEÆ.

2941. Didymopanax pittieri Marchal, Bull. Soc. Bot. Belg. xxx. 280.—Costa Rica.

RUBIACEÆ.

3089. Oldenlandia grayi K. Schumann in Engler u. Prantl. Pflanzenfam. iv teil, 4 abt. 25.

——— **hookeri** K. Schumann in Engler u. Prantl. Pflanzenfam. iv teil, 4 abt. 25.

COMPOSITÆ.

3870. Madia corymbosa Greene, Pitt. ii, 218.

LABIATÆ

5793. Salvia pittieri Briquet, Bull. Soc. Bot. Belg. xxx. 237.—Costa Rica.
5829. Stachys costaricensis Briquet, Bull. Soc. Bot. Belg. xxx. 240.—Costa Rica

POLYGONACEÆ.

6084. Polygonum polymorphum foliosum Keller, Bull. Soc. Bot. Belg. xxx. 49.—Washington.
——— **sagitattum pubescens** Keller, Bull. Soc. Bot. Belg. xxx. 45.—New York.

ARISTOLOCHIACEÆ.

6135. Aristolochia gigas sturtevantii W. Watson, Gard. and For. iv. 546.—Guatemala.

PIPERACEÆ.

6141. Piper biolleyi C. De Candolle, Bull. Soc. Bot. Belg. xxx. 210.—Costa Rica.
——— **borucanum** C. De Candolle, Bull. Soc. Bot. Belg. xxx. 219.—Cost Rica.
——— **calvirameum** C. De Candolle, Bull. Soc. Bot. Belg. xxx. 200.—Cost Rica.
——— **carrilloanum** C. De Candolle, Bull. Soc. Bot. Belg. xxx. 209.—Cost Rica.
——— **chrysostachyum** C. De Candolle, Bull. Soc. Bot. Belg. xxx. 207.—Cost Rica.
——— **coilostachyum** C. De Candolle, Bull. Soc. Bot. Belg. xxx. 212.—Cost Rica.
——— **dilatatum acutifolium** C. De Candolle, Bull. Soc. Bot. Belg. xxx. 217.—Costa Rica.
——— **discophorum** C. De Candolle, Bull. Soc. Bot. Belg. xxx. 201.—Cost Rica.
——— **dryadum** C. De Candolle, Bull. Soc. Bot. Belg. xxx. 221.—Cost Rica.
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——— **hirsutum lævius** C. De Candolle, Bull. Soc. Bot. Belg. xxx. 204.—Costa Rica.
——— ——— **pallescens** C. De Candolle, Bull. Soc. Bot. Belg. xxx. 204.—Costa Rica.
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——— **peltaphyllum** C. De Candolle, Bull. Soc. Bot. Belg. xxx. 220.—Cost Rica.

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backhousiana.
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andersonii.
fasciculata.
Antrophyum
minimum.
Aristolochia
gigas sturtevantii.
Asplenium
chihuahuense.
Bellucia
costaricensis.
Blakea
gracilis longifolia.
Cheilanthes
albida.
longipila.
moncloviensis.
Clidemia
purpureo-violacea.
sessiliflora angustifolia.
Conostegia
bigibbosa.
lanceolata subtrinervia.
pittieri brevifolia.
Corallocarpus
emetocatharticus.
Cracca
micrantha.
Cyclanthera
pauciflorum.
pittieri.
pittieri quinqueloba.
tonduzii.
Didymopanax
pittieri.
Gymnogramme
schaffneri.
Leandra
costaricensis.
fulva.
grandifolia.
lasiopetala.
Madia
corymbosa.
Maieta
cococoidea watsonii.
Miconia
biperulifera rigida.
costaricensis pittieri
Miconia—Continued.
chrysoneura angustifolia.
mexicana conostegioides.
pedicellata.
Mimosa
pittieri.
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costaricensis.
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pittieri.
sylvicola.
Monochætum
carazoi.
diffusum eglandulosa.
vulcanicum.
Nephrodium
endresi.
fournieri.
harrisoni.
nevadense.
Notholæna
schaffneri.
schaffneri mexicana.
Oldenlandia
grayi.
hookeri.
Ossæa
tetragona.
Peperomia
borucana
calvicaulis.
cooperi
costaricensis.
durandi
palmana fragrans.
pittieri.
poasana.
· flexa pallida.
scutellata.
stenophylla.
vinasiana.
Physosiphon
guatemalensis.
Piper:
biolleyi.
borucanum.
calvirameum.
carrilloanum.
chrysostachyum.
coilostachyum.
dilatatum.
discophorum.

Piper—Continued.
dryadum.
fimbriulatum.
geniculatum longepetiolatum.
gibbosum.
hirsutum lævius.
hirsutum pallescens.
hirsutum parvifolium.
hirsusum tonduzii.
nemorense.
neurostachyum.
nobile minus.
nudifolium.
otophorum.
peltaphyllum.
poasanum.
pseudo-velutinum flavescens.
psilocladum.
rufescens.
salinasanum.
sepicola.
subsessilifolium.
terrabanum.
umbricola.
vallicolum.
Pittiera
longipedunculata.
Polygala
costaricensis.
durandi.
durandi crassifolia.
Polygala
paniculata verticillata.
Polygonum
polymorphum foliosum.
sagittatum pubescens.
Polypodium
blandum.
eatonia.
endresi.
Salvia
pittieri.
Sicydium
tamnifolium dussii
Sicyos
sertuliferus.
Sorbus
occidentalis.
Stachys
costaricensis.
Syndesmon
thalictroides.
Tephrosia.
niteus lanata.
Tibouchina
œrstedii subsessiliflora.
Topobea
durandiana.
Trifolium
bifidum decipiens.

IV. CORRECTIONS OF THE INDEX FOR 1891.

p. 153. Anemone tetonesis, read A. tetonensis.

p. 157. To Hosackia sericea Trelease in Branner and Coville, Bot. Geol. Surv. Ark 1888, IV, 174, add, not Bentham.

p. 159. Rubus canadensis, var. roribaceus, read R. canadensis, var. roribaccus.
Rubus sativus, read R. villosus, var. sativus.
Pyrus ivensis, read P. ioensis.

p. 174. Strike out Carex straminea, var. festucacea Hitchcock, Trans. St. Louis Acad V, 525.

p. 183. Strike out parvifolia after Miconia tonduzii, var. serrulata, and add M. tonduzii, var. parvifolia.

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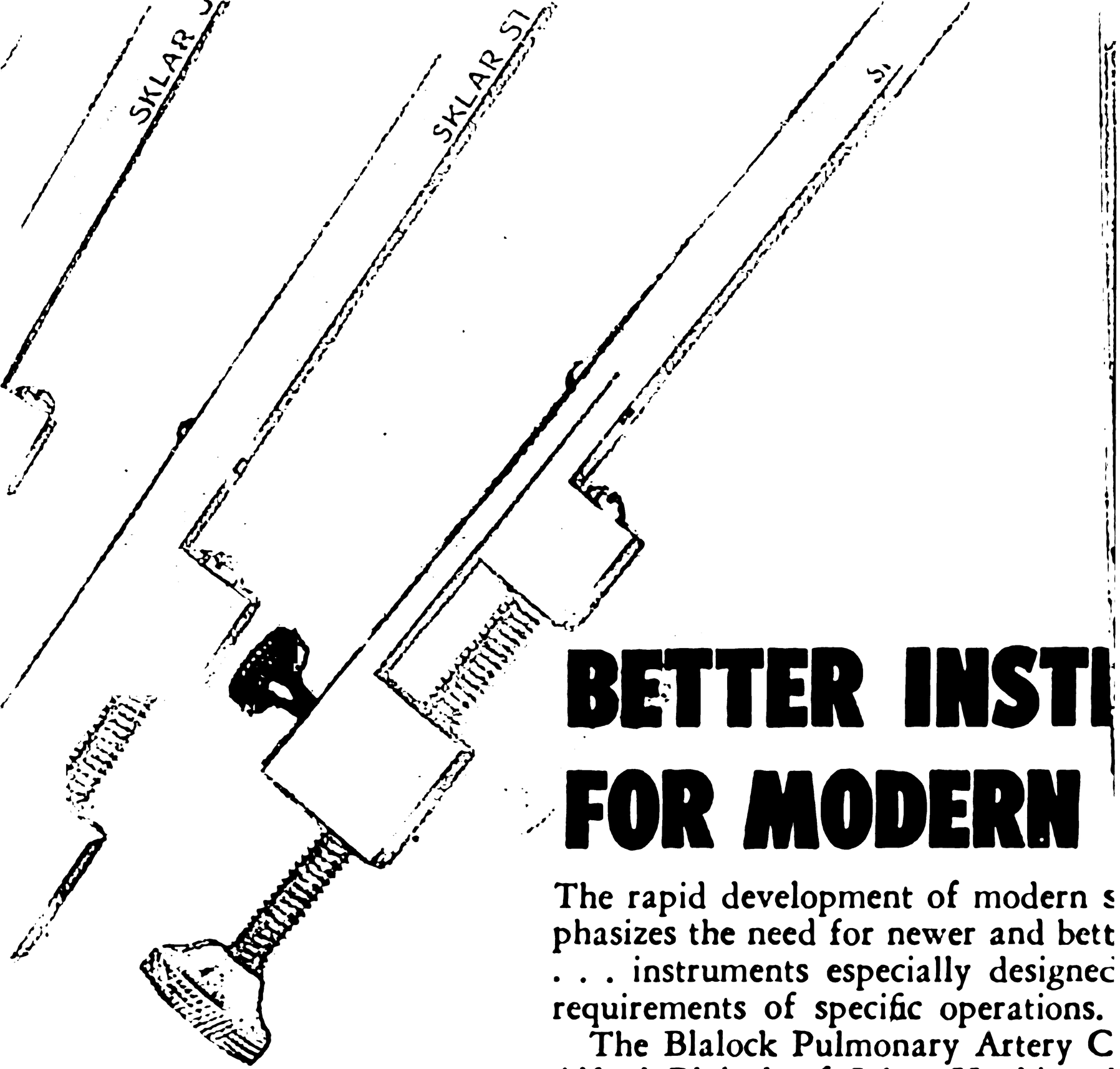

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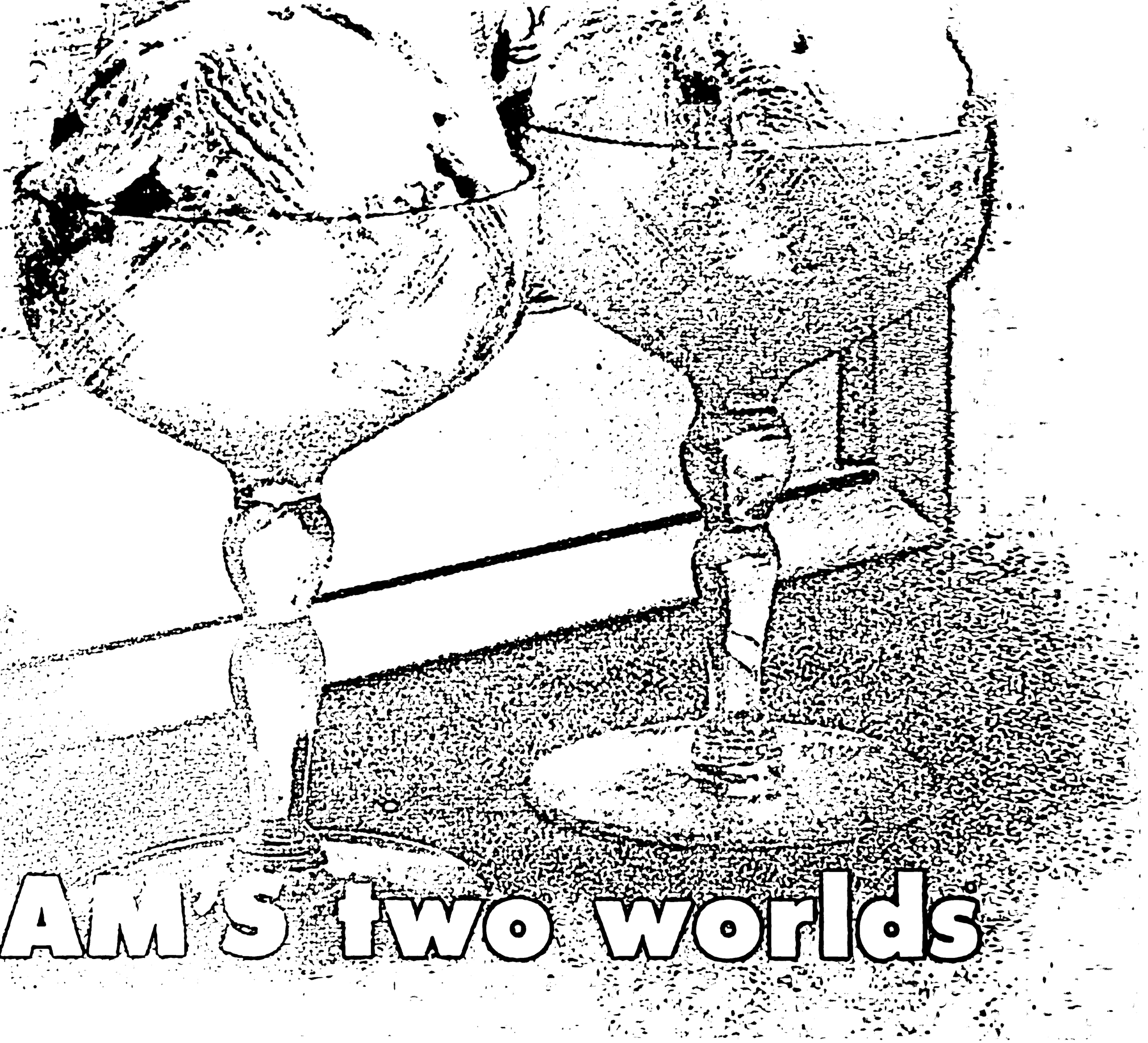

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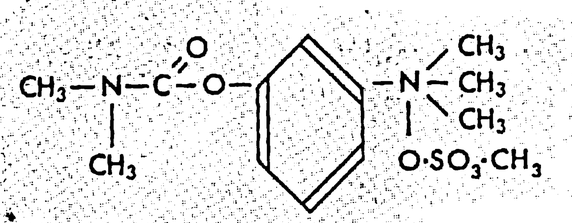

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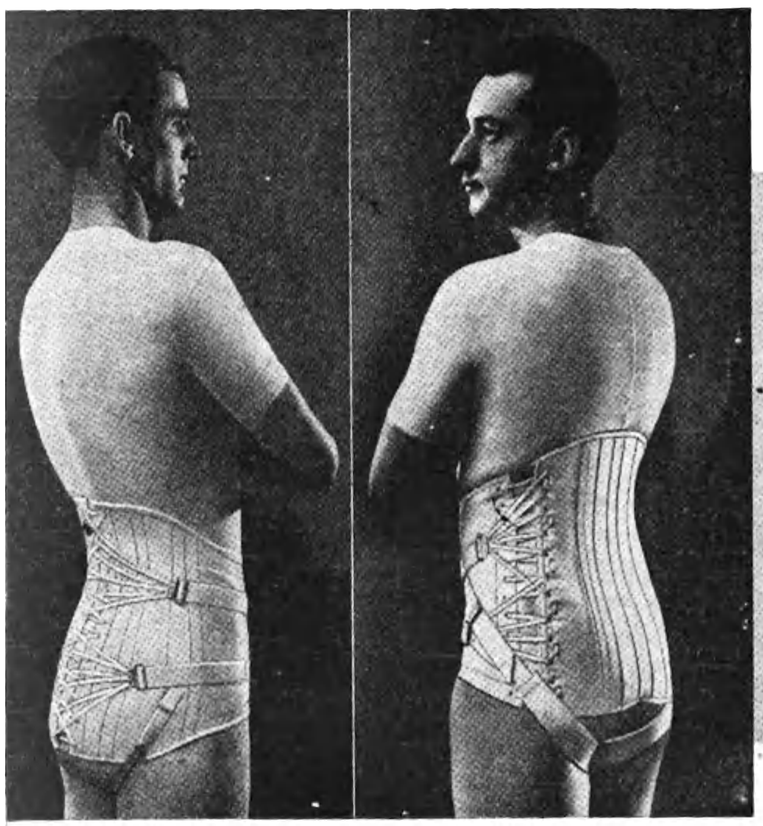

FIGURE 2 — Patient — intermediate type of build. Strain of lumbosacral joint predisposes to other strains. For protection of the joints in the lumbar region from recurrent strain and also as an aid in relieving the pain of acute conditions, Camp lumbosacral supports have proved effective.

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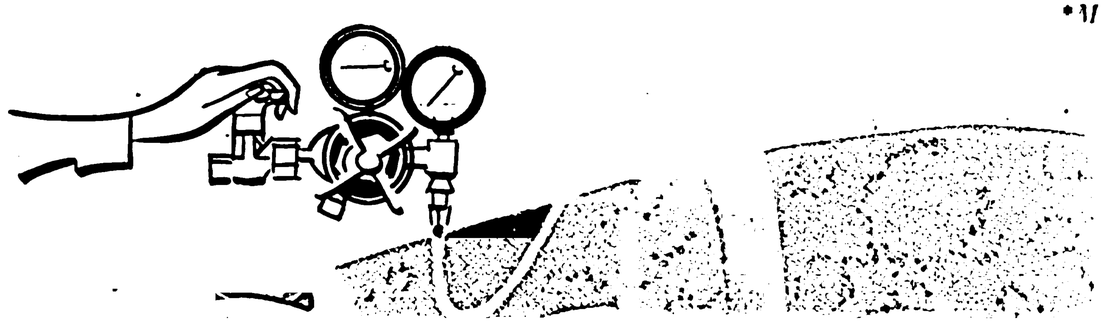

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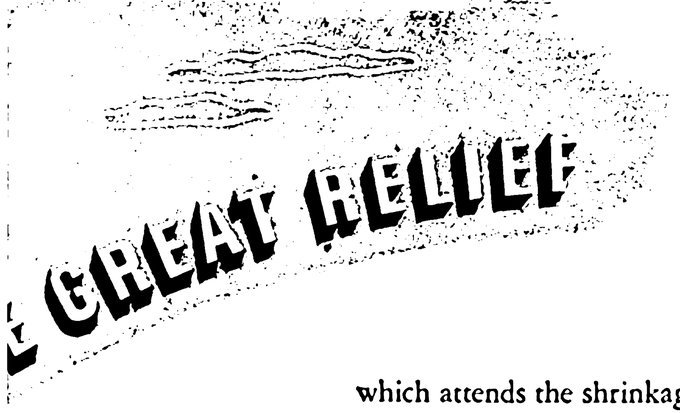

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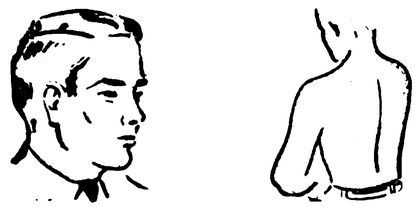

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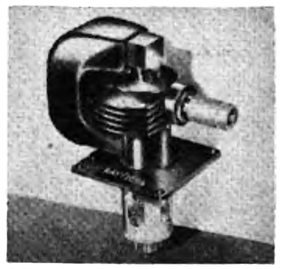

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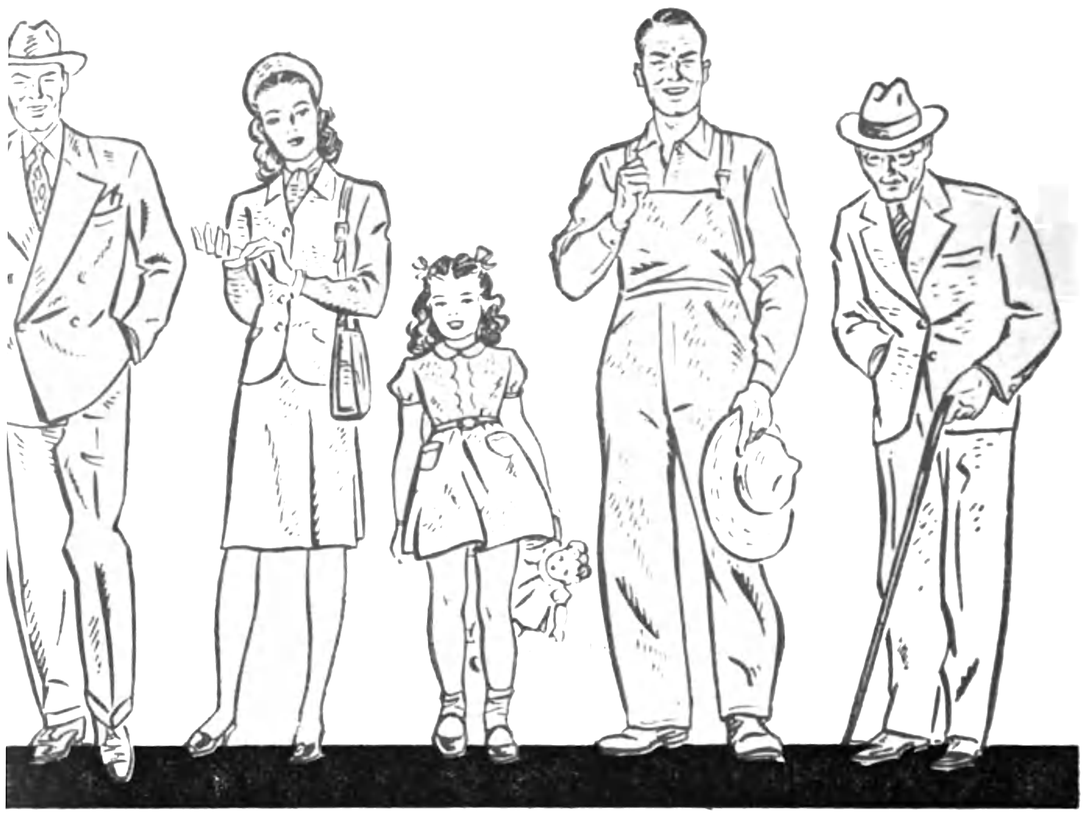

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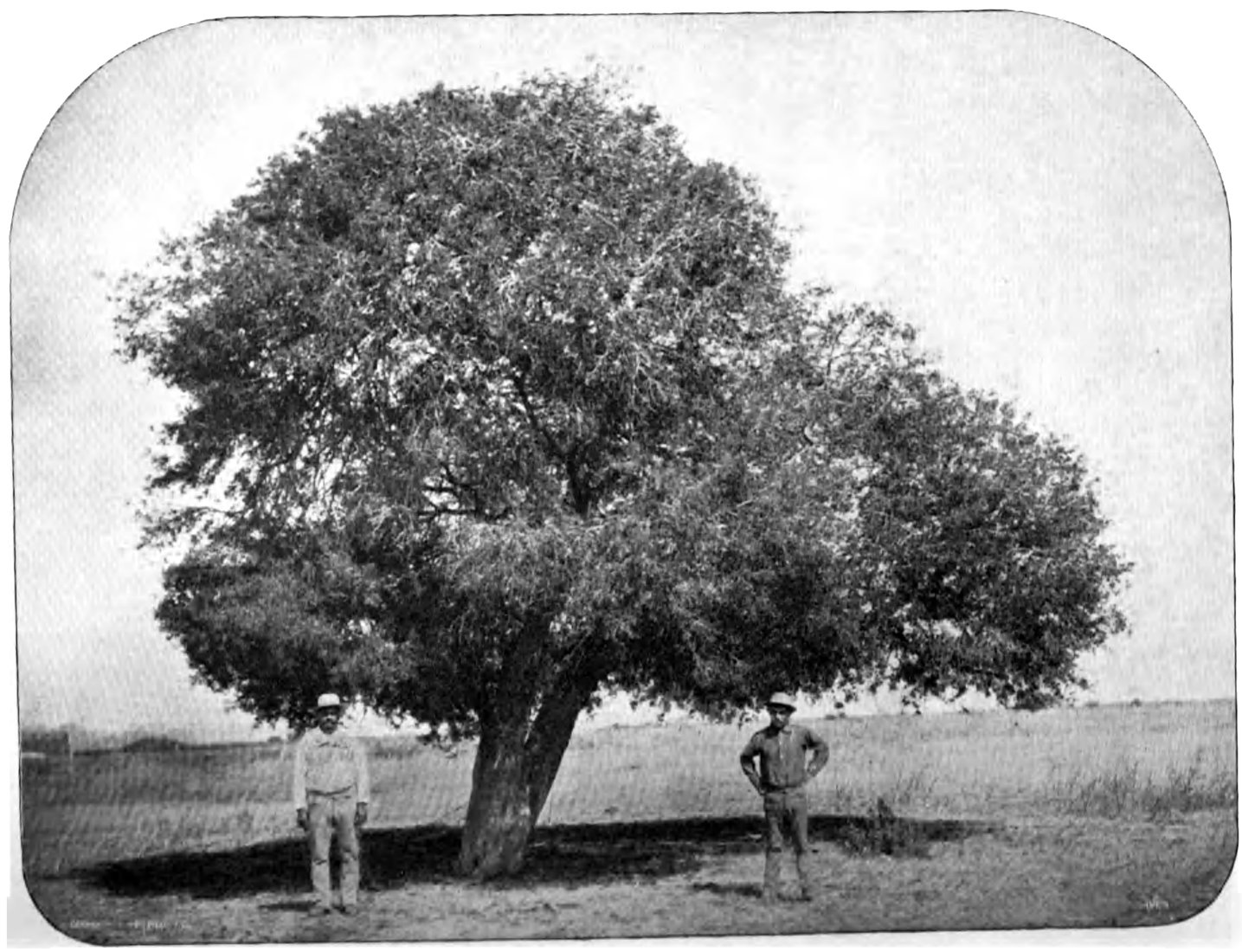

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He stopped here two weeks in the following year (March 2 to 16, 1891), securing many plants not obtainable earlier in the season.

From Manzanillo he went to Colima, the capital of the state of the same name. Almost a month was spent here (January 9 to February 6, 1891), and a second visit was made later, February 27 and 28. One day (February 15) was spent in Armeria, a small place half way between Manzanillo and the city of Colima.

The following table will show the places visited, with the dates of collection and the numbers of the plants:

Places visited.	Date of collection.	Collector's numbers (inclusive).
Agiabampo	Oct. 3 to 15, 1890	752–815
Manzanillo	Dec. 1 to 31, 1890	816–1096
Colima	Jan. 9 to Feb. 6, 1891	1097–1273
Armeria	Feb. 15, 1891	1274–1293
Colima	Feb. 27 and 28, 1891	1294–1328
Manzanillo	Mar. 2 to 18	1329–1401
Colima (bought at market)	Jan. 9 to Feb. 6, 1891	1402–1410*
Manzanillo	Dec. 31, 1891	1810–1812

The following interesting account of Colima and Manzanillo is taken from the consular report for January, 1885, by Emil Mahlo, U. S. consul at Manzanillo:

The state of Colima lies between 18° 30′ and 19° 28′ north latitude, and 105° to 107° west longitude; is bounded north by the state of Jalisco, east by the same state and Michoacan, and south and southwest by the Pacific Ocean. It covers, probably, an area of 4,000 square miles and is said to have between 70,000 and 75,000 inhabitants. All these figures are approximations, as no survey of the state has ever been made, nor have they had an official census since 1871. The city of Colima may have 30,000 inhabitants.

The topographical and geological features of the state are interesting. The ground rises gradually from the coast, frequently intersected by detached, unconnected ranges of the Cordilleras (Sierra Madre), forming between them terrace-like, fertile plains which make Colima one of the richest agricultural states of Mexico.

The city of Colima, in an altitude of 1,450 feet, and 58 miles distant from its port of Manzanillo, is situated almost in the center of one of the plains, which is probably 75 miles in circumference, traversed by several rivers and creeks.

Southeast and west of it are wooded mountains from 2,000 to 4,000 feet high, while to the north the ground again at first rises gradually, when suddenly, proud and majestic, the double volcano of Colima, about 20 miles distant, pushes itself high up above the surrounding country into the limits of eternal snow.

From here radiate the almost impassable deep "barrancas" which traverse the state in its northern and northeastern portion, making the communication with the interior of the Republic exceedingly difficult.

The base of the geological formation is granite; it is in many places overlaid by feldspathic porphyry, conjointly with limestone, gypsum, and shale. In and near the barrancas porphyry, trachite, and calcareous conglomerate predominate. The structure of the volcano of Colima is trachite.

Although entirely within the hot zone, this consular district can truly be said to present all kinds of climates. From the snow of the volcano and the cold climate of

*The numbers between 1410 and 1810 represent Dr. Palmer's collection in the state of Sinaloa, made in 1891. The identification of these plants is nearly completed and will form the basis of a future paper.

the high surrounding country through the temperate, beautiful climate of the terraced slopes and plateaus, down through the semitropical to the tropical heat of the shores of the Pacific, are represented the three principal climatic zones.

To this difference in the climate is due the great variety of the agricultural products grown in this district. There are only two marked seasons—the rainy and the dry season. The rains commence invariably at the end of May or the beginning of June and terminate about the end of October.

I give herewith in a tabular form a résumé of the annual rainfall as observed by an intelligent private citizen of Colima during the years 1869 to 1880, inclusive. This is, as far as I know, the first reliable compilation of meteorological observations ever made on this coast of Mexico. The place of observation is the city of Colima.

Years.	Mean annual rainfall.		Years.	Mean annual rainfall.	
	Inches.	Number of days of rain.		Inches.	Number of days of rain.
1869	60.2	91	1875	39.1	82
1870	47.6	97	1876	35.1	89
1871	35.1	53	1877	32.2	72
1872	64.8	71	1878	60.1	79
1873	64.7	76	1879	45.0	88
1874	48.0	75	1880	41.0	75

Yearly mean for twelve years, 46 inches; yearly average number of rainy days, 79.

It is to be regretted that no hygrometric observations have been made. The atmosphere contains considerable humidity the whole year round.

The maximum temperature in the shade, as observed, was, in July, 96° F.; the minimum in February, 70° F.; greatest variation during the year, 26°; annual mean, 83°.

The observed monthly mean temperature during one year (1880) gave the following result:

Month.	Mean.	Month.	Mean.
	Degrees F.		*Degrees F.*
January	75	July	86
February	71	August	83
March	78	September	79
April	81	October	78
May	83	November	78
June	83	December	77

On the higher plateau in the interior the thermometer ranges from 54° to 90°.

While the climate of the port of Manzanillo is not very healthy, the city of Colima, at an elevation of 1,450 feet, and other places farther inland and of a higher altitude, are considered healthy places.

The state of Colima, small though it is, is one of the most fertile of Mexico, and is noted for the variety of agricultural products. It produces maize, rice, coffee, sugar, cotton, cocoa, indigo, tobacco, the castor-oil bean, etc.; and upon the higher plateaus of Jalisco and Michoacan wheat, maize, and potatoes are cultivated.

Of all the tropical and semitropical fruits which this part of Mexico produces I will mention only the following: Cocoa, limes, oranges, mangoes, bananas, pineapples, tamarinds, the chico (a very delicious fruit), the "aguacate," and the mamey. Limes are exported from Manzanillo to San Francisco to a considerably extent; also some pineapples, oranges, and mangoes.

In the small state of Colima alone over two hundred different kinds of useful and valuable woods are encountered; fine cabinet and dyewoods and woods for construction. The most valuable of these, as, for instance, mahogany, cedar, "primavera," granadillo, "tampinziran" palo-maria, palo-fierro, are articles of export to Europe and to the United States. They grow in abundance all along the coast and to a considerable distance inland. Among the dyewoods are the "campeachy," and palo Brazil. On the higher plateau fine oak and pine forests are met with. Fibrous plants and trees also grow in abundance. Besides the majestic "palma de coco" we have the useful palm-nut oil tree (palma de coquito de aceite) and other species of palms.

The rubber tree grows wild in the forests of the lowland along the Pacific coast. Some crude rubber is made, chiefly by the natives, and is exported to Europe and to the United States.

I am under obligation to many botanists who have aided me in comparing my specimens with those owned or controlled by them.

Dr. George Vasey, late chief of the division of botany, gave me every facility to carry on this work, and is wholly responsible for the determination of the grasses. The following list comprises the grasses determined by him:

Ægopogon gracilis.
Anthephora elegans.
Aristida manzanilloana.
Aristida tenuis.
Arundinella brasiliensis.
Bouteloua bromoides.
Bouteloua polystachys.
Cathestecum erectum.
Cenchrus echinatus.
Chloris radiata.
Eleusine indica.
Eragrostis ciliaris.
Eragrostis plumosa.
Eragrostis diversiflora.
Eragrostis pallida.
Eragrostis purshii.
Gouinia polygama.
Hilaria cenchroides.
Jouvea straminea.
Muhlenbergia exilis.
Oplismenus humboldtianus nudicaulis.
Oplismenus setarius.
Panicum molle.
Panicum capillaceum.
Panicum divaricatum.
Panicum myurum.
Panicum pringlei.
Panicum sanguinale ciliare.
Panicum trichanthum.
Paspalum conjugatum.
Paspalum paniculatum.
Pennisetum setosum.
Phragmites communis.
Sporobolus argutus.

Prof. Daniel C. Eaton has named the ferns and fern allies of which the following species were obtained:

Adiantum concinnum.
Aspidium patens.
Aspidium trifoliatum.
Gymnogramme calomelanos.
Lygodium mexicanum.
Notholæna brachypus.
Pellæa rigida.
Phegopteris tetragona.
Polypodium elongatum.
Polypodium incanum.
Polypodium lanceolatum.
Selaginella lepidophylla.

The following Cyperaceæ were determined by Dr. N. L. Britton:

Cyperus canus.
Cyperus compressus.
Cyperus fugax.
Cyperus ligularis.
Cyperus ottonis.
Cyperus regiomontanus.
Eleocharis geniculata.

The late Dr. Sereno Watson, to whose kindness I have repeatedly referred in the past, assisted me in various ways in the preparation of this report. One of his last letters contained a note on *Pisonia aculeata*,

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The following species have been determined by Prof. A. Cogniaux:

Corallocarpus emetocatharticus.
Curcurbita radicans.
Cyclanthera gracillima.
Luffa operculata intermedia.
Sicyos sertuliferus.
Tibouchina schiedeana.

I have also received advice and assistance from the following well-known specialists: Dr. F. Pax, of Berlin; Mr. R. A. Rolfe, of Kew; Dr. K. Schumann, of Berlin; Dr. O. Hoffman, of Berlin; Dr. Hans Schinz, of Zurich; and Dr. A. Engler, of Berlin.

Mr. William M. Canby, Capt. John Donnell Smith, and Mrs. Katharine Brandegee have repeatedly loaned me specimens and aided me in many ways.

The following plants have been cultivated by Mrs. H. L. T. Wolcott at Halifax, Mass., during the summer and fall of 1892 from seeds obtained by Dr. Palmer:

Agave angustissima.
Asclepias curassavica.
Henrya scorpioides.
Hibiscus sabdariffa.
Ipomœa bracteata.
Ipomœa grayi.
Ipomœa nelsoni.
Ipomœa peduncularis.
Ipomœa quinquefolia.
Ipomœa umbellata.
Jussieua octonervia.
Manihot angustiloba.
Nicotiana trigonophylla.
Portulaca stelliformis.
Thevetia cuneifolia.

It is proper to state here that this work of Mrs. Wolcott has been of great assistance to me in supplementing the herbarium specimens with fresh flowers, fruits, etc. She has entered into this work with enthusiasm and has looked after the plants almost continually, subjecting herself to no little outlay of time and money.

The following list comprises the new species described from this collection, of which 9 are from Agiabampo, 29 from Manzanillo, 26 from Colima, 4 from Armeria, and 2 from Sonora:

Abutilon bastardioides.
Acalypha coryloides.
Acalypha papillosa.
Agiabampoa congesta.
Argithamnia manzanilloana.
Aristida manzanilloana.
Ayenia manzanilloana.
Brickellia colimæ.
Bumelia arborescens.
Canavalia acuminata.
Capparis palmeri.
Cassia manzanilloana.
Ceiba grandiflora.
Celosia monosperma.
Cienfuegosia palmeri.
Cratæva palmeri.
Drymaria procumbens.
Encelia purpurea.
Epidendrum palmeri.
Eragrostis diversiflora.
Eragrostis pallida.
Euphorbia colimæ.
Euphorbia sonoræ.
Flaveria robusta.
Forchhammeria watsoni.
Gaya minutiflora.
Guarea palmeri.
Heteropterys palmeri.
Hiræa mexicana.
Ipomœa nelsoni.
Ipomœa wolcottiana.
Jacobinia auriculata.
Jatropha purpurea.
Justicia mexicana.
Justicia paniculata.

Karwinskia parvifolia.
Krameria palmeri.
Leucæna macrocarpa.
Lonchocarpus palmeri.
Luffa operculata intermedia.
Malpighia ovata.
Malpighia umbellata.
Mimosa manzanilloana.
Mimosa leptocarpa.
Panicum pringlei.
Paullinia sessiliflora.
Piper palmeri.
Piper palmeri manzanilloanum.
Piper unguiculatum longifolium.
Piptadenia leptocarpa.
Porophyllum palmeri.
Sassafridium macrophyllum.
Schrankia diffusa.
Serjania fuscopunctata.
Serjania rutæfolia.
Serjania trifoliolata.
Spigelia palmeri.
Tabebuia donnell-smithii.
Tephrosia multifolia.
Tetramerium aureum.
Tetramerium diffusum.
Tetramerium tenuissimum.
Trichilia colimana.
Trichilia havanensis spatulata.
Trichilia palmeri.
Tridax dubia.
Viguiera tenuis alba.
Xylosma horrida.
Xylosma palmeri.
Zizyphus mexicana.

In addition to the foregoing new species, the following list comprises those plants not reported from Mexico by Mr. Hemsley in Biologia Centrali-Americana, most of them, however, having been described since that excellent work was published. The number of these species is 59.

Acacia cochliacantha H. & B.
Acalypha subviscida Watson.
Acnida cannabina L.
Ægopogon gracilis Vasey.
Æschynomene amorphoides Rose.
Æschynomene petrœa Robinson.
Antigonon flavescens Watson.
Bigelovia diffusa Gray.
Bouchea dissecta Watson.
Bursera laxiflora Watson.
Bursera palmeri Watson.
Cacalia pringlei Watson.
Carlowrightia arizonica Gray.
Cereus strictus Brandegee.
Colubrina arborea Brandegee.
Comocladia dentata Jacq.
Corallocarpus emetocatharticus Cogn.
Corchorus acutangulus L.
Coursetia glandulosa Gray.
Coursetia mollis Rob. & Greenow.
Cyperus ottonis Boeckl.
Cyperus regiomontanus Britton.
Diphysa racemosa Rose.
Dracocephalum moldavica L.
Euphorbia californica Benth.
Ficus fasciculata Watson.
Gomphrena decipiens Watson.
Gynandropsis pentaphylla DC.
Hamelia versicolor Gray.
Hibiscus sabdariffa L.
Hilaria cenchroides texana Vasey.
Jussieua octonervia Lam.
Malvastrum scabrum Gray.
Matayba scrobiculata Radlk.
Monnieria trifolia L.
Oxalis berlandieri Torr.
Panicum capillaceum Lam.
Panicum sanguinale ciliare Vasey.
Paullinia tomentosa Jacq.
Pectis palmeri Watson.
Sapindus saponaria Radlk.
Selaginella lepidophylla Spring.
Sicyos sertuliferus Cogn.
Sida pyramidata Cav.
Solanum grayi Rose.
Solanum tequilense Gray.
Sporobolus argutus Kunth.
Stemodia palmeri Gray.
Tibouchina schiedeana Cogn.
Tournefortia floribunda H. B. K.
Veatchia discolor Brandg.
Verbesina sphærocephala Gray.
Zexmenia tequilana Gray.
Zinnia palmeri Gray.

The following species are included by Mr. Hemsley in Biologia Centrali-Americana, but not under the names here used:

Abutilon texense T. & G. = *Abutilon incanum* Don.
Prosopis heterophylla Benth. = *Acacia willardiana* Rose.
Acalypha chamædrifolia Mull. = *Acalypha microphylla* Klotzsch.
Nephrodium patens Desv. = *Aspidium patens* Swartz.
Nymphæa ampla DC. = *Castalia ampla* Salisb.
Cyperus polystachys Rottb. = *Cyperus fugax* Liebm.
Mollugo glinus A. Rich. = *Glinus lotoides* Loefl.
Tetramerium scorpioides Hemsl. = *Henrya scorpioides* Nees.
Kosteletzkya sagittata Presl. in part, = *Kosteletzkya asterocarpa* Turcz.
Panicum microspermum Fourn. = *Panicum trichanthum* Nees.
Paullinia velutina DC. = *Paullinia fuscescens* Kunth.
Nephrodium conterminum Desv. = *Phegopteris tetragona* Fee.
Sida carpinifolia L. f. = *Sida acuta carpinifolia* K. Schum.
Verbena caroliniana L., in part, = *Verbena polystachya* H. B. K.
Bastardia hirsutiflora Presl = *Wissadula* sp.

CATALOGUE OF SPECIES.

RANUNCULACEÆ.

Clematis sp. An abundant bloomer, flowers white and sweet scented. Manzanillo, December 1 to 31, 1890. No. 992.

Clematis sp. A strong, high climber, covering fences and trees. The fruit is similar to that of the above species, but the leaves are thicker. Along water courses. Colima, January 9 to February 6, 1891. No. 1113.

DILLENIACEÆ.

Tetracera volubilis L. Sp. Pl. i. 533 (1753). A high climbing shrub, its large stems often prostrate for a long distance, either straight or coiled; flowers in large axillary or terminal panicles. Common in wet bottoms across the bay from Manzanillo, March 2 to 18, 1891. No. 1044.

The fruit of our plant is somewhat different from that of this species and it ranges farther northward, but it seems to answer to this better than any other. It is called "Beyuco deaqua." The stems when cut give forth a large quantity of clear, sweetish water, with which travelers often quench their thirst.

MENISPERMACEÆ.

Cocculus diversifolius DC. Syst. i. 523 (1818). Low climber. Colima, January 9 to February 6, 1891. No. 1111.

Cissampelos pareira L. Sp. Pl. ii. 1031 (1753). Colima, January 9 to February 6, 1891. No. 1140.

NYMPHÆACEÆ.

Castalia ampla Salisb. Parad. Lond. i. 73, t. 14 (1805); *Nymphæa ampla* DC. Syst. ii. 54 (1821). Strongly fixed in the mud by long fleshy white roots: leaves above dark olive, beneath dark cherry, and with very conspicuous veins, 12 inches or more in diameter; petals white; stamens yellow; fruit olive-green, depressed, 2½ inches in diameter. At the mouth of a creek where it enters the lagoon. Manzanillo, March 2 to 18, 1891. No. 1392.

This plant is figured in Curtis's Botanical Magazine, t. 4469.

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The shape and size of the fruit resembles that of the species of *Crataeva* (No. 1013) collected here also. These specimens do not belong to any described species, so far as I can learn, and the genus has not been reported previously from Mexico. It seems to belong in *Morisonia*, but in the absence of flowers it is better to refer it doubtfully, as above.

Forchhammeria pallida Liebm. Kjoeb. Vidensk. Meddel. 1853. 94 (1854). A small tree, 15 to 20 feet high, 5 to 8 inches in diameter, with a large top and a great profusion of leaves: leaves 2½ to 4 inches long, including the petioles (2 to 8 lines long), 8 to 12 lines broad: calyx of male flowers minute or wanting: in flower while in full leaf. On a sandy beach near Manzanillo, March 2 to 18, 1891. No. 1333, in flower; No. 1348, with immature fruit; No. 1366, with leaves only.

The tree is somewhat taller with the leaves larger than in the type, but in other respects it agrees with it. Only the male flowers were collected. This is a very rare plant in herbaria and has not been collected for many years. It was first seen and described by F. Liebmann, and is now collected the second time.

In habit and flowers the following new species is closely allied:

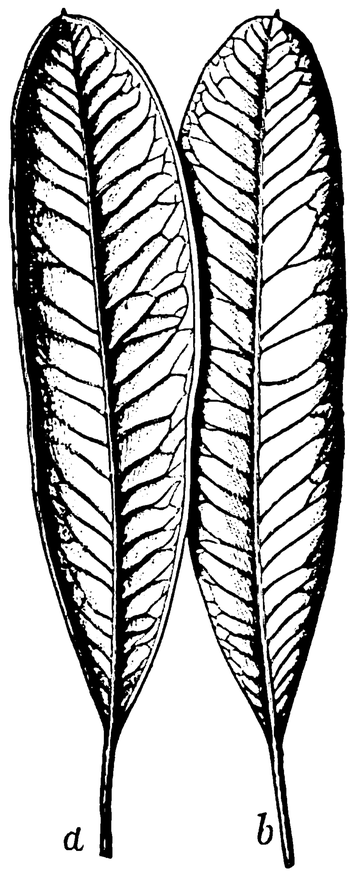

FIG. 1.—*a*, Leaf of *Forchhammeria pallida* showing the lower surface; *b*, the same as seen from above.

Forchhammeria watsoni Rose, sp. nov. A tree with large spreading top, 15 feet high, 1 to 5 feet in diameter; young branches finely pubescent: leaves coriaceous, narrowly to broadly linear, 3 to 5 inches long, 2 to 6 lines broad, more or less puberulent, cordate at base, strongly reticulated beneath, with prominent midrib and revolute margins: flowers in slender racemes 2 to 3 inches long: stamens 18 to 22: fruit pear-shaped, orange-colored, but when fully ripe a "purplish red," 5 to 6 lines long.—Common about Guaymas, Mexico, and at low elevations in the cape region of Lower California. Collected by Dr. Palmer in

1887 (No. 179); February 15, 1890 (No. 167); April 1 and 2, 1890, in flower; and July 30, 1891, in fruit. Mr. Brandegee reports it from Lower California, and has recently written me that he obtained it also at Guaymas in 1892.

For illustrations see Frontispiece and Pls. XXIV and XXV.

Considerable doubt has existed among our American botanists as to what this plant is, owing to the insufficient material which has been collected. This is the plant referred to under No. 167, on page 90 of this volume. A long note by Dr. Sereno Watson with reference to the same may be found in Proc. Amer. Acad-xxiv. 82 (1889), and another by Mr. Brandegee in Proc. Cal. Acad. ser. 2. ii. 215 (1889). The ripe fruit is much eaten by birds.

I have named this remarkable tree in honor of the late Dr. Sereno Watson, who made a careful study of the plant when it first appeared in the collection of Dr. Palmer in 1887.

In this species, which is clearly distinct from *F. pallida*, the flowers appear just after the leaves of the previous growing season have fallen and before the new leaves are put forth. In *F. pallida* the flowers and leaves appear together: in both cases the racemes of flowers arise in the axils of the old leaves. *F. pallida* seems to be clearly dioecious as described, while *F. watsoni* often has more or less developed ovaries in the staminate racemes.

Forchhammeria has been variously placed, sometimes in *Capparidaceæ*, sometimes in *Euphorbiaceæ*, and once in *Malvaceæ*. It certainly does not belong to the latter order nor does it seem to me that it can be placed in *Euphorbiaceæ*. Prof. Radlkofer has made a very careful study of the genus, and believes that it should be retained in *Capparidaceæ*, where it was first placed by Liebmann.

BIXACEÆ.

Cochlospermum hibiscoides Kunth, Syn. Pl. Æq. iii. 214 (1824). A tree 25 to 30 feet high. Common about Mazanillo, December 1 to 31, 1890. No. 1096. This is a beautiful flowering tree, remaining in bloom for more than two months.

Bixa orellana (?) L. Sp. Pl. i. 512 (1753). A small tree, 20 feet high, leaves mostly rounded at base, rarely truncate: fruit broader than long. Along the bay opposite the city of Manzanillo, December 1 to 31, 1890. No. 920.

Xylosma horrida Rose, sp. nov. A tree 30 feet high, 8 inches in diameter; thorns on the trunk large, often 3 to 6 inches long, branching: leaves 2½ to 3½ inches long, acute or slightly acuminate, broadly cuneate at base, bluntly serrate, glabrous and shining: flowers hermaphrodite in short axillary racemes; sepals small: glandular disk prominent: stamens about 20, much longer than the sepals: ovary glabrous, prolonged into a slender style; stigmas 2: seeds 2 to 6, oval in outline.—Manzanillo, March 2 to 18, 1891. No. 1340.

This species agrees with *X. intermedia*, collected in Panama, in having its flowers racemose and hermaphrodite, but this latter plant is described as a shrub 10 feet high, with large leaves, without thorns, with sepals nearly as long as the stamens and with 3 stigmas. Its nearest alliance is probably with *X. calophyllum*. I am indebted to Capt. John Donnell Smith for comparing my specimen with No. 1600 of Spruce, already referred to *X. calophyllum*, of which he writes: "Like your 1340, the spines are long and branched and the hermaphrodite flowers are racemose and glands of disk numerous, but the leaves are quite different."

Xylosma palmeri Rose, sp. nov. Diœcio-polygamous, glabrous, armed at the nodes with slender straight spines 5 to 15 lines long: leaves about 2 inches long, elliptical, cuneate at base, alternate, shining, dentate: flowers fasciculately grouped, 6 to 10 together: pedicels 4 to 5 lines long: male flowers with 4 sepals, 20 to 26 stamens set within the disk, and no style: female or hermaphrodite flowers, with a prominent disk, few or no stamens, short style; broad, peltate

stigma, and ovary with 2 parietal placenta; fruit black or red, with 2 to 4 seeds.—Near the base of the mountains about Manzanillo, December 1 to 31, 1890. Nos. 930, 930*a*, 969, 969*a*.

For illustration see Pl. XXVI.

This species was collected four different times. All the specimens are so similar in habit and leaves that I am unable to separate them. Nos. 969 and 969*a* have all the flowers staminate; in No. 930 they are pistillate or nearly so, while in 930*a* they are hermaphrodite and fertile. No. 930 is said to be a large shrub, while No. 969 is said to be a small shrub. Dr. Palmer states that the fruit of No. 930 is red, while that of 930*a* is fleshy and black. In No. 930*a* the styles become cleft to the base in the fruit.

POLYGALACEÆ.

Krameria palmeri Rose, sp. nov. Compact shrub, 2 to 3 feet high, much branched; young branches appressed-pubescent: leaves numerous, alternate, slightly pubescent, linear, 3 to 9 lines long: pedicels short, bibracteate near the middle: sepals oblong, obtuse, 3 lines long: petals 5; the 2 lower fleshy, broadly obovate, 1 line long; the 3 upper united below, the middle one ovate, the lateral ones more dilated, 2 lines long including the claw: stamens 4, slightly shorter than the upper petals: ovary glabrous: fruit globose, flattened, 4 lines in diameter, glabrous, yellowish or purplish, covered with stout naked prickles.—Scattered here and there on the gravelly plains. Agiabampo, October 3 to 15, 1890. No. 753.

For illustration see Pl. XXVII.

CARYOPHYLLACEÆ.

Drymaria cordata (L.) Willd. in Roem. & Schult. Syst. v. 406 (1819); *Holosteum cordatum* L. Sp. Pl. i. 88 (1753). In swampy places in river bottoms. Colima, January 9 to February 6, 1891. No. 1166.

Drymaria procumbens Rose, sp. nov. Annual, slender, procumbent, rooting at the nodes, puberulent throughout, except the leaves: leaves succulent, oval, 3 to 9 lines long, obtuse, on very short petioles, glabrous: flowers in diffuse pedunculate cymes: sepals 2 lines long, herbaceous with scarious margins, acute, 5-nerved at base: petals white, deeply 2-parted, two-thirds the length of the sepals: capsule few-seeded.—Near water ditches about Colima. January 9 to February 6, 1891. No. 1165.

Drymaria villosa Cham. & Schlecht. Linnæa, v. 232 (1830). Very common on clay banks in the mountains. Manzanillo, December 1 to 31, 1890. No. 945.

PORTULACACEÆ.

Portulaca pilosa L. Sp. Pl. i. 445 (1753). A very common plant everywhere about Manzanillo. March 2 to 18, 1891. No. 1375.

Portulaca sp. Erect, often 1 foot or more high, more or less branching above, purplish: leaves terete, 15 lines long, tapering towards the apex, a little hairy in the axils: flowers pink, 1 inch or more in diameter: stamens 30 to 50, much shorter than the style; filaments and style red. Agiabampo, October 3 to 15, 1890. No. 804.

This is the same as *P. pilosa?* Proc. Amer. Acad. XXI. 417. (Palmer's No. 79 of 1885.)

These plants bear numerous slender tubers similarly to *P. stelliformis*, which differs from this species in the color of the flowers, longer leaves, and a somewhat different habit. Perhaps it should be referred to *P. stelliformis* as a variety. Specimens have been cultivated by Mrs. H. L. T. Wolcott at Halifax, Mass., to whom I am indebted for some fine blooming plants.

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Sida sp. Manzanillo, December 1 to 31, 1890. No. 1003.

"I am rather puzzled with this plant. It is, of course, a *Sida* and comes near *Sida aggregata* Presl, Reliq. Hænk. We have not the type of this, so I have only the description to go by. It also comes rather near a plant I described as *S. barclayi*, but has totally different leaves. It may be new." E. G. Baker.

Wissadula rostrata Planch. in Hook. Fl. Nig. 229 (1849). Carpels 3 or 4. Found along fences in river bottoms. Colima, January 9 to February 6, 1891. No. 1137.

Wissadula hirsutiflora (Presl); *Bastardia hirsutiflora* Presl, Reliq. Hænk. ii, 112 (1836). Colima, February 27 and 28, 1891. No. 1307.

When I first studied this plant, more than two years ago, I considered it a new species of *Wissadula*, and so sent it to Mr. E. G. Baker, who was then preparing his Synopsis of Malveæ. He reported it as the *Bastardia hirsutiflora* of Presl. While my plant does not answer to Presl's description in all respects, Mr. Baker is doubtless right in considering them the same. One thing, however, seems certain, and that is that Presl's plant belongs with *Wissadula* rather than with *Bastardia*, although Mr. Baker (see Journ. Bot. xxxi. 68) still retains it in the latter genus.

It differs from *Bastardia* in having three styles and carpels instead of five, three ovules instead of one in each cell, and the carpels constricted with an internal projection. It is like *Wissadula*, in having the peculiar carpel structure of that genus, but the carpels are rounded at the apex and only three in number. The flowers are violet instead of yellow. While these differences may not be sufficient to establish a generic separation from *Wissadula*, yet in the light of other material which I have studied they seem to suggest a good subgenus.

Either there are several valid species belonging to this group, or *W. hirsutiflora* is an extremely variable species. One of these forms is *Abutilon* (*Wissadula*) *cinctum* Brandegee, Zoe, iii. 348 (1893), collected at Las Durasnillas, Sonora, and with it should probably be referred Palmer's No. 38 (1890) from Alamos. These specimens have small rounded leaves, merely acute, with short petioles, and the pubescence is short and dense throughout except some pilose hairs on the calyx. Another form, and it certainly seems specifically distinct from that above, is Mr. Pringle's No. 4610 (1893) from the state of Jalisco, which he has recently distributed as a new species of *Wissadula*. The stems are covered with pilose hairs, and the leaves, which are much larger, gradually taper from near the base into a long acumination. In the same distribution (No. 4578) is another form, near the last, but with slightly different pubescence. Palmer's Colima plant has thinner, broader leaves, with a broad, open sinus, and an abrupt acumination. Still another form is Palmer's No. 1720 from Ymala, which has not yet been distributed.

Abutilon bastardioides Baker fil. ms.; caule vel ramo ligneo terete, foliis cordato-ovatis acutis vel acuminatis serratis 7–9-palmati-nervatis membranaceis utrinque tenuiter stellato-pubescentibus petiolis quam laminis longioribus vel subæquilongis, floribus paniculatis, paniculis foliosis laxis, pedunculis gracilibus teretibus circa medium articulatis, alabastris calycibusque externe brunneopiloso-pubescentibus, sepalis lanceolatis vel ovatis acutis vel acuminatis, carpellis 4–5 in capsulam loculicidem connatis, carpellis triovulatis intus nudis apice muticis.—Hab. Mexico Colima. February 27 and 28, 1891. No. 1314.

Stem or branches woody, canescent, terete except at the apex: leaves cordate, ovate, acute or acuminate, serrate, generally slightly broader than long; 1½ to 2 inches long, 1½ to 2¾ inches broad; on both sides finely stellately pubescent, palmately 7-nerved, petioles as long as or longer than the lamina: panicle lax, leafy: peduncles terete, articulated generally about at the middle, above the articulation covered with brown somewhat glandular pubescence, often bent at the articulation: calyx tube campanulate, sepals lanceolate or ovate, acute or acuminate, externally together with the tube covered with brown glandular and pilose pubescence: petals obovate, longer than the sepals (½ inch long): staminal column, especially below, covered with stellate white hairs, about 3 lines long:

stigma capitately stigmatose: capsule composed of 4 or 5 carpels, loculicidally dehiscent, externally incano-pubescent, about ¼ inch high, shorter than the calyx: carpels 3-ovuled, muticous: seeds black, sparsely pubescent. This plant approaches the genus *Bastardia* in the structure of its fruit, there being 4 or 5 carpels which are entirely muticous and united so as to form a loculicidally dehiscing capsule.

Abutilon incanum (Link) Sweet, Hort. Brit. 53 (1827); *Sida incana* Link, Enum. Plant. ii. 204 (1822), *fide* Baker. Armeria, February 15, 1891. No. 1281. Agiabampo, October 3 to 15, 1890. No. 768.

Dr. Palmer writes as follows of this plant: "The natives call this plant 'Tronadora,' which signifies popping of the leaf. It grows about 8 feet high, acquiring the greatest perfection upon rich bottom lands. It yields a strong, durable fiber, which the Zotlahnacar Indians, who live 40 miles southeast of Manzanillo, utilize in making hammocks, ropes, and carrying-nets, which are so durable that they last from seven to ten years when in constant use."

According to Dr. Palmer, the fiber is prepared as follows: "When the plant is mature, the lateral branches are cut away and the stems are buried in the mud at the edge of Lake Alcuzagua (Lake of the Devil). Three to four days afterward the plants are removed and washed, and are then ready for the stripping of the inner bark or fiber. This is done in the following manner: The workman, standing upright, with the stem which rests firmly upon the ground in his left hand, presses the right thumb firmly upon the stick, and taking the fiber between the fingers, he pulls steadily, bending gradually to the work until he falls upon his knees. When the fiber is removed the stem rebounds and flies over the shoulder of the operator, stripped of half its bark. This seems a very slow process, but jute was formerly cleaned as slowly, and it was only after many and repeated trials that machinery was perfected to perform this tedious work. Probably this, like jute, if allowed to die before cutting, would become brittle, and fit only for paper manufacture; therefore, in more northern latitudes it may be best to cut the plants before frost. Experiments will be necessary to ascertain the proper time for cutting, the length of time it should be immersed, if water will accomplish the same result as mud, rendering the bark soft and pliable."

Abutilon triquetrum Presl, Reliq. Haenk. ii. 115 (1836), *fide* Baker. Along rich bottoms. Agiabampo, October 3 to 15, 1889. No. 810.

Abutilon sp. Colima, February 27 and 28, 1891. No. 1314.

Malachra radiata L. Syst. Veg. 518 (1767); *Sida capitata* L. Sp. Pl. ii. 685 (1753). Manzanillo, December 1 to 31, 1890. No. 958.

Malachra capitata L. Syst. Veg. 518 (1767); *Sida radiata* L. Sp. Pl. ed. 2. ii. 965 (1763). Manzanillo, December 1 to 31, 1890. No. 962.

Malvaviscus arboreus Cav. Diss. iii. 131, t. 48, f. 1 (1787), *fide* Baker. A very showy shrub, 10 to 12 feet high: leaves 3 to 6 inches long (petioles 2 to 4 inches long), ovate, sometimes subtrilobate, crenate, slightly cordate or truncate at base. The fruit, which is edible, is at first red, but becomes yellow when mature. The shrub is called "Monacillo," while the fruit is known as "Manzanita." Manzanillo, December 1 to 31, 1890. No. 963.

"This plant certainly does not agree with Cavanille's description of *arboreus* where the leaves are described as '3–5-lobis,' but I think it comes near this species." E. G. Baker *in lit.*

Kosteletzkya asterocarpa Turcz. Bull. Soc. Mos. xxxi. pt. 1. 191 (1858), *fide* Baker. Branches slender, hispid with spreading hairs or stellate-pubescent: leaves narrowly lanceolate to linear, serrate, acute, 1½ to 4 inches long, stellate-pubescent, truncate at base or with one or two auricles or lobes; petioles 3 to 6 lines long: peduncle 10 to 20 lines long: flowers small, yellow: involucre of 8 to 9 filiform bractlets shorter than the calyx: sepals 2 lines long, obtuse: capsule 5-celled, hispid on the angles. Collected from a garden at Manzanillo, March 2 to 18, 1891. No. 1362.

Kosteletzkya sagittata Presl, Reliq. Hænk. ii. 131, t. 70 (1836). Probably this species or one closely related to it. About 3 feet high: leaves sometimes truncate at base: flowers small, "white, shaded with pink," drying a yellowish green: staminеal tube short: seeds with short crisped hairs. Only one plant seen, near a lagoon. Manzanillo, December 1 to 31, 1890. No. 951.

Hibiscus coulteri Harvey in Gray, Pl. Wright. i. 23 (1852). "Flowers canary color with purple base." Collected along a creek botton at Agiabampo, October 3 to 15, 1890. No. 779.

Hibiscus sabdariffa (?) L. Sp. Pl. ii. 695 (1753). About 4 feet high, nearly glabrous: leaves simple or deeply 3-cleft, dentate, 3 to 5 inches long: flowers axillary, solitary on short (3 to 4 lines long) peduncles: involucre gamophyllous, 10-cleft: calyx 12 to 18 lines long, deeply 5- to 6-cleft into ovate, acuminate divisions, dark purple: corolla spreading to 1½ inches, yellow with a black or purplish eye: style 5-cleft; stigma capitate: capsule globular, 6 to 9 lines long, 5-celled: cells 4- to 7-seeded. Cultivated at Manzanillo, but said to be native. December 1 to 31, 1890. No. 1065.

Dr. Palmer says: "The stems, involucre, and capsules are copper-red. The Mexicans gather the fleshy capsules and use them after drying to make a cool, refreshing drink. This is an important article of commerce and is sold all over Mexico."

I have grown this plant in my grounds, but was not successful in getting it to flower. The young plants are a bright purple and the leaves are all simple.

Hibiscus tiliaceus L. Sp. Pl. ii. 694 (1753). Very common along the banks of a ravine at Manzanillo, December 1 to 31, 1890. No. 1054.

Hibiscus (Bombycella) sp. Shrubby 4 feet high: leaves mostly 3-lobed, serrate; central lobe acute or acuminate peduncles 2 to 3 inches long, longer than the leaves: involucral bracts 11, cleft to the base, linear, 3-nerved, longer than the capsule: calyx cleft below the middle, shorter than the capsule: capsule globose, 5-celled, 4 lines long, pubescent with appressed hairs at the top: seed with long cottony, dirty-white hairs. Not found in flower. Under brush along a creek. Agiabampo, October 3 to 15, 1890. No. 776

Near *H. phœniceus* var. of Palmer's 1885 collection, but differing in having lobed leaves, longer peduncles, shorter and more globose capsule, etc.

Cienfuegosia palmeri Rose, sp. nov. An upright shrub, 6 to 8 feet high: leaves heart-shaped, acuminate, 2 to 4 inches long, on petioles 1 inch or less long: flowers axillary on short peduncles: bractlets 3, minute, 3 lines long with a small pit at the base without: calyx cup-shaped, 4 lines long, with 5 small acute or acuminate teeth, black-dotted: corolla large, white with dark purple center, or becoming purplish throughout in age: petals 2 inches long: staminal column elongated, bearing anthers throughout its entire length except near the base: style clavate, slightly 2-lobed: capsule oblong, 1 inch long, apiculate, black-dotted, glabrous, 3-celled: seeds several in each cell, lanate, ovoid.—In shady woods about Colima, February 27, 1891. No. 1316.

This plant has much the habit of *Hibiscus*, but its relationships are evidently with the above genus

Ceiba (Euone) grandiflora Rose, sp. nov. A small tree, 15 to 20 feet high, 8 to 12 inches in diameter: branches covered with short straight prickles, mostly infrastipular: petioles 2 to 4 inches long; leaflets glabrous, 3 to 5, oblong, cuneate at base (sometimes tapering into a petiolule), obtuse or acute, entire or slightly serrulate, 2 to 3½ inches long: calyx narrowly campanulate, 8 to 10 lines long, with 3 small equal obtuse teeth, glabrous without, silky within: petals white, silky, especially without, strap-shaped, 4 to 5 inches long: stamens 5; filaments long (3½ inches), each with 2 anthers, united at base into a tube 9 lines in length with 5 small teeth at its apex: style glabrous: capsule oblong, 4½ inches

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Heliocarpus tomentosus Turcz. Bull. Soc. Nat. Mosc. xxxi. pt. 1. 225 (1858). A small tree, 15 to 30 feet high, 3 to 5 inches in diameter, with a very large top and a great abundance of fruit. Very common all over the mountains. Manzanillo, December 1 to 31, 1890. No. 986.

The plant was collected in fruit only, and is tentatively referred here. It is not nearly so pubescent as our herbarium specimens nor as the original description requires, and fuller material may show it to be a new species.

Corchorus acutangulus Lam. Encyc. ii. 104 (1786). Only a single specimen found near the base of the mountains. Manzanillo, December 1 to 31, 1890. No. 944.

I have thus referred my plant, although I have seen no specimens of the species otherwise, nor have I any knowledge of its having been reported from Mexico before. Wight's figure (Icon. t. 739) shows numerous stamens, while the single flower on my plant had but 10 stamens.

Corchorus siliquosus L. Sp. Pl. i. 529 (1753). Only a few plants found near a water-ditch. Colima, January 9 to February 6, 1891. No. 1231.

Corchorus pilolobus Link, Enum. Hort. Berol. ii. 72 (1822). Only a single plant found near the base of the mountains. Manzanillo, December 1 to 31, 1890. No. 922. Also found in a creek bottom at Agiabampo, October 3 to 15, 1890. No. 763.

MALPIGHIACEÆ.

Malpighia ovata Rose, sp.nov. Shrub, 3 to 15 feet high, glabrous throughout, or a little hairy in the inflorescence: leaves opposite, broadly ovate, acuminate, slightly tapering at base to truncate or even a little cordate, pale beneath, somewhat reticulated, 2 to 2½ inches long, 1¼ to 2 inches broad, on very short but distinct petioles: flowers in small axillary umbels or corymbs; peduncles short; pedicels 3 to 5 lines long, jointed and 2-bracteate near the middle, the upper half thickened in age: calyx 10-glandular: petals 5, cuneate at base into a slender claw: stamens 10, slightly united at base, glabrous: anthers obtuse: styles 3, obtuse: drupe 3-pyrenous, 4 lines in diameter: pyrene carinate, with 5 horizontal crests.—Manzanillo, December 1 to 31, 1890. No. 900.

For illustration see Pl. XXVIII.

Malpighia umbellata[1] Rose, sp. nov. A large shrub 8 feet high, intricately much branched: leaves glabrous or when young pubescent with appressed hairs, obovate to oblong, obtuse to retuse, mostly tapering toward the base, 10 to 18 lines long, 4 to 8 lines wide: fruit in small umbel-like clusters, either sessile or on very short peduncles: pedicels 9 to 12 lines long, jointed considerably below the middle: flowers not seen: calyx 5-to 8-glandular: drupe red, ovate to oval, 2 to 3 lines in diameter.—Agiabampo, October 3 to 15, 1890. No. 799.

For illustration see Pl. XXIX.

The fruit is edible and is called Mulberry or "Mora de Campo."

Bunchosia sp. A small tree, 10 to 14 feet high, 3 to 4 inches in diameter, with large symmetrical top: leaves glabrous (sometimes with a few hairs beneath), 3 to 5

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[1]Very near the above species is **Malpighia watsoni** (*Bunchosia parriflora* Watson. Proc. Amer. Acad. xxiv. 42), but the latter differs in the following points. It is a small shrub 3 to 4 feet high, leaves acute with rounded base, the calyx with more glands, the fruit much larger and the pyrene more sharply ribbed, etc. This species seems clearly to belong to *Malpighia* rather than to *Bunchosia*, from which it differs in its distinct styles, cristate pyrene, and pink flowers.

This species may properly bear Dr. Sereno Watson's name as *M. parriflora* has already been used by Jussieu.

I would also refer as **Malpighia guadalajarensis** Palmer's No. 490, from Jalisco collected in 1886, the type of *Bunchosia guadalajarensis* Watson, Proc. Amer. Acad. xxii. 401.

inches long, 2 to 3 inches broad: calyx 8-glandular: drupe "yellow," or reddish, fleshy, compressed, acute, glabrous, 7 to 8 lines broad, 2-pyrenous. Manzanillo, December 1 to 31, 1890. No. 1064.

Dr. Palmer says, "It resembles a magnolia tree; its large leaves and large handsome clusters of yellow fruit should recommend it for cultivation in our Southern States."

It is nearest *B. palmeri*, but has broader and glabrous leaves, and 8- (instead of 10-) glandular calyx, with differently shaped fruit and more compact inflorescence.

It seems to be a good species.

Bunchosia sp. Small tree, 10 to 12 feet high, with glabrous branches: leaves oblong, acute, tapering and a little oblique at base, without glands, glabrous above, with a few scattered, appressed hairs beneath (more pubescent when young), 1½ to 2½ inches long, including the petiole (3 to 6 lines long), 1 to 1¾ inches broad: racemes 1 to 3 in each axil, 3 to 4 inches long, including the peduncle (6 to 18 lines long), canescent: pedicels 3 to 6 lines long, jointed near the base and bearing 1 or 2 glands near the joint: calyx 8-glandular; sepals oblong, obtuse, pubescent: petals yellow, 4 lines long, including the claw: stamens 10, nearly equal, connate for one-third of their length: anthers obtuse; styles connate: stigma peltate: drupe "orange," dry, compressed-globose, pubescent, 2-pyrenous, 6 lines broad. Manzanillo, December 1 to 31, 1890. No. 1056.

This species is near *B. palmeri* Watson, but has different leaves, number of glands, calyx lobes, ovary, and fruit. This tree grows on the mountain side. It has a very irregular top.

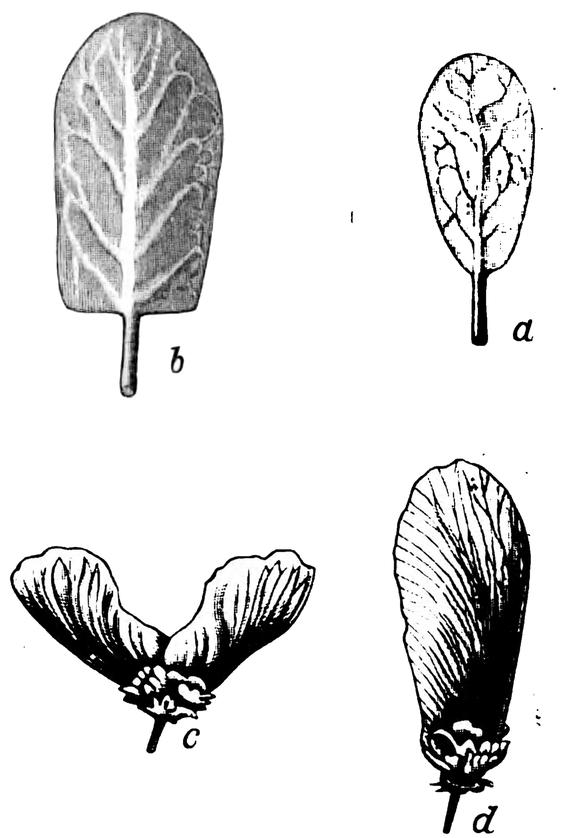

FIG. 2.—*a*, Petal of *Heteropterys palmeri*; *b*, petal of *H. portillana*; *a* and *b* enlarged; *c*, samara of Palmer's No. 656 (*H. palmeri*); *d*, samara of Palmer's No. 1025 (*H. gayana*); *c* and *d* natural size.

Echinopterys lappula Juss. Arch. Mus. Par. iii. 342 (1843). Colima, February 27 and 28, 1891. No. 1308.

Heteropterys* **gayana** Juss. Arch. Mus. Par. iii. 439 (1843), *fide* Hemsley. A tall climbing shrub with large fruit clusters: samaræ sometimes 2 but mostly single, "bright cherry color above,

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**Heteropterys palmeri* Rose, sp. nov. This species differs from *H. portillana* in the following particulars: leaves lanceolate to ovate, 2 to 3 inches long, 9 to 12 lines broad, obtuse or acute; petioles and base of blade without glands or with an occasional one; petioles 3 to 6 lines long: flowers in panicles of small corymbs: pedicels slender: flowers and glands smaller: sepals shorter: petals 4, oblong to obovate, 2 lines long, reflexed with cuneate base and short claw; the fifth petal larger with thick claw and erect: samaræ mostly 2; dorsal wing 9 lines long.—Alamos, 1890. Nos. 655, 656.

This is the *H. portillana*, p. 95 of this volume.

old-gold below," with several small lateral crests; dorsal wing 12 to 15 lines long. Only a single plant seen near the base of the mountains. Manzanillo, December 1 to 31, 1890. No. 1025.

These specimens are only in fruit.

The flower characters of *H. portillana*, a closely related species, are here added: sepals 5, 1½ lines long, obtuse; glands 8: petals 5, 2½ lines long including the short claw; blade oblong with truncate or sagittate base, with a thick midrib.

Bourgeau's No. 3112, referred to *H. gayana* in Biol. Cent.-Amer., seems to be *H. beechyana*.

Hiræa mexicana Rose, sp. nov. Shrub with slender hanging branches, sometimes trailing over bushes: young branches lanate-pubescent, becoming glabrate with age: leaves opposite, oblong to oval, obtuse or acutish with rounded or somewhat tapering base, somewhat pubescent beneath (lanate or soft-silky when young), glabrous above (a little pubescent when young), 2½ to 3½ inches long, 1 to 1¾ inches broad; petioles pubescent, 3 to 8 lines long, with 2 glands near the middle: flowers in 3-to 6-flowered umbels or corymbs: peduncles slender: pedicels 6 to 9 lines long, pubescent: calyx with 8 large glands: petals yellow, 4 or 5 lines in diameter, denticulate, with a claw 1 line long: stamens 10, short, nearly equal; the filaments unequally connate above the middle; anthers obtuse: styles 3: samaræ pubescent, with 3 wings, these equal or nearly so (central one sometimes more prominent), 1½ inches broad, 2 to 3¾ inches long.—Armeria, February 15, 1891. No. 1275.

For illustration see Pl. XXX.

In foliage and flowers this species is nearest *H. greggii*, but it has much larger fruit, and is apparently distinct.

ZYGOPHYLLACEÆ.

Tribulus grandiflorus (Torr.) Benth. & Hook. Gen. Plant. i. 264 (1862); *Kallstræmia grandiflora* Torr. in Gray, Pl. Wright. i. 28 (1852). Plant procumbent. Found in rich bottoms. Agiabampo, October 3 to 15, 1891. No. 783. Also on grassy plains, though not common. Colima, January 9 to February 15, 1891. No. 1110.

Tribulus maximus L. Sp. Pl. i. 386 (1753). Agiabampo, October 3 to 15, 1890. No. 786.

GERANIACEÆ.

Oxalis berlandieri Torr. Mex. Bound. Surv. 41 (1859). Only a few plants found along a mountain trail. Manzanillo, December 1 to 31, 1890. No. 1008.

The finding of this rare Texan plant in central Mexico is interesting and it should be looked for further north. This species had not been collected since the Mexican Boundary Survey was published, until Pringle and Nealley got it in 1890.

RUTACEÆ.

Monnieria trifolia L. Sp. Pl. ed. 2. ii. 986 (1763). In wet places along the bay, opposite the village. Manzanillo, December 1 to 31, 1891. No. 927.

This genus is not credited to Mexico by Mr. Hemsley in Biol. Centr.-Amer., nor do I find it reported anywhere from Mexico. The range of this species is given as Brazil and Guiana. It is not represented in the National Herbarium, but through the kindness of Dr. Robinson I have examined the three sheets from the Gray Herbarium.

My specimens have broader leaflets and the terminal one has a narrow cuneate base, the peduncles longer, and the two larger sepals broader, and the pellucid dots are not so conspicuous. Future study may show that this form constitutes a good variety.

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ad 12 cm. longa ad 4 cm. lata in sicco firmula pallida subopaca epunctata supra nitentia, nervis secundariis utrinque circiter 8. Rhachis cum petiolo circiter 2 cm. longo teres glabra. Paniculæ cum foliis coætaneis. Capsula pallide fuscescens 2 cm. longa 22 mm. lata 4-locularis. Cotyledones transverse superpositi crassi, radicula inclusa, plumula minima.

Species G. *brachystachyæ* C. DC. et *G. filiformi* C. DC. affinis.

Trichilia colimana C. DC. Bot. Gaz. xix. 40 (1894); foliis modice petiolatis 5–6-jugis, foliolis subæqualibus petiolulatis oppositis subalternisve lanceolatis basi leviter inæquali acutis apice acute acuminatis supra subtusque densius pilosulis, paniculis fructiferis simplicibus quam folia pluries brevioribus, capsulis pedicellatis 3- vel abortu 2-valvatis, valvis late ovatis transverse rugulosis hirsutis, loculis monospermis, seminibus subglobosis arillo aurantiaco circumdatis.—In Colima (*Palmer* 1117).

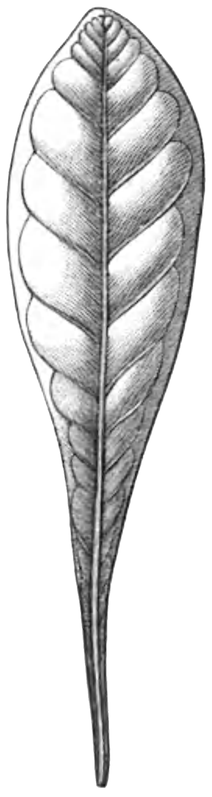

FIG. 3.—A leaf of *Trichilia havanensis spatulata*, drawn natural size.

Ramuli adulti glabri, in sicco rufescentes lenticellis pallidioribus inconspicuis. Folia ad 30 cm. longa impari-pinnata. Foliola superiora cæteris parum majora ad 7.5 mm. longa ad 22 mm. lata in sicco firmule membranacea inconspicue subtiliter pellucido-punctulata, nervis secundariis subadscendentibus utrinque 10–12. Rhachis cum petiolo 7 cm. longa teres pilosula. Paniculæ fructiferæ circiter 8 cm. longæ. Capsularum valvæ circiter 1 cm. longæ. Embryo intra sacculum persistentem extus perispermio pulverulente albo circumdatum inclusus, cotyledonibus carnosis ellipticis, radicula exserta brevi obtusa, plumula minima.

Trichilia havanensis spatulata Rose, var. nov. Small tree, 15 to 20 feet high with a very large top: leaves small with long cuneate base, becoming spatulate.—Colima, January 9 to February 6, 1891. No. 1136.

Called "Garrapatilla."

M. C. de Candolle, to whom I afterwards submitted the plant, writes me as follows:

"I quite agree with you as to the specimen (Palmer's No. 1136) which you have sent to me. It differs from *Trichilia havanensis* by its narrower leaflets only, and must accordingly be taken as a variety of that species—*T. havanensis spatulata* as you propose."

Trichilia palmeri. C. DC. Bot. Gaz. xix. 3 (1894); foliis parvis modice petiolatis 3-foliolatis, foliolis petiolulatis lanceolatis basi æqual' acutis apice breviter obtuse cuspidatis supra glabri subtus velutino-puberulis, paniculis glabris breviter ramulosi fructiferi quam folia multum brevioribus plerumque monocarpinis capsulis apice ramulorum sessilibus globosis parvis, valvis ovato-acutis glabris extus nigrescentibus lenticellis pallidis numerosis conspersis, seminibus ellipticis.—In Mexico (*Palmer* 1, 292).*

Februario fructifera. Ramuli glabri pallide fuscescentes lenticellis albis conspersi. Folia ad 9 cm. longa. Foliola in sicco firmo-membranacea inconspicue subtiliter pellucido-punctulata subpellucida, terminalia 7.5 cm. longa 3 cm. lata lateralia parum minora, nervis secundariis subadscendentibus suboppositis utrinque 8–10. Petioluli ad 6 mm. longi subtiliter puberuli. Petioli ad 2 cm. longi. Panicula hornotinæ axillares glabræ. Capsula paulo latior quam longa, circiter 7 mm. lata. Semina circiter 4 mm. longa elliptica in sicco flavicantia. Embryo perispermio albo tenui inclusus, cotyledonibus carnosis basi cordulatis, radicula exserta subrotunda, plumula minima.

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* Dr. Palmer collected *T. spondioides* Swartz on the Alamos Mt. March 25 to April 8, 1890 (No. 309), but it was not given in my report on that collection.—J. N. R.

Species sicut subsequens ac tertia e Guatemala alio loco describenda semine perispermium includente radiculaque e cotyledonibus exserta a cæteris *Trichiliis* quorum fructus notus est discrepans.

RHAMNACEÆ.

Zizyphus mexicana Rose, sp. nov. A tree 25 feet high, 9 inches in diameter, with large, dense top; spines straight and scattered; leaves oblong, 2 to 3 inches long, strongly 3-nerved, coriaceous, glabrous, obtuse or retuse, cuneate or rounded at base, crenately toothed; petioles 3 to 8 lines long: peduncle 6 lines long; flowers 8 to 10 in a small umbel; peduncle and pedicels (as well as young leaves and branches) a little pubescent: calyx nearly glabrous, 5-parted: petals 5, small: stamens 5: fruit drupaceous, 6 to 8 lines in diameter.—On hills about Armeria, February 27 and 28. No. 1278.

This species seems nearest *Z. guatemalensis*, but it is a small tree, with leaves commonly cuneate at base, and longer petioles and peduncles. Mr. Hemsley writes me that the species is quite distinct. The fruits are gathered by the Mexicans and sold in the markets by the dozen. They are used in the place of soap and are highly prized for washing woolen goods. They are called "Amole."

Karwinskia humboldtiana Zucc. Nov. Stirp. fasc. 1, 353 (1832). A compact shrub 10 to 12 feet high. Manzanillo, December 1 to 31, 1890. No. 959.

Called "Margareta." The twigs and leaves are much used in cases of fever, etc.

Karwinskia parvifolia Rose, sp. nov. Large bush, 5 to 10 feet high, glabrous throughout: leaves opposite or subopposite, small, oblong, or linear-oblong, about 1 inch long on short petioles, obtuse, rounded, or somewhat tapering at base, the margin somewhat black-dotted; stipule minute: pedicels short; peduncles short or none: stigma 2-lobed: fruit mostly single, axillary, black, 2-celled.—Agiabampo, October 3 to 15, 1890. No. 773.

For illustration see Pl. XXXI.

This plant is not in flower, but it has all the indications of being a *Karwinskia*. It differs from *K. humboldtiana* in its much smaller leaves, the fruit more tapering at base, its larger disk, etc.

Mr. Hemsley writes me that it is not Coulter's (No. 3) from Sonora, nor is it represented in the Herbarium at Kew.

Colubrina arborea (?) Brandegee, Zoë, iv. 401 (1894). Along the edge of thick woods. Armeria, February 15, 1891. No. 1293.

Dr. Palmer says this tree has the habit of the weeping willows. Its long hanging branches are loaded with fruit. I have referred this plant as above with some doubt. I at first described it as a new species, but since then Mr. Brandegee has described a species from Lower California under the above name, to which my plant probably belongs.

AMPELIDACEÆ.

Cissus sicyoides L. Syst. ed. 10. ii. 897 (1759). Trailing over bushes along the lagoon. Manzanillo, December 1 to 31, 1890. No. 1075.

Cissus sp. Leaflets 3. Agiabampo, October 3 to 15, 1890. No. 784.

SAPINDACEÆ.

Serjania fuscopunctata Radlkofer, sp. nov. Scandens, fruticosa, subincano-pubescens; rami canaliculato-6-sulcati, ad angulos pilis patulis cano-pubescentes, cortice subfusco; corpus lignosum simplex, sulcatum; folia biternata (interdum foliolorum terminalium conformatione transitum in supradecomposita indicantia); foliola ovata, acuta, mucronulata, basi rotundata vel sub-

cordata in petiolulos abrupte contracta, integerrima vel (lateralia præsertim) utrinque grosse 1–2-dentata, penninervia, utrinque pubescentia glandulisque microscopicis adspersa, membranacea, e viridi fuscescentia, punctis pellucidis fuscis a latere superiore impressis notata, epidermide mucigera (paginæ superioris quoque stomatibus instructa); petioli nudi, petioluli submarginati; thyrsi rhachi abbreviata subcorymbiformes, dense cinciniferi; cincinni stipitati; flores majusculi, flavescentes; sepala omnia canescenti-tomentella; fructus semimaturi fusco-purpurei, maturi pallescentes, ovati vel subelliptici, basi et apice excisi, glabrati, loculis latis tumidis reticulato-nervosis, dorso carinatis ecristatis, endocarpio glabro; semen prope loculi basin insertum.

Rami thyrsigeri diametro 2–4 mm. Folia (majora) 15 cm. longa, totidem lata; foliola terminalia (petiolulo ad 2.5 cm. longo excluso) 7 cm. longa, 4.5 cm. lata, lateralia decrescentim minora, petiolus communis 2 cm., partialium intermedius 4 cm., laterales 2.5 cm. longi; stipulæ minutæ, ovato-triangulares. Thyrsi 4–14 cm. longi, rhachi 2.5 cm. vix excedente; cincinni abbreviati; pedicelli 4 mm. longi, medio articulati. Flores:—Sepala interiora 4 mm. longa. Petala sepalis longiora, intus glandulis vix ullis obsita; squamæ superiores petala dimidia superantes, crista divaricato-bifida appendiceque deflexa lineari dense villoso-barbata, inferiores crista subcornuta erecta instructæ. Tori glandulæ superiores ellipticæ, laterales subconformes minores. Staminum filamenta villosiuscula, antheræ glabræ. Germen ad angulos puberulum, ceterum glanduli, microscopicis obsitum; stylus puberulus; stigmata stylum subæquantia. Fructus 2.7 cm. longus, 2 cm. latus, infra loculos vix constrictus, loculis 8 mm. longis, totidem latis, subinflatis, pericarpio tenui, endocarpio papyraceo ab epicarpio plus minus solubili. Semen obovoideum, badium.

In Mexico: Palmer n. 1360! (Manzanillo, m. Mart. 1891, flor. et fruct.)

Obs. Affinis *S. subtriplinervi* Radlk. (Sect. xi.; cf. Radlk. Serjaniæ Monogr. p. 273), a qua inter alia differt partibus omnibus robustioribus, præsertim floribus duplo majoribus, nec non foliolis sæpius dente uno alterove instructis.

Serjania rutæfolia Radlkofer, sp. nov. Scandens, suffruticosa, cano-pubescens; rami teretes, leviter 8-striati, pube brevi cana crispula induti, cortice viridi; corpus lignosum simplex, teretiusculum; folia impari-pinnata, tri-quadrijuga, primis infimis nunc ipsis trijugis, jugo infimo utrinque ternato, vel biternatis, vel 5-foliolato-pinnatis, proximis 5-foliolato-pinnatis vel trifoliolatis, summis simplicibus (folio 1 inde foliola 19 ad 41 exhibente); foliola parvula, superiora subrhombea vel oblonga vel obovata, inferiora ovata vel suborbicularia, fere omnia obtusa, immo retusa, mucronulo ornata, in petiolulos attenuata vel subsessilia, integerrima vel parce inciso-dentata, pilis brevibus crispulis glandulisque microscopicis utrinque obsita, membranacea, triste viridia, punctis pellucidis parvis lineolisque notata, epidermide valde mucigera (paginæ superioris quoque stomatibus instructa); petiolus communis teretiusculus, striatus, petioli partiales superiores rhacheumque segmenta superiora marginata; thyrsi solitarii, folia subduplo superantes, rhachi quam pedunculus communis subduplo longiore cincinnisque stipitatis subverticillatim approximatis pube cana crispula densa indutis; flores mediocres, albi, suaveolentes; sepala omnia pube cana crispa densa intus quoque induta; tori glandulæ superiores ovatæ, inferiores conformes, vix minores; stamina fere tota breviter hirsuta; germen (auctum) ex obovato cuneatum, pube brevi cana ad loculos densissima indutum nec non intus dense albido-pubescens, stylo glaberrimo; fructus—(non suppetebat).

Rami thyrsigeri diametro 2 mm. Folia inferiora 12 cm. longa, totidem lata; foliola terminalia 2–2.5 cm. longa, 0.9–1 cm. lata, lateralia inferiora 1 cm. longa et lata; petiolus communis 2.5–3.5 cm. longus, partiales paullo breviores, rhacheum segmenta apicem versus decrescentia, summa circ. 1.2 cm. longa; stipulæ minutæ, subulatæ. Thyrsi inferiores 3.5 cm., summi 7 cm. longi; cincinni stipite 5–6 mm. longo adjecto 1 cm. vix superantes, 5–6-flori; pedicelli 4–5 mm. longi, basi-articu-

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interrupto instructa, epidermide non mucigera; petiolus rhachisque late alata; thyrsi solitarii, pedunculati, elongati, interrupte cincinnigeri, tomentelli; cincinni sessiles vel breviter stipitati; bracteæ bracteolæque lanceolato-subulatæ, parvulæ; flores sat magni, sessiles, ex albido flavescentes, sepalis tomentellis: fructus ex ellipsoideo pyriformis, glabratus, stipite quam capsula ipsa pluries breviore; semen ellipsoideum, compressiusculum, arillo dorso ventreque fisso ultra duas tertias indutum.

Rami juniores (thyrsigeri) diametro 2–5 mm., adultiores lenticellis notati. Folia circ. 15 cm. longa, fere totidem lata, inferiora majora; foliola circ. 7 cm. longa, 2.5 cm. lata; petiolus communis 2–6 cm. longus, rhachis brevior vel æquilonga, alis basi vix angustatis utrinque 3–5 mm. latis; stipulæ lineari-lanceolatæ, 7–15 mm. longæ, 2 mm. latæ. Thyrsi 15–30 cm. longi, pedunculo 2–12 cm. longo, glabro; bracteæ circ. 2 mm. longæ, 0.8 mm. latæ. Sepala duo exteriora reliquis tertia parte breviora, interiora late ovata. Petala oblonga, circ. 5 mm. longa, 2 mm. lata; squamæ duas petalorum tertias æquantes, margine villosæ, superiores crista obcordata squamæ dimidiam partem vix æquante appendiceque brevi barbata, inferiores crista aliformi fere recte adscendente instructæ. Tori glandulæ superiores orbiculares, conspicuæ. Staminum filamenta filiformia, compressiuscula, pilosa; antheræ glabræ. Germen e trigono globosum, tomentosum, stylo germen æquante. Fructus circ. 3 cm. longus, 1.6 cm. latus, stipite pilosiusculo 5 mm. longo, ruber. Semen 12 mm. longum, 8 mm. latum.

In Mexico: Palmer n. 1066! (Colima, m. Januario et Februario, 1891, flor., foliis subglabris); idem n. 1187! Manzanillo, m. Decembri, 1890, fruct.)

A Warwa (1868–'71) in hortis insulæ Hawaicæ Honolulu lecta exstat in Hb. Vindobonensi, ut et *Paullinia tomentosa* Jacq.

Obs. Affinis *Paullinia clarigeræ* Schlecht. Linnaea X. 239 (1836) (Sect. i, *Neurotachus;* cf Radlk. in Durand Ind. p. 72) a qua differt floribus majoribus sessilibus, capsula brevius stipitata, petiolis latius alatis.

Paullinia tomentosa Jacq. Enum. Pl. Carib. 37 (1760), fide Prof. Radlkofer. A shrub climbing over trees, with slender branches 10 to 20 feet long. Flowers white. Colima, January 9 to February 6, 1891. No. 1248.

Sapindus saponaria L. Sp. Pl. ed. 2. i. 526 (1762), *fide* Prof. Radlkofer. A small tree, 12 feet high, 3 to 5 inches in diameter, with a large compact top. In a creek bottom. Manzanillo, March 2 to 18, 1891. No. 1370.

Prof. Radlkofer writes me that it approaches the forms described as species under the names *S. inequalis* and *S. diviricatus*.

Matayba scrobiculata (H. B. K.) Radlk. Sitzungsber. K. Bayer. Akad. Bd. ix. 627 (1879); *Cupania scrobiculata* H. B. K. Nov. Gen. et Spec. v. 127 (1821), *fide* Prof. Radlkofer. A tree 25 feet high with a compact top: leaves alternate, pinnate; leaflets 2 to 3 pairs, oblanceolate, cuneate at base, retuse, 3 to 5 inches long, glabrous above and beneath, strongly veined: panicle terminal and large: sepals 5, obtuse: petals 5: stamens 8, long exserted: ovary pubescent, 3-celled: style none. In woods about Manzanillo, March 2 to 18, 1891. No. 1339.

Dr. Palmer states that the flowers are of a greenish-yellow and sweet-scented.

ANACARDIACEÆ.

Veatchia discolor (Benth.) Brandegee, Proc. Cal. Acad. ser. 2. ii. 140 (1889); *Schinus (?) discolor* Benth. Bot. Voy. Sulph. 11, t. 9 (1844); *Rhus veatchiana* Kell. Proc. Cal. Acad. ii. 24 (1863); *Veatchia cedrosensis* Gray, Bull. Cal. Acad. i. 4 (1886); *Bursera pubescens* Watson, Proc. Amer. Acad. xxiv. 44 (1887). Dr. Palmer obtained flowering specimens of this at Angeles Bay in July, 1891. This is the same plant he collected here in 1887 (No. 585) which was only in foliage. It is called "Torate blanco." The bark is shipped to Europe and has valuable dye and tanning properties.

Spondias purpurea L. Sp. Pl. ed. 2. i. 613 (1762). Small tree, 8 to 15 feet high, sometimes 10 inches in diameter: flowers red. Manzanillo, December 1 to 31, 1891. No. 998.

Leaflets sometimes more numerous than described. Called "Ciruelo." The fruit is bitter, not edible; is said to be red when ripe.

Comocladia dentata Jacq. Enum. Pl. Carib. 12 (1760). Several stems, spreading from the base, 8 feet long: leaflets 6 to 7 pairs, oblong or the lower ones oval, obtuse, slightly and remotely toothed: sepals obtuse, pubescent: petals thinnish. Manzanillo, March 2 to 18, 1891. No. 1393.

My specimens differ from the above species in having the sepals pubescent and petals thinner.

This species belongs to the West Indian Islands, and has not before been reported from Mexico; it is curious that it should now be obtained from western Mexico.

CORIARIACEÆ.

Rourea glabra H. B. K. Nov. Gen. et Spec. vii. 41 (1825). High climbing shrub. Only in fruit. Manzanillo, March 2 to 18, 1891. No. 1349.

LEGUMINOSÆ.

Crotalaria longirostrata Hook. & Arn. Bot. Beech. Voy. 285 (1836–'40). About 5 feet high, younger parts puberulent. Common in bottoms and on hills. Colima. January 9 to February 6, 1891. No. 1139.

Although I have not seen this species, yet this plant is probably rightly referred. Most of the upper leaflets are small (one-half inch long) as described, yet they are often 1½ inches long. Dr. Palmer writes of it as follows: "One of the most attractive of plants. It is upright and with a compact symmetrical top. It is a free bloomer and the flowers are a beautiful yellow with brown patches, and it is worthy of cultivation."

In 1891 I sent seed to Kew where it was planted and proves to be a most promising plant. Sir Joseph Hooker has recently figured and redescribed it in Curtis's Botanical Magazine (vol. xlix. pl. 7306).

The following note is taken from the above article:

"A very handsome greenhouse plant described as suffruticose, but, though copiously branched, harbaceous as grown in the Royal Gardens, where it forms a conspicuous winter feature in the Begonia house, flowering freely from December to March and attaining a yard in height. It was discovered by the late Dr. Sinclair, surgeon in H. M. *Blossom*, during the surveying voyage of Capt. Beechey, at Acapulco on the west coast of Mexico, and also in the province of Jalisco by other officers of the ship, and on the Volcano de Fuego in Guatemala, altitude 5,300 feet, by Mr. Salvin, F. R. S., and at Mazatenango, by Bernoulli."

The Garden, in its issue of March 25, 1893, contains the following note respecting this plant:

"*Crotalaria longirostrata* may be seen in bloom in the stove at Kew. It is a thoroughly useful plant for flowering in the winter months, and the specimen there has kept up a gay display for over two months, notwithstanding the fogs, which are peculiarly trying to stove subjects. This species is still in full bloom, bearing at the ends of the long slender shoots clusters of large, bright yellow pea-shaped flowers, which make a great show of color in the winter season. It is easily propagated by cuttings, and all who wish for something distinct and attractive in their stoves during the so-called dark months of the year, should make good note of it."

Crotalaria sp. Manzanillo, December 1 to 31, 1890. No. 979; and Colima, January 9, to February 6, 1891. No. 1203.

Crotalaria sp. Manzanillo, December 1 to 31, 1890. No. 995.

Crotalaria sp. On level places about the lagoon. Manzanillo, December 1 to 31, 1890. No. 979.

Apoplanesia paniculata Presl, Sym. Bot. i. 64, t. 41 (1831). Diffuse shrub, 12 feet high, 3 inches in diameter, with a large top: flowers white. On the low land between the lagoon and the mountains. Manzanillo, December 1 to 31, 1890, No. 967. December 30, 1891. No. 1810.

A few specimens with leaves only were collected with ***Coursetia glandulosa.*** Manzanillo, March 2 to 18, 1890. No. 1373a.

This shrub is called by the Mexicans "Cacanaquasle," and is used by them for covering their huts. The bark is said to yield a good dye.

This species is not in the National Herbarium, and has apparently been collected only once or twice.

Dalea diffusa Moric. Pl. Nov. Amer. 8, t. 6 (1833). Very common along ridges and river banks. Colima, January 9 to February 6, 1891. No. 1189.

This plant is largely sold in the market for brooms.

Dalea sp. Colima, February 27 and 28, 1891. No. 1312.

Dalea sp. Manzanillo, December 1 to 31, 1890. No. 933.

Indigofera sp. Manzanillo, December 1 to 31, 1890. No. 957.

Indigofera anil L. Mant. ii. 292 (1771). Manzanillo, December 1 to 31, 1890. No. 1057.

Tephrosia multifolia Rose, sp. nov. Somewhat bushy, several feet high, pubescent: leaves impari-pinnate; leaflets 10 to 15 pairs, narrowly oblong, 1 to 2 inches long, rounded at base, obtuse or retuse, appendiculate, green and appressed-pubescent above, paler and more pubescent beneath; stipules linear, caducous: racemes axillary or terminal, 4 to 8 inches long: pedicels 2 to 3 lines long: sepal triangular, acuminate, 2 lines long: corolla purplish; standard orbicular, 6 to 7 lines long; wings oblong: stamens 10, monadelphous above: style hairy: legume silky-pubescent, linear, 2 to 2½ inches long, about 10-seeded: seeds oblong, 2 lines broad, turgid.—Collected in a creek bottom. Manzanillo, March 2 to 18, 1891. No. 1364.

Seemingly near *T. schiedeana.*

Gliricidia maculata H.B.K. Nov. Gen. et Spec. vi. 393 (1823). A small tree, 15 to 25 feet high, 1 foot in diameter: flowers white in bud, but pink when expanded. Armeria, February 15. 1891. No. 1279.

Dr. Palmer says he saw this species at Colima also. It is a very profuse bloomer and the flowers last for two months. The leaves appear after the flowers are gone.

Diphysa sennoides Benth. Kjoeb. Vidensk. Meddel. 1853. 12 (1854). Large shrub, 5 to 20 feet high, 4 inches in diameter, with spreading top; branches slender, often hanging: not seen in flower. Manzanillo, December 1 to 31, 1890. No. 890.

The pods are shorter than in Palmer's (1887) plant from Guaymas.

Diphysa racemosa Rose, Contr. Nat. Herb. i. 97 (1891). A shrub, 10 to 12 feet high: leaflets 1 inch long or less, obtuse: flowers yellow: banner with a brown spot. Colima, February 27 and 28, 1891. No. 1319. Certainly near this species but with large leaflets.

Coursetia glandulosa Gray, Proc. Amer. Acad. v. 156 (1862). Large diffuse shrub, 10 feet high. Manzanillo, March 2 to 18, 1891. No. 1373.

Coursetia mollis Robinson & Greenman, Proc. Amer. Acad. xxix. 384 (1894). Shrub (?), very pubescent, often glandular throughout: leaves oddly pinnate; leaflets 10 to 15 pairs, oblong, obtuse, 6 to 9 lines long, silky-pubescent on both sides; stipules stout spines 2 to 3 lines long: racemes axillary, single or in pairs, erect, many-flowered, 3 to 6 inches long: calyx campanulate; sepals 5, triangular, acuminate, the lower a little longer than the 2 upper, 3 lines long: flowers "light yellow" but drying purplish: vexillary stamen free, the other 9 connate into a tube, oblique: style inflexed, hairy: legume 2½ to 3 inches long, pubes-

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Desmodium scorpiurus (Swartz) Desv. Journ. Bot. Ser. 2. i. 122 (1813); *Hedysarum scorpinus* Swartz, Prod. Veg. Ind. Occ. 107 (1788). A very variable species as to the leaves. The form found at Colima has the typical oblong leaflets, but the specimens from Armeria have linear leaflets. Colima, January 9 to February 6, 1891, No. 1101; also February 27, 1891, No. 1101a. The specimens collected at Armeria were obtained on the dry table-lands. February 15, 1891. No. 1276.

Desmodium triflorum (L) DC. Prod. ii. 334 (1825); *Hedysarum triflorum* L. Sp. Pl. ii. 749 (1753). A prostrate herb. In shade along a creek bottom. Colima, January 9 to February 6, 1891. No. 1128.

Desmodium sp. A small plant growing in the shade. Colima, January 9 to February 6, 1891. No. 1103.

We have nothing in the National Herbarium to match this plant.

Desmodium sp. Two specimens just past flowering. In wet ground. Manzanillo, December 1 to 31, 1890. No. 928.

Erythrina coralloides DC. Prod. ii. 413 (1825). A small tree, 10 feet high. Agiabampo, October 3 to 15, 1890. No. 771.

Commonly called "Pioneo." The seeds are pulverized and used in making a kind of poultice.

Calopogonium cæruleum (Benth.) Hemsl. Biol. Cent.-Amer. i. 301 (1880); *Stenolobium cæruleum* Benth. Ann. Wien. Mus. ii. 125 (1837). A high climber. Common along watercourses. Colima, January 9 to February 6, 1891. No. 1108.

Canavalia obtusifolia (Lam.) DC. Prod. ii. 404 (1825); *Dolichos obtusifolia* Lam. Encyc. ii. 295 (1786). Growing very abundantly in the sand along the seacoast. Manzanillo, December 1 to 31, 1890. No. 1024.

Only the pods were obtained.

Canavalia acuminata Rose, sp. nov. A climbing shrub, glabrous or early glabrate: leaflets 3, oblique-oval or -ovate, rounded at base, acuminate but tip truncate or appendiculate, glabrous on both sides, 2 to 4 inches long: racemes axillary, nodose, 3 to 7 inches long: flowers large: calyx tube 5 to 6 lines long, with very short lobes; upper lobe 2-parted, very large, rounded; lower lobe 3-parted, minute: corolla large; banner orbicular, obtuse, with short claw, 12 to 14 lines long, yellow; wings linear, 10 lines long including the claw (2 to 3 lines long); keel oblique-oblong, 14 lines long, "cream color," slightly twisted at the tip: ovary and young legumes silvery-pubescent: mature legumes straight, oblong, 6 to 8 inches long, strongly 2-ribbed on side of each valve: seeds brownish-black, oval, 6 lines in diameter.—In various parts of the mountains about Manzanillo, December 1 to 31, 1890. No. 1036.

This plant climbs over the highest bushes. The buds are said to be steel-colored.

Phaseolus (Drepanospron) sp. Colima, January 9 to February 6, 1891. No. 1116.

Phaseolus (?) sp. Only a single specimen collected and this in fruit. Manzanillo, March 2 to 18, 1891. No. 1365.

Phaseolus (?) sp. Manzanillo, December 1 to 31, 1890. No. 904.

Rhynchosia phaseoloides (Swartz) DC. Prod. ii. 385 (1825); *Glycine phaseoloides* Swartz, Prod. Veg. Ind. Occ. 105 (1788). Colima, January 9 to February 6, 1891. No. 1216.

Rhynchosia minima (L.) DC. Prod. ii. 385 (1825); *Dolichos minimus* L. Sp. Pl. ii. 726 (1753). Common in rich bottom lands. Agiabampo, October 3 to 15, 1890. No. 789.

Lonchocarpus (Neuroscapha) palmeri Rose, sp. nov. A tree 20 to 30 feet high, 6 to 12 inches in diameter: leaves large, alternate, with 7 to 13 leaflets; leaflets opposite, oval or oblong, rounded at base, rarely cuneate, obtuse or sometimes acuminate, shining and a little pubescent above, soft-pubescent and strongly veined beneath, 2 to 5 inches long: lower pedicels 2-flowered; bracts oval, obtuse, deciduous; calyx 1½ lines long, cup-shaped, truncate or with small teeth:

corolla 6 lines long; the standard greenish-yellow, densely silvery-pubescent, as broad as long, retuse, and with callous appendages; wings and keel "light mauve" or purplish, somewhat pubescent, slightly adhering (as in this genus), each on a claw 2½ lines long: ovary and legume pubescent: legume 2 to 3 inches long, several seeded, somewhat thickened on the ventral side by a ridge on each side near the margin: seeds brown, kidney-shaped, 4 lines broad.—Manzanillo, December 1 to 31, 1890. No. 1021.

This tree has a large spreading top; its numerous clusters of flowers are very attractive.

This species seems nearest *L. sericeus*, but differs in its larger obtuse and strongly veined leaves, longer raceme and larger flowers.

Lonchocarpus (?) sp. A small tree, 15 feet high, 8 inches in diameter, with large spreading top: leaflets 9 to 13, oblong or oval, 1 to 2 inches long, obtuse, glabrous and shining above, rusty-pubescent beneath, with veins impressed above, strongly elevated beneath: racemes 3 to 6 inches long: legumes densely brownish-tomentose, elliptical or rarely oblong, slightly tapering at the base, 2½ to 3 inches (rarely 4 inches) long, indehiscent, 1- (rarely 2-) seeded. At the base of the mountains. Manzanillo, December 1 to 31, 1890. No. 984.

The seeds are sometimes eaten by birds, but with poisonous effects.

This species certainly comes near *L. rugosus* and answers Bentham's description very well except in the pods. In the absence of flowers, therefore, I have referred it without specific name.

Lonchocarpus sp. A diffuse shrub, 6 to 8 feet high: leaves small, alternate, with 5 to 7 leaflets; leaflets opposite, oval, obtuse or retuse, thin, 6 to 15 lines long, glabrous above, villose-pubescent beneath: racemes 2 to 3 inches long: calyx cup-shaped, truncate, brownish-pubescent, 1 line long: corolla purplish; banner broader than long, 4 lines long, 5 lines broad, retuse: style glabrous: ovary pubescent: legume not seen. In rocky places near the base of the mountains. Manzanillo, March 2 to 18, 1891. No. 1379.

Swartzia grandiflora Willd. Sp. Pl. ii. 1220 (1799). A small tree, 15 feet high and about 3 inches in diameter. A single tree seen along the trail near the base of the mountains. Manzanillo, December 1 to 31, 1890. No. 1005.

Cæsalpinia bonducella (L.) Fleming, in As. Res. xi. 159 (1810); *Guilandina bonducella* L. Sp. Pl. ed. 2. i. 545 (1762). Three to four feet high. Only along the sandy beach just above high tide. Manzanillo, December 1 to 31, 1890. No. 1015.

Cæsalpinia cacalaco Humb. & Bonp. Pl. Æq. ii. 173 [Fr. ed. 165], t. 137 (1809). A shrub 6 feet high. Only a single plant found in the low lands near the lagoon. Manzanillo, December 1 to 31, 1890. No. 997.

The lower sepal has a lacerate margin, and in this differs from Humboldt and Bonpland's figure.

Cæsalpinia eriostachys Benth. Bot. Voy. Sulph. 88 (1844). A small tree, 15 to 20 feet high, 8 inches in diameter, with large symmetrical top: leaves 4 to 6 inches long with small glabrous leaflets: racemes often 9 inches long: legumes glabrous, 3 to 9 inches long, 9 to 10 lines broad, falcate or straight, sharply pointed, tardily dehiscent. Colima, February 27, 1891. No. 1309. Manzanillo, March 2 to 18, 1891. Letter E.

This plant is called "Palo alejo." The bark is used by fishermen, who crush it and throw it into the water to stun fish.

Apparently very common on mountain sides both at Colima and Manzanillo. Its published range is now extended much farther northward. According to Mr. Hemsley it has been collected three or four times before, but not north of the Central American States.

Mr. Bentham did not have mature legumes for his description, and hence I have carefully characterized them above, as well as filled in some dimensions

not given before, and added some variations not found in the original description. This species is very different from our other Mexican specimens in its oblique leaflets and glandular stamens.

Cæsalpinia (Coulteria) platyloba Watson, Proc. Amer. Acad. xxi. 425 (1886). A shrub, 8 feet high, glabrous: leaves twice pinnate; pinnæ 2 to 4 pairs; leaflets 6 to 9 pairs, oblong, acute, 1 to 2 inches long, glabrous: racemes axillary, 3 to 4 inches long: lower sepal pectinate-fimbriate: petals yellow: stamens hairy at base, about the length of the petals: pods indehiscent, glabrous, 3 to 6 inches long, 10 to 15 lines broad. Along the sandy beach a few feet above tide water. Manzanillo, December 1 to 31, 1890. No. 1010 (in fruit); March 2 to 18, 1891. Letter K (in flower).

This seems to be the plant that Dr. Watson referred as above while questioning its generic position. My plant differs in several minor details, and especially in the length of the pods. Flowering specimens are now for the first time collected and show clearly that the plant belongs to this genus and to the section *Coulteria*. The specimens ought to be compared with the South American species *C. tinctoria*, to which it is certainly closely related. Here, perhaps, may be referred Coulter's No. 873 from Zimipan, cited by Mr. Hemsley in Biol. Cent.-Amer. vol. i.

Cæsalpinia (Pomaria) sp. Shrub, 15 feet high, loosely branching: leaves 2-pinnate; pinnæ 2 to 4 pairs; leaflets, 2 to 3 pairs, oblong or oval, obtuse, unequal at base, glabrous, strongly veined, 6 to 18 lines long: racemes terminal and axillary, 5 to 10 inches long; pedicels 4 to 5 lines long: sepals 5, puberulent, strongly imbricated, obtuse, 4 about equal, the fifth exterior and longer: petals 5, yellow, covered more or less with short stipitate glands, 4 to 5 lines long: stamens 10, woolly at base, a little longer than the corolla: legume falcate, narrowed downward, 2 inches long, densely covered with stipitate glands, 3- to 4-seeded: seed 4 lines broad. Manzanillo, March 2 to 18, 1891. No. 1397.

This species resembles *C. palmeri* in its legumes, but in foliage approaches *C. mexicana*.

Dr. Palmer also collected a form closely related to this from Colima, but with larger, straight pods, less tapering at base, leaflets smaller and often 4 pairs, etc. Letter F.

Cæsalpinia* sp. A large bush on hills and in bottoms. Agiabampo, October 3 to 18, 1890. No. 796.

Probably *C. platyloba*, but not collected in flower; the few pods are immature.

Cæsalpinia (Libidibia) sp. Small tree, 15 to 20 feet high: leaves 2-pinnate; pinnæ 4 to 6 pairs; leaflets 3 to 5 pairs, glabrous, oval to obovate, obtuse or retuse, 9 to 18 lines long: raceme terminal, 6 to 12 inches long, puberulent (as also the young branches and rachis of the leaves), many-flowered: sepals 5, obtuse and with entire margins; the lower sepals larger, exterior and strongly concaved: petals 5, "outer ones yellow, inner ones red," 4 about equal, oblong, 5 lines long; upper one smaller, orbicular: stamens about the length of the petals, very woolly: ovary silky-pubescent: legumes slender, 4 to 7 inches long, torulose, indehiscent, many-seeded. Armeria, February 15, 1891. No. 1289.

A handsome tree, 6 inches in diameter at base, with large symmetrical top. Called "Palo fierro."

This species is very near *C. cacalaco*, and I see no good reason for keeping it separate. I have not seen any specimens, however, of that species, and there-

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* *Cæsalpinia mexicana* Gray. This is a small bush common about Monterey. Specimens were collected and sent in by Charles K. Dodge, April, 1891; also collected by Eaton and Edwards from the same locality many years before.

Cæsalpinia pulcherrima Swartz. Collected at Vera Cruz, April 12, 1888, by James Shepard.

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what prickly; pinnæ 10 to 12 pairs; leaflets about 30 pairs, linear 3 to 5 line long, glabrous or nearly so; the midrib on one side: spikes mostly paired in th axils of the leaves, 3 to 4 inches long, densely flowered: flowers yellow, sub tended by a small, oval, deciduous bract: calyx nearly truncate, ½ line long petals 5, a line long: stamens as in the genus, 10; authers glandular: ovary glabrous: legume 3 to 5 inches long, 9 lines broad, glabrous, thin, the two valves readily separating when mature: seeds containing albumen.—In various parts of the mountains back from Manzanillo. December 1 to 31, 1890. No. 996.

This species belongs to Bentham's *Eupiptadenia*, and is nearest *P. communis* of South America, but more thorny, with more numerous pinnæ, shorter pods, etc. It differs from the other species of this genus in having albumen in the seed.

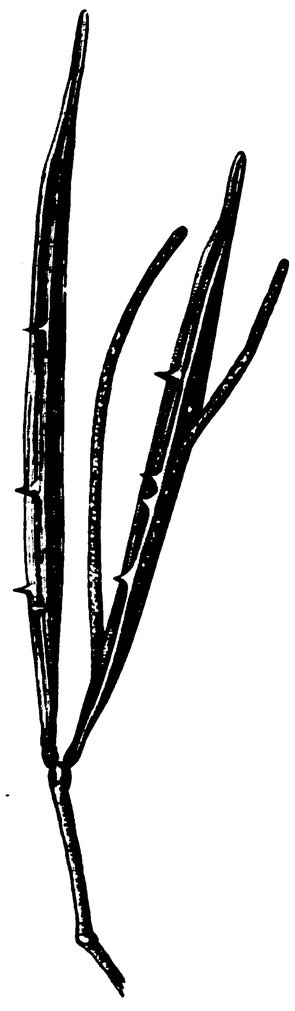

FIG. 5.—Two pods of *Schrankia diffusa*, one of them dehiscing, showing valves, replum, etc.; natural size.

Prosopis juliflora (Swartz) DC. Prod. ii. 447 (1825); *Mimosa juliflora* Swartz, Prod. Veg. Ind. Occ. 85 (1788). A low-spreading shrub, growing at the base of the mountains and about the lagoon. Manzanillo, December 1 to 31, 1890. No. 985.

This plant is called here "Algarroba."

Mimosa asperata L. Sp. Pl. ed. 2. ii. 1507 (1763). Shrub 4 to 5 feet high: leaves very sensitive. Growing in the water near where a creek empties into the lagoon. Manzanillo, March 2 to 18, 1891. No. 1377.

Mimosa distachya (?) Cav. Ic. iii. 48, t. 295 (1794). A small tree, 15 feet high, with large top: leaves with 2 pinnæ; leaflets 3 pairs: pods 1½ inches long, strongly setose. In grassy plains. Armeria, February 15, 1891. No. 1291.

This species could only be collected in poor condition, and only a few leaves and no flowers were obtained. It is referred here, owing to its close resemblance to *M. laxiflora*, from which, however, it differs very much in its pods.

The fruit was not known by Mr. Bentham when he wrote his monograph in Trans. Linn. Soc., and I do not know whether it has ever before been collected.

Mimosa (Sensitiva) manzanilloana Rose, sp. nov. Thorny shrub, 5 feet high, with slender hanging branches, glabrous: leaves twice pinnate; leaflets two pairs (one of the lower leaflets very small or often wanting), 9 to 15 lines long, oblong, acute, glabrous except for the appressed setæ of the margins and under surface: inflorescence in raceme-like clusters of heads, or the lower peduncles subtended by leaves: flowers pink: stamens 4 or 5: legumes 1 inch or more long, puberulent, the margins and sides with few appressed setæ.—Low places near base of the mountains. Manzanillo, December 1 to 31, 1890. No. 905.

The leaves are said to be somewhat sensitive. It is nearest *M. relloziana*, but with smaller heads, different pod, etc.

Mimosa leptocarpa Rose, sp. nov. A large shrub, with many long, slender, hanging branches: young branches and rachis of leaves with many small reflexed prickles: pinnæ 4 to 6 pairs; leaflets 6 to 12 pairs, oblong, 3 to 6 lines long, obtuse, appendiculate, puberulent: flowers capitate, racemose; peduncles 6 lines long: flowers wanting: stamens 5: legumes flat, thin, glabrous, shining, oblong, 3 to 5 inches long, 8 to 10 lines broad; valves not articulated; replum delicate, often bearing

reflexed prickles; stipe 3 to 6 lines long.—Manzanillo, March 2 to 18, 1891. No. 1311.

Schrankia diffusa Rose. sp. nov. A weak plant, with long hanging branches 4 to 6 feet long, with short pubescence and reflexed prickles: leaves sensitive, with 2 to 3 pairs of pinnæ; rachis prickly and pubescent; stipules setaceous; leaflets 10 to 20 pairs, glabrate, linear-oblong, 4 to 5 lines long: peduncles becoming 10 lines long: flowers capitate, pink becoming white: sepals valvate: stamens 10: legume terete, 2 to 4 inches long, more or less beaked, naked or a little prickly.—Very common along the beach, hanging over rocks and low bushes. Manzanillo, December 1 to 31, 1891. No. 1046.

Nearest *S. subinermis*, but with more pinnæ and leaflets, longer legumes, etc.

Leucæna macrophylla Benth. Bot. Voy. Sulph. 90 (1844). A small tree, 12 feet high: peduncle 3 to 6 lines long: pods 8 to 10 inches long, 12 to 15 lines broad on stipes 1 inch long. Along a river bank. Colima, February 27 and 28, 1891, No. 1325.

The specimen is only in fruit.

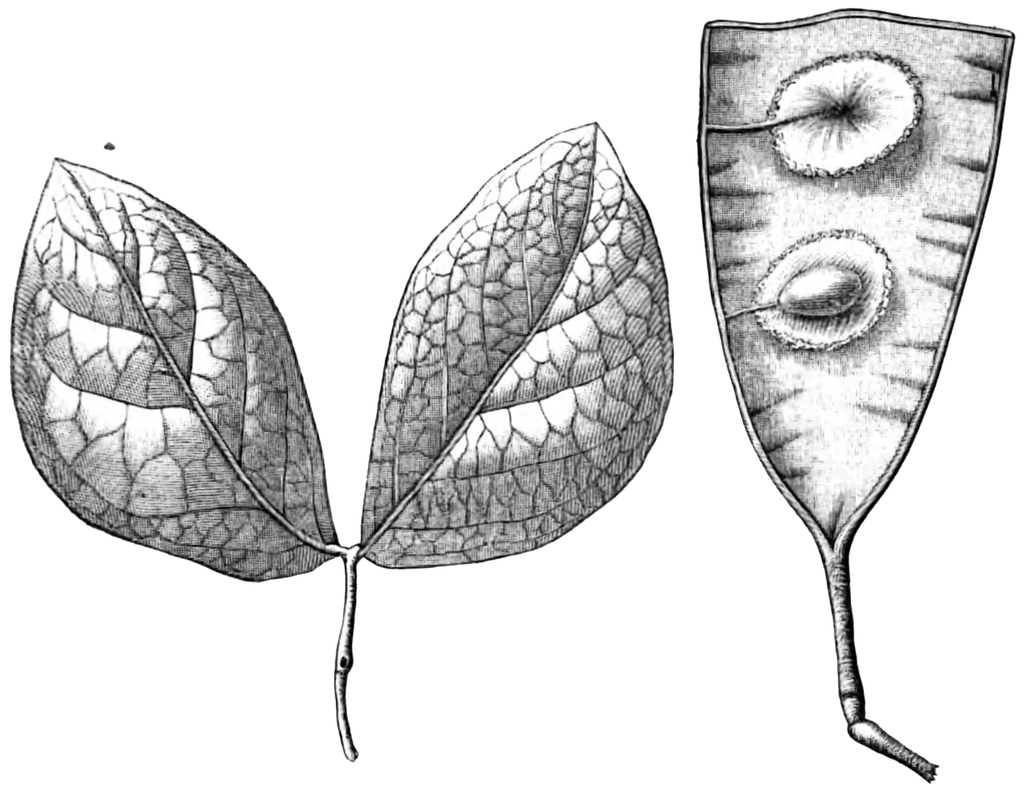

FIG 6.—*Leucæna macrocarpa; a*, the terminal pair of leaflets; *b*, a section of the legume.

This is a rare species and has been poorly understood in this country. This confusion has been due to two factors: First, the absence of the species from all our collections, and, second, because Mr. Bentham referred to it (Trans. Linn. Soc. xxx.) an undescribed species, which proves to be a species of *Albizzia*. I should state here that it is through the kindness of Mr. Hemsley, of Kew, that I have been able to clearly fix upon this as the true *L. macrophylla*.

The pods described above were detached, and while a little longer than the type seem to be the same. They may, however, as suggested by Mr. Hemsley, belong to a different species.

Leucæna macrocarpa Rose, sp. nov. A shrub or small tree, 25 feet high or less, glabrous: leaves twice pinnate; pinnæ 2 to 4 pairs: leaflets large, 2 to 3 pairs, 1½

to 3 inches long, oblong or oval, somewhat oblique, acute, rounded at base, strongly reticulated, a little puberulent beneath: flowers in small, compact heads in terminal naked racemes: legume large, 8 to 10 inches long, 1 to 1¼ inches broad; stipes 9 to 12 lines long. This is *L. macrophylla*, Watson Proc. Amer. Acad. xxii. 409, collected by Palmer at Rio Blanco, State of Jalisco, August 1886 (No. 320). The flowering specimens of No. 320 are made the type of this species. Here undoubtedly belongs Pringle's No. 3848, from the same State, collected in 1891 and distributed under *L. macrophylla*, but the name is corrected in Mr. Pringle's list for 1892. Palmer's No. 981 from Manzanillo (December 1 to 31, 1891) is also referred here, but with less confidence. The specimens are only in fruit and the foliage and legumes are so similar to Mr. Brandegee's *Albizzia occidentalis* that without flowers it is next to impossible to separate the two. Palmer's Jalisco plant, which is undoubtedly a true *Leucæna*, has pods exactly like those from Manzanillo.

Mr. Hemsley has compared these specimens with the type at Kew and decided that it is not the *L. macrophylla* of Bentham. The leaves are in fact much larger than in that species.

Acacia cochliacantha Humb. & Bonp. in Willd. Sp. Pl. iv. 1081 (1805). Sometimes a tree 30 feet high. Manzanillo, March 2 to 18, 1891. Nos. 1353, 1331.

Xantus found it here in 1859 and '60.

Acacia coulteri Benth. in Gray, Pl. Wright. i. 66 (1852). A handsome tree, 20 feet high, 3 to 5 inches in diameter: leaves large, often with 25 pairs of pinnæ: spikes 4 to 5 inches long, in pairs, often forming terminal racemes 10 inches long: flowers sweet-scented: legume with thin valves covered with a close tomentum. Along river bottoms and mountain sides. Colima, January 9 to February 6, 1891. No. 1209.

I have seen flowering specimens only of *A. coulteri*, with which the above compares fairly well. Bentham's description, however, calls for fewer pinnæ, shorter stipes, and glabrous pods.

Acacia spadicigera Cham. & Schlecht. Linnæa, v. 594 (1830). A large tree, a foot in diameter: flowers sweet-scented. Manzanillo, March 2 to 18, 1891. No. 1395.

This is one of the Acacias in which the tree-inhabiting ants live. They nest in the large stipular spines, each pair being inhabited by a colony.

Acacia willardiana Rose, Contr. Nat. Herb. i. 88 (1890); *Prosopis heterophylla* Benth. in Lond. Journ. Bot. v. 82 (1846).

Dr. Palmer has re-collected an abundance of these plants in flower and fruit. Seed has been distributed, and it is hoped that the species will prove valuable in cultivation. Guaymas, April 1 to 2 (in flower) and July, 1891 (in fruit). No. 164a and 164b.

Mr. Brandegee has recently sent me specimens collected at Guaymas, May 12, and at Hermosillo, May 22, 1892.

Acacia sp. Large tree, 30 feet high, 1 foot in diameter. Near the base of the mountains. Manzanillo, March 2 to 18, 1891. No. 1401.

This species is only in fruit. It is near *A. cochliacantha*.

Calliandra coulteri Watson, Proc. Amer. Acad. xvii. 352 (1882). Six to eight feet high. Manzanillo, December 1 to 31, 1890. No. 896.

Calliandra grandiflora (L'Her.) Benth. in Hook. Journ. Bot. ii. 139 (1840); *Mimosa grandiflora L'Her.* Sert. Angl. 30 (1788). Shrub, 8 to 10 feet high. Along river banks. Colima, January 9 to February 6, 1891. No. 1200.

Pithecolobium dulce (Roxb.) Benth. in Hook. Lond. Journ. Bot. iii. 199 (1844); *Mimosa dulcis* Roxb. Corom. Pl. i. 67 t. 99 (1795). Manzanillo, December 1 to 31, 1890, No. 966; also, Agiabampo, October 3 to 15, 1890. No. 800.

Pithecolobium tortum Mart. Herb. Fl. Bras. 114 (1837). A diffuse shrub, 8 to 10 feet high: rachis 2 to 3 inches long, bearing a small gland half way between the base and first pair of pinnæ, and generally between the uppermost pair:

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This species may not be properly referred, but it is certainly near Dr. Palmer's Jalisco plant named *C. corymbosa* by Dr. Watson. The stamens in my flower are 8.

Casearia sp. Diffuse shrub, 6 to 8 feet high: young branches yellowish pubescent: leaves deciduous, alternate, oblanceolate, downy-pubescent, sharply serrate: flowers axillary, large: calyx 5-lobed, pubescent without: stamens 10, ovary 1-celled, with 3 parietal placentæ: style entire. Manzanillo, December 30, 1891. No. 1812.

I have not been able to place this in any described species, and, owing to the present confusion in the genus, I have deemed it best not to give it a specific name.

Mr. Marcus E. Jones has collected what seems to be the same species at Colima (No. 72), July 2, 1892.

TURNERACEÆ.

Turnera diffusa aphrodisiaca (Ward) Urban, Jahrb. Bot. Gard. Berl. ii. 127 (1883); *T. aphrodisiaca* Ward, Va. Med. Month. iii. 48 (1876). Manzanillo, December 1 to 31, 1890. No. 1071.

CUCURBITACEÆ.

Momordica charantia L. Sp. Pl. ii. 1009 (1753). Climber running over bushes. At the foot of the mountains near Manzanillo, December 1 to 31, 1890. No. 1016.

The fruit is eaten by children and birds.

Palmer's No. 59 from La Paz (poor specimens only were obtained) was referred to the above species, p. 70 of this volume, but is probably *M. balsamina*.

Cucurbita radicans. Naud. Ann. Sci. Nat. ser. 5. vi. 8 (1866), *fide* Cogniaux. Manzanillo, December 1 to 31, 1891. No. 1037.

Luffa operculata intermedia Cogn. var. nov. Petiolus ½–1 decim. longus. Folia profunde lobata, lobes lobulatis. Cirrhi sæpius trifidi. Flores feminei breviter pedunculati.—A climber running over fences and bushes. Very common in creek bottoms. Agiabampo, October 3 to 15, 1890. No. 770.

Also found growing about the lagoons at Manzanillo, December 1 to 31, 1890. No. 1018.

Corallocarpus emetocatharticus (Grosourdy) Cogn. Bull. Soc. Bot. Belg. xxx. pt. 1. 279 (1891); *Doyerea emetocathartica* Grosourdy, El Medico Bot. criollo, ii. 388 (1864), *fide* Cogniaux. A vine climbing over small bushes: leaves ovate, somewhat 3-lobed, glabrous or nearly so above, with short dense pubescence beneath: fruit axillary, small, 3-seeded (?). Manzanillo, March 2 to 18, 1891. No 1398.

We have not had this genus represented before in the National Herbarium. The specimen is in very poor condition, without good leaves or flowers.

Cayaponia attenuata (Hook. & Arn.) Cogn. in DC. Monogr. Phan. iii. 769 (1881); *Bryonia attenuata* Hook & Arn. Bot. Beech. Voy. 424 (1841?). Climbing over shrubs along the base of hills. Colima, January 9 to February 6, 1891. No. 1146.

These specimens are only in fruit, and we have not the above species in our collection with which to compare them.

I succeeded in growing some specimens of this little vine in 1892, but they had not flowered when killed by frost in November.

Cyclanthera gracillima Cogn. Mem. Cour. Acad. Belg. xxviii. 71 (1878), *fide* Cogniaux. Colima, January 9 to February 6, 1891. No. 1138.

Sicyos sertuliferus Cogn. Bull. Soc. Bot. Belg. xxx. pt. 1. 277 (1891), *fide* Cogniaux. Vigorous, climber; branches slender, somewhat pubescent: leaves oval, 1½ to 3 inches long, cordate at base, acute or acuminate, somewhat 3-lobed, remotely callose-toothed white-papillose and scabrous above, scabrous beneath; petioles

pubescent, 5 to 10 lines long; tendrils 4- to 5-parted. River bottoms. Colima, January 9 to February 6, 1891. No. 1176.

It runs over fences, bushes, and rocks, forming a very dense mass. Sometimes the sterile flowers are abnormally developed, the pedicels becoming 1 inch long and the petals transformed into small leaves.

CACTACEÆ.

Mamillaria sp. Manzanillo, December 1 to 31, 1890. No. 1053.

Echinocactus wislizenii Engelm. Wisliz. Mem. 96 (1848). Agiabampo, October 3 to 15, 1890. No. 803.

Cereus striatus Brandegee, Zoe, ii. 19 (1891). Roots large and tuberous, resembling those of the dahlia. Agiabampo, October 3 to 15, 1890. No. 794. Also from Carmen Island, November 1 to 7, 1890. No. 852.

Dr. Palmer collected this plant in 1887, but it is not reported in Dr. Watson's list. Roots were sent to the Department in 1887 and were grown for some time in the greenhouse, but finally died.

Dr. Palmer says that the large roots are cut into thin slices and dried, and are in this form found in the markets, having various medical uses.

Cereus sp. Manzanillo, March 2 to 15, 1891. No. 1396.

Opuntia sp. Manzanillo, March 2 to 18, 1891. No. 1380.

FICOIDEÆ.

Mollugo verticillata L. Sp. Pl. i. 89 (1753). Common in sandy places near the lagoon. Manzanillo, December 1 to 31, 1890. No. 970.

Glinus lotoides Loefl. It. Hisp. 145 (1758). Rich bottoms. Manzanillo, March 2 to 18, 1891. No. 1345.

RUBIACEÆ.

Exostemma caribæum (Jacq.) Roem. & Schult. Syst. v. 18 (1819); *Cinchona caribæa* Jacq. Enum. Pl. Carib. 16 (1760). A shrub 8 to 10 feet high. Manzanillo, December 1 to 31, 1890. No. 918.

Rondeletia dubia (?) Hemsl. Diag. Pl. Nov. pt. 2. 28 (1879). Shrub 8 feet high: flowers 4- to 5-parted: calyx-lobes persistent: corolla brownish, glabrous within, unequal, sometimes 3½ lines long. Only a single shrub seen on a river bank. Colima, February 27 and 28, 1891. No. 1311.

I refer this plant here without having seen any specimens of the species, which seems best, although it differs slightly in some of its characters.

Hamelia patens Jacq. Enum. Pl. Carib. 16 (1760); Select. Stirp. Amer. 72 (1763). This species is without number, but is probably from Manzanillo. Letter C.

Hamelia versicolor Gray, Proc. Amer. Acad. xxii. 416 (1887). Fruit black, either 3-or 4-celled. Armeria, February 15, 1891. No. 1277.

Hamelia zorullensis H. B. K. Nov. Gen. et Spec. iii. 414 (1818), *fide* Dr. K. Schumann. Colima, January 9 to February 6, 1891. No. 1164.

Chiococca racemosa. L. Syst. ed. 10. ii. 917 (1759). Manzanillo, December 1 to 31, 1891. No. 1062. Agiabampo, October 3 to 15, 1890. No. 777.

Geophila reniformis (H. B. K.) Don, Prod. Fl. Nep. 136 (1825); *Cephaëlis reniformis* H. B. K. Nov. Gen. et Spec. iii. 377 (1818). Very common in low grounds about Manzanillo, December 1 to 31, 1890. No. 1060.

Diodia prostrata Swartz, Prod. Veg. Ind. Occ. 30 (1788). Not common. Colima, January 9 to February 6, 1891. No. 1106.

We have not the typical form of this species with which to compare this, but our plant seems nearer this species than to *D. teres*, although Mr. Pringle's No. 739 (1883), from Chihuahua seems very near our plant.

Crusea rubra Cham. & Schlecht. Linnæa, v. 165 (1830). Colima, January 9 to February 6, 1891. No. 1194.

This is the same as Palmer's No. 416 from Jalisco, referred as above by Dr. Gray.

In the same collection (No. 462) is a specimen which Dr. Gray referred to *C. calocephala* DC. This was also collected by Pringle in 1890 (No. 3256) from near the same locality. Both the latter specimens seem to differ from specimens distributed by Capt. John Donnell Smith under the name *C. calocephala*. Mr. Smith's specimens have larger and more strongly veined leaves, and larger calyx (3 lines long) and corolla (4 to 5 lines long), the latter blue: Palmer's and Pringle's Jalisco specimens have the calyx 1½ to 2 lines long, the corolla with very slender tube, 2 to 3 lines long, and purple or rose-colored.

I am inclined to think that Mr. Smith's specimens are the true *C. calocephala*, while the latter belongs to an undescribed species.

Spermacoce sp. Low herb, much branched, and more or less spreading, rough on the angles: leaves linear or narrowly lanceolate: flowers white in dense glomerules, 1 terminal and 2 or 3 lateral: calyx teeth 2: corolla 4-parted: stamens 4: fruit pubescent above. On sandy spots about the lagoon. Manzanillo, December 1 to 31, 1890. No. 974.

This species is near *S. podocephala*, but differs in being an annual, in the character of the leaves, etc.

Spermacoce sp. Along the base of the mountains and about the lagoon. Manzanillo, December 1 to 31, 1890. No. 937.

This species is near *S. asperifolia*.

Richardia scabra L. Sp. Pl. i. 330 (1753). Manzanillo, December 1 to 31, 1890. No. 999.

Galium sp. Sold in the market at Colima. No. 1407.

COMPOSITÆ.

Vernonia trifloscculosa H. B. K. Nov. Gen. et Spec. iv. 40 (1820), *fide* O. Hoffmann. Colima, February 27 and 28, 1891. No. 1298.

Elephantopus spicatus Juss. in Aub. Pl. Gui. ii. 808 (1775). Colima, January 9 to February 6, 1891. No. 1184.

Stevia eupatoria (Spreng.) Willd. iii. pt. 3. 1775 (1803); *Mustelia eupatoria* Spreng. Trans. Linn. Soc. vi. 152, t. 13 (1802). Only one plant seen. Colima, January 9 to February 6, 1891. No. 1240.

Stevia trifida Lag. Gen. et Spec. Nov. 27 (1816). Colima, January 9 to February 6, 1891. No. 1158.

Stevia sp. Grows on grassy slopes near the river. Colima, January 9 to February 6, 1891. No. 1219.

Fleischmannia rhodostylis Schultz, Bip. Flora, xxxiii. 417 (1850). Several plants grow together. Flowers rose-colored. Not very common. Found in the shade of rocks, near water. Colima, February 27 and 28, 1891. No. 1295.

This rare plant has only been collected once before and then by Œrsted in 1846–'48, who found it in Nicaragua.

Eupatorium conyzoides Vahl, Sym. Bot. iii. 96 (1794). About 5 feet high, with many spreading or hanging branches: flowers lavender. Common at the base of the mountains. Colima, January 9 to February 6, 1891. No. 1214.

Eupatorium dissectum (Hook. & Arn.) Benth. Bot. Voy. Sulph. 113 (1844); *Phasis (?) dissecta* Hook. & Arn. Bot. Beech. Voy. 433 (1841). Stems and leaves very succulent: peduncles long; flowers white. Manzanillo, March 2 to 18, 1891. No. 1371.

This plant has not only the corolla of *Hofmeisteria*, as stated by Bentham and Hooker in Gen. Plant., but the whole habit, the foliage, the single heads on long

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Egletes viscosa (L.) Less. Syn. Comp. 252 (1832); *Cotula viscosa* L. Sp. Pl. ii. 892 (1753). A low, compact plant, 6 to 8 inches high. Manzanillo, March 2 to 18, 1891. No. 1389.

The range of this species as given by Mr. Hemsley in Biol. Cont.-Amer. is along the Atlantic coast of South Mexico and South America. I cannot learn that it has before been found on the west coast of Mexico. My specimens agree with C. Wright's, from Nicaragua, collected in 1853–56. Here, it seems, should be referred C. Wright's No. 2865, distributed as *E. domingensis*, and Palmer's 1092 of 1878–9, distributed as *Grangea maderaspatana*.

Pringle's No. 4101, distributed as *E. viscida*, seems to be near *E. oborata*.

Erigeron divergens T. & G. Fl. N. Am. ii. 175 (1841), *fide* O. Hoffmann. On banks of streams. Colima, January 9 to February 6, 1891. No. 1236.

Pluchea odorata ? (L.) Cass. Dict. Sc. Nat. xlii. 3 (1826); *Conyza odorata* L. Syst. ed. 10. ii. 1213 (1759). Probably from near Colima. No. 1097a. Leaves thinner and less pubescent than in typical *P. odorata*.

Pluchea subdecurrens Cass. Dict. Sc. Nat. xlii. 4 (1826). Five to six feet high, with few stems: leaves 3 to 6 inches long, the broadest 1½ inches wide. Found along a watercourse among underbrush. Not common. Colima, January 9 to February 6, 1891. No. 1097.

This plant seems to answer to the above species. Very near to it is Palmer's 546 (1880).

Lagascea decipiens (?) Hemsl. Diag. Pl. Nov. pt. 2. 33 (1879). Shrubby, 4 to 6 feet high, glabrous, much branched and open: leaves opposite, ovate, acuminate, 1 to 3 inches long, 3-nerved, slightly dentate, scabrous above and below: heads very numerous, aggregated: involucre 1-flowered, somewhat hirsute, becoming glabrate, 5-toothed: akenes glabrous except a slight puberulence above, 2 lines long; pappus a minute denticulate crown: flowers yellow. In shady woods. Colima, February 27, 1891. No. 1320.

Nearest *L. decipiens*, but the leaves are less dentate, the glomerules and flowers smaller, etc.

Lagascea mollis Cav. Ann. Sci. Nat. vi. 333, t. 44 (1800). Rare about Colima, January 9 to February 6, 1891. No. 1185.

Lagascea suaveolens H. B. K. Nov. Gen. et Spec. iv. 29 (1820). "Flowers dull-white." On grassy hillsides. Colima, January 9 to February 6, 1891. No. 1148.

Guardiola tulocarpus Gray, Pl. Wright. i. 111 (1852); *Tulocarpus mexicana* H. & A. Bot. Beech. Voy. 299 (1840). Bushy, 1½ to 2 feet high. ray 1; disk-flowers 8 or 9. Along river banks. Colima, January 9 to February 6, 1891. No. 1198.

I am somewhat in doubt whether this plant should be referred to G. *mexicana* or as above.

Melampodium perfoliatum (Cav.) H. B. K. Nov. Gen. et Spec. iv. 274 (1820); *Alcina perfoliata* Cav. Ic. i. 11, t. 15 (1791). Along a water ditch. Colima, January 9 to February 6, 1891. No. 1163.

Melampodium sericeum longipes Gray, Proc. Amer. Acad. xxii. 423 (1887). Common on a creek bottom near Colima, January 9 to February 6, 1891. No 1172.

Melampodium divaricatum (Rich.) DC. Prod. v. 520 (1836); *Dysodium divaricatum* Rich. in Pers. Syn. ii. 489 (1807). Common along water ditches. Colima, January 9 to February 6, 1891. No. 1232.

Parthenium hysterophorus L. Sp. Pl. ii. 988 (1753). Manzanillo, December 1 to 31, 1890. No. 921.

Zinnia palmeri Gray, Proc. Amer. Acad xxii. 423 (1887). From 2 inches to 1 foot high, much branched and spreading. Smaller throughout, and apparently of somewhat different habit from the type. Manzanillo, December 1 to 31, 1890. No. 893. Also at Colima, January 9 to February 6, 1891. Letter J.

Jægeria hirta Less. Syn. Comp. 223 (1832). An inch to one foot or more high, spreading or erect. Very common along river bottoms at Colima, January 9 to February 6, 1891. No. 1190.

This is Pringle's No. 1282 (1887) distributed as *J. calva* Schultz Bip. To this genus, and perhaps to the same species (although it is taller and has simpler inflorescence) belongs Botteri's No. 1180, referred by Mr. Hemsley to *Spilanthes uliginosa* Biol. Cent.-Amer. ii. 194; also J. D. Smith's No. 930 distributed as *S. sessilifolia.*

Gymnolomia patens Gray, Proc. Amer. Acad. v. 182 (1861). Often 8 feet high with spreading branches, frequently depending for support upon other plants. It is a very abundant bloomer. Colima, January 9 to February 6, 1891. No. 1223.

Agiabampoa Rose in Hoffmann, Wiss. Beil. z. Jahresb. Fried. Werd. Gym. Berl. p. — (reprint, 20) and Eng. & Prantl, Pflanzenf. iv. abt. 5. 390 (1894). A new genus of *Helianthoideæ.* Heads heterogamous, radiate, few-flowered; ray-flowers sterile, in 1 row; disk-flowers hermaphrodite, fertile. Involucre oblong; bracts in 4 series, broad and obtuse; receptacle very small, almost flat; corolla of ray-flowers without style, spreading, 2-lobed or merely notched: corolla of disk-flowers regular, 5-toothed; proper tube short; throat tubular: stamens entire at base; style-branches short, somewhat flattened, with an ovate, acute tip: akenes a little flattened, cuneate-oblong: pappus none.—Shrubby, much branched: leaves opposite, slender and entire: heads in small compact cymes terminating the branches.

For illustration see Pl. XXXII.

This genus seems to belong to Bentham and Hooker's third section of *Verbesineæ* and near *Varilla,* although it differs from it quite widely.

Mr. Canby in a letter to me points out the close resemblance in habit of this species to *Gymnosperma,* but of course its opposite leaves and bracts on the receptacle keep it distinct from this genus.

Dr. O. Hoffmann, of Berlin, has placed the genus next to *Gymnolomia,* from which it differs in its cylindrical involucre and very unequal bracts.

Agiabampoa congesta Rose, ll. cc. A loose-growing shrub, 4 to 5 feet high, quite woody below with several stems from the base, glabrous or with some hispid pubescence: leaves (uppermost ones often alternate) linear to linear-lanceolate, 3-nerved, a little hispid on both sides, 2 to 6 inches long: heads (sessile or on short pedicels) 3 lines long: involucral bracts 3- to 5-nerved, coriaceous with green tips, oblong and obtuse and with long, oily glands on the back: rays 5, yellow, oval to oval-oblong, 1½ to 2 lines long: disk-corolla 2 lines or less long with a very short proper tube: akenes black, glabrous, 1½ lines long.—Common in rocky creek bottoms. Agiabampo, October 3 to 15, 1891. No. 752.

The bracts are more or less viscid as seems also to be the case with *Varilla.*

Sclerocarpus uniserialis (Hook) B. & H. Gen. Plant. ii. 364 (1873); *Gymnopsis uniserialis* Hook. Ic. Pl. t. 145 (1837). One to one and one half feet high. Only a few plants seen on the mountain side at Manzanillo, December 1 to 31, 1891. No. 975. A spreading or somewhat procumbent form was obtained at Colima, but is without number. Distributed as Letter I.

Montanoa grandiflora DC. Prod. v. 565 (1836). A shrub 10 feet high. Colima, January 9 to February 6, 1891. No. 1159.

Zexmenia greggii Gray, Pl. Wright. i. 113 (1852). Stem 5 to 6 feet high. Along river banks. Colima, January 9 to February 6, 1891. No. 1241.

Zexmenia tequilana Gray in Watson, Proc. Amer. Acad. xxii. 425 (1887). A shrub 10 feet high. On the bank of a creek on the opposite side of bay from Manzanillo, December 1 to 30, 1890. No. 1022.

Tithonia tagetiflora Desf. Ann. Mus. Par. i. 49, t. 4 (1802). About 3 feet high. Only two plants seen in a creek bottom. January 9 to February 6, 1891. No. 1250.

Tithonia tubæformis (Ortega) Cass. Dict. Sc. Nat. xxxv. 278 (1825); *Helianthus tubæformis* Ortega, Hort. Matr. Dec. 181 (1791-1800). About 5 feet high. Grows on the banks of the lagoon. Manzanillo, December 1 to 31, 1890. No. 1076.

In old fields along streams. Colima, January 9 to February 6, 1890. No. 1220.

Viguiera tenuis alba Rose, var. nov. Like the type, but heads and leaves somewhat smaller, bracts of the involucre and receptacle more or less purplish, and rays white.—Grassy hillsides among other plants. Colima, January 9 and February 6, 1891. No. 1151. Nearly past blooming at time of collection.

Viguiera helianthoides H. B. K. Nov. Gen. et Spec. iv. 226, t. 379 (1820). Only a single perfect plant was found, owing to the fact that domestic animals eat it with avidity. Agiabampo, October 3 to 15, 1890. No. 811.

Other specimens were collected at Colima, January 9 to February 6, 1891. No. 1131.

These two forms have been referred to this polymorphous species, although they differ considerably from each other.

Encelia (Simsia) purpurea Rose, sp. nov. Stems 2 to 3 feet high, with spreading branches; younger parts villose-pubescent: leaves ovate, 6 to 18 lines long, acute, truncate or a little cuneate at base, entire or somewhat serrate, appressed-pubescent on both sides, short-petioled: inflorescence somewhat corymbose; peduncles 6 to 18 lines long: heads slender, cylindrical, 3 to 5 lines long; bracts of two lengths, ovate-lanceolate, acute, somewhat hispid, 3- to 5-nerved, more or less purplish: involucral bracts emarginate or short-appendiculate, purplish: rays 5 to 8, 2 to 3 lines long, a little exserted beyond the disk, sterile, slightly 2-toothed, yellow: disk-corolla 2½ lines long, with a very short proper tube (one-fourth line long), a slender cylindrical throat and 5 small teeth: akenes strongly flattened, 2½ lines long, appressed, pubescent: pappus of 2 nearly equal awns a little longer than the akenes.—Only two plants found, these in a creek bottom. Colima, January 9 to February 6, 1891. No. 1105. A peculiar species, resembling *E. exaristata* in the color and shape of the involucral bracts, but of different habit.

Verbesina sphærocephala Gray in Watson, Proc. Amer. Acad. xxii. 428 (1887). Leaves toothed. Bought in the market at Colima, January 9 to February 6, 1891. No. 1404.

Spilanthes alba Willd. Sp. Pl. iii. pt. 3. 1714 (1803). Involucral bracts about 8: rays none: corolla 4-toothed: outer akenes 3-angled; inner ones flat: receptacle high-conical. Grassy plains and river bottoms. Colima, January 9 to February 6, 1891. No. 1192.

This is the *S. alba* of Hemsley's Biol. Cent.-Amer., but differs from the description in the number and shape of the involucral bracts. Fendler's No. 166 from the Isthmus of Panama seems to be the same species. *S. pseudo-acmella* var. of Capt. Wilkes' Exped. (probably from the East Indies) seems very near our plant.

Cosmos sulfureus Cav. Ic. i. 56, t. 79 (1791). About 4 feet high, with a rough pubescence: leaves bi- to tri-pinnatifid, often 12 inches or more long, with rachis and midrib hispid; ultimate pinna, entire or 2- to 3-toothed: peduncles 7 to 10 inches long: bracts of outer involucre 2 lines long, ovate-linear, 3-nerved; inner involucre, twice longer, scarious: rays 6 to 8, oblong; 6 to 9 lines long, 3-toothed, "amber" or deep orange: akenes 8 to 9 lines long, including the long beak, upwardly scabrous and with 2 spreading awns. Not common, and at the time of collection almost past blooming. Colima, January 9 to February 6, 1891. No. 1222.

This species is the same as the one collected by Palmer in Jalisco (1886) and referred as above by Dr. Gray.

I have not seen other specimens of this species, nor have I seen Cavanilles'

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about 1 line long; disk flowers 2: akenes ½ of a line long.—Colima, February 27 and 28, 1891. No. 1299. Also collected by Marcus E. Jones, June 28, 1892, near Armeria. No. 276.

This species is near *F. linearis* and *F. longifolia*; but with different leaves, fewer flowers, etc.

Porophyllum palmeri Rose, sp. nov. Perennial, much branched and open, several feet high, reddish and glabrous throughout: leaves opposite, oblong to broadly linear, 9 to 20 lines long, mostly obtuse, with linear glands along the margin: flowers abundant, in numerous small corymbs: involucral bracts 5, 6 lines long. linear, acute, greenish or with purplish margin, with black glands: corolla tube very slender with 5 equal slender lobes: akenes linear, 3½ lines long: pappus abundant, shorter than the corolla.—Collected in a ravine bottom, in the shade of bushes. Colima, January 9 to February 6, 1891. No. 1142.

For illustration see Pl. XXXIV.

This plant seems nearest *P. jorullense*, but differs in its inflorescence, gland-bearing leaves which are not reticulated, its pappus which is shorter than the corolla, etc.

Dysodia tagetiflora Lag. Gen. et Spec. Nov. 29 (1816). Very common on grassy plains about Colima, January 9 to February 6, 1891. No. 1157.

Tagetes subulata Llav. & Lex. Nov. Veg. Desc. fasc. 1. 31 (1824). Collected on the river bank; also bought in the market under the name "Santa Maria." It has a very strong, disagreeable odor, and is manufactured into an insect powder. Colima, January 9 to February 6, 1891. Nos. 1154 and 1180.

Tagetes tenuifolia Cav. Ic. ii. 54, t. 169 (1793). Common in river bottoms at Colima, February 27 and 28, 1891. No. 1318.

Pectis arenaria Benth. Bot. Voy. Sulph. 110 (1844). Leaves 1 to 2 inches long: akenes 4 lines long. The plant grows in the sand just above high tide at Manzanillo. December 1 to 31, 1890. No. 971.

Pectis coulteri Harvey & Gray, Pl. Fendl. 62 (1849). Very common on sandy plains. Agiabampo, October 3 to 15, 1890. No. 759.

Pectis diffusa Hook. & Arn. Bot. Beech. Voy. 296 (1840). Common by river banks at Colima, January 9 to February 6, 1891. No. 1155.

This seems to be Hooker and Arnott's species. The pappus, which is described as of 10 to 29 setæ, is quite variable. These plants have many akenes with 10 to 14 setæ, but often there are only 3 to 5.

It is the same as Palmer's No. 4 (1886) and Pringle's No. 1814 from Jalisco, both doubtfully referred to the above species.

Pectis palmeri Watson, Proc. Amer. Acad. xxiv. 58 (1889). Very common on rich bottoms near creek. Agiabampo, October 3 to 15, 1890. No. 765.

Pectis prostrata Cav. Ic. iv. 12, t. 324 (1797). Not common. Found near the beach. Manzanillo, December 1 to 31, 1890. No. 910.

Erechthites runcinata (Less.) DC. Prod. vi. 295 (1837); *Senecio runcinata* Less. Linnæa, vi. 410 (1831). A tall, coarse herb with large leaves 1 to 1½ feet long: flowers red. In moist, shady valleys. Colima, January 9 to February 6, 1891. No. 1145.

Dr. Palmer says this plant seems to have some good medical properties and is much used by the medicine venders under the name of "Maguapas."

Cacalia pringlei Watson, Proc. Amer. Acad. xxv. 156 (1890). Stems 6 feet high: flowers white. Collected on the grassy slope of a hill. Colima, January 9 to February 6, 1891. No. 1234.

Trixis obvallata Hook. & Arn. Bot. Beech. Voy. 300, t. 65 (1840). On grassy hills about Colima, January 9 to February 6, 1891. No. 1235. Also from the markets. No. 1406.

Trixis alata Don, Trans. Linn. Soc. xvi. 192 (1833). A bushy plant, 5 to 10 feet high. Near the base of the mountains. Manzanillo, December 1 to 31, 1890. No. 897.

This plant, which is now collected for the second time, was obtained by Seem

and Mocino over a hundred years ago (about 1788), but the station is not mentioned; and it is more than sixty years since Don first published (1833) his description.

Mr. Hemsley writes me that the type is probably in the Delessent Herbarium at Geneva, and that the species was not represented in the Kew Herbarium.

LOBELIACEÆ.

Heterotoma tenella, Turcz. Bull. Soc. Nat. Mosc. xxv. pt. 2. 175 (1852). In moist, shady places among rocks along river bottoms. Colima, January 9 to February 6, 1891. No. 1177. Also good specimens from Mrs. H. L. T. Wolcott, to whom seed had been sent.

PLUMBAGINACEÆ.

Plumbago pulchella Boiss. in DC. Prod. xii. 692 (1848). Common along fences. Colima, January 9 to February 6, 1891. No. 1182.

MYRSINACEÆ.

Jacquinia sp. A small tree, 12 feet high with very large top: leaves spatulate to oblanceolate, sharply pungent, glabrous, 3 inches long: flowers in racemes, orange-colored: fruit 1 inch in diameter. Manzanillo, December 1 to 31, 1891. No. 1014.

Lucuma sp. A small shrub, 10 feet high; young branches pubescent: leaves oblanceolate, tapering into a slender petiole (1 inch or more long), glabrous, obtuse or acutish, shining above; 5 to 8 inches long, 1½ to 2½ inches broad: flowers in clusters of 2 to 4, supra-axillary: peduncles 6 to 7 lines long, pubescent: sepals 5, orbicular, obtuse, imbricated, pubescent without, subequal, 3 lines long: corolla dull white, somewhat tubular, 6 lines long, 5-cleft to the middle or into obtuse lobes, puberulent: stamens and staminodia equally inserted near the top of the tube; stamens included on short filaments about equal to the anthers; staminodia linear, longer than the stamens; ovary pubescent, 5-celled: fruit unknown. Manzanillo, March 2 to 18, 1891. No. 1346.

Very similar to a specimen in the National Herbarium from a plant cultivated in Florida under the name *L. fruticosa*.

SAPOTACEÆ.

Bumelia arborescens Rose, sp. nov. A tree with a wide-spreading top; trunk 1 foot in diameter; branches often bearing short, straight thorns: leaves when young clothed with a close, short, reddish pubescence, in age glabrous and shining, oblong, obtuse, 2 to 3 inches long: flowers very numerous in the axils of the leaves: pedicels 1½ to 2½ lines long: calyx and pedicels ferruginous-pubescent: fruit glabrous. Colima, January 9 to February 6, 1891. No. 1123.

Mr. Hemsley writes that they have not this species in the herbarium at Kew. Perhaps nearest *B. persimilis*.

APOCYNACEÆ.

Rauwolfia heterophylla Roem. & Schult. Syst. iv. 805 (1819). A shrub 5 to 6 feet high. Manzanillo, December 1 to 31, 1890. No. 1030. Armeria, February 27 and 28, 1891. Letter H.

Thevetia cuneifolia (H. B. K.) A. DC. Prod. viii. 344 (1844); *Cerberia cuneifolia* H. B. K. Nov. Gen. et Spec. iii. 224 (1818). A shrub 20 feet high, 6 to 12 inches in diameter, leaves often 5 to 6 inches long: flowers yellow. Manzanillo, December 1 to 31, 1890. No. 1069.

This shrub gives out an abundance of milky juice when cut. The plant has apparently only been collected twice, first by Humboldt in flower and next by

Dr. Palmer, in 1886, in fruit. At Manzanillo the plant was both in flower and fruit. It differs but slightly from the description in H. B. K., Nova Genera et Species Plantarum vol. iii. The leaves are, however, a little longer.

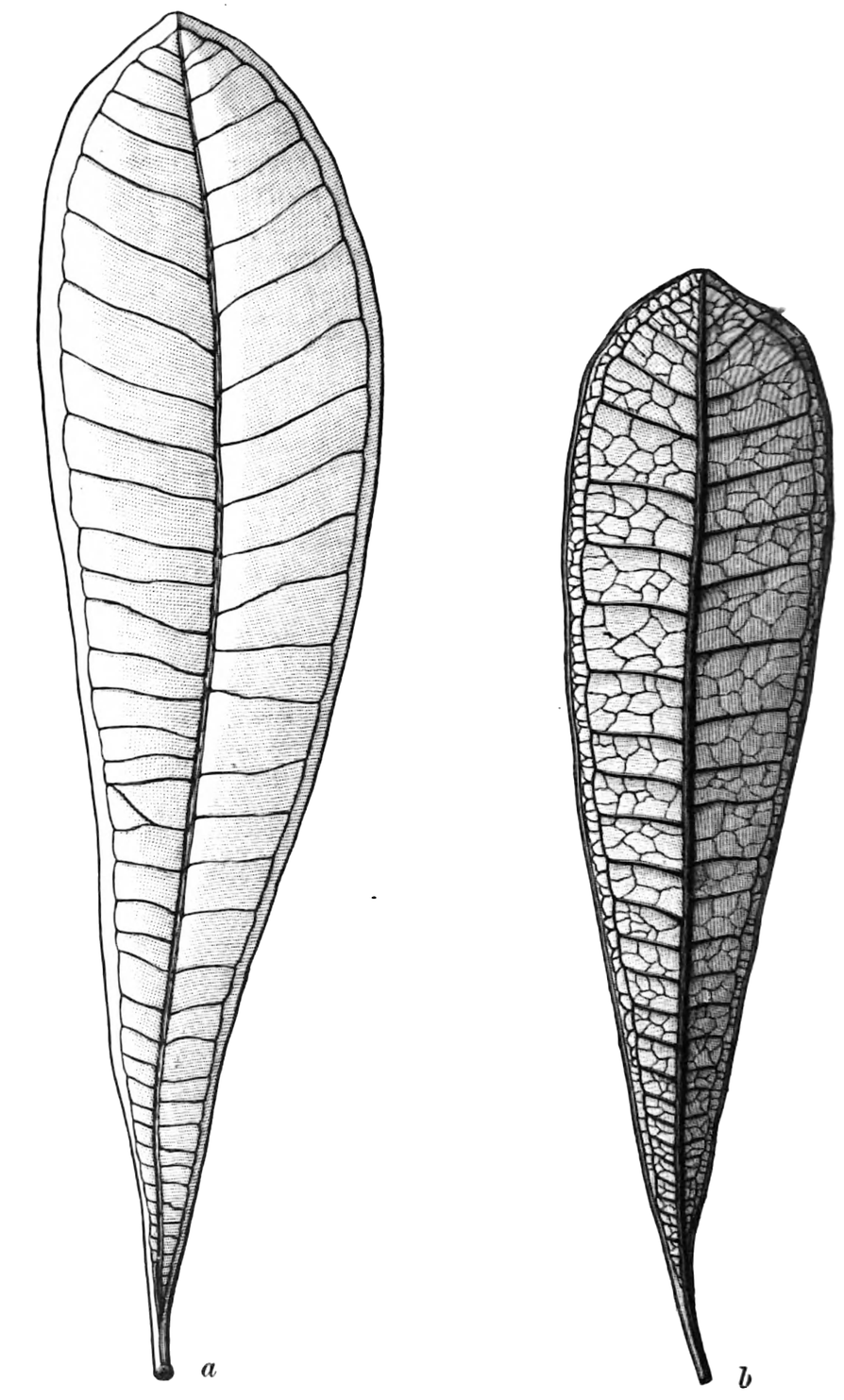

FIG. 7.—*a*, leaf of *Thevetia cuneifolia*, showing upper side; *b*, a smaller leaf, showing lower side; *a* and *b* natural size.

Plumeria sp. A shrub 15 to 20 feet high, 4 inches in diameter. Manzanillo, March 2 to 18, 1891. No. 1394.

This may be *P. mexicana*, but the specimens have neither flowers nor leaves.

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character in the horns. Dr. Gray clearly describes the form as it is in *A. elata* (under *A. glaucescens* Syn. Fl.), where, in speaking of the hood, he says "the whole length within occupied by a broad and thin crest, which is 2-lobed at the summit, the outer lobe broad and rounded, the inner a short triangular-subulate nearly included horn;" in *A. glaucescens* the horn is a broad, triangular, incurved, entire beak.

LOGANIACEÆ.

Spigelia* palmeri Rose, sp. nov. Annual, simple, 4 to 8 inches long, glabrous: leaves opposite (connected by an ovate membranaceous stipule), oblong to oval, acute or obtuse, tapering at base into a short petiole, glabrous, pale beneath, 1 to 3 inches long, 8 to 20 lines broad, spikes 8-to 12-flowered, terminal or axillary: sepals linear, 1½ lines long, shorter than the capsule: corolla white; tube 4 lines long; lobes 4 to 5 lines long: stamens 5: capsule glabrous.—In wet places across the lagoon from Manzanillo, December 1 to 31, 1890. No. 929.

POLEMONIACEÆ.

Lœselia ciliata L. Sp. Pl. ed. 2. ii. 875 (1763). Common along river bottoms. Colima, January 9 to February 6, 1891. No. 1175.

Lœselia coccinea (Cav.) Don, Gen. Syst. iv. 247 (1838); *Hoitzia coccinea* Cav. Ic. iv. 44, t. 365 (1797). In mountain ravines. Colima, February 27 and 28, 1891. No. 1301.

This plant is called "Espincilla," and is used in many places in Mexico as a medicine.

Lœselia glandulosa (Cav.) Don, Gen. Syst. iv. 248 (1838); *Hoitzia glandulosa* Cav. Ic. iv. 45, t. 367 (1797). Collected along streams. Colima, January 9 to February 6, 1891. No. 1152.

HYDROPHYLLACEÆ.

Nama jamaicense L. Sp. Pl. ed. 2. i. 327 (1762). Colima, January 9 to February 6, 1891. No. 1233.

Hydrolea spinosa L. Sp. Pl. ed. 2. i. 328 (1762). A small specimen found at the side of a dry ditch near Colima, February 27 and 28, 1891. No. 1305.

BORAGINACEÆ.

Cordia sp. A tree 25 feet high, about 10 inches in diameter, younger stems whitish: leaves broadly lanceolate to broadly ovate, acute to somewhat acuminate, with truncate or somewhat cuneate base, green and smooth above, whitish and with a short, close pubescence below: flowers very abundant in large open panicles: pedicels short, mostly 1 line long, sometimes 4 lines long: flower-buds globular, opening by a deciduous operculum: calyx short-campanulate, 2 to 3 lines long, whitish pubescent, somewhat 10-ribbed, with small teeth: corolla with short tube scarcely longer than the calyx, limb spreading (10 to 12 lines broad) deeply cut into 5 oblong, obtuse lobes, white (?), marcescent: stamens 5, exserted: style twice 2-parted: drupe ovate-acuminate, 4-celled. A very common tree about Manzanillo and worthy of cultivation. December 1 to 31, 1890. No. 895.

The marcescent corolla seems to ally this species with De Candolle's section *Gerascanthus*. Of all the specimens of *Cordia* which we have seen, it most resembles *C.* (*Varronia*) *alba*.

Cordia alba (Jacq.) Roem. & Schult. Syst. iv. 466 (1819); *Varronia alba* Jacq. Select. Stirp. Amer. p. 41 (1763). Manzanillo, March 2 to 18, 1891. No. 1369.

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*To this genus should be referred *Calophanes palmeri* Gray, Proc. Amer. Acad. xxii. 443, which is probably *S. scabrella* Benth. or near it.

Tournefortia capitata Mart. & Gal. Bull. Acad. Brux. xi., pt. 2, 332 (1844). Colima, January 9 to February 6, 1891. No. 1243.

Tournefortia floribunda H. B. K. Nov. Gen. et Spec. iii. 89 (1818). A high woody climber: flowers greenish yellow. Very common along streams, and at the base of mountains. Colima, January 9 to February 6, 1891. No. 1210. Manzanillo, March 2 to 18, 1891. No. 1359.

This plant almost completely covers the bushes and shrubs over which it runs. Dr. Palmer speaks of a large shrub 15 feet high, with considerable spread of branches, which was entirely hidden by it. I do not find that this plant is reported from Mexico, but it seems to be common there, and as it corresponds fairly well with the description and with a single specimen from Brazil, I have no hesitancy in referring it as above.

Tournefortia hirsutissima (?) L. Sp. Pl. ed. 2. i. 201 (1762). Tall shrubby climber covering the tops of the highest trees with its numerous branches: the small drupes at first dull white and fleshy: in age hard and dry. Manzanillo, December 1 to 31, 1890. No. 1043.

This plant seems to be the same as the one obtained by C. Wright in Nicaragua, and also referred as above. In both of these specimens the leaves are nearly glabrous in age. In De Candolle's Prodromus this species is described as "fruticosa erecta." Also about Colima, January 9 to February 6, 1891. No. 1242. But in these specimens the leaves are very scabrous and more pubescent.

Heliotropium curassavicum L. Sp. Pl. i. 130 (1753). Manzanillo, March 2 to 18, 1891. No. 1343.

Heliotropium phyllostachyum Torr. Bot. Mex. Bound. 137 (1859). Manzanillo, December 1 to 31, 1890. No. 891.

Heliotropium indicum L. Sp. Pl. i. 130 (1753). Manzanillo, December 1 to 31, 1890. No. 953. March 2 to 18, 1891. No. 1378.

Heliotropium inundatum Swartz, Prod. Veg. Ind. Occ. 40 (1788). Colima, January 9 to February 6, 1891. No. 1122. Manzanillo, March 2 to 18, 1891. No. 1361.

Heliotropium parviflorum L. Mant. ii. 201 (1771). Manzanillo, December 1 to 31, 1890. No. 915.

CONVOLVULACEÆ.

Ipomœa (Orthipomœa) wolcottiana Rose, Garden and Forest, vii. 367 (1894). A tree, 30 feet high, sometimes 1 foot in diameter: branches slender, somewhat drooping: leaves ovate to ovate-lanceolate, 3 to 5 inches long, 1½ to 3½ inches broad, rounded or truncate at base, acuminate, glabrous, on petioles 2 to 4 inches long: flowers in numerous short racemes or corymbs mostly naked: pedicels jointed near the base, little if at all thickened upward, 4 to 6 lines long: calyx 5 to 6 lines long, glabrous: sepals nearly equal, oblong or oval, rounded at apex: corolla white, broadly campanulate, 2½ inches broad, with a short thick tube 1 inch long: capsule oblong, 9 lines long, glabrous, 2-valved, 4-seeded, separating into 4 carpels: seeds oblong, 4 lines long with the margins covered with a long reflex coma longer than the seed. Manzanillo, March 2 to 18, 1891. No. 1342.

Dr. Palmer speaks of this as a tree with a large top, hanging branches, and a great profusion of flowers. The flowers generally appear before the leaves, but when both appear together the flowers are found in the axils of the leaves forming short, leafy racemes. It is called "Acote" and the bark is used in the prepation of a tea which is taken for diseases of the kidneys.

Ipomœa bracteata Cav. Ic. v. 51, t. 447 (1799). Agiabampo, October 3 to 15, 1890. Letter D.

Ipomœa nelsoni Rose, sp. nov. Climbing, abundantly hirsute: leaves cordate, with open sinus, obtuse to somewhat acuminate, 1½ to 3 inches long (peduncles mostly shorter, sometimes longer) glabrous or nearly so: peduncles slender, longer than

the leaves, glabrous, 2- to 12-flowered; calyx 1 line long, the lobes oblong-ovate, obtuse; corolla funnel-form, glabrous, 9 to 12 lines long, orange color: stamens included: style included, stigma 2-lobed: capsule glabrous, 2 lines in diameter, 2-celled, 4-ovuled, 2- to 4-seeded.—A great climber over fences and bushes. Very common in the bottom of a creek near where it empties into the lagoon. Manzanillo, March 2 to 18, 1891. No. 1363. Also collected by E. W. Nelson in a deserted field near the town of Tuxtepec, Oaxaca, April 9, 1894. No 318.

For illustration see Pl. xxxv.

This is a very handsome climber and well worthy of cultivation.

I have grown specimens in the greenhouse of the Agricultural Department, as has also Dr. B. L. Robinson at Cambridge. It is a very delicate little vine and its yellow flowers are very attractive.

Near to *I. microsepala* Benth. (Bot. Voy. Sulph. 136), which species I have not seen. Mr. Helmsley writes me, however, that "*I. microsepala* has quite a narrow corolla", and that he also takes Palmer's plant to be new.

Ipomœa pes-capræ Roth, Nov. Pl. Sp. 109 (1821); *Convolvulus pes-capræ* L. Sp. Pl. i. 159 (1753). Manzanillo, December 1 to 31, 1890. No. 1055.

Ipomœa peduncularis Bertol. Fl. Guatem. 8, t. 2 (1840). Colima, January 9 to February 6, 1891. No. 1104.

Ipomœa quinquefolia L. Sp. Pl. i. 162 (1753). Flowers white. Along the banks of a lagoon. Manzanillo, December 1 to 31, 1890. No. 1017. Only a single plant seen.

Ipomœa sidæfolia Choisy, Mem. Soc. Phys. Genev. vi. 459 (1833). A high-climbing plant and an abundant bloomer: flowers white with the tube blotched with purple. Along the side of the river emptying into the lagoon at Manzanillo, December 1 to 31, 1890. No. 1049.

Ipomœa umbellata (L.) G. F. W. Mey. Prim. Fl. Esseq. 99 (1818) not L; *Convolvulus umbellatus* L. Sp. Pl. 155 (1753). Colima, January 9 to February 6, 1891. No. 1099. The flowers, which are yellow, open late in the morning and do not close until late in the day.

Ipomœa sp. Low climber, glabrous: leaves pinnate or pedately 7-parted; segments glabrous, linear to linear-lanceolate, more or less toothed: petioles short: peduncles 1½ to 2 inches long, 1- to 2-flowered; petioles 6 to 12 lines long, much thickened in fruit: sepals imbricate, equal, 5 to 6 lines long, oval to oblong, rounded at apex with a scarious margin: corolla in bud covered with long silky hairs tinged with yellow, wheel-shaped with a slender tube shorter than the calyx: anthers partly exserted and twisted. No. 781.

This species belongs to Choisy's sub-section *Multilobæ* of *Strophipomœa* as laid down in DC. Prod. vol. ix. As considered by others, it would be referred to the section *Operculina;* for although the capsule is not strictly circumscissile, yet it is clearly differentiated into an upper and lower part. A. Peter in Engler and Prantl, Pflanzenf. keeps *Operculina* distinct from *Ipomœa* on account of the capsule, but I do not find that this character holds in the Mexican species. *I. rhodocalyx* Gray has a very different leaf and corolla from my species, but the capsule has very thin valves throughout, irregularly breaking apart.

Ipomœa sp. Trailing or low-climbing plant: leaves palmately parted: corolla purplish. Common on mountain side. Manzanillo, December 1 to 31, 1890. No. 1031.

Ipomœa sp. Low climber: leaves cordate and with a deep sinus: flowers in umbellate clusters: corolla pinkish. At base of mountains. Manzanillo, December 1 to 31, 1890. No. 978.

Ipomœa sp. A low climber. Not common. Agiabampo, October 3 to 15, 1890. No. 774.

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Buchnera mexicana (?) Hemsley, Biol. Cent.-Amer. ii. 457 (1882). **Colima**, January 9 to February 6, 1891. No. 1168.

Specimens found in poor condition, and hence the specific determination is somewhat uncertain.

BIGNONIACEÆ.

Bignonia unguis-cati (?) L. Sp. Pl. ii. 623 (1753). Climbing over small trees and bushes. Manzanillo, December 1 to 31, 1890. No. 1072.

This is doubtfully referred here, as the specimens are without flowers or fruit, but it agrees with C. Wright's specimens from Nicaragua collected on the Ringgold and Rogers Exploring Expedition, 1853-1856.

Tabebuia donnell-smithii Rose, Bot. Gaz. xvii. 418, t. 26 (1892) A tree 50 to 75 feet high, often 4 feet in diameter: leaves palmately compound on long peduncles 5 to 10 inches long; leaflets 7, very variable in size (the largest on petiolules 1 to 3½ inches long), oblong to ovate, acuminate, rounded or truncate at base, serrate, glabrate in age, 2 to 10 inches long, often 3 inches broad: flowers arranged in a large terminal panicle of small cymes, 8 inches long, with short glandular-pubescence throughout: cymes few-flowered, with deciduous scarious bracts; pedicels 6 lines long: calyx closed in bud, deeply cleft and two-lipped in flower, 6 lines long: corolla yellow, tubular, 5-lobed; tube 1 to 1½ inches long: limb 1½ inches broad: stamens 4, included, didynamous; filaments incurved, glabrous except at base; anther cells glabrous, oblong; sterile filament 1½ lines long: ovary sessile: pods 12 inches or more long, 10-ribbed, glandular-pubescent and loculicidally dehiscent: seeds in 2 rows. Common on the mountains about Colima and cultivated about the town. Collected by Capt. John Donnell Smith, at Cuyuta in the department of Escuintla, at an altitude of 200 feet, April, 1890, No. 2070; and, also, by Dr. Edward Palmer, at Colima, January 9 to February 6, 1891. No. 1098.

This is said to be one of the most beautiful trees of Mexico, and is called "Primavera." The flowers are of a beautiful golden yellow, produced in great abundance, and generally appearing before the leaves. The trees are often large, sometimes 4 feet in diameter, and the wood very valuable. The trunks are cut into logs about 12 feet in length and shipped from Manzanillo, in the State of Colima, to the United States, principally to Cincinnati and San Francisco, where they are much used for cabinetwork and veneering. The tree is very common in the lower part of the department of Escuintla; it is tall and slender, usually leafless, and with the profuse delicate yellow flowers standing out against the sky like golden clouds.

The following note is from a letter of J. D. Smith, January 7, 1892: "The trees were too branchless for my servant to climb, too stout for him to fell with his machete, and too high for me to discern what manner of leaves were those which occasionally showed themselves among the flowers. My flowers were all picked up on the ground. I think there must be many trees in those countries of which botanists have not been able easily to collect specimens, and which, therefore, remain unknown."

I have not been able to place in any known species this interesting tree. It seems curious that a tree so widely distributed, of such attractive flowers, and of some commercial importance should have remained unknown to botanists. The species, while not agreeing in all respects with *Tabebuia*, answers better to this than to any other known genus. In its inflorescence and ribbed pods it is more like *Godmannia* and *Cybistax*, but does not agree in other particulars.

Since the above description of this tree was published by me in the Botanical Gazette I have written to several New York dealers in imported woods and learn that they are well acquainted with it. I give two of these letters. Mr. John R. Graham wrote, under date of December 29, 1892:

"Replying to your postal, 'Primavera' or 'white mahogany' are the two names for the same wood, which grows in Mexico. It is used largely in the manufacture of fine furniture and interior decoration. We handle it in the logs and lumber, also veneers. Worth from 12 cents per foot in the log to 15 to 25 cents in lumber."

William E. Uptegrove & Bro. write, under date of December 29, 1892:

"We do handle 'Primavera' or 'white mahogany.' The two names are used for the same wood. The former is correct. It is a native of Mexico. That growing on the west coast is the best. It is used only moderately and costs somewhat higher than 'red' mahogany. We do not consider it a desirable cabinet wood."

A condensed account of the original description is given in Hardwood (vol. iii. 21), by Geo. B. Sudworth.

Prof. C. S. Sargent, in Garden and Forest (vol. VI, p. 12), says:

"In the December issue of The Botanical Gazette there is a figure reproduced from one of Mr. Faxon's drawings of a species of *Tabebuia*, a native of Mexico and Central America, which Prof. Rose, of the Department of Agriculture, describes as a new species, and which he dedicates to Mr. John Donnell Smith, of Baltimore, its discoverer. For the last twelve or fifteen years a handsome, light-colored wood has been imported into the market of San Francisco from the west coast of Mexico, and is said to have been produced by a tree called 'Prima vera.' This wood, of late years, has been quite extensively brought into the Eastern markets under the name of 'white mahogany,' and is now considered here one of the most valuable and useful of all cabinet woods. Its origin has long remained unknown, and although there may be still some doubt as to the identity of white mahogany with the 'Primavera' of Manzanillo, Prof. Rose's note gives the indication of the direction in which further investigations of the origin and source of supply of this wood should be made."

Tecoma stans (L.) Juss. Gen. Plant. 139 (1789); *Bignonia stans* L. Sp. Pl. ed. 2. ii. 871 (1763). Collected in the public square at Guaymas, July 30, 1891.

This plant is commonly cultivated in Mexico for its handsome flowers.

Parmentiera sp. A small tree, 12 feet high with horizontal branches: leaves in fascicles of 2 to 5 subtended by a single spine; leaflets 3, obovate, obtuse, entire or toothed towards the apex; petioles slightly winged, about the length of the leaflets: pods 10 inches long, yellow. In shady woods about Manzanillo, March 2 to 18, 1891. No. 1347.

This species differs certainly from *P. cereifera* and *P. edulis*, which by some are considered the only two species; from the former it differs in its pods, acuminate leaflets and calyx: from the latter, in its pods, etc. Miers considered there were six species; of these it seems nearest to *P. foliolosa*, but differs in being spiny; *P. aculeata* has similar spines, but its leaflets are often simple; in *P. lanceolata* all the leaflets are simple; *P. alata* has very properly been referred to the genus *Crescentia*.

Mr. John Donnell Smith has since written me that he has in his collection two numbers which he considers the same as mine, which he has referred to *P. edulis*.

ACANTHACEÆ.

Calophanes sp. Armeria, February 15, 1891. No. 1274.

Calophanes sp. Compact plant, 2 to 3 feet high: leaves oblong, acuminate, tapering at base into a short petiole, glabrous beneath, slightly scabrous above, 3 to 6 inches long; upper leaves smaller and narrower: flowers axillary or forming leafy spikes: calyx puberulent; tube 2 lines long; lobes unequal, filiform 3 to 4 lines long: corolla violet, puberulent without, 1½ to 1¾ inches long; tube slender; lobes obtuse, equal, spreading: stamens 4, nearly equal, slightly

exserted; anthers 2-celled, obtuse at base: capsule slightly compressed, 5 lines long including the short stipe, cinereous-puberulent: seeds 4 (2 to each cell), much flattened. Armeria, February 15, 1891. No. 1286.

This species has the stamens of *Ruellia*.

A peculiar form growing with the above has short woolly pubescence and bright crimson flowers. No. 1287.

Ruellia albicaulis Bertero, in Spreng. Syst. Veg. ii. 822 (1825). Flowers lilac. A very common plant growing in thick shady woods. Colima, February 27 and 28, 1891. No. 1321.

In this species the ovules are only 2 in each cell and only one in each cell matures. In this respect the species has the character of *Calophanes*. This peculiarity I find holds in J. D. Smith's Guatemala plant as well as in that of C. Wright from Nicaragua.

Ruellia tuberosa L. Sp. Pl. ii. 635 (1753). Along creek bottoms. Agiabampo, October 3 to 15, 1890. No. 757.

Ruellia sp. Flowers lilac color. Among underbrush along a river bank. Colima. February 27, 1891. No. 1313.

Blechum brownei Juss. Ann. Mus. Par. ix. 270 (1807). This is a very common plant about the mouth of the river which enters the lagoon near Manzanillo. It grows in the shade. March 2 to 18. No. 1357.

Justicia mexicana Rose, sp. nov. An upright shrub, sometimes 6 feet high, glabrous or nearly so: leaves short-petioled, ovate, acuminate, glabrous or with some appressed pubescence: flowers few on short axillary branches: bracts 3, linear, 6 lines long: bractlets filiform: calyx deeply 5-cleft, its lobes 3 lines long: corolla scarlet, 1½ inches long, puberulent, deeply bilabiate; upper lip erect, entire or with a slight notch; lower lip spreading, 3-cleft: stamens 2; anthers 2-celled, unequally exserted, the lower one slightly mucronate: capsule 2 lines long, on a stipe of equal length, glabrous, 2-celled, 4-seeded: seeds reddish, glabrous.—In rich bottoms, growing in shade. Agiabampo, October 3 to 15, 1890. No. 788.

This species is near *J. palmeri*, but with more acuminate leaves, narrower bracts, etc.

Justicia paniculata Rose, sp. nov. One or two feet high, much branched, glandular-pubescent and somewhat villose, older parts with whitish bark and glabrate: leaves lanceolate, acute, or slightly acuminate, or lower ones oblong to oval and obtuse, cuneate at base into a short petiole, pubescent beneath, becoming glabrate above: panicles sometimes axillary, 2 to 4 inches long: flowers sessile: bracts and bractlets small, filiform, 1½ lines long: calyx deeply 4-parted into filiform lobes 4 lines long, glandular-pubescent: corolla somewhat swollen, "white, tinted with mauve," 5 to 6 lines long, two-lipped; lower lip 3-lobed, spreading; upper lip erect, rostrate, and bidentate: stamens 2; anther cells 2, oblique, hairy on the back, separated by a broad connective, broader above; lower cells appendiculate or coalescing with the connective: style a little hairy below and also the ovary: capsule 6 to 8 lines long, puberulent, 4-seeded: seeds 1½ lines in diameter with a short, thick pubescence.—Along a river bottom in the shade. Only three plants seen. Colima, January 9 to February 6, 1891. No. 1143.

Dianthera (?) sp. Leaves oblong, 3 to 4 inches long, on short petioles, acute: flowers in long, slender, unilateral spikes: corolla 2-lipped; upper lip entire, lower lip 3-lobed: stamens, 2; filaments broadened; anther cells 2, unequally inserted: capsules 5½ lines long including the slender stipe, acuminate, cells each 2-seeded: seeds very flat, cordate, papillose.—On the mountain sides about Manzanillo, December 1 to 31, 1890. No. 892.

These specimens are in fruit, but from some buds the flower characters were made out. This resembles *Carlowrightia*, but the stamens seem to place it in the above genus.

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tube: filaments hairy below; anther-cells 2, oval, equal, parallel: capsule puberulent, 2 lines long, 4-seeded; placenta separating from the valves: seeds ¼ line in diameter, papillose.—A very common plant growing in the shade. Colima, February 27 and 28, 1891. No. 1297.

I have not seen the little known *T. oralifolium*, but I judge that my plant is clearly distinct. Besides this, the former was collected farther south.

Henrya scorpioides (L.) Nees in DC. Prod. xi. 491 (1847); *Justicia scorpioides* L. Sp. Pl. ed. 2. i. 21 (1762). Low, of spreading habit, 8 to 12 inches high, involucre 3½ lines long: corolla white: capsule 2 to 2½ lines long: seeds ½ line in diameter. Manzanillo, March 2 to 18, 1890. No. 1330a.

Dr. Palmer sends another plant from near the same place, which differs considerably from it in habit. Branches very long and slender, rooting at the joints: leaves more oval, on very long petioles, beneath glabrate; involucre very pilose, less glandular, the appendiculation stronger. In shade at the edge of a lagoon. March 2 to 18, 1891. No. 1330.

Bentham in Botany Sulphur speaks of this genus as being a shrub. Our specimens, while the plants are probably perennial, having a small, indurated root, can not bear the dignity of shrubs.

The restoration of the *Henrya* of Nees supplants the *Henrya* of Hemsley (Journ. Linn. Soc. xxvi. 111), and which that author has recently (Bull. Torr. Club, xix. 97) renamed *Neohenrya*.

Fig. 9.—The corolla of *Barleria micans* split open, showing the stamens.

Barleria micans Nees in Benth. Bot. Voy. Sulph. 146 (1844). One to two feet high: leaves 8 to 10 inches long, narrowly oblong to oblong-lanceolate. A very showy plant. Growing in shade. Colima, January 9 to February 6, 1891. No. 1144.

Dr. Palmer's notes state that the flowers are sulphur-yellow, but this must be a mistake; in the herbarium specimens they area dark violet.

In this species only the 2 anterior stamens are developed, but there are 3 small scaly hairy staminodia at the base of the corolla.

VERBENACEÆ

Lantana camara L. Sp. Pl. ed. 2. ii. 874 (1763). Found only in poor condition. Manzanillo, December 1 to 31, 1890. No. 1059.

The drupes are called "Moro," and are sometimes eaten.

Lantana involucrata L. Amœn. Acad. iv. 319 (1759). Common along river banks. Colima, February 27 and 28, 1891. No. 1303.

Lippia sp. Colima, January 9 to February 6, 1891. No. 1199.

Bouchea dissecta Watson, Proc. Amer. Acad. xxiv. 68 (1889). Agiabampo, October 1 to 15, 1890. Letter B.

Priva echinata Juss. Ann. Mus. Par. vii. 69 (1806). A few specimens obtained from the mountains. Manzanillo, December 1 to 31, 1890. No. 1007, and also No. 1093, which is infested by peculiar gall-insects.

Verbena polystachya H. B. K. Nov. Gen. et Spec. ii. 274 (1817). Very common on grassy plains. Colima, January 9 to February 6, 1891. No. 1156.

Citharexylum sp. Colima, February 27 and 28, 1891. No. 1326.

LABIATÆ.

Hyptis capitata Jacq. Coll. i. 102 (1786). Along river bottoms. Colima, January 9 to February 6, 1891. No. 1174.

Hyptis stellulata Benth. Lab. Gen. et Spec. 129 (1833). Three to five feet high. Along the river bottom. Colima, January 9 to February 6, 1891. No. 1203.

Hyptis pectinata (L.) Poit. Ann. Mus. Par. vii. 474, t. 30 (1806); *Nepeta pectinata* L. Sp. Pl. ed. 2. ii. 799 (1763). Found at the base of the mountains. Manzanillo, December 1 to 31, 1890. No. 993.

Hyptis polystachya H. B. K. Nov. Gen. et Spec. ii. 321 (1817). Colima, January 9 to February 6, 1891. No. 1134.

Hyptis suaveolens (L.) Poit. Ann. Mus. Par. vii. 472, t. 29, f. 2 (1806); *Ballota suaveolens* L. Syst. ed. 10. ii. 1100 (1759). Manzanillo, December 1 to 31, 1890. No. 913.

The seed is called "Chana" at Colima and Manzanillo, but elsewhere it is known as "Chia granda." The "Chia" proper is the fruit of a *Salvia*. This species is collected in considerable quantities and sold in the markets under the above names. With sweetened water it makes a cool, refreshing drink, much used by the sick. The roots are also gathered and used medicinally.

Dracocephalum moldavica L. Sp. Pl. ii. 595 (1753). Flowers white. Colima, January 9 to February 6, 1891. No. 1225.

This is a medical plant much used by the Mexicans and sold in the market at Colima. It is probably cultivated in the gardens, but it was not seen by Dr. Palmer in any of his excursions.

The specimen from southern Mexico, doubtfully referred by Mr. Hemsley to *D. parviflorum*, could hardly be confused with this species.

NYCTAGINACEÆ.

Boerhavia erecta L. Sp. Pl. i. 3 (1753). Common plant growing in sand along the beach and margins of the lagoons. Manzanillo, December 1 to 31, 1890. No. 907.

Boerhavia erecta L. form (?). Stems purplish: "flowers white;" stamens 3. On sandy plains. Agiabampo, October 3 to 15, 1890. No. 758.

Boldoa lanceolata Lag. Gen. et Spec. Nov. 10 (1816). Colima, January 9 to February 6, 1891. No. 1204.

Pisonia aculeata* L. Sp. Pl. ed. 2. ii. 1511 (1763). Colima, January 9 to February 6, 1891. Nos. 1114 and 1115.

Mr. Watson says of it in a letter dated October 23, 1891. "That must be *Pisonia aculeata*. We have seen the same thing essentially from the West Indies and Brazil, and the variety *hirsutissima* is described as having the cymes corymbose-capitate."

Cryptocarpus globosus H. B. K. Nov. Gen. et Spec. ii. 187, t. 123 (1817). Bushy plant, 4 feet high: largest leaves 12 inches long, including the long petioles: flowers dull white, perianth pubescent, with granular and hooked hairs: stamens 3: style lateral. Manzanillo, December 1 to 31, 1890. No. 950.

I have not seen specimens of *C. globosus*. My specimens differ from the description of that species in having only 3 stamens and much larger leaves.

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* *Pisonia aculeata* L. Guaymas, April 1 and 2, 1891. No. 175a. Specimens of this plant are again collected by Dr. Palmer. The following note was sent me by the late Dr. Watson:

"*Cryptocarpus (?) capitatus* Watson [Proc. Amer. Acad. xxiv. 71 (1889)]. Fresh specimens of this doubtfully named species, collected by Dr. Palmer at Guaymas, show it to be a form of the widely-distributed and very variable *Pisonia aculeata*. It does not differ essentially from the var. *hirsutissima* Schmidt. Fl. Bras. xiv. 354, distinguished by its blunt obovate leaves and dense, short-hirsute pubescence. The want of spines (they are few on these specimens also), the unusual form of the leaves, and the presence of only staminate flowers served to effectually disguise Dr. Palmer's original specimens."—S. W.

Celosia (?) monosperma Rose, sp. nov. Shrub, 8 to 16 feet high, glabrous: leaves lanceolate 3 to 6 inches long, acute or shortly acuminate, cuneate at base; panicles terminal large, often 1 foot long, slightly pubescent: bracts and bractlets ovate, acute, ½ line long: segments of the perianth oblong, 1 line long, acute: stamens 5, united at base into a shallow membranaceous cup; anthers 2-celled; intermediate appendages none: styles none: stigmas 2, reflexed, acute: utricle stipitate, ovoid, compressed, circumscissile, shorter than the perianth: ovule 1, suspended from an elongated funiculus: seed pendulous, lenticular, shining; aril none.—Very common on the mountains near Manzanillo, December 1 to 31, 1891. No. 887.

The following note has been sent me by Dr. Hans Schinz in regard to this species:

"I have to thank you very much for having sent me the very interesting *Amarantaceæ*. No doubt your *Celosia monosperma* is a very interesting and puzzling plant, but I also take it for a *Celosia*. Unfortunately, most of the flowers are destroyed by a little beetle, so that I could not make out for sure if the anthers are 2-celled or 1-celled, but as you say in your description that they are 2-celled it *can not* be anything else than a *Celosia*. The *Celosia monosperma* does not stand alone, for the different species that were formerly united under the name *Lagrezia* generally have but one or two seeds."

Celosia moquini Guillem. in DC. Prod. xiii. pt. 2. 239 (1849). An upright plant, 4 to 8 feet high: utricle circumscissile: ovules 2. Along fences in river bottoms. Colima, January 9 to February 6, 1891. No. 1208.

This plant is referred as above, although I have not seen other specimens of the species.

Very little is known of this species. It was probably collected by Bonpland, and is No. 354 of Ghiesbreght. The localities from which these collectors obtained the plant is not known. Perhaps Ghiesbreght obtained his specimens from near this locality. He seems to have visited Colima, although I find very few species of this region credited to him. A type specimen is said to be in Herb. Mus. Paris.

Moquin was uncertain whether the utricle was circumscissile or not. My specimens, while not quite mature, clearly show that the utricle is circumscissile.

Chamissoa altissima (Jacq.) H. B. K. Nov. Gen. et Spec. ii. 197, t. 125 (1817); *Achyranthes altissima* Jacq. Enum. Pl. Carib. 17 (1760). Common along the base of the mountains and near the lagoon. Manzanillo, December 1 to 31, 1890. No. 1023.

Amarantus sp. Sepals 5: stamens 5: stigmas 3. Manzanillo, December 1 to 31, 1890. No. 1000.

This seems to be a common species, but it does not agree with any represented in the National Herbarium.

Acnida cannabina L. Sp. Pl. ii. 1027 (1753). Stems 2 feet high. Grows along the edge of the lagoon. Manzanillo, March 2 to 18, 1891. No. 1399.

Only the staminate form of this species was obtained and it can not be definitely referred here. So far as I can learn, neither this species nor any other *Acnida* has been reported from Mexico.

Achyranthes aspera L. Sp. Pl. i. 204 (1753). Common along the base of the mountain and about the lagoon. Manzanillo, December 1 to 31, 1890. No. 1033.

Telanthera gracilis (?) Moq. in DC. Prod. xiii. pt. 2. 375 (1849). Shrubby, 5 to 8 feet high: leaves lanceolate, long-acuminate, tapering at base into a short petiole, glabrous or nearly so, 3 to 7 inches long, 1 to 2 inches wide: inflorescence irregularly trichotomously branched or in umbellate clusters of 3 to 5 rays: heads small, white, either on short pedicels or in glomerate clusters: calyx 5-parted, 2½ lines long, nerveless, long-pilose on the back; stigmas capitate. Common in the mountains. Manzanillo, December 1 to 31, 1890. No. 886.

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These two species are very similar, but the former may be distinguished from the latter by its larger, thicker, glabrous leaves and sessile fruit.

Antigonon flavescens Watson, Proc. Amer. Acad. xxii. 446 (1887). A very common climber found running over bushes and trees in various parts of the mountains. Manzanillo, December 1 to 31, 1890. No. 980.

ARISTOLOCHIACEÆ.

Aristolochia pardina Duch. Ann. Sci. Nat. ser. 4. ii. 47 (1854). A high-climbing shrub; the woody base ¼ inch in diameter, the bark corky; the herbaceous branches glabrous or a little glaucous (except the margins, petioles, and axils of young leaves, these pubescent): leaves orbicular to broadly ovate with broad cleft, open or closed sinus, 5-nerved, somewhat reticulated, obtuse or retuse: flowers solitary, axillary, on slender peduncles 1½ to 3½ inches long: calyx "old gold, spotted with brown," oval, 4 to 5 lines in diameter; tube 9 lines long, obtuse or acutish; stamens 6; capsule many-seeded, oblong, 15 to 20 lines long: seeds 3 lines long. Colima, January 9 to February 6, 1891. No. 1247.

Very common in shade on hillside and river bottoms, climbing over bushes, trees, and fences.

The leaves are not as large as described by Duchartre.

I have not seen specimens of this species, but it has been collected about Colima by Ghiesbreght and Dugès. The species is only known from this locality. Mr. Hemsley thinks that this is the *Guaco mexicana* Liebm.

PIPERACEÆ.

Piper palmeri C. DC. sp. nov.; foliis modice petiolatis ovato-lanceolatis basi inæquali latere longiore rotundatis breviore subacutis apice acute acuminatis utrinque et subtus densius velutino-pubescentibus haud scabris, nervo centrali nervos adscendentes alternos utrinque 5 mittente, petiolo dense pubescente, basi vaginante, pedunculo petiolum æquante dense retrorsum pubescente, amento limbi dimidium superante in sicco flavescente, rhachi inter baccas fimbriolata, bracteæ pelta triangulari margine in sicco flavida hirsuta pedicello angusto hirsuto, bacca obpyramidato-trigona vertice carnosa puberulaque. In Colima ubi Natico dictum, Januario florens (Palmer n. 1227). Frutex 6 ped. altus ramulis retrorsum pubescentibus amentiferis 2 mm. crassis in sicco virescentibus, ramis glabris ligno duro. Limbi in sicco membranacei pallidi virescentes subopaci haud crebre pellucido-punctulati, ad 15 cm. longi ad. 5½ cm. lati. Petioli ad 1 cm. longi. Amenta apice obtusa, baccifera in sicco ad 4 mm. crassa. Stamina 4 antheris subglobosis parvis caducis. Bacca circiter 1 mm. longa. Stigmata 3 sessilia brevia.

Species *Piper pseudo-fuliginei* C. DC. (in Linnæa) proxima, limbis haud subobovatis nervorum numero minore amentisque haud apice mucronulatis ab eo sat discrepans.

Var. **manzanilloanum** C. DC. var. nov.; ramulis pubescentibus limbis tenuioribus amentis in sicco haud aut minus flavescentibus baccisque paulo minoribus a specie vix distinctum. Manzanillo, December 1 to 31, 1890. No. 1045.

Piper unguiculatum longifolium C. DC. var. nov.; limbis ad 10½ cm. longis baccis densius et longius hirtellis.

In Colima, ubi commune. Palmer n. 1120.

Piper umbellatum L. Sp. Pl. ed. 2. i. 43 (1762). Colima, January 9 to February 6, 1891. No. 1226.

Piper tuberculatum Jacq. Ic. Par. ii. 2, t. 211 (1786–'93). Colima, January 9 to February 6, 1891. No. 1213.

Piper realejoanum C.DC. Linnæa, xxxvii. 345 (1871–'73). Manzanillo, March 2 to 18, 1891. Nos. 1374 and 1332.

LAURACEÆ.

Sassafridium macrophyllum Rose, sp. nov. A diffuse shrub with numerous stems, 15 feet high: leaves alternate, oblong, 6 to 10 inches long, 1 to 3 inches broad, cuneate at base, acuminate, "emerald-green," shining, strongly veined beneath; petioles 3 to 6 lines long: panicles axillary and terminal, 4 to 8 inches long, including the peduncle; pedicels 3 to 5 lines long: flowers white, sweet-scented, 5 to 6 lines in diameter: calyx 6-parted, the outer considerably larger: perfect stamens 9, 4-celled, 4-valved, sessile; the three inner with a pair of glands at base; staminodia 3, capitate.—Very abundant in the wet bottom of a small creek on the opposite side of the bay from Manzanillo, December 1 to 31, 1890. No. 1033.

The only described species is *S. veraguense* from Nicaragua, although there are said to be 2 undescribed species from South America. My species differs from the above in having nearly all the parts much larger, especially the leaves; the latter are also acuminate, with stronger lateral veins, but the veinlets are not so strongly or regularly reticulated.

Meissner, in the original description of the genus (DC. Prod. xv. 171), as well as Benth. and Hook. (Gen. Plant. iii. 160), states that the berry is unknown. Charles Wright, however, collected mature fruit in Nicaragua as long ago as 1853–'56. The berry is oblong, glabrous, 6 to 8 lines long. By some mistake these specimens of Wright's were distributed under the name "*Daphnidium veraguense* Meissn."

Here I am inclined to refer J. N. Rovirosa's Nos. 35 and 15, although they have somewhat smaller leaves, and the No. 35 is said to be a tree 8 to 10 meters high. Rovirosa's specimens are from Tabasco and were collected November 6 and 20, 1887, respectively.

LORANTHACEÆ.

Loranthus sp. A common plant parasitic on *Bumelia*. Colima. January 9 to February 6, 1891. No. 1124.

Phoradendron sp. Manzanillo, December 1 to 31, 1890. No. 982.

EUPHORBIACEÆ.

Pedilanthus sp. Leaves oblong, small, 6 lines long, glabrous: peduncle glabrous: involucre glabrous, crimson, 6 lines long: upper lip small, 2-lobed; spur or appendage slender, 6 lines long: glands 2: glands and pedicels of male flowers glabrous: capsule 1 inch broad, crimson. Abundant in certain places in the rich bottoms. Agiabampo, October 3 to 15, 1890. No. 802.

This species seems near the specimens obtained by Dr. Palmer at Los Angeles Bay in 1887 and referred to *P. macrocarpa* by Mr. Watson. It seems very distinct, however, from that species.

Pedilanthus sp. Shrub, 2 to 3 feet high, glabrous: leaves thick and "leathery" glabrous, oblong to obovate, 3 to 5 inches long, peduncle pubescent: involucre very oblique, puberulent along the margins; 6 lines long: upper lip small, 2-lobed: perianth of 3 squamellæ: spur or appendage very short and obtuse: glands 3 or 4: stamens numerous; pedicels and filament glabrous. Colima, February 27 and 28, 1891. No. 1328.

Euphorbia californica Benth. Bot. Voy. Sulph. 49, t. 23B (1844). A tree-like shrub with trunk 6 feet high and with a very large top. Agiabampo, October 3 to 15, 1890. No. 756.

As first suggested by Mr. Watson, this species seems to include *E. hindsiana*, and with it also I am inclined to place the more recent species *E. comonduana* Millsp.

As the species is now construed its range extends in Mexico along the coast from Guaymas to Agiabampo and on both sides of the peninsula of Lower California as far north as Comondu. The bibliography of this species is as follows:

Boissier in DC. Prod. xv. pt. 2. 68; Watson, Proc. Amer. Acad. xxiv. 76; Zoë, i. 348; Brandg. Proc. Cal. Acad. ser. 2. iii. 170.

E. hindsiana Benth. Bot. Sulph. 51, t. 24; Boissier in DC. Prod. xv. pt. 2. 68; Millsp. Proc. Cal. Acad. ser. 2. ii. 229; Zoë, i. 348.

E. comonduana. Millsp. Proc. Cal. Acad. ser. 2. ii. 229; Contr. Nat. Herb. i. 77; Brandg. Proc. Cal. Acad. ser. 2. iii. 170.

Euphorbia capitellata laxiflora Watson, Proc. Amer. Acad. xxiv. 74 (1889). In shade along a creek bottom. Agiabampo, October 3 to 15, 1890. No. 762.

Euphorbia (Cyttarospermum) colimæ Rose, sp. nov. Slender, weak annuals, 1 to 2 feet high, villose or glabrate: leaves alternate below, opposite above, ovate to lanceolate, slightly narrowed at base, acute, bract-like above; bracts small, with white or whitish margins: involucre about 1 line long: glands 5 with an entire petaloid, white appendage; lobes broad, obtuse, with a pectinate margin: styles 2-parted: capsule, glabrous: seeds with smaller pits, pectinate-margined.—In gardens and fields, growing in shade. Colima, January 9 to February 6, 1891. No. 1170.

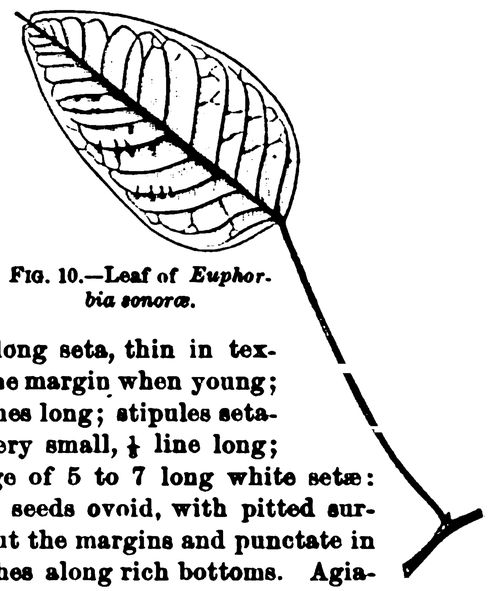

FIG. 10.—Leaf of *Euphorbia sonoræ*.

Euphorbia pilulifera L. Sp. Pl. i. 454 (1753). Common between the mountains and beach. Manzanillo, December 1 to 31, 1891. No. 938.

Euphorbia (Cyttarospermum) sonoræ Rose, sp. nov. Annual, slender, erect, glabrous, 1 to 3 feet high: leaves oblong, 1½ inches long or less, rounded at base, obtuse or acutish, tipped with a long seta, thin in texture, slightly pubescent and ciliate on the margin when young; petiole longer than the blade, 1 to 2 inches long; stipules setaceous, deciduous; involucre solitary, very small, ½ line long; glands (1 smaller) 5, with an appendage of 5 to 7 long white setæ: styles 3, entire; carpels slightly villose: seeds ovoid, with pitted surface; pits with glandular tubercles about the margins and punctate in the center.—In the dense shade of bushes along rich bottoms. Agiabampo, October 3 to 15, 1890. No. 760.

Euphorbia thymifolia L. Sp. Pl. i. 454 (1753). Common in level places between the mountains and the beach. Manzanillo, December 1 to 31, 1890. No. 939.

This species, although of wide distribution, is scarce in our herbarium.

Euphorbia sp. In shade along a creek bottom. Agiabampo, October 3 to 15, 1890. No. 761.

Euphorbia sp. Plains and river banks. Colima, January 9 to February 6, 1891. No. 1191.

Euphorbia sp. Along river bottoms. Manzanillo, December 1 to 31, 1890. No 924.

Euphorbia sp. Manzanillo, December 1 to 31, 1890. No. 943.

Euphorbia sp. Manzanillo, December 1 to 31, 1890. No. 899.

Euphorbia sp. Manzanillo, March 2 to 18, 1891. No. 1351.

Euphorbia sp. Manzanillo, December 1 to 31, 1890. No. 1038.

Phyllanthus polygonoides Nutt. in Spreng. Syst. Veg. iii. 23 (1825). In rich bottoms. Agiabampo, October 3 to 15, 1890. No. 767.

Phyllanthus niruri L. Sp. Pl. ed. 2. ii. 1392 (1763). Very common about the lagoon in moist places. Manzanillo, December 1 to 31, 1890. No. 925.

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which has any affinity with your new plant, and I think it is best to place it in a new subgenus."

Acalypha microphylla Klotzsch in Seem. Bot. Voy. Herald, 278 (1856). Common along the base of the mountain, and about the lagoon. Manzanillo, December 1 to 31, 1890. No. 935. Also collected from a garden at Colima, January 9 to February 6, 1891. No. 1251.

This same species was collected at Mazatlan in 1888 and was referred as above by Dr. B. L. Robinson.

Acalypha papillosa Rose, sp. nov. Diffuse shrub, 5 to 6 feet high, monœcious: leaves ovate, long acuminate, rounded or slightly cordate at base, sharply dentate, 3- to 5-nerved, pubescent when young, becoming glabrate in age; blade 2 to 4 inches long, 1 to 2 inches broad; petiole 6 to 10 lines long; stipules setaceous, early deciduous: fertile spikes terminal, few-flowered; bract cup-shaped, 7-toothed, 1-flowered: calyx lobes 4: styles long, purple, each with 8 to 10 branches: capsules hispid, papillose roughened: sterile spikes axillary, dense; calyx-lobes 4.—Along creeks. Agiabampo, October 3 to 15, 1890. No. 778.

Probably nearest the recent species *A. flavescens* Watson.

Acalypha subviscida Watson, Proc. Amer. Acad. xxi. 440 (1886). Manzanillo, December 1 to 31, 1890. No. 941.

URTICACEÆ.

Ficus fasciculata Watson, Proc. Amer. Acad. xxiv. 78 (1889). A tree, 30 feet high, bearing a widely spreading top; trunk 2 feet in diameter: leaves often 5 inches long on petioles 1 inch long. Colima, January 9 to February 6, 1891. No. 1119.

This seems to be the same as Mr. Watson's species although the leaves are considerably larger. Mr. Watson afterwards thought that his species was possibly referable to *F. sapida*.

This wild fig is called "Camichin." The fruit, which is small, is sweet and juicy, and is much used by the people of this region.

Ficus sp. Tree, 20 feet high with trunk 1 foot in diameter, and bearing a widely spreading top; branchlets pubescent, especially on the stipular lines: leaves oblong, 3 to 5 inches long, 2 to 2½ inches broad (on petioles 9 to 20 lines long) obtuse, rounded at base, pinnately veined: fruit sessile, in pairs, small, 3 lines in diameter: involucre 3- to 4-lobed; lobes obtuse, puberulent. At the base of the mountains growing among the rocks. Manzanillo, March 2 to 18, 1891. No. 1387. Pringle's No. 3887 (1891), from Barranca, near Guadalajara, is the same plant. It was distributed as *F. tecolutensis*, from which it differs in its smaller, sessile fruit, 3- to 4-lobed involucre, pubescent stems, etc. It is, perhaps, a new species.

Ficus sp. Small shrub, 6 feet high: leaves 4 to 6 inches long, acuminate, cuneate at base, somewhat pubescent beneath. Colima, February 27 and 28, 1891. No. 1324.

Ficus sp. Leaves oblong, 10 inches long on petioles 2 inches long. Colima, January 9 to February 6, 1891. No. 1186.

SALICACEÆ.

Salix taxifolia H. B. K. Nov. Gen. et Spec. ii. 22 (1817); Anders in DC. Prod. xvi. pt. 2. 215; *S. microphylla* Cham. & Schlect. Linnæa, vi. 354; Hook & Arn. Bot. Beech. Voy. 311, t. 70, *fide* M. S. Bebb. Shrub, 4 feet high. Along a river bank. Colima, January 9 to February 6, 1891. No. 1193.

ORCHIDACEÆ.

Epidendrum (Barkeria) palmeri Rolfe, Kew Bull. 1893, 6 (1893); pseudobulbis fusiformibus di-triphyllis, foliis linearibus v. lineari-lanceolatis acutis, pedun-

culis terminalibus, racemis simplex v. interdum ramosis multifloris, bracteis lanceolatis acuminatis, pedicellis gracilibus, sepalis lineari-lanceolatis acuminatis, petalis lanceolatis acutis, labello suborbiculari-elliptico obtuso irregulariter crenulato, carinis 3 approximatis parallelibus crenulato-papillosis, nervis lateralibus basi elevatis crenulato-papillosis, columna brevi clinandrio late alato.

Hab. Colima; January–February, 1891, n. 1201!

Pseudobulbi 1-3 poll. longi. Folia 1½–2½ poll. longa. Pedunculi ½–1 ped. longi. Bracteæ 1½–3 lin. longæ. Pedicelli 5–8 lin. longi. Sepala 7 lin. longa, 1½ lin. lata. Petala 7 lin. longa, 2 lin. lata. Labellum 7 lin. longum, 5½ lin. latum. Columna 1 lin. longa.

A very distinct *Epidendrum*, belonging to the section *Barkeria*, readily distinguished from every other by its narrow leaves, small bracts, and smaller flowers, which are densely arranged on the raceme, and appear to be light-rosy purple in color. A dried specimen collected by Dr. Edward Palmer, at Colima, in Mexico, was sent for determination by Mr. J. N. Rose, assistant botanist, Department of Agriculture, Washington, U. S. A., in November. 1892.

The above description and note are taken from Kew Bulletin of Miscellaneous Information, for January, 1893, p. 6.

BROMELIACEÆ.

Hechtia sp. Along the ocean just above high tide and extending back to the base of the mountains. Manzanillo, March 2 to 18, 1891. No. 1352.

Probably near *H. rosea*. Another plant which may belong to this genus was obtained from the market at Colima, but it is in too poor condition to determine accurately. No. 1410.

Tillandsia recurvata L. Sp. Pl. ed. 2. i. 410 (1762), *fide* J. G. Baker. Agiabampo, October 3 to 15, 1890. No. 806.

Tillandsia polystachya L. Sp. Pl. ed. 2. i. 410 (1762), *fide* J. G. Baker. Agiabampo, October 3 to 15, 1890. No. 805.

AMARYLLIDACEÆ.

Hymenocallis sp. Scape strongly compressed, 12 to 15 inches high: leaves (appearing with the flowers), about 6, 10 to 20 inches long by 10 to 14 lines broad, glaucous: scape 3- to 6-flowered; spathe 2-leaved; bracts ovate, membranaceous, 2 inches long: perianth tube 4 to 5 inches long, green; lobes 2½ to 3½ inches long, linear, white: staminal cup funnel form, 10 lines long, 10 lines broad at the throat; free tips of filament green, 15 lines long; style slender, green, a little longer than the stamens; cells with 2 ovules. Probably collected near Agiabampo, October 8 to 15, 1890. No number.

Only bulbs were collected by Dr. Palmer. I had these planted and two specimens flowered during the summer of 1891; none flowered during 1892, and only a single specimen flowered during 1893. It is a very delicate little plant and well worthy of cultivation.

This species is near *H. harrisiana*, but the leaves are glaucous, and not nearly so wide, of different shape, and with different tip.

Agave (Littæa) angustissima Engelm. Trans. St. Louis Acad. iii. 306 (1875). Acaulescent: leaves 15 to 20 in a dense rosette, straight, linear, 12 to 20 inches long, 4 to 5 lines broad above the inflated base, flat on both sides; the edge splitting off in fine threads; the end spine slightly pungent: peduncle 12 feet long including the dense spikes: flowers in pairs: corolla yellow; tube slender, cylindrical, 8 to 9 lines long; lobes linear, 6 lines long: stamens purple; filaments more than twice as long as lobes; anthers becoming curved and forming almost a complete circle: fruiting peduncle very short or none in the axil of a long, setaceous bract (1 to 2 inches long): pedicels 1 to 2 lines long: capsule glabrous,

9 to 10 lines long. Growing among rocks with little soil, along the margin of the bay at Manzanillo, December 1 to 31, 1890. No. 1070.

I have given a full description above, as the original reference is very incomplete.

The following note appeared in *Garden and Forest* of January 4, 1893:

"It will be of considerable interest to the readers of Garden and Forest to know that Dr. Edward Palmer has collected what seems to be the little-known *Agave angustissima* (see figure 11). The plant is entirely unknown to the growers of *Agaves*, and is only represented in herbaria by the type specimens in the Engelmann Herbarium at the Shaw School of Botany, St. Louis.

"The following note from Dr. Engelmann, published in the Transactions of the Academy of Sciences, St. Louis (vol. iii, p. 306), contained all the information that we previously had respecting this plant:

"'Dr. Gregg collected near Ocotillo, direction of Tepic, in western Mexico, leaves of a plant which he says bears a scape 5 to 6 feet high, and which, like many narrow-leaved *Agaves* and *Yuccas*, was called "Pamilla" by the natives; unfortunately no flowers came along, but as it seems to be an undescribed *Agave*, it may be designated as *A. angustissima;* leaves 2 to 3 feet long, 2 and 1½ lines wide, convex on the back, filamentose on the margin, narrowed into a short (2½ lines), stout, triangular, brown spine. It seems allied to *A. filamentosa* Salm., which, however, has much shorter and wider leaves. The form of the terminal spine precludes its being taken for a *Yucca*.'

"Dr. Palmer's plant reaches 12 feet in height. The leaves are numerous in a dense rosette, the flowers, in pairs, as in *A. schottii*, yellow, with linear lobes. I submitted this species to Mr. J. G. Baker, of Kew, as probably a new species, who wrote me as follows: 'We have nothing like this either in the herbarium or the garden; its nearest affinity is evidently the imperfectly described *A. angustissima*, of which we have no specimens.'

"With this suggestion I applied to Dr. William Trelease for the loan of Engelmann's plant. Through his kindness I have been able to examine the type of this species. I have little hesitancy in referring my specimens here. The type specimens, however, consist of only a few leaves cut off above the enlarged base. With such material any comparison is very unsatisfactory, but until specimens can be obtained from the original station, and it is proved to be different, this plant should stand for *A. angustissima*.

"Dr. Palmer's plant was collected at Manzanillo, December 1 to 31, 1890 (No. 1070). The plant is common, growing among rocks, with little soil, along the margin of the bay. I have some small plants growing in the greenhouses of the Department of Agriculture.

"Seeds when planted in pans, germinated in seven to ten days. Seeds have been sent to Kew and to the Shaw gardens, but no report has yet been received."

Mr. W. Watson, of Kew, also writing in *Garden and Forest* (vol. vi. p. 76) has this to say regarding this discovery:

"The picture and full account of this *Agave*, published in Garden and Forest (vol. vi. p. 5), were highly interesting to growers of succulent plants in this country, and still more interesting is the fact that, through the kindness of Prof. Sargent, who sent seeds of it to Kew, it is likely soon to become known in collections here, the seeds having germinated quickly and freely. The offer of seeds through your pages (vol. vi. p. 6) to any person wishing to grow this plant should be taken advantage of by all cultivators of such species of agave as *A. filifera* and *A. schottii*, to which ornamental and compact growers *A. angustissima* is closely related. The attention of collectors and botanists generally should be drawn to the forethought and good nature which attended the rediscovery of this plant. It is difficult to interest botanical collectors in the introduction of desirable plants into cultivation."

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Cyperus fugax Liebm. Vidensk. Selsk. Skr. ser. 5. ii. 196 (1851). Plentiful under shade of trees and in sandy places at the upper part of the lagoon. Manzanillo, December 1 to 31, 1890. No. 1079.

Cyperus ligularis L. Amœn. Acad. v. 391 (1760). Very robust and of a light-green color. Manzanillo, March 2 to 18, 1891. No. 1383.

Cyperus ottonis Boeckl. Linnæa, xxxvi. 350 (1869–70). Ex. descr. The plants grow at the edge of the lagoon upon low spots where the water reaches them readily. In front of and over them are Mangrove trees and behind, the contiguous mountains give them shade. Manzanillo, March 2 to 18, 1891. No. 1382. Also found in bunches among rocks just above the spray of the ocean. Manzanillo, December 1 to 31, 1890. No. 1095.

Cyperus regiomontanus Britton. Shady spots in the mountains. Manzanillo, December 1 to 31, 1890. No. 1080.

This is *Mariscus hænkei* Presl. Rel. Haenk. i. 181(1830). "There is a *Cyperus hænkeanus* Kunth, an altogether different plant; so I propose to name it *Cyperus regiomontanus* The plant is referred to *C. flavus* by Boeckeler, and Watson followed him; but both Clarke and I can see a good species in it. Clarke and I differ in this, however, that he maintains *Mariscus* as a genus, while I do not so regard it." N. L. Britton.

Cyperus sp. Manzanillo, March 2 to 18, 1891. No. 1381.

"It is a *Cyperus* of the *Diclidium* section, but I can not quite match it. It is pretty young." N. L. B.

Eleocharis geniculata (L.) R. Br. Prod. 224 (1810); *Scirpus geniculatus* L. Sp. Pl. i. 48 (1753). Only two specimens seen. In a swamp. Colima, January 9 to February 6, 1891. No. 1260.

GRAMINEÆ.*

Anthephora elegans Schreb. Beschr. Grüs. ii. 105, t. 44 (1810). Near the beach. Manzanillo, December 1 to 31, 1890. No. 1094. Also along a river bank. Colima, January 9 to February 6, 1891. No. 1255.

Hilaria cenchroides texana Vasey, Contr. Nat. Herb. i. 53 (1890). Very common on grassy plains. Colima, January 9 to February 6, 1891. No. 1267.

This is undoubtedly the *Hexarrhena cenchroides* Presl.

Ægopogon gracilis Vasey, Bull. Torr. Bot. Club, xiii. 230 (1886). In large patches near river banks. Colima, January 9 to February 6, 1891. No. 1270.

Arundinella brasiliensis Raddi. Agrost. Bras. 37 (1823). On a river bank. Colima, January 9 to February 6, 1891. No. 1264.

Paspalum conjugatum Berg. Act. Helv. vii. 129 (1772). In low, damp ground. Rare. Colima, January 9 to February 6, 1891. No. 1272.

Paspalum paniculatum L. Sp. Pl. ed. 2. i. 81 (1862) Along a ditch. Rare. Colima, January 9 to February 6, 1891. No. 1265.

Panicum molle Swartz, Prod. Veg. Ind. Occ. 22 (1788); *Panicum barbinode* Trin. Ic. Pl. iii. 318 (1828–'36). Said to be introduced. Manzanillo, December 1 to 31, 1890. No. 1078. Much used as a forage plant.

Panicum capillaceum Lam. Encyc. i. 173 (1791). In the mountains and wet bottoms. Manzanillo, December 1 to 31, 1890. No. 1083.

Panicum divaricatum L. Amoen. Acad. v. 392 (1760). In the mountains. Manzanillo, December 1 to 31, 1890. No. 1089.

Panicum myurum Meyer, Prim. Fl. Esseq. 50 (1818). In wet bottoms. Colima, January 9 to February 6, 1891. No. 1259.

A good forage plant.

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* The determination and critical notes upon the grasses were furnished me in 1891 by the late Dr. George Vasey. It has been found necessary since that time to make some slight changes in the nomenclature.

Panicum (Ptychophyllum) pringlei Vasey, sp. nov. Culms tufted, apparently perennial, 8 to 10 inches high, branching near the base: leaves mostly radical (the upper part of culm naked), about 2 inches long, 2 to 3 lines wide, acute: panicle racemose, 2 to 3 inches long, consisting of 3 to 4 alternate, nearly sessile, 1-sided spikes: spikes mostly ¼ to 1 inch long, and containing 12 to 15 spikelets on alternate sides of the flattened rachis, each spikelet with a simple persistent bristle at its base; the bristles rather larger than the spikelets: spikelets conical-oblong, about 2 lines long, acute; first glume ⅓ as long as spikelet, obtuse, obscurely 3-toothed; second glume 9-nerved, a little shorter than the acute 5-nerved male floral glume which incloses the nearly equal, acute palet, and the 3 stamens; fertile spikelet oblong 3-nerved, with a short, pointed apex. Mexico, Pringle Coll. of 1888, No. 2047, and Coll. of 1889, No. 2423; also from Colima, January 9 to February 6, 1891, No. 1256.

Panicum sanguinale ciliare (Retz.) Vasey, Bull. No. 8. Div. Bot. 23 (1889); *Panicum ciliare* Retz. Obs. Bot. fasc. 6, 16 (1786). In the low ground between the mountains and lagoon. Manzanillo, December 1 to 31, 1890. No. 1083.

This variety differs in its usually smaller size, more prostrate habit, shorter leaves, fewer spikes, and in the strongly ciliate-fringed third glume.

Panicum trichanthum Nees, in Mart. Fl. Bras. ii. 210 (1829). In shady places in gardens. Colima, January 9 to February 6, 1891. No. 1257.

Oplismenus humboldtianus nudicaulis Vasey. This is near *Oplismenus humboldtianus muticus* Fournier, but differs from that by having larger flowers, with longer awns, and the hermaphrodite flower not muticous. Colima, January 9 to February 6, 1891. No. 1258.

Oplismenus setarius (Lam.) Roem. & Schultz, Syst. Veg. ii. 481 (1817); *Panicum setarium* Lam. Encyc. i. 170 (1791). In the wet bottom near the bay. Manzanillo, December 1 to 31, 1890. No. 1090.

Cenchrus echinatus L. Sp. Pl. ii. 1050 (1753). Found sparingly on the mountain sides. Manzanillo, December 1 to 31, 1890. No. 1086.

Pennisetum setosum Rich. in Pers. Syn. i. 72 (1805). Grassy bottoms of a creek. Colima, January 9 to February 6, 1891. No. 1269.

Aristida (Ortachne) manzanilloana Vasey, Contr. Nat. Herb. i. 282 (1893). Apparently annual; culms tufted, 2 to 2½ feet high, smooth, slender, erect, simple, or geniculate and branching below; leaves 2 to 3 inches long, plane below, conduplicate above, not rigid, very narrow, almost setaceous; sheaths shorter than the blade; panicle racemose, simple, 4 to 5 inches long; branches single, or 2 or 3 together, the lower about 1 inch long, sessile, with 3 to 5 somewhat crowded spikelets; empty glumes about 3 lines long, awn-pointed, nearly equal; floral glume with the undivided awn about 1 inch long when mature, scabrous on the keel, not twisted, flattish, commonly curved above.

Collected in the mountains about Manzanillo, December 1 to 31, 1890. No. 1084. This species differs from *A. tenuis flexuosa* in its culms being slender and flexuous, leaves softer, and spikelets with a few scattered hairs.

Aristida tenuis (?) (H.B.K.) Kunth, Rev. Gram. i. 62 (1829–1835); *Streptachne tenuis* H. B. K. Nov. Gen. et Spec. i. 124 (1815). Manzanillo, January 9 to February 6, 1890. No. 1091.

Muhlenbergia exilis Fourn. Mex. Pl. Gram. 84 (1886). Along the banks of a creek. Colima, January 9 to February 6, 1891. No. 1271.

Sporobolus argutus (Nees) Kunth, Enum. Pl. i. 215 (1833); *Vilfa arguta* Nees in Mart. Fl. Bras. ii. 395 (1829). Very common along the coast. Agiabampo, October 3 to 15, 1890. No. 814.

Chloris radiata (?) Swartz, Prod. Veg. Ind. Occ. 26 (1788). Common along water ditches. Colima, January 9 to February 6, 1891. No. 1253.

Bouteloua bromoides Lag. Gen. et Spec. Nov. 5 (1816). Common on grassy plains. Colima, January 9 to February 6, 1891. No. 1254.

Bouteloua polystachya (Benth.) Torr. Pac. R. R. Rep. v. pt. 2. 366, t. 10 (1857); *Chondrosum polystachyum* Benth. Bot. Voy. Sulph. 56 (1844). In rich valleys. Agiabampo, October 3 to 15, 1890. No. 791.

Eleusine indica Gærtn. Fruct. i. 8 (1788). On wet bottoms. Colima, January 9 to February, 1891. No. 1263.

Cathestecum erectum Vasey & Hack. Bull. Torr. Bot. Club, xi. 37, t. 45 (1884). Colima, January 9 to February 6, 1891. No. 1261.

A reduced form with short leaves and short flowering culms.

Phragmites communis Trin. Fund. Agrost. 251 (1820). Eight to ten feet high. Common about the margin of the lagoon. Manzanillo, December 1 to 31, 1890. No. 1092.

Eragrostis pallida Vasey, Contr. Nat. Herb. i. 285 (1893). Apparently annual; culms erect, more or less branched at the base, 1½ feet high, smooth; leaves 2 or 3 on the culm, 3 to 5 inches long, erect, acuminate; ligule inconspicuous, truncate; sheaths shorter than the internodes; panicle 6 to 9 inches long, ½ to ¾ inch wide, pale, strict, sometimes interrupted below, crowded above; branches unequal, semiverticillate, numerous, the longer 1½ inches long, strict, all closely flowered to the base; spikelets 1 line long, 5-flowered; empty glumes less than ½ line long, 1-nerved, subacute; floral glumes ½ line long, subacute, 3-nerved.

Collected in a ditch. Colima, January 9 to February 6, 1891. No. 1268.

At first I thought this might be *E. alba* Presl, but it does not answer the description; neither does the Californian species, so called by Dr. Thurber, which is quite different from the present species.

Eragrostis ciliaris (L.) Link, Hort. Berol. i. 192 (1827); *Poa ciliaris* L. Sp. Pl. ed. 2. i. 102 (1862). In gardens. Colima, January 9 to February 6, 1891. No. 1266.

Eragrostis plumosa (Retz.) Link, Hort. Berol. i. 192 (1827). Common on the low ground between the mountains and the lagoon. Manzanillo, December 1 to 31, 1890. No. 1085.

Eragrostis diversiflora Vasey, Contr. Nat. Herb. i. 285 (1893). Culms densely tufted, 2 to 8 feet high, firm, leafy at the base, lower leaves 6 to 8 inches long, gradually narrowed to long, setaceous points; sheaths smooth; ligule ciliate with long hairs; upper leaves distant, filiform; panicle spike-like, interrupted below, 7 to 10 inches long, ¾ inch wide, the nearly sessile branches densely crowded, interrupted and distant below, also on the same plant some panicles open and thinly flowered; spikelets linear, 3 to 4 inches long, 7- to 13-flowered or on less perfect culms reduced to 5, 3, or 2; outer glumes ovate, subacute, similar in texture to the floral glumes, which are ovate-lanceolate, rather thick, subobtuse, smooth, the lateral nerves not prominent.

Manzanillo, March 2 to 18, 1891. No. 1335. Here should be referred W. G. Wright's No. 1318, from Mazatlan, 1889.

Eragrostis purshii Schrad. Linnæa, xii. 451 (1838). In gardens. Colima, January 9 to February 6, 1891. No. 1262.

Eragrostis purshii miserrima Fourn. Mex. Pl. Gram. 116 (1886). Culms tufted, low, 3 to 6 inches high, branching from the base, often geniculate: leaves 1 inch long or less, very narrow; ligule short, ciliate; lower sheaths loose, striate; panicle 1 to 1½ inches long, branches alternate, spreading, short (less than an inch long), each with 2 to 5 spikelets; spikelets 1½ to 2 lines long, 5- to 9-flowered; floral glumes 3-nerved; the lateral nerves prominent. River bottoms. Colima, January 9 to February 6, 1891. No. 1273.

Eragrostis purshii Schrad. Linnæa, xii. 451 (1838). Manzanillo, December 1 to 31, 1890. No. 1088.

Gouinia Fournier (emended description). Spikelets 2- to 4-flowered, narrow, approximate or somewhat distant, along the 2 sides of the triangular rachis, sessile or short-pedicelled, erect on the spreading branches of the rather large pan-

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Aspidium trifoliatum Swartz, Syn. Fil. 43 (1806). This fern and the *Adiantum* (No. 1127) were found growing abundantly on a garden wall the top of which was channeled to convey a stream of water. Colima, January 9 to February 6, 1891. No. 1126.

Gymnogramme calomelanos Kaulf. Enum. Fil. 76 (1824). The common white-powdered form. Shady side of river banks under bushes and among rocks. Colima, January 9 to February 6, 1891. No. 1218.

Lygodium mexicanum Presl, Reliq. Haenk. i. 72 (1830). Climbing fern found in dark shady spots among trees and bushes on the mountains. Grows from 5 to 12 feet high Manzanillo, December 1 to 31, 1890. No. 931.

Notholæna brachypus (Kunze) J. Smith, Ferns British & Foreign, 172 (1886); *Cheilanthes squarrosa brachypus* Kunze, Linnæa, xviii. 340 (1844). Shade of stone walls. Colima, January 9 to February 6, 1891. No. 1230.

Pellæa rigida (Swartz) Hook. Sp. Fil. ii. 144 (1858); *Pteris rigida* Swartz, Syn. Fil. 104 (1806). From a shady bank among bushes. Colima, January 9 to February 6, 1891. No. 1294.

Polypodium elongatum Mettenius, Polyp. 88 (1857). The plants are not in good condition, and the identification is somewhat doubtful in consequence. The fronds are 2 to 3 inches long, obovate-spatulate in outline, and dull yellowish-green in color. The fruit is very scanty, and forms small oblong sori near the tips of only a few of the fronds. Shady side of stone walls. Colima, January 9 to February 6, 1891. No. 1228.

Polypodium incanum Swartz, Syn. Fil. 35 (1806). Some of the specimens show a heavy coating of lacerate-ciliate and pointed scales on the lower surface of the frond; these are most observable on young fronds; in maturer fronds the scales are nearly entire and have mostly lost their acuminations. Found adhering to the shady side of stone walls. Colima, January 9 to February 6, 1891. No. 1229.

Polypodium lanceolatum L. Sp. Pl. ed. 2. ii. 1542 (1763). Mature plants much contracted by drought. The local name is "Lengua de Sierra para las calenturas." It is used as a remedy in cases of fever and ague. Found at the market at Colima. January 9 to February 6. No. 1409.

Phegopteris tetragona Mettenius. Fil. Hort. Lips. 84 (1856). On stone walls in shade. Colima, January 9 to February 6, 1891. No. 1129.

Selaginella lepidophylla Spring. Monogr. Lycopod. iii. 72 (1848). The natives call this "Flor de Piedra para la sangre," and employ it to check hemorrhages. Manzanillo, March 2 to 18, 1891. No. 1401.

MUSCI.

Funaria hygrometrica Sibth.* With *Philonotis* probably *fontana* Brid. Colima, January 9 to February 6, 1891. No. 1118. No. 1196.

Philonotis fontana Brid.* Probably, with a species of *Gymnostomum*. Both are sterile and not with certainty determinable. Colima, January 9 to February 6, 1891. No. 1197.

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* Determined by J. H. Holzinger.

THREE NEW SPECIES OF SAPINDACEÆ FROM WESTERN MEXICO AND LOWER CALIFORNIA.[1]

By L. RADLKOFER.

Serjania (?) albida Radlk. sp. nov.; *Paullinia (?)* sp. Vasey et Rose, Contr. Nat. Herb. i. 82 (1890). Scandens, suffruticosa, parvula; rami (caules) tenues, sexangulares, angulis glabris, faciebus leviter canaliculatis, albido pulverulento-puberulis; corpus lignosum simplex; folia ternata; foliola parva, ovata, obtusa, subtrilobodentata, terminalo in petiolulum longum anguste marginatum abrupte contractum, lateralia petiolulis brevioribus insidentia, omnia membranacea, pallide viridia, opaca, glabra, nec nisi glandulis microscopicis adspersa, punctis pellucidis obscurius notata, epidermide mucigera (paginæ superioris quoque stomatibus instructa); petiolus (communis) brevis, nudus; thyrsi solitarii, folia subæquantes, rachi perbrevi; flores (non nisi insectorum ictu deformati suppetebant) parvi; sepala puberula.

Rami thyrsigeri diametro 1.5–2 mm., internodiis elongatis 5–7 cm., longis. *Folia* 3–5 cm. longa, 2–4 cm. lata; foliola terminalia petiolulo 1.5 cm. longo excluso 1.5–2 cm. longa, 1–1.5 cm. lata, lateralia minora; petiolus 6–15 mm. longus; stipulæ minimæ, subulatæ. *Thyrsi* 3–6 cm. longi.

In California inferiore ad Santa Agueda: Palmer No. 263!

Observ. Affinis videtur Serjaniæ (?) californicæ Radlk. (v. Serj. Suppl. 1886. 139; *Cardiospermum?* sp. Gray), sed ut hæc quoque quoad genus dubia est. An *Paullinieæ sonorensi* Wats., an *Cardiospermo spinoso* Radlk. congener?

Serjania brachylopha Radlk. sp. nov.; *Serjania* sp.? Watson, Proc. Amer. Acad. xxii. 403 (1887); coll. Palmer No. 381!

Scandens, fruticosa, ramis petiolisque sparsim crispato-pilosis vel subsetulosis, ceterum glabra; rami subtrigoni, 6-sulcati, cortice pallide subfusco; corpus lignosum compositum e centrali majore et peripherieis 3 parvis angulos efficientibus; folia biternata; foliola lateralia ovato-oblonga, acuta vel inferiora obtusata, breviter petiolulata, terminalia late rhombea, acuta et mucronulata, in petiolulum contracta, omnia subduplicato-serrata, membranacea, reti venarum tenerrimo instructa, præter nervos glabra nec nisi glandulis microscopicis adspersa, impunctata, epidermide mucigera; petiolus communis partialesque nudi; thyrsi solitarii, dense cincinniferi; cincinni stipitati, deflorati pedicellorum supra medium articulatorum articulis inferioribus stipitem æquantibus sat numerosis scopiformes; flores parvuli; sepala exteriori puberula, interioribus tomentellis fere dimidio breviora; fructus—

Rami thyrsigeri diametro 2.5 mm. *Folia* circ. 11 cm. longa, totidem lata; foliola terminali petiolulo 1-centimetrali excluso 5 cm. longa, 3.5 cm. lata, lateralia super-

[1] The three following new species of Prof. Radlkofer were intended to form a part of my next report upon Dr. Palmer's Mexican plants. At Prof. Radlkofer's request, I have published them here so as to enable him to refer to them in his work on the order soon to appear.—J. N. ROSE.

iora 4 cm. longa, 2 cm. lata, inferiora plus dimidio minora; petiolus communis 2–3 cm. longus, partialium intermedius circ. 3 cm. lateralis 1 cm. longi; stipulæ parvæ ovato-triangulares. *Thyrsi* folia superantes, rhachi quam pedunculus communis longiore; cincinni circ. 8-flori, contracti, stipite 2.5–3 mm. longo suffulti, pedicelli circ. 4 mm. longi, supra medium articulati. *Flores masculi: Sepala* exteriora vix 2 mm., interiora 3 mm. longa. *Petala* e late obovato abruptius attenuata, 3 mm. longa, 2 mm. lata, intus glanduligera; squamæ superiores crista brevi truncata, crenulata appendiceque deflexa brevi barbata, inferiores crista dentiformi instructæ. *Tori* glandulæ superiores ovatæ glabræ, laterales minores subconformes. *Stamina* glabra, nec nisi breviora extus pilis singulis adspersa. *Germinis* rudimentum apice puberulum.

In Mexico septentrionali: Palmer No. 381! (Jalisco, Tequila, m. Aug. to Sept., 1886, flor.).

Observ. Habita accedit, ut jam Watson l. c. indicavit, ad *S. racemosam* Schum.; vera affinitas autem ei potius est, ut videtur, cum *S. mucronulata* Radlk. in eadem Sectione xi (*Physococcus*).

Cardiospermum spinosum Radlk. sp. nov. Suffruticosa, affinis *Cardiospermo tortuoso* Benth.; insignis cirris binis ad apicem pedunculi communis in spinas conversis, pedunculo inde apice furcillato ex angulo quasi furculæ rhachin brevem cum floribus paucis, si qui sunt, protrudente, vel interdum omnino sterili ipsoque in spinam simplicem converso; rami thyrsigeri geniculato-flexuosi, tenues, e 5–6 angulari subteretes angulis vix prominulis subfuscis glabratis, faciebus pulverulento-canopuberulis; folia e ternato folioli terminalis dissociatione transeuntia in 5-foliolato-pinnata; foliola superiora obovata, inferiora suborbicularia, parvula (vix 1-centimetralia), subsessilia, obtusa, subsinuato-crenata vel lobata nec nisi glandulis microscopicis et in nervis pilis singulis adspersa, crassiuscule membranacea, pellucide lineolata utriculis laticiferis sat crebris et plerumque venis approximatis, epidermide valde mucigera exceptis solummodo cellulis stomata in pagina superiore quoque numerosa (puncta albida efficientia) cingentibus; petiolus nudus; stipulæ minutæ, subulatæ, thyrsi abbreviati, pauciflori; flores pro genere mediocres; sepala 5 (?).

Rami thyrsigeri diametro 1 mm. vix superantes. *Folia* ramorum thyrsigerorum 2.5 cm. longa, summa minora; foliola 0.5–1 cm. longa. *Thyrsi* vix 1.5 cm. longi. *Flores masculi: Sepala* duo exteriora breviora, interiora 4 mm. longa. *Petala* obovata, in unguem latum attenuata, 4 mm. longa, 3 mm. lata, intus (densius quam extus) glanduligera; squamæ (cristis exclusis) quam petala dimidio breviores, margine villosulæ, superiores crista obcordata appendiceque deflexa mediocri dense barbata, inferiores crista obliqua instructæ. *Tori* glandulæ superiores ovatæ, glabræ, inferiores minores, subannulares. *Stamina* adpresse puberula, apice glabra. *Germinis* rudimentum glabrum.

In California inferiore: Palmer No. 2! (La Paz, m. Jan. to Feb., 1890, flor.).

Observ. Affinis *Cardiospermo tortuoso* Benth., quod sepalis 5 quoque (ut e speciminibus a Brandegee in Magdalena Bay lectis patet) gaudet nec non foliolis eodem modo ac in *C. spinoso*, supra quoque stomatibus numerosis instructis.

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PLATE XXIV.

Forchhammeria watsoni Rose.

Fig. *a*, fruiting branch; *b*, flowering branch; *c*, sterile flower; *d*, seed. Figures *a* and *b* are of natural size; fig. *c* is enlarged 7 diameters; *d*, 2 diameters. Description on page 302.

FORCHHAMMERIA WATSONI ROSE.

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PLATE XXV.

Forchhammeria watsoni Rose.

Fig. *a* and *b*, sterile branches showing leaves of different forms. Description on page 302.

FORCHHAMMERIA WATSONI ROSE

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PLATE XXVI.

Xylosma palmeri Rose.

The main figure illustrates a branch bearing fruit and female flowers; fig. *a*, staminate flowering branch; *b*, staminate flower; *c*, the same with sepals removed, exposing the disk; *d*, sepal; *e*, pistillate flower; *f*, the same with sepals removed; *g*, a flower with the ovary removed, viewed from above, showing sepals and disk. The dissections are enlarged 4 diameters. Description on page 303.

XYLOSMA PALMERI ROSE.

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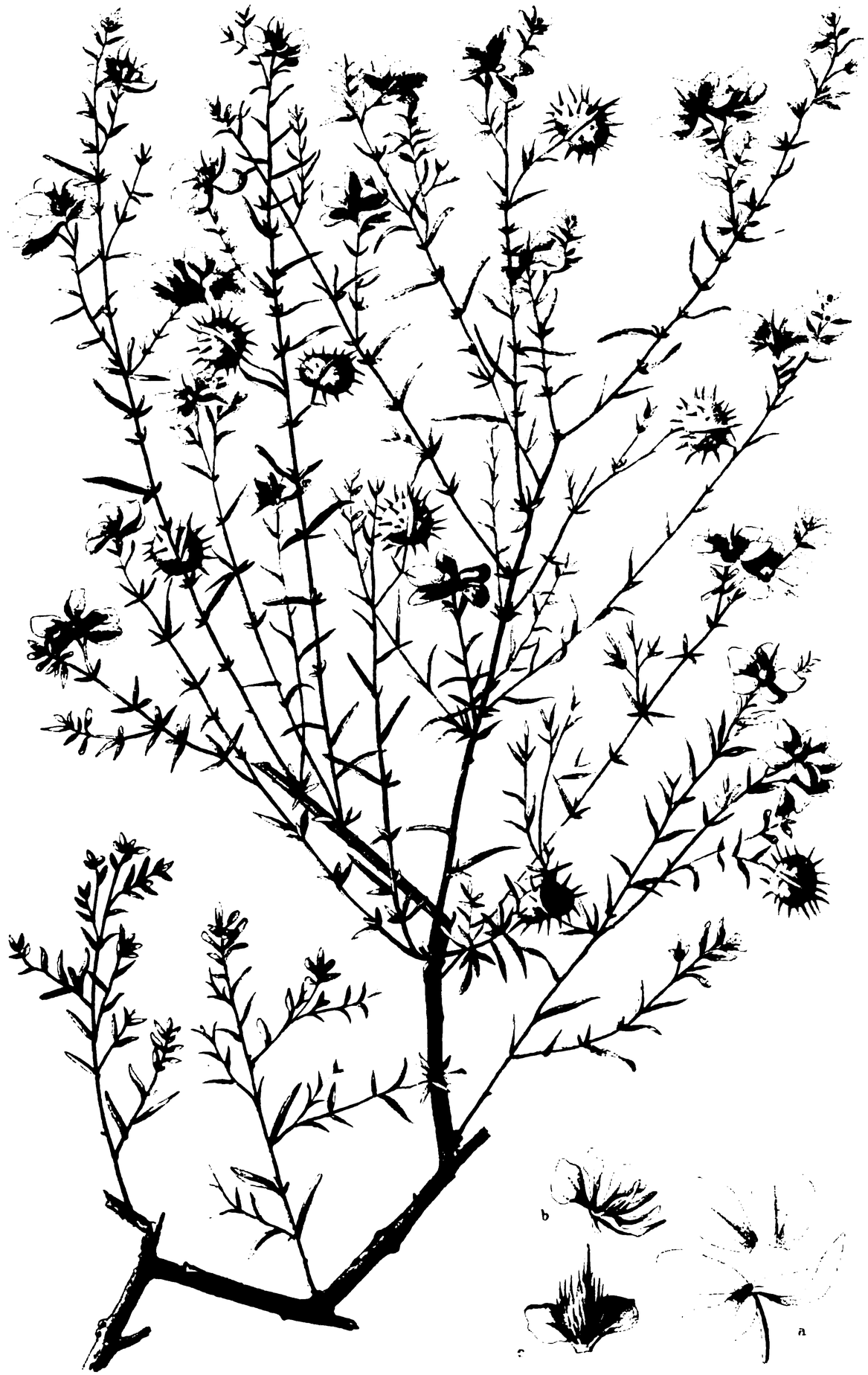
PLATE XXVII.

Krameria palmeri Rose.

Portion of plant, natural size; fig. *a*, the 5 sepals, disjointed; *b*, the 3 upper petals and the 4 stamens; *c*, ovary with two lower petals. Figs. *a*, *b*, and *c* are enlarged about 3 diameters. Description on page 304.



KRAMERI

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PLATE XXVIII.

Malpighia ovata Rose.

A branch showing flowers and leaves; fig. *a*, lower leaf showing venation, natural size; *b*, bud showing position and shape of glands, enlarged 3 diameters; *c*, fruit as seen from the side, showing the distinct styles; *d*, the fruit as seen from above. Figs. *c* and *d* are of natural size. Description on page 310.

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MALPIGHIA OVATA ROSE.

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PLATE XXIX.

Malpighia umbellata Rose.

A fruiting branch; fig. *a*, fruit; *b*, the same as seen from beneath, showing calyx and glands; *c*, a nutlet with fleshy covering removed. Figs. *a*, *b*, and *c* are enlarged 5 diameters. Description on page 310.

MALPIGHIA UMBELLATA ROSE.

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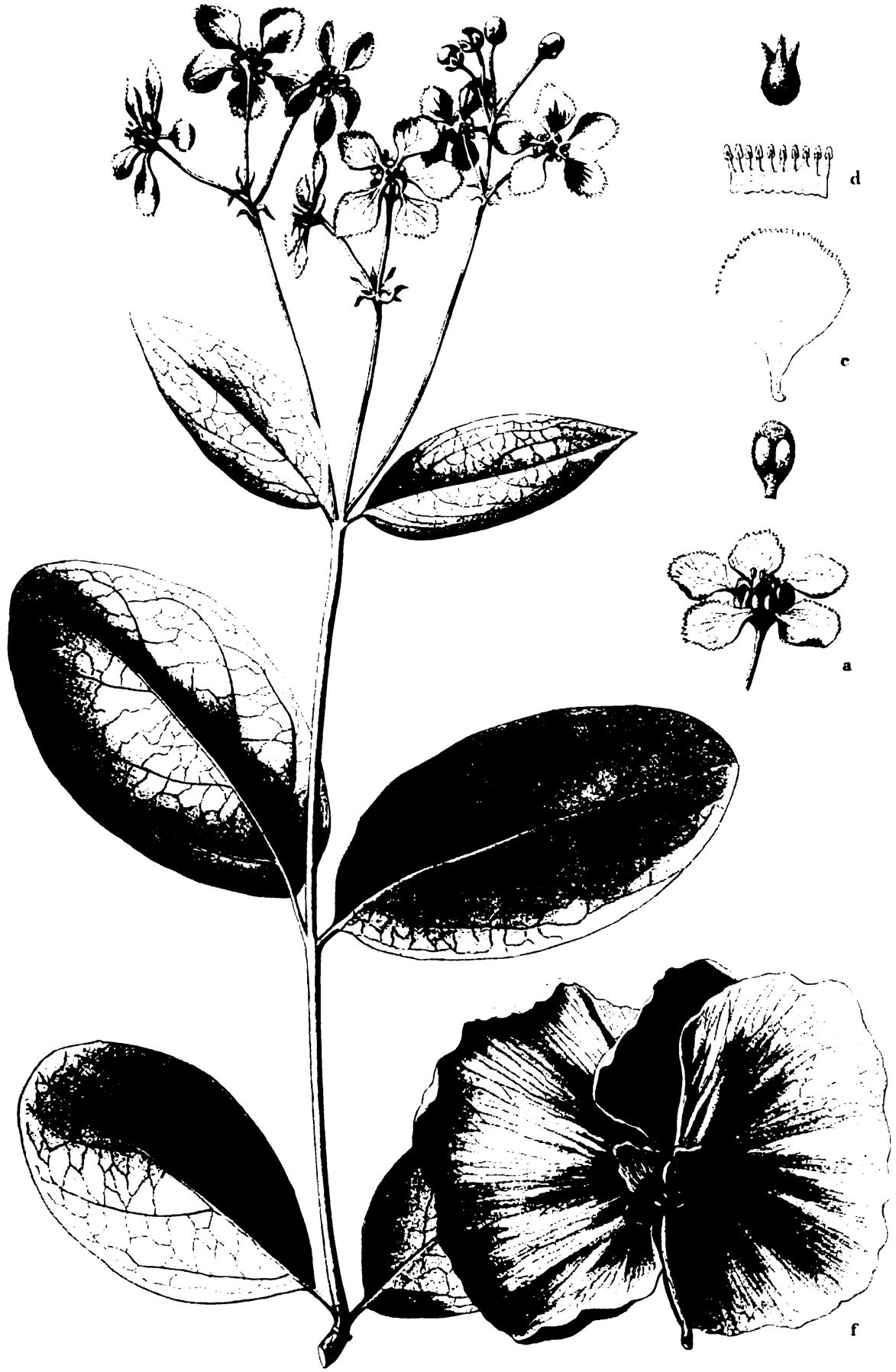
PLATE XXX.

Hirœa mexicana Rose.

Flowering branch, natural size; fig. *a*, an open flower, natural size; *b*, sepal with its two glands, enlarged 3 diameters; *c*, petal, enlarged 2 diameters; *d*, stamen tube spread out, enlarged about 2½ diameters; *e*, ovary, enlarged about 3 diameters; *f*, fruit, natural size. Description on page 312.



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HIRAEA MEXICANA ROSE.

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PLATE XXXI.

Karwinskia parrifolia Rose.

Fruiting branch; fig. *a*, fruit, enlarged 2½ diameters; *b*, embryo, enlarged 2 diameters. Description on page 315.

a
b

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PLATE XXXII.

Agiabampoa congesta Rose.

A flowering branch; figs. *a* and *b*, ray flowers; *c*, disk flower with bract; *d*, style branches; *e*, involucral bract. Figs. *a* and *b* are enlarged 2 diameters; *c*, 3 diameters; *d*, 10 diameters; *e*, 2½ diameters. Description on page 335.

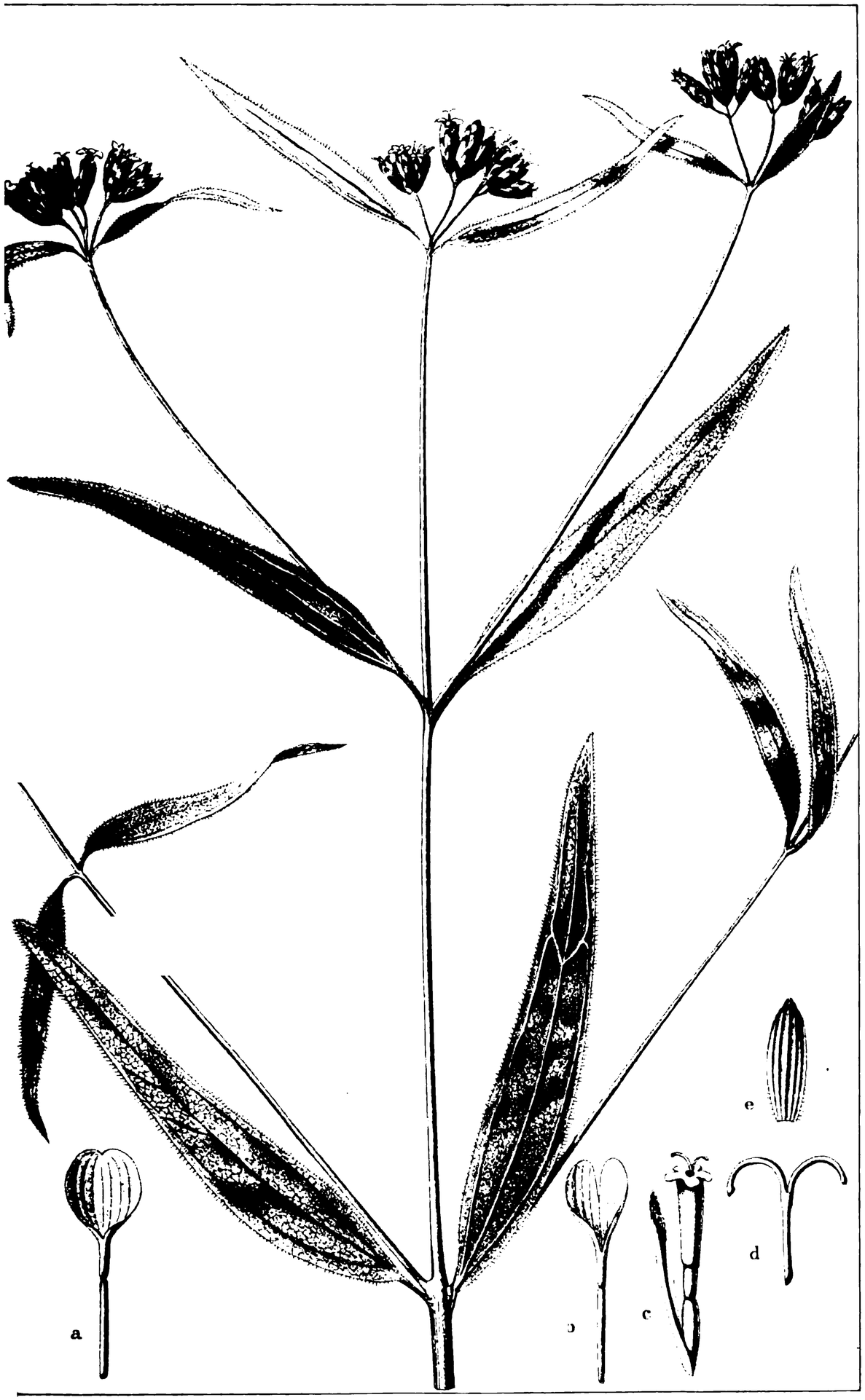

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PLATE XXXIII.

***Tridax dubia* Rose.**

A flowering branch; fig. *a*, ray flower, enlarged about 4 diameters; *b*, disk flower, enlarged about 4 diameters; *c*, palex of the pappus, enlarged about 10 diameters. Description on page 337.

c
b
a

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PLATE XXXIV.

Porophyllum palmeri Rose.

A flowering branch, natural size; fig. *a*, flower, enlarged about 3 diameters; *b*, an akene with pappus, enlarged about 5 diameters. Description on page 338.

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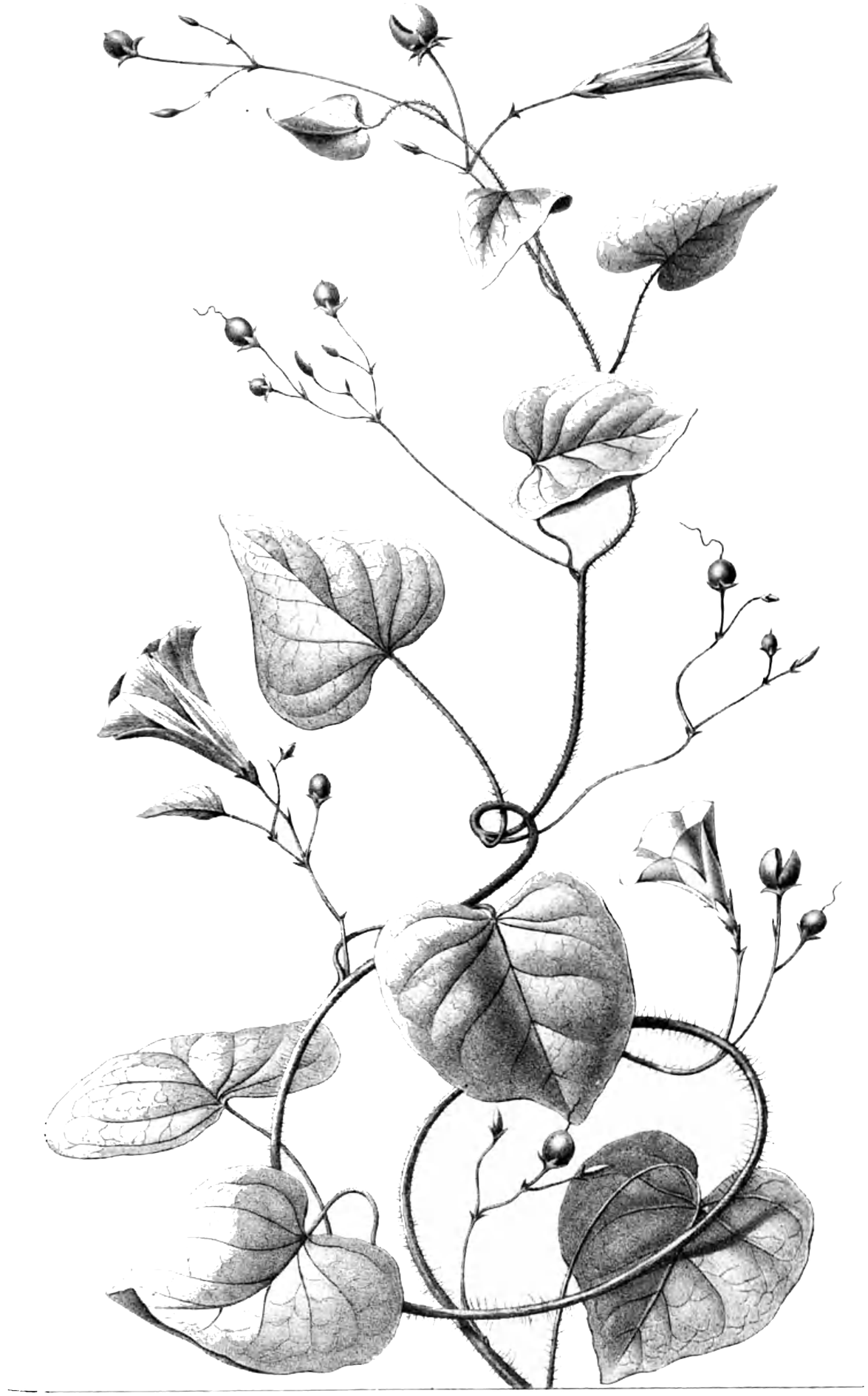
PLATE XXXV.

Ipomœa nelsoni Rose.

A branch, showing flowers and fruit, natural size. Description on page 343.



IPOMOEA NELSONI ROSE.

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