

*Pacific Railroad Reports*

*Vol. IV*

*Whipple's Botany (Bigelow)*

*25 plates*

EXPLORATIONS AND SURVEYS FOR A RAILROAD ROUTE FROM THE MISSISSIPPI RIVER TO THE PACIFIC OCEAN.

WAR DEPARTMENT.

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ROUTE NEAR THE THIRTY-FIFTH PARALLEL, EXPLORED BY LIEUTENANT A. W. WHIPPLE, TOPOGRAPHICAL ENGINEERS, IN 1853 AND 1854.

*Dr. Geo Engelmann  
with Dr. Torrey's kind regards.*

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REPORT

ON THE

BOTANY OF THE EXPEDITION:

BY

PROFESSOR JOHN TORREY.

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WASHINGTON, D. C.

1857.

## INTRODUCTION.

The greater part of the botanical collections made by Dr. J. M. Bigelow, in the Pacific Railroad Survey, under the charge of Captain Whipple, were submitted to me for examination, in accordance with the instructions of the War Department. The plants that were collected before reaching Fort Smith, on the western borders of Arkansas, are of comparatively little interest, and are not included in the following list. The surveying party, in proceeding from Fort Smith to Albuquerque, travelled near the Canadian river, through the Indian territory and northern Texas; thence through northeastern New Mexico to the Rio Grande. This river was crossed on the 10th of November, at which time the flowering season of most plants had passed; and the explorations continued through western New Mexico, chiefly between the parallels of  $35^{\circ}$  and  $36^{\circ}$ , to the Great Colorado, which was reached on the 28th of February. The most interesting region of this part of the route is the valley of Williams' river, (commonly called Bill Williams' Fork,) a tributary of the Colorado. Some of the most remarkable plants of the collection were found here, and it is a matter of regret that a country so rich and peculiar in its Flora (and I am informed by Professor Baird that its Fauna is equally remarkable) was not visited at a more favorable season. From the Colorado the route was across the California desert to the Cajon Pass, in the southern part of the Sierra Nevada; thence through Coco Mungo and Los Angeles to San Pedro, on the Pacific coast. Here the surveys of Captain Whipple terminated; but Dr. Bigelow remained in California until near the first of June, and improved the time in exploring considerable portions of the valleys of the Sacramento and San Joaquin, as well as numerous tributaries of those rivers. His ample collections were brought home in perfect order, and the following report affords abundant proof of the zeal and success with which he labored. A number of new genera, and more than sixty new species, have been discovered by Dr. Bigelow, and he has added much valuable information upon many heretofore imperfectly known plants.

The observations of Dr. Bigelow upon the geographical botany of the regions explored are interesting, and are embodied by him in a separate memoir, as also are his notes upon the more interesting forest trees of the country.

The Cactaceae collected in the Expedition have been elaborated conjointly by Dr. Engelmann and Dr. Bigelow, and are described by them in a separate portion of Captain Whipple's report. The Compositae and Scrophulariaceae were described by my friend Dr. Gray, to whom I am indebted also for much valuable aid in drawing up this catalogue, as will be seen by the frequent quotation of his manuscript names in the following pages. The drawings were, with few exceptions, executed by Sprague and Riocreux, two of the most skilful botanical artists now living. All the engraving has been done upon stone by Prestele, who excels in this branch of the art.

JOHN TORREY.

NEW YORK, *January 12, 1857.*

## ERRATA AND ALTERATIONS.

Owing to the distance of the author from the press, and the rapidity with which the work was printed, the revised sheets could not be examined, so that many typographical errors have been left uncorrected. The *more important* of these are noticed in the following list, but some others have doubtless been overlooked. The mistakes of punctuation are numerous, but they do not materially affect the sense, and they have not been included in the errata.

- Page 62, last line, "Delphinium coccineum." *Zorr.* is probably *D. cardinalis*, *Hook. Bot. Mag. t. 4857.*
- 65, lines 12, 15, and 23, for "STREPANTHUS" read "STREPANTHUS."
- 68, last line, in some copies the C in *Canothia* has fallen out.
- 72, lines 1, 4, 9, and 12, for "STELLARIA" read "SIDALCEA."
- 72, line 20, for "STELLARIA" read "SPHERALCEA."
- 74, last line but one, for "SOREDIACUS" read "SOREDIATUR."
- 74, line 5, for "subdecum" read "subdecim."
- 79, line 27, for "folioformibus" read "foliiformibus."
- 81, line 12, from bottom, for "MACROCARPUS" read "MACROCARPUS."
- 85, 4 lines from bottom, for "GEBLOBA" read "GEBLOBA."
- 90, line 27, for "subaequilongus" read "subaequilongi;" and line 29, for "calysis" read "calycis."
- 91, line 21, for "tubero" read "tubere."
- 92, line 7, from bottom, for "disagrees" read "differs."
- 97, line 9, after "glaberrimis" add "Tab. X."
- 99, line 4, from bottom, for "APHANTOCHET, a Nov. Gen." read "APHANTOCHETA, Nov. Gen."
- 103, line 13, for "triplineris" read "triplinervis."
- 105, line 16, for "rise" read "sise."
- 107, line 15, for "bellioides" read "bellioides."
- 108, last line, for "LUSULIFOLIA" read "LUSULIFOLIA."
- 112, line 30, for "SILYRUM" read "SILYRUM;" and line 37, for "calais" read "Calais."
- 113, line 23, for "scarpas" read "scaposa."
- 114, lines 11 and 25, for "arwas" read "awns;" and line 17, for "decidius" read "deciduis."
- 115, line 32, for "serruclate" read "serrulate."
- 116, line 11, for "DYSMICODON" read "DYSMICODON;" last line but one, for "Comarostaphylis" read "Comarostaphylis;" and for "Arctostaphylo" read "Arctostaphylus."
- 119, line 35, for "shrub" read "shrubby."
- 120, line 8, for "panic" read "panicle."
- 126, at the end of line 15 add "*A. Gray, MS.;*" and line 33, for "corollam" read "corolla."
- 127, line 8, for "CALIPOINCA" read "CALIPOINICUS;" and line 13, for "petiolem" read "petiolum."
- 130, line 15, after "hyssopifolium" add "var. Americanus."
- 131, line 27, the "dwarf variety" here noticed is *A. fragrans*, *Nutt.*, a good species.
- 133, lines 1 and 2, for "perigon fauc" read "perigonal fauce;" and line 7, for "falcratum" read "falcratis."
- 136, line 4, after "than" add "in."
- 139, line 33, for "pencilatum" read "pencilatum."
- 142, last line but one, for "petals" read "petalis," and for "adscendentibus" read "adscendentibus."
- 144, line 7, for "statutes" read "sometimes;" and line 29, erase "very."
- 145, line 14, for "hermaphrodite" read "hermaphroditis;" line 21, for "spithameo" read "spithameo;" line 26, after "Mr. Semuels" add "from which the floral characters are derived;" line 42, for "loculicidal" read "parietal."
- 146, line 18, for "pedicellos recurva" read "pedicellis recurvis."
- 148, line 27, for "humilis" read "humile;" and line 43, for "flexuous" read "flexuosus."

- Page 149, last line, for "*arpege*" read "*arpegata*."  
 150, line 14, for "*fissuris*" read "*rimis*."  
 151, line 20, erase "*AMARYLLIDACEÆ*;" and line 39, for "*contractes*" read "*contractis*."  
 153, line 8, for "*infimo*" read "*infima*;" and line 9, for "*acuminato*" read "*acuminata*."  
 155, line 6, for "*valvulis subaequalibus pilosis*" read "*valvulis subaequalibus pilosis*;" line 43, for "*fasciculata*" read "*fascicularis*;" and line 45, for "*138*" read "*228*."  
 156, line 12, after "*appressed*," insert "*branches*."  
 157, line 10, for "*elipodioides*" read "*colpodioides*;" line 24, for "*debile*" read "*debili*;" and line 46, for "*of*" read "*to*."  
 158, line 7, for "*Spiculae 2-6 flor.*" read "*Spiculae 2-6 flore*;" line 10, for "*barbata*" read "*barbatis*," and for "*plerumpue*" read "*plerumque*;" line 12, after "*sapius*" add "*vaginis*," and for "*suffulta*" read "*suffulta*;" line 30, for "*Major Monro*" read "*Colonel Monro, of the 39th regiment, British army*."  
 159, line 33, for "*OCCIDENTAL*" read "*OCCIDENTALE*."  
 160, line 15, after "*FRYS*" add "*AQUILINA VAR.*;" line 28, for "*NOTOHELENA*" read "*NOTOHELENA*;" line 45, for "*ASPIDUR*" read "*ASPIDUR*."

## ADDITIONAL NOTES AND CORRECTIONS.

BY J. M. BIGELOW, M. D.

1. The general botanical sketch and that of the forest trees of Captain Whipple's survey were written immediately after the return from California, and before any elaboration, or even a cursory examination, of the botanical collections had been made. Soon after our return, the collections, with the exception of the Cactaceæ, were placed in the hands of my excellent friend Doctor Torrey, of New York. The Cactaceæ were not examined until the spring of 1855, illness and the obstructions to travel preventing my visiting St. Louis during the winter; consequently, my report was made and printed before the memoir on Cactaceæ was prepared, a fact which will account for many discrepancies between the two. These notes are appended for the purpose of making the necessary corrections. Though my name is associated with that of my highly esteemed friend Doctor Engelmänn, in the elaboration of the collections in Cactaceæ, justice requires that I should state that the diagnoses of all the new species are to be accredited to him alone.

2. "First appearance of grama grass," page 2.

*BOUVELOEA ERIOPODA*, *BOUVELOEA OLIGOSTACHYA*, AND *BOUVELOEA HIESUTA*, under the general term of "*grama grass*," abound upon the plains from about the 97th to about the 113th degrees of longitude. *BOUVELOEA (CHONDOBRIUM) FOSBERGII*, Torrey, collected by Major Emory, on the uplands bordering the valley of the Rio Grande, closely allied, if not identical, with one of our species, is well figured, (Pl. XII.) by Dr. Torrey, in Major Emory's report. In lower Texas, the common name of these plants is "*mesquite grass*." They all indicate a dry climate.

3. "*Mirabilis*," page 2, is probably *QUANQUILLIDON OXYRAPHOIDES*, Gray.

4. "*Evening primrose*," page 2, is *ENOTHEEA SPECIOSA*, Nutt.

5. "*Opuntia macrorhiza*," page 2, is *OPUNTIA RAFINESQUII* VAR. *JUNIFORMIS*, Engelm. Various fibrous and tuberous rooted forms of this species occur from Fort Smith, and still further east, to the mountains of Zuni, 150 miles west of the Rio Grande. Longitude 109°.

6. "*Cereus cespitosus*," pages 2 and 32. As an instance of the difficulties attending the study of this interesting family of plants, I will here quote from a letter lately received from my friend Arthur Schott, esq., who, for some time, was associated with me on the Boundary Commission. Under date of July 31, 1857, he writes: "Since I sent you the letter press copy, (Cactaceæ of the Boundary, by Dr. Engelmänn,) I have made a new discovery, which separates a little *Cereus* from *Cereus cespitosus*. It is on a living specimen which I brought on my last trip, from near Escudilla springs, (El Paso road,) and which, fortunately, produced from ten flower buds six perfect blossoms, so decidedly different from those of *C. cespitosus* that I gave a minute account of it to Dr. Engelmänn. Among the collections of your living specimens in Washington, there are two or three individuals very similar, if not identical, with my new one, but also different in habits from the white-spined true *C. cespitosus*, so that I hope we soon will be able to corroborate the fact by the study of more individuals. *C. cespitosus* has short farinaceous white spines, of a lax nature, whilst the spines of the new one are rigid, horny, yellowish translucent, adscendent, and recurved; the lower ones purpureous, very similar to the petals, whence I have given it the name *CEREUS CONCOLOR*. *C. cespitosus* flowered for me almost at the same time, so that I had a good opportunity to make close observations. In *C. cespitosus*, the flower buds are clothed with a dense greyish wool, and bear a beautiful purple showy blossom, 2" in diameter and 2" in length. In *C. concolor*, the flower buds are perfectly naked, small campanulate blossoms, with yellowish sanguineous petals, perfectly like the spines in color—0.5" in diameter and 0.8" in length." In the spines, this plant very nearly approaches *C. pectinatus*, Engelm., but in flower and some other characters, it differs very widely. In the size of the flower, arrangement and color of the spines, it more nearly approaches *C. viridiflorus*, between which and *C. chloranthus* more observations will be required to prove that it

does not form a connecting link." It is often assumed, and with apparent plausibility, that these plants are more easily studied in the field than in the herbarium; but the experience of our collectors, and the history of this little plant of Mr. Schott, proves that these difficulties are inherent in the subject, which requires close discrimination, with patient and laborious investigations.

The plant above noticed was collected at Escondido springs, on the El Paso road, near the Pecos, a locality often previously visited by every one of the botanists of the boundary commission, with the exception, perhaps, of Mr. Thurber, who crossed the Pecos somewhat higher up, on his trip to El Paso, in the fall of 1859. Mr. Schott, himself, passed it several times before. Mr. Wright passed it four several times, and Dr. Parry, an acute and discriminating collector of Cactaceae, certainly passed it once. We all failed to detect it, while passing the locality, at two different seasons of the year. In the boundary publication of Cactaceae are six or seven pretty distinct species, besides the one under consideration, that in general habit and arrangement of spines would be taken as mere varieties, were it not for the beautiful permanent distinctions presented by the flower and fruit, which are difficult to secure on hurried surveys and government expeditions.

7. "The Cactaceae have not heretofore been well studied in the United States," page 2. However well this observation might apply at the time my memoir was written, the patient labor and enlightened researches of Dr. Engelmann since that time, on the collections of the boundary commission, as well as Pacific railroad surveys and explorations, show quite a different state of things now; so that this will compare favorably with any other department of botany.

8. "Grass-leaved Dasylirion," page 4, is probably *DASYLIRION TEXANUM*, although, as Dr. Torrey thinks, it may be an undescribed species. Professor Lindley places this genus in the pine apple family. It appears to me much more nearly allied to the low-candelax form of palms.

9. "Opuntia Engelmanni," pages 4, 16, 37, and 38. At Delaware Mount, long. 97°, I first found this plant; and if *Opuntia occidentalis*, which Dr. Engelmann, in the boundary Cactaceae, has indicated as only a sub-species, is identical, it has a range of over 20° east and west. Southwardly, it extends to the Gulf of Mexico.

10. "Thymophylla Greggii," page 4, is probably *HYMERATHURUM ACRORHIZUM*, Gray.

11. "Pinus brachyptera," pages 4, 8, 9, 14, 18, 26, 134, and 141, is *PINUS ENGELMANNI*, Torrey.

12. "Balsam Fir," pages 6, 18, 23, and 141. Dr. Torrey says he names this *ABIES BALSAMICA* on my authority. I succeeded in getting broken cones at Sandia mountains, which answered to the description of *A. BALSAMICA* very well. A critical examination of it was not made.

13. "Three kinds of Cedar," pages 6, 9, 15, 20, 141, and 142. They are *JUNIPERUS TETRAOENA*, *Solmsch.*, *JUNIPERUS OCCIDENTALIS*, *Hook.*, and *JUNIPERUS PACHYFOLIA*, *Torrey*, new species. *JUNIPERUS VIRGINIANA* was also met with.

14. "New species of Opuntia," pages 7 and 47, is *OPUNTIA BRACHYARTHRA*, *E. & B.*, new species.

15. "New arborescent Opuntia," called also "our new Cactodendron," pages 7 and 11, is *OPUNTIA WHIFFLERI*, *E. & B.*, new species.

16. "Densely aggregated Cereus," pages 7 and 10, is *CEREUS MOJAVENSIS*, *var. ZUNIENSIS*, *E. & B.*, new species.

17. "Large oval masses," pages 7—10, for the number of growth of many Cereus is not a proper term. When the stems or heads are from 100 to 200, they are hemispherical or sub-hemispherical in form. When the masses are larger, they are flattened on the top.—See page 36.

18. "Cereus chloranthus," pages 7 and 12, is *CEREUS ENGELMANNI*, *Parry*, *var. VARIEGATUS*, *E. & B.*

19. "Berberis pinnata," page 7, and "Blue-berried barbery," page 10, is *BERBERIS TRIFOLIATA*, *Morison*.

20. "Mount Hope," page 8, is a peak of the Artec mountains of our line.

21. "Spring plant, Umbelliferous family," page 8, is *CYMOPTERIS MONTANA*, *Nutt.*

22. "Narrow filamentose-leaved Yucca," page 9, was not determined by Dr. Torrey, for the want of more perfect specimens.

23. "Arceuthobium," page 9. If this is different from the one growing on *Pinus Engelmanni*, Dr. Torrey has failed to notice it in his account of the Loranthis of the collections.

24. "Fraxinus velutina," page 10, is *FRAXINUS PISTACIIFOLIA*, *Torrey*.

25. "Small order of Garryaceae," page 10. It appears we have three or four species of this genus in the west.

26. "A beautiful shrubby Spiraea," page 10, is a new species, *SPICEA MILLEFOLIUM*, *Torrey*.

27. "Madrona," page 10, is *ARBUTUS MENZIESII*, *Pursh*.

28. "Mamillaria, very common," page 11, is *MAMILLARIA VIVIPARA*, *Horn.*, *var. NEO-MEXICANA*, *Engl.*

29. "Opuntia, never before seen on our route," and "O. Tidballii," page 11, is *OPUNTIA CHLOROTICA*, *E. & B.*, new species.

30. "Opuntia, similar to O. Engelmanni," page 11, is *OPUNTIA PROCUMBENS*, *E. & B.*, new species.

31. "Green-barked acacia," page 11, is *CERCIDIUM FLORIDUM*, *Benth.*

32. "Two other leguminous trees," page 11, one, as stated, is *OLNEYA TEGOTA*, *Gray*, the other is *PARKINSONIA MICROPHYLLA*, *Torrey*.

33. "Echinocactus Wislizeni, Engl.," pages 12—14, is *ECHINOCACTUS LEONTHI*, *Engl.* The same mistake was made by Drs. Parry and Le Conte.

34. "Globose Mamillaria," page 12, is *MAMILLARIA GRAHAMI*, *Engl.*, and a little further westward, in the Colorado valley, *MAMILLARIA PUGLIONESPERMA* was found. These, with two others, *M. WRIGHTII* and *M. GOODRICHII*, are so nearly alike in shape and arrangement of spines as to be easily confounded, if not examined in flower and fruit, in which state they preserve beautifully distinct and permanent characters.

35. "A new arborescent *Opuntia*," page 12, is *Opuntia acanthocarpa*, *E. & B.*, a new species.
36. "A beautiful spineless *Opuntia*," page 12, is *Opuntia basilaris*, *E. & B.*, new species.
37. "Skeletons of reticulated wood of *Cereus giganteus*," pages 12 and 37.—See frontispiece plate of *Cactaceae* of United States boundary.
38. "*Opuntia*, with very fragile joints, and armed with spines worse than a porcupine," page 13, is *Opuntia Beulzevii*, *Engl.*
39. "Stanley's landscape plate, in Major Emory's report," page 13. The arborescent *Opuntia* there represented is probably intended for *Opuntia fulgida*, *Engl.*
40. "Tree *Yucca*," page 14, is *Yucca draconis*, *Link.*, var. *arborescens*.
41. "Shrubby *Amygdalus*, or *Cereus*," page 14, is *Cereus minutiflora*, *Engl.*
42. "Bignonaceous shrub," page 14, is probably *Cheilosia*, *Dun.*
43. "*Opuntia clavata*," page 14, is *Opuntia Parryi*, *Engl.* They are very closely allied.
44. "*Opuntia fragilis*," page 14, is *Opuntia Erinacea*, *E. & B.*, a new, but closely allied species.
45. "*Opuntia phaeoantha*," page 14, is var. *Mojavensis*, *E. & B.*
46. "Aggregate *Cereus*," page 14, is *Cereus Mojavensis*, *E. & B.*, a new species.
47. "New species of the same genus, (*Echinocactus*) aggregated in large globose or ovate heads," page 14, is *Echinocactus polycephalus*, *E. & B.*, new species.
48. "Several species of *Ceanothus*," page 15, are *Ceanothus crassifolius*, *Torrey*, and *Ceanothus divaricatus*, *Nutt.*
49. "*Yucca*," page 15. Dr. Torrey thinks this is *Yucca aloifolia*, but it is quite a different plant.
50. "Beautiful evergreen oak," page 15, is *Quercus crassifolia*, *Torrey*. I collected the acorns of this tree, but Dr. Torrey must have failed to get them.
51. "*Echinocactus*, not before seen," page 15, is *Echinocactus polyanctus*, *E. & B.*, a new species.
52. "*Mamillaria atranctra*," page 15, is *Mamillaria publosperra*, *Engl.*
53. "*Platanus Mexicana*," page 16, is *Platanus racemosa*, *Nutt.*
54. "*Alnus*," page 16, is, probably, *Alnus viridis*, *DC.*, but the specimens were not perfect enough to remove all doubt.
55. "Two other species of oaks," page 16, were not determined by Dr. Torrey.
56. "Leguminous plants, such as *Medicago*," page 16, are *Melilotus parviflora*, *Desf.*, and *Medicago denticulata*, *Willd.*
57. "*Trifolium*," page 16, is *Trifolium fugatum*, *Link.*
58. "*Avena*," page 16, is *Avena fatua*, *Link.*
59. "*Cocumungo*," pages 16, 58, 63, 64, 68, 70, 75, 77, 79, 80, 83, 85, 91, 99, 104, 107, 110, 111, 118, 121, 124, 126, 127, 149, 152, and 153, and "Quival Gango," page 38, should be *Quival Mungo*.
60. "*Opuntia*, nearly akin to *O. Engelmanni*," page 16. This is *Opuntia occidentalis*, *E. & B.*, a new species in our memoir, but, in the *Cactaceae* of the boundary, Dr. Engelmann considers it only as a variety or sub-species.
61. "Other [leguminous] trees, of the size of mesquite," page 21, are *Olneya tesota*, *Grey*, and *Parkinsonia microphylla*, *Torrey*.—See note 31.
62. "*Quercus*," page 21, see note 50; also, Dr. Torrey's article, *Cupuliferae*, page 137 of present volume.
63. "*Taxus Canadensis*," pages 23—25, is *Taxus brevifolia*, *Nutt.*
64. "*Potentilla paradoxa*," page 27, is *Potentilla paradoxa*.
65. "*Lithodendron creek*," page 28, is *Lithodendron Creek*.
66. "*Echinocerei* of low growth," page 36. The only exception in American plants of this section is *Cereus tuberosus*, *Forst.*, which is a very slender form, growing two feet or more high.—See remarks, page 36.
67. "*Cereus Thurberi*," page 37, is, more probably, *Cereus Schottii*, *Engl.*
68. ("*Organos del Lunar*,") page 37, should be *Organos del Tunal*.
69. "*Corte Madera*," pages 62, 70, 71, 72, 73, 74, 76, 78, 79, 80, 81, 85, 86, 92, 99, 109, 113, 117, 119, 121, 125, 128, 136, 142, 144, 152, 156, and 157, and, wherever it occurs, should be *Coté Madera*.
70. "*Mohave creek*," pages 67, 73, 89, 86, 104, 122, 124, 133, 143, 147, and, wherever else it occurs, should be *Mojave Creek*. The Indians, I believe, pronounce the name *Amochales*, and Colonel Frémont sometimes spells it *Mohave*.
71. "*Tamal Pass*," and "*Tamal Pass mountain*," pages 72, 93, 106, 168, 135, 145, and 150. In the United States Coast Survey this is called *Table mountain*. It is in Marin county, near *Coté Madera*.
72. "*Cahon*," and "*Cohon*" *Pass*, pages 75—83. This is the *Cajon Pass* of the Sierra Nevada.
73. "*Mark West's creek*," pages 79, 85, 92, 101, 113, 121, 126, 135, 138, 153, 154, 155, 156, and 157. This stream is north of Sonoma and Petaluma, and is a small tributary of Russian river.
74. "*Sophora speciosa*," page 82. I have met this plant very often in lower Texas, but this one, gathered at *White Cliff creek*, appeared quite different to me.
75. "*Cajon Creek*," and "*Cajon Pass*," page 99, are very near *White Cliff*, in the *Cactus Pass* mountains.
76. "*Inscription rock*, on the Puerco of the west," page 102, should be *Inscription Rock*, near *Zuñe*.
77. "*Camp Douglas*," page 111, is at the eastern base of the *Sandia* mountain, near *San Antonita*.
78. "*Costa county*," page 150, should be *Contra Costa county*.

(61) 5

No. 4.

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DESCRIPTION OF THE GENERAL BOTANICAL COLLECTIONS.

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BY JOHN TORREY.

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RANUNCULACEÆ.

*CLEMATIS LIGUSTICIFOLIA*, Nutt. in Torr. & Gray, Fl. 1, p. 9. Near San Antonita, New Mexico; October. In fruit.

*CLEMATIS BIGELOWII*, (sp. nov.): humilis? herbacea? glabella; foliis pinnatis vel subbipinnatis; foliolis 7-9 trilobis tripartitisve longiuscule petiolulatis, lobis subovatis integerrimis nunc incisis; pedunculis solitariis unifloris; calyce subcampanulato, sepalis anguste oblongis haud crassis apice obtuso patentibus; caudis carpellorum dense plumosus. On the Sandia mountains, New Mexico; October. Of this apparently new Clematis there is only a single flowering specimen and a few mature carpels in the collection. The stem appears to be low and nearly herbaceous, but it probably elongates and climbs by the petioles. The leaflets are only from half an inch to an inch in length, membranaceous and inconspicuously veined; those of the lower pinnae more divided. Peduncle an inch or two in length, nodding in flower. Sepals scarcely over half an inch in length, pale, membranaceous in the dried state, probably a little thickened in the living plant, but not leathery as in *C. Viorna*, *C. Pitcheri*, etc., almost glabrous, except the densely tomentose margin, not appendaged, but the obtuse tip spreading. Carpels silky pubescent, becoming glabrate; the tails over an inch long, plumose as in *C. Viorna*. The flowers are smaller than in any other North American species of this division.

*CLEMATIS LASIANTHA*. Nutt. in Torr. & Gray, Fl. 1, p. 9. Hill sides, Napa valley, April 27. Only the male plant of this showy species was collected by Dr. Bigelow. The female was not known when the Flora of North America was published; but it has since been found by Colonel Frémont. The carpels have tails of about an inch and a half in length.

*THALICTRUM FENDLERI*, Engelm. in Gray, Pl. Fendl. p. 5; var.? *POLYCARPUM*: glaberrimum; carpellis numerosioribus eglandulosis. Mountain ravines, New Mexico. In fruit October, &c. Sides of rivulets, Napa valley, California, April 25, (with immature fruit). It occurs in Coulter's California collection, in flower only. Leaves mostly petiolate, ternately decomposed: leaflets obovate and cuneate, incisedly 3-lobed; the lobes cut or entire. Panicle contracted, few-flowered. Sepals ovate, rather acute. Carpels 15-25, ovate, compressed, with two prominent ribs on each side. Stigma linear, elongated. *T. Fendleri* has a more compound and spreading panicle than our plant, and the carpels are more or less glandular.

*THALICTRUM DIOICUM*, Linn.; Torr. & Gray, Fl. 1, p. 38. Mountains near San Gabriel; March 23. Only the male flowers are in the collection; and it is possible the plant may be distinct from *T. dioicum*. That species occurs in Oregon.

*ANEMONE NEMOROSA*, Linn.; var. caule gracili elongato; foliis utrinque pubescentibus. San

Geronimo Ranch; April 12. Differs from the ordinary form of *A. nemorosa*, in its tall stem (which is a foot or more below the involucre), the elongated petioles, and the pretty strong pubescence of the leaves. The leaflets are rhombic-ovate, incised and rather coarsely toothed, but the lateral ones are not two-parted in any of the specimens. Such leaflets, however, occur now and then in the eastern *A. nemorosa*. Rev. Mr. Spalding found the same plant on the Kookooskee, in Oregon, and it exists in Geyer's collection.

*RANUNCULUS AQUATILIS*, *Linn. sp. p.* 556. Corte Madera; in water; April 10-13. This seems not to be the form or species which almost universally represents the section *Batrachium* in North America, but what is called *R. aquatilis* by those European authors, who do not subdivide the Linnæan species extremely. It is a state destitute of emersed leaves.

*RANUNCULUS HEDERACEUS*, *Linn. var.* With the preceding. Nearly the *R. tripartitus*, *D.C.*, as to the leaves, etc.; but the receptacle of the fruit is glabrous. The petals are oblong-obovate and twice the length of the calyx. This is the first *Batrachium*, bearing emersed leaves, which we have received from any part of North America.

*RANUNCULUS TRACHYSPERMUS*, var.? *LINDHEIMERI*, *Engelm. in Pl. Lindh.* 1, p. 3. Napa valley, in wet places; April 26. The granulate roughened carpels principally distinguish this from *R. pusillus* (to which *R. oblongifolius*, *Ell.*, with large bright yellow petals, numerous stamens, and apiculate achenia, does not properly belong). The heads of carpels incline to become oblong.

*RANUNCULUS DIVARICATUS*, *Schrank; Gray, Pl. Wright.* 2, p. 8. In the bed of the Pecos; October.

*RANUNCULUS AFFINIS*, *R. Br.; Var. β. Hook. Fl. Bor.-Am.* 1, p. 13, t. 6. Near San Antonita; October. In fruit.

*RANUNCULUS CALIFORNICUS*, *Benth. Pl. Hartw.* p. 295. *R. dissectus*, *Hook. & Arn. Bot. Beech. p.* 316. *R. delphinifolius*, *Torr. & Gray, Fl. Suppl.* p. 659, non *H. B. & K.* Los Angeles; March 21. This is *R. acris β. Torr. & Gray* = *R. Deppii*, *Nutt. Mss.* It agrees exactly with Nuttall's specimens. Two forms of the plant were collected by Dr. Bigelow. 1. About a span high, manifestly pubescent, and the leaves with narrowly linear segments. 2. Tall and stout; less pubescent; leaves with oblong-cuneate segments. Fremont gathered the latter in 1846, near San José.

*RANUNCULUS REPENS*, *Linn.; Torr. & Gray, Fl. l. c.* San Francisco; April 5. Resembles the European. In the long styles it agrees with some of the forms of this polymorphous species, though not with the ordinary state of it, that we find in the northern States.

*RANUNCULUS CANUS*, *Benth. Pl. Hartw.* p. 295. Hill sides, Duffield's Ranch, Sierra Nevada; May 11. A less white-hairy form; some of the radical leaves only 3-5-parted. The plant is probably only a state of *R. repens*.

*RANUNCULUS HEBECARPUS*, *Hook. & Arn. Bot. Beechey*, p. 369. *R. parviflorus*, *Torr. & Gray, Fl.* 1, p. 25. Along rivulets, Sonora, May 9th; and hill-sides, Knight's Ferry, Stanislaus; May 8. Not an uncommon species in the southern part of California. It is regarded by most of our botanists as a variety of *R. parviflorus*, which, indeed, it very much resembles. This species differs, however, it being much less hairy; the lobes of the leaves are broader and less acute; the fruit is decidedly tuberculate, while in *R. hebecarpus* it is merely a little roughened, and the pubescence longer. In the latter the beak of the fruit is decidedly shorter than in the former.

*AQUILEGIA CANADENSIS*, *Linn.; Torr. & Gray, Fl.* 1, p. 29; var. *sepalis limbo petalorum duplo-longioribus, calcare subequalibus*. A formosa, *Fisch. in DC. Prodr.* 1, p. 70; *Torr. & Gray, l. c.* Plains near Oakland, California; April 5.

*DELPHINIUM NUDICAULE*, *Torr. & Gray, Fl.* 1, p. 33, t. 661. *D. sarcophyllum*, *Hook. & Arn. Bot. Beechey*, p. 317. Hill sides, Napa valley, April 27, and near San Geronimo Ranch, California, April 12. A beautiful species with large scarlet flowers. It would be a great acquisition to our gardens.

A splendid scarlet-flowered *Delphinium* was discovered by Dr. Parry, in 1850, on the mountains east of San Diego. It is *D. coccinium*, *Torr.* (*Bot. Mexican Boundary Survey*, with a

*D. cardinale Hook. l. c. May 1857*



figure). It differs from *D. nudicaule* in the leaves, the lobes of which are deeply 3-cleft, with linear-lanceolate acute segments.

*DELPHINIUM AZUREUM*, Michx. *Fl. 1*, p. 314: var. *floribus cœruleo-albidis*, Benth. *Pl. Hartw.* p. 296. Plains, etc., Knight's Ferry, Stanislaus; May 7.

*DELPHINIUM PATENS*, Benth. *Pl. Hartw.*, p. 296. Hills, Napa; and on mountains near Oakland; April 4-25.

*DELPHINIUM SIMPLEX*, Dougl. in Hook. *Fl. Bor.-Amer. 1*, p. 25; Hook. & Arn. *Bot. Beechey*, p. 317. Napa valley; April 26.

*DELPHINIUM VARIEGATUM*, Torr. & Gray, *Fl. 1*, p. 32; *D. decorum*, Benth. *Pl. Hartw.* p. 295. Napa valley; April 26. Flowers sometimes almost white.

*DELPHINIUM DECORUM*, Fisch. & Mey. *Index sem. (3) Petrop.*, p. 33. Plains near Punta de los Reyes; April 17. Perhaps *D. variegatum* is not distinct from this.

*DELPHINIUM SCOPULORUM*, Gray, *Pl. Wright. 2*, p. 9. In the Sandia mountains, New Mexico; October. In fruit.

*ACTEA SPICATA*, Link. var. *ARGUTA*, Nutt. in Torr. & Gray, *Fl. 1*, p. 35. Redwoods, Corte Madera, and Oakland; April 4-10. Not found before south of Oregon. We are of opinion that *A. rubra* and *A. alba* are likewise only varieties of *A. spicata*.

*PÆONIA BROWNII*, Dougl. in Hook. *Fl. Bor.-Amer. 1*, p. 27; *Bot. Reg. 25*, t. 30. Cocumungo, March 17; and Duffield's ranch, Sierra Nevada, May 10. *P. Californica*, Nutt., is not a distinct species.

*CROSSOSOMA CALIFORNICA*, (Tab. I.) Nutt. *Pl. Gamb. in Journ. Acad. Philad. (ser. 2) 1*, p. 150. Cañons on Williams' River, a branch of the Colorado, western New Mexico; February 8. In the memoir above quoted, Mr. Nuttall does not express any opinion as to the affinities of this genus, owing to the embryo being unknown, the seeds in all his specimens being imperfect; but he says that it "may well form a Suborder Crossosomeses." On the ticket of a fragment of this plant, which he sent us, he has written: Nat. Order Pæoniaceæ. Unfortunately, our specimens are only in flower, and the ripe seeds are still wanting. Although the stamens are decidedly perigynous, and the seeds are furnished with an ample fimbriate arillus, the plant may nevertheless belong to the tribe or Suborder Pæoniaceæ. We were once inclined to refer it to tribe Spirææ of Rosaceæ, to which it has some resemblance in the flowers; but it is destitute of stipules, and arillate seeds are not found in that order. We should place this remarkable plant in Dilleniaceæ, were it not for the perigynous stamens. These are inserted in several series into the upper part of a thin disk which, lining the tube of the calyx, projects in a somewhat tumid border around the base of the pistils, as in Pæonia.

#### BERBERIDACEÆ.

*VANCOUVERIA HEXANDRA*, Morr. & Dec. in *Ann. Sc. Nat. (2 ser.) 2*, p. 351; Torr. & Gray, *Fl. 1*, p. 52. *Epimedium hexandrum*, Hook. *Fl. Bor.-Am. 1*, p. 31, t. 13. Deep ravines and shady woods, Napa valley; April 27.

*BERBERIS AQUIFOLIUM*, Pursh, *Fl. 1*, p. 219, t. 4, (excl. fig. 4.) Hill-sides Downieville, Yuba; May 22. In the specimens from this locality, the leaflets are mostly reduced to a single pair, and are sometimes even solitary. The Var. *REPENS* was found in the Sandia mountains of New Mexico.

*BERBERIS PENNATA*, Lag. *Elench. 1803*, p. 6; Benth. *Pl. Hartw.*, p. 296. *Mahonia fascicularis*, DC. *Syst. 2*, p. 19, and in Deless.  *Ic. 2*, t. 3. Mountains near Oakland; April 4. This agrees pretty well with Delessert's figure, but we are not confident that it is distinct from *B. aquifolium*. The short petioles are pretty constant, but we can find no other reliable characters. This plant occurs also near San Francisco.

*BERBERIS TRIFOLIATA*, Moricand, *Pl. Amer. t. 69?* In arroyas and cañons; Lithodendron creek western New Mexico; December 4, (in fruit.) This species grows 15 feet high. The leaves

have frequently two pairs of leaflets, which are furnished with 2-4 (sometimes more) very strong angular teeth. The fructiferous racemes are loose, and the pedicles of the dark-blue berries are half an inch long. The same plant grows between the Rio Grande and the Gila, where it was collected by Major Emory, and it is the *B. pinnata* of Sitgreave's report. Colonel Frémont found it on the tributaries of the Virgin river. Dr. Gregg collected, near the battle-field of Buena Vista, what seems to be the same species, except that he says the berries are reddish; but they may be so only when they are unripe.

*BERBERIS FENDLERI*, Gray, *Fl. Fendl.*, p. 5. Mountain arroyos and bluffs on the Pecos, New Mexico; October. In fruit. The lower cauline leaves are spinulose-toothed, and the racemes appear not to have been many-flowered; otherwise the specimens accord with those of Fendler.

#### PAPAVERACEÆ.

*ESCHSCHOLTZIA CALIFORNICA*, Cham.; Torr. & Gray, *Fl.* 1, p. 664. Sandy plains, Cocomungo; March 19. Common in most parts of California.

*ESCHSCHOLTZIA DOUGLASSII*, Hook. & Arn. *Bot. Beech.*, p. 320; Torr. & Gray, *l. c.*—Hill-sides Knight's ferry, Stanislaus; May 8. We find the acumination of the calyx nearly as long as in the preceding species. The flowers, too, are smaller than in the Oregon plant.

*ESCHSCHOLTZIA DOUGLASSII*, Var. *tenuifolia*. *E. tenuifolia*, Benth. in *Trans. Hort. Soc.* (ser. 2) 1, p. 408. With *E. Douglasii*, from which it differs only in its usually very short stem, long sub-radical peduncles, and very narrow segments of the leaves; characters which are by no means constant. What appears to be a diminutive form of this variety, was collected on Williams' River of the Great Colorado, early in February.

*DENDROMECON RIGIDUM*, Benth. in *Hort. Trans.* (ser. 2) 1, p. 407; Hook. *l. c.* 37. Gravelly hills near Oakland, California; April 5.

*MECONELLA CALIFORNICA*, Torr. & Frém. in *Frém. 2d Rep.* Mokelumne hill, California; May 17. Also found on the American river by Mr. Rich, and near San Francisco by Mr. Thurber. We have also specimens collected in California by Mr. Gibbes. It differs from *M. Oregona* in having 11 or 12 stamens, and in its much larger flowers.

*PLATYSTIGMA LINEARE*, Benth. in *Hort. Trans.* (2 ser.) 1, p. 407; Hook. *l. c.* 38; Torr. & Gray, *Fl.* 1, p. 65. Low places near San Francisco; April 8. A much rarer plant than the next.

*PLATTSTEMON CALIFORNICUM*, Benth. *l. c.*; Lindl. *Bot. Reg.* t. 1679; Torr. & Gray, *Fl.* 1, p. 66. Cocomungo, March 17; plains near San Gabriel, March 23.  $\beta$  *LEOCARPUM*, Torr. & Gray, *l. c.* Hills and plains, Benicia, April 24; Knight's ferry, Stanislaus, May 8.

*MECONOPSIS HETEROPHYLLA*, Benth. *l. c.*; Torr. & Gray, *Fl.* 1, p. 61; Hook. *l. c.* 8, t. 732. Hill-sides, Martinez, California; April 23.

*ARGEMONE MEXICANA*, Linn. Plains of Deer creek, Arkansas; August.

#### FUMARIACEÆ.

*DICENTRA FORMOSA*, DC. *Syst.* 2, p. 109; Torr. & Gray, *Fl.* 1, p. 603 (not 67.) <sup>605</sup> *Fumaria formosa*, Dryand. *Bot. Mag.* t. 1335. Mountains near Oakland, April 5; hillsides and ravines, Duffield's ranch, Sierra Nevada, May 12.

#### CRUCIFERÆ.

*CHEIRANTHUS CAPITATUS*, Dougl. in Hook. *Fl. Bor.-Amer.* 1, p. 38; Torr. & Gray, *Fl.* 1, p. 71. *C. asper*, Cham. & Schlecht. in *Linnaea* 1, p. 14, (excl. syn.) *Erysimum grandiflorum*, Nutt. in Torr. & Gray, *Fl.* 1, p. 96. Sand Hills, near the sea-shore, Punta de los Reyes, April 17. A true *Cheiranthus*.

*NASTURTIUM PALUSTRE*, DC.: the usual short-fruited form. On the Pecos, and St. Domingo; October.

*NASTURTIUM OBTUSUM*, Nutt. in Torr. & Gray, *Fl.* 1, p. 74. River banks, middle Yuba, May 2. The North American species of this genus need a careful revision. They are probably too many of them described in our books.

*NASTURTIUM CURVISILIQUA*, Nutt. l. c. Gravelly hills near the Colorado; February. Without full-grown fruit.

*BARBAREA VULGARIS*, R. Br.; var. *pedicellis angulo recto patulis*, etc. Benth. *Fl. Hartw.*, p. 297. Near San Francisco and Punta de los Reyes, April.

*STREPTANTHUS FLAVESCENS*, Hook.  *Ic.* 1, t. 34; Torr. & Gray, *Fl.* 1, p. 77. River banks, Benicia, April 24. Sepals hairy. Pods about an inch and a half long, nearly terete, sparsely hirsute, with a long tapering point, strictly erect. Pedicles almost hispid, with spreading or reflexed hairs.

*STREPTANTHUS LINEARIFOLIUS*, Gray, *Pl. Fendl.*, p. 7. Gravelly and rocky places, on Hurrah creek; September. The radical and some of the lower cauline leaves are spatulate or obovate, and short.

*STREPTANTHUS CORDATUS*, Nutt. in Torr. & Gray, *Fl.* 1, p. 77. River banks, Middle Yuba, May 21. Stem 2-3 feet high, paniculately branched above; whole plant very smooth and somewhat glaucous. Lower leaves and sometimes the cauline ones repandly or sharply denticulate; the latter about an inch long, mostly obtuse, strongly clasping. Pedicles usually almost as long as the flower, spreading and curved upward. Flower buds acute. Calyx very obtuse at the base. Sepals with a long narrow acuminate point, the exterior ones carinate, petals spatulate, shorter than the calyx. Torus or receptacle dilated. Pods not seen. We have specimens of the plant collected in California by Colonel Frémont and Mr. Gibbes.

*STREPTANTHUS LONGIFOLIUS*, Benth. *Pl. Hartw.*, p. 10, No. 52. Gray, *Pl. Fendl.*, p. 6, var. *glaber*; *pedicellis brevioribus*. Sandy hills near the Colorado of the West. New Mexico, February 22. Root annual. Stem about a foot high, slender. Lower leaves acutely repand-dentate; upper ones linear-oblong, entire. Pedicles shorter than the closed calyx, recurved after flowering. Petals linear-spatulate, pale purple, a little exerted. Pods (immature) an inch long, with a tapering summit.

*TURRITES GLABRA*, Linn.; Torr. & Gray, *Fl.* 1, p. 78. *T. macrocarpa*, Nutt. in Torr. & Gray, *Fl.* l. c. Near San Francisco, April 3. A dwarf state of this species was found on Cajon creek, March 17. We reduce Nuttall's *T. macrocarpa* to *T. glabra*, as there are often intermediate forms between the two.

*TURRITES PATULA*, Graham, in *Edinb. Phil. Jour.*, (1829,) p. 7; Torr. & Gray, *Fl.* 1, p. 79 Gray, *Pl. Wright.* 2, p. 10. Yuba river, May 22. In all Dr. Bigelow's specimens of this plant the stem-leaves are nearly as hairy as the radical leaves.

*TURRITES PATULA*, Graham; Hook. *Fl. Bor.-Am.* 1, p. 40: var. *magis hispidula*. Hill sides, Downieville; May 22.

*ARABIS HIRSUTA*, Scop.; Torr. & Gray, *Fl.* 1, p. 80.  $\beta$ . *GLABRATA*, Torr. & Gray, l. c. Wet ravines, Duffield's ranch, Sierra Nevada, May 11, (in flower.)

*CARDAMINE ANGULATA*, Hook. *Bot. Misc.* 1, p. 343, t. 69; Torr. & Gray, *Fl.* 1, p. 84. *C. paucisecta*, Benth. *Fl. Hartw.*, p. 297. Hill-sides, Duffield's ranch, Sierra Nevada, May 10; mountains near Oakland, April 4; and plains near San Gabriel, March 23. Radical leaves sometimes entire; but more commonly 3-parted, with the segments petiolulate, roundish, entire, or obscurely repand-toothed; stem-leaves 3-5-parted; the segments varying in form from broadly ovate and cordate to lanceolate, and narrowed at the base, entire, toothed. Flowers as large as in *Cardamine rhomboidea*. Pods erect, an inch and a half long, on a stalk of about the same length,  $1\frac{1}{4}$  line wide, tapering to a long point. Seeds narrowly margined, distant. Root tuberiferous.

*CARDAMINE OLIGOSPERMA*, Nutt. in Torr. & Gray, *Pl.* 1, p. 85; Benth. *Fl. Hartw.* Near San Francisco; April 3. Very near *C. hirsuta*, but differs in the broader pods and less numerous seeds.

*SISYMBRIUM OFFICINALE*, Scop.; Torr. & Gray, *Fl.* 1, p. 91. Near Benicia, April 24. Doubtless introduced.

*SISYMBRIUM CANESCENS*, Nutt. *Gen.* 2, p. 68; Torr. & Gray, *Fl.* 1, p. 92. Var. *CALIFORNICUM*, Torr. & Gray, l. c. Williams' River of the Colorado, New Mexico. February 6-18.

*SISYMBRIUM DEFLEXUM*, (Harvey, *Mss. in herb. Gray.*) annuum, pilis patentibus hispidulum; caule stricto, foliis simplicibus, foliis oblongis inferioribus pinnatifidis seu pinnatifidis, segmentis lineari-lanceolatis distantibus laciniato-dentatis integrisve, sinibus obtusis; foliis supremis linearibus integris; pedicellis brevibus cum siliquis angustissimis rectis elongatis teretiusculis arcte deflexis. Turritis? lasiophylla, Hook. & Arn. *Bot. Beechey*, p. 321? Hill-sides, Napa valley, April 26. About three feet high, slender, the lower half almost hispid, with short spreading hairs. Lower leaves petiolate, 2-3 inches long, more hispid than the stem; middle leaves sharply toothed; the highest 2-3 lines wide, and usually entire. Flowers about as large as in *Cardamine hirsuta*, and apparently white. Petals oblong-spatulate. Pods 2-3 inches long, and scarcely half a line wide. Pedicles 2 lines long. Cotyledons incumbent. This plant resembles a *Sisymbrium* from Coulter's Californian collection, sent to us by Dr. Harvey under the name of *S. deflexum* Harv., of which we believe no description has yet appeared. A smoother and more humble form of it (some of the specimens only 2 or 3 inches high) was collected near San Francisco, April 3.

*SISYMBRIUM INCISUM*, Engelm. in *Pl. Fendl.*, p. 8. Mountain arroyas, near San Antonita, New Mexico; October.

*ERYSIMUM ASPERUM*, DC. Laguna Blanca to the Sandia mountains.

*THELIPIDIUM WRIGHTII*, Gray, *Pl. Wright*, 1, p. 7. Rocky places on the Pecos; September. Many of the flowers are in an enlarged and abnormal state, probably from the stinging of insects.

*TROPIDOCARPUM GRACILE*, Hook.  *Ic.* 1, t. 43; Torr. & Gray, *Fl.* 1, p. 94. *T. scabriusculum*, Hook. l. c.; Torr. & Gray, l. c. Plains near San Gabriel, March 23. We find the two species of Hooker to pass into each other.

*ERYSIMUM ASPERUM*, DC. *Syst.* 2, p. 506; Torr. & Gray, *Fl.* 1, p. 94. Near San Francisco, April 3, and mouth of Santa Rosa creek, May 1, (with flowers and immature fruit.) Flowers cream-color or pale yellow, becoming deeper in drying. A variety (or possibly distinct species) with much larger and orange-yellow flowers, was found at Cocomungo, March 17, without fruit; also found by Mr. Wallace. We are unable to find characters that will clearly distinguish *E. Arkansasum* and *E. elatum* from this species. The leaves and degree of pubescence are very variable, and the pods seem to be the same in all of them.

*VESICARIA ARGYREA*, Gray, *Pl. Lindheim*, 2, p. 147. Arroyas and cañons, Williams' River of the Colorado, New Mexico, February 7-26.

*VESICARIA FENDLERI*, Gray, *Pl. Fendl.*, p. 9. Bluffs and rocky places, New Mexico; October. To this very polymorphous species must be referred *V. stenophylla*, Gray, *Pl. Lindh.* 2, p. 149.

*DRABA AUREA*, Vahl; Hook. *Bot. Mag.* t. 2934. San Antonita, New Mexico, and in the Sandia mountains, in rocky places; October. Mostly in fruit. From these specimens the plant appears to have a biennial root, while those of Fendler would seem to be perennial. The siliques are mostly twisted.

*DRABA CUNEIFOLIA*, Nutt. in Torr. & Gray, *Fl.* 1, p. 108. Williams' River of the Colorado; February 11.

*DITHYREA WISLIZENI*, Engelm. in *Wisl. Mem. New Mex.*, p. 11; Torr. in Marcy, *Expl. Red River*, t. 11. On prairies and sandy bottoms of the Canadian, near Antelope Hills; September. It is from this region doubtless that the plant was first collected by Dr. James.

*DITHYREA CALIFORNICA*, Harv. in Hook.  *Lond. Jour. Bot.* 4, p. 77, t. 5; Engelm. in *Wisl. Mex.* p. 95. Sandy hills on the Colorado of the West. February 22. The radical leaves are deeply lyrate-pinnatifid. The calyx is 4 or 5 lines long; much longer, narrower, and more closed than that of *D. Wislizeni*. The petals appear to have been purple.

*LEPIDIUM NITIDUM*, Nutt. in Torr. & Gray, *Fl.* 1, p. 116. Sandy plains, Cocomungo; March

17. A humble annual; seldom more than a span high. The flowers are tetrapetalous in all of Dr. Bigelow's specimens.

*LEPIDIDIUM ALYSOIDES*, Gray, *Pl. Fendl.* p. 10. San Antonita and Galisteo, New Mexico; October.

*LEPIDIDIUM WRIGHTII*, Gray, *Pl. Wright.* 2, p. 15. On Williams' River of the Colorado, New Mexico; February 11. There are 4 minute petals in all the specimens.

*LEPIDIDIUM FLAVUM* (sp. nov.): annuum, pusillum, acule, demum prolifero-ramosum, depressum glabrum; foliis crassiusculis oblongo-spathulatis pinnatifidis, lobis rotundatis brevibus; floribus capitato-congestis flavis; petalis obovatis unguiculatis; siliculis ovatis, sinu lato emarginato truncatis breviter bidentatis stylo bis longioribus. Sandy places near the Mohave creek; March 13. These are early specimens of a minute depressed plant, in flower only. But a single specimen was gathered by Fremont, in the same region, in his second expedition, from which the fruit is here characterized. The leaves are half an inch or more in length, and mostly rosulate around the sessile capitate or umbellate cluster of small yellow flowers: and the axis of the inflorescence apparently does not elongate in fruit. Stamens tetradynamous. Silicle a-line long. Valves minutely reticulated. Cotyledons incumbent.

*THYSANOCARPUS ELEGANS*, Fisch. & Mey. *Ind. Sem. St. Petersb.*, Dec. 1835; Torr. & Gray, *Fl.* 1, p. 118. Hill sides, Napa; April. The pods are perforated only when they are quite mature and dry. They vary in shape from nearly orbicular to orbicular-obovate. The stem is usually simple or with very few branches. *T. pulchellus*, Fisch. & Mey., and *T. radians*, Benth., seem to be only forms of this species.

*THYSANOCARPUS CRENATUS*, Nutt. in Torr. & Gray, *Fl. l. c.* Hill sides, Sonora, California; May 9. Chiefly distinguished from *T. elegans* by its smaller pods and paniculately branching stem.

*THYSANOCARPUS LACINIATUS*, Nutt. in Torr. & Gray, *Fl. l. c.* Plains near San Gabriel, March 23, and sandy places, Cajon creek. Radical leaves pinnatifid; the segments very narrow and entire.

*THYSANOCARPUS OBLONGIFOLIUS*, Nutt. in Torr. & Gray, *Fl. l. c.* Sides of hills, Napa; April 26.

*THYSANOCARPUS PUSILLUS*, Hook. *IC.* 1, t. 43; Torr. & Gray, *Fl. l. c.* Low wet places near San Francisco, April 8, and Murphy's, May 14.

#### CAPPARIDACEÆ.

*CLEOME (PERITOMA) INTEGRIFOLIA*, Torr. & Gray, *Fl.* 1, p. 122; Gray, *Gen. III. t. 76, Pl. Fendl.* p. 11. Comanche plains, on the banks of rivulets; September. The form with lanceolate leaflets, and very densely crowded, large flowers. Galisteo, and on the Rio Grande near Santa Domingo, in low places; October: a form with oblong or obovate leaflets, and smaller as well as fewer flowers, mostly on short axillary branchlets, appearing considerably different, but doubtless of the same species. Fendler's No. 49 is intermediate. The leaflets are entire in all the specimens I have seen. Probably, however, *C. serrulata*, Pursh is not distinct.

*CRISTATELLA JAMESII*, Torr. & Gray, *Fl.* 1, p. 124; Gray, *Gen. III. t. 77.* Gravelly hills, on the Canadian; September.

*POLANTSEA UNGLANDULOSA*, DC. *Prod.* 1, p. 242; Gray, *Pl. Wright.* 1, p. 10. *P. trachysperma* Torr. & Gray, *Fl.* 1, p. 669. On the Canadian, and at Anton Chico; August, September.

#### VIOLACEÆ.

*VIOLA SHELTONII*, (sp. nov.): glabra, caulibus ascendentibus brevibus; foliis circumscriptione reniformi-cordatis trisectis, segmentis subsessilibus, irregulariter palmatim 5-8-fidis lobatisve, lobis lineari-cuneatis obtusis; stipulis parvulis ovatis apice ciliatis, sepalis lineari-lanceolatis; petalis luteis, calcare brevi sacciforme, (TAB. II.) Hill sides, Yuba, near Downieville; May 8. A neat little species resembling *V. Beckwithii*, Torr. & Gray in Beckwith's Report; but that has the divisions of the leaves conspicuously petiolulate, and the two upper petals purple.

*VIOLA LOBATA*, *Benth. Pl. Hartw. p. 298.* Moist and shady places, Napa valley, April 27. Grass valley, May 21. Rhizoma short, throwing down a tuft of long thick fibres. Stem sometimes a foot high, naked below. Leaves variable in the lobing. Flowers large, the petals yellow, often tinged with purple, especially on the outside; the lateral ones bearded near the base.

*VIOLA CHRYSANTHA*, *Hook. Ic. 1, t. 49; Torr. & Gray, Fl. 1, p. 143.* Hill sides and plains, Knight's ferry, Stanislaus, and Murphy's, California; May 8-14.

*VIOLA PEDUNCULATA*, *Torr. & Gray, Fl. 1, p. 141.* Sandy plains, Cocumungo, March 17; Benicia, April 24; Duffield's Ranch, Sierra Nevada, May 10. A pubescent form was collected near Santa Rosa creek, May 1. This species, *V. præmorsa*, *Dougl.*, *V. linguæfolia*, *Nutt.*, and *V. Nuttalli*, *Ph.*, are nearly allied, and should, perhaps, be united.

*VIOLA SARMENTOSA*, *Dougl. in Hook. Fl. Bor.-Am. 1, p. 80; Torr. & Gray, l. c.* Mountains near Oakland, April 4; Red woods, April 12.

*VIOLA OCELLATA*, *Torr. & Gray, Fl. 1, p. 142.* Deep ravines, Napa valley. Mr. Thurber found this species near the quicksilver mines of New Almaden.

*VIOLA ADUNCA*, *Smith in Rees Cyclop. V. longipes, Nutt. in Torr. & Gray, Fl. 1, p. 140.* Santa Rosa creek; May 1. The specimens are tall and slender, with the peduncles much elongated; but a short cespitose form of the plant (which is the same as Hartweg's No. 1660,) with the peduncles scarcely longer than the leaves, was collected at Duffield's Ranch, Sierra Nevada. There can be scarcely a doubt that the little known *V. adunca* of Smith is identical with Nuttall's *V. longipes*. The description of Smith agrees with our plant, but we have seen no authentic specimen for comparison.

*VIOLA CUCULLATA*, *Ait.; Torr. & Gray, Fl. 1, p. 139.* Pecan creek, Arkansas, and on the Pecos. August-October; Cocumungo, California; March 18. The style is more slender and the stigma less rostrate in the Californian than in the eastern plant; but in other respects we find no difference.

*VIOLA CANADENSIS*, *Linna.* In the Sandia mountains, New Mexico; October. In flower and fruit.

#### HYPERICACEÆ.

*HYPERICUM ANAGALLOIDES*, *Cham. & Schlecht. in Linnaea 3, p. 127; Torr. & Gray. Fl. 1, p. 160.* Wet places, Laguna Santa Rosa, May 1, and Punta de los Reyes, April 18. Leaves varying from oblong to broadly ovate, sparsely pellucid-punctate. Not very distinct from *H. mutilum*\*.

\* A remarkable shrub, bearing ripe pods only, was found by Dr. Bigelow in western New Mexico, on the hills bordering Williams' river, from near its source to its confluence with the Great Colorado. The Mexicans call it *Canotia*. It usually grows from 9 to 10 feet high, but was sometimes found attaining the height of nearly 20 feet. The branches are very numerous, alternate, rigid, terete, of a greenish color, and terminate in very long thorns. The epidermis is smooth and finely striate. Between the elevated striae there are 2 or 3 rows of impressed perforations. There were no leaves on the plant when Dr. Bigelow saw it, and he thinks that it never bears any; but there are distant alternate brown scars, where minute leaves or scales appear to have been. The pedicels are somewhat racemose towards the summit of the branches. They are about half an inch long, somewhat spreading, then curved upward, and are articulated below the middle. Calyx persistent, 5-cleft, small, free from the ovary. The corolla, if any, is deciduous. Stamens 5, hypogynous; filaments slender and distinct. The fruit is nearly an inch long, oblong, acute at each end, and pointed with a short persistent subulate style, covered with a thin red flesh; the endocarp lignous; 5-celled, septically dehiscent about two-thirds of the way down, and loculicidally at the summit, which thus presents 10 subulate points in pairs. Seed solitary in each cell, suspended from near the summit at the inner angle, oblong, compressed with a broad somewhat falcate wing at the inferior extremity. Testa coriaceo-chartaceous, dull, minutely granulated. Albumen very thin. Embryo nearly the length of the seed; cotyledons thin and flat. Radical inferior, terete, short, straight.

We can scarcely form a conjecture as to the affinities of this plant, but may note that the fruit is not unlike that of *Eucryphia*, which Lindley, following Choisy, refers to Hypericaceæ, notwithstanding its superior radicle. The fruit has the same thin fleshy covering that occurs in our plant, and the large seeds (of which there are only three or four in each carpel) are also furnished with a conspicuous wing on the lower side; but the radicle is certainly superior. It is yet uncertain whether the New Mexican plant ever bears leaves. Dr. Bigelow saw it early in the spring, when other shrubby plants of the region were beginning to assume their foliage, but it was entirely naked. We must wait for other observations on this strange shrub, and especially for its flowers, before assigning it a place in the system. As, however, there can be but little doubt of its constituting an undescribed genus, we may bestow upon it the provisional name of *Canotia holacensis*.

## CARYOPHYLLACEÆ.

*SILENE CALIFORNICA*, Durand, *Pl. Pratt. in Jour. Acad. Philad.*, (n. ser.) 2, p. 83. *S. pulchra*, Torr. & Gray, *Fl. 1*, p. 675; *excl. syn. Cham. & Schlecht.*; *S. Virginica*, Benth. *Pl. Hartw. No.* 1653. Sides of hills, Mammoth Grove, and Duffield's Ranch, Sierra Nevada, May; Mormon island, Mr. Rich. var? *viscido-pubescentis*; foliis ovatis sessilibus, cymis subtrifloris; petalis profunde bipartitis, lobis bifidis, segmentis bidentatis v. integris. Valley of the Sacramento, Mr. Shelton. This variety has leaves sometimes as broad as those of *S. latifolia*. At the base of the limb of the petals there is remote linear lobe or tooth. In the specimens from Mormon island the middle lobes of the petals are somewhat toothed on the margin, especially near the summit. *Lychnis pulchra*, Cham. & Schlecht., which was founded on a Mexican plant, seems clearly to be *Silene laciata*, Cav. We are not sure that it grows in California, unless, which is possible, *S. Californica* passes into it.

*SILENE QUINQUEVULNERA*, Linn.; Torr. & Gray, *Fl. 1*, p. 191. Hills near Sonoma; May 3. Doubtless introduced from Europe.

*SILENE DRUMMONDII*, Hook. *Fl. Bor.-Am. 1*, p. 89; Torr. & Gray, *Fl. 1*, p. 91 and 675. Near San Francisco; April 8. On the Sandia mountains, New Mexico; October. In fruit.

*SILENE ANTIRRHINA*, Linn.; Torr. & Gray, *Fl. 1*, p. 191. Hill sides, Napa valley; April 16.

*SAGINA DECUMBENS*, Torr. & Gray, *Fl. 1*, p. 177. *Spergula saginoides*, Linn.; Michx. *Fl. 1*, p. 276. Damp places near San Francisco. Sepals and petals 4-5, equal in length. Stamens 10.

*ALSINE DOUGLASHI*, Fenzl.; Torr. & Gray, *Fl. 1*, p. 674. Napa valley; April 26. Seeds orbicular-reniform, compressed, not margined.

*ALSINE MICHAUXII*, Fenzl. *Arenaria stricta*, Michx. *Fl. 1*, p. 274. Walnut creek; August: on rocks. In fruit.

*ARENARIA MACROPHYLLA*, Hook. *Fl. Bor.-Amer. 1*, p. 102, t. 37; Torr. & Gray, *Fl. 1*, p. 182. *Mæhringia umbrosa*, Fenzl.; Gray, *Pl. Fendl. p.* 13. We are uncertain of the station of this plant, as the ticket belonging to it was lost; but it is probably the valley of the Sacramento. Dr. Bigelow's specimens are rather smaller than Nuttall's from Oregon, and the leaves are narrower. They accord pretty well with *Mæhringia umbrosa* from Songaria, in our herbarium, except that the leaves are narrower. Our California plant is not sufficiently mature to show the character of the seeds.

*ARENARIA DIFFUSA*, Ell. *Sk. 1*, p. 519; Gray, *Pl. Wright. 2*, p. 18. San Antonita, New Mexico; October.

*ARENARIA FENDLERI*, Gray, *Pl. Fendl. p.* 13. Laguna Blanca, in pine woods; September. The specimens bear mature fruit. The capsule is slightly longer than the calyx, and six-valved. Seeds obliquely obovate, with a minute uncinatè micropyle, papillose-scabrous. Embryo unequally hypocrepeiforme.

*STELLARIA JAMESII*, Torr. in *Ann. Lyc. New York*, 2, p. 169. In the Sandia mountains; October. This striking species has not been collected, since its discovery by Dr. James, until now. The weak stems (a foot in length) and the older leaves are glabrous; the branches, etc., viscid-pubescent. The larger leaves are 3 or 4 inches long, and two-thirds of an inch in width.

*STELLARIA NITENS*, Nutt. in Torr. & Gray, *Fl. 1*, p. 184. Near San Gabriel, March 23. In our specimens the leaves are fringed with weak hairs, the lowest ones are oblong-ovate, on long petioles, the middle ones lanceolate-spatulate, and the uppermost linear. Sepals subulate-lanceolate, acuminate, 3-nerved. Petals oblong, deeply two-parted with linear segments. A similar form occurs in Oregon. We have also an apetalous triandrous state of the plant from hills near Murphy's; May 14.

*STELLARIA LITTORALIS*, (sp. nov.): undique pubescens; caule ascendente? superne cymosomoso; foliis ovatis acuminatis basi rotundatis arcte sessilibus; pedicellis foliis vix longioribus; petalis profunde bipartitis, laciniis linearibus, sepala lanceolata excedentibus. Seashore, Punta

de los Reyes; April 17. Stems about a foot long, clothed, like the leaves, with a short woolly (and somewhat viscid?) pubescence. Leaves nearly an inch long and half an inch wide; the upper ones almost amplexicaul. Flowers few in leafy cymes, about as large as in *Cerastium vulgatum*. Sepals lanceolate, acute, obscurely 3-nerved. Petals about one-fourth longer than the sepals. Stamens 10. Styles rarely 4. Ovary and young fruit globose-ovate. This species resembles *S. pubera*, but that has less pubescence on the stem in two lines; the leaves are much larger, narrow at the base, and nearly smooth, except on the margin, and the sepals are broader as well as more obtuse. The present plant has much the aspect of a *Cerastium*, but the styles are almost invariably only three, and never five.

*CERASTIUM OBLONGIFOLIUM*, Torr. in *Sill. Jour.* 4, p. 63; Torr. & Gray, *Fl.* 1, p. 188. Near Punta de los Reyes, California; April 17. Except in the larger flowers, we see nothing in which this differs from the eastern plant.

*PARONYCHIA RAMOSISSIMA*, DC. *Mém. Paronych.* p. 12, t. 4; Torr. & Gray, *Fl.* 1, p. 72. San Francisco; April 8.

*PARONYCHIA SESSILIFLORA*, Nutt. *Gen.* 1, p. 150; Hook. *Fl. Bor.-Amer.* 1, p. 226, t. 79. Gravelly natural mounds on the Canadian; September.

*PARONYCHIA DICHOTOMA*, Nutt. *l. c.* On the Canadian, in rocky prairies; August.

*DRYMARIA GLANDULOSA*, Bartl.; Gray, *Pl. Wright.* 2, p. 18. La Cuesta, New Mexico, on mountains, under pine trees; September. A small state.

*SPERGULARIA RUBRA*, Pers. *Syn.* 1, p. 504, (Sect. *Arenariæ*); Gray *Gen. III.* 2, p. 25, t. 107. *Arenaria rubra*, Linn. *Spergula rubra*, Torr. & Gray, *Fl.* 1, p. 174, and Torr. & Gray, *Fl.* 1, p. 157. *Arenaria media*, Linn. *A. marginata*, DC. *prodr.* 1, p. 401. Low places where the tide flows, Martinez, Corte Madera, &c.; April 10-23. All the specimens have the seed broadly margined.

#### PORTULACACEÆ.

*PORTULACA PILOSA*, Linn. Pecan creek, in dry, rocky places; August.

*PORTULACA RETUSA*, Engelm. in *Pl. Lindl.* 2, p. 154. On the upper Canadian; September.

*CALANDRINIA MENZIESII*, Hook. *Fl. Bor.-Amer.* 1, p. 223, t. 10; Torr. & Gray, *Fl.* 1, p. 197. Cocomungo, March 18, Corte Madera, April 20. *C. speciosa*, Lindl., seems to be scarcely distinct from this species. Dr. Bigelow collected at Cahon Pass, March 16, a *Calandrinia* scarcely an inch high, but with conspicuous bright purple flowers. It is, probably, *C. Menziesii* in a very early state.

*CLAYTONIA CAROLINIANA*, Michx. *Fl.* 1, p. 160; var. *SESSILIFOLIA*: minor, racemo foliis ovato-oblongis sessilibus vix longiore; petalis obovatis integris. *C. lanceolata*, Hook. *Fl. Bor.-Am.* 1, p. 234. On hills near Downieville, May 22. Whole plant only 2 or 3 inches high. Tuber globose, about half an inch in diameter. There were no radical leaves on any of the numerous specimens. Stem leaves from half an inch to three-fourths of an inch or more in length. Raceme 6-10-flowered, a little overtopping the leaves, even when the lower capsules were nearly mature. Flowers about half as large as in the eastern plant. (They are quite as large in specimens of *C. lanceolata*, Hook., collected in the Rocky mountains by Burke). Calyx one-third the length of the petals. Corolla apparently pale rose-color. This is the only perennial (corm-bearing) *Claytonia* that we have received from California. Pursh's *C. lanceolata* (as intimated in the *Flora of North America*), is a spurious species, made up of *C. Caroliniana* and *C. alsinoides*. The leaves, in all the species of this genus that we have examined, are furnished with a fine intra-marginal vein, in which all the veinlets terminate.

*CLAYTONIA ALSINOIDES*, Sims, *Bot. Mag.* t. 1309; Torr. & Gray, *Fl.* 1, p. 199. Marshes, Punta de los Reyes, April 17; deep woods, Bolinas bay, April 19.

*CLAYTONIA PERFOLIATA*, Don, *Hort. Cant. ed.* 4, p. 50; *Bot. Mag.* t. 1335; Torr. & Gray, *l. c.* Corte Madera, April 12; Cocomungo, March 18; Cajon creek, March 18. In the specimens from the



two latter stations, some of the radial leaves are rhomboidal, others are linear-spatulate, showing a tendency to pass into *C. parviflora*.

*C. PERFOLIATA*, var. *PARVIFLORA*: foliis radicalibus lineari-spathulatis, caulinis in unum ovale perfoliatum coalitis. *C. parviflora*, *Dougl. in Hook. Fl. Bor.-Amer.* 1, p. 225, t. 73; *Torr. & Gray, l. c.*; *C. gypsophiloides*, *Fisch. & Mey. Index. Sem. St. Petersburg.* (1835), p. 33. Hills, Middle Yuba (fine specimens, nearly a foot high). A dwarf form was collected near San Francisco, April 3.

*C. PERFOLIATA*, var. *EXIGUA*: nana; radicalibus anguste linearibus; caulinis lanceolatis vel linearibus, subconnatis. *C. exigua*, *Torr. & Gray, Fl. l. c.* San Francisco; April

A careful examination of our numerous specimens of annual *Claytonia* has led us to reduce several species to *C. perfoliata*, and we would add to the list of varieties *C. spathulata*. Intermediate forms connect all these. Hereafter it may be found necessary to include *C. tenuifolia*.

*CLAYTONIA LINEARIS*, *Dougl. in Hook. Fl. Bor.-Am.* 1, p. 224, t. 71; *Torr. & Gray, l. c.* Wet places, Napa valley; April 26. The specimens are considerably larger than those of Douglas. The seeds are larger than in any other species of this genus; they are lenticular, acute on the margin, and highly polished. A very distinct species.

*MONTIA FONTANA*, *Linn.; DC. Prodr.* 3, p. 361; *Torr. & Gray, Fl.* 1, p. 202. In water; Duffield's ranch, Sierra Nevada, May 11; San Francisco, April 8; Corte Madera, April 20. On the western side of America, the range of this plant extends from Sitcha to Quito, but on the eastern side it has not been found south of Newfoundland. Chamisso (in *Linnaea* 6, p. 565) considers the Quito plant as a distinct species, which he calls *M. lamprosperma*, and states that it occurs also in the island of Unalaschka, and at the Bay of Eschscholtz. In plate 7, figs. 1-2, of the volume quoted, he has given figures of the seeds of that species, and of *M. fontana*. Our Californian plant has exactly the seeds of *M. fontana*, and Mr. Nuttall's Oregon specimens have the same; but *M. fontana*  $\beta$ . from Sitcha, is *M. lamprosperma* of Chamisso. We find the seeds to vary in size and color, and Dr. J. D. Hooker, in *Fl. Antarct.*, p. 13, has shown that the two species are almost certainly not distinct.

*LEWISIA REDIVIVA*, *Pursh, Fl.* 1, p. 368; *Hook. Bot. Misc.* 1, p. 344, t. 70; *Torr. & Gray, Fl.* 1, p. 677. Rocky places, Napa valley; April 25. This interesting plant extends as far south as the American fork of the Sacramento.

#### STERCULIACEÆ.

*FRÉMONTIA CALIFORNICA*, *Torr. in Smithson. Contrib.* 6, p. 5, t. 2. Cajon Pass of the Sierra Nevada. The plants found by Dr. Bigelow were about 15 feet high, which is much taller than the specimens seen by Col. Frémont and Rev. Mr. Fitch. They were bearing ripe fruit on the 16th of March, which must have been formed the previous season. The capsules are in perfect condition, and show that no part of the calyx is deciduous. The seeds are about as large as in *Hibiscus Syriacus*, ovate, black, smooth, and somewhat shining. Testa thick and crustaceous. Embryo straight, lying in fleshy and oily albumen; cotyledons ovate, foliaceous, nearly flat. In all of Dr. Bigelow's specimens of the *Frémontia*, the leaves were small, few of them being more than an inch in diameter.

#### MALVACEÆ.

*CALLERRHÖE INVOLUCRATA*, *Gray, Pl. Fendl.*, p. 15, and *Gen. III. t.* 117. On the Canadian; September.

*MALVASTRUM COCCINEUM*, *Gray, l. c.* Upper Canadian, and near Galisteo, New Mexico.

*MALVA BOREALIS*, *Wallm.; Gray, Pl. Fendl.*, p. 15. *M. obtusa*, *Torr. & Gray, Fl.* 1, p. 225, A common weed in California.

*SIDALCEA DIPLOSCYPHA*, *Gray, Gen. III. 2, t.* 222; *Plant. Fendl.*, p. 19. *Sida diploscypha*. *Torr. & Gray, Fl.* 1, p. 234. Plains, Ione valley, California; May 18.

*SELLARIA HIRSUTA*, Gray, *Pl. Wright*, 1, p. 16. *S. delphinifolia*, Gray, *Pl. Fendl.*, p. 19, and *Gen. Ill.* 2, t. 12, f. 10-12, and in *Benth. Pl. Hartw.* p. 300, excl. syn. Nutt. In low places, on the sides of rivulets; Knight's ferry, Stanislaus river, California; May 7.

*SELLARIA HARTWEGI*, Gray, *Pl. Fendl.*, p. 209, and in *Benth. Pl. Hartw.*, p. 300. Plains and hill-sides, Napa valley; May 5. Fine specimens of this rare plant are in the collection; some of them are sparingly branched above, and the racemes are somewhat compound. The fruit is still unknown.

*SELLARIA MALVÆFLORA*, Gray, *Pl. Wright*, 1, p. 16. *Sida malvæflora*, Moc. & Sesse.; DC. *Prodr.* 1, p. 194. *Sidalcea Neo-Mexicana*, Gray, *Pl. Fendl.* p. 23. *S. Oregana*, Gray, l. c. Mokelumne hill, May 17; plains of Napa valley, May 5.

*SELLARIA HUMILIS* and var.  $\beta$ . Gray *Pl. Fendl.* p. 20. Hills near Oakland, April 5; Punta de los Reyes, April 18;  $\beta$ . Napa valley. Perhaps not distinct from *S. malvæflora*.

*SIDA LEPIDOTA*, var. *SAGITTIFOLIA*, Gray, *Pl. Wright*, 1, p. 18. Plains, Laguna Colorado; September.

*SIDA SPINOSA*, Linn. Shawneetown, Indian Territory; August.

*ABUTILON PARVULUM*, Gray, *Pl. Wright*, 1, p. 21. Rocky hills near Anton Chico; September. *SPHERALCEA ANGUSTIFOLIA*, var. (*S. stellata*, Torr. & Gray.) Plains of the Upper Canadian, etc.; September.

*SELLARIA INCANA?* var. *OBLONGIFOLIA*, Gray, *Pl. Wright*, 2, p. 21. Galisteo, in low places; October.

*HIBISCUS MOSCHEUTOS*, Linn. Sandy bottoms of the Canadian; September.

#### LINACEÆ.

*LINUM PERENNE*, Linn. Gravelly hills and plains near Galisteo, New Mexico; October. In fruit.

*LINUM RIGIDUM*, Pursh, *Fl.* 1, p. 210; Gray, *Pl. Wright*, 2, p. 25. Prairie hills, on the Canadian; September.

*LINUM CALIFORNICUM*, *Benth. Plant. Hartw.* p. 298. Plains of Feather river, near Marysville; May 25. Petals rose color in the bud; white when expanded. In all the flowers that we examined, there were but 3 styles, and the ovary was tricarpeillary. Some of our specimens are more than a foot high.

#### GERANIACEÆ.

*GERANIUM CAROLINIANUM*, Linn.; Torr. & Gray, *Fl.* 1, p. 207. Corte Madera, April 12; hill-sides, Murphy's, May 14. One of the most widely diffused plants of North America.

*GERANIUM RICHARDSONII*, Fisch. & Meyer; Engelm. in *Pl. Fendl.* p. 26. *G. albiflorum*, Hook. In the Sandia mountains, New Mexico; October.

*GERANIUM CASPITOSUM*, James, in *Long's Exped.*; Gray, *Pl. Fendl.* p. 25. Mountain arroyas, near San Antonita; October. A low and diffuse state, mostly in fruit, and an erect form, near Wright's No. 910, but with long peduncles.

*ERODIUM MACROPHYLLUM*, Hook. & Arn. *Bot. Beech.*, p. 227; Torr. & Gray, *Fl.* 1, p. 679. Hill-sides, Murphy's, May 14. All the specimens are small leaved.

*ERODIUM CICTARIUM*, L'Herit.; DC. *Prodr.* 1, p. 646; Torr. & Gray, *Fl.* 1, p. 208. In various parts of New Mexico; also plains near Los Angeles, and on Williams' river, near the Colorado, February and March. In the specimens from the latter station the leaves are more cut than usual.

#### OXALIDACEÆ.

*OXALIS OREGANA*, Nutt. in Torr. & Gray, *Fl.* 1, p. 211. *O. Acetosella*, Hook. *Fl. Bor.-Am.* 1, p. 118, (ex parte.) Tamul Pass, April 11. Perhaps not distinct from *O. Acetosella*; the chief difference being the greater proportionate breadth of the leaflets. The rhizoma is some-

times a foot or more in length. It is only the portion near the leaf-bearing extremity that has the scales imbricated; on the other parts they are distant and alternate.

*OXALIS STRICTA*, *Lin.*; *Torr. Fl., New York*, 1, p. 123. Plains near San Gabriel, March 23-

## LIMNANTHACEÆ.

*LIMNANTHES ROSEA*, *Benth. Pl. Hartw.*, p. 302; "*Jour. Hort. Soc.* 4, t. 78." Low wet places, Corte Madera; Stanislaus; Los Angeles, etc. March—May. Scarcely distinct from *L. Douglasii*; the divisions of the leaves being, in some of Douglas' original specimens, quite as narrow as those of *L. rosea*. In cultivated specimens of the latter the ultimate segments of the leaves are broader than in the wild plant.

*LIMNANTHES ALBA*, *Benth. l. c.* Hill-sides, Duffield's ranch, Sierra Nevada, May 12. This seems to be a very distinct species, and is obviously distinguished by its hairiness.

## RUTACEÆ.

*THAMNOSMA MONTANUM*, (*Torr. & Frém.*) fruticosum, ramosissimum; ramis spinescentibus; foliis crassiusculis lineari-spathulatis obscure punctatis; antheris sagittatis promissis mucronatis; disco parvo stipite fructifero (sesquilineari) columnari multum brevioris; capsula didyma basi retusa; seminibus cochleatis lævibus. (Tab. III.)—*Torr. & Frém. in Frém. 2d. Rep.*, p. 313. Dry ravines of the Mohave, near the Colorado, March 3-9. The description in the work here quoted was drawn from imperfect materials, and the plant was incorrectly referred to *Zanthoxylaceæ*, instead of *Rutaceæ* proper. The aestivation of the corolla is imbricated, not valvate. The stamens and filiform style are more or less exserted. Stigma small and capitate. Albumen thin. *Rutosma* of Gray must be included in this genus.

*PTELEA TRIFOLIATA*, *Lin.* *B. mollis*, *Torr. & Gray, Fl. 1*, p. 680; *Gray, Pl. Wright. 1*, p. 31. Rocky hills of the Upper Canadian; September. In fruit.

## ANACARDIACEÆ.

*RHUS TRILOBATA*, *Nutt. in Torr. & Gray, Fl. 1*, p. 219. Hilly prairies on the Canadian; September. In fruit.

*RHUS DIVERSILOBA*, *Torr. & Gray, Fl. 1*, p. 218. *R. lobata*, *Hook. Fl. Bor. Am. 1*, p. 127, t. 46, non *Poir.* Plains and mountains near San Gabriel, March 23; Martinez, April 23. The specimens are all male.

*STYFRONIA INTEGRIFOLIA*, *Nutt. in Torr. & Gray, Fl. 1*, p. 220; *Nutt. Sylv. 3*, p. 4, t. 82. Ravines, Cojon Pass; March 17. The leaves are three inches long, and nearly two inches wide, ovate, with a short acumination. Dr. Parry collected similar specimens near Santa Barbara. *S. serrata* is probably not a distinct species.

*LITHREA LAURINA*, *Walp. Repert. 1*, p. 551. *Rhus laurina*, *Nutt. in Torr. & Gray, Fl. 1*, p. 219. Near San Gabriel, March 23, (in fruit; doubtless of the preceding season.) The thin pulp of the dry fruit consists chiefly of a white waxy material, which is soluble in very strong alcohol, and seems to be almost entirely cerine.

## VITACEÆ.

*VITIS INCISA*, *Nutt. in Torr. & Gray, Fl. 1*, p. 241. Gypsum rocks, Elm creek; August.

*VITIS RUPESTRIS*, *Scheele in Linnaea 21*, p. 291, On the Canadian, Pecos, etc. August—September. In fruit.

## ACERACEÆ.

*NEGUNDO ACEROIDES*, *Moench.* In a cañon on the Pecos; September. In fruit.

*ACER TRIPARTITUM*, *Nutt. in Torr. & Gray, Fl. 1*, p. 247; *Gray, Pl. Fendl.*, p. 28. Arroyas

in the Sandia mountains; October. In fruit. While some of the leaves are trifoliate, others on the same branch are only three-lobed, and so much resemble those of *A. glabrum* that the species probably cannot be kept distinct.—*Gray, Mss.*

*ACER MACROPHYLLUM*, *Pursh, Fl. 1, p. 267; Hook. Fl. Bor.-Am. 1, p. 112, t. 38; Nutt. Sylv. 2, p. 76, t. 67.*

*NEGUNDO ACEROIDES*, *Manch. Meth., p. 334; Torr. & Gray, Fl. 1, p. 260; N. Californicum, Torr. & Gray, l. c.; Nutt. Sylv. 2, p. 90, t. 72. Acer Negundo, Linn. Corte Madera, April 10, (in flower.)*

## SAPINDACEÆ.

*ÆSCULUS CALIFORNICA*, *Nutt. in Torr. & Gray, Fl. 1, p. 251; and Sylv. 2, p. 69, t. 64. Hill-sides, Sonoma, May 3, in flower; mountains near Oakland, (leaves only.)*

*ÆSCULUS FLAVA*, *Art.; Pursh, Fl. 1, p. 255. On the Canadian, near the Shawnee villages, and Deer creek; August. In fruit.*

*SAPINDUS MARGINATUS*, *Willd.; Gray, Gen. III. 2, t. 180. Creek bottoms, on the Upper Canadian; September. In fruit.*

*CARDIOSPERMUM HALICACABUM*, *Linn. Deer creek; August.*

## CELASTRACEÆ.

*PACHYSTEMA MYRSINITES*, *Raf. in Amer. Month. Mag., 1818; Gray, Pl. Fendl., p. 29. Ilex? Myrsinites, Pursh, Fl. 1, p. 119. Oreophila myrtifolia, Nutt. in Torr. & Gray, Fl. 1, p. 259.—Sandia mountains, New Mexico; October; in fruit. Hill-sides. South Yuba, California; May 26. The leaves are larger than in the Oregon plant, and sharply serrate. The woody stem is of extremely slow growth, several annual circles being included with one-tenth of an inch.*

*EUONYMUS OCCIDENTALIS*, *Nutt. Mss. E. atropurpureus ? Torr. & Gray, Fl. 1, p. 258. Head of Tomales bay; April 17. Leaves ovate, mostly obtuse, at the base quite smooth. Peduncles 3-flowered. Flower pentamerous, larger than in *E. atropurpureus*. The fruit is unknown.*

*CELASTRUS SCANDENS*, *Linn. Pecan creek; August. In fruit.*

*GLOSSOPETALON SPINESCENS*, *Gray, Pl. Wright. 2, p. 29, t. 12. Cañons in the Llano Estacado; September. Without flowers or fruit.*

## RHAMNACEÆ.

*RHAMNUS CROCEUS*, *Nutt. in Torr. & Gray, Fl. 1, p. 261. Hills near Sonora, May 9; Rocky hills, 80 miles west of the Colorado. Leaves often green underneath.*

*FRANGULA CALIFORNICA*, *Gray, Gen. III. 2, p. 178; and Pl. Wright. 2, p. 28. Rhamnus Californicus, Esch.; Torr. & Gray, Fl. 1, p. 263. R. oleifolius, Hook. Fl. Bor.—Am. 1, p. 123, t. 44. R. laurifolius, Nutt. in Torr. & Gray, Fl. l. c. Hill-sides, Robinson's ferry, Stanislaus, May 14; a variety, with larger leaves, softly pubescent on both sides; Napa valley, May 5, (leaves nearly glabrous both sides, and with obtuse serratures;) mountains near San Gabriel, March 23, (glabrous leaves, with acute serratures): var. *TOMENTELLA*, *Gray, Pl. Wright. l. c. Rhamnus tomentellus, Benth. Pl. Hartw. p. 303. Butte mountains, near Marysville, May 25. A plant of very diverse appearance; but its extreme forms pass insensibly into each other. In favorable situations it attains the height of 18 feet.**

*CEANOTHUS THYRSIFLORUS*, *Esch.; Torr. & Gray, Fl. 1, p. 266; Bot. Reg. 30, t. 38; Nutt. Sylv. 2, p. 43, t. 57. Punta de los Reyes, April 18; San Francisco, April 3; hill-sides, Napa valley, April 27. A beautiful shrub, known in its native country under the name of California lilac.*

*CEANOTHUS SOREDIIFOLUS*, *Hook. & Arn. Bot. Beech. p. 328; Torr. & Gray, Fl. l. p. 686. Hill-sides, Grass valley; May 9-19. A neat little shrub, 4-5 feet high, (sometimes prostrate,) with*

numerous clusters of bright-blue flowers, and resembling *C. thyrsoiflorus*, only much smaller. A trailing form, with more pubescent branches and leaves, and short-peduncled panicles, was found at Duffield's ranch, Sierra Nevada, (May 12,) and at the Washington Mammoth grove, (May 15.)

*CEANOETHUS DIVARICATUS*, Nutt. in Torr. & Gray, *Fl. l. c.* Var.? *GROSSE-SERRATUS*: foliis majoribus, grosse-serratus, acutiusculis. Station not recorded. Branches thorny at the extremity; serratures of the leaves acute; flowers blue.

*CEANOETHUS INCANUS*, Torr. & Gray, *Fl. l. c.* p. 265. A single specimen, of a slender form, of this species exists in the collection. It is without a ticket, but was probably found in the valley of the Sacramento.

*CEANOETHUS CRASSIFOLIUS*, (Torr. in Emory's Mex. Bound. Rep., cum tab. ined.) fruticosus, ramulis pubescentibus; foliis ovatis, integerrimis, vel remote spinuloso-denticulatis coriaceis crassis penninerviis, supra demum glabratis, subtus albo-tomentosis, thyrsois subsessilibus umbelliformibus (horibus albis.) Hills and sandy plains, Cajon Pass, March 16; Teyung, California, Mr. Wallace, 1854. Dr. Parry discovered this well-marked species in the mountains south of Los Angeles, while acting as botanist, under Major Emory, in the Mexican boundary survey.

*CEANOETHUS INTEGERRIMUS*, Hook. & Arn. Bot. Beechey, p. 329; Torr. & Gray, *Fl. l. c.*; Benth. Pl. Hartw. p. 302, No. 1684. Grass valley, May 20; Los Angeles, May 14; hill-sides, Nevada, May 20.

*CEANOETHUS DIVARICATUS*, Nutt. l. c. var. *EGLANDULOSUS*: foliis integerrimis (marginibus nec denticulatis glanduliferis) obtusissimis. On mountains near San Gabriel; March 22. Also with vestiges of last year's fruit. Cohon Pass, March 16. (Collected by Dr. Parry on the mountains east of San Diego; in fruit and in flower by Mr. Wallace, at Boca de Teyunga, April.) This has the flowers, the divaricate spinescent branches with whitish bark, and also the foliage of *C. divaricatus*, except that none of the specimens show a trace of the glandular denticulations so manifest in the specimens of Douglas and of Coulter; nor is the pubescence on their ribs quite so evident. Some of the leaves are slightly cordate.—Gray, *Mss.*

*CEANOETHUS CUNEATUS*, Nutt. in Torr. & Gray, *Fl. l. c.* p. 267. *C. macrocarpus*, Nutt. l. c., (non *Cavan.*) Cocomungo, March 17; San Giovana, April 12; Napa valley, April 27; Knight's ferry, Stanislaus, May 7, (fruit.) A very variable species in the size and form of the leaves. It should, perhaps, include *C. verrucosus* of Nuttall.

*CEANOETHUS DENTATUS*, Torr. & Gray, *Fl. l. c.* p. 268; Lindl. & Paxt. *Fl. Gard.* 1, p. 17, t. 4. Santa Rosa Laguna; May 1. This pretty species has much the appearance of *C. sorediatus*, but the leaves are hardly 3-nerved.

*CEANOETHUS RIGIDUS*, Nutt. in Torr. & Gray, *Fl. l. c.*; Lindl. & Paxt. *Fl. Gard.* 1, p. 74, t. 51; Bot. Mag. 78, t. 4664. Var. *GRANDIFOLIUS*. Punta de los Reyes; April 18. The leaves are three times larger than in the ordinary form of this species, and strongly spinose-toothed on the sides, as well as at the extremity. This variety seems to show almost a transition to *C. prostratus*, through the broad-leaved form of that plant noticed below; but we are not willing to unite the two species, without seeing a more extensive suite of specimens for comparison.

*CEANOETHUS PROSTRATUS*, Benth. Pl. Hartw. p. 302. Grass valley, May 20; with immature fruit. The leaves vary from oblanceolate and entire to cuneate and tricuspidate. The fruit is crowned with 3 strong protuberances. A variety, with much larger obovate-cuneate leaves, coarsely spinose-toothed down to the middle, or at the apex only, was found at the Washington Mammoth grove. Colonel Frémont collected the same on the Upper Sacramento in 1846.

*CEANOETHUS FENDLERI*, Gray, Pl. Fendl. p. 20. Sandia mountains; October. In fruit.

#### MESEMBRYANTHEMACEÆ.

*MESEMBRYANTHEMUM DIMIDIATUM*, HBK.? Sea-shore, Punta de los Reyes, April 18. The plant is abundant in several other places on the coast of California, and was probably introduced.

## FRANKENIACEÆ.

FRANKENIA GRANDIFOLIA, *Cham. & Schlect. in Linnæa* 1, p. 35; *Torr. & Gray, Fl.* 1, p. 168. Corte Madera; April 10.

## POLYGALACEÆ.

POLYGALA CUCULLATA, *Benth. Pl. Hartw.* p. 229. Hill-sides, Napa valley; April 27. We have seen no other *Polygala* from California, nor from any other part of the Pacific coast, and we strongly suspect that *P. Nutkana*, *Moc. Sesse.* (if really from the northwest coast) and *P. Californica*, *Nutt.*, are not distinct. The leaves are variable in breadth. In some of Frémont's specimens, collected on the Sacramento, they are acute at the base, and the apex is scarcely blunt. The little appendage which takes the place of this crest at the summit of the keel is sometimes rostrate, and either straight or curved. Although there are no flowers or radical sarments in Dr. Bigelow's specimens, there are vestiges of them, and it is probable that in the early state of the plant it usually produces such flowers.

POLYGALA LINDHEIMERI, *Gray, Pl. Lindh.* 2, p. 150. On the Llano Estacado; September. A form with mostly linear leaves.

## KRAMERIACEÆ.

KRAMERIA LANCEOLATA, *Torr. in Am. Lyc., New York*, 2, p. 168. Sandy prairies on the Canadian; August.

## LEGUMINOSÆ.

VICIA EXIGUA, *Nutt. in Torr. & Gray, Fl.* 1, p. 272; *var. ? CALIFORNICA.* River banks, Benicia, April 24. We have not seen the Californian variety of the plant noticed by Mr. Nuttall. The specimens collected by Dr. Bigelow seem to be quite as near *V. exigua*, and perhaps the two species are not distinct. The former has been found in Alabama by Mr. Buckley, and in Florida by Dr. Chapman. All the specimens of Dr. Bigelow have single-flowered peduncles, which are of not half the length of the leaves. They are usually 6 leaflets, which are about an inch long and two lines wide, glabrous and emarginate, with a mucro, or acute and entire. The stipules are minute, and narrowly semi-sagittate. The pod is fully an inch long, sabre-shaped, and 5-7-seeded.

VICIA GIGANTEA, *Hook. Fl. Bor.-Amer.* 1, p. 157; *Torr. & Gray, Fl.* 1, p. 270. Mountains near Oakland; April 4; Punta de los Reyes, April 18. This agrees well with our Oregon specimens from Dr. Scouler and Mr. Nuttall, except that the lower teeth of the calyx are not so long. It also occurs in Coulter's Californian collection.

VICIA OREGANA, *Nutt. in Torr. & Gray, Fl. l. c.* *V. truncata*, *Nutt. l. c.* Mountains, near Oakland, April 4; hill-sides, Benicia, April 24. We find Nuttall's two species to run into each other.

LATHYRUS VESTITUS, *Nutt. in Torr. & Gray, Fl.* 1, p. 276. *Var. ? MULTIFLORUS:* foliolis ovato-oblongis, pedunculis folio multo longioribus 20-25-floris, dentibus inferioribus calycis superioribus triplo-longioribus. Hills, Tomales bay, April 19; Corte Madera, April 10. About one foot high, clothed with a short soft pubescence. Leaflets 6 pairs, nearly three-fourths of an inch long, cuspidate. Peduncles 2-3 times longer than the leaves. Flowers nearly as large as in *L. palustris*. Lower teeth of the calyx linear-lanceolate, three times longer than the upper triangular ones. Stipules lanceolate, semi-sagittate, entire.

LATHYRUS VENOSUS, *Muhl. in Willd. Sp.* 3, p. 1092? *Torr. & Gray, Fl.* 1, p. 274, (the *var. γ.*;) *Benth. Pl. Hartw., No.* 1705. *L. decaphyllus*, *Hook. Fl. Bor.-Amer.* 1, p. 159; non Pursh. Grass valley, May 19. A stout plant, with a winged stem. Leaflets 6 pairs, an inch and a

half long, ovate-elliptical, minutely pubescent on both sides. Peduncles 4-6 inches long, (exclusive of the 10-14-flowered raceme.) Upper teeth of the calyx very short, and broadly triangular, with a minute point; all the teeth shorter than the tube. The stipules are larger than in the eastern plant, but much smaller than the leaves. We have not seen the pods.

*LATHYRUS VENOSUS*, var. *GRANDIFLORUS*: caule nudo; foliolis (subdecum) minoribus supra glabris; pedunculis folio subduplo longioribus; floribus maximis, dentibus calycis tubo subæqualibus. Cocomungo, March 17. The flowers are twice as large as in the ordinary form of this species.

*LATHYRUS VENOSUS*, var. *δ*. *Torr. & Gray, l. c.* *L. pubescens*, *Nutt. Mss.* Hill-sides, Benicia; April 24. This agrees with our Oregon specimens from Nuttall. It is between *L. venosus* and *vestitus*, and seems almost to unite the two species.

*LATHYRUS VENOSUS*: var. *OBOVATUS*: caule nudo; foliolis sub-4-jugis plerumque obovatis obtusis puberulis; racemo 3-4-floro; calycis dentibus subæqualibus. Near the Mammoth Grove and at Duffield's Ranch, Sierra Nevada, May 15. A mountain form, with larger flowers than usual.

*LATHYRUS OCHROLEUCUS*, *Hook. Fl. Bor.-Am. 1, p. 159?* Var. pedunculis 12-20-floris, folio subæquantibus. Hill-sides, Murphy's, May 12. Leaflets of a firm texture, and more approximated than in the eastern plant.

We are by no means satisfied with the results of our examination of the *Lathyri* in Dr. Bigelow's collection. The species of this genus are extremely variable, especially those of Oregon and California. It is possible that the true *L. venosus* does not grow on the northwest coast; but we have not been able to discover characters sufficient for distinguishing from that species any of the varieties enumerated above.

*LATHYRUS POLYMORPHUS*, *Nutt. Gen. 2, p. 97; Gray, Pl. Fendl., p. 30.* Laguna Colorado, New Mexico, September; and Santa Domingo, October; in low and wet places.

*OROBUS LITTORALIS*, *Gray, in Stevens' Rep. ined.* *Astrophia littoralis*, *Nutt. in Torr. & Gray, Fl. 1, p. 278.* Specimens of this plant were given to Dr. Bigelow by Dr. Andrews. They were probably collected on the coast, near San Francisco.

*PHASEOLUS DIVERSIFOLIUS*, *Pers.; Torr. & Gray, Fl. 1, p. 279.* Sand banks of the Canadian River, near the Shawnee villages, etc. August.

*PHASEOLUS PAUCIFLORUS*, *Benth.; Gray, Pl. Wright. 1, p. 44.* With the preceding.

*AMPHICARPEA MONOICA*, *Torr. & Gray, Fl. 1, p. 292.* Ravines of Pecan creek; August.

*PSORALEA PHYSODIS*, *Dougl. in Hook. Fl. Bor.-Amer. 1, p. 304; Torr. & Gray, Fl. 1, p. 304 and 689.* Near Mark West's Creek, California. April 30. The stem is wholly free from glands.

*PSORALEA CUSPIDATA*, *Pursh, Fl. 2, p. 741.* Rocky hills of the upper Canadian; September. In fruit.

*PSORALEA DIGITATA*, *Nutt. in Torr. & Gray, Fl. 1, p. 301.* Sand-banks of the Canadian, near the Shawnee villages; August. In fruit.

*PSORALEA LINEARIFOLIA*, *Torr. & Gray, l. c.* Gypsum hills, Comanche plains; September.

*PSORALEA MICRANTHA* (sp. nov.): cinereo-puberula, minute glanduloso-punctata; caulibus e radice seu rhizomate longissimo repente assurgentibus paniculato-ramosissimis; stipulis subulatis minimis; foliis palmatim trifoliolatis; foliolis lineari-filiformibus incisive anguste linearibus mucronato-acutis; pedunculis folio paulo brevioribus; spica brevi densiflora; bracteis minimis caducis; calycis dentibus brevibus obtusissimis; fructu glabro.—Sand hills, near the last camp on the upper Canadian; September. Plant a foot high, from a horizontal root or slender root-stock of several feet in length. Branches slender, leafy. Leaflets an inch or less in length, canaliculate and nearly filiform, or the lowest flat and about a line wide, punctate with fine brown dots. Peduncles half an inch long, about the length of the subtending petioles, bearing a short and oval or oblong spike of 10-20 small flowers, which are usually closely approximate or crowded. Calyx short, scarcely a line long, rather longer than the pedicel, campanulate, dotted with coarse brown glands; the short teeth broad and very obtuse, equal. Corolla barely a line and a half long beyond the calyx, narrow, white, except the tip of the keel, which is blue.

Anthers uniform. Fruit globular, flattened, glabrous or nearly so. This should be compared with *P. laxiflora*, Nutt., which we have never seen, and which is compared with *P. lanceolata*, a species having much affinity with the present one. Nuttall's plant, however, is characterized as having the leaflets longer than *P. lanceolata*, and linear or oblong, the peduncles longer than the leaves, the flowers somewhat distant, etc.—Gray, *Mss.*

*AMORPHA CANESCENS*, Nutt. *Gen.* 2, p. 92. Prairies Indian Territory; August.

*PETALOSTEMON VIOLACEUM*, Michx. *Fl.* 2, p. 50, t. 37. Sand banks of the Canadian river, near the Shawnee villages; August.

*PETALOSTEMON MULTIFLORUM*, Nutt.; Torr. & Gray, *Fl.* 1, p. 309. Prairies on the Canadian, near Delaware mountain; August.

*PETALOSTEMON VILLOSUM*, Nutt. *Gen.* 2, p. 85; Torr. & Gray, *l. c.* Sand banks of the Canadian, near the Shawnee villages; August.

*DALEA SPINOSA*, Gray, *Plant. Thurb.* p. 315. Arroyos near Williams' River of the Colorado, New Mexico; February 16. In fruit.

*DALEA FORMOSA*, Torr. in *Anner. Lyc. New York*, 2, p. 178, & in *Emory's, Rep. t.* 1. Rocks and cañons on the upper Canadian; September.

*DALEA LAXIFLORA*, Pursh, *Fl.* 2, p. 741. Prairies of the upper Canadian; August.

*DALEA ALOPECUROIDES*, Willd. Santo Domingo, New Mexico, on the banks of streams; October.

*DALEA LANATA*, Spreng. *Syst.* 3, p. 327. Sand banks of the Canadian, near the Shawnee villages; August.

*DALEA NANA*, Torr. in *Pl. Fendl.* p. 31. Plains of the upper Canadian and New Mexico; September—October.

*DALEA AUREA*, Nutt. *Gen.* 2, p. 101. Prairies of the upper Canadian; September.

*DALEA JAMESII*, Torr. & Gray, *Fl.* 1, p. 308. Plains of the upper Canadian; September.

*TRIFOLIUM INVOLUCRATUM*, Willd.; Benth. *Pl. Hartw.* n. 54; Gray, *Pl. Fendl.* p. 33. Banks of streams near Santo Domingo, New Mexico; October.

*TRIFOLIUM MACREI*, Hook. & Arn. in *Hook. Bot. Misc.* 3, p. 179, & *Bot. Beech.* p. 330. *T. albopurpureum*, Torr. & Gray, *Fl.* 1, p. 313. Corte Madera, April 10; in fields, Benicia, April 23; Napa valley, April 26. Variable in height, size of heads, and form of the leaves.

*TRIFOLIUM DICHOTOMUM*, Hook. & Arn. *Bot. Beech.* p. 330; Torr. & Gray, *Fl.* 1, p. 691. The station of this plant is uncertain, as no ticket accompanied the specimen, but it was probably collected near San Francisco. We are not certain that it is a distinct species from the preceding, although so much larger in all its parts.

*TRIFOLIUM CILIOLATUM*, Benth. *Pl. Hartw.* p. 304. Corte Madera, April 12; Benicia, California; April 23. We have specimens of this plant from the valley of the Sacramento, collected by Dr. Stillman and Mr. Shelton.

*TRIFOLIUM GRACILENTUM*, Torr. & Gray, *Fl.* 1, p. 316. Corte Madera, April 10; Napa valley, April 26; Hill sides, Sonoma, California; May 3.

*TRIFOLIUM MICROCEPHALUM*, Pursh, *Fl.* 2, p. 478; Torr. & Gray, *Fl.* 1, p. 317. Tamul Pass, California; April 11.

*TRIFOLIUM HETERODON*, Torr. & Gray, *Fl.* 1, p. 318. Low wet places, near San Francisco; April 3-8. Legume 4-5-seeded. A good species.

*TRIFOLIUM TRIDENTATUM*, Lindl. *Bot. Reg. sub. t.* 1070. *T. involucratum*, Torr. & Gray, *l. c.*, non Willd. Corte Madera, April 12.

*TRIFOLIUM MICRODON*, Hook. & Arn. *Bot. Misc.* 3, p. 180; & *Bot. Beechey*, p. 330, t. 79. Hill-sides; Sonoma, California; May 3.

*TRIFOLIUM FUGATUM*, Lindl. *Bot. Reg. t.* 1883; Torr. & Gray, *Fl.* 1, p. 619. Los Angeles, March 21; Benicia and Martinez, April 23-24.

*TRIFOLIUM AMPLECTENS*, Torr. & Gray, *Fl.* 1, p. 319. Corte Madera, April 10; and San Francisco, April 3; hill-sides, Benicia, April 24.



*TRIFOLIUM BARBIGERUM*, (sp. nov.): nanum, molliter pubescens; caulibus e radice annua vel bienni adscendentibus, (1-3 poll. longis), junioribus stipulis scariosis apice truncato setaceo-lacinatis imbricatum vestitis; foliolis obovatis cuneatisve obtusissimis denticulatis; involucrio cyathiformi laciniato aristato-dentato flores subequante; calycis dentibus tubo fere triplo longioribus aristiformi-subulatis plumoso-barbatis, infimo simplici præsertim supremo bi-trifidis; leguminibus dispermis. Near San Francisco, April. The Rev. A. Fitch collected this plant in the same place, four or five years ago.

*MELILOTUS PARVIFLORA*, Desf. *Fl. Atl.* 2, p. 192; Torr. & Gray, *Fl.* 1, p. 321. Common in New Mexico and California, on banks of streams; probably introduced.

*MEDICAGO DENTICULATA*, Willd. *Sp.* 3, p. 1414; Torr. & Gray, *Fl.* 1, p. 332. Cocomungo, California; March 18. Introduced.

*HOSACKIA BICOLOR*, Dougl. et Benth. in *Bot. Reg. t.* 1257; Hook. *Fl. Bor.-Am.* 1, p. 134; Torr. & Gray. *Fl.* 1, p. 323. Hills near Punta de los Reyes; April 17; and wet ravines, Grass Valley, California; May 19. A showy perennial species. The stipules are not always "very obtuse," but are sometimes rather acute.

*HOSACKIA STOLONIFERA*, Lindl. *Bot. Reg. t.* 1977; Torr. & Gray, *Fl.* 1, p. 323. River banks, Mokelumne Hill, and Mammoth grove, California; May 15-17. Var. *PUBESCENS*. Corte Madera, April 16. In this variety the peduncles are sometimes naked, and sometimes (even on the same specimen) furnished with a sessile, unifoliate, or pinnately 2-7-foliate bract. The whole plant is conspicuously pubescent.

*HOSACKIA GRANDIFLORA*, Benth. in *Bot. Reg. sub. t.* 1257; Torr. & Gray, *Fl.* 1, p. 323. Hill-sides, mouth of the Yuba, California; May 21. The bract is occasionally trifoliate, and not unfrequently it is wanting altogether, or only rudimentary.

*HOSACKIA PUBERULA*, Benth. *Pl. Hartw.*, p. 305; Gray, *Pl. Wright.* 1, p. 50. On Williams' River of the Colorado, western New Mexico, February 11.

*HOSACKIA (EUHOSACKIA) INCANA* (sp. nov.): perennis, undique et mollissime cano-villosa; caule erecto simplici; foliolis 11-13 ovatis acutiusculis; stipulis ovatis folioformibus; pedunculis folio multo brevioribus; umbellis 6-9-floris; bractea 5-foliolata; floribus pedicellatis; calycis dentibus subulato-lanceolatis tubo duplo brevioribus. (Tab. IV.) Dry hills, near South Yuba, California; May 23. Plant 6-10 inches high, densely clothed with soft greyish-white villous pubescence. Stem rather stout, leafy. Leaflets nearly half an inch long, mostly opposite, varying from broadly to narrowly ovate. Stipules about two-thirds the size of the leaflets, and resembling them in form. Peduncles (floriferous) half an inch or more in length. Flowers as large as in *H. bicolor*, apparently purple, mixed with yellow; the pedicels about one-third the length of the calyx. Pods not seen. Allied to *H. stipularis*, but abundantly distinct.

*HOSACKIA PARVIFLORA*, Benth. in *Bot. Reg. sub t.* 1257; Torr. & Gray, *Fl.* 1, p. 326. Napa Valley, April 25. Hills near Punta de los Reyes, and Tomales bay, April 17-19. *H. microphylla* and *H. nudiflora* of Nuttall seem to be only reduced forms of this species.

*HOSACKIA STRIGOSA*, Nutt. in Torr. & Gray, *Pl.* 1, p. 326. Cocomungo, March 26. We think that *H. rubella*, Nutt., should be united to this species.

*HOSACKIA SUBPINNATA*, Torr. & Gray, l. c. *Lotus subpinnatus*, Lagas. *Gen. and Sp.* p. 33; Hook. & Arn. *Bot. Beech.*, p. 17, t. 8. Corte Madera, April 10; hill-sides, Martinez, California; April 23.

*HOSACKIA PURSHIANA*, Benth. l. c.; Torr. & Gray, l. c. *Lotus sericeus*, Pursh, *Fl.* 2, p. 489. Low ravines, Grass valley, May 19. The four remaining species of the section *Psycopsis* of Nuttall (in Torr. & Gray, *Fl.* l. c.) are probably only forms of *H. Purshiana*.

*HOSACKIA CYTISOIDES*, Benth. l. c.; Torr. & Gray, l. c. Near San Francisco. Bracts mostly unifoliate.

*ROBINIA NEO-MEXICANA*, Gray, *Pl. Thurb.*, p. 314. Mountain arroyos, near San Antonita, New Mexico; October. In fruit.

*GLYCYRRHIZA LEPIDOTA*, Nutt. *Gen.* 2, p. 106. Sand banks of the Canadian, near the Shawnee villages; August. With ripe fruit.

INDIGOPERA LEPTOSEPALA, *Nutt. in Torr. & Gray, Fl. I, p. 298.* With the preceding, and at Upper Cross-timbers, Indian Territory; August.

PHACA DENSIFOLIA, *Smith in Rees Cycl.; Torr. & Gray, Fl. 1. p. 344 & 693; Hook. Ic. t. 283. P. Nuttallii, T. & Gr. l. c.* Cocomungo, California; March 18. Legumes an inch and a half long, and more than three-fourths of an inch broad. Seeds numerous, not half the size of a pepper-corn. Our plant differs somewhat from Douglas's, as figured by Hooker in his *Icones*, especially in being smoother and the flowers larger, as well as in the larger calyx-teeth; but it is undoubtedly the same.

ASTRAGALUS DIDYMOCARPUS, *Hook. & Arn. Bot. Beech., p. 334, t. 81; Torr. & Gray, Fl. 1, p. 693.* Fields near Benicia, and Corte Madera; April 10-23. The specimens are much smaller than those collected by Douglas, Mr. Rich, and Dr. Parry. The legumes are scarcely three lines long, and of about the same breadth. When young they are villous, but nearly glabrous (though strongly rugose) when old. The leaves vary in breadth from half a line to two lines or more. We have little doubt that *A. nigrescens* and *A. Catalinensis, Nutt. (Pl. Gamb.)* are varieties of this species.

ASTRAGALUS MISSOURIENSIS, *Nutt. Gen. 2, p. 99; Torr. & Gray, Fl. 1, p. 331, excl. syn. Pursh.* Gravelly hills, New Mexico, and on Williams' fork of the Colorado, February 6.

ASTRAGALUS FRÉMONTII (sp. nov.): molliter strigoso-cinerea; radice perenni; caulibus adscendentibus (10 poll. longis) crassiusculis; foliolis 9-21 ovalibus vel rotundatis retusis; stipulis triangulatis basi tantum petioli adnatis; pedunculis folium æquantibus, floribus laxiuscule spicatis patentibus subsessilibus; calycis dentibus subulatis tubo campanulato brevioribus; "corolla purpurea;" leguminibus immaturis membranaceis inflatis ovatis acuminatis bilocellatis polyspermis estipitatis. Banks of the Rio Virgin; May 3, 1844, Frémont. Var. caule breviori (2-3-pollicari); floribus majoribus; calyce magis cylindraceo et nigro-hirsuto. On the Mohave creek; March 3. An early state, only in flower, apparently of the same species as that gathered in the same region by Colonel Frémont. Leaflets 3-6 lines long. Flowers half an inch long; the calyx 3 lines long; the corolla apparently white, or whitish; all the petals tipped with deep violet purple. The half-grown pods of Frémont's specimens are over half an inch in length, nearly glabrous, very thin, and completely bilocellate.—*Gray, Mss.*

ASTRAGALUS HUMISTRATUS, *Gray, Pl. Wright. 5, p. 45.* Arroyos, near San Antonita, New Mexico; October. In fruit.

ASTRAGALUS MOLLISSIMUS, *Torr. in Ann. Lyc., New York, 2, p. 178; Gray, Pl. Wright. 1, p. 53.* Rocky ridges of the False Washita, August; and plains of the Upper Canadian, September. In flower.

ASTRAGALUS DIPHYSCUS, *Gray, Pl. Fendl., p. 34.* Sandy places, near Albuquerque; October. In fruit.

ASTRAGALUS (PHACA) LONCHOCARPUS. *Phaca macrocarpa, Gray, Pl. Fendl., p. 36.* Bluffs and rocky places, on the Llano Estacado; September. The few specimens of this interesting plant bear only old and dehiscent pods, which are shorter than in Fendler specimens, and are follicular, opening as they do only by the ventral suture, and at length spreading out into a perfectly plane lamina. The leaflets are nearly all wanting, and the filiform naked petioles are rather persistent. The root is perennial. The name has to be changed, on account of the *Astragalus macrocarpus* of De Candolle.

OXYTROPIS URALENSIS, *DC. Prod. 2, p. 276; Hook. Fl. Bor.-Am. 1, p. 145.* Sandia mountains, New Mexico; October. In flower and fruit.

OXYTROPIS LAMBERTI, *Pursh Fl. 2, p. 740.* Rocky hills, of the Upper Canadian; September. Narrow-leaved and loosely-flowered forms. Pods slender and very minutely silky-puberulent; in one specimen of which the flowers are unknown, shorter and thicker, and strigose-hirsute.

OXYTROPIS SERICEA, *Nutt. in Torr. & Gray, Fl. 1, p. 339.* Bluffs and rocky places, on the Llano Estacado; September. There is scarce a doubt that this passes into *O. Lambertii*.

KENTROPHYTA MONTANA, *Nutt. in Torr. & Gray, Fl. 1, p. 353.* Inscription Rock, New Mexico;

November 18, (in fruit.) *K. viridis* is hardly a distinct species, and the genus itself might be reduced to a section of *Astragalus*.

*LUPINUS SPARSIFLORUS*, *Benth. Pl. Hartw.*, p. 303. Gravelly hills, on the Colorado, western New Mexico, February 26. A form with less hirsute leaves. Also a larger form, February 17.

*LUPINUS NANUS*, *Dougl.; Benth. in Hort. Trans.*, p. 459, t. 14, f. 2. Corte Madera, California; April 12-15. Some of the specimens are a foot or more in height. Those with broader leaflets accord with "*L. nanus* var. *latifolius*," *Benth. in Herb. Coulter*. The flowers are sometimes white.

*LUPINUS DENSIFLORUS*, *Benth. in Hort. Trans. n. ser. 1*, p. 409. *L. Menziesii*, *Agardh, Syn. Lup.*, p. 2. Woods and shady places, Knight's Ferry, on the Stanislaus river; May 7. Mr. Bentham (in *Pl. Hartweg* p. 303) points out that Agardh has founded his *L. Menziesii* upon the Douglasian plant, which he had described as *L. densiflorus*. All confusion about the synonymy may be avoided, however, for the two species, *L. densiflorus* and *L. Menziesii*, *Ag.*, cannot be kept distinct. Both have white flowers, (Agardh wrongly attributes yellow corollas to his *L. Menziesii*, but his guess from the appearance in dried specimens is not correct in this, nor in some other instances;) and the longer bracts and very villous calyxes of Agardh's *L. densiflorus* are evidently not available for a specific distinction. Dr. Bigelow's specimens, however, corresponds in this respect with *L. Menziesii*.

*LUPINUS BICOLOR*, *Lindl. Bot. Reg. t. 1109; Agardh, l. c. p. 14*. *L. micranthus*, *Dougl. in Bot. Reg. t. 1251; Torr. & Gray, l. c.* Wet places, near San Francisco, April 8. Plains, near San Gabriel; March 23.

*LUPINUS LEPTOPHYLLUS*, *Benth. in Hort. Trans. l. c. t. 14, f. 2; Torr. & Gray, l. c.* Hills and rocky places, Knight's Ferry, Stanislaus river; May 7.

*LUPINUS LATIFOLIUS*, *Agardh, l. c. L. cytisoides, Agardh, l. c.; Torr. & Gray, l. c.* Corte Madera, April 12; and hill-sides, Martinez, California; April 23. *L. cytisoides* was supposed by Agardh to have yellow flowers, but he saw only dried specimens, and was very probably mistaken.

*LUPINUS RIVULARIS*, *Lindl. Bot. Reg. t. 1595; Torr. & Gray, Fl. 1, p. 377*. Plains, near San Gabriel, March 23. Rather more silky than the ordinary state of the plant. Except in the entire calyx, it scarcely differs from *L. Douglasii*.

*LUPINUS LAXIFLORUS*, *Dougl. in Bot. Reg. t. 1140; Torr. & Gray, l. c.* Hill-sides, Stanislaus river, near Carson's, May 14. We are doubtful about our determination of this plant, as the calyx is not very decidedly gibbous.

*LUPINUS DECUMBENS*, *Torr. var. ARGOPHYLLUS, Gray, Pl. Fendl. p. 37*. Gravelly hills, near San Antonita, New Mexico; October. *L. laxiflorus*, *Dougl.*, probably passes into this species.

*LUPINUS ALBIFRONS*, *Benth. in Hort. Trans. l. c. p. 410; Lindl. Bot. Reg. t. 1642; Torr. & Gray, l. c.* Sand hills, on the sea-shore; Punta de los Reyes; and near San Francisco. April 3-17. A fine shrubby species.

*LUPINUS ORNATUS*, *Dougl. in Bot. Reg. t. 1216; Agardh, l. c. p. 28; Torr. & Gray, Fl. 1, p. 378*. Butte mountains, California; May 25.

*LUPINUS MACROCARPUS*, *Hook. & Arn. Bot. Beech., p. 138*. On sand hills, near the sea; Punta de los Reyes, California; April 17. This species was discovered many years ago by Menzies, and seems not to have been found again till Dr. Bigelow collected it in Whipple's expedition. It resembles *L. arboreus* (which Dr. Parry obtained near San Diego) in its shrubby stem and large yellow flowers, but that species is minutely pubescent; this is very hirsute, and the leaves are silky underneath. The petioles of both are shorter than the leaflets, and in our specimens of *L. macrocarpus* the flowers are decidedly verticillate. We have not seen the pods.

*THERMOPSIS MACROPHYLLA*, *Hook. & Arn. Bot. Beech., p. 329; Torr. & Gray, Fl. 1, p. 388*. *L. montana*, *Nutt. in Torr. & Gray, Fl. l. c.* Corte Madera, April 15. Leaflets often broadly obovate. Nuttall's *T. montana* can hardly be considered as more than a smoother form of this plant, with usually narrower leaves. We have specimens that are intermediate between the two

SOPHORA SPECIOSA, *Benth. in Gray, Pl. Lindh. 3, p. 178.* Dermatophyllum speciosum, *Scheele in Linnaea, 21, p. 459.* Cactus Pass and White Cliff creek, New Mexico, January 29.

HEDEYSARUM BOREALE, *Nutt. Gen. 2, p. 110.* With the preceding; in flower and fruit.

DESMODIUM PAUCIFLORUM, *DC. Prod. 2, p. 230.* Creeks, on the Canadian river; August.

DESMODIUM CUSPIDATUM, *Torr. & Gray, Fl. 1, p. 360.* Near Shawnee town; August.

DESMODIUM CANADENSE, *DC.; Torr. & Gray, l. c.* Wet places, on the Canadian; September.

In fruit.

DESMODIUM PANICULATUM, *DC.; Torr. & Gray, l. c.* Sandy soil, on the Canadian; September.

LESPEDeza VIOLACEA, *Pers.* On the Canadian; August.

LESPEDeza CAPITATA, *Michx.* Near Beavertown; August.

CERCIS OCCIDENTALIS, *Torr. in Gray, Pl. Lindh. 2, p. 177.* C. Siliquastrum, var. *Benth. Pl. Hartw., p. 307.* Hill-sides, Robinson's Ferry, Stanislaus river; May 14; with immature fruit. This species has a very extensive range, being found from the upper Sacramento, northern California, to the high lands near Saltillo, Mexico.

OLNEYA TESOTA, *Gray, Pl. Thurb., p. 328.* Arroyos, near Williams' river of the Colorado, western New Mexico; February 6. The specimens are in fruit only. Some of them are destitute of prickles.

PARKINSONIA MICROPHYLLA, *Torr. Bot. of Mex. Boundary Survey, ined.* Banks of the Colorado, and on Williams' river; February 12-22; in fruit. A very distinct species with minute roundish leaflets.

CERCIDIUM FLORIDUM, *Benth. in Gray, Pl. Wright. 1, p. 58.* In arroyos, near the Colorado. February 11; in fruit. This is the *Green Acacia* of Major Emory's report. It is a common tree on the Gila; attaining the height of 25 or 30 feet.

CASSIA REMERIANA, *Scheele in Linnaea, 21, p. 458.* Hurrah creek, New Mexico; September. In fruit.

HOFFMANSÉGEGIA JAMESII, *Torr. & Gray, Fl. 1, p. 393; Torr. in Marcy's Rep. t. 4.* Prairies of the Canadian; September.

HOFFMANSÉGEGIA STRICTA, *Benth. Var. DEMISSA, Gray, Pl. Wright. 1, p. 56.* Dogtown prairies, on the Llano Estacado; September.

HOFFMANSÉGEGIA DREPANOCARPA, *Gray, Pl. Wright. 1, p. 58.* Plains, near Hurrah creek, New Mexico; September. In fruit.

STROMBOCARPA PUBESCENS, *Gray, Pl. Wright. 1, p. 60.* Prosopis (*Strombocarpa*) pubescens, *Benth. in Hook. Lond. Jour. Bot. 5, p. 82.* P. (*Strombocarpa*) Emoryi, *Torr. in Emory's Rep., p. 139.* Low sandy shore of the Colorado. Western New Mexico, (in fruit.) Prosopis odorata, *Torr. in Frém. Rep., p. 313, t. 1,* is a var. of P. glandulosa, (in flower only,) with the pods of *Strombocarpa pubescens.* The error arose from the mixing of specimens in Frémont's collections.

ALGAROBIA GLANDULOSA, *Torr. & Gray, Fl. 1, p. 399.* Plains, on the Canadian; September.

SCHRANKIA UNCINATA, *Willd.; Torr. & Gray, Fl. 1, p. 400.* Prairies, near Deer creek, Indian Territory; August.

DESMANTHUS BRACHYLOBUS, *Benth. in Hook. Journ. Bot.* Sand banks of the Canadian; August.

CALLIANDRA HUMILIS, *Benth. in Lond. Journ. Bot. 5, p. 103; Gray, Pl. Wright. 2, p. 53.* C. herbacea, *Englm.* Gravelly hills, near Santa Antonita, New Mexico; October. In fruit.

#### ROSACEÆ.

PRUNUS SUBCOORDATA, *Benth. Pl. Hartw., p. 308.* Hills, Sonora, May 9; near Duffield's Ranch, Sierra Nevada, May 11, and hill-sides, near Middle Yuba, California; May 23. A shrub 2-6 feet high. Fruit small, with a thin pulp. The leaves are sometimes pubescent underneath.

PRUNUS AMERICANA, *Marsh. Ait.; Torr. & Gray, Fl. 1, p. 407.* Banks of Bogg creek, near Shawneetown, Indian Territory; August. In fruit.

PRUNUS CHICASA, *Michx. Fl. 1, p. 284.* Banks of the Canadian, near Shawneetown; August. With ripe fruit.

*PRUNUS GRACILIS*, Engelm. & Gray, *Pl. Lindh.* 1, p. 35. Prairies, Gains' creek, Indian Territory; August. In fruit. Cultivated under the name of Prairie Cherry. This appears to belong to the *Microcerasus* group.

*CERASUS VIRGINIANA*, DC. Banks of the Pecos, and in cañons of the Llano Estacado; September. Sandia mountains; October. In fruit.

*CERASUS DEMISSA*, Nutt. in Torr. & Gray, *Fl.* 1, p. 411. Deep ravines, Sonora, California, May 9; and Duffield's Ranch, Sierra Nevada; May 12.

*CERASUS EMARGINATA*, Dougl. in Hook. *Fl. Bor.-Amer.* 1, p. 169; Torr. & Gray, *Fl.* 1, p. 410. Hill sides, near Downieville, California; May 21. A small shrub, with numerous slender branches. Flowers in short corymbose racemes. Leaves  $\frac{3}{4}$  of an inch to an inch and a half long, entire at the summit. Teeth of the calyx obtuse and reflexed.

*CERASUS MINUTIFLORA*, Engelm. in Gray, *Plant. Lindh.* 2, p. 185, sub *Pruno*; Gray, *Pl. Wright.* 2, p. 68. Williams' fork of the Colorado, Western New Mexico. Fruit only.

*CERASUS ILLICIFOLIA*, Nutt. in Torr. & Gray, *Fl.* 1, p. 411; & *Sylv.* 2, p. 16, t. 47; Hook. & Arn. *Bot. Beechey*, p. 340, t. 83. Topographical Hill, near Williams' fork of the Colorado. With leaves only.

*NUTTALLIA CERASIFORMIS*, Torr. & Gray, in Hook. & Arn. *Bot. Beechey*, p. 336, t. 82; & *Fl.* 1, p. 413. Mountains, near Oakland; April 5, (in flower and young fruit,) and hill-sides, Napa valley, California; April 27, (with mature fruit.)

*SPIRÆA OPULIFOLIA*, Linn. *Sp.* 1, p. 489; Torr. & Gray, *Fl.* 1, p. 413. Arroyos, in the Sandia mountains, New Mexico, October. Banks of streams and hill-sides, Napa valley, etc., California; April 27.

*SPIRÆA ARLEFOLIA*, Smith in Rees, *Cycl.*; Torr. & Gray, *Fl.* 1, p. 416. Banks of streams, Sonoma, California; May 3.

*SPIRÆA CESPITOSA*, Nutt. in Torr. & Gray, *Fl.* 1, p. 418; Gray, *Pl. Fendl.*, p. 40. Rocky places, Pass of Mt. Hope, Western New Mexico; January 23. The wood of the stem has no annual rings, even when several years old, and the medullary rays are as wide as the woody wedges.

*SPIRÆA MILLEFOLIUM* (sp. nov.): lanoso-tomentosa; foliis circumscriptione oblongo-lanceolatis pinnatis multijugis, pinnis pinnatisectis partitise oblongo-linearibus cum foliolis minutissimis oblongis confertissimis; floribus racemoso-paniculatis. (Tab. V.) Low hills and valleys, near Williams' mountain; January 5. A shrub, apparently 1-2 feet high. Leaves crowded on short branches or spurs, scarcely an inch long; pinne oblong-linear, in 20 or more pairs; the upper ones sometimes confluent; leaflets very numerous, about one-fourth of a line long, densely tomentose, and of a somewhat fleshy texture. Stipules linear, minute, deciduous. Racemes in a long and rather loose terminal panicle. Calyx turbinate; the teeth acute, erect, rather longer than the tube. Petals orbicular-obovate, longer than the calyx. Stamens about 70; the filaments distinct at the base, inserted into the margin of a disk, which is wholly adnate to the tube of the calyx. Ovaries 5, distinct, at first woolly; styles filiform; stigmas somewhat capitate. Ovules 8-10, pendulous from the upper part of the ovary, narrowly oblong. Mature carpels nearly glabrous, erect, 2-valved to the base. All the mature seeds had fallen, but the immature ones were somewhat attenuated at each end. Although so very remarkable, this appears to be a genuine *Spiræa*, and to resemble more the *Euspiræa* than any other of the admitted sections of the genus. The leaflets are almost as small and crowded as in *Chamaebatia*. The specimens collected by Dr. Bigelow seem to have the persistent inflorescence and fruit of the preceding autumn, and the young leaves of the new year. Many of the flowers exhibited the withered petals, and there were a few imperfect undeveloped buds.

*CERCOCARPUS PARVIFOLIUS*, Nutt. in Torr. & Gray, *Fl.* 1, p. 427; Gray, *Pl. Fendl.*, p. 41; Hook. *lc. Pl.* t. 323. Hills on the Llano Estacado; also sandy hills, Cahon Pass and Cocomungo, April 16-17; hills and ravines, Sonora, California; May 9. A shrub about 10 feet high. *C. betulæfolius* seems to pass into this species.

CHAMÆBATTIA FOLIOLOSA, *Benth. Pl. Hartw.* p. 308; *Torr. Pl. Frémont.*, p. 11, t. 6. Hill-sides and ravines, Sonora; May 9.

COWANIA MEXICANA, *Don in Linn. Trans.* 14, p. 574, t. "22; *Gray, Pl. Wright.* 2, p. 55. Mountains near the Zuni river. In leaf only.

COWANIA STANSBURIANA, *Torr. in Stansb. Rep.*, p. 386, t. 3. Ojo Piscado; November 19. San Francisco mountain, and Lithodendron creek, New Mexico; December. Although very near *C. Mexicana* it seems to retain its characters.

ACÆNA TRIFIDA, *Ruiz & Pav. Fl. Peruv.* 1, p. 67, t. 104. A pinnatifida, *Hook. & Arn. Bot. Beechey*, p. 339; *Torr. & Gray, Fl.* 1, p. 430, non *Ruiz & Pav.* San Geronimo Ranch; April 12.

ADENOSTOMA FASCICULATA, *Hook. & Arn. Bot. Beechey*, p. 139 & 338, t. 30; *Torr. & Gray, Fl.* 1, p. 430. Sandy hills near Cajon Pass, March 16, (with the fruit of the preceding year.) Hill-sides, near Ion valley; May 18.

ALCHEMILLA ARVENSIS, *Scop. Fl. Carn.* 1, p. 115; *Torr. & Gray, Fl.* 1, p. 432. *A. occidentalis* and *A. cuneifolia*, *Nutt. in Torr. & Gray, Fl. l. c.* Hill-sides, Benicia, April 24. Low places near San Francisco, April 8. We find the characters of this species to be quite variable, so as to include the two species of Nuttall.

FALLUGIA PARADOXA, *Torr. in Emory's Rep.* 2. Cañons of the Pecos, New Mexico; September. HORKELIA CAPITATA, *Lindl. Bot. Reg. sub fol.* 1997; *Torr. & Gray, Fl.* 1, p. 434. San Gabriel, California; March 21. In Dr. Bigelow's specimens, as also in those collected at Los Angeles by Mr. Wallace, the petals are quite as long as the calyx. Agrees pretty well with our Douglasian specimen, except that the cymes are not capitate; but in most of the species of this genus the inflorescence is at first dense, and unfolds with age.

HORKELIA FUSCA, *Lindl. Bot. Reg. t.* 1997. Var. TENUILOBA: canescenti-villoso; foliis 25-30, latissime-cuneatis profunde-palmatifidis; laciniis anguste-linearibus; cymis laxiusculis; bracteolis laciniis dentibus subæqualibus; petalis cuneatis, apice bilobis. Laguna of Santa Rosa creek, California; May 1. Radical leaves 4-6 inches long, mostly villous with greyish hairs; leaflets less than half an inch long, palmately 5-7-cleft; the segments scarcely half a line wide; cauline leaves with a much smaller number of leaflets, with 3-4 segments. Stem about a foot high. Cyme somewhat open when the inflorescence is fully developed. Flowers about as large as in *H. parviflora*. Proper segments of the calyx triangular-lanceolate; the bracteoles narrowly lanceolate. Petals white, narrowly cuneiform, deeply notched at the summit.

HORKELIA TRIDENTATA (sp. nov.): subsericeo-villosa; caulibus patentibus; foliis 7-11 oblongo vel obovato-cuneatis apice plerumque tridentatis; stipulis profunde laciniatis; cymis densifloris; bracteolis calycis segmentis brevioribus et angustioribus; petalis obovato-spathulatis. (Tab. VI.) Wet ravines, Duffield's Ranch, Sierra Nevada; May 10; and hill-sides, Mammoth Grove, California; May 15. A span or more in height. Leaflets of the radical leaves 9-11, about half an inch long, almost uniformly 3-toothed at the apex, the intermediate tooth often smaller, otherwise entire; those of the cauline leaves (5-7) narrower. Petals at first narrowly spatulate, but broader when fully expanded. Somewhat resembling *H. parviflora*; the flowers being quite as small as in that species.

POTENTILLA PENNSYLVANICA, var. HIPPIANA, *Torr. & Gray, Fl.* 1, p. 438. Sandia mountains, New Mexico; October; in fruit. Some of the specimens nearly accord with *P. diffusa*, *Gray, Pl. Fendl.* p. 41, which Prof. Lehmann, the learned monographer of the genus, has no doubt correctly arranged as a variety of his *P. Hippiana*, viewed by him as distinct from *P. Pennsylvanica*.

POTENTILLA ANSERINA, *Linn. Sp.* 1, p. 495; *Torr. & Gray, Fl.* 1, p. 444. Wet places, San Domingo, New Mexico; October. Near San Francisco, California; April 3.

POTENTILLA RIVALIS, *Nutt. in Torr. & Gray, Fl. l. c.* Wet places near San Francisco, April 8.

POTENTILLA GLANDULOSA, *Lindl. Bot. Reg. t.* 1583; *Torr. & Gray, Fl.* 1, p. 446. Mountains near Oakland, California; April 4.

*FRAGARIA VESCA*, *Lin.*; *Torr. & Gray, Fl. 1, p. 448.* San Antonita, New Mexico, October. Ravines on the Yuba, near Downieville, May 22, and mountains near Oakland, California; April 5.

*FRAGARIA CHILENSIS*, *Ehrh.*; *Torr. & Gray, l. c.* Near San Francisco; April 3.

*RUBUS NUTKANUS*, *Moçino*; *Lindl. Bot. Reg. t. 1368*; *Torr. & Gray, Fl. 1, p. 450.* Corte Madera, California, April 10.

*RUBUS VITIFOLIUS*, *Cham. & Schlecht. in Linnæa, 2, p. 10?* Near San Francisco; April 3. Stems long and apparently prostrate. Leaves (of flowering specimens) about an inch and a half in length and breadth, strongly 3-lobed, a little pubescent on both surfaces when young. Flowers smaller than the species is described to have. Sepals ovate-lanceolate, with a long subulate (not foliaceous) point. Petals white, a little longer than the calyx.

*RUBUS LEUCODERMIS*, *Dougl.*; *Torr. & Gray, Fl. 1, p. 454?* Leroux's spring, foot of San Francisco mountain, New Mexico; December. Prickles numerous, slender, short and somewhat recurved. Leaves mostly pinnately 5-foliolate, very white underneath, much smaller than usual. Peduncles 5-6-flowered. The specimens are imperfect, the plant having been gathered late in the season.

*RUBUS URSINUS*, *Cham. & Schlecht. in Linnæa, 2, p. 11*; *Torr. & Gray, l. c.* *R. Menziesii*, *Hook. Fl. Bor.-Am. 1 p. 141*; *Hook. & Arn. Bot. Beech. p. 140.* Ravines and low grounds near Punta de los Reyes; April 17. A showy species, with large red flowers. The obovate petals are 7 or 8 lines long, much larger than they are said to be by Chamisso and Schlecthendal, who do not mention the color, and whose description of the species applies better to what we take for a state of *R. macropetalus* than to this plant.

*RUBUS MACROPETALUS*, *Dougl. in Hook. Fl. Bor.-Amer. 1, p. 178, t. 59*; *Torr. & Gray, l. c.* Cocomungo, California; March 18. The main stems are often prostrate, throwing up short erect branches. The leaves are mostly trifoliolate, except the uppermost ones, which are sometimes simple and 3-lobed. All the specimens seem to have perfect flowers.

*RUBUS TRIVIALIS*, *Michx. Fl. 1, p. 296.* Low places near Mark West's creek, California; April 30. Petals elliptical-lanceolate, nearly twice the length of the sepals. Leaves all trifoliolate; leaflets rhombic-oblong. Perhaps only a state of *R. macropetalus*.

*ROSA FOLIOLOSA*, *Nutt. in Torr. & Gray, Fl. 1, p. 460.* Upper Canadian river, and in the Sandia mountains; September—October. In fruit.

*ROSA GYMNOCARPA*, *Nutt. in Torr. & Gray, Fl. 1, p. 461.* Near Bolinas, April 19; wet ravines, Grass valley, May 20, (in flower); also mountains near Oakland; April 5, (with the fruit of the preceding season). A very neat slender species. The leaflets vary from less than half an inch to three-fourths of an inch long. The flowers are scarcely an inch in diameter.

*ROSA BLANDA*, *Ait. Kew. (ed. 1), p. 202*; *Torr. & Gray, Fl. 1, p. 459.* *R. fraxinifolia*, *Bork.*; *Torr. & Gray, l. c.* *R. Californica*, *Cham. & Schlecht. in Linnæa, 2, p. 35.* *R. Woodsii*, *Lindl.*; *Torr. & Gray, l. c.* Knight's ferry, Stanislaus river, May 7; Grass valley, May 19; low places, Mark West's creek, California; April 30 (with fruit of the preceding season.) This is a variable species, including, as we think, all those quoted above.

*PYRUS RIVULARIS*, *Dougl. in Hook. Fl. Bor.-Amer. 1, p. 203, t. 68*; *Torr. & Gray, Fl. 1, p. 71*; *Nutt. Sylv. 2, p. 22, t. 49.* Santa Rosa creek, California; May 1.

*PHOTINIA ARBUTIFOLIA*, *Lindl. in Linn. Trans. 13, p. 103, & Bot. Reg. t. 491*; *Torr. & Gray, Fl. 1, p. 473*; Cajon Pass, March 16, (with unexpanded flowers.) Martinez, April 23, (young fruit;) Mark West's creek, California; and April 30 (mature fruit).

*AMELANCHIER CANADENSIS*, var. *ALNIFOLIA*, *Torr. & Gray, Fl. 1, p. 473.* Near Punta de los Reyes, April 17. Hill sides, Nevada, May 20. Hills near Williams' fork of the Great Colorado. Another form of this species was found on the middle Yuba. It has ovate or obovate leaves, which are often nearly entire, or with only a few serratures at the summit. The racemes are 6-8-flowered, and the peduncles as well as the segments of the calyx are woolly.

*CRATEGUS COCCINEA*, *Linn. Var. VIRIDIS*, *Torr. & Gray, l. c.* In the Sandia mountains, New Mexico; October. With ripe fruit.

*CRATEGUS SUBVILLOSA*, *Schrad. Hort. Gœtt. C. coccinea, var. mollis*, *Torr. & Gray, l. c.* Shawnee villages on the Canadian River; August. In the great size of the fruit, no less than in the foliage, this differs from *C. coccinea*.

## CALYCANTHACEÆ.

*CALYCANTHUS OCCIDENTALIS*, *Hook. & Arn. Bot. Beechey, p. 340, t. 84; Torr. & Gray, Fl. 1, p. 476; Bot. Mag. t. 4808.* Deep ravines, Napa Valley, California; (with old fruit).

## LYTHRACEÆ.

*AMMANNIA LATIFOLIA*, *Linn.; Torr. & Gray, Fl. 1, p. 480.* Near Beavertown, on the Canadian River, in low places; August.

## ONAGRACEÆ.

*EPILOBIUM COLORATUM*, *Muhl.* Wet places, near San Domingo, New Mexico; October.

*EPILOBIUM PALUSTRE*, *Linn.* In a spring, on the Upper Canadian; September.

*EPILOBIUM TETRAGONUM*, *Linn.; Hook. Fl. Bor.—Am. 1, p. 206.* Corte Madera, California; April 20. Near San Francisco Dr. Bigelow also gathered, early in April, specimens of an *Epilobium*, with purple flowers as large as those of *E. montanum* or *E. parviflorum*, but too young for satisfactory determination.

*EPILOBIUM MINUTUM*, *Lindl. in Hook. l. c.; Torr. & Gray, Fl. 1, p. 490.* Hill sides, Napa valley; April 24. Knight's Ferry on the Stanislaus river; May.

*ENOTHERA JAMESII*, *Torr. & Gray, Fl. 1, p. 493.* Comanche Plains, etc., New Mexico; September.

*ENOTHERA CORONOPIFOLIA*, *Torr. & Gray, l. c.* Laguna Blanca, New Mexico; September. The corolla is sulphur color in the dried specimens: it was probably white in the living plant.

*ENOTHERA ALBICAULES*, *Nutt.; Gray, Pl. Wright. 1, p. 69.* One of the cinereous varieties, with leaves toothed at the base. Sandy bottoms of the Upper Canadian; September.

*ENOTHERA SPECIOSA*, *Nutt.; Torr. & Gray, l. c.* Near Shawneetown and Beaverstown, on the Canadian river; August.

*ENOTHERA MISSOURIENSIS*, *Sims.* Naked prairies of the Upper Canadian. The smooth and broader-leaved form. *Var. INCANA.* False Washita and Comanche Plains; September.

*ENOTHERA SERRULATA*, *Nutt. Gen. 1, p. 246.* Walnut Creek, etc.; August.

*ENOTHERA LEPIDA*, *Lindl. Bot. Reg. t. 1849.* Plains near Stockton and Knight's Ferry, California; May 7.

*ENOTHERA VIMINEA*, *Dougl. in Bot. Mag. t. 2873.* Hill-sides and plains, Knight's Ferry; May 8. *Var. ? PARVIFLORA*, *Hook. & Arn.* Napa valley, May 5.

*ENOTHERA TENELLA*, *Var. TENUIFOLIA*, *Lindl.; Hook. & Arn. Bot. Beech. p. 342.* Hill-sides, Knight's Ferry, California; May 7.\*

*ENOTHERA DENSIFLORA*, *Lindl. Bot. Reg. t. 1593.* Knight's Ferry, Stanislaus river; in dry ravines and on plains; May 8.

*ENOTHERA CLAVIFORMIS*, *Torr. in Frém. 2d Rep. p. 314.* Mohave Creek; March 2. Rocky arroyos of the Colorado; Feb. 22. The petals barely equal the stamens, (2 or 3 lines long,) and the style is soon much exerted. The corolla would seem to be whitish; but specimens gathered at the foot of the Sierra Nevada, by Lieut. Beckwith, (Beckwith's Report, p. 115,) are plainly yellow-flowered. The following is a third and very striking species of the same group, (*Chylisma* of Nuttall,) connecting it with *Sphærostigma*.

\* *Epiloba*, *Durand, Fl. Prater. Calif. in Jour. Acad. Philad. 1855*, (the same as Hartweg's, No. 1,728,) appears to be a well-marked species. The petals vary, however, in the degree in which they are orbiculate or two-lobed. In specimens raised by Dr. Short, from seeds collected in California by Dr. Dayton, the petals ("delicate rose-color, changing to violet") are nearly two-cleft.—*Gray, Mo.*



*ENOTHERA* (*CHYLISMIA*) *BREVIPES* (sp. nov.): villosa-hirsuta vel glabra; caule simpliciter (3-9 pollicari) inferne foliato; foliis lyrato-pinnatisectis, segmentis denticulatis, lateralibus parvis irregularibus nunc obsolete, terminali maximo ovato vel subcordato; petalis calyce staminibusque duplo longioribus, capsula longe lineari tubum calycis et pedicellum multoties excedente. Gravelly hills on and near the Colorado; February 17 and 20. We have seen an imperfect specimen of this plant in a small collection made on the Gila, etc., by A. B. Gray, Esq., surveyor, in the possession of Mr. George Thurber. The stem is pretty stout, much thicker than that of *O. scapoidea* and the nearly related *O. claviformis*; and the flowers are very much larger, the light yellow petals being from half an inch to an inch in length; they are rounded, obovate, and entire. The pedicels are about as long as the bracts, varying from 1 to 5 lines in length, while the ovary is usually an inch long. The latter, like the limb of the calyx, is very villous in some specimens, and sparingly so or entirely glabrous in others. Ripe pods arcuate ascending, about an inch and a half long. Veins of the leaves often purplish beneath, as in *O. claviformis*. The raceme is nodding at the undeveloped summit, and scorpioid, as in the related species.—*Gray, Mss.*

*ENOTHERA OVATA*, Nutt. in *Torr. & Gray, Fl. 1*, p. 507. San Francisco, and on mountains near Oakland; April 3 and 4.

*ENOTHERA GRACILIFLORA*, Hook. & Arn. *Bot. Beech.*, p. 341; *Hook. Ic. t.* 338. San Gabriel, California; March 23.

*ENOTHERA DENTATA*, Cav.?; *Torr. & Gray, Fl. 1*, p. 510. Gravelly hills near the Great Colorado; February 17. Knight's ferry, on the Stanislaus; May; a much branched and larger flowered variety.

*ENOTHERA STRIGULOSA*, Torr. & Gray, l. c. Cocomungo; March 8, and San Francisco; April 8.

*ENOTHERA CHEIRANTHIFOLIA*, Hornem.; *Torr. & Gray, l. c.* San Francisco; April 8.

*ENOTHERA VIRIDESCENS*, Hook. *Fl. Bor.-Am. 1*, p. 214. Seashore at Punta de los Reyes, California; April 17.

*GAYOPHYTUM NUTTALLII*, Torr. & Gray, *Fl. 1*, p. 514. Hillsides on the Yuba, near Downieville; May 22.

*EUCCHARIDUM CONCINNUM*, Fischer & Meyer; *Lindl. Bot. Reg.*, t. 1962. Bolinas bay, California; April 19. Also, a specimen collected by Dr. Andrews; the habitat not recorded. This plant rarely occurs in Californian collections.

*CLARKIA ELBEGANS*, Lindl. *Bot. Reg.*, t. 1575. Also, *C. unguiculata*, Lindl.? Hillsides, Knight's ferry; May 7-8.

*LUDWIGIA NATANS*, Ell. *Sk. 1*, p. 581. Beavertown on the Canadian in wet places; August.

*STENOSIPHON VIRGATUS*, Spach. *Monogr. Onagr.*, p. 64. Rocky prairies on the Canadian; August.

*GAURA PARVIFLORA*, Dougl. in Hook. *Fl. Bor.-Am. 1*, p. 208. Sand banks of the Canadian; August.

*GAURA BIENNIS*, Linn.  $\beta$ . *PITCHERI*, Torr. & Gray, *Fl. 1*, p. 517. Near Beavertown, Indian Territory; August. San Domingo; October.

*GAURA VILLOSA*, Torr. in *Ann. Lyc. New York*, 2, p. 200. Prairies and hills on the Upper Canadian; September.

*GAURA COCCINEA*, Nutt. *Gen. 1*, p. 249. Prairie hills on the Canadian; September.

*GAURA HETERANDRA* (sp. nov.): glabella, annua; caule ramoso; foliis membranaceis ovato-lanceolatis summis anguste lanceolatis acuminatis petiolatis; spicis paniculatis laxis; floribus tetrameris parvis, inferioribus folioso-bracteatis; tubo calycis infundibuliformi lobis dimidio brevioribus; petalis obovato-spathulatis conformibus; staminibus 8, alternis brevioribus fere anantheris, 4 longioribus antheris cordato-rotundis; stigmatibus integro; fructu brevissime pedicellato obovato gibboso 3-4-loculari. River banks, Mokelumne Hill, California; May 17. Stem a foot or more in height, erect, paniculately branched above; the branches, etc., slightly puberulent. Cauline leaves two inches in length, and with a slender petiole of half or two-thirds of an inch

in length, those of the branches smaller and narrower; all thin, entire, or obscurely repand, loosely feather-veined. Flowers apparently purple, small, the lobes of the calyx and the petals about two lines long. Stamens apparently not declined; the four longer ones equaling the petals, and with very short basi-fixed anthers; the alternate ones (opposite the petals) much shorter, and with the anthers abortive. Style long; stigma hemispherical, entire, or nearly so. Fruit globular-obovate, gibbous, obscurely ribbed, a line and a half long, indehiscent. This is the only *Gaura* yet known from California, and a very peculiar one, but apparently of this genus, notwithstanding the abortive shorter stamens and the short anthers of the others.

*HIPPURES VULGARIS*, *Linn. Spec.* 1, p. 4. Ponds near Tomales bay, California; April 19.

#### GROSSULACEÆ.

*RIBES CALIFORNICUM*, *Hook. & Arn.*, *R. Californicum*, *occidentale*, and *subvestitum*, *Hook. & Arn. Bot. Beech.*, p. 346; *Torr. & Gray, Fl.* 1, p. 545, 548. Dr. Bigelow's specimens, with others, collated with those of Douglas, plainly show that the three above-mentioned nominal species must be reduced to one, which should stand next to *R. Menziesii*, (the anthers of which are slightly mucromate,) and for which the name of *R. Californicum* is to be preferred. The subaxillary spines are sometimes solitary, geminate and ternate on the same branch; the branches are setose or naked on otherwise similar plants; the foliage is either glabrous, glandular-pubescent beneath, or simply pubescent, and either moderately or deeply lobed and incised; the flowers in all are reddish or purple; the ovary, etc., more or less strongly glandular and setose, and with or without a soft or hirsute pubescence. *R. Californicum* was founded on a small-leaved and smaller-flowered state of the species. *R. subvestitum* on a larger-leaved and large-flowered form. Dr. Bigelow's collection comprises the following: 1. From rocky ravines, Cajon Pass; March 16: the *R. subvestitum*, *Hook. & Arn.*, except that the branchlets are not setose, and the pubescence of the leaves scarcely glandular.—2. Mammoth Grove, on the prostrate trunk of a huge *Sequoia gigantea*; May 11: similar to the preceding, but the leaves more cleft, and the calyx-tube more pubescent.—3. Mountains near San Gabriel; March 28: like No. 1, but more glabrous leaves, glandular-dotted beneath.—4. Duffield's ranch, Sierra Nevada, with young fruit, which is large, hairy, and prickly.—5. Grass valley; May 20, with young fruit: the same, with glabrous leaves.—6. Duffield's Ranch, on hillsides, and near San Francisco: forms with the foliage and calyx, etc., perfectly glabrous; the fruit glandular and prickly. This answers to *R. occidentale*, but the subaxillary spines are often in pairs, threes, or fives. It is the same as Hartweg's No. 1736.—*Gray, Mss.*

*RIBES DIVARICATUM*, *Dougl. in Hort. Trans.* 7, p. 515; *Torr. & Gray, l. c.*; San Francisco; April 3. This accords entirely with the Californian plant of Douglas's collection, except that the racemes are 4-5-flowered. Nuttall's *R. villosum* is merely a pubescent form of it.

*RIBES GLUTINOSUM*, *Benth. in Hort. Trans. n. ser.* 1, p. 476; San Francisco; April 3. Duffield's Ranch; May 12. Also, at Mammoth Grove, on the prostrate trunk of a huge *Sequoia*, at the height of twenty feet from the ground.

*RIBES MALVACEUM*, *Smith; DC. Prod.* 3, p. 383; *Torr. & Gray, l. c.* Cajon Pass; March 16. San Francisco; April 28.

*RIBES AUREUM*, *Pursh, Fl.* 1, p. 164, Var. *R. tenuiflorum*, *Lindl. Bot. Reg.*, t. 1, 274. Rocky hills on the upper Canadian river. Plains near San Gabriel, California; March 23, in flower.

*RIBES LEPTANTHUM*, *Gray, Pl. Fendl.*, p. 53. Laguna Blanca, New Mexico, in rocky places at the foot of mountains; September.

*RIBES OXYACANTHOIDES*, *Linn. ?* Rocky hills near San Domingo, New Mexico; October, without flowers or fruit.

#### CUCURBITACEÆ.

*MELOTHRIA PENDULA*, *Linn.* On the Canadian River and Deer creek; August.

CYCLANTHERA DISSECTA, *Ara. in Hook., Jour. Bot.* 3, p. 280. Banks of the False Washita; August.

CUCURBITA PERENNIS, *Gray, Pl. Lindh.* 2, p. 193. *Cucumis perennis*, James. Camanche plains, on the banks of streams; September.

## LOASACEÆ.

EUCNIDE LOBATA, *Gray, Pl. Lindh.* 2, p. 192. Rocky ravines of the Colorado, near the confluence of Williams' River, in western New Mexico. The specimens were winter vestiges, with good fruit of the preceding season.

MENTZELIA ALBICAULIS, *Torr. & Gray, Fl.* 1, p. 534. *Bartonia albicaulis*, *Hook. Fl. Bor.-Amer.* 1, p. 222. Mohave creek, California; March 2.

MENTZELIA LINDLEYI, *Torr. & Gray, l. c.* Gravelly hills along the Great Colorado; February 20.

MENTZELIA OLIGOSPERMA, *Nutt. in Bot. Mag. t.* 1760. Rocky hills on the False Washita, etc.; August.

MENTZELIA (BARTONIA) NUDA, *Nutt.; Torr. & Gray, Fl.* 1, p. 534. On Elm creek and the False Washita; August. Denuded plains of the Upper Canadian; September.

MENTZELIA (BARTONIA) MULTIFLORA, *Nutt. Pl. Gamb. p.* 180; *Gray, Pl. Wright. p.* 74. Rocky cañons, from the Llano Estacado to Galisteo, New Mexico; October.

## CRASSULACEÆ.

SEDUM WRIGHTII, *Gray, Pl. Wright. 1, p.* 76. Sandia mountains, New Mexico; October. A dwarf and condensed state.

SEDUM SPATHULIFOLIUM, *Hook. Fl. Bor.-Amer.* 1, p. 227; *Torr. & Gray, Fl.* 1, p. 559. Hill-sides and rocky places, Napa valley, California; May 5. Stems ascending, simple, or sparingly branched, throwing off from the base prostrate sterile runners or offsets, which bear a rosulate tuft of leaves at the extremity, and strike root.

ECHVEVERIA LANCEOLATA, *Nutt. in Torr. & Gray, Fl.* 1, p. 561. Rocks and hill-sides, Sonoma, and Knight's Ferry, Stanislaus river, California; May 3-9. The leaves vary in form, from lanceolate to obovate. The pedicels are from one-third to more than half the length of the flower.

## SAXIFRAGACEÆ.

SAXIFRAGA VIRGINIENSIS, *Michx. Fl.* 1, p. 269; *Torr. & Gray, Fl.* 1, p. 571; *Benth. Pl. Hartw. p.* 311. Mountains near Oakland, California. The leaves are less toothed, and the petals broader than in the eastern plant, but in other respects there is little difference. Dr. Bigelow collected in Napa valley (May 5) an unusual state of this species, with large, thin, nearly entire glabrous leaves, and a very loose sparsely-flowered panicle; characters which may be owing to the plant having grown in a moist shady place.

SAXIFRAGA INTEGRIFOLIA, *Hook. Pl. Bor.-Amer.* 1, p. 249, t. 86: var. *foliis oblongo-lanceolatis, basi angustatis; cymis in paniculam elongatam sub-contractam dispositis; floribus brevipedicellatis; calycis segmentis oblongis recurvis; petalis lineari-lanceolatis, obtusis.* Swamps near Santa Rosa, California; May 3. Plant 24-30 inches high; leaves 2-3 inches long; corolla apparently white. This variety has a strong resemblance to *S. Pennsylvanica*. The panicle remains contracted even in fruit.

HEUCHERA MICRANTHA, *Dougl. in Bot. Reg. t.* 1302; *Torr. & Gray, Fl.* 1, p. 579. Rocky ravines, Yuba, near Downieville, May 22; and shady hill-sides, Napa valley, California; May 5. The solitary specimen from the latter locality is leafy to the summit, and more hairy than is usual in this species. This accords with Hartweg's No. 1742, but it can hardly be *H. pilosissima* of Fischer and Meyer.

LITHOPHRAGMA HETEROPHYLLA, *Hook. & Arn. Bot. Beech. p. 346; Torr. & Gray, Fl. 1, p. 585.* Hill-sides, near Napa, California; April 26. A smaller form occurs on the mountains near Oakland.

TELLIMA GRANDIFLORA, *Dougl.; Lindl. Bot. Reg. t. 1178; Torr. & Gray, Fl. 1, p. 583.* Head of Tomales bay, and Redwoods, California; April 12—17. In the dried specimens from Tomales bay the petals are bright crimson. We have not received this plant before, except from Oregon.

PHILADELPHUS CALIFORNICUS, *Benth. Pl. Hartw., p. 309.* Ravines, Mokelumne Hill, May 17, (flowers unexpanded.) Fremont collected fine specimens of this plant on the rocky banks of the American river; June 14, 1846. It grows from 8 to 12 feet high. We fear it is scarcely distinct from *P. Lewisii*.

PHILADELPHUS LEWISII, *Pursh, Fl. 1, p. 29.* Var. PARVIFOLIUS: foliis ovato-oblongis utrinque acutis remote denticulatis margine ciliolatis caeteris glabriusculis; thyrso pedunculato, multifloro. Hill-sides, Duffield's Ranch, Sierra Nevada; May 12. The specimens are without flowers, but bear the fruit of the last season. It is therefore uncertain whether the inflorescence was naked, as the leaves of the preceding year had fallen. The leaves are scarcely an inch long, and the thyrsus is 6-12-flowered.

JAMESTIA AMERICANA, *Torr. & Gray, Fl. 1, p. 593; Gray, Pl. Fendl. p. 55.* Arroyos in the Sandia Mountains, New Mexico; October. In fruit.

FENDLERA RUPICOLA, *Engelm. & Gray, Pl. Wright, 1, p. 77, t. 5.* Cañons of the Pecos, New Mexico; September.

#### WHIPPLEA, Nov. Gen.

Flores hermaphroditæ. Calyx 5-6-fidus, tubo brevissimo turbinato cum ovarii basi connato, segmentis oblongo-lanceolatis æstivatione valvatis? Petala 5-6, perigyna, rhomboideo-ovata, basi angusta subunguiculata, æstivatione imbricata? marginibus involutis, decidua. Stamina 10 vel 12, cum petalis inserta, iisdem opposita et alterna, ea sepalis anteposita breviora: filamenta subulata: antheræ didymæ, subintrorsæ, longitudinaliter dehiscentes. Ovarium quadriculare, quadriovulatum: styli discreti, ovario subæquilongè, subulato-lineares, intus plani longitrosium stigmatosi. Ovulum in quoque loculo solitarium, suspensum, anatropum. Capsula 4-5-cocca, parva, basi calycis tubo accreta, coccis coriaceis; intus dehiscentibus. Semen pendulum. Embryo minutus, in apice albuminis, rectus; radícula supera. Suffrutex—Californicus, sarmentosus; foliis oppositis membranaceis deciduis ovatis trinervatis paucidentatis; stipulis nullis; pedunculis gracilibus terminalibus racemum parvum confertum gerentibus; floribus parvis albis.

WHIPPLEA MODESTA. (Tab. VII.) Red-woods, California; April 12. A slender, nearly simple or moderately branching under-shrub, about a foot long, sparsely clothed with strigose scabrous hairs. Leaves on very short petioles, about an inch long, membranaceous, obtuse, 2-3-toothed on each margin, green on both sides, 3-nerved from the base, softly strigose-pubescent; the hairs of the upper surface arising from a slightly tuberculate base. Peduncles terminal, 1-2 inches long: raceme 6-12-flowered, the flowers mostly opposite; pedicels about 2 lines long, spreading. Calyx whitish, the tube pubescent; segments lanceolate, rather acute, one-nerved, erect. Petals exceeding the sepals, about a line and a half long, slightly imbricated, the margin involute in the bud. Stamens twice as many as the petals, (very rarely 4,) in a double series: filaments subulate, flat, inserted with the petals at the base of the free portion of the calyx: anthers didymous, the cells roundish, opening on the margin from the summit to the base; pollen extremely minute, globose. Ovary ovate-globose, the base adherent to the tube of the calyx; styles (rarely 3) linear, flat, slightly united at the base, the upper half stigmatose on the inside. Ovules large for the size of the ovary, suspended from the inner angle of the cell at the summit,

<sup>1</sup> From Dr. T. L. Andrews, lately of California, we have received, just in time for this publication, the Whipplea with nearly ripe fruit.

furnished with a small caruncle at the micropyle. Fruit subglobose, about a line and a half in diameter. There can be little doubt of the affinities of this interesting plant. Notwithstanding some of its anomalies, it must be referred to the suborder Hydrangæe of Saxifragaceæ. In *Eremosyne* of Saxifragæe proper the cells of the ovary are one ovuled; also in *Aphanopetalum*, and in the new genus *Spiræanthemum*<sup>1</sup> of the suborder Cunoniaceæ. The hairs, especially those of the leaves, exhibit the same mucicate-scabrous appearance that occurs in those of *Deutzia*, *Philadelphus*, *Fendlera*, and other genera of Hydrangæe. It is somewhat difficult to determine the estivation of the petals of this genus, as the flower is open while the bud is yet very young; but in one or two instances they were slightly overlapping. We dedicate this new genus to the accomplished commander of the expedition.

### UMBELLIFERÆ.

*ERYNGIUM DIFFUSUM*, Torr. in *Ann. Lyc. New York*, 2, p. 207, & in *Marcy's Report*, t. 6. Prairies on the False Washita; August. The root appears to be annual.

*SANICULA BIPINNATA*, Hook. & Arn. *Bot. Beechey*, p. 347; Torr. & Gray, *Fl.* 1, p. 603. Hill-sides, Martinez, California, April 23, (with mature fruit.) The heads or umbellets are about 3 lines in diameter, on long slender rays. Pedicels of the sterile flowers shorter than the fruit. Root fusiform.

*SANICULA BIPINNATIFIDA*, Dougl. in Hook. *Fl. Bor.-Amer.* 1, p. 258, t. 92; Torr. & Gray, *Fl. l. c.* Cocomungo, San Francisco and Benicia; March and April. This is rather a common plant in California and Oregon.

*SANICULA TUBEROSA* (sp. nov.): caule gracili e tuberculo globose; foliis pinnatisectis, segmentis angustis pinnatifidis inciso serratis vel dentatis; foliolis involueralibus profunde trifidis, laciniiis plerumque dentatis; floribus sterilibus longe pedicellatis; calycis tubo tuberculato. Hill-sides, Duffield's Ranch, Sierra Nevada; April—May. Tuber half an inch in diameter, fleshy and farinaceous. Stem (fructiferous) 12–14 inches high, moderately branching. The primary divisions of the leaves are rather ternate than pinnate. The secondary ones are pinnately and deeply cut, with pinnatifid or sometimes finely dissected segments. Umbels compound, or sometimes decomposed; the rays seldom more than two, unequal. Heads nearly half an inch in diameter. Sterile flowers 15–20, on pedicels 3–4 lines long. Fertile flowers 1–5, sessile. Calyx-tube in fruit covered with conical obtuse tubercles, which are not at all hooked at the point. Teeth of the calyx lanceolate. Styles elongated, recurved. This remarkable species was first collected by Colonel Frémont in 1844 on the American river, and afterwards on the upper waters of the Sacramento, but without fruit. The specimens of Dr. Bigelow have the fruit not quite mature, but fully formed, and yet without any appearance of prickles; instead of which there are rather soft tubercles. In all the other North American species of *Sanicula* the calyx-tube, in its youngest state, shows the uncinatè prickles distinctly. Our plant most resembles *S. bipinnata*, but is distinguished by its long-stalked sterile flowers and unarmed fruit.

*SANICULA MENZIESII*, Hook. & Arn. *Bot. Beechey*, p. 142 & 347; Hook. *Fl. Bor.-Amer.* 1, p. 258, t. 90; Torr. & Gray, *Fl. l. c.* Hill-sides, San Francisco and Martinez, April; in flower and fruit.

*SANICULA LACINIATA*, Hook. & Arn. *l. c.*; Torr. & Gray, *l. c.*  $\beta$ . *nudicaulis*, Hook. & Arn. *l. c.*; Torr. & Gray, *l. c.* Hill-sides, Napa valley, California; April 27, with flower and young fruit. *S. nudicaulis* can hardly be regarded as more than a variety of *S. laciniata*; the chief difference being the less finely cut leaves of the latter.

*SANICULA ARCTOPOIDES*, Hook. & Arn. *l. c.*; Hook. *Fl. Bor.-Amer.* 1, p. 258, t. 91; Torr. & Gray, *l. c.* San Francisco, April 3.

*APIUM GRAVEOLENS*, Linn.; DC. *Prodr.* 4, p. 101; Hook. & Arn. *Bot. Beechey*, p. 142. The

<sup>1</sup> Gray, *Botany of the United States Exploring Expedition*, 1, p. 666.

label of this plant got misplaced, but we suppose the specimens were collected near the coast. They agree with others found near San Luis Rey, California, by Dr. Parry.

*BERULA ANGUSTIFOLIA*, Koch; *Gray, Pl. Fendl. p. 55, and Pl. Wright. 2, p. 65.* In water, near San Domingo, New Mexico; October. In fruit.

*CYMOPTERUS MONTANUS*, Nutt. in *Torr. & Gray, Fl. 1, p. 624; Gray, Pl. Fendl., p. 56.* William's river, New Mexico; January 26, (scarcely in full flower.) Called by the Mexicans *Gamote* or *Camote*. The root is about as thick as a man's thumb, and seems to be farinaceous.

*PEUCEDANUM LEOCARPUM*, Nutt. in *Torr. & Gray, Fl. 1, p. 626.* *Seseli leiocarpum, Hook. Fl. Bor.-Amer. 1, p. 262, t. 93.* Hill-sides, Napa, California, April 25; in flower. The segments of the leaves are broader than in the Oregon plant; so that we suspect *P. latifolium* may be only a variety of this species.

*PEUCEDANUM NUDICAULE*, Nutt. in *Torr. & Gray, Fl. l. c.* *Ferula Nuttallii, DC. Prodr. 4, p. 173.*  $\beta?$  ellipticum, *Torr. & Gray, in Beckwith's Rep.* Hill-sides, Sonoma, May 3; (with flowers and immature fruit), and Feather river, near Marysville, California; with mature fruit. The fruit is so much longer and narrower in proportion than in the normal form of *P. nudicaule* that we would have described this plant as a distinct species, were there other marks of difference; which, however, we have not been able to find. Besides, in other species of this genus there is considerable variation in the form and size of the fruit.

*PEUCEDANUM TOMENTOSUM*, Benth. *Pl. Hartw., p. 312.* Knight's Ferry, Stanislaus river, May 7; with immature fruit; and Corte Madera, California, on hills. We have a strong suspicion that this species, *P. dasycarpon*, macrocarpon, and feniculaceum (at least the western plant) are not distinct. We have many intermediate forms that appear to connect them; but are unwilling, at present, to unite them.

*PEUCEDANUM DASYCARPUM*, *Torr. & Gray, Fl. 1, p. 628.* Knight's Ferry, Stanislaus river, May 7; with immature fruit. Peduncles 15 inches long. Ultimate segments of the leaves narrowly linear. Fruit (not mature) elliptical-obovate, very woolly. Segments of the involuclers lanceolate. Perhaps not sufficiently distinct from *P. feniculaceum*. The number of North American species of this genus will doubtless be reduced when they are carefully studied with more ample materials than we now possess.

*PEUCEDANUM CARUIFOLIUM*, *Torr. & Gray, Fl. l. c.* *Ferula caruifolia, Hook. & Arn. Bot. Beech. p. 348.* Mark West's creek, Napa valley, and on hill-sides, near Sonoma, California, April—May. The specimens are much larger than the original ones of Douglas and Nuttall, being about a foot and a half high. This is pretty certainly *P. marginatum*, Benth. *Pl. Hartw. p. 312, No. 1752;* and we suspect that it is also *P. abrotanifolium*, Nutt. *Pl. Gambel.*

*PEUCEDANUM UTRICULATUM*, Nutt. in *Torr. & Gray, l. c.* Hill-sides, Martinez; mountains near Oakland; Mark West's creek, and Cocomungo, California; March—April.

*LEPTOTENIA? CALIFORNICA*, Nutt. in *Torr. & Gray, Fl. 1, p. 630.* Hills, near Tokeloma creek, April 17, (with flowers and young fruit;) Napa valley, April 26, (with nearly ripe fruit.) This plant, which Nuttall referred with doubt to *Leptotenia*, and thought (as he had not seen the fruit) might perhaps be a species of *Polytenia*, does not accord entirely with either genus. From the former it differs in having emarginate petals with a long inflexed point, and 6 vittæ on the commissure, with numerous true vittæ on the back, and nearly obsolete ribs; the involuclers also are wanting. From the latter it disagrees in the toothless calyx, as well as in wanting the involuclers. The fruit is oval or elliptical, about 5 lines long, and the border is rather thin. Many of the flowers are abortive, and in some of the umbels all are so. The primary rays are about 3 inches long.

*HERACLEUM LANATUM*, DC. *Prodr. 4, p. 192.* *Torr. & Gray, Fl. 1, p. 632.* *H. Douglasii, DC. l. c.* Corte Madera, California, April 10; in flower. Scarcely more pubescent than the eastern plant.

*DAUCUS PUSILLUS*, *Michx. Fl. 1, p. 164; Torr. & Gray, Fl. 1, p. 636.* Hill-sides, Napa, April 25. This plant has some reputation among the Mexicans as a remedy for the bite of venomous serpents; but its efficacy is very doubtful.

*DAUCUS BRACHIATUS*, *Stieb.; DC. Prodr. 4, p. 514; Gray, Bot. U. S. Expl. Exped. 1, p. 711.* *Scandix glochidiata, Labill. Pl. N. Holl. 1, p. 75, t. 102.* *Caucalis microcarpa, Hook. & Arn. Bot. Beech. p. 348; Torr. & Gray, Fl. 1, p. 636.* Hill-sides, Knight's ferry, Stanislaus, May 1, (in fruit.) A widely diffused plant, being found in Australia, New Zealand, Peru, Chili, many parts of Mexico, and California. It may have been brought to California by cattle. An original specimen of Labillardiere differs from our plant only in the rather denser prickles of the fruit. It is more nearly related to *Caucalis* than to *Daucus*, but does not accord wholly with either genus.

*CHEROPHYLLUM? CALIFORNICUM* (sp. nov.): perenne, erectum, elatum, glaberrimum; foliis triternatisectis, lobis linearibus integris vel paucidentatis; involucre polyphylo; calycis margine 5-dentato; fructibus oblongis utrinque obtusis, costis vix elevatis. Wet ravines, Knight's ferry, Stanislaus, May 8; in flower and fruit. Stem 3-4 feet high, nearly simple. Leaves (including the petioles) a foot in length; the primary divisions biternately or bipinnately divided; the segments either all (except the elongated terminal one) coarsely 2-3-toothed, or nearly entire and linear; uppermost leaves simply 3-parted with entire divisions. Umbels on very long peduncles, the primary one wholly female, 9-12-rayed. Involucre 9-12-leaved, scarcely one-fifth the length of the rays. Lateral umbels wholly male. Umbellets many-flowered, about an inch long. Involucels of numerous entire lanceolate leaves. Petals white, broadly oval, emarginate, with a small inflexed point. Calyx with 5 distinct acute teeth. Stylopodium broadly conical. Styles half the length of the ovary, recurved. Fruit about five lines long, often a little curved, or gibbous, laterally compressed; mericarps obscurely ribbed, with large single vittæ in the intervals and 4 in the commissure. Seed deeply furrowed on the face, but not involute, with an elevated central ridge; carpophore 2-cleft at the summit. We are by no means satisfied with our disposition of this plant. It rather falls into this genus than into any other known to us; yet it differs much in habit and in several characters from *Cherophyllum*.

*OSMORHIZA BRACHYPODA*, *Torr. in Durand's Planta Pratt. (Jour. Acad. Phil. n. ser. 2, p. 79).* Hill-sides, Yuba, Downieville, California; May 22. It was also found with mature fruit by Dr. Parry near Monterey, and by Mr. Pratten on Deer creek. The flowering specimens collected by Dr. Bigelow are only a foot high. Easily distinguished from *O. brevistylis* and *O. longistylis* by the very short pedicels of the fertile flowers and fruit, the minute stylopodium, and shorter trapezoidal segments of the leaves. In the short styles it is nearest *O. brevistylis*, but it is quite glabrous, and the fruit is much more hispid on the angles than in that species.

*OSMORHIZA NUDA* (n. sp.): stylis brevissimis; fructibus obtusis; involucris et involucellis nullis; pedicellis fructu longioribus. Shady woods, Napa valley, April 27. Plant about two feet high. Leaves on long petioles, which, as well as the lower part of the stem, are strigose pubescent; segments broadly ovate, often deeply 3-lobed, coarsely dentate-serrate. Peduncles elongated. Umbel about 4-rayed; umbellets 4-6-flowered. Flowers like those of *O. brevistylis*. Fruit (immature) very hispid, especially towards the base, crowned with a short conical stylopodium. This species is intermediate between *Osmorhiza* and *Glycosma*. In its bristly fruit it is like the former, and in the short stylopodium and styles, as well as in the entire absence of the involucre, it resembles the latter. The two genera should, perhaps, be united.

*CYNAPIUM APIFOLIUM*, *Nutt. in Torr. & Gray, Fl. 1, p. 640.* Tamul Pass, April 11; in flower. This plant had not been found before in California.

*SUBGENUS? MICROZENTIA.* Calycis margo obsolete. Petala ovata, cum lacinula elongata inflexa. Stylopodium minutum, depressum. Styli elongati, recurvi. Fructus ovalis, a latere contractus. Mericarpa jugis obtusissimis; valleculis 3-5-vittatis. Commissura 6-8-vittata,

crassa, spongiosa. Herba Californica, glabra. Folia decomposita. Involucrum oligophyllum. Involucella 6-8-phylla.

CYNAPIUM? (MICROLENIA) BIGELOVII. Hill sides, near Murphy's, California; May 16. Stem 3 feet or more in height. Lower leaves a foot long, ternately decomposed; segments pinnately incised, with linear-lanceolate lobes. Umbels on long naked peduncles. Rays about 12, 2 or 3 inches in length. Involucre of 5-6 linear leaves. Involucels somewhat lateral, the leaflets lanceolate and reflexed, longer than the flowers. Umbellets monœcious, many-flowered; the male flowers mostly central. Petals apparently white. Fruit (immature) about 3 lines long; the ribs very indistinct. Vittæ extremely minute, forming an almost uninterrupted circle around each mericarp. Differs from *Cynapium* in its much more compressed fruit, nearly obsolete ribs, and in having an involucre. Very likely the mature fruit would show other differences.

TRASPIMUM MONTANUM, *Gray, Pl. Fendl. p. 57, and Pl. Wright. 2, p. 65.* Sandia mountains, New Mexico; October.

CONIOSELINUM CANADENSE, *Torr. & Gray, Fl. 1, p. 69.* Near Santa Antonita, in mountain marshes; October. In fruit.

DEWEYA? ACAULIS (sp. nov.): humilis; foliis 5-9-foliolatis e rhizomate repente crasso scapum nudum simplicem subæquantibus; foliolis cuneatis sessilibus acute trifidis quæcque 3-5-fidis lobis patentibus acutis integerrimis; umbella solitaria; fructu subtereti, valliculis univittatis. In crevices of rocks near Santa Antonita, New Mexico; October. Of this there are only one or two specimens in the collection, with some mature fruit, but no flowers. The genus is altogether doubtful; but it may, perhaps, be referred to *Deweya* until it is better known; although the fruit is but slightly campylospermous, so that the plant should, perhaps, be referred to the *Seselineæ*. The seeds and the root-stock have a pleasant aromatic odor, much as in *Ligusticum*; from which genus, as well as from *Deweya*, our plant differs in the single large vittæ which fill the narrow intervals between the thick and corky, almost winged, rather obtuse ribs.

DEWEYA ARGUTA, *Torr. & Gray, Fl. 1, p. 641.* Near San Gabriel; March 22; in flower.  $\beta$ . foliis triternati-sectis; involucellis elongatis. D.? (n. sp.) *Benth. Pl. Hartw., p. 312; Durand, Pl. Pratt. p. 89.* Mountains near Oakland; April 5; in flower only. The Oakland plant must be only a form of *D. arguta*, with the leaves more divided than usual.

APIASTRUM ANGUSTIFOLIUM, *Nutt. in Torr. & Gray, Fl. 1, p. 644.* Hill sides, Napa valley; April 26; plains near San Gabriel; March 23. We doubt whether *A. latifolium* is a distinct species from this.

#### ARALIACEÆ.

ARALIA RACEMOSA, *Linn. Spec. 1, p. 273?* Bolinas bay, California; April 19; scarcely in flower. The inflorescence is less compound, and the serratures of the leaves are much coarser than in the eastern plant. Very likely this will prove to be a distinct species.

#### CORNACEÆ.

CORNUS NUTTALLII, *Audubon, Birds of Amer. t. 367; Torr. & Gray, Fl. 1, p. 655; Nutt. Sylv. 3, p. 51, t. 97.* *C. florida, Hook. Fl. Bor.-Am. 1, p. 277, (ex parte.)* Hill sides and ravines, Duffield's Ranch, Sierra Nevada; May 12; in full flower. This beautiful tree attains its highest perfection in lower Oregon, where Mr. Nuttall found it growing seventy feet high. The involucreal leaves vary in form. They are sometimes nearly as broad as in *C. florida*.

CORNUS SESSILIS, *Torr. (in Durand, Pl. Pratt. p. 89):* floribus paullo ante folia late ovata subtus pubescentia nascentibus; involucri foliis acutis; petalis acuminatis. (TAB. VIII.) Wet ravines near Grass valley, California; May 20; with young fruit. A small tree, (10-15 feet high), with smooth, slender, flexile branches. Leaves  $2\frac{1}{2}$  inches long and  $1\frac{1}{4}$  inch wide, dull, closely approximated towards the extremity of the flowering branches. Umbel 15-20-flowered, appearing



rather before the leaves, usually becoming lateral from the development of only one of the buds near the extremity of the flowering branch: pedicels 4-6 lines long, villous. Involucre nearly as long as the pedicels, very deciduous; the leaflets ovate, acute, yellowish, or tinged with purple. Teeth of the calyx minute, crowning the ovary. Petals lanceolate, or ovate-lanceolate, acuminate. Style filiform; stigma slightly dilated. Immature fruit twice as long as broad, somewhat hairy. This species, remarkable as the only one of the section *Tanycrania* found in America, is closely allied to *C. mas* of Europe and *C. officinalis* of Japan, differing only, so far as our imperfect materials show, in the slight characters given above. Dr. Bigelow's specimens have the foliage and the young fruit. A branchlet gathered by Mr. Pratten exhibits the flowers just developing.

*CORNUS PUBESCENS*, Nutt. in Torr. & Gray, *Fl.* 1, p. 652, (sub var. *C. sericea*.) & Sylv. 3, p. 54. *C. circinata*, Cham. & Schlecht. in *Linnaea* 3, p. 139. *C. sericea*,  $\beta$ ? *occidentalis*, Torr. & Gray, l. c. River banks and ravines. Grass valley and Middle Yuba; May 20. Also, hillsides, Duffield's Ranch, Sierra Nevada; May 12; with unexpanded flowers. We incline to the opinion that this species is more nearly allied to *C. alba* (*stolonifera*) than to *C. sericea*. It varies in the degree of pubescence and in the breadth of the leaves.

## CAPRIFOLIACEÆ.

*LONICERA INVOLUCRATA*, Banks; DC. *Prodr.* 4, p. 336. Near San Francisco, California.

*LONICERA CALIFORNICA*, Torr. & Gray, *Fl.* 2, p. 7. Knight's ferry on the Stanislaus. A small-leaved form. *L. hispidula* is a more or less hairy state, apparently of the same species.

*SYMPHORICARPUS ROTUNDFOLIUS*, Gray, *Pl. Wright.* 2, p. 66. In the Sandia mountains near Santa Antonita, New Mexico; October. In fruit.

*SAMBUCUS MEXICANA*, Pres. in DC. *Prodr.* 4, p. 323; Gray, *Pl. Wright.* 2, p. 66. *S. glauca*, Benth. *Pl. Hartw.* p. 313, (non Nutt.) *S. velutina*, Durand & Hilg. *Pl. Heerm. in Journ. Acad. Sc. Phil.* (n. ser.) 3, p. 39, (a more pubescent form.) Knight's ferry, Stanislaus river, May 7, (in flower); also on Mark West's creek, California. Our specimens agree very well with the plant collected in New Mexico by Mr. Wright.

*SAMBUCUS PUBENS*, Michx. *Fl.* 1, p. 181; Torr. & Gray, l. c., p. 13. Hills near Oakland, California.

## RUBIACEÆ.

*OLDENLANDIA (HOUSTONIA) RUBRA*, Gray, *Pl. Wright.* 2, p. 68. Hills and plains near Galisteo, New Mexico; October.

*GALIUM APARINE*, Linn. *Sp.* 1, p. 108. San Francisco and Napa valley; May. A small-fruited form, apparently of this species, occurring in various collections from California, New Mexico, and western Texas.

## VALERIANACEÆ.

*PLECTRITIS CONGESTA*, Lindl.; DC. *Prodr.* 4, p. 631. Mountains near Oakland; April—May.

*PLECTRITIS MACROCERA*, Torr. & Gray, *Fl.* 2, p. 50. *P. brachystemon*, Fisch. & Mey. Napa valley; April.

## COMPOSITÆ. (By A. GRAY.)

*ELEPHANTOPUS CAROLINIANUS*, Willd. On the Canadian River; August.

*VERNONIA JAMESII*, Torr. & Gray, *Fl.* 2, p. 58. On the Canadian; and Llano Estacado; August—September.

*PECTIS (PECTIDOPSIS) ANGUSTIFOLIA*, Torr. in *Ann. Lyc. New York* 2, p. 214; Gray, *Pl. Fendl.* p. 61. Head waters of the Canadian. September.

*HOFMEISTERIA PLURISETA* (sp. nov.): fruticulosa, puberula; foliis oppositis et alternis parvis plerumque hastato-trifidis inciso-dentatis; involucri squamis floribusque 20-25; pappi paleis 10-12 lineari-lanceolatis (aut muticis aut partim acuminato-aristatis,) cum setis totidem tenuibus denticulatis. (Tab. IX.) In a cañon at Bill Williams' fork, now called Williams' river; February. This is evidently a congener of *Helogyne fasciculata*, *Benth.*, of southern California, and apparently of *Phania? urenifolia*, *Hook. & Arn.* also, although the number of scales and awns of the pappus (2-3 in the former and 4-5 in the latter) is thrice or twice greater. On account of the earlier *Helogyne* of Nuttall, (founded on an obscure Eupatoriaceous plant from Peru, but apparently with good characters,) the late Dr. Walpers has changed the name of *Bentham's* genus to *Hofmeisteria*, in honor of one of the best phytomists of the age. This genus, strengthened by a third species, is well marked in habit as well as character. All have palmately-lobed or divided leaves on very long petioles. In *H. pluriseta* the petioles are an inch or an inch and a half long, while the blade is only 4 to 6 lines long. The latter is ovate or deltoid in outline, and irregularly cut into 3-6 coarse teeth or lobes, the two basal ones usually largest and divergent. Involucre as in *Brickellia*; the scales acuminate. Corolla ochroleucous; the slightly dilated summit 5-toothed. Style, &c., as in *H. fasciculata*. Achenia oblong, nearly terete, 5-ribbed, minutely hirsute. Paleæ of the pappus 10 or 12, hyaline, with somewhat crose margins, entire at the summit, which is either obtuse, retuse, or several of them more commonly produced into an acuminate point, or into a short awn, the latter above half the length of the achenium. Bristles of the pappus as many as the paleæ, and alternate with them, forming an inner series as long as the corolla, nearly capillary, minutely denticulate.

*LIATRIS PUNCTATA*, *Hook. Fl. Bor.-Am. 1, p. 306, t. 55.* Rocky prairies, from the Canadian river, August 26, to the Llano Estacado; August-September.

*LIATRIS SQUARROSA*, *Willd. Prairies; August 26.*

*LIATRIS ELBAGANS*, *Willd.; Torr. & Gray, Fl. 2, p. 48.* Shawnee villages, Canadian; August.

*CARPHOCETE BIGELOVIL*, *Gray, Pl. Wright. 1, p. 89; & 2, p. 71.* On the mountains near the Mimbres; April; *Dr. Henry.*

*KUERNIA EUPATORIODES*, *Linn., Var. COEYMBOSA, Torr. & Gray, Fl. 2, p. 78.* Deer creek, of the Canadian; August.

*KUERNIA EUPATORIODES*, *Var. GRACILLIMA, Gray, Pl. Lindh. 2, p. 218.* Anton Chico; September; and on the San Domingo, New Mexico; October.

*BRICKELLIA BRACHYPHYLLA*, *Gray, Pl. Wright. 2, p. 84.* *Clavigera brachyphylla, Gray, Pl. Fendl. p. 63.* On bluffs and rocky plains of the Llano Estacado; September. Root thick and long. Pappus nearly plumose.

*BRICKELLIA WRIGHTII*, *Gray, Pl. Wright. 2, p. 72.* Arroyos and washed places, near the Llano Estacado; September.

*BRICKELLIA CALIFORNICA*, *var. Gray, Pl. Fendl. p. 64.* Rocky hills and plains on the San Domingo, New Mexico, &c. This is the same as Fendler's plant; but its bushy habit, cordate leaves, and smaller heads indicate it as probably distinct from *B. Californica*; and it is very likely to pass into *B. Wrightii*.

*BRICKELLIA GRANDIFLORA*, *Nutt.; Gray, Pl. Fendl. p. 63.* La Cuesta, New Mexico; September.

*EUPATORIUM AGERATOIDES*, *Linn. f.* Shawneetown, on the Canadian; August.

*EUPATORIUM AGERATIFOLIUM*, *var.? HERBACEUM, Gray, Pl. Wright. 2, p. 74.* Anton Chico, New Mexico; in rocky arroyos, &c. A small-leaved form.

*EUPATORIUM SEROTINUM*, *Michx. Fl. 2, p. 100.* Grande Prairie, on the Canadian; August 22.

*EUPATORIUM ALTISSIMUM*, *Linn.* On the Canadian, &c.; August.

*CONOCLINIUM CELESTINUM*, *DC.* Shawnee villages; August.

*NARDOSMIA PALMATA*, *Hook. Fl. Bor.-Am. 1, p. 308.* *Tussilago palmata, Ait. Hort. Kew. ed. 1, 3, t. 2.* Wet places along mountain streams, Oakland, California; April 5. A plant of wide range, yet of very rare occurrence.

*MACHLERANTHERA TANACETIFOLIA*, *Nees, Ast.*, p. 224; *Gray, Pl. Wright.* 1, p. 90. On the Canadian, &c.; September.

*MACHLERANTHERA CANESCENS*, *Gray, Pl. Wright.* 1, p. 89. Banks of the Pecos, &c., northwestern Texas, (smooth varieties); gravelly hills near the Colorado of the west; February.

*ASTER BIGELOVII* (sp. nov.): ramis viscido-hirsutis ad apicem usque foliosis; ramulis corymbosis monocephalis; foliis membranaceis oblongo-lanceolatis semiamplexicaulibus grosse serratis tenuiter triplinerviis hirtis-puberulis glabris; capitulis magnis globosis; involucri pluriserialis squamis attenuato-subulatis basi appressis superne longe caudato-appendiculatis squarrosorecurvis glanduloso-viscidis; acheniis glaberrimis. Arroyos in the Sandia mountains; October. A wholly new and most remarkable Aster, of the Grandiflori group; but the apparently showy heads larger than those of *A. grandiflorus*, being an inch in diameter, and the numerous (blue and violet) rays an inch long. It is probably a tall plant; but the base of the stem was not collected. Cauline leaves two or three inches long, coarsely dentate-serrate throughout; the uppermost, and those of the short branchlets, smaller and less toothed. Scales of the imbricated involucre half an inch long when extended, very slender; the long and almost filiform appendicular portion recurved, spreading and very glandular. Receptacle flat, alveolate; the alveolae short and entire. Achenia perfectly glabrous, linear, compressed, three lines long. Pappus not abundant, nearly in a single series.

*ASTER NOVI-BELGII*, *Linn.*; *Gray, Pl. Wright.* 2, p. 76. Sandia mountains, New Mexico.

*ASTER LEVIS*, *Linn.*; *Torr. & Gray, Fl.* 2, p. 116. San Antonio, New Mexico; October; in mountain ravines.

*ASTER PATENS*, *Ait.*; *Torr. & Gray, l. c.* On the Canadian, &c.; August-September.

*ASTER MULTIFLORUS*, *Ait.* Rocky dell, Eastern New Mexico; September 17.

*ASTER NUTTALLII*, *Torr. & Gray, Fl.* 2, p. 126; var. *FENDLERI*; foliis rigidioribus hispidociliatis; involucri squamis granuloso-glandulosis. *A. Fendleri*, *Gray, Pl. Fendl.* p. 66. Rocky ravines and cañons, Llano Estacado; September. Exactly Fendler's plant; but it appears to differ from *A. Nuttallii* only in its greater rigidity, and the more manifest hispid bristles on the branches and the margin of the leaves.

*ASTER (OXYTRIPOLIUM) PAUCIFLORUS*, *Nutt.*; *Gray, Pl. Wright.* 2, p. 76. San Domingo, New Mexico; October.

*ASTER (OXYTRIPOLIUM) DIVARICATUS*, *Nutt.*; *Torr. & Gray, Fl.* 2, p. 162. Sand-banks of the Canadian; August.

*ASTER (OXYTRIPOLIUM) ANGUSTUS*, *Torr. & Gray, l. c.*; *Gray, Pl. Wright.* 2, p. 76. In wet springs, Eastern New Mexico.

*DIPLOPAPPUS ERICOIDES*, *Torr. & Gray, l. c.* Laguna Colorado, New Mexico, September.

*ERIGERON (CENOTUS) DIVARICATUM*, *Michx.*, *Fl.* 2, p. 534. Dogtown prairies; September.

*ERIGERON (CENOTUS) SUBDECURRENS*. *Coryza subdecurrens*, *Gray, Pl. Fendl.* p. 78. Plains and prairies, Eastern New Mexico; September 21.

*ERIGERON MACRANTHUM*, *Nutt.*; *Gray, Pl. Fendl.* p. 67. Mountain arroyos, near San Antonio, New Mexico.

*ERIGERON BELLIDIASTRUM*, *Nutt.*; *Torr. & Gray, Fl.* 2, p. 170. Sand-hills on the Upper Canadian; September.

*ERIGERON PHILADELPHICUM*, *Linn.*; *Torr. & Gray, Fl.* 2, p. 171. Near Santa Rosa, Benicia, and Cocomungo, California; March-May.

*ERIGERON DIVERGENS*, *Torr. & Gray, Fl.* 2, p. 175; *Gray, Pl. Wright.* 2, p. 77, (nearly the var. *CINEREUM*.) Hills in the Butte mountains near Marysville, California; May 25. The lower leaves are mostly lobed or almost divided, and the stems become lignescent at the base.

*ERIGERON DOUGLASSII*, *Torr. & Gray, l. c.* Hill-sides on the Stanislaus river at Robinson's Ferry, California. Mr. Thurber and others have gathered a very narrow-leaved state of this near San Diego.

*ERIGERON MODESTUM*, *Gray, Pl. Fendl.* p. 68, & *Pl. Lindl.* 2, p. 220; excl. syn. DC. Rocky ravines on the Llano Estacado; September.

*ERIGERON STENOPHYLLUM* (sp. nov.): humile, cæspitosum, pube appressa tenuiter cinereum; caulibus floriferis simplicibus e caudice perenni inferne foliosissimis apice nudo monocephalia; foliis angustissime linearibus integerrimis; capitulo magno; ligulis (semipollicaribus et ultra) circiter 40 albis uniseriatis involucri pubescente multo longioribus; acheniis hirsutissimis; pappo simplici. On hill-sides and steep banks of the Pecos; October. Stems six to ten inches high, growing in dense tufts. Leaves one to three inches long, about a line wide, many of them almost filiform; the lower ones tapering to the base, which is not ciliate nor hirsute; all merely cinereous with a very fine and close strigose pubescence. Scales of the involucre all nearly equal and similar, scarcely biserial, linear-lanceolate, acuminate, three or four lines long, somewhat tomentose-pubescent. Rays linear, broad for the genus, apparently pure white or slightly tinged with purple, certainly not ochroleucous. Achenia flat, two-nerved, densely hirsute with long and white hairs. Pappus similar in the ray and disk, composed of a single series of scabrous capillary bristles of about the length of the disk-corolla, not fragile nor caducous, of equal length, and not accompanied by short setæ or squamellæ. This most resembles *E. ochroleucum*, Nutt.; but the leaves are hoary with a finer pubescence, and are not hirsute towards the base; the heads are longer and more showy, the rays not ochroleucous, the achenia remarkably villous-hirsute, and the exterior pappus wanting.

*ELEMIASTRUM BELLIOIDES*, Gray, *Pl. Nov. Thurb.*, p. 320. Gravelly hills near the Colorado, interior of California; February. Precocious specimens, less than an inch high, just beginning to flower. Mature fruit of this plant is a desideratum.

*TOWNSENDIA GRANDIFLORA*, Nutt. in *Trans. Amer. Phil. Soc.* 7, p. 305; Torr. & Gray, *Fl.* 2, p. 186. *Erigeron?* florifer, Hook. *Fl. Bor.-Am.* 2, p. 20. Sand-hills and rocky ridges of the Antelope hills on the Canadian; September.

*TOWNSENDIA EKIMLA*, Gray, *Pl. Fendl.* p. 70. Laguna Blanca, in pine woods, and Santa Antonita, New Mexico, in mountain ravines; October. The root of this striking and well-marked species is perhaps perennial. The branching stems sometimes attain the height of a foot and a half.

*APHANOSTEPHUS ARKANSANUS*, Gray, *Pl. Wright.* 1, p. 93. Valley of the Canadian, at Shawneetown; August.

*AMPHIACHYRIS DRACUNCULOIDES*, DC.; Torr. & Gray, *Fl.* 2, p. 122. Ravines on Walnut creek, of the Canadian; August.

*GUTIERREZIA EUTHAMLE*, Torr. & Gray, *Fl.* 2, p. 123. Antelope hills of the Canadian; September.

*GUTIERREZIA SPLEUROCEPHALA*, Gray, *Fl. Fendl.* p. 73. Prairies and plains near the Pecos, New Mexico, September 21.

*SOLIDAGO RIGIDA*, Linn. At Beavertown, on the Canadian; August.

*SOLIDAGO PUMILA*, Torr. & Gray, *Fl.* 2, p. 210. On the Pecos, New Mexico; October.

*SOLIDAGO TENUIFOLIA*, Pursh. Sand-hills and Antelope hills on the Canadian; September.

*SOLIDAGO RADULA*, Nutt. in *Jour. Acad. Philad.* 7, p. 102. With the foregoing, and on the Llano Estacado; September.

*SOLIDAGO CANADENSIS*, Linn. Deer creek, of the Canadian; August.

*LINOSYRIS WRIGHTII*, Gray, *Pl. Wright.* 1, p. 95. Between the Canadian and the Pecos, September 15.

*LINOSYRIS (CHRYSOTHAMNUS) GRAVEOLENS*, Torr. & Gray, *Fl.* 2, p. 234. Wet places and banks of creeks between the Canadian and the Pecos rivers.

*LINOSYRIS (CHRYSOTHAMNUS) BIGELOVII* (sp. nov.): fruticosa, ramosissima, cinerea; ramis flexuosis fastigiato-polycephalis; foliis filiformibus supra canaliculatis; capitalis 5-floris; involucri elongato floribus tertis parte brevioribus, squamis 5-floris 4-5-seriatis pallidis carinatis arachnoideo-ciliatis subacutis appressis, extimis oblongis, intimis lineari-lanceolatis; acheniis acute 5-angulatis glaberrimis; pappo copioso, setis tenuibus inæqualibus. (Tab. XII.) Hills and arroyos, Cienegella, above Albuquerque, New Mexico. A dense and fastigiata shrub, apparently

of two or more feet in height; the branchlets whitish or yellowish, but with scarcely a perceptible pubescence. Leaves more hoary, about an inch long, involute-filiform, slender. Heads fasciculate, 9 or 10 lines long, about a line and a half in diameter, therefore more slender than those of *L. pulchella*; the scales of the involucre almost as strikingly five-ranked as in that species, but thinner, not so sharply carinate, not green on the back, and not so much pointed, the somewhat scarious margins, especially of the outer ones ciliate with arachnoid and apparently viscid hairs. Corolla, style, and the slender achenia nearly as in *L. pulchella*; but the bristles of the pappus rather less copious, evidently finer and softer, and unequal in length, therefore intermediate between that of the latter species and of *L. graveolens*. This species is a peculiarly interesting discovery, on account of the transition it establishes between *L. pulchella*, a strikingly aberrant form, and the rest of the group to which I had referred to that plant.

*LINOSYRIS (CHRYSOTHAMNUS) PULCHELLA*, Gray, *Pl. Wright*, 1, p. 96, & 2, p. 80; Torr. in *Sitgreaves' Rep.* t. 4. Gravelly hills on the upper Canadian, September. The margins of the leaves are denticulate-ciliolate, which was not observed in Mr. Wright's specimens. Dr. Schultz (Bipont.) informs me, in a letter, that he has indicated this as a new genus, "*Tetragonospermum pulchellum*, C. H. Schultz, *Mss.*" I think that the preceding species forbids its separation from Nuttall's *Chrysothamnus*, whatever view we take of that group.

*APOLOPAPPUS (BLEPHARODON) SPINULOSUS*, DC. and var. *GLABER*, Gray, *Pl. Fendl.* p. 75. On the Canadian, and Deer creek; August, September.

*APOLOPAPPUS (BLEPHARODON) RUBIGINOSUS*, Torr. & Gray, *Fl.* 2, p. 240. Sandy bottoms of the Canadian; September.

*APOLOPAPPUS (PRIONOPSIS) CILIATUS*, DC. *Prodr.* 5, p. 346; Gray, *Pl. Wright*, 1, p. 98. Prairies on the Canadian; September.

*APOLOPAPPUS (ISOPAPPUS) DIVARICATUS*. *Isopappus divaricatus*, Torr. & Gray, *Fl.* 2, p. 239. Sand-banks of the Canadian, near the Shawnee villages; August. A state with rather larger heads, approaching *Isopappus Hookerianus*, which most probably is not distinct.

*APOLOPAPPUS (ERICAMERIA) LARICIFOLIUS*, Gray, *Pl. Wright*, 2, p. 80. White Cliff creek, New Mexico; on hills and rocks. Cañon creek, Western New Mexico. The flowers have all fallen; but there is little doubt about the species, which Dr. Bigelow formerly gathered in the Organ Mountains, near El Paso.

*AMMODIA OREGANA*, Nutt. in *Trans. Amer. Phil. Soc.* 7, p. 321; Torr. & Gray, *Fl.* 2, p. 235, California, on the Stanislaus; May 8. This was also gathered in northern California by the United States South Sea Exploring Expedition, and by Mr. Allen on the Yuba river.

*STENOTUS LINEARIFOLIUS*, Torr. & Gray, *Fl.* 2, p. 238. Cañon Pass, New Mexico; March 16, 1854; California.

*CHRYSOPSIS HISPIDA*, Hook.; Nutt. in *Trans. Amer. Phil. Soc.* n. ser. 7, p. 316. Sandstone rocks and hills, on the Canadian; August—September.

*CHRYSOPSIS FOLIOSA*, Nutt. l. c. Hilly prairies on the Canadian; September. Intermediate between *C. villosa* and *C. canescens*.

*HETEROTHECA GRANDIFLORA*, Nutt. in *Trans. Amer. Phil. Soc.* n. ser. 7, p. 315. Cocomungo, California.

*GRINDELIA HIRSUTULA*, Hook. & Arn. *Bot. Beech.* p. 147 & 351. Hill-sides, at Knight's ferry, on the Stanislaus, California; May 7. A narrow-leaved state.

*PENTACHETA AUREA*, Nutt. l. c.; Torr. & Gray, *Fl.* 2, p. 249. Corte Madera, California; April. Very like Nuttall's original specimens, except that the leaves are broader.

#### APHANTOCHETA, Nov. Gen.

Capitulum heterogamum, 8-10-florum; floribus radii 3-5 femineis, tubulo corollæ stylo brevioribus truncato eligulato; disci 4-5 hermaphroditis, corolla tubuloso-infundibuliformi apice 5-dentata. Involucrum circiter 10-phyllym, biserialia; squamis aequalibus oblongis membranaceis

marginē lato hyalinis dorso subearinatis obtusis mucronatis. Receptaculum parvum, alveolator-dentatum. Antheræ ecaudatæ. Styli rami fl. fem. lineari-filiformes prorsus stigmatosi; fl. herm. plani appendice longa subulato-filiformi hispida superati. Achenia conformis, vel disci substerilia, hirsuta, oblonga, compresso-pentagona, 5-nervia. Pappus e setulis 5 brevissimis ad nervos respondentibus, vix manifestus. Herba annua, tenerissima; caulibus filiformibus 2-4-pollicaribus erectis parce arachnoideo-villosis ramisque paucis superne nudis monocephalis; foliis alternis filiformibus integerrimis; floribus ut videtur luteis mox purpurascensibus.

**APHANTOCHÆTA EXILIS.** (Tab. XI.) Hill-sides in the Napa Valley, California; April 25. A delicate, almost capillary little plant, becoming glabrous; the stems or branches naked above for an inch or so, and terminated by a head of 3 lines in length, below rather leafy, the leaves half an inch or more in length. Scales of the involucre greenish, except the margins, shining, nearly equaling the flowers. Corolla of the ray reduced to a tube, sheathing the style and about half its length, the apex somewhat obliquely truncate, with no vestige of a ligule. Disk-corollas with rather slender tubes; the throat dilated, the border equally 5-toothed. Appendages of the style twice the length of the stigmatic portion. Mature achenia not seen. The five rudimentary setulæ of the pappus do not exceed the hairs of the achenium in length. This curious little Composita exhibits that modification of the Asteroid style which is seen in *Pentachæta*, *Bradburia*, *Xanthisma*, &c. From the technical characters, the genus would fall into *De Candolle's* div. *Solenogyneæ*. But the genus to which I imagine it is most related has true rays, namely, the California genus *Pentachæta*, *Nutt.*; from which it differs mainly in the fewer-flowered heads, the entire suppression of the ligule, the longer proper tube of the corolla in the disk, and the reduction of the five bristles of the pappus to minute rudiments. The latter character furnishes the generic name.

**PERICOME CAUDATA**, *Gray, Pl. Wright. 2, p. 81.* On rocky hills at San Domingo, New Mexico; October. Also gathered by Dr. Henry on the Mimbres.

**PERITYLE NUDA**, *Torr. in Bot. Emory's Mex. Bound. ined.*: herbacea, ramosissima; foliis perisque alternis subcordato-rotundis 5-7-lobis crebre laciniato-dentatis incisive cum ramulis junioribus subpubescentibus glanduloso-viscosis; involucri squamis oblongis; ligulis oblongis discum haud superantibus; appendicibus styli fl. hermaph. brevibus obtusis; acheniis oblongo-linearibus marginibus villosissimo-ciliatis; pappo e squamellis hyalinis coroniformi-concretis pilis achenii brevioribus; aristis omnino nullis. (On the Rio Gila, near the Pimo village. Dr. Parry.) Arroyos and cañons at Williams' River, and on hills near the Colorado of the West; February 7. Plant a span to a foot or more high, probably annual. Leaves half an inch or more in diameter, moderately lobed, much lacinated and toothed. Heads three or four lines in diameter. Scales of the involucre very thin, hispid-ciliate towards the summit. Disk deep yellow; the small rays nearly white in the specimen. Receptacle convex, scrobiculate. Disk-corollas 4-toothed. Achenia a line and a half long, the margin densely villous-hispid. This species, which has no awns to the pappus, together with *P. aglossa*, *Gray, Pl. Wright. 2, p. 107*, which wants the rays, nearly effects a transition to *Pericome*, *Gray, l. c., p. 81*. The subjoined species, having (so far as the imperfect and scanty specimens show) no pappus at all, and no strong fringe on the margins of the achenium, carries the variations of this genus to an extreme.

**PERITYLE FITCHII** (*Torr. ined.*): herbacea, humilis, viscosissimo-pubescentis; foliis oppositis et alternis cordato-rotundis inciso-crenatis dentibus crenulatis; involucri squamis oblongis; ligulis oblongis discum superantibus; appendicibus styli fl. hermaph. subulatis; acheniis lineari-oblongis 3-4-nervatis ad nervos hirsutulis; pappo plane nullo. California; *Rev. Mr. Fitch*. Stems or branches three inches long, probably from a depauperate plant, clothed (as are the leaves in a lesser degree) with a glandular and very viscous villous pubescence. Leaves half an inch or less in diameter, subcordate, on slender petioles. Heads five to six lines in diameter. Scales of the involucre oblong, or oblong-lanceolate, villous, bearded at the tip. Receptacle convex. Flowers yellow; the rays moderately exserted. Disk-corollas 4-toothed, the teeth sparingly bearded on the back. Branches of the style tipped with slender and acute, but rather

short, appendages. Achenia compressed, usually with two approximate nerves at each margin, which are barely hirsute, terminated by a small, disk-shaped, rather prominent areola, which is entirely naked, there being no trace of a pappus.

BACCHARIS DOUGLASSI, *DC. Prodr.* 5, p. 400; *Torr. & Gray, Fl.* 2, p. 259; excl. syn. *P. Pingreei*, &c. Along streams; Napa Valley, (male,) and Cocomungo, (female); California, March and April. The leaves often denticulate.

BACCHARIS SERGEOIDES, (sp. nov.): suffruticosa, glabra, confertim ramosissima; ramis ramulisque angulatis rigidis articulatis seepissime aphyllis; foliis dum adsunt parvis spatulatis uninerviis, ramulorum ad bracteas minimas reductis, capitulis parvis in ramulos confertis subsessilibus, masculis magis glomeratis; involucre obovato, squamis multiseriatis appressis glabris oblongis, seu interioribus lanceolatis, fem. acutis, masc. omnibus obtusis; receptaculo conico subpaleaceo; acheniis glabris; pappo brevi. Dry arroyos, fifty miles west of the Colorado, western New Mexico. A very bushy, broom-like plant, with small heads, apparently abundant on the Gila, where Colonel Emory and others have gathered specimens.

BACCHARIS TEXANA, *Gray, Pl. Fendl.* p. 75. Prairies, &c. Comanche plains, Northwestern Texas; September.

BACCHARIS SALICINA, *Torr. & Gray, Fl.* 2, p. 258. Sand-banks of the Canadian, near the Shawnee villages; August.

PLUCHEA FORTIDA, *DC. Prodr.* 5, p. 452. On the Canadian; August.

TESSARIA (PHALACROCLINE) BOREALIS, *Gray, Pl. Fendl.* p. 75, & *Pl. Wright* 1, p. 102. Williams's river; February.

STYLOCLINE GNAPHALOIDES, *Nutt. in Trans. Amer. Phil. Soc., l. c.*; *Torr. & Gray, Fl.* 2, p. 267; var. *BIGELOWII*: foliis spatulato-oblongis vel sublinearibus; paleis receptaculi fructiferis dorso multo magis lanatis. (TAB. XIII.) California; along rivulets near Knight's ferry, on the Stanislaus river; May. Plant a span high, rather stouter, and with larger and broader leaves, and larger heads than in our specimens of Nuttall's plant; which, however, are poor, and perhaps depauperate. The heads are not larger in Dr. Bigelow's plant than those of *S. gnaphaloides* are described to be; but the paleæ are more woolly on the back, which perhaps is more deeply saccate, especially in the upper ones. In both, however, the saccate portion enclosing the fruit is larger than the hyaline wing in the uppermost fructiferous paleæ. The male flowers are subtended by one or two small and linear glabrous paleæ; their scanty pappus is sometimes barely denticulate, sometimes barbellate-toothed.

EVAX (HESPEREVAX) CAULESCENS, *Psilocarphus caulescens, Benth. Pl. Hartw. No.* 1812, p. 319. (TAB. XI.) Napa Valley, California; April 25. This plant is no *Psilocarphus*, but essentially an *Evax*. The achenia are obcompressed, and the paleæ barely concave (not complicate): the latter are of a firm, chartaceous texture, and persistent on the villous cylindrical receptacle, or the uppermost (which form an involucre verticil around the 6-8 sterile flowers) herbaceous, all pointless, or nearly so. Achenia smooth.

PSILOCARPHUS TENELLUS, *Nutt. l. c.* Near San Francisco and Mark West's creek, California; April. Quite distinct from *P. globiferus*, to which Nuttall's *P. brevissimus* and *P. Oregonus* are likely to belong.

MICROPS CALIFORNICUS, *Fisch. & Meyer; DC. Prodr.* 7, p. 283. Napa valley and Corte Madera, California; April.

ECLIPTA ERRECTA, *Linn.* River banks, Shawneetown, Arkansas; August.

BLENNOSPERMA CALIFORNICUM, *Torr. & Gray, Fl.* 2, p. 272. Rancho of San Geronimo, California; April.

POLYMNIA UVEDALLIA, *Linn.* Woods, on the Lower Canadian; August.

MELAMPODIUM CINERUM, *DC. Prodr.* 5, p. 518. Prairies, on the Canadian; September.

BERLANDIERA TEXANA, *DC. Prodr.* 5, p. 517. Bottom lands and prairies, on the Canadian and Walnut creek; August.

BERLANDIERA LYRATA, *Benth. Pl. Hartw.; Gray, Pl. Fendl. p. 78.* Plains of the Canadian; September.

ENGLERMANNIA PINNATIFIDA, *Torr. & Gray.* Prairies, on the Canadian; September.

PARTHENIUM INCANUM, *H. B. K. Nov. Gen. & Spec. 4, p. 260, t. 391.* Rocky hills, between the Canadian and the Pecos; September.

EUPHROSINE XANTHIIFOLIA, *Gray, Pl. Wright. 2, p. 85.* *Cyclachæna xanthiifolia, Fresenius.* Bottom of creeks, Comanche plains, Northwestern Texas, September.

IVA CILIATA, *Willd.; Torr. & Gray, Fl. 2, p. 287.* On Deer creek; August.

AMBROSIA APTERA, *DC. Prodr. 5, p. 527; Gray, Pl. Lindh. 2, p. 226.* On the Canadian; August.

AMBROSIA CORONOPIFOLIA, *Torr. & Gray, Fl. 2, p. 291.* With the preceding.

FRANSERIA AMBROSIOIDES, *Cav. Ic. 2, t. 200.* Mountain cañons, near Bill Williams' fork; February, (in fruit.)

FRANSERIA DUMOSA, *Gray, in Frém. Report 2, p. 316?* On the Mohave river, March. Branches, destitute of inflorescence.

FRANSERIA TENUIFOLIA, var. *TRIPINNATIFIDA, Gray, Pl. Lindh. 2, p. 227.* Plains, between the Canadian and the Pecos; September.

FRANSERIA HOOKERIANA, *Nutt.; Torr. & Gray, Fl. 2, p. 294.* Low places, Pecos to Galisteo; September—October.

FRANSERIA TOMENTOSA, *Gray, Pl. Fendl. p. 80.* Bottoms of the Canadian; September. The specimens resemble those of Fendler, and bear mature fruit.

XANTHIUM ECHINATUM, *Murray; Torr. & Gray, Fl. 2, p. 295.* On the Canadian river.

ZINNIA (DIPLOTHRIX) GRANDIFLORA, *Nutt.; Gray, Pl. Fendl. p. 81, & Pl. Wright. 1, p. 105.* Dogtoward prairies, Northwestern Texas; September.

WYETHIA HELENIODES, *Nutt.; Gray, Pl. Fendl. p. 82.* *Alarçonía helenioides, DC. Prodr. 5, p. 537.* Hill-sides, Oakland, California; April.

WYETHIA AUGUSTIFOLIA, *Nutt. in Trans. Amer. Phil. Soc. l. c.; Torr. & Gray, Fl. 2, p. 300.* Hills, near Punta de los Reyes, California; April.

WYETHIA SCABRA, *Hook. in Lond. Jour. Bot. 6, p. 247: foliis linearibus seu lineari-lanceolatis acutatis (inferioribus sæpe oppositis) integerrimis sessilibus venoso-trinerviis utrinque cum caule stricto gracili ultrapedali hispidulo-scaberrimis; capitulo solitario nudo; involucre hemisphærico disco brevioris, squamis pluriseriatim imbricatis appressis coriaceis oblongis, exterioribus appendice foliosa lineari patente auctis, interioribus purgenti-mucronatis; acheniis glaberrimis compresso-quadrangulatis pappo brevissimo calyculiformi irregulariter dentato coronatis.* Sand bluffs, near Inscription Rock, on the Puerco of the West, New Mexico. A remarkable species, of which only fruiting specimens were gathered. The stems are over a foot long, and do not show the base; possibly they are only branches, but they are perfectly simple. These, like the leaves, (which are 4 to 6 inches long, and 3 to 7 lines wide,) are very rough with short and close papillose bristles, much as in *Helianthus Maximiliani*. The short and sparing veins are confluent into a false nerve within the margin on each side, making the leaf appear three-nerved. Head short-peduncled, an inch in diameter. Rays not seen. Diacorollas slender, glabrous. Achenia about 4 lines long, the angles very acute. This species completes the parallel between *Wyethia* and *Balsamorhiza*, having the involucre imbricated as in *Balsamorhiza Hookeri*, &c., while several species of the latter genus are now known with the entirely foliaceous involucre of *Wyethia helenioides*, *angustifolia*, &c. Without doubt, the plant described above is the same as that of Geyer.

BALSAMORHIZA MACROPHYLLA, *Nutt. l. c.; var. pube minuta molli canescens; foliis plerisque elongatis (radicalibus subpedalibus) circumscriptione lanceolatis 1-2-pinnatipartitis, segmentis sæpe dentatis incisivis; involucri squamis exterioribus magnis foliaceis elongato-oblongis seu spatulatis quandoque dentatis.* Hill-sides, near Sonoma, California; May. All the species of this group are extremely variable in foliage. I possess only a leaf of Nuttall's *B. macrophylla*,



and that shows no hoary pubescence; but a specimen from Frémont's collection (which is remarkable for the foliaceous scales of the involucre being as long as the rays, even two inches in length) connects Nuttall's plant with our own. The foliage is more like that of *B. Hookeri*, (to which *B. hirsuta* must belong,) but the involucre is very different.

*BALSAMORHIZA DELTOIDEA*, Nutt. l. c.; var. *GLABRESCENS*. *B. glabrescens*, *Benth. Pl. Hartw.*, No. 1785, p. 317; but with the leaves for the most part coarsely toothed, and some of them not cordate at the base. Hill-sides, Sonora, California; May. This was also collected by Frémont in his second journey, and is mentioned in the account of some new Compositeæ of that collection (in *Bost. Jour. Nat. Hist.*) as a new *Balsamorhiza*, if not a form of *B. deltoidea*. There is scarce a doubt that they are all forms of one species.

*HELIANTHELLA CALIFORNICA* (sp. nov.): *hirsutula*; caule ramoso; ramis apice longe nudis monocephalis; foliis omnibus longius petiolatis lanceolatis seu spatulato-lanceolatis e medio triplinervis nitidulis; involucri squamis lineari-subulatis hirsutis ligulas subæquantibus; acheniis (immaturis) leviter oboordatis glaberrimis ala integerrima apice pappum brevissimum squamellato-setulosum gerentibus; aristis atque squamellis intermediis nullis. Napa valley, California, on hill-sides; April. The western species of this genus were founded on very incomplete materials, and greatly need revision. But this appears to be different from any before known, on account of the perfectly glabrous, awnless, neither ciliate nor lacerate achenia, with the pappus reduced to a tuft of very minute setæ or squamellæ at the summit of each smooth and entire wing; and the scales of the involucre are uniformly attenuate-subulate, not at all foliaceous. The naked peduncles are from 5 to 15 inches long. Leaves slightly scabrous, most of them opposite, 3 to 7 inches long, half an inch or an inch wide, or some of the larger occasionally rhomboid-dilated upwards, and these 2 inches wide; the cauline all on petioles of one or two inches in length.

*ENCELIA CALIFORNICA*, Nutt. l. c.; *Torr. & Gray, Fl. 2, p. 317*. Los Angeles, California; March.

*ENCELIA FARINOSA*, *Gray, in Emory's Rep. p. 143*. A species of which no character has been published, but which is likely to prove not distinct from the *E. nivea*, *Benth. Bot. Voy. Sulph. p. 27*. Gravelly hills on the Colorado of the west; February.

*HELIOMERIS MULTIFLORA*, Nutt. in *Jour. Acad. Philad. (n. ser.) 1, p. 171*; *Gray, Pl. Fendl. p. 171, & Pl. Wright. 2, p. 87*. Banks of streams, San Domingo and New Mexico; October.

*LEPACHYS COLUMNARIS*, *Torr. & Gray, Fl. 2, p. 315*. Shawneetown; August. Var. *PULCHERRIMA*, *Torr. & Gray, l. c.* Upper Canadian to New Mexico; September, October.

*LEPACHYS TAGETES*. *L. columnaris*, var. *Tagetes*, *Gray, Pl. Wright. 1, p. 106*. *Rudbeckia Tagetes*, *James, in Long's Exped. 2, p. 68*. Prairies on the Canadian; September. This appears to hold its characters, and to claim a place as a distinct species.

*VIQUIERA LAXA*, DC. and *V. CORDIFOLIA*, *Gray, Pl. Wright. 1, p. 107, & 2, p. 88*, were collected on the Mimbrès, by *Dr. Henry*.

*HELIANTHUS LENTICULARIS*, *Dougl. in Bot. Reg. t. 1265*. On the Canadian; August.

*HELIANTHUS PETIOLARIS*, Nutt. in *Jour. Acad. Philad. 2, p. 115*. Pecan creek, a tributary of the Canadian; August.

*HELIANTHUS CILIARIS*, DC. Prairies of the upper Canadian; September. A dwarf state of this well-marked species.

*HELIANTHUS RIGIDUS*, *Desf.; Torr. & Gray, Fl. 2, p. 322*. Prairies near Walnut creek, of the Canadian; August.

*HELIANTHUS LEVIFLORUS?* *Pers.; Torr. & Gray, l. c.* Pecan creek, of the Canadian; August.

*HELIANTHUS MAXIMILLANI*, *Schrader; Torr. & Gray, l. c.* Prairies and ravines on the Canadian; August.

*HELIANTHUS GROSSE-SERRATUS*, *Martens; Torr. & Gray, l. c. p. 326*. Bottoms, Deer creek, Arkansas; August.

*HELIANTHUS DORONICOIDES*, *Lam.; Torr. & Gray, l. c., p. 327*. On the Canadian, in low places; August.

*ACTINOMERS SQUARROSA*, *Nutt. Gen. 2, p. 131.* Near Shawneetown, on the Canadian river; August.

*THELESPERMA GRACILIS*, *Gray in Kew Jour. Bot. 1, p. 252, & Pl. Wright 1, p. 109.* Denuded prairies on the False Washita; August.

*COSMOS BIPINNATUS*, var. *PARVIFLORUS*, *Gray, Pl. Wright. 2, p. 90.* Plains and pine woods in the mountains near Laguna Blanca; September; (in fruit.)

*BIDENS CHRYSANTHEMOIDES*, *Michex.* San Domingo, New Mexico, in wet places; October.

*BIDENS TENUISECTA*, *Gray, Pl. Fendl. p. 86.* Banks of the Pecos; October.

*BIDENS BIPINNATA*, *Linna.* Hurrah creek, in rocky places; September.

*LEPTOSYNE DOUGLASII*, *DC. Prodr. 5, p. 531.* San Gabriel and Cocomungo, California; March.

#### PUGIOPAPPUS, *Nov. Gen.*

Capitulum, etc., fere *Coreopsis*; sed flores radii feminei fertiles; tubus corollæ disci (fauce infundibulari-campanulata haud longior) apice annulatus. Ovaria plano-obcompressa, ovalia, glabra; radii ala angusta cincta, calva; disci marginata, pappo gerentia e squamellis 2 pugioniformibus triquetris, angulis anguste alatis denticulatis, corolla vix dimidio brevioribus, constante. Herba monocarpica, pumila, glabra, subcaulescens, facie *Leptosynis*; caulibus scapigis sub-1-2-foliatis monocephalis; foliis alternis pinnatisectis, segmentis cum rhachi anguste linearibus; corollis radii et disci flavis.

*PUGIOPAPPUS BIGELOWII*. On the Mohave creek, in the desert east of the Colorado; March. The accessions which may be expected are not unlikely to efface the distinctions between several admitted genera, mostly founded on single plants, resembling *Coreopsis* or *Bidens* except in having fertile rays. The present plant, which we possess only in an early flowering state, approaches the incompletely-known *Narvalina*, *Cass.* (a West Indian opposite-leaved shrub) in floral characters, but it could hardly be joined to that genus with our present knowledge. It is to *Leptosyne* much what *Agarista* is to some sections of *Coreopsis*; but it is distinguished by the short tube of the disk-corolla, marked at the summit by a beardless ring, as well as by the pappus; yet, from the analogous case of *Coreopsis*, one should not be surprised if future discoveries were to connect them.

*HETEROSPERMUM TAGETINUM*, *Gray, Pl. Fendl. p. 87.* With the preceding.

*SANVITALIA ABERTI*, *Gray, Pl. Fendl. p. 87, & Pl. Wright. 1, p. 111.* La Cuesta; September.

*XIMENESIA ENCELOIDES*, *Cav.* Plains from the Canadian to New Mexico; September.

*VERBESINA VIRGINICA*, *Linna.; Torr. & Gray, Fl. 2, p. 359.* Prairies on the Canadian; August.

*FLAVERIA ANGUSTIFOLIA*, *Pers.; DC. Prodr. 5, p. 635.* Sandy bottoms of the upper Canadian; September. In all probability not distinct from *F. Contrayerba*.

*DYSODIA CHRYSANTHEMOIDES*, *Lagasca; DC. Prodr. 5, p. 640.* Plains from the Canadian to the Galisteo, New Mexico; August—October.

*HYMENATHERUM (ACIPHYLLEA) ACEROSUM*, *Gray, Pl. Wright. 1, p. 115.* Bluffs of the Llano Estacado; September.

*HYMENATHERUM TENUIFOLIUM*, *Cass.; Gray, Pl. Wright. 1, p. 118.* Bill Williams' fork, West New Mexico; February.

*LOWELLIA AUREA*, *Gray, Pl. Fendl. p. 91, & Pl. Wright. 1, p. 118.* Dogtown prairies, on the Llano Estacado, &c.; September.

*GAILLARDIA PINNATIFIDA*, *Torr. in Ann. Lyc. New York 2, p. 214; Torr. & Gray Fl. 2, p. 366.* Prairies of the Llano Estacado; September.

*GAILLARDIA PULCHELLA*, *Foug.; Torr. & Gray, l. c.* Prairies on the Canadian; September.

*PALAPOXIA HOOKERIANA*, *Torr. & Gray, Fl. 2, p. 368.* Sand-hills on the Canadian, from Shawneetown; August—September.

*PALAPOXIA TEXANA*, *DC. Prodr. 5, p. 125.* Shawneetown; with the foregoing species.

*CLERNACTIS GLABRUSCULA*, *DC. var. MEGACEPHALA.* Hill-sides and near rivulets, at Knight's ferry, on the Stanislaus, and Ione valley, California; May. Heads from 6 to 9 lines in length. Flowers yellow; the ray-corollas conspicuously ampliate. Pappus mostly of 4 silvery paleæ;

which in the outermost flowers are often oblong, obtuse, and barely half the length of the corolla, but in the others lanceolate, mostly acutish, and almost as long as the corolla. Although the heads are larger than in Douglas' plant, described by De Candolle, and notwithstanding differences in the characters, yet I think that both these specimens and what I called *Chaenactis filifolia*, in *Pl. Fendl.* p. 98, belong to *C. glabriuscula*, DC. For, although De Candolle in the generic character assigns 5 or 6 paleæ to the pappus, I find only four in Hooker's, and his own specimens of *C. glabriuscula*, and these are in many flowers almost as long as the corolla, although in others (probably from the exterior part of the head) they are only half that length, as De Candolle described them. In this and the allied genera, little reliance is to be placed upon the particular size and shape of these paleæ.

*HYMENOPAPPUS FLAVESCENS*, Gray, *Pl. Fendl.*, p. 97, & *Pl. Wright.* 2, p. 94. Dogtown prairies on the Pecos; September. Also, the fine-leaved variety, La Cuesta, New Mexico; September 29.

*HYMENOPAPPUS TENUIFOLIUS*, Pursh, *Fl.* 2, p. 742; Torr. & Gray, *Fl.* 2, p. 372. Plains and dry arroyos from Hurrah creek to the Galisteo; September–October. The characters of all the species need revision. The length of the tube of the corolla and size of the pappus varies considerably. This species probably includes *H. corymbosus*, Var. *Nuttallii*, Torr. & Gray, l. c.

*HYMENOPAPPUS LUTEUS*, Nutt.; Torr. & Gray, l. c.; Gray, *Pl. Wright.* 2, p. 94. Sandy, denuded plains, on the Upper Canadian; September.

*RIDDELLIA TAGETINA*, Nutt.; Torr. in *Emory's Rep.* t. 5; Gray, *Pl. Fendl.* p. 93. Plains, &c., from the False Washita to the Llano Estacado; August–September.

*BAHIA OPOSITIFOLIA*, DC. *Prodr.* 5, p. 656; Gray, *Pl. Fendl.* p. 99; Torr. in *Sitgreaves' Rep.* t. 3. Prairies, &c., near Hurrah creek, N. W. Texas; September.

*BAHIA (ERIOPHYLLUM) CONFERTIFLORA*, DC. *Prodr.* 5, p. 657. Hill sides, Sonora, California.

*BAHIA (ERIOPHYLLUM) LANATA*, Nutt.; DC. l. c. California; banks of the Mokelumne river, and near Marysville; May: also, Napa Valley; April: a form with the heads no larger than in *B. tenuifolia*, DC., but much branched to the top and leafy; the lobes of the leaves rather broad and short, much lacinate and toothed. Knight's ferry, on the Stanislaus; May: the very large form, with the involucre almost half an inch in diameter; the same with Hartweg's No. 1787.

*BAHIA (ERIOPHYLLUM) ARACHNOIDEA*, Fisch. & Lallemand, *Ind. Hort. Petrop.*, 1842; Gray, *Pl. Fendl.* p. 100. *B. latifolia*, Benth. *Bot. Voy. Sulph.* p. 30. Bolinas Bay, California; April. Pappus reduced to a crown of minute paleæ, shorter than the diameter of the achenium. In a small collection made by Mr. Wm. A. Wallace, in the vicinity of Los Angeles, there is an interesting dwarf *Bahia*, which, with *B. rubella*, (an unpublished species found by Dr. Parry in the interior of California,) is intermediate in character between true *Bahia* and *Eriophyllum*, and both species are remarkable for having a conical receptacle. The characters are subjoined.

*BAHIA WALLACKI* (sp. nov.): annua, humilis, e basi diffusa ramosissima, albo-lanosisissima; pedunculis solitariis monocephalis; foliis alternis obovatis vel spatulatis integerrimis; involucre hemisphærico 8-phyllo lanuginoso, squamis subpatentibus margine scariosis discum subaequantibus; ligulis 8 rotundis subintegerrimis aureis; styli fl. disci ramis cono acuto superatis; receptaculo conico; acheniis glabellis; pappi paleis 10 brevissimis enerviis obtusissimis. Teyunga, near Los Angeles, California; May; Mr. Wm. A. Wallace. Plant 2 or 3 inches high, but doubtless acquiring a greater size later in the season, white, with a dense covering of long and loose floccose wool, the branches terminated by peduncles of about an inch in length. Leaves numerous, 3 to 6 lines long, tapering into a slight petiole. Involucre 2½ lines long and broad; the scales obovate-oblong, acute, membranaceous, with a hyaline margin. Ligules 1½ to 2 lines in length and breadth, either retuse or obsoletely emarginate, three-toothed at the truncate-summit, abruptly contracted at the base into a very short tube. Disk-flowers, 20 or more, like those of true *Bahia*. Branches of the style much as in *Bahia ambrosioides*, but with a proportionately larger, triangular, more flattened, acute, and hispid cone or appendage.

Pales of the pappus oblong, or the alternate ones oval, about one-sixth of the length of the corolla, scarcely longer than the breadth of the achenium. Receptacle proportionately large, ovoid-conical.

I append the characters of what must be regarded as a new genus, allied to *Bahia*, *Burrielia*, and *Actinolepis*, and remarkable for its multisetose rather than paleaceous pappus.

#### SYNTRICHOPAPPUS, Nov. Gen.

**CAPITULUM** multiflorum, heterogamum; floribus radii 5 ligulatis fœmineis; disci tubulosi hermaphroditis. Involucrum obovatum, e squamis 5 erectis membranaceis discum æquantibus. Receptaculum convexum, nudum. Corollæ glabræ; disci infundibuliformes, limbo quinquelobo, lobis lineari-oblongis; ligulæ breves, late ovales, apice trilobæ. Antheræ lineares, in appendicem lanceolatam longe productæ. Styli rami fl. disci appendice triangulata complanata hispidula conspicua superati. Ovaria oblongo-linearîa, hirsuta. Pappus (radii et disci conformis) e setis plurimis (35-40) uniserialibus filiformibus hispidulis æqualibus basi inter se pl. m. coalitis constans, corolla disci paullo brevioribus. Herba monocarpica, e basi ramosa, depressa, floccoso-lanata, deinde glabrescens; foliis alternis cuneato-spathulatis apice trilobatis; capitulis breviter pedunculatis; floribus flavis.

**SYNTRICHOPAPPUS FREMONTII.** (TAB. XV.) Gathered by Colonel Fremont (a single specimen) in his journey across the continent in 1853-4, probably in the spring of 1854, and somewhere between the Rocky Mountains and the Sierra Nevada. A small herb, intermediate in habit between *Actinolepis*, DC., and *Bahia* § *Trichophyllum*. Leaves 6 to 10 lines in length, tapering from the summit into a long, narrowed base. Heads somewhat glomerate on the branches, 3 lines long. Scales of the involucre concave, with narrow scarious margins. Pappus white, composed of 30 to 40 uniform and equal slender bristles, which are all usually connate at the very base into a ring, so as to fall away together; and also for the most part further united in twos, threes, &c.; the combined base somewhat paleaceous.

**AMBLYOPAPPUS NEO-MEXICANUS.** *Schkuhria* (*Amblyopappus* vel *Achyropappus* *ligulus nullis*) *Neo-Mexicana*, *Gray, Pl. Fendl. p. 96.* Hills and rocky places near La Cuesta, &c., between the Pecos and the Rio Grande; September. The same as Fendler's No. 458. Except in the want of rays, this is an *Achyropappus*; the species of which (along with an unpublished one, gathered by Dr. Bigelow on the Limpio, in 1852, *Bahia* (*Achyropappus*) *Bigelovii*) I am unable to keep generically separate from true *Bahia*. Its characters accordingly associate it with *Amblyopappus*, *Hook. & Arn. (Aromia, Nutt.; Infantea, Remy)* which may perhaps be kept distinct for the sake of convenience, unless, as is likely, radiate and rayless heads should occur in the same plant.

**VILLANOVA CHRYSANTHEMOIDES,** *Gray, Pl. Wright 2, p. 96.* Rocky places near Hurrah creek; September. In a few heads some traces of a chaffy pappus were detected, showing that this is really only an epappose *Bahia*.

**MONOLOPIA MAJOR,** *DC. Prodr. 6, p. 74.* A small form, Napa valley, Feather river, &c., California; May.

**MONOLOPIA LANCEOLATA,** *Nutt. Pl. Gamb. in Jour. Acad., Philad., n. ser. 1, p. 175.* Los Angeles, California; March. This comes from the same district as Nuttall's *M. lanceolata*, and was likewise gathered by Coulter, (No. 323.) The leaves are lanceolate, nearly all toothed, and less woolly than those of *M. major*; but the lowest are opposite, and the scales of the involucre are united to about the middle.

**LASTERENIA (HOLOGYMNE) GLABRATA,** *Lindl.; DC. Prodr. 5, p. 665.* Near Tamul-Pass Mountain, California; April 11.

**BURRIELIA (BAERII) CHRYSOSTOMA,** *Torr. & Gray, Fl. 2, p. 379;* and var. *MACRANTHA.* San Francisco; the variety on the hills near Punta de los Reyes, California; April. The stems, foliage, &c., of the variety accord with the larger states of *Burrielia chrysostoma*; but the head is of extraordinary magnitude, the involucreal scales being half an inch, and the rays an inch in length.

*BURRIELIA TENERRIMA*, DC. *Prodr.* 5, p. 663. Cocomungo, California; March. In the same head some of the flowers present a pappus of a single large palea, (awned from a broad base;) others have a minute rudiment of a palea, the greater number none at all; thus destroying all claims of *Baeria* to rank as a genus. Perhaps the epappose state of more than one *Burrielia* may have been referred to *B. chrysothoma*.

*BURRIELIA (DICHLETA) LANOSA* (sp. nov.): pygmaea, arachnoideo-lanata, foliosa; foliis linearibus plerumque integerrimis; capitulo sessili; involucri squamis oblongis ligulisque ovalibus (albis?) 8; antheris appendice setiformi auctis; pappo ex aristis 4 subulatis scabris corolla paullo brevioribus et squamis totidem oblongis obtusis denticulatis alternantibus. Gravelly hills near the Colorado of the West; February. The specimens are barely an inch high from a slender annual root, leafy to the head, and clothed throughout with a loose white wool. They are evidently early seedling plants, flowering at the first approach of spring, but probably branching and increasing considerably in height as the season advances. They were found growing along with equally pigmy specimens of *Eremiastrum bellifoides*. Perhaps the wool is deciduous with age. Leaves half an inch long, tapering downwards, one of them is two-lobed at the apex. Involucre campanulate, two and a half or three lines long, resembling that of a *Bahia Eriophyllum*. Ligules two lines long, broadly oval, truncate and emarginate or three-toothed at the summit. Disk-flowers yellow. Anthers tipped with a setiform appendage almost of their own length. The intermediate paleæ of the pappus almost half the length of the aristiform ones, which are about two-thirds the length of the disk-corolla. Ovaries linear, minutely hairy.

*HELENIUM AUTUMNALE*, Linn. Springs and wet places on the upper Canadian; September. A roughish and rigid-leaved state.

*HELENIUM MEXICANUM*, H. B. K. *Nov. Gen. & Spec.* 4, p. 299; DC. *Prodr.* 5, p. 666. Bolinas Bay, California; April. The same as No. 357 of Coulter's California collection. The pappus is from a third to half the length of the disk-corolla, as it is in Humboldt's plant.

*HELENIUM BIGELOVII* (sp. nov.): subglabrum; caule bipedali simplici apice longe nudo monocephalo vel superne parce ramoso; ramis monocephalis; foliis lineari-lanceolatis integerrimis parallele triplinerviis basi plerumque in caulem decurrentibus; ligulis palmatifidis involucri squamis subulatis et disco hemisphaerico paullo longioribus; pappi paleis 5-7 ovato-lanceolatis aristatis corolla 5-dentata tertia parte brevior. Swamps near Santa Rosa Creek, California; May. Plant, when single-stemmed and simple, with much the aspect of a *Leptopoda* and of *Hecubaea*; the striate stem moderately leafy below, its naked summit or peduncle 10 or 12 inches long, thickened under the head. One specimen, however, is considerably branched above. Leaves from 3 to 6 inches long, 3 to 5 lines wide, erect, tapering to each end; the lower ones again dilated at the insertion, and mostly decurrent on the stem into a slight or manifest wing; the radical leaves similar, or rather shorter and broader. Rays numerous and crowded, bright yellow. Disk two-thirds of an inch in diameter, between hemispherical and depressed-globose, as is the receptacle, considerably larger than in any form of *H. autumnale*, but the rays not so long in proportion. This handsome and well-marked species is dedicated to the discoverer.

*ACTINELLA RICHARDSONII*, Nutt. in *Trans. Amer. Phil. Soc.* l. c.; Gray, *Pl. Fendl.* p. 101. Pine and Cedar woods near Galisteo, New Mexico; October.

*ACTINELLA LEPTOCLEADA*, (sp. nov.): caulibus e caudice perenni crasso multicapiti gracilibus ramosis foliosis; ramis apice longe nudis monocephalis; foliis lineari-spathulatis, radicalibus in petiolum attenuatis subtrinerviis subtus vel utrinque sericeo-canescensibus, superioribus viridulis; involucri squamis biserialibus oblongis cano-villosis; receptaculo acute conico; pappi paleis 5 obovato-rotundis integerrimis subito longiuscule aristatis. In mountains and rocky places near Santa Antonita, New Mexico; October. Caudices 1 or 2 inches long, caespitose, clothed with the scaly bases of former leaves mixed with villous hairs, as in other species; the slender and loosely-branched flowering stems 8 or 9 inches high, 4-6-leaved. Leaves 1 or 2 inches long,  $1\frac{1}{2}$  to 3 lines wide, the radical often spatulate and silky-canescens, at least beneath, nearly as in *A.*

acaulis, but the cauline or upper ones green and merely silky-pubescent, strongly punctate. Peduncles or naked branches 3 to 4 inches long, almost filiform. Head small, the involucre barely 3 lines in diameter. Rays 5 to 8, glandular-puberulent underneath. Pappus similar in the disk and ray; the thin silvery scales very obtuse, marked with an indistinct mid-nerve, which is abruptly produced into a slender awn rather shorter than they, and a little shorter than the disk-corolla. Achenia silky-villous. The perennial root, thick caudices, and broader leaves, the lower at least appressed-silky and canescent, distinguish this from any form of *A. linearifolia*; the much smaller heads, the less silvery foliage, the acute receptacle, and the rounder paleæ of the pappus forbid its being viewed as an attenuated form of *A. argentea*.

*ACTINELLA ACAULIS*, Nutt. l. c.; Torr. & Gray, *Fl.* 2, p. 389. On the crest of the Sandia mountains, New Mexico; October 10. The scape, 2 or 3 inches long, and seldom exceeding the linear silvery radical leaves, occasionally bears one or two similar leaves.

*ACTINELLA SCAPOSA*, var. *A. glabra*, Nutt. l. c.; Torr. & Gray, l. c. Rocky ridges of the Antelope hills, on the Canadian; September. This is the same as the *A. scaposa* var. *mutica*, Gray, *Pl. Fendl.* p. 101; and the pappus is sometimes awnless, sometimes short-awned. It is without doubt the *A. glabra* of Nuttall, (whose specimen probably came from the same district, not from the Missouri,) but only a narrow-leaved and glabrate form of *A. scaposa*.

*ACHYRACHENA MOLLIS*, Schauer; DC. *Prodr.* 7, p. 492. On plains, Benicia and Lone valley, California; April-May.

*LAYIA CALLIGLOSSA*, Gray, *Pl. Fendl.* p. 103. *Calliglossa Douglasii*, Hook. & Arn. *Bot. Beech.* p. 356. Fields at Benicia, California; April.

*LAYIA (CALICHRŒA) PLATYGLOSSA*, Gray, l. c. San Francisco and Los Angeles, California; March-April.

*LAYIA (CALICHRŒA) PENTACHETA*, (sp. nov.): villosa-hispida; foliis linearibus, inferioribus parce pinnatifidis, superioribus integerrimis; pappo ex aristis 5 tenui-setiformibus lævibus ter se æqualibus achenio pubescente et fere corolla aequalongis. (Tab. XVI.) Hillsides at Knight's ferry, on the Stanislaus, California; May. This adds another to the already numerous species of this genus, which so closely resemble one another that they can scarcely, if at all, be distinguished, except by the pappus, or sometimes by the chaff of the receptacle. The present species falls naturally into the section *Calichroa*, and is only to be distinguished from the more slender forms of *L. platyglossa*, perhaps, by the rather smaller heads and less hairy achenia, but principally and surely by its pappus of only five longer and smooth awns. These are slender and bristle-like, naked, and only obscurely denticulate under a strong lens. Receptacle chaffy only at the very margin. Rays cuneate, yellow throughout.

*LAYIA (MADAROGLOSSA) GAILLARDIODES*, Hook. & Arn. *Bot. Beech.* p. 148 & p. 357. Napa Valley and Tamul Pass, California; April. This is undoubtedly Hooker and Arnott's species, on which the genus was originally founded. But there is seldom any chaff on the receptacle within the exterior disk flowers, so that it wholly falls into the section *Madaroglossa*. Its large rays trifid at the apex distinguish it from *L. hieracioides*. The fuscous pappus is villous with rather scanty wool only next the base.

*LAYIA (MADAROGLOSSA) CARNOSEA*, Nutt. in *Trans. Amer. Phil. Soc.* 7, p. 393, & in Torr. & Gray, l. c. Sandy beach, Punta de los Reyes, California; April.

*LAYIA (MADAROGLOSSA) HETEROTRICHA*, Hook. & Arn., l. c.; Hook.  *Ic. Pl.* t. 326. Plains at Knight's Ferry, on the Stanislaus, California; May.

*LAGOPHYLLA DICHOTOMA*, Benth. *Pl. Hartw.* p. 317. Plains of Feather river, near Marysville, California; May. The rays are bright yellow. The genus is distinguished from *Hemizonia* by the obcompressed fertile achenia, completely enclosed by the subtending involucre scale, and by the cuneiform, deeply trifid rays. The habit also is peculiar. Yet the genus may perhaps pass into *Hemizonia*, although it is more distinct from it than *Calycadenia* is.

*HEMIZONIA LUZULIFOLIA*, DC. *Prodr.* 5, p. 692. Hillsides near Benicia, California; April.

*HEMIZONIA FITCHII* (sp. nov.): annua, pilis longissimis patentibus arachnoideo-villosa; caule rigido erecto superne demum ramoso; foliis caulinis elongatis pinnatifidis vel pinnatipartitis, (imis nunc fere bipinnatipartitis,) summis et ramealibus subulato-linearibus integerrimis seu rariter dentatis rigidis pungenti-cuspidatis, floralibus capitulum sessile arcte involucrentibus et bis superantibus; involucri squamis 7-9 subulatis glandulis nonnullis parvis claviformibus obtusis ligulis oblongis apice bidentatis flavis paulo brevioribus; floribus disci (plusquam 30) omnibus paleis receptaculi oblongis scariosis muticis ad apicem herbaecum longe crinitis fulcratis; pappo (fl. disc. ster.) corollam subaequantibus e paleis 8-12 anguste linearibus rigidis basi in tubum vel in phalanges saepius pl. m. coalitis superne fimbriato-barbatis; ovariis radii apice valde gibbosis. Plains of the Sacramento, California; May; where it was previously detected by the Rev. Mr. Fitch. A well-marked and peculiar species, which will fall into none of the sections of the genus, as they are limited in the Flora of North America; but in some respects it approaches that section of *Calycadenia* which is formed of Nuttall's *Osmadenia*, and of which some additional species are now known. The present plant has a rigid and usually stout stem, from three to twelve inches high, at first simple, and terminated by a single sessile head, (of about an inch in diameter,) at length corymbosely branched, often from within the circle of involucre leaves, so as to appear proliferous. Cauline leaves of linear outline, two to three inches long; the rigid and springy-pointed rameal ones an inch or less in length, often fascicled. Ligules three lines long, including the tube. Lobes of the disk-corolla short, ovate. Receptacle chaffy throughout; the paleas distinct, partly wrapped around the disk-flowers. The very immature fertile achenia are obovate-trigonal, with a short inflexed stipe, a large dorsal hump, and a short inflexed apical beak.

*HEMIZONIA CONGESTA*, DC. *Prodr.* 5, p. 692. California. Besides these specimens, I have seen no indigenous ones except those of Douglas, who seems to have collected it sparingly. I have, however, a specimen taken from a plant raised in the Cambridge Botanic Garden, in 1850, from seeds received the previous year from the London Horticultural Society, under the name of "*Madaria corymbosa*." Indeed, it is distinguishable from *Madaria* by the shape of the fertile achenia alone. The foliage and young parts are more cinereous and soft-downy than in *Madaria*, and many of the leaves are serrulate-toothed.<sup>1</sup>

*MADARIA ELEGANS*, DC. *Prodr.* 5, p. 692. Hill-sides, Knight's Ferry, on the Stanislaus River; May.

*MADIA SATIVA*, Molina; DC., l. c. With the preceding, and in Napa Valley.

*MADIA RACEMOSA*, Nutt. in *Trans. Amer. Phil. Soc.*; Torr. & Gray, *Fl. N. Amer.* 2, p. 405. Hill-sides, with the preceding.

*HARPECARPUS MADARIOIDES*, Nutt., l. c.; Torr. & Gray, *Fl. N. Amer.* 2, p. 406. Hill-sides, Napa Valley; April: a small form; and Knight's Ferry; May: a larger state.

*CALYCADENIA CEPHALOTES*, DC. *Prodr.* 5, p. 695; also, *C. multiglandulosa*, DC. l. c., which is a more elongated and glandular state. Hill-sides and plains, Knight's Ferry, on the Stanislaus; May.

*MARUTA COTULA*, DC. *Prodr.* 6, p. 13. Knight's Ferry, on the Stanislaus, California; May. Doubtless introduced.

*ACHILLEA MILLEFOLIUM*, Linn. Stony mountain streams, New Mexico; October: Benicia, California; April.

*BAILEYA PLENI-RADIATA*, Harv. & Gray, in *Pl. Fendl.* p. 106. Gravelly hills and arroyos, New Mexico; October-November.

*BAILEYA MULTI-RADIATA*, Harv. & Gray, l. c.; Torr. in *Emory, Rep.* p. 144, t. 6. Williams' River; February.

*MATRICARIA DISCOIDEA*, DC. *Prodr.* 6, p. 52. Corte Madera, California; April.

<sup>1</sup> *Hemizonia filipes*, Hook. & Arn., is doubtless a third *Lagophylla*, *L. filipes*. *Hartmannia ciliata*, DC., is surely *Oxyura chrysanthemoides*. There is no specimen in the Candollean herbarium; whence I suppose that De Candolle had discovered the fact and united the specimens, but omitted to erase the species under *Hartmannia* from his manuscript.

*COTULA CORONOPIFOLIA*, *Linn.*; *DC. l. c. p. 78.* Swampy places, Benicia, California; April. Laguna, near San Francisco, *Mr. H. G. Bloomer.* Dr. Bigelow does not seem to have thought this an introduced plant; but it was probably brought to California from the Old World.

*ARTEMISIA DRACUNCULOIDES*, *Pursh.*, *Fl. 2, p. 742*; *Torr. & Gray, Fl. 2, p. 416.* Rocky hills along the Canadian River; August.

*ARTEMISIA CAUDATA*, *Michx.* *Fl. 2, p. 129.* Sandy bottoms of the Canadian; September.

*ARTEMISIA FILIFOLIA*, *Torr. in Ann. Lyc. New York 2, p. 211, & in Marcy's Rep. t. 12.* Rocky hills on the Canadian; August.

*ARTEMISIA BIGELOVII* (sp. nov.): fruticosa, humilis, incana; foliis utrinque albo-sericeis cuneato-linearibus seu augustissime cuneatis apice tridentatis, floralibus parvis integerrimis; capitulis obovatis parvis glomeratis longe spicato-paniculatis; involucre tomentoso sæpissime trifloro; floribus 2 hermaphroditis, unico fœmineo; corolla glabra. Rocks and cañons on the Upper Canadian and Llano Estacado. A much branched, shrubby species, apparently only a foot high, and of the section *Abrotanum*; very canescent all over, the crowded leaves and branchlets with a fine and close silvery sericeous pubescence, the heads (which are glomerate, into a strict and virgate, interrupted, spicate panicle, of fully the length of the leafy branches) more tomentose. Leaves 3 to 7 lines long, 1 to 2 lines broad at the truncate and 3-toothed or 3-lobed apex, thence tapering to the base, equally silky-canescens on both sides, the broader ones triplinerved above; the floral ones very small, filiform-linear, entire, scarcely as long as the glomerules they subtend. Heads a line and a half long, usually three-flowered, sometimes only two-flowered, but one of them always slender and pistillate only, apparently all of them fertile. Scales of the involucre oblong, obtuse; the exterior with slight scarious margins, the innermost scarious, villous-ciliate. This might be mistaken for a small and narrow-leaved state of *A. tridentata*, *Nutt.*; but the heads are smaller, more hoary, fewer-flowered, and heterogamous, while in that species (rightly referred to the section *Seriphidium*) the flowers are all hermaphrodite.

*ARTEMISIA LUDOVICIANA*, *Nutt.*: an entire-leaved variety. Hills and plains, with the last species.

*ARTEMISIA FRIGIDA*, *Willd.*; *DC. Prodr. 6, p. 125.* La Cuesta, New Mexico; on mountains and plains; September.

*FILAGO PARVULA*, *Torr. & Gray, Fl. 2, p. 432.* Hill-sides, Napa Valley, California; April. Plant a span to nearly a foot high, the fascicles of capituli terminating the corymbose branches. Involucral scales and chaff mostly obtuse, the exterior with a narrowed apex.

*ANTENNARIA LUXULOIDES*, *Torr. & Gray, Fl. 2, p. 430*: var. *foliis inferioribus oblongo-spathulatis. A. argentea*, *Benth. Pl. Hartw. no. 1810, p. 319.* Duffield's Ranch, in the Sierra Nevada, California; May. The male plant only. Stem 12 to 18 inches high. Scales of the involucre either white or tinged with rose-color.

*GNAPHALIUM CALIFORNICUM*, *DC. Prodr. 6, p. 224.* San Francisco. Punta de los Reyes; April. San Gabriel; March.

*GNAPHALIUM SPRENGELII*, *Hook. & Arn.* Between the upper Canadian and the Rio Grande, New Mexico. Cocomungo, California; March.

*GNAPHALIUM PALUSTRE*, *Nutt.*; *Torr. & Gray, Fl. 2, p. 427.* Knight's Ferry, Stanislaus River, California; May; on the sides of rivulets. Albuquerque, New Mexico; October: the variety with smooth achenia.

*GNAPHALIUM PURPUREUM*, *Linn.* San Francisco; April.

*GNAPHALIUM MICROCEPHALUM*, *Nutt.*; *Gray, Pl. Wright. 1, p. 124.* Rocky places. Hurrah Creek, New Mexico; September.

*GNAPHALIUM STRICTUM* (sp. nov.): annuum, cano-lanatum; caule simplici stricto; foliis angustissime linearibus elongatis; capitulis in axillis arcte glomeratis; glomerulis subsessilibus folioso-bracteatis foliis multo brevioribus longe interrupto-spicatis; involucre campanulato, squamis exterioribus lanceolatis subfuscis, intimis linearibus apice albidis; acheniis lævibus.



Banks of the Rio Grande, near Albuquerque; October. Stems 3 to 9 inches high, virgate. Leaves uniform from the base to the apex of the stem, an inch or an inch and a half long, rather crowded, almost filiform. Heads rather larger than those of *G. uliginosum*, densely congested into woolly capitate glomerules, one in each axil, and forming a long and virgate, interrupted, leafy spike. Flowers very numerous. Receptacle broad and flat. Involucre about the length of the disk. To this apparently well-marked species belongs a specimen gathered by Frémont, in his first expedition, on the Sweet-water of the Platte. Its strict and virgate stems and inflorescence, and the very narrow leaves, distinguish it at once from *G. uliginosum* and any allied species.

*SENECIO FILIFOLIUS*, Nutt. var. *JAMESII*, Torr. & Gray, *Fl.* 2, p. 444; and var. *FREMONTII*, Torr. & Gray, *l. c.* Rocky hills of the Upper Canadian; September.

*SENECIO LONGILOBUS*, Benth. *Pl. Hartw.* var. Rocky places, Hurrah Creek, New Mexico; September.

*SENECIO FENDLERI*, Gray, *Pl. Fendl.* p. 108. Sandia mountains, New Mexico; October. The specimens exactly accord with those of Fendler's collection.

*SENECIO EREMOPHILUS*, Richards.; Gray, *Pl. Fendl.* p. 108. Mountain arroyos, near Santa Antonita, New Mexico; October.

*SENECIO EURYCEPHALUS*, Torr. & Gray, *Pl. Fendl.* p. 109, var. *MAJOR*; foliis tantum pinnatifidis, radicalibus superne integris inferne dentatis rariter laciniato-lobatis. On plains, near Murphy's, California; May. The heads and flowers accord with those of Frémont's and Hartweg's specimens of *S. eurycephalus*; but the plant is larger, apparently 3 or 4 feet high; the cauline leaves are 6 to 9 inches long, lanceolate in outline, obtuse, lacinate-pinnatifid, with irregular and unequal oblong lobes; the radical leaves oblong or ovate-oblong, sparingly and irregularly pinnatifid only at the base. All these species may be expected to be polymorphous in foliage.

*SENECIO EXALTATUS*, Nutt.; Torr. & Gray, *Fl.* 2, p. 439. Hill-sides, near Downieville, California; May.

*SENECIO EXALTATUS*, Nutt., var. *UNIFLOSCULUS*. Hill-sides, Grass Valley, California; May. A slender form, and with a solitary ray, or sometimes perhaps rayless.

*SENECIO ARONICOIDES*, DC. *Prodr.* 6, p. 426. Hills, near San Francisco and Punta de los Reyes; April. Also, with slightly-toothed leaves and few heads, Duffield's Ranch, in the Sierra Nevada; May.

*SENECIO CALIFORNICUS*, DC. *l. c.*, var. foliis caulinis laciniato-pinnatifidis. Cocumungo, California, in sandy plains; March. This appears to differ from *S. Californicus*, *β. DC.*, only in the lacinate-pinnatifid or toothed leaves. The heads are larger than in Nuttall's *S. Coronopus*.

*SENECIO BIGELOVII* (sp. nov.): glabra; caule simpliciter a radice perenni apice racemoso-3-15-cephalo; foliis ovato-lanceolatis acuminatis argute callosa-dentatis in petiolum longum marginatum contractis, supremis lanceolatis basi angusta semiamplexicaulibus; capitulis magnis nutantibus homogamis; involucre late campanulato 10-12-phyllo basi bracteolis paucis brevibus setaceis calyculato, squamis acatis aequalibus, exterioribus lanceolatis, interioribus latioribus scarioso-marginatis; ligulis nullis; acheniis glaberrimis. In mountain arroyos, near Camp Douglas, New Mexico; October. Plant entirely glabrous. Stem rather stout, erect, 18 inches to 2 feet or more in height, rather leafy to the top; the uppermost leaves reduced to bracts. Lower leaves 3 to 5 inches long, abruptly contracted at the base into a margined or winged petiole of 2 or 3 inches in length; the upper successively narrower and with shorter petioles, or at length sessile. Heads racemose, nodding on the summit of erect and naked or slightly bracteolate peduncles of  $1\frac{1}{2}$  to 3 inches in length, very large for a *Senecio*, from half to three quarters of an inch in length and breadth, many-flowered. Involucre rather fleshy, a little shorter than the flowers, very minutely bracteolate; the scales 5 or 6 lines long, herbaceous, with abrupt hyaline-scarious margins, which on the alternate and interior scales are broad and

conspicuous. Corollas yellow, narrowly infundibuliform-tubular, rather deeply 5-toothed at the summit, externally callous-thickened, and reticulated at the tip. Stamens, style, &c., as in *Senecio*. Achenia linear, perfectly glabrous, strongly ribbed or angled, fully 3 lines long. Pappus soft and fine, white, minutely scabrous. This striking species may perhaps be taken for a *Cacalia*; but I see nothing to distinguish it from *Senecio*. There is no North American species with which I can compare it, except *S. Frémontii*, *Torr. & Gray*, which has much smaller and radiate heads.

*HAPLOSTICHES GREGGII*, *Gray, Pl. Fendl. p. 109.* Gypsum hills, on the Upper Canadian; September.

*CIRSIUM UNULATUM*, *Spreng.; DC.; Torr. & Gray, Fl. 2, p. 456.* Plains of the Upper Canadian to Anton Chico, in the mountains; September.

*CIRSIUM ALTISSIMUM*, *Spreng.; Torr. & Gray, l. c.* Woods, near Shawneetown; August. "Stem 10 feet high."

*CIRSIUM CALIFORNICUM* (sp. nov.): elatum, ramosum; foliis caulinis lanceolatis basi subdecurrentibus infra medium sinuato-pinnatifidis denticulatis spinulosis supra glabris vel glabratis subtus ramisque arachnoideis; capitulis longe pedunculatis hemisphaericis; involucreo ebracteato glabrato, squamis subulato-lanceolatis superne subfoliaceis patulis spinula brevi cuspidatis. Hill-sides, near Knight's Ferry, on the Stanislaus, California; May. Only the upper part of an apparently tall plant was collected. The largest leaves (upper cauline) are 5 or 6 inches long, an inch wide, obtusely sinuate-pinnatifid from the middle to the base, the summit entire; the upper surface green, sparingly arachnoid when very young, soon glabrous and smooth, the lower clothed with a thin and whitish arachnoid wool, not more dense than that of *C. lanceolatum*. Heads solitary, terminating nearly naked branches or peduncles of 5 to 8 inches long, erect, rather smaller than those of *C. lanceolatum*. Scales of the involucre occupying only about five series, slightly arachnoid, soon glabrous, smooth; the coriaceous base appressed; the upper half of all except the innermost spreading, and more or less green, narrow, tapering into a small prickle of not more than two lines in length. Flower apparently pale purple or pink. Pappus not very copious, 7 lines long.

*ONOPORDON ACANTHUM*, *Link.?* San Francisco; April. The heads undeveloped.

*SILYBUM MARIANUM*, *Gertn.* Stanislaus River, near Knight's Ferry, California; May. A single specimen occurs in the collection; its ticket has no indication of the plant being otherwise than indigenous; but it was doubtless introduced from the south of Europe.

*PEREZIA NANA*, *Gray, Pl. Fendl. p. 111, & Pl. Wright. 1, p. 125.* Plains, near Laguna Colorado, New Mexico; September.

*CALAIS MACROCHETA*, *Gray, Pl. Fendl. p. 112, adn.\** San Francisco, California; April. The

\*The recent accessions to this group of plants render the union of *Scorzonella*, *Nutt.* and *Ptilophora*, *Gray, Pl. Fendl. l. c.*, with *Calais* inevitable, as will be seen by the following synoptical view:

*CALAIS*, *DC. Prodr. 7, p. 85, char. aut.*

Capitulum multi-(rarius pauci)-florum. Involucrum cylindraceum vel campanulatum, aut simplex basi calyculatum, aut imbricatum pauciseriali. Receptaculum epaleaceum planum. Achenia teretia, 10-14-costata, aut erostris aut sursum rostrato-attenuata. Pappus simplex, e paleis scariosis aristatis 5-10 vel 14-22, aristis scabris barbello-scabris vel plumosis. Herbae Americae Borealis-Occidentalis, scapis ramisque superne longe nudis monocephalis, floribus flavis.

§ 1. *CALOCALAIS*, *DC.* Achenia gracilia, apice attenuata vel breviter rostrata. Pappus (saepissime niveus) e paleis 5 apice bifidis ex sinu aristam nudam proferentibus. Involucris squame exteriores breviores. Ligulae breves vix exsertae. Monocarpium, leptorhizum, subcaulescentes.

1. *C. LINEARIFOLIA*, *DC. l. c.*, excl. syn. *C. Lindleyi*, *DC.*

2. *C. MACROCHETA*, *Gray, Pl. Fendl. p. 112*, excl. syn.

3. *C. PARRYI* (sp. nov.): scaposa, fere glabra; involucri squamis triseriatis ovatis oblongisve subobtusis, exterioribus graduatim brevioribus; pappi paleis oblongis apice bifidis aristae et sinu exsertente barbello-scabra dimidio brevioribus. Near San Diego, California, *Dr. Parry*. (Achenia not seen.)

§ 2. *ENCALAIS*, *DC.* Achenia breviora, linearia vel oblonga basi attenuata, erostris, apice truncata, extima villosa. Pappus (sordidus vel rufidulus) e paleis 5 integris in aristam barbello-scabram productis. Involucrum basi calyculatum; squame propriis inter se aequalibus. Ligulae breviusculae, exsertae. Monocarpium, leptorhizum, scaposa.

4. *C. DOUGLASSI*, *DC. l. c.*

specimens are barely in flower, and therefore too young for ascertaining the form of the achenia. But the pappus and the lanceolate very taper-pointed involucre scales are just as in *C. macrocheta*, and the whole plant resembles the Oregon specimens, except that the leaves are mostly pinnatifid with longer linear lobes; a character of no specific value in this and other *Cichoraceae* genera, and not uniform in these specimens. These plants, like so many others of the same and similar regions, spring from seed apparently in the autumn, and flower in the vernal season; so that one is in doubt whether to call them annuals or biennials, between which there is no marked distinction in such climates.

*CALAIS DOUGLASSII*, DC. *Prodr.* 7, p. 85. Low or wet places, Mark West's creek, California; April. A depauperate state, with slender and only about 10-flowered heads, none of the exterior achenia hirsute. Still the few specimens gathered (mixed with another species) cannot safely be regarded as specifically distinct from *C. Douglasii*.

*CALAIS BIGELOWII* (sp. nov.): scaposa, spithamea; foliis pinnatifidis, lobis plerumque crebris linearibus acutis, majoribus saepe laciniatis; involucre calyculato; acheniis oblongo-turbinatis apice truncatis, (nec rostratis nec sursum angustatis,) externis villosissimis; pappi paleis 5 oblongo-ovatis in aristam barbellosum longiorem subito productis. (Tab. XVII.) Corte Madera, California; April. This species is most nearly related to *C. Douglasii*; but the heads are smaller and shorter; the (ovate-lanceolate) scales of the involucre broader; the achenia barely 2 lines long when apparently full grown, and tapering from the broad truncate summit to the base, the exterior densely villous, the others smooth, or nearly so; the fuscous paleae of the pappus are of nearly the length of the achenium, their strong midnerve produced abruptly from the apex into an awn, which is about a third longer than the palea itself.

*CALAIS CYCLOCARPHA* (sp. nov.): scaposa, glaberrima; foliis scapis dimidio brevioribus integris et pinnatifidis, lobis integerrimis; involucre calyculato; acheniis oblongis sub apice truncato levissime contractis, extimis villosissimis; pappi paleis 5 orbiculatis integris achenio dimidio arista barbellosum circiter triplo brevioribus. (Tab. XVIII.) Napa Valley, California, on grassy plains and hill-sides; May. Root annual, slender, as in all the species of true *Calais*. Leaves 5 to 9, the naked scapes 6 to 18, inches long. Involucre 5 to 6 inches long, campanulate, glabrous, of 10 or 11 ovate-lanceolate equal proper scales, and of 6 or 7 very short

5. *C. BIGELOWII*, sp. nov. Vide supra.

6. *C. CYCLOCARPHA*, sp. nov. Vide supra.

7. *C. FLATYCARPHA* (sp. nov.): pappi paleis latissime ovalibus integerrimis brevissimis aristatis. San Luis Rey, California, Dr. Perry.

§ 3. *ATHANOLALIS*. Achenia clavato-oblonga, crostris, apice obtuso areola parva terminata! omnia glabra. Pappus Scorzonella, sed paleis multum paucioribus (1-5) et deciduis, quandoque nullis! Involucrum fere Eucalaidis, 8-12 florum. Ligulae exsertae. Herbula scaposa monocarpica, radice exili.

8. *C. TENELLA*, sp. nov. Vide supra, p. 112.

§ 4. *SCORZONELLA*. (*Scorzonella*, Nutt.) Achenia brevis, truncata, haud apice vix basi angustata. Pappus e paleis 10 brevissimis lato-ovatis integerrimis, arista capillari scabro-denticulata multoties brevioribus, constans. Involuceri squamae gradatim imbricate, acuminatae. Caulis subramosi plures, e radice perenni tuberosa fusiformi.

9. *C. LACINIATA*. *Hymenonema*? laciniatum. Hook. *Fl. Bor.-Am.* 1, p. 301. *Scorzonella laciniata* and *S. leptosepala*? Nutt. *Trans. Amer. Phil. Soc. n. ser.* 7, p. 426; Torr. & Gray, *Fl.* 2, p. 470. *Hymenonema*? glaucum, Hook. *l. c.* (*Scorzonella glauca*, Nutt. *l. c.*) is either an allied species, or only an entire-leaved state of *C. laciniata*.

§ 5. *ANACALAIS*. Achenia linearis, crostris, omnia glabra. Pappus (sordidus) e paleis 6-9 vel sepius 10 lanceolatis integerrimis in aristam longam barbellosum desinentibus. Involuceri squamae subgradatim imbricate, acuminatae. Ligulae exsertae, elongatae. Caulis simplex e radice bienni? gracilis vel subfusiformi, basin versus foliosus.

10. *C. SYLVATICA*. Vide supra, p. 112. *Scorzonella sylvatica*, *Reich. Pl. Hartw.* p. 320.

§ 6. *PHYLOPHORA*. (*Phlophora*, Gray, non Kütz.?) Achenia oblongo-linearis, crostrata. Pappus (albus) e paleis 14-22 brevissimis aristam proelongam molliter plumosam gerentibus. Involuceri squamae inaequales, extima brevior. Ligulae exsertae. Caulis ramosi, e radice perenni fusiformi vel tuberosa.

11. *C. NOTANS*. *Crepis notans*, Geyer. *Phlophora notans*, Gray, *Fl. Fendl.* p. 113.

12. *C. MAJOR*. *Phlophora major*, Gray *l. c.*

This last group has greater claims than any of the preceding to rank as distinct from *Calais*, but too close a transition is found in section 5. The name *Phlophora* is preoccupied in the *Algae*. Still it may serve to designate a subgenus in the present instance; otherwise the latter may be called *Phlocaelis*.

and small calyculate ones. Flowers numerous. Achenia only 3 lines long, terete and strongly 10-ribbed in the manner of the genus, narrowed at the base, very slightly contracted underneath the large and truncate summit, the inner ones scabrous on the ribs. Paleæ of the pappus of a firm scarious texture, overlying each other in a convolute manner, or else imbricated, a line and a half long, and of equal breadth, whitish, appressed-puberulent or scabrous externally (at least the exterior ones) as in *Eucalais* generally, entire, or crose-denticulate near the summit, where the thick midnerve is abruptly produced into a long and rather stout arwn. This is well distinguished by the pappus, &c., from any one yet described, and is most nearly related to an unpublished species (*C. platycarpa*) found by Dr. Parry at San Luis Rey, of which better materials are wanted, but which appears to be clearly distinguished by the larger paleæ of the pappus, tipped with very short arwns. Both in the achenia and the pappus *C. cyclocarpa* makes an approach to *Scorzonella*.

*CALAIS (APHANOCALAIS) TENELLA* (sp. nov.): annua, scaposa, fere glabra; foliis linearibus integerrimis et laciniato-pinnatifidis scapo filiformi subæquilongis; capitulo 8-12-floro; involucre calyculato, squamis lanceolatis obtusiusculis; acheniis conformibus glabris oblongo-clavatis erostratis, areola terminali parva; pappo aut nullo aut sæpius e paleis 1-5 brevissimis lato-deltaideis in aristam tenentem nudam iisdem multoties longiorem productis deciduis. (Tab. XVII.) Napa Valley, California, in plains and grassy places; May. (On the Sacramento river, *Rev. Mr. Fitch.*) Plant about a span high, slender, glabrous. Head nodding before anthesis. Involucre 3 lines long, of 7 to 10 equal scales, and of 5 or 6 minute calyculate scales. Corolla yellow. Achenia nearly 2 lines long, narrowed at the base, not at all contracted towards the summit, strongly 10-ribbed, the ribs upwardly scabrous, the apex obtuse, but not truncate, the terminal areola being much smaller than the diameter of the achenium. Some of the achenia are destitute of pappus, at least in many specimens; others in the same head bear from one to four, or sometimes five, capillary, barely scabrous arwns, which are abruptly dilated at the base into a very short and broad palea, just as in *Scorzonella laciniata*. So that this connects *Scorzonella*, and the following connects *Ptilophora*, with *Calais*.

*CALAIS (ANACALAIS) SYLVATICA*. *Scorzonella sylvatica*, *Benth. Pl. Hartw. No. 1815, p. 320*. Sonora, California; on hills; May. The slender but sometimes fusiform-thickened root is that of a biennial. Pappus sordid, of 6 to 9, or more commonly 10 paleæ; the long arwns strongly barbellate, almost plumose. The leaves in these specimens are scarcely, if at all, pinnatifid. On Mark West's creek, April 30, in low wet places, was gathered a specimen of what may (on account of an intermediate form gathered by Dr. Stillman) be received as a variety of this species, with the involucreal scales all lanceolate and taper-pointed, and the arwns of the pappus less strongly barbellate.

*RAFINESQUA NEO-MEXICANA*, *Gray, Pl. Wright. 2, p. 103*. Gravelly hills of the Rio Colorado; February. In the single specimen the rays of the pappus are only 8, or even sometimes fewer.

*STEPHANOMERIA MINOR*, *Nutt. in Trans. Amer. Phil. Soc. n. ser. 7, p. 427*. Plains, between the Canadian and the Rio Grande, New Mexico; September. This and *S. runcinata* are doubtless the same.

*LYGODESMIA JUNCEA*, *Don; Hook. Fl. Bor.-Am. 1, p. 295, t. 103*. Buffalo plains, Upper Canadian; September.

*PYRHOPAPPUS CAROLINIANUS*, *DC. Prodr. 7, p. 144*. Beavertown, Arkansas; and on the grassy bottoms of the Rio Grande, New Mexico.

*MACROBRYNCHUS RETRORSUS*, *Benth. Pl. Hartw. No. 1817, p. 320*. Hill-sides, Sonora, California; May. Plant stouter than Hartweg's specimens, and the fully developed head larger, but otherwise the same. Stems a foot high. Head from an inch to an inch and a half, or in fruit two inches long, cylindrical, or at length cylindrical; the scales of the involucre all acute, somewhat tinged with purple; the exterior short, lanceolate or ovate-lanceolate, obscurely foliaceous above. Achenia all alike, oblong, smooth, and glabrous, wingless, acutely ribbed

and angled, somewhat mucronate-toothed in a ring at the abrupt origin of the very long and capillary beak, which is more than thrice the length of the achenium. The latter is only  $2\frac{1}{2}$  lines long, while the beak is three-fourths of an inch long; the pappus fully half an inch long. The lobes of the leaves are all retrorse and callous-tipped, as described by Mr. Bentham.

*MACRORHYNCHUS GRANDIFLORUS*, Torr. & Gray, *Fl.* 2, p. 492, (*Stylopappus grandiflorus*, Nutt.): var. *involutrici squamis exterioribus aut ovatis appendice acuminatis aut oblongo-lanceolatis*. Hill-sides, Napa Valley, near Sonoma; May. Head in fruit an inch and a half long, broader and proportionally shorter than in *M. retrorsus*, the external calyculate scales more foliaceous and spreading. Achenia smooth and glabrous, oblong, acutely ribbed and angled, barely  $2\frac{1}{2}$  lines long, abruptly tapering into a filiform beak of three-fourths of an inch in length; the pappus only  $4\frac{1}{2}$  lines long. This may be a larger state of *M. laciniatus*, (of which I have only a miserable flowering specimen,) but it plainly passes into *M. grandiflorus*. The achenia differ from those of *M. retrorsus*, and the lobes or laciniae of the leaves are either spreading or ascending.

*MACRORHYNCHUS HUMILIS*, Benth. *Pl. Hartw. No.* 1816, p. 320. Hills, near Punta de los Reyes, California; April. The leaves are larger and more glabrate than in my specimen of Hartweg's plant; the scape 6 to 10 inches high. The fusiform achenia are from  $1\frac{1}{2}$  to 2 lines long; the external rather longer than the inner ones; the latter more strongly and shaggy ribbed, as Mr. Bentham remarks. The beak, though apparently full grown, is not longer than the achenium. If it varies so as to be "more than twice the length of the achenium," as Bentham characterizes the species, then it must pass, I should think, into *M. Lessingii*, Hook. & Arn.; of which we have no fruiting or certain materials; but it is said to have the beak "nearly thrice the length of the achenium."

*MACRORHYNCHUS HETEROPHYLLUS*, Nutt. in *Trans. Amer. Phil. Soc. l. c.*; Torr. & Gray, *Fl.* 2, p. 493. *M. Chilensis*, Hook. in *Lond. Jour. Bot.* 6, p. 256. Fields, Benicia and San Geronimo Ranch, California; April. This abounds in California and Oregon, where it is the only annual species known. Hooker pronounces this to be the *M. Chilensis*; and it doubtless must be so considered, if that is held to include all the Chilean species. But the short wing-ribbed achenium ( $1\frac{1}{2}$  to 2 lines long) and long beak (of 3 to  $4\frac{1}{2}$  lines) distinguish it from *M. lævigatus*, and less decidedly from *M. pterocarpus*, to one or the other of which Lessing's *M. Chilensis* is referred, though in neither are the achenia "plano-obcompressed." The ribs or wings of *M. heterophyllus* vary considerably in strength; they are scarcely, if at all, serrulate. When less salient and acute, they remain straight and even; when more developed, especially in the exterior achenia, these wings become strongly undulate at or before maturity, sometimes very strikingly so, giving the body of the achenium a remarkable corrugated appearance. Some different state of the marginal achenia has probably served as the basis of Nuttall's *Cryptopleura Californica*; but I have seen nothing that accords with his character of it.

*TROXIMON PARVIFLORUM*, Nutt. in *Trans. Amer. Phil. Soc. l. c.*, p. 434. *Macrorhynchus cynthioides*, Hook. *Pl. Geyer, in Lond. Jour. Bot.* 4, p. 256, ex char. Sandia mountains, New Mexico; October. The specimens, with mature fruit, are taller than Nuttall's; the scapes 9 inches high; the scales of the involucre tinged with purple, and the ligules of a remaining flower appear to have been purple. I suspect that *T. roseum*, Nutt., is only a variety of this with pinnatifid leaves and purplish or rose-colored flowers. I should confidently refer the present specimens to *Macrorhynchus purpureus*, Gray, *Pl. Fendl.*, were it not for the short and stouter beak, of less than half the length of the body of the achenium; and the pappus is, perhaps, a little stiffer. Whether the difference holds constant or not, it is evident that the present plant effects a real transition between *Troximon* and *Macrorhynchus*.

*MULGEDIUM PULCHELLUM*, Nutt. *l. c.* Banks of the Pecos, New Mexico; October.

*SONCHUS OLBRACEUS*, Linn. Near San Gabriel, California; March.

## LOBELIACEÆ.

*DOWNINGIA PULCHELLA*. *Clintonia pulchella*, *Lindl. Bot. Reg. t.* 1909; *Hook. & Arn. Bot. Beechey*, p. 362. *C. corymbosa*, *DC. Prodr.* 7, p. 347. Borders of pools, on the Stanislaus River; May 8: and Santa Rosa creek; May 1. As the *Clintonia* of Rafinesque was published some years earlier than Douglas', we propose to dedicate this beautiful genus of annuals, now so frequent an ornament of our gardens, to the memory of the late A. J. Downing, Esq., whose name, in every part of the world, is associated with horticulture.\*

## CAMPANULACEÆ.

*HETEROCODON RARIFLORUM*, *Nutt. in Trans. Amer. Phil. Soc. (n. ser.)* 8, p. 255. Grassy plains, Napa Valley, California; May 5. Dr. Parry and Rev. Mr. Fitch also found this plant in California. It is a neat and very delicate annual, with flowers only 2 or 3 lines in diameter.

*DISMICODON CALIFORNICUM*, *Nutt. l. c.* Plains and mountains near Marysville, California; May 25. Very near *D. ovatum*, and perhaps not distinct from that species. The uppermost flowers are nearly as large as in *D. perfoliatum*, and blue.

*GITHOPSIS SPECULARIODES*, *Nutt. l. c.* Hill-sides and plains along the Stanislaus and Sacramento, also at Martinez; April—May. Most of the specimens belong to the vari. *hirsuta*, of Nuttall l. c.

## ERICACEÆ.

*VACCINIUM OVATUM*, *Pursh; Dunal, in DC. Prodr.* 7, p. 570. Mountains near Oakland; April 4.

*ARBUTUS MENZIESII*, *Pursh Fl.* 1, p. 282; *DC. l. c.*, p. 582. Mountains near Oakland, and in other parts of California. A tree 40 feet high.

*ARCTOSTAPHYLOS TOMENTOSA*, *Dougl.; DC. Prodr.* 7, p. 585. *Xerobotrys tomentosus, cordifolius*, etc., *Nutt. in Trans. Amer. Phil. Soc.* Los Angeles; March 22. A shrub 4 or 5 feet high.

*ARCTOSTAPHYLOS GLAUCA*, *Lindl. Bot. Reg. sub t.* 1791? *Xerobotrys glaucus*, *Nutt. l. c.* Hills near Downieville; May 21.

*ARCTOSTAPHYLOS PUNGENS*, *H. B. K. Nov. Gen. & Sp.* 3, p. 278; *Hook. Bot. Mag. t.* 3027. *A. Hookeri*, *Don.* *Andromeda? venulosa*, *DC.* *Xerobotrys venulosus*, etc., *Nutt. Daphnidostylis pungens Hookeri*, *Klotzsch, in Linnaea* 24, p. 81. Hills near Downieville, and San Francisco; May 22: in flower. Napa Valley; April 25: with old fruit.\*

*AZALEA OCCIDENTALIS*, *Torr. & Gray, Fl. ined.* *A. calendulacea*, *Benth. Pl. Hartw.* p. 321. *Rhododendron calendulaceum*, *Hook. & Arn. Bot. Beech.* p. 362. Laguna de Santa Rosa, in low and wet ravines; May 1. Differs from *A. calendulacea*, among other characters, in its white flowers.

*PYROLA CHLOBANTHA*, *Nutt. Gen.* 1, p. 273; *Hook. Fl. Bor.-Amer.* 2, p. 46. Hills near Downieville, Yuba river; May 22.

*CHIMAPHILA MENZIESII*, *Hook. Fl. Bor.-Amer.* p. 49, t. 138. *C. dasystemon*, *Haw. Supp.* Hill-sides near Downieville, (with unexpanded flower buds.)

*PTEROSPORA ANDROMEDEA*, *Nutt. Gen.* 1, p. 269; *Torr. Fl. N. York* 1, p. 458. Hill-sides, Duffield's Ranch, Sierra Nevada; May 11, (in fruit.) The only specimen collected is more than two feet high.

\* Kuntz (Enum. 5, p. 156, adnot.) proposed to change the later name of Lindley to *Wittia*, in honor of the same distinguished statesman and patron of science (De Witt Clinton) to whom the earlier genus was dedicated. But it would be inadmissible to bestow two genera on the same person.

“The genera recently severed from *Arctostaphylos* are not well founded. Different fruits of *A. Uva-Ursi*, both American and European specimens, exhibit the characters of *Daphnidostylis*, *Klotzsch*, *Xerobotrys*, *Nutt.*, and even of *Comarostaphylos*, *Zucc.* Indeed, one of Klotzsch's new species of *Daphnidostylis* (*D. Fendleri*) is only *Arctostaphylo Uva Ursi*” *Gray, Mo.*

*SARCODES SANGUINEA*, Torr. in *Smithson. Contrib.* 6, p. 19, t. 10. Hill-sides, Duffield's Ranch, Sierra Nevada; May 12. Fine specimens, in full flower, of this rare plant were collected by Dr. Bigelow. They differ from Fremont's only in the scales being more strongly ciliate.

PLANTAGINACEÆ. (By A. GRAY.)

*PLANTAGO MARITIMA*, Linn. Corte Madera, California, within reach of the tide; April. The sepals, especially the posterior ones, are strongly crested, more so perhaps than in the plant of the Atlantic States, which seems to pass by gradations into the northern crestless form, (*P. juncoides*, Lam., *P. pauciflora*, Pursh, and *P. decipiens*, Barnoud.)

*PLANTAGO PATAGONICA*, Jacq. var. *GNAPHALIOIDES*. *P. gnaphalioides*, Nutt. *Gen.* 1, p. 100. Williams' Fork of the Great Colorado; February: a depauperate form. Cocomungo; March: a still more diminutive and glabrate form. A widely diffused species, extending nearly the whole length of the continent on the western side, and with us exhibiting some remarkable varieties; for to this species we must refer not only the Chilian *P. Patagonica*, (*P. mollis*, Hook. & Arn.,) but *P. Hookeriana*, Fisch. & Meyer, *P. gnaphalioides*, Nutt., *P. spinulosa*, Decaisne, *P. curta*, Engelm., *P. Wrightiana*, Decaisne, *P. Xorullensis*, H.B.K.?, *P. aristata*, Michx., *P. squarrosa*, Nutt., and *P. filiformis*, Decaisne. This species is *diécio-dimorphous*, some individuals having small anthers on short filaments, and mostly included in the throat of the corolla, while others bear large anthers on long exerted filaments as in the genus generally. Both sorts perfect fruit, but the former (as is usual in such cases) is the most fruitful.

*PLANTAGO BIGELOVII* (sp. nov.): pusilla, parce minutim hirsuta vel glabrata, annua; foliis carnulosis linearifiliformibus obtusis integerrimis; spica brevi-oblonga 3-12-flora densa; staminibus 2; capsula oblongo-ovoidea 3-4-sperma bractea ovata acuta calyceque longiore. Benicia, California; April 23. Leaves 1-2 inches long, half a line wide. Scape 2-3 inches high. Bracts carinate, the margins broadly scariosus. Sepals broadly oval, very obtuse, scariosus, with a green and thickened centre. Flowers twice as large as those of *P. pusilla*, in the specimens all perfect and fertile; the two stamens more or less exerted, but not so long as the style. Lobes of the corolla ovate, open or spreading in fruit. Capsule a line and a half long at maturity, when it becomes one-third longer than the calyx. Ovules 2 in each cell. Seeds oblong, nearly as in *P. pusilla*. By the latter we mean, of course, Nuttall's *P. pusilla*, not what Decaisne has taken for it, and characterized in DeCandolle's *Prodromus*. His plant, as also his *P. perpusilla*, is *P. heterophylla*, Nutt. in *Trans. Amer. Phil. Soc. n. ser.* 5, p. 177, which, although often larger and with sparingly-toothed or incised leaves, is to be distinguished with certainty only by its 10-28-seeded capsule, more oblong or conoidal in form, and exerted to twice the length of the calyx when mature. *P. pusilla* has only a pair of ovules and seeds in each cell. These three species accord in being *diandrous*, (a fact first noted for *P. pusilla* by Dr. Torrey in his *Flora of New York*, where, however, the capsule is inadvertently said to be *two-seeded*, instead of *four-seeded*;) but *P. tenuiflora*, Kit., is not so: they are also *sub-diacious* or *diécio-dimorphous*, more decidedly so than *P. Patagonica*, and with the corolla inclined to be closed in the more fertile form, but less so than in *P. Virginica*\* and its allies.

\* It is remarkable that the *diécio-dimorphous* character of the wide-spread and variable *P. Virginica* (which includes *P. occidentalis*, *rhodosperma*, *echioides*, *Cumingiana*? and *purpurascens*, (Nutt., of Decaisne) and some allied species, has not long before this been distinctly made out. Both *subsexes* have been described, indeed; some authors indicating the one, some the other, some mixing up the two inconspicuously in their descriptions; while others, as Nuttall and Decaisne, have mistaken them for separate species. The *substerile* plant, as we may call it, since it rarely ripens any seeds, exhibits the usual exerted stamens and large anthers of the genus, and its corollas remain open after anthesis; this is Nuttall's *P. purpurascens*, of which, with other *substerile* forms of the same and some allied species, Decaisne has made his section *Nivortis*. That these are mostly *sterile* plants may be inferred from the circumstance that of the fifteen admitted species of the section, only two have the capsule and seed described, although specimens of all of them have been examined by Decaisne himself; yet in such a spicate inflorescence it rarely happens that a dried specimen of a truly fertile plant fails to offer some full-grown fruit and seed. The truly fertile form, which is the most common in herbaria, bears flowers all of which are provided with short or included filaments and

They compose a small section of the genus, quite otherwise characterized, however, than is Decaisne's *Microsyllium*, and not embracing all his species.

## PLUMBAGINACEÆ.

*ARMERIA VULGARIS*, Willd., var. *A. Andina* var. *Californica*, Boiss. in *DC. Prodr.* 12, p. 682; *Benth. Pl. Hartw.* p. 332. Hills near San Francisco; and Laguna of Santa Rosa creek; April. We are not satisfied with the characters on which the acute Boissier has separated into many species what may, perhaps, better be regarded as variations of *A. vulgaris*.

## STYRACACEÆ.

*STYRAX CALIFORNICUM*, Torr. *Desc. Darlingt. in Smithson. Contrib.* 6, p. 4, t. 12. Hill-sides and river banks, Mokelumne Hill, California; May 17: in blossom. Some of the racemes are 5-6-flowered. This is quite an ornamental shrub, and well deserves cultivation.

## PRIMULACEÆ.

*TRIENTALES EUROPEA*, Linn. var. *LATIFOLIA*. *T. latifolia*, Hook. *Fl. Bor.-Am.* 2, p. 121. Tokeloma creek; April 16. Mountains, near Oakland, California; April 5.

*GLAUX MARITIMA*, Linn. Martinez, California; April 23.

*ANAGALLIS ARVENSIS*, Linn. There was no label to this plant. It is, however, common in California, and was doubtless introduced from Europe.

*DODECATHEON MEADIA*, Linn. var. *D. integrifolium* and *D. frigidum*, (Cham.) Hook. *Fl. Bor.-Am.* 2, p. 118. Cocomungo; March 17; and mountains, near Oakland, California; April 4. We can recognize but one species of *Dodecatheon*. The length of the tube of filaments is exceedingly variable.

## OROBANCHACEÆ. (By A. GRAY.)

*BOSCHNIAKIA STROBILACEA* (sp. nov.): squamis orbicularibus vel obovato-rotundis obtusissimis ubique confertim imbricatis, floralibus flores subsequantibus; calyce postice truncato haud obliquo, dentibus 3 lineari-subulatis tubo longioribus; labio corollæ inferiore patente superius adæquante, lobis oblongis; filamentis basi barbatis; placentis 4 æquidistantibus. Dry and rocky hills, South Yuba, California; May. A span high, thick, resembling *Cynopholis Americana* in aspect, the scales larger and broader, about half an inch wide, brown in the dried state. The three slender teeth of the calyx are anterior and lateral, a line and a half long; the two others obsolete or indistinct. Anthers sparsely hairy. The shape of the scales and of the calyx teeth at once distinguishes this from *B. tuberosa* and *B. glabra* of Oregon, etc.

*PHLEPSEA CALIFORNICA*, Don, *Syst.* 4, p. 632. *Orobanche Californica*, Cham. & Schlecht. in *Linnaea*, 3, p. 134. Plains, near Marysville, California; May. The specimen renders it probable that *P. Californica* is not distinct from *P. Ludoviciana*, which has a wide range. It is nearly allied on the other hand to *P. comosa*, (the *Orobanche comosa* of Hooker,) which must find a place in this genus, notwithstanding the bractlets are remote from the calyx.

*APHYLLON UNIFLORUM*, Gray, *Man. Bot. N. States*, ed. 1, p. 290. Napa valley, California; April 27. The range of this species includes all temperate North America, from Newfoundland and Canada, south to Florida and Texas, and west to the Pacific. Had Wallroth's name of *Anoplon* been generally adopted by succeeding botanists, it might have been unwise to disturb it. But

very small anthers—whether sterile or precocious is uncertain, probably the latter, as the ovary is uniformly fruitful;—and the corolla, as is well known, becomes connivent-closed after anthesis, its broad lobes involutely and imbricately enveloping each other, so as to form a kind of beak surrounding the fruit. This is the type of Decaisne's section *Cleisantha*.—Gray, *Man.*



since Endlicher's name of *Anoplanthus* has been adopted by Benter, the monographer of the order in De Candolle's *Prodromus*, while Nuttall has preferred the prior claim of his unobjectionable name *Gymnocaulis*, there can be no question of the propriety of restoring the far older name of *Aphyllon*, under which Mitchell characterized the genus more than a hundred years ago. There is considerable reason for thinking, however, that the genus will be reduced to a mere section of *Phelipœa*.

SCROPHULARIACEÆ. (By A. GRAY.)

*LINARIA CANADENSIS*, *Dum.* Near San Francisco, and elsewhere in California; April. A species diffused over all the temperate parts of the American continent.

*SCROPHULARIA NODOSA*, *Linn.*; *Benth.* in *DC. Prodr.* 10, p. 309. Corte Madera and Napa Valley; April. A species common to the temperate portion of the whole northern hemisphere.

*COLLINSIA BARTSLEPOLIA*, *Benth.* in *DC. Prodr.* 10, p. 318. Bolinas bay and Punta de los Reyes, California; April.

*COLLINSIA TINCTORIA*, *Hartw.*; *Benth. Pl. Hartw.* p. 328. Wet ravines, Knight's Ferry, etc., California; May. This and the foregoing are likely to pass into the next.

*COLLINSIA BICOLOR*, *Benth.* in *Hort. Trans.* 1, p. 480. Hill-sides, Martinez, Mokelumne, etc., California; May.

*COLLINSIA PARVIFLORA*, *Dougl.* in *Bot. Reg.* t. 1082. Hill-sides, on the Yuba; May. Var. *SPARSIFLORA*, *Benth.* (*C. sparsiflora*, *Fisch & Meyer.*) Corte Madera, Napa Valley, and mountains, near Oakland, California; April. The corolla is not only larger, but longer in proportion to the calyx; still intermediate forms appear to connect it with *C. parviflora*, as *Bentham* states.

*PENTSTEMON CENTRANTHIFOLIUS*, *Benth. Scroph. Ind.* p. 7, & in *DC. Prodr.* 10, p. 323. Plains, near San Gabriel, California; March.

*PENTSTEMON MICROPHYLLUS* (sp. nov.): fruticosus, ramosissimus, foliis in axillis crebre fasciculatis (minutis) obovatis ovatisve obtusissimis coriaceis integerrimis subpetiolatis; racemis paniculatis; sepalis fructiferis oblongo-ovatis. On Williams' Fork of the Colorado, New Mexico. The specimens were collected in February, and are without flowers, but they bear the remains of the fruit of the preceding season. The plant is a remarkable one, and may possibly not belong to this genus. The leaves are only one or two lines long, of a thick and firm texture, and arise three or seven together from short spurs or undeveloped branches. The peduncles are opposite and alternate, somewhat spreading, and about as long as the fructiferous calyx. There is nothing peculiar about the capsule; and the aspect of the plant is that of the section *Erianthera*.

*PENTSTEMON LEWISII*, *Benth. l. c. ?* Rocky ravines, Cajon Pass, California; March 16. The specimen belongs to a shrubby species, and bears only the vestiges of the last year's fruit. The leaves are not so finely and evenly denticulate as those of *P. Lewisii*; but for the present it may be referred to that species.

*PENTSTEMON BREVIFLORUS*, *Lindl. Bot. Reg.* t. 1946. Knight's Ferry, on the Stanislaus; May. A shrubby species, as already noted by *Hartweg*.

*PENTSTEMON HETEROPHYLLUS*, *Lindl. Bot. Reg.* t. 1899. Butte mountains, near Marysville, California; May. The variety with narrower sepals, without manifest scarious margins, (*Hook. & Arn. Bot. Beech.*) the same as *Hartweg's* No. 1880, and not to be well separated from *P. azureus*, *Benth. Pl. Hartw.* No. 1819, which seems, as to the calyx, to connect all the forms.

*PENTSTEMON SPECTABILIS* (*Thurber* in *A. B. Gray's Rep. ined.*): undique glaber; caule stricto elato (3-4-pedali) herbaceo; foliis coriaceis serraturis rigidis crebris argute dentatis oblongis seu ovato-lanceolatis sæpius acutis, imis sessilibus, reliquiis connato-amplexicaulibus, superioribus floralibusque orbiculato-disciformibus; panicula ampla elongata virgato-pyramidalis; pedunculis 3-9-floris; sepalis orbiculari-ovatis carnosis; corolla e tubo brevi (calyce duplo

longiori) angusto subito ventricosa campanulata modice bilabiata, lobis 5 consimilibus rotundatis patentibus; filamentis sterilibus filiformibus glabris; antheris (Cepococcosmi) glabris. San Francisco Mountain, New Mexico, December 16. Imperfect specimens, with fruit only. But they clearly belong to a species which we first received from Mr. William A. Wallace, from Cocomungo and Los Angeles, California; and soon after from Mr. George Thurber, who gathered it in the same district. Mr. A. B. Gray likewise gathered fragments of the same on the Gila river. It must be one of the showiest species known, and it will appropriately bear the name imposed upon it by Mr. Thurber. The crowded panicle of purplish blue flowers is often two feet in length, and free from leaves, the lowest bracts not exceeding the peduncles, while the upper are reduced to small and inconspicuous perfoliate disks. Peduncles and spreading pedicels each half an inch to an inch long. Sepals 3 lines long, obtuse or apiculate. Corolla an inch or more in length; the proper tube about twice the length of the calyx, then abruptly expanded into a campanulate throat, glabrous inside; the two lips of equal length, and the lobes very similar. Leaves apparently somewhat glaucous, 3 or 4 inches long; only the radical petioled; all the upper cauline connate into a disk, which is an inch or two in width where it is perforated by the stem.

*DIPLOCLADUS GLUTINOSUS*, Nutt. Hill-sides, Sonoma, Punta de los Reyes, etc., California; May. The species also includes *D. leptanthus* and *D. longiflorus* of Nuttall.

*MIMULUS BREVIPES*, Benth. *Scroph. Ind. p.* 28, & in *DC. l. c.* Hill-sides, on the Stanislaus; May.

*MIMULUS LUTEUS*, Linn.; Benth. in *DC. l. c.* Various forms of this polymorphous plant: Napa Valley, etc., California, and Williams' River; February—May.

*MIMULUS DENTATUS*, Nutt. in *Herb. Hook.*; Benth. *l. c.* Hill-sides, at Murphy's, California. Also (a narrow-leaved variety) near Mammoth Grove; May.

*MIMULUS MOSCHATUS*, Dougl. in *Bot. Reg. t.* 1118. Wet ravines on the Yuba, near Downieville, California; May.

*MIMULUS BICOLOR*, Benth. *Pl. Hartw. p.* 328, No. 1892. Hill-sides, near Sonora, California; May. A depauperate form.

*MIMULUS FLORIBUNDUS*, Dougl. in *Bot. Reg. t.* 1125. Grass valley, California, in low places; May. A small form.

*MIMULUS INCONSPICUUS* (sp. nov.): annuus, glaber; caule gracili 1-2-pollicari ascendente paucifoliato; foliis ovalibus seu ovatis subintegerrimis obsolete 3-5-nerviis subsessilibus; pedunculis solitariis foliis et flore parvo brevioribus; calyce prismatico, dentibus brevissimis subaequalibus; tubo corollae paullo exserto. Damp hill-sides, Los Angeles, California, May. Leaves 5 or 6 lines long, the cauline only a single pair in the specimens. Peduncle 2 or 3 lines long. Flower 4-5 lines long; the corolla yellow tinged with rose-color in the dried plant, its lobes very small. Fructiferous calyx not seen.

*EUNANUS DOUGLASSII*, Benth. in *DC. Prodr. 10, p.* 374. Gravelly hills, Sonora, and Moke-lumne Hill, California; May. The former specimens, like those of Douglas, etc., are very dwarf and simple; the stem, of only 2 or 3 internodes above the cotyledons, barely half an inch long, while the flower it is terminated with is fully an inch long. Those from the latter locality, like Hartweg's No. 1894, are developed into many-flowered branches 4 inches high, the lower part fructiferous. To Bentham's description of the capsule, from Hartweg's specimens, we have only to add that it is often nearly linear, 4 or 5 lines long, not much compressed, of a crustaceous texture, but at length dehiscent; the valves bearing the many-seeded placentae. The ovoid seeds are apiculate at each end. The calyx, as in the next species, is very oblique at the orifice; in this it is narrow and prismatic, and its teeth are very short and obtuse. The marked difference between this species and *E. Frémonti*, and perhaps *E. Tolmæi*, (which we have not seen,) led us to propose its generic separation, as Mr. Bentham has stated; but his judgment in the combination is fully sustained by the characters of the following intermediate species.

*EUNANUS COULTERI*, (Benth. *Pl. Hartw. p.* 320): foliis inferioribus ovatis oblongisve, superioribus spatulato-lanceolatis pollicaribus; calycis infundibuliformis dentibus lanceolatis,

supremo tubo vix dimidio brevior; corollae tubo calycem bis terve superante, fauce valde ampliata, labiis subaequilongis; stigma obtuse bilabiato, labiis brevibus latis inequalibus sed consimilibus; fructu immaturo subgloboso. Low places, Mark West's creek; April, and Knight's ferry, on the Stanislaus; May. (Also communicated by Dr. Andrews, etc.) Flower fully as large as that of *E. Douglasii*, often an inch and a half or even two inches long, lilac? the throat mottled with deep purple. Immature seeds apiculate at both ends. This is not the *E. Coulteri*, *Harv. & Gray*, in the herbarium of Trinity College, Dublin, (Coll. Coult., No. 614;) but as no character of that has been published, and as recent specimens lead us to think it not different from *E. Fremonti*, the name should be retained for the present species, to which Bentham applied it, although we are not sure that it occurs in Coulter's collection.

*EUNANUS BIGELOVII* (sp. nov.): foliis caulinis oblongo-lanceolatis acutis; calycis subcampanulatis valde plicato-angulatis, ore vix obliquo, dentibus inequalibus triangulari-subulatis pungentibus dimidium tubi longitudine paulo excedentibus; corollae tubo calyce subduplo longiore, limbo patentissimo, lobis aequilongis; stigmatibus integro. Gravelly hills, near the Colorado of California; February 17. On the Mohave creek; March 2. Plant only beginning to blossom, 1-2 inches high, doubtless attaining a greater height as the season advances. Largest leaves an inch long, more or less viscid-pubescent, like the stem. Calyx 4-5 lines long. Corolla 6-8 lines long, of the same shape as in *E. Fremonti*; the foliage and the calyx quite different.

*VERONICA AMERICANA*, *Schwein.*; *Benth. in DC. Prodr.* Santa Rosa creek, California; May.

*CASTILLEIA AFFINIS*, *Hook. & Arn. Bot. Beech.*, p. 154. Cocomungo, California; March. The same as Hartweg's No. 1896.

*CASTILLEIA HISPIDA*, *Benth. in Hook. Fl. Bor.-Am.* 2, p. 105. San Francisco and Punta de los Reys; April.

*ORTHOCAERUS PUBELLUS*, *Benth. Scroph. Ind., in DC. Prodr.* 10, p. 535. Low grounds, San Francisco; April.

*ORTHOCAERUS FLORIBUNDUS*, *Benth. l. c.* San Francisco, California; April.

*ORTHOCAERUS ERIANTHUS*, *Benth. l. c.* Benicia, California; April.

*ORTHOCAERUS LITHOSPERMOIDES*, *Benth. l. c.* Mark West's creek, California; April.

*ORTHOCAERUS (TRIPHYSA) FAUCIBARBATUS* (sp. nov.): foliis linearibus 1-3-nerviis ultra medium pinnatifidis cum caule erecto ramoso laevi glabris, lacinias angusto-linearibus fere filiformibus elongatis; bracteis viridibus scabro-puberulis floribus brevioribus; spicis demum interruptis; calyce tubo corollae pubescente dimidio brevior, dentibus triangulari-lanceolatis obtusis vix dimidium tubi adaequantibus; corollae labio inferiore trisaccato, fauce secus plicas 2 palatinas longe barbata, appendiculis brevissimis obtusis; antheris unilocularibus. Corte Madera, California; April 20. Plant rather stout, 9 or 10 inches high, with spreading branches. Cauline leaves 2 inches long; the bracts becoming shorter and broader, the upper ones nearly palmate. Flowers 7-8 lines long. Calyx minutely pubescent. Corolla apparently pale yellow. Allied to *O. lacerus* and *O. lithospermoides* of Bentham. The last named has the throat of its corolla somewhat villous-pubescent; that of the others is glabrous. Besides the smoothness and the one-celled anthers, the calyx distinguishes the present species.

*ORTHOCAERUS DENSIFLORUS*, *Benth. l. c.* Corte Madera and San Gabriel; March and April.

*ORTHOCAERUS CASTILLEIODES*, *Benth. l. c.?* Corte Madera, California; April. Too young for proper determination.

*ORTHOCAERUS (ONCORRHYNCHUS) ATTENUATUS* (sp. nov.): cinereo-pubescente; caule gracili stricto; foliis anguste linearibus sursum filiformi-attenuatis integerrimis vel summis cum bracteis viridibus trifidis, lobis attenuatis; spica angusta; calyce corolla tertia parte breviorae postice fissa, dentibus linearibus obtusis tubo dimidio brevioribus; corollae labio inferiore vix trisaccato, appendiculis oblongis obtusis ventriculo brevioribus galeam rectam truncatam subaequantibus; antheris bilocularibus. Corte Madera; April 16. A span high. Corolla narrow, 7 lines long, puberulent, white or cream-color, with the slightly ventricose lower lip spotted with purple.

PEDICULARIS DENSIFLORA, *Benth. in Hook. Fl. Bor. Amer. 2, p. 110, in DC. l. c., p. 574.* Napa Valley, California; April 5. In fruit.

PEDICULARIS ATTENUATA, *Benth. in DC. l. c.* Mountains near Oakland, California; April 5. In flower.

BIGNONIACEÆ—SESAMEÆ. (By A. GRAY.)

MOHAVEA, Nov. Gen.

*Scrophular.*  
*Alphonse*

Calyx alte 5-partitus, laciniis lanceolatis foliaceis fere æqualibus. Corolla hypogyna, profunde bilabiata personata, limbo amplo patenti tubo campanulato multo longiore; labio postico latissimo rotundo emarginato-bilobo, aestivatione exteriore, basi fornice supra antheras arcuata instructo; labio antico consimili subtrilobo, palato prominente medio barbato. Stamina fertilia 2, tubo corollæ inserta: filamenta apice incurva: antheræ approximata rotundo-reniformes, confluentim uniloculares. Filamenta sterilia sæpius 2, exigua. Stylus columnaris: stigma compresso-capitatum, integrum. Ovarium ovoideum, biloculare, placentis axilibus, apice tantum placentis haud coalitis uniloculare, parietibus membranaceis. Ovula multa, pluriseriata, horizontalia vel adscendens, anatropa. Fructus ignotus. Herba humilis, ramosa, diffusa, pilis viscidis et glanduliferis pubescens; radice annua; foliis alternis, imisve oppositis, oblongo seu ovato-lanceolatis, integerrimis vel repando-angulatis, penninerviis, basi angustata parallelinerviis; floribus axillaribus solitariis, pedunculis nudis brevibus; corolla ochroleuca? et purpurascens, fauce cum palato purpureo picta.

MOHAVEA VISCIDA. Mohave Creek, California; March 2. Leaves  $1\frac{1}{2}$  to 2 inches long. Sepals half an inch long, exceeding the short tube of the corolla. Lips of the corolla nearly an inch broad, apparently flat. Filaments and style somewhat hairy towards the base, included within the throat. Ovary 2-celled, except near the summit, with no dorsal inflexion of the walls, the placentæ not bilamellar. Style nearly as long as the stamens. Notwithstanding the ovary, which is strictly 2-celled, except at the top, we suspect this curious plant to belong to the Bignoniaceæ—Sesameæ; but the fruit alone can determine the question. If the seeds prove to be albuminous, we know not where in the order Scrophulariaceæ to place it. In one of our few specimens a singular abnormal body was found growing from the outside of the corolla at its base, resembling a long-clawed petal, with a small, truncate, saccate, and involute limb. It is evidently a monstrosity.

VERBENACEÆ.

VERBENA PROSTRATA, *R. Br. in Hort. Kew. (ed. 2) 4, p. 41; Schauer in DC. Prodr. 11, p. 547.* Banks of the Mokelumne River, California, May 17.

LABIATÆ.

PYCNANTHEMUM CALIFORNICUM (*Torr. in Durand, Pl. Pratt. in Jour. Acad. Phil. 2, p. 99*): incano-pubescens, foliis ovato-lanceolatis sessilibus parce denticulatis; verticillastris 2-4 densissimis, demum scorpoideo-explanatis multiradiatis; calycis dentibus æqualibus lanceolatis muticis. California, probably from the lower part of the Sacramento Valley. Gathered by Colonel Frémont, (1846), Rev. A. Fitch, & Mr. Shelton.

P. CALIFORNICUM, var. foliis tenuioribus oblongis glabrisculis viridibus. River banks and ravines, Mokelumne, California, (with the persistent inflorescence of the preceding year).—This plant is a genuine Pycnanthemum, and is most nearly related to P. muticum. No other species is found west of the Rocky Mountains. The inflorescence is at first in the form of compact heads, of which there are usually three on the main axis. Late in the season these unfold into very dense sessile cymes, the branches of which are secund, and nearly an inch in length.

The variety found by Dr. Bigelow was not in flower. It seems to be a tall plant. The leaves are 3-4 inches long and nearly an inch broad.

MONARDELLA CANDICANS, *Benth. Pl. Hartw. p. 330, (No. 1911); Durand, l. c.* Sides of rivulets, Knight's Ferry, Stanislaus, May 7. The lobes of the corolla in this and some other species have a small hemispherical sac at the tip. The stamens are strongly didynamous. This species is found as far south as San Diego, and north to the Upper Sacramento.

M. CANDICANS,  $\beta$ . VENOSA: foliis angustioribus; bracteis mucronatis capitulis longioribus, inter venas validas hyalino-membranaceis. Plains of Feather River, near Marysville, May 25. Also collected in California by Rev. A. Fitch. The bracts of this plant are very remarkable. They are larger than in the ordinary form of *M. candicans*, and between the strong veins (which are usually of a purplish color) there is no parenchyma, but only the thin transparent epidermis resembling goldbeater's skin. The corolla is much exserted, of a deep rose color, and has the lobes tipped with a little sac, as in the common variety.

POGONYE DOUGLASSII, *Benth. Lab. p. 414, & in DC. Prodr. 12, p. 243.* Plains and low places, Stockton, May 7; valley of the Sacramento, May 26. All the species of this genus are annual.

HEDEOMA? SERPYLLOIDES (sp. nov.): annua, e basi ramosa prostrata; foliis obovatis obtusis integris, basi in petiolem attenuatis; verticillastris 2-6-floris sessilibus basi bibracteolatis, bracteolis oblanceolatis flore longioribus; calyce vix bilabiato, profunde quinquefido, segmentis angusto-lanceolatis patulis; corolla calyce paulo brevior, labio superiore plano ovato obtuso labio inferiore trifido, laciniis subequalibus, intermedio submarginato. Hill-sides, Martinez, California, April 23. A slender annual, with divaricate puberulent branches. Leaves 5-6 lines long (including the petiole), ciliate at the base, otherwise nearly glabrous. Early flowers solitary, the later ones in 2-6-flowered cymes. Tube of the calyx very short; the 3 superior segments (upper lip) broader and longer than the others, all of them cuspidate. Stamens 2, the upper pair wanting.

SALVIA CARDUACEA, *Benth. Lab. p. 302, & in DC. Prodr. 12, p. 349.* *S. gossypina*, *Benth. Pl. Hartw. p. 330.* Plains, Knight's Ferry, Stanislaus, May 7. We have no doubt of *S. gossypina* being a mere variety (as Mr. Bentham suspected) of *S. carduacea*.

SALVIA COLUMBARIE, *Benth. l. c.* Sides of rivulets, Knight's Ferry, California, May. This is an annual species, and varies greatly in size, as well as in the lobing of the leaves.

AUDIBERTIA HUMILIS, *Benth. Lab. p. 313, & in DC. Prodr. 12, p. 359.* Hill-sides, near Nevada City, May 20. Leaves most clustered towards the base of the stem; the proper cauline ones being seldom more than a single pair.

SCUTELLARIA TUBEROSA, *Benth. l. c.* Plains, near San Gabriel, March 23. Dr. Parry collected this species near Monterey. It was found also by Mr. Gibbes in Calaveras county; by Dr. Stillman on the Upper Sacramento; by Mr. Thurber and Rev. Mr. Fitch in the lower part of the Sacramento valley. It is variable in its pubescence, being sometimes almost glabrous. The calyx, however, is always villous. The leaves frequently oblong and narrowed at the base. Besides the principal tuber, from which the stem arises, there are often others at the extremity of the fibrous roots, or rather subterranean branches. They are about three-fourths of an inch in length, oblong, pubescent, tapering to the extremity, jointed, and of a fleshy consistence. Sometimes they show a tendency to ramify. They appear to be true tubers, like those of the potato.

SCUTELLARIA ANTIERRHINOIDES, *Benth. in Bot. Reg. fol. 1493, & in DC. Prodr. 12 p. 428.* Var. foliis dentatis, interdum sessilibus. River banks, Mokelumne Hill, May 17. We have the same variety, collected in California by Frémont (1846) and by Rev. A. Fitch. The leaves are larger than in the Oregon plant, and the upper ones are sometimes closely sessile.

MARRUHM VULGARE, *Linnaeus; Benth. in DC. Prodr. 12, p. 453.* River banks, Mokelumne Hill, California, May 17. Introduced from Europe.

STACHYS AJUGOIDES, *Benth. in Linnæa 6, p. 80, & in DC. Prodr. 12, p. 468.* Bolinas bay,

April 19. Bracts shorter than the calyx, ovate. Teeth of the calyx triangular-ovate, spinescent at the tip, somewhat recurved.

*STACHYS CHAMISSONIS*, *Benth. l. c.* Hill-sides, Napa Valley, California; April 26.

#### BORAGINACEÆ.

*LITHOSPERMUM* (*BATSCHIA*) *CANESCENS*, *Lehm. Asperif. 2, p. 305?* Hill-sides, Grass Valley, California; May 20. Except in being less canescent than the eastern plant, we can find nothing to distinguish this from some of our specimens of *L. canescens*.

*AMISCKIA SPECTABILIS*, *Fisch. & Mey. Index Hort. Petrop. 1835; DC. Prodr. 10, p. 118.* Los Angeles, March 21. Gravelly hills of the Colorado, February 20. On Mohave creek, March 14. Near San Francisco, April 3. The place of insertion of the stamens is by no means a constant character in this genus. In the same species they sometimes are inserted in the throat, and sometimes towards the base of the corolla. *A. intermedia* seems to be no more than a variety of *A. spectabilis*.

*ERITRICHIMUM FULVUM*, *Alph. DC. in Prodr. 10, p. 132.* *Myosotis fulva*, *Hook. & Arn. Bot. Beech. p. 369.* Cocomungo, California; March 17. The fruit is scarcely mature enough for comparison, but our plant is very like specimens of *E. fulvum* from Chili, and it is certainly *Myosotis fulva* of Hooker and Arnott.

*ERITRICHIMUM CALIFORNICUM*, *DC. Prodr. 10, p. 130.* *Myosotis Californica*, *Fisch. & Mey. Ind. Sem. Hort. Petrop. 1835, p. 42.* Near San Francisco, April 8. *E. Scouleri*, *DC. l. c.* (*Myosotis Scouleri*, *Hook. & Arn.*) seems to be a mere variety of this species.

*ERITRICHIMUM CHORISIANUM*, *DC. l. c.* *Myosotis Chorisiana*, *Cham. in Linnæa, 1829, p. 444.* With the preceding, from which it is chiefly distinguished by its much longer pedicels.

*ERITRICHIMUM PLEBEIUM*, *Alph. DC. l. c.  $\beta$*  *Lithospermum plebeium*, *Cham. & Schlecht. in Linnæa, 1829, p. 446.* With the preceding. The flowers are much larger than in *E. Californicum*.

*PECTOCARYA LINEARIS*, *DC. Prodr. 10, p. 120.* On gravelly hills, near the Colorado of California, February 17. This species differs from all the others of the genus in the nutlets being pectinate with acute teeth, instead of bristles.

*PECTOCARYA CHILENSIS*, *DC. Prodr. 10, p. 120; var. CALIFORNICA: nuculis obovatis, planoconvexis calyce brevioribus.* Hill-sides and wet places, near Los Angeles; May 14. Embryo straight, cotyledons nearly orbicular. We find the radicle inferior (not superior, as stated by Alph. De Candolle) in all the species of this genus that we have examined. *P. pectinata* was found in California by Frémont in his second expedition, and it is No. 516 of Coulter's Californian collection. In this species the nutlets are somewhat panduriform, and are chiefly pectinate on the upper half. The middle contracted portion is naked, and towards the base the hooked hairs are much smaller than those above.

*KRINITZKIA LEIOCARPA*, *Fisch. & Mey. Ind. Sem. Hort. Petrop. 1841, p. 52.* *Myosotis flaccida*, *Dougl. in Hook. Fl. Bor.-Amer. 2, p. 82.* Hill-sides, Knight's Ferry, Stanislaus river. There are specimens, in a young state, of what seems to be the same plant from gravelly hills along the Colorado of California. We find very often but a single nutlet matured in one flower. Mr. Bentham makes the same remark of Hartweg's specimens.

*CYNOGLOSSUM GRANDE*, *Dougl. Mss.; Lehm. Pug. 2, p. 25; Hook. Fl. Bor.-Amer. 2, p. 85.* Mountains, near Oakland, California; April 4.

#### HYDROPHYLLACEÆ.

*ERIODYCTION TOMENTOSUM*, *Benth. Bot. Sulph. p. 35.* *E. crassifolium*, *Benth. l. c.* Near San Gabriel, California; March.

*ERIODYCTION GLUTINOSUM*, *Benth. l. c.* Sonora, Cajon Pass, Mokelumne hill, etc., California; Also, var. *ANGUSTIFOLIUM*, (*E. angustifolium*, *Nutt. Plant. Gamb.*) from hills near Cactus Pass, in the western part of New Mexico; January 30.

NAMA JAMAICENSIS, (*Link.* ?): hispido-hirsuta; caule decumbente; foliis lanceolato-spathulatis in petiolum decurrentibus; floribus subgeminis axillaribus pedicellatis; corolla campanulato-infundibuliformi calyce duplo-longiore; sepalis angusto-linearibus. Gravelly hills near the Great Colorado; February 17. Also found near Fort Yuma by Major G. H. Thomas and Lieutenant Du Barry. It is a common species in the valley of the Rio Grande. We refer it to *N. Jamaicensis* with much doubt.

ROMANZOFFIA SITCHENSIS, *Cham.* in *Linnaea*, 2, p. 609; *Bong. Veg. Sitch.* t. 4. Redwoods, California; April 12. It is interesting to meet with this species in California, where doubtless it is confined to the mountains. Dr. Bigelow's beautiful specimens accord very well with those we possess from Sitcha, from Mertens' collection. The calyx is glabrous. Choisy, (in *DC Prodr.* 10, p. 185,) who had not seen the plant, has written "calycis hirsuti," doubtless by a slip of the pen, in place of *glaberrimi*, the word used by Chamisso.

HYDROPHYLLUM CAPITATUM, *Dougl.* in *Benth. Hydrophyll.*; *DC. Prodr.* 9, p. 289. Hill-sides, Duffield's Ranch, Sierra Nevada; May. The peduncles are longer than usual, and the leaves are as large as in *H. macrophyllum*; but the segments are sparingly incised, not coarsely toothed, and the lobes of the corolla have a pubescent line along the back. Perhaps the eastern and western plants may be united.

NEMOPHILA PARVIFLORA, *Benth.* l. c. With the preceding, and near Oakland, California; April.

NEMOPHILA ATOMARIA, *Fisch. & Meyer*; *DC. l. c.* Borders of fields, Corte Madera; April.

NEMOPHILA MACULATA, *Hartw.*; *Lindl.* in *Jour. Hort. Soc.* 3, p. 319. Hill-sides, Duffield's Ranch, Sierra Nevada; May. A handsome species, now often seen in cultivation.

NEMOPHILA AURITA, *Lindl. Bot. Reg.* t. 1601. Banks of the Stanislaus, at Robinson's Ferry; May.

NEMOPHILA INSIGNIS, *Benth.* l. c. *N. liniflora*, *Fisch. & Meyer, Hort. Petrop.* Cajon Pass; March.

PHACELIA TANACETIFOLIA, *Benth. Hydrophyll.* l. c. Los Angeles, San Francisco, etc.; March, April. Various forms.

PHACELIA CIRCINATA, *Jacq. Ecl.* 1. t. 91; *Benth.* l. c. Hill-sides at Murphy's, and in many other places in California; May.

PHACELIA CILIATA, *Benth.* l. c. Los Angeles, and on the Great Colorado; February, March.

EUTOCA DIVARICATA, *Benth.* l. c. Near the Redwoods of California; April.

#### POLEMONIACEÆ.

PHLOX OCCIDENTALIS (*Durand, Mss.*): glanduloso-puberula; caulibus adscendentibus (subpedalibus); foliis lanceolatis rigidulis mucronatis; pedunculis erectis brevibus; calyce viscido corollæ tubo paulo brevior, dentibus subulatis erectis tubo æquilongis; corollæ (albæ?) lobis late obovatis contiguis; ovarii loculis uniovulatis. *P. divaricata*, *Durand, Pl. Pratten in Journ. Acad. Philad. n. ser.* 1855. Hill-sides, near Duffield's Ranch, May. Lower leaves not seen; the upper 12-16 lines long, 2 or 3 wide, usually broadest at the base. Limb of the corolla an inch in diameter, the broad and rounded rather deeply obovate lobes overlapping each other, not widely separate as in *P. divaricata* (in which, however, the lobes vary from strongly obovate-notched to barely retuse). Ovules solitary. Root doubtless perennial. The only species of the first section of the genus known west of the Rocky Mountains.

COLLOMIA GRACILIS, *Benth.* in *Bot. Reg.*, & in *DC. Prodr.* 9, p. 308. Corte Madera and Sonoma; April, May.

COLLOMIA GLUTINOSA, *Benth.* l. c. Sonoma, California, along rivulets and ravines; May. A form with the corolla longer than usual; its slender tube half an inch long, and thrice the length of the calyx.

NAVARETTIA HETEROPHYLLA, *Benth.* in *DC. l. c.* *Collomia heterophylla*, *Hook.* Mokelumne Hill, and Grass Valley, California; May.

NAVARRERIA PUBESCENS, *Hook. & Arn. Bot. Beech. p. 368.* Lone Valley, in low places; also Knight's Ferry on the Stanislaus, on hill sides; May.

NAVARRERIA COTULIFOLIA, *Hook. & Arn. l. c.* With the last.

NAVARRERIA LEUCOCEPHALA, *Benth. Pl. Hartw. p. 324.* Low and wet places, Mark West's Creek, California; April 30.

GILIA CAPITATA, *Dougl. in Bot. Mag. t. 2698.* Hill-sides, Sonoma, California; May.

GILIA ACHILLEIFOLIA, *Benth. in Bot. Reg. & DC. l. c.* Knight's Ferry on the Stanislaus; May.

GILIA TRICOLOR, *Benth. l. c.* Hill-sides, Martínez; April. From Napa Valley are specimens gathered April 16, wholly in fruit, which appear to be either *G. tricolor* or *G. multicaulis*, but with the calyx and peduncles glabrous.

GILIA (LINANTHUS) DICHOTOMA, *Benth. in DC. l. c.* Napa Valley, and near San Francisco; April. This and all the sections (formerly genera) of Benthams, with palmatisect usually opposite leaves, we should prefer to regard as one genus, leaving to *Gilia* the sections *Eugilia*, *Thysogilia* (of which *G. congesta* is the type), and *Ipomopsis*.

GILIA (LINANTHUS) DIANTHOIDES, *Endl. Atakt. t. 29;* Cocomungo, California; in sandy or gravelly places; March.

GILIA (DACTYLOPHYLLUM) PHARNACEOIDES, *Benth. in DC. l. c.* Hill-sides, Napa Valley; April.

GILIA (LEPTOSIPHON) ANDROSACEA, *Steud.; Benth. l. c.* Plains and hill-sides, Napa Valley, etc. April, May.

GILIA (LEPTOSIPHON) CILIATA, *Benth. Pl. Hartw., p. 324.* Hill-sides and grassy plains, Napa Valley, California; May.

GILIA (LEPTOSIPHON) MICRANTHA, *Steud.; Benth. l. c.* Hill-sides, Napa Valley; May: and Benicia, California; April.

GILIA MICRANTHA, var. AUREA, *Benth. Pl. Hartw. l. c.* Hills and plains, Napa Valley; April. The stamens nearly equal in length the lobes of the corolla, which is yellow; otherwise the same as *G. micrantha*.

#### GENTIANACEÆ.

FRASERA NITIDA, *Benth. Pl. Hartw. p. 322.* Hill-sides, near Marysville, California; May, Capsule, 4-seeded. Seeds linear-oblong, winged. We have specimens of this species in fruit, collected in California by Mr. Shelton. It is scarcely distinct from *F. albescens*.

FRASERA PANICULATA (n. sp.): foliis linearibus oppositis; panicula pyramidata nuda laxa; calycis segmentis ovatis acutis corollam duplo brevioribus; foveis oblongo-linearibus binis; corona nulla. Sand-bluffs, Inscription Rock, Zuni county. Specimens were collected very late in the season, but they are sufficient to show that this is quite a new species. The plant is nearly three feet high, with a long tapering root. Radical leaves in a cluster; stem leaves in three distant pairs. Panicle (fructiferous) about two feet long, loose, compound; pedicels an inch or more in length. Segments of the corolla oblong, obtuse, furnished near the base with two narrow pits, which are nearly half the length of the segment, and are pectinately ciliate around the margin. Filaments somewhat dilated downward, distinct. Capsule about three-fourths of an inch long, very slightly compressed. Seeds 15-20, completely filling the capsule, scabrous, wingless.

As Mr. Benthams remarks, (in *Plant. Hartw.*) Grisebach's character of the genus *Frasera* does not agree with the western species, and seems to have been drawn from *F. Carolinensis*, which is destitute of a corona. This is the more remarkable, as Grisebach elaborated the *Gentianaceæ* for Hooker's *Fl. Bor.-Amer.*, and described in that work, two species, which are furnished with a conspicuous corona, consisting of fimbriate scales, alternating with the stamens. Our new species agrees with the eastern one in wanting the crown. Dr. Parry found on the mountains east of San Diego another species (*F. Parryi*, *Torr. Bot. Mex. Bound. Surv., ined.*) still more

*F. solanoides Gray ined.*



like *F. Carolinensis*, and likewise destitute of a crown. It is, perhaps, *F. verticillata*, *Hook. Fl. Bor.-Am.*, but not of Walter. It has a nearly naked panicle, and lunate solitary glandular pits.

*ERYTHRA MUHLENBERGII*, *Griseb. in DC. Prodr.* 9, p. 60, quoad pl. Calif. Fields, Benicia; April.

*MENYANTHES TRIFOLIATA*, *L.* Near San Francisco; April.

### CONVOLVULACEÆ.

*CONVOLVULUS CALIFORNICA*, *Choisy in DC. Prodr.* 9, p. 405. Santa Rosa creek, California; May 1.

*IPOMÆA SAGITTATA*, *Desf.?* *I. sagittifolia*, *Hook. & Arn. Bot. Beech.* p. 151. Hills near Punta de los Reyes, California; April 17. This is probably the plant of Hooker and Arnott, but not *Convolvulus sagittifolius*, *Michx.* The leaves are broader, and the auricles are deeply emarginate, or even 2-lobed at the summit. The one-flowered peduncles are longer than the leaves, and furnished with two small alternate lanceolate bracts a short distance below the flower. Corolla nearly as large as in *Calystegia sepium*, whitish, with pale purple stripes.

*CONVOLVULUS ARVENSIS*, *Linn.; Choisy in DC. Prodr.* 9, p. 406; var. *VILLOsus*, *Choisy l. c.* Hill sides, Sonora, California; May 9. Stems prostrate, branching from the root. Leaves varying from ovate to narrowly lanceolate, strongly hastate or sagittate. Peduncles longer than the leaves, with a pair of opposite lanceolate mostly sagittate bracts a little below the flower.

*CONVOLVULUS* (n. sp.): *canescenti-tomentosus*; caule prostrato e basi ramoso; foliis lato-cordatis brevissime acuminatis, auriculis angulari-bilobis; pedunculis unifloris axillaribus-Hill-sides, Downieville, Yuba river, California; May 22. Our specimens have only young flower buds, so that the genus cannot certainly be ascertained. The plant has never come under our observation before.

*CUSCUTA CALIFORNICA*, *Hook. & Arn. Bot. Beech.* p. 364; *Choisy in DC. Prodr.* 9, p. 457. Parasitic on *Phacelia circinata* and other plants, in various parts of California; February, May.

### SOLANACEÆ.

*SOLANUM UMBELLIFERUM*, *Eschsch. Mem. de St. Petersburg.* 10, p. 280, and in *Linnaea*, 1828, (litt.) p. 148; *Dunal in DC. Prodr.* 13, pars. 2, p. 93. *S. Californicum*, *Dunal. l. c.* p. 86. Cocomungo, March 17, and San Francisco; April 3. A common species in California. It varies much in the size and form of the leaves, degree of the pubescence, and number of flowers in the raceme or umbel.

*NICOTIANA QUADRIVALVIS*, *Pursh Fl.* 1, p. 141; *Dunal in DC. Prodr.* 13, pars. 1, p. 571. *N. multivalvis*, *Lindl. Bot. Reg. t.* 1057? Rocky arroyos, near the Colorado of the West; February 17.

*NICOTIANA PLUMBAGINIFOLIA*, *Dunal in DC. Prodr.* 13, pars. 1, p. 569. Var? *BIGELOVII*: annuus; caule glanduloso-pubescente subsimplici; foliis oblongo-lanceolatis acutiusculis glabrisculis, inferioribus in petioleum angustatis, superioribus sessilibus basi angustatis; panícula terminali laxiuscula; calyce glanduloso-pubescente, laciniis lanceolato-linearibus inequalibus, corolla hypocraterimorpha, tubo elongato calyce 2-3-plo longiore, limbi laciniis lato-ovatis obtusiusculis. Knight's Ferry, Stanislaus river; May. We are unwilling to propose this as a new species, since there are so many others in the same genus that are very imperfectly known. Our plant does not agree with any *Nicotiana* described by Dunal, (*l. c.*) but it seems to approach the nearest to *N. plumbaginifolia*.

*LYCIUM*, "n. sp. near *L. FRAGROsum*," *Miers in lit.* In cañons along Williams' river, February 8. Mr. Miers will describe this new species in a monograph of *Lycium* that is to appear in the second volume of his *Illustrations of South American Plants*, shortly to be published.

## ASCLEPIADACEÆ.

*ASCLEPIAS ERICOARPA*, *Benth. Pl. Hartw. p. 323, No. 1835.* Hill-sides, Knight's Ferry, Stanislaus river, California; May 7.

*ASCLEPIAS* (OTARIA) n. sp.? Dry arroyos, on the Great Colorado of California. Our specimens are imperfect, having been gathered late in the season, when the leaves had fallen. The plant evidently belongs to the section Otaria of Decaisne, but we can refer it with certainty to none of the species described in the Prodrômus. It is tall, (apparently 3-4 feet high,) somewhat branched above, with a minutely pubescent stem. The umbels are numerous, in a terminal panicle or raceme, 15-20-flowered. The flowers are apparently white, about as large as in *A. variegata*. The petals are reflexed, and the oblong entire cuculli are only about one-third longer than the sessile gynostegium. Horn subulate-falciform, slightly exerted. The pol is about 5 inches in length, even, oblong, tapering to a long point. It seems to be nearly allied to *A. subulata* of Decaisne, but that is said to have the cuculli twice as long as the gynostegium, and until the leaves are known we cannot be sure that it is a new species.

*ACERATES CORDIFOLIA*, *Benth. Pl. Hartw. p. 323.* Knight's Ferry, Stanislaus river, California; May 8. We have this plant also from the Rev. Mr. Fitch. In all our specimens the gynostegium is much shorter than the corolla. The cuculli are about the length of the gynostegium, obliquely truncated downward, and closely appressed to the processes of the anthers.

## OLEACEÆ.

*FRAXINUS PISTACIEFOLIA*: glabra seu tomentuloso-velutina; foliis 2-4-jugis subpetiolulatis ovatis oblongis lanceolatisve serratis vel fere integerrimis pallidis vel supra lucidis venosis; petiolo canaliculato nunc apicem versus marginato; samara ex apice in alam spatulato-oblongam portione seminifera subtereti immarginata vix longiorem producta. *F. velutina*, *Torr. in Emory's Rep. (forma tomentosa.)* Rocky ravines of Williams' River; January 3: fruit only. A species occurring in almost all the New Mexican collections, excessively variable in its foliage, and so much more generally smooth than pubescent (still less velvety) that we propose to supersede the little-known name under which an extreme form of it was briefly described in Emory's Report some years ago.

*FRAXINUS OREGONA*, *Nutt. N. Amer. Sylv. 3, p. 59, t. 99.* *F. pubescens*, var. *Hook. Fl. Bor.-Am. 2, p. 51.* *F. grandifolia*, *Benth. Bot. Sulph. p. 33.* Napa Valley, California, in deep ravines and along rivulets; May 5. A small-leaved form.

## ARISTOLOCHIACEÆ.

*ARETOLOCHIA CALIFORNICA* (sp. nov.): caule volubili fruticoso; foliis ovato-cordatis integerrimis membranaceis utrinque pubescentibus; pedunculis solitariis medio unibracteatis; perianthio glabriusculo inflato, limbo trilobo, lobis fere æqualibus subconniventibus. Near Corte Madera, California; April 16, (in flower.) A tall climbing species. Leaves 3-4 inches long, obtuse, velvety-pubescent when young, thinly but softly pubescent when mature. Peduncles an inch and a half or two inches in length, thickened and pubescent under the flower, furnished near the middle with a small ovate bract. Flower dull purple at the base and tip, paler in the middle, about an inch and a half long from the base to the curvature. This rare plant (which we have only received besides from Dr. Hulse, who collected it in the Sacramento valley) resembles *A. tomentosa*, *Nutt.*; but that has naked peduncles and narrow villous flowers, the lobes of which are widely spreading.

*ASARUM HOOKERI*, *Fielding, Sert. Plant. fol & t. 32.* *A. Canadense*,  $\beta$ . *Hook. Fl. Bor.-Am. 2, p. 139.* Hill-sides and low places, Downieville, Yuba; Duffield's Ranch, and mount-

ains near Oakland, California; March—April. The specimens from all these stations have the lobes of the flower furnished with a long caudate acumination, and the leaves are much more glabrous than in *A. Canadense*; but Bentham (*Pl. Hartweg*, p. 335) says that specimens from the mountains of Sacramento are more like the eastern *A. Canadense*, of which he thinks the Californian plant may be only a variety.

## CHENOPODIACEÆ.

*TELOXYS CORNUTA* (n. sp.): foliis repando-dentatis pinnatifidisque calycis laciniis acutis dorso brevi-rostellatis, semine compresso margine obtusissimo. Rocky places, Hurrah creek, New Mexico. Near San Francisco mountain, Western New Mexico, *Dr. Woodhouse*, (omitted by accident in the botany of Sitgreaves' report); Wright's Coll., No. 1735. Gregg collected the plant near Saltillo, Mexico, (No. 390.) *T. aristata* differs in the entire leaves, inappediculate glabrous calyx with obtuse segments, and acutely margined lenticular seeds. *T. cornuta* is commonly about a foot or 15 inches high, and is often very much branched. The leaves are deeply pinnatifid, with 2-3 distant lobes on each side. The calyx is beset with minute elevated glands, and on the upper part of the back of each segment is a short acute spine or tooth, so that in fruit the calyx appears somewhat stellate. The seed is exactly orbicular, thick, rounded on the margin, and closely covered with the utricle, which strongly adheres to its surface. In *T. aristata* the utricle separates spontaneously from the seed.

The genus *Teloxys* was established by Moquin on *Chenopodium aristatum*, and has hitherto consisted of that species only. Linnæus, in the second edition of the *Species Plantarum*, referred to *C. aristatum*, the *Chenopodium Virginicum* of his first edition, regarding it as a variety only. Dr. Gray, who saw the original specimens in the Linnæan herbarium, informs me that the plant is nothing more than *Sueda maritima*; and yet it is difficult to understand how the description of *Chenopodium Virginicum*, in the *Species Plantarum*, (ed. 1.) could have been drawn from that plant. The first part of the character ("foliis linearibus obtusis canaliculatis") agrees sufficiently well, but the latter portion ("peduncularibus axillaribus dichotomis") is quite inapplicable. We greatly doubt whether a *Teloxys* has ever been found in any of the older United States. Moquin (in *DC. Prodr.*) states that he has seen Mexican specimens of *T. aristata* in the Vienna herbarium, but it is more than probable that the plant which he refers to is our *T. cornuta*. Without the leaves, (which fall away late in the season,) the two species are not distinguishable except by the use of a lens.

*CYCLOLOMA PLATYPHYLLUM*, *Moq. Chenop.* p. 18, & *DC. Prodr.* 13, pars 2. p. 60. *Salsola platyphylla*, *Michx.* Sand-hills of the Canadian River; September: flowers and fruit.

*CHENOPODIUM ALBUM*, *Linn.* Alluvions of the Upper Canadian; September. *C. subspicatum*, *Nutt.* is hardly distinct.

*CHENOPODIUM HYBRIDUM*, *Linn.*; *Moq. in DC. l. c. p. 68.* With the last.

*BLITUM CAPITATUM*, *Linn.*; *Moq. l. c. p. 83.* Ravines, Sandia mountains, New Mexico; October. It is difficult to believe that the last three species could have been introduced into a region so far removed from settlements of the whites.

*BLITUM BONUS-HENRICUS*, *Reich.*; *Moq. in DC. Prodr.* 13, (pars 2.) p. 85; *Torr. Fl. N. York* 2, p. 136. Plains and banks of the Sacramento, California; April 24.

*OBIONE LENTIFORMES*, *Torr. in Sitgreaves' Report*, p. 169, t. 14,  $\beta$  *RHOMBIFOLIA*: foliis rhomboideo-ovatis undulatis. On Williams' River of the Colorado of California; February, (with fruit of the preceding autumn.) This species forms impenetrable thickets twelve feet high! The leaves are much larger than in the specimens collected in Captain Sitgreaves' expedition.

*OBIONE HYMENELYTRA*, *Torr. in Emory's Rep. of Mex. Bound. Surv. (ined.)* (Tab. XX.) Hills and gravelly places, on Williams' River. This species was found by Dr. Parry and by Colonel Fremont on the Gila. It is remarkable for its large broad membranaceous fruit-bracts, and roundish-deltoid coarsely and sharply toothed leaves.

*OBIONE POLYCARPA*, Torr. (in Emory's 1st Report, p. 149, sine char.): suffruticosa, ramosissima; ramulis gracilibus paniculatis; foliis minutis sessilibus obovato-oblongis obtusis integerrimis albedo-farinosis; bracteis orbicularibus, supra mediam distinctis argute grosse-dentatis, utrinque cristatis. With the preceding. Leaves 3-5 lines long, crowded. Fruit abundant, aggregated on the long slender branchlets. Fructiferous bracts about 2 lines in diameter.

*OBIONE CANESCENS*, Moq. l. c. p. 212. Llano Estacado; September; fruit. The specimens belong to the form with broadly winged fruit-bracts.

*OBIONE ARGENTEA*, Moq. l. c. p. 115. *Atriplex argentea*, Nutt. Gen. 1, p. 198. Upper waters of the Canadian; with ripe fruit, in which state it is seldom collected. The fructiferous bracts are somewhat orbicular, the margin deeply and acutely toothed, and the disk is often more or less cristate with leafy appendages.

*EUROTIA LANATA*, Moq. l. c. p. 121. *Diotis lanata*, Pursh, Fl. 2, p. 602. With the last, abundant; September. Hooker refers this to *E. ceratoides*, but we are inclined to regard it as a distinct species.

*CORISPERMUM HYSSOPIFOLIUM*, Linn.; Moq. l. c., p. 140. *C. hyssopifolium*, Nutt. Gen. 1, p. 4. Sandy ravines on the Canadian; also banks of streams, Galisteo, New Mexico; September, October.

*SUEDA MARITIMA*, Dumort.; Torr. Fl. N. York, 2, p. 141. *Chenopodium maritima*, Moq. in DC. Prodr. 13, pars 2, p. 161. *Salsola depressa*, Pursh, Fl. 1, p. 197, excl. syn. Wet saline soils along the Canadian River; August, September.

*SUEDA FRUTICOSA*, Forsk.; Moq. l. c. p. 156. Var.? *MULTIFLORA*: floribus 6-10 glomeratis, foliis carnosis compressis. Llano Estacado. A shrubby much branched plant, apparently 3-4 feet high. The branches are of a light-brown color, and marked with little knobs, the cicatrices of fallen leaves. Lower leaves not seen; those of the primary branches are nearly half an inch long, and more than half a line wide, compressed, (not semiterete.) The flowers are very numerous, and are crowded on the axils of the leaves. Sepals oblong, a little fleshy, concave and somewhat cucullate at the extremity, the narrow margin scarious. Seeds horizontal and vertical in the same plant, black and shining, with a short rostrum. We fully agree with Fenzl (in Ledeb. Fl. Ross. 3, p. 777) in restoring *Chenopodium* to *Sueda*—the only character on which the former genus was founded being inconstant. There are several other species of *Sueda*, in which both vertical and horizontal seeds are found on the same plant.

*SARCOCATUS VERMICULARIS*, Torr. in Emory's Rep. p. 150, and in Sitgreaves' Rep. p. 169. *Batis? vermicularis*, Hook. Alluvions of the Rio Grande, near Albuquerque; October; in fine fruit.

#### AMARANTHACEÆ.

*MONTELLA TAMARISCINA*, Gray. Man. ed. 2, p. 370. *Amaranthus tamariscinus*, Nutt. in Trans. Amer. Phil. Soc. (2d ser.) 5, p. 165. Wet ravines, Deer creek, Indian Territory; August.

*AMARANTUS ALBUS*, Linn.; Moq. in DC. Prodr. 13, pars 2, p. 264. Sandy ravines near the Canadian River; September.

*AMARANTUS RETROFLEXUS*, Linn.; Moq. l. c., p. 258. *A. græcizans*, Torr. Fl. N. York 2, p. 144. Ravines near Santa Antonito, New Mexico; and prairies (especially around marmot burrows) along the Canadian River; September, October.

*GOSYPIANTHUS TENUIFLORUS*, Hook. Ic. t. 251; Moq. l. c., p. 337. Dry prairies near the Cross Timbers of the Canadian River. Root-stock stout and dark colored, branching into several short heads. Stems numerous prostrate 3-4 inches long. Leaves a little pubescent underneath. Filaments very thin and translucent.

*FREGLICHIA GRACILIS*, Moq. l. c. p. 420. Dry prairies and rocky places along the Canadian to the Rio Grande. On Hurrah creek a dwarf form (1-4 inches high) was found, in which the inflorescence was reduced to a single terminal cluster or head.

*FROELICHIA FLORIDANA*, *Moq. l. c.* *Oplothea floridana*, *Nutt. Gen. 2, p. 79*; *Bart. Fl. N. Amer. 2, t. 59*; *Hook. Ic. t. 256*. Sand banks of the Canadian; August. *F. Drummondii* of Moquin seems to be scarcely a variety of this species. The fructiferous calyx has a narrowly winged and irregularly toothed margin. At the base there is usually a central tooth or protuberance on one side, and two protuberances on the other. The same characters occur in *F. gracilis*.

## NYCTAGINEÆ.

*OXYBAPHUS GLABRIFOLIUS*, *Vahl, Enum. 2, p. 40*; *Choisy in DC. Prodr. 13, (pars 2,) p. 431*. *O. laevis*, *Benth. Bot. Sulph. p. 44*. Los Angeles; March 21; and mountains near the Colorado, Mexico.

This species is very variable in its pubescence. If *O. laevis* of Bentham be correctly referred here, it is sometimes wholly glabrous. Our California specimens usually have the branches, peduncles, and margin of the leaves slightly pubescent. Those from near the Colorado have the branches strongly pubescent, and both surfaces of the leaves more or less so. The perianth is rose-colored, and the 5 lobes are emarginate.

*QUAMOCLIDION OXYBAPHOIDES*, *Gray in Silk Jour., 2d ser. 15, p. 320*. Rocky places, Llano Estacado; September. The involucre is unequally 4-5 cleft. Fruit black when dried before ripening, but mottled when mature.

*ABRONIA CYCLOPTERA*, *Gray l. c., p. 319*. *A. (Tripterocalyx) micrantha*, *Torr. in Frem. 1st Rep., p. 96*. Banks of the Rio Grande, near Albuquerque, New Mexico; October; with flowers and fruit, the latter more than an inch in length, with very broad membranaceous wings.

*ABRONIA MELLIFERA*, *Dougl. in Hook. Bot. Mag. t. 2879*; *Moq. in DC. Prodr. 13, (pars 2,) p. 435*. Sandy hills, Indian Territory; September; with flowers and ripe fruit; and sandy hills near the Colorado, California; February. The figure in the Botanical Magazine (copied by Lindley, *Veg. Kingd.*) erroneously shows the embryo with two cotyledons. We have shown, elsewhere, that in all the species of *Abronia*, the inner cotyledon is either wholly suppressed, or only rudimentary. Near Galisteo, New Mexico, Dr. Bigelow collected a dwarf variety of *A. mellifera*, with spatulate leaves tapering at base to a long petiole, and large membranaceous involucre with broadly ovate segments. The fruit resembled that of the ordinary form.

*ABRONIA ARENARIA*, *Menz. in Hook. Exot. Fl. t. 193*; *Choisy in DC. Prodr. 13, (pars 2,) p. 435*. Sand-hills near the sea-shore, Punta de los Reyes, California; April 17.

## POLYGONACEÆ.

*ERIOGONUM POLIFOLIUM*, *Benth. in DC. Prodr. 14, pars 1, p. 12*. Mountain aroyos near Williams' River; February 9. Involucre usually in a capitate cluster, but sometimes on short rays.

*ERIOGONUM CORYMBOSUM*, *Benth. l. c.* Var. *DIVARICATUM*, *Torr. & Gray, in Beckwith's Rep., p. 123*. On sandy hills, near Inscription Rock, Western New Mexico; November 18.

*ERIOGONUM LONGIFOLIUM*, *Nutt. in Trans. Amer. Phil. Soc. n. ser. 5, p. 164*. Dry prairies, Upper Cross Timbers of the Canadian River; August.

*ERIOGONUM ORTHOCLADON*, *Torr. in Sitgreaves' Rep. p. 167, t. 9*; *Benth. in DC. Prodr. 14, pars. 1, p. 15*. Sandy hills, Albuquerque, New Mexico.

*ERIOGONUM ALATUM*, *Torr. l. c. p. 168, t. 8*. Var. *GLABRIUSCULUM*: caule foliisque vix pubescentibus; involucri bracteolisque glabris. High prairies, near the Upper Canadian. Plant 4-5 feet high. Differs from the ordinary form of this species in being taller, nearly glabrous in all its parts, (except a slight hairiness on the leaves and lower part of the stem,) and in the slender and more numerous branches. It may be *E. alatum*  $\beta$ . *elatatum*, *Benth. in DC. Prodr. 14, pars. 1, p. 7*.

*ERIOGONUM LACHNOGYNUM*, Torr. *ms.*; *Benth. l. c. p. 8.* (Tab. XIX.) Hill-sides and rocky dells of the Llano Estacado; September. A remarkable species. At the base of each flower there is an ovate-lanceolate bract, (not represented in the figure,) and inside this a pair of spatulate-linear opposite bracteoles. This appears to be the normal structure in the genus, but we have not detected it in any other species. Usually the bracteoles are solitary, or more rarely, a pair of opposite ones to each flower.

*ERIOGONUM WRIGHTII*, Torr. *Ms.*; *Benth. l. c. p. 15.* Gravelly plains, near Albuquerque, New Mexico; October. Stem suffruticose, decumbent, throwing up erect branches which are 6-12 inches high. Flowers very numerous, many of them expanding together, and thus forming heads which are more than half an inch in diameter. Involucre acutely 5-toothed. Segments of the perianth obovate, the exterior a little broader than the others; ovary and achenium with the beak hispid.

*ERIOGONUM JAMESII*, *Benth. in DC. Prodr. 14, pars 1, p. 7.* Hills on the upper waters of the Canadian River. September.

*ERIOGONUM TENELLUM*, Torr. *Ann. Lyc. N. York, 2, p. 241*; *Benth. l. c. p. 19.* With the last; in rocky places.

*ERIOGONUM ROTUNDFOLIUM*, *Benth. l. c. p. 21.* Sandia mountains, New Mexico; October. Bracteoles 2, spatulate-linear, glandular on the margin, and fringed also with long hairs.

*ERIOGONUM EFFUSUM*, var. *LEPTOPHYLLUM*, Torr. *in Sitgreaves' Rep. p. 168.* Hills and ravines, Cieneguela, New Mexico; October.

*ERIOGONUM EFFUSUM*, var. ? *NUDICAULE*: caule brevissimo ramoso basi lignoso; foliis subradicalibus lanceolato-linearibus albanatis, scapis glabriusculis superne bis bi-trichotomis, involucri turbinato-campanulatis glabris 5-dentatis, dentibus rotundatis brevibus, perigonii glabris, basi obtusis, laciniis oblongis subæqualibus; ovario glabro. In pine and cedar woods, near Galisteo, New Mexico. Branches of the stem or caudex scarcely an inch long. Leaves 2 inches long, 2-3 lines wide, revolute on the margin (in the dry specimens), tomentose on both sides, but less so above. Scapes 8-12 inches high, naked, mostly twice three-forked with very short bracts at the base of the somewhat spreading branches. Perianth pale purple, segments emarginate, the exterior ones a little broader. Achenium ovate with a long tapering summit, slightly scabrous on the angles above. Embryo incurved-excentric. This resembles some forms of *E. effusum*, especially the var. *rosmarinoides*, *Benth.*, but differs in the very short stem, nearly glabrous elongated scapes or peduncles and involucre, looser and more spreading inflorescence. Its habit is that of *E. lachnogyum*, but it belongs to a different section, the embryo being strongly curved.

*ERIOGONUM POLYCLADON*, *Benth. l. c. p. 16.* Gravelly hills, near Albuquerque, New Mexico; October. Annual. Bracteoles filiform, not glandular, with very long fringed hairs on the margin.

*CHORIZANTHE MEMBRANACEA*, *Benth. in Linn. Trans. 17, p. 419, t. 17, f. 11.* Hill-sides, etc., Knight's Ferry, Stanislaus River; also near Sonora, California; May.

*CHORIZANTHE PUNGENS*, *Benth. l. c. t. 19, f. 2.* With the preceding species, May 8.

*PTEROSTEGIA DRYMARIOIDES*, Fisch. & Mey. *Ind. Sem. Hort. Petrop. 1835*; Hook. & Arn. *Bot. Beech. p. 387, t. 90.* Rocky places, near Marysville; also at Knight's Ferry, Stanislaus River; Napa Valley; and mountains near San Gabriel, March-May. This plant is variable in the size and divisions of the leaves. In the specimens from near San Gabriel the leaves are deeply two-parted, and the divisions two-cleft, with entire or bifid segments. We have little doubt that among its forms must be included *P. diphylla* and *P. microphylla*.

#### ACANTHOGONUM, Nov. Gen.

Involucrum 1-2-florum, tripartitum, basi indurata subtrigonum, segmentis inæqualibus ovatis lanceolatisve apice subulato-pungentibus. Flos hermaphroditus sessilis, ima basi involucri

reconditus. Perigonium æqualiter 6-dentatum, fructiferum clausum. Stamina 6, perigoni fauc inserta, dentibus ejusdem opposita: filamenta brevissima. Styli 3, breves; stigmata capitata. Achenium ovato-trigonum, acutum, semen conforme. Embryo in axi albuminis farinacej curvatum; cotyledonibus orbiculatis planis; radica elongata supra. Herba annua, nana, breviter ramosa, rigida; foliis imis ovatis longe petiolatis tomentosis, reliquiis spinescenti-subulatis confertissimis patentibus exstipulatis; involucri axillaribus sessilibus bracteola trifida spinescente fulcratum.

**ACANTHOGONUM RIGIDUM.** On Williams' river, a fork of the Colorado, Western New Mexico. Only winter vestiges of this plant were collected by Dr. Bigelow; but the specimens seem to show that it is a new genus of Eriogonæe. It will stand next to *Mucronea*, from which it differs in habit, in the short involuclral tube, in the 6-toothed closed perianth, and in the insertion of the stamens. The whole plant above ground is not more than 3 or 4 inches high. The lower and radical leaves are about half an inch long, clothed with a white tomentum, and stand on petioles which are nearly an inch in length. The upper leaves are destitute of stipules, rigid, subulate, and spreading. In nearly every axil is a solitary sessile involucre, which is 3-parted; the segments varying from ovate to narrowly lanceolate; all of them mucronate and pungent, carinate, strongly 3-nerved, with transverse connecting veins; the closed base is obtusely triangular, and contains a single sessile flower. Perianth membranaceous, 6-toothed; the teeth ovate, very hairy. Stamens apparently only 6; filaments inserted in the throat opposite the teeth of the perianth; anthers not seen. The achenium is sometimes 3-valved at the summit, or at least easily splits when old. What we have called subulate rigid upper leaves may be only the spine-like persistent midribe.

**RUMEX MARITIMUS**, *Linna.*; *Meisn. in DC. Prodr.* 14, pars 1, p. 59. Low places on the Rio Grande, near Albuquerque. A dwarf form.

**RUMEX DOMESTICUS**, *Hartm.*; *Hook. Fl. Bor.-Amer.* 2, p. 129? Sandy plains and hills near the Mohave creek, California; March. The fruit too young for determining with certainty the species.

**POLYGONUM PARONYCHIA**, *Cham. & Schlecht. in Linnæa.* 3, p. 51; *Hook. & Arn. Bot. Beech.*, p. 158. Near San Francisco; April 3.

**POLYGONUM BISTORTA**, *Linna.*; *Meisn. Polyg.* p. 91. *P. bistortoides*, *Pursh, Fl.* 1, p. 371. Laguna of Santa Rosa creek, New Mexico; May 1.

#### LAURACEÆ.

**OREODAPHNE CALIFORNICA**, *Nees, Syst. Laur.* p. 463. *Tetranthera?* *Californica*, *Hook. & Arn. Bot. Beech.* p. 150. *Laurus?* *regia*, *Dougl. in Hook. Comp. Bot. Mag.* *Umbellularia Californica*, *Nutt. Sylv.* 1, p. 87. *Drimophyllum pauciflorum*, *Nutt. l. c. t.* 22, *excl. syn.* Mountains near San Gabriel, and Oakland, California; March—April, (in flower.) On the Upper Sacramento this fine tree attains a height of 50-70 feet. Douglas estimated the height of some individuals at 120 feet. Towards the south its altitude is much less, being from 15-30 feet. By the slightest friction it emits a strong spicy odor, but is apt to excite sneezing. The fruit is globose, nearly an inch in diameter, and stands on a thick stalk. When immature it is green, but dark-purple when fully ripe. We have no doubt that Nuttall's *Drimophyllum* is identical with *Oreodaphne Californica*. His plate agrees very well with a common state of the plant, and also with an authentic specimen of *Laurus regia* of Douglas. The inhabitants of California call it Mountain Laurel and Spice-tree. It grows throughout the western part of the State, from the borders of Oregon to Santa Barbara.

#### THYMELACEÆ.

**DIRCA PALUSTRIS**, *Linna. Spec.* 1, p. 358; *Torr. Fl. N. York* 2, p. 163. Mountains near Oakland, California; April 4, (with flowers and young fruit.) We have never before received this plant from any part of the United States west of the Mississippi.

## SANTALACEÆ.

COMANDRA UMBELLATA, *Nutt. Gen.* 1, p. 157; *Hook. Fl. Bor.-Amer.* 2, p. 139, t. 179, fig. A; *Torr. Fl. N. York* 2, p. 160. Hill-sides, Sonora, California; May 9. This plant has a very extensive range both in latitude and longitude, being found from British America to Georgia and Texas, and from the Atlantic to the Pacific. In the south, and far to the west, it is often suffrutescens, which is not the case in the middle States. Mr. Stauffer, of Mount Joy, Pennsylvania, has clearly established the parasitism of Comandra to be similar to that which M. Mitten had previously ascertained of Thesium.

## LORANTHACEÆ.

PHORADENDRON FLAVESCENS, *Nutt. in Jour. Acad. Phil. n. ser.* 1, p. 185; *Engelm. in Gray Pl. Fendl.* p. 59. *Viscum flavescens*, *Pursh, Fl.* 1, p. 114. *V. Reichenbachianum*, *Seem. Bot. Herold.* p. 294 t. 62. On Williams' River; February. The anthers are only one-celled, with a transverse terminal slit.

VAR. PUBESCENS, *Engelm. in Gray, Pl. Lindh.* 2, p. 212. Parasitic on *Quercus agrifolia*. Napa Valley, Corte Madera, &c., California. Differs from the ordinary form of *P. flavescens* only in its pubescence, and smaller leaves.

VAR. ORBICULATUM, *Engelm. l. c.* Pass of Mount Hope, and near White Cliff Creek, Western New Mexico; on *Quercus Emoryi*. Fruit ripe in January. Dr. Bigelow found at Cajon Pass, on what seems to be a dwarf oak, a *Phoradendron* with ovate nearly sessile and very thick leaves, which are scarcely more than half an inch in length, and clothed (as well as the young branches) with a dense pubescence. There were only a few separate berries accompanying the specimens. It may be *P. villosum* of Nuttall. Our materials are scarcely sufficient for identifying the species.

PHORADENDRON PAUCIFLORUM (n. sp.): ramis teretibus; foliis spatulatis v. spatulato-linearibus nervis junioribus pubescentibus demum glabratis crassis; spicis brevipedunculatis simplicibus capitatis oblongisve pauci-(4-8)-floris foliis multo brevioribus; floribus plerumque 3-lobis. On *Juniperus occidentalis* and *Abies Douglasi*, Duffield's Ranch, Sierra Nevada. Branches 3-6 inches long, stout. Leaves three-fourths of an inch to an inch long, 2-3 lines wide. Anthers 2-celled, opening by two terminal transverse chinks. There is an abortive ovary with a distinct style in the male flowers. Berries apparently white, about one line in diameter in the dried specimens. This seems to be a widely spread species. Dr. Gregg found it at San Antonio de los Alanzanes, Mexico. It also occurs in Sonora, and Mr. Wright collected it in New Mexico.

PHORADENDRON CALIFORNICUM, *Nutt. l. c.*; *Engelm. l. c.* Williams' River, growing on *Parkinsonia microphylla*; also near the Colorado, on *Cercidium floridum*, bearing fruit in February, probably formed in the autumn of the preceding year. Specimens with small flowers were collected near Fort Yuma by Major Thomas. Branches pubescent when young, but at length nearly or quite smooth. Spikes, in the specimens from the Colorado, three-fourths of an inch long and many-flowered, with several approximated whorls; but often only 4-8-flowered. Berries globose, apparently reddish, about two lines in diameter. Perianth 3-4-lobed. Anthers oblong, 2-celled, adnate by the middle to the calyx; the cells opening longitudinally on their face the whole length of the anther. This species differs in the structure of the anthers from the character of *Phoradendron* as given by Nuttall and Engelman. When dry, the whole plant is of a grayish-brown color.

PHORADENDRON JUNIPERINUM, *Engelm. l. c.* On Williams' River; also in the Desert, 50 miles west of the Colorado. It grows on different species of *Juniperus*. Only fruiting specimens were found. This is a common species in New Mexico, but we have never seen the male flowers.

ARCUTHORIUM CRYPTOPODUM, *Engelm. in Gray, Pl. Lindh.* 2, p. 214. On *Pinus brachyptera*. Sierra Madre and Leroux's Spring, near San Francisco mountain, Western New Mexico. Our



specimens are all female, and mostly in fruit. The plant is of a light-brown when dry. Dr. Engelmann (l. c.) was inclined to refer *A. Oxycedri* of Hooker's Fl. Bor.-Amer. to this species, but seeing that plant in my herbarium, he thought it was probably *A. Americana*, Nutt.

*ARCEUTHOBium OXYCEDRI*, *M. Bieb.?* *A. campylopodum*, var. *macrathron*, *Engelm. l. c.?* On Libocedrus decurrens, Duffield's Ranch, California. The female plant only. A foot long, and of a dark-brown when dry. Stems stout; the branches long and slender, somewhat quadrangular above; the length of the joints 2-3 times more than the diameter. Female flowers mostly 3-cleft. From the Rev. A. Fitch we have specimens of what is undoubtedly Engelmann's plant, collected on a Pinus between Stockton and Stanislaus. It is much smaller than the specimens from Duffield's Ranch, and the color is light-brown.

## SAURURACEÆ.

*ANEMOPSIS CALIFORNICA*, *Nutt. in Tayl. Ann. Nat. Hist.* 1, p. 136; *Hook. & Arn. Bot. Beech.* p. 390 t. 92. Wet places on the Rio Grande, near Albuquerque; October.

## CALITRICHACEÆ.

*CALITRICHÆ VERNÆ*, *Linna. Sp.* 1, p. 6; *Torr. Fl. N. York*, 2, p. 170, var. *vulgaris*, *DC. Prodr.* 3, p. 70. In water, near Tamul Pass, California; April 11. Styles twice as long as the fruit.

*CALITRICHÆ MARGINATA* n. sp.: fructibus longepedunculatis; carpellis parallelis dorso alato-membranaceis; foliis lineari-spathulatis trinerviis. Muddy places along Mark West's creek, California; April 30. Upper California; *Rev. A. Fitch*, (locality not recorded.) Stem slender, branching, rooting in the mud. Leaves about one-third of an inch long, distinctly 3-nerved. Styles at first spreading, but finally reflexed over the fruit. Peduncles about two-thirds as long as the leaves, spreading or reflexed. Carpels strongly margined, or with a narrow wing on the back from the base to the summit. A well characterized species, resembling *C. Nuttallii*; *nob.* (*C. pedunculosa*, *Nutt. in Trans. Amer. Phil. Soc. n. ser.* 5, p. 140; not of Arnott, nor *C. pedunculata DC.*), but differs in the winged fruit. In *C. Nuttallii* the leaves are very obscurely 3-nerved, not veinless, as they are described.

## DATISACEÆ.

*TRICERASTES GLOMERATA*, *Presl, Rel. Hank.* 2, p. 88, t. 64; *Benth. Pl. Hartw.* p. 335, No. 1951. Mokelumne Hill, and sides of rivulets, Sonora, California; May. Our observations on the male flowers of this genus agree with those of Bentham l. c. We have not seen the hermaphrodite flowers which he describes.

## EUPHORBIACEÆ.

*EUPHORBIA LEPTOCERA*, *Engelm. Mss. in herb. Torr.* Prairies of Grass Valley, California; May 20, (fl. and fr.) We regret having mislaid Dr. Engelmann's description of this species. It will, however, be contained in his Monograph of North American Euphorbia, which will be published in a few months. The plant has a strong resemblance to *E. Peplus*, but is more nearly allied to *E. commutata*, *Engelm.*, (in *Gray's Manal.* ed. 2, p. 389,) from which, indeed, it is difficult to distinguish it.

*EUPHORBIA MELANADENIA* (sp. nov.): caule procumbente ramosissimo herbaceo; foliis breviter petiolatis suborbiculatis inequaliter cordatis crassiusculis integerrimis dense cano-pubescentibus; stipulis minutis; involucri solitariis; glandulis involucri transverse oblongis, appendicibus petaloideis semiorbiculatis; capsulis hirsutis; seminibus lævibus opacis. Low or wet places near San Gabriel, California; March 22. Leaves 2-3 lines in diameter. Glands black in dried specimens, but perhaps very dark purple in the living plant. Capsule without tubercles. This species appears to be annual, and belongs to the group that contains *E. herniariodes*.

## GARRYACEÆ.

*GARRYA ELLIPTICA*, *Lindl. Bot. Reg. t. 1686; Hook. & Arn. Bot. Beech. p. 390.* Rocky arroyos, near White Cliff Creek, a tributary of Williams' River, New Mexico. The specimens in the collection were gathered in February, and are all female, in fruit. The leaves of the flowering specimens are smaller than the ordinary form of this species, and they are not wavy: those of sterile branches are much larger.

*GARRYA WRIGHTII* (sp. nov.): foliis elliptico-oblongis utrinque acutis mucronatis crassis planis opacis, margine muriculatis; racemis ramosis; bracteis lanceolatis basi connatis interdum foliaceis et vix connatis; floribus in quisque bractea solitariis masculis pedicellatis, femineis sessilibus. On rocks, base of San Francisco Mountain, New Mexico. This species is common at the Copper Mines, New Mexico, and is the same as No. 634 of Mr. Wright's collection of 1849, and No. 1789 of the collection made in 1851-'52. It is nearly allied to *G. laurifolia*, *Benth. Pl. Hartw. No. 81 and 384*; but that has rather obtuse and larger leaves, which are of a thinner texture and without the thickened muriculate margin. Endlicher (*Gen. Suppl. I, No. 1900*) has proposed to separate *G. Fadyenii*, *Hook. Ic. t. 333*, a native of Jamaica, as a genus, under the name of *Fadyenia*, on account of the sepals cohering at the tip in the male flower, the absence of a free portion of the perianth in the female, and the short thick recurved styles. In his *Suppl. IV, No. 1899*, he has added four other species from Mexico to this genus. In *G. elliptica*, however, (the original species,) the sepals cohere at the tip as much as they do in *G. Fadyenii*, nor have we detected in the pistillate flower of the former, the two teeth or free portion of the calyx described by Lindley; and the styles are more or less recurved in all the species. The genus *Fadyenia* is, therefore, without a distinctive character. *G. Wrightii* is easily distinguished by the roughish, slightly muriculate margin of the leaves. It is a shrub about three feet high. The leaves are  $1\frac{1}{2}$ -2 inches long, and from three-fourths to nearly an inch wide, with a strongly mucronate tip.

Colonel Frémont found on the Upper Sacramento, "above the Great Cañon," in 1846, a *Garrya* nearly allied to this species. It may be thus characterized:

*GARRYA FREMONTII*: foliis lato-ellipticis utrinque acutis vix mucronatis planis glabris supra nitidis margine integerrimis; racemis (♂) ramosis; bracteis ovatis acuminatis supra medium connatis, inferioribus 3-floris; floribus pedicellatis. A shrub about four feet high. Only the male plant was found. The leaves are broader than in *G. Wrightii*, and are only slightly hairy in the youngest state. The spikes are 2-4 inches long, and seem to be pendulous. The bracts, by their union, form bidentate cups, which, on the lower part of the spike, and frequently throughout, are 6-flowered, (three flowers on each side.) This seems to be the normal inflorescence of the genus, for in *G. elliptica*, and often in *G. Wrightii*, besides the primary flower in each bract, there are two small rudimentary ones.

Another apparently undescribed species of this genus is No. 633 of Wright's Western Texas and New Mexican Collection, (1849.) It is also in the earlier collection of Lindheimer. We have only the male plant. The leaves (including the petioles) are  $2\frac{1}{4}$ -3 inches in length, oblong and obovate, obtuse, slightly mucronate, nearly glabrous and somewhat shining above, pubescent underneath, smooth and even on the margin; spikes shorter than the leaves, bracts lanceolate or ovate, flowers on short pedicels. Lindheimer and Wright seem to be the only botanists who have collected it. We propose for it the name of *G. Lindheimeri*.

## PLATANACEÆ.

*PLATANUS RACEMOSA*, *Nutt. in Audubon's Birds t. 362, and North Amer. Sylv. 1 p. 47, t. 15.* *P. Mexicana*, *Moric. Pl. Nov. ou rar. d' Amer. t. 26.* *P. Californica*, *Benth. Bot. Sulph. p. 54, and Pl. Hartw. p. 336.* Arroyos and plains, near San Gabriel; March 23, (in flower, with

balls of ripe fruit of the preceding year.) This species resembles *P. orientalis* much more than *P. occidentalis*.

## BETULACEÆ.

*ALNUS VIRIDIS*, *DC. Fl. Franc.* 3 p. 304? Cajon Pass and Creek, California. The specimens are in very young leaf, with old female aments of the past season. The latter are oblong-ovate, and the fruit is narrowly winged. The leaves are glutinous, acute at the base, and doubly serrate. There are needed specimens in a more mature state in order to be certain of the species.

## MYRICACEÆ.

*MYRICA CALIFORNICA*, *Cham. & Schlecht. in Linnaea* 6, p. 535; *Hook. Fl. Bor.-Am.* 2, p. 260; *Hook. & Arn. Bot. Beech.* p. 390. Near San Francisco; April 3, (only the male plant); near Monterey, *Mr. Rich*, (in fruit.) Hooker and Arnott are inclined to refer the plant to *M. Xalapensis*, *H. B. K.*

## CUPULIFERÆ.

*CASTANEA CHRYSOPHYLLA*, *Dougl. in Hook. Fl. Bor.-Amer.* 2 p. 159; *Hook. Lond. Jour. Bot.* 1843, t. 16. Gravelly hills near Oakland, California. The plants found by Dr. Bigelow were only from 2-3 feet high, and yet they bore fruit. In Oregon, where it abounds on the Columbia, it is a large tree, sometimes growing 70 feet high. Dr. Parry and Mr. Rich found it at Monterey. It is a beautiful species, and well deserves cultivation. Nuttall, in his *North American Sylva*, asks whether this tree and *Quercus densifolia*, *Hook.*, may not be the same. The *Castanea* had not been figured when the *Sylva* of Mr. Nuttall was published, nor had he seen specimens of the plant.

*QUERCUS ECHINACEA*, *Torr. in Pl. of U. S. Expl. Exped. (ined.)*: foliis perennantibus lanceolato-oblongis integerrimis vel serrato-dentatis, junioribus subtus cinereo-tomentosis demum glabratis; amentis masculis elongatis densifloris; fructibus sessilibus; cupula hemispherica, squamis filiformibus densis patulis vel reflexis apice plerumque uncinatis; glande brevi ovata. Tokeloma Creek, California; April 17; fruit of the preceding season was collected on the ground. This fine oak was first discovered by Mr. Brackenridge, on the upper waters of the Sacramento Creek, while attached to the United States Exploring Expedition. It was found also by Dr. Parry, botanist of the Mexican Boundary Survey, while under command of Major Emory. We have also received specimens of it from Mr. Burke, and the acorns from Dr. Andrews. It is a near ally of *Q. densiflora*, *Hook. & Arn.*, which is also a native of California, but is easily distinguished from that species by the remarkable scales of the cup. The leaves are exceedingly variable, for although they are usually more or less lanceolate-oblong, sometimes they are obovate. They are commonly obtuse, but occasionally quite acute, even on the same tree. In the specimens collected by Dr. Bigelow and by Mr. Burke, the leaves are 4-5 inches long, and sharply toothed, as in the chestnut. In those obtained by Mr. Brackenridge they are perfectly entire, except a few of them which are obscurely repand-dentate. The male aments are in clusters, about 4 inches long and about 3 lines in diameter; at their base are a few female flowers. The acorns are 2 or 3 together; the cup is an inch in diameter and thickly covered with rigid subulate or filiform scales, which are at length reflexed or recurved. The acorns are short and thick, about three-fourths of an inch long, obtuse, with a short abrupt point, and of a light-brown color. In the mountains this oak attains the height of 25 or 30 feet, with a trunk six inches in diameter.

*QUERCUS CRASSIFOCULA*, *Torr. in Williamson's Rep. cum tab.* Cajon Pass, Sierra Nevada. The specimens are not in fruit. According to Dr. Bigelow's notes, this species, in favorable situations, becomes a tree 40 feet high, but in poor soils it is a mere bush. In the former the leaves are toothed; in the dwarf plants they are entire.

*QUERCUS DENSIFLORA*, Hook. & Arn. *Bot. Beech.* p. 391; *Hook. Ic.* 4, t. 380; *Nutt. Sylv.* 1, p. 11, t. 5. Hill-sides on the Yuba, near Downieville, California. There are no acorns, and only old decayed cups of the preceding season, which show the characters very imperfectly. We are not certain but our specimens may belong to a form of the preceding species.

*QUERCUS EMORYI*, Torr. in *Emory's Rep.* 1 p. t. 9. San Francisco Mountain, and Aztec Pass, New Mexico. A species of *Phoradendron* frequently grows on this oak.

*QUERCUS AGRIFOLIA*, Née. in *Ann. Sc. Nat.* 3, p. 271; *Hook. Ic.* 3, t. 377; *Nutt. Sylv.* 1 p. 5, t. 2. Corte Madera, and Laguna of Santa Rosa Creek, California; April, May; with male catkins and old acorns. This is a dwarf species in most situations; often loaded with fruit when only 2 or 3 feet high. Sometimes, however, it becomes a tree 40-50 feet high, with a trunk of a foot or more in diameter. It varies greatly in the size, form, and dentures of the leaves, as well as in the size and shape of the acorns. *Q. oxyadenia*, Torr. in *Sitgreaves' Rep.* t. 17, is this species with the acorns fully developed.

*QUERCUS TINCTORIA*, *Bartram. Trav.* p. 37; *Michx. f. Sylv.* 1, t. 24, var. *Californica*: sinibus folii angustioribus, fructibus majoribus, cupula squamis triangulari-ovatis acutioribus. Hill-sides, Napa Valley. This is a common tree in California. It occurs throughout the valley of the Sacramento, and as far south as San Diego. We have not been able to point out characters sufficient to distinguish it specifically from the *Q. tinctoria* of the Atlantic States, and yet it is probably a distinct species. The qualities of the bark we had no means of determining. It presents some diversity in the size and lobes of the leaf; but the acorns vary more than in the eastern oak. They are generally larger, and the glands are sometimes more than two-thirds immersed in the cup, with the upper scales elongated; but more commonly the cup is much more shallow and the scales more nearly uniform in size. The largest acorns are an inch and a quarter long.

*QUERCUS GARRYANA*, Hook. *Fl. Bor.-Amer.* 2, p. 159; *Hook. & Arn. Bot. Beech.* p. 391; *Nutt. Sylv.* 1, p. 1, t. 1. Santa Rosa Creek, California. Dr. Bigelow found it growing only about 30 feet high; but in Oregon Mr. Nuttall saw trees of this species 90-100 feet in height, with a diameter of from 3 to 6 feet. It belongs to the section of the genus that includes the White Oak.

*QUERCUS HINDSII*, *Benth. Bot. Sulph.* p. 55; *Torr. Bot. of Calif. & Oregon, U. S. Expl. Exped. cum icon.* (ined.) *Q. longiglanda*, Torr. in *Frémont's Geogr. Mem. of Calif.* Plains near Marysville, Feather River, California. Common in the valley of the Sacramento. Dr. Parry found it as far south as Monterey. It is a tall tree with a trunk 3 feet in diameter, and is remarkable for the usually great length of its acorns. These are sometimes even two inches long, and either tapering to a point, or rather obtuse at the summit. Rarely they are somewhat curved. On some trees they are ovate. The cup is tuberculate with the thickened scales.

### SALICACEÆ.

*SALIX HINDSIANA*, *Benth. Pl. Hartw.* p. 336, No. 1956. Swamps and river banks, Mark West's Creek; April 30, (male); also valleys and ravines near Butte Mountains, Marysville, California; May 25, (in fruit.) Branches very slender, pale-brown, dull. Leaves about an inch and a half long and 2-3 lines wide, thinly pubescent, at first hoary, but when mature pale-green on both sides, very acute at each end. Aments appearing with the leaves, pedunculate, terminating the short lateral branchlets, about an inch long; the male often 2-3 together. Filaments hairy below the middle. Capsules sessile, pubescent, abruptly narrowed to a long beak; style short, but distinct; stigmas with 2 linear lobes. This species is allied to *S. exigua*. *Nutt. Sylv.* 1, p. 75, but the leaves are narrower, perfectly entire, and not silky; the fertile aments shorter, etc. It also resembles No. 1873, Wright, but that has glabrous fruit, bright reddish-brown branchlets, paler leaves, etc.

*SALIX LASIANDRA*, *Benth. l. c.* No. 1954. Near Bolinas Bay, California; April, in fruit. The

fertile aments only were collected by Dr. Bigelow, while Mr. Bentham describes only the male flowers. There can be little doubt that our plant is the same as his. The fertile aments appear after the leaves are nearly unfolded, and are produced at the extremity of short lateral branches. They are cylindrical, and about two inches long. The capsules are smooth and distinctly pedicellate. Style short, but evident. Stigmas 2-lobed. Leaves  $2\frac{1}{2}$  inches long and 6-8 lines wide, distinctly serrulate. There are in Dr. Bigelow's collection more advanced specimens of what appears to be only *S. lasiandra*. The leaves are fertile, aments are larger, but in other respects there is little difference.

*SALIX BIGELOVII* (sp. nov.): foliis obovatis vel cuneato-oblongis obtusissimis integerrimis subtus griseo-pubescentibus supra glabratis nitidulis; amentis (femineis) brevi pedunculatis cylindricis elongatis crassis, basi bracteosis; ovariis pedicellatis acutiusculis glabris; stylo elongato; stigmatibus brevibus bilobis; squamis persistentibus villosis. Near San Francisco; April 8, (with immature fruit.) Twigs rather stout, slightly pubescent, dark-brown, and dull. Leaves  $1\frac{1}{2}$ -2 inches long, and  $\frac{1}{2}$  to  $\frac{3}{4}$  of an inch broad, on short petioles of a firm but not coriaceous texture. Female catkins nearly two inches long, and more than one-third of an inch in diameter; the peduncle 3-4 lines long; the small leafy bracts at base deciduous. Ovary ovate, supported on a distinct pedicel. Scale about one-fourth the length of the ovary, dark-brown, but the color is concealed by the strong villous pubescence. We know not what else to do with this well characterized willow but to describe it as a new species. It does not appear to have been noticed by any writer on the plants of California and Oregon. The species to which it seems nearest allied is *S. planifolia* of Hooker. The male flowers were not found. In the collection of Dr. Bigelow was a *Salix* with female catkins only, which is perhaps the same species as the one just described, but in a younger state. The leaves are silky-pubescent underneath, and slightly pointed.

Two or three other *Salices* were collected in California, but we are unwilling to decide on them without a more extensive study of all the allied species than we can give them at present.

#### URTICACEÆ.

*URTICA URENS*, *Linn. Sp. 2. p. 284; Torr. Fl. N. York. 2. p. 222.* Plains near San Gabriel; March 23. Probably introduced from Europe.

#### HESPEROCNIDE, Nov. Gen.

*FLORES MONOICI. Masc.* Calyx 4-partitum; foliolis equalibus concavis patentibus. Stamina 4. Ovarii rudimentum. *Fem.* Perigonium oblongo-ovatum, ventricosum; ore minuto bidentato; Ovarium liberum, ovatum, sessile; stigma sessile, pencillatum. Achenium lato, ovatum lenticulari-compressum, calyce membranaceo immutato tectum. Herba annua Californica; pilis urentibus; foliis oppositis ovatis petiolatis dentatis; floribus laxe glomeratis axillaribus, masculi et feminei in eisdem glomerulis.

*HESPEROCNIDE TENELLA.*—Shady rocks, Napa Valley, California; April 25. Stem slender, 3-8 inches high, simple, armed with scattered conspicuous stinging hairs. Leaves broadly ovate, 5-8 lines in diameter; obtuse, serrate-dentate, beset with a few stinging hairs on both sides, and finely ciliate on the margin; petiole about one-third the length of the lamina. Axillary glomerules 15-20-flowered, on short pedicels, mostly female, there being usually only one or two males in a cluster. *Male.* Calyx deeply 4-parted; the segments concave and somewhat saccate at the summit. Stamens nearly twice as long as the calyx. In the centre of the flower is the rudiment of an ovary. Female flowers articulated to a short stalk. Calyx clothed with short uncinatè hairs, acute, the orifice minute, bidentate. Ovary loosely but completely enclosed in the calyx. Stigma terminal, nearly sessile, consisting of a tuft of short-jointed hairs. Achenium enclosed in the thin membranaceous calyx, orbicular-ovate, acute, somewhat coriaceous, brownish. Embryo in thin albumen; cotyledons transversely reniform-orbicular; radicle

cylindrical rather shorter than the cotyledons. This little urticaceous plant seems to have been overlooked hitherto. It resembles *Boehmeria*, but differs in the inflorescence, pencilliform stigma, and in some other characters. It is still more nearly related to the East Indian genus *Pouzolzia*, which differs in the "stigma elongatum," and in the fructiferous calyx being "accretum vel 2-4-alatum." The habit is also different: *Pouzolzia* consisting of perennial shrubs, or under shrubs, with entire leaves.

## CONIFERÆ.

*EPHEDRA ANTISIPHILITICA*, *Berland.*; *Endl. Syn. Conif.* p. 263. On hills between the Canadian and the Pecos, also along Williams' Fork, (not in flower.)

*TAXUS BREVIFOLIA*, *Nutt. Sylv.* 3. p. 86, t. 108. *T. baccata*, *Hook. Fl. Bor.-Am.* 2, p. 167, (ex parte.) *T. Lindleyana*, *Murray in Edinb. Phil. Mag.* April, 1855. Mammoth Grove, and hill-sides near Downieville; May. A small tree in California, but in Oregon it sometimes occurs 60 feet high, with a trunk 2 or 3 feet in diameter. We follow Mr. Nuttall in separating the Yew of the Northwest coast from the *Taxus baccata* of Europe. We have not, however, found the differences pointed out by Mr. Nuttall to be constant. The leaves are not always shorter than in the European species, and in *T. Canadensis*; nor are they flatter than in the other species, and the male aments, when fully grown, are quite as large as in the Canadian Yew. The chief character in which *T. brevifolia* differs from *T. baccata* is the cuspidate leaves of the former. From *T. Canadensis* it is distinguished by its upright stem.

*TORREYA CALIFORNICA*, *Torr. in New York Jour. Pharm.* 3, p. 49. *T. Myristica*, *Hook. Bot. Mag.* t. 4780. Tokeloma Creek, near Tomales Bay; April 17, (male flower.) This is the famous *California Nutmeg*. It was first made known to North American botanists by the late Mr. Shelton, who travelled extensively in California. For a description of the plant, we refer to the works here quoted, and to Dr. Bigelow's report on the trees collected on the expedition.\*

*SEQUIA SEMPERVIRENS*, *Endl. Syn. Conif.* p. 198. *Taxodium sempervirens*, *Lamb. Pin.* (ed. 2,) 2, t. 64; *Gray, in Sil. Jour.* (2d ser.) 18, p. 150. Mountains near Oakland. The popular name of this tree in California is Redwood. Dr. Bigelow has given some interesting details respecting it in his special report.

*SEQUIA GIGANTEA*, *Torr. in Sil. Jour.* l. c. *Wellingtonia gigantea*, *Lindl. Gardner's Chronicle*, Dec. 1853, p. 820 and 823; *Hook. Bot. Mag.* t. 4777 and 4778. A full account of this monarch of the Californian forest will be found in Dr. Bigelow's report, and in the Botanical Magazine, l. c. We have shown that in this tree, as well as in *S. sempervirens*, the leaves are dimorphous, as they are in many species of *Juniperus*. We have proved, also, that there is no generic difference between the two trees. The male aments of *S. gigantea*, which were not known to Lindley and Hooker, prove to be in all respects like those of *S. sempervirens*. *S. gigantea*, of Endlicher, (l. c.,) which is founded on *Taxodium sempervirens*, *Hook. & Arn. Bot. Beech. & Hook. Ic.* t. 379, (not of Humboldt,) has been ascertained by Hooker to be a species of *Abies*, (*A. bracteata*, *Bot. Mag.* t. 4640.)

*LIBOCEDRUS DECATRANS*, *Torr. in Smithson. Contrib.* 6. p. 7. t. 3. Hills, Duffield's Ranch, Sierra Nevada. Called *White Cedar* in California. It is in Hartweg's California Collection. Dr. Bigelow, in his report, states that the fruit is pendulous, and is incorrectly represented as erect in the plate just quoted; but in most of his own specimens the cones are erect.

*PINUS EDULIS*, *Engelm. in Wislitz. Rep.* p. 88; *Torr. in Sitgr. Rep.* p. 173, t. 20. Rocky places on the Llano Estacado; also near Hurrah Creek, New Mexico; September 20; with ripe seeds. Near Bill Williams' Mountain; January 5. A tree 40-50 feet high, called *Piñon* by the Mexicans, and *Nut Pine* by American travellers. It is found from 150 miles east of the Rio Grande to the Cajon Pass of the Sierra Nevada. How far it occurs to the southward we have

\*Dr. Kellogg, of San Francisco, says that it sometimes attains the height of eighty feet, with a trunk 12-15 inches in diameter.

not been able to ascertain. In Mexico its place seems to be taken by *Pinus Cembroides*, Zucc., which has been found by Dr. Parry on the mountains east of San Diego, in California.

*PINUS LAMBERTIANA*, Dougl.; Lamb. *Pin. ed.* 2, 1, p. 57, t. 34; *Endl. Syn. Conif.* p. 150; *Nutt. Sylv.* 3, p. 122, t. 114. On the eastern slope of the Sierra Nevada. A stately and beautiful tree, not excelled by any in California for its timber. A sweet substance, intermediate between resin and sugar, exudes from it when wounded and partially burned, so that it is generally known in California by the name of *Sugar Pine*.

*PINUS ENGELMANNI*. P. BRACHYPTERA, *Engelm. in Wislitz. Rep.* p. 89. Hill-sides, Sonora, California. Dr. Bigelow states that this valuable pine makes its first appearance in the mountains between the Pecos and the Rio Grande, and occurs in large quantities on the mountain ranges quite to the Sierra Nevada. See his report. It is called Yellow Pine and Pitch Pine in some parts of New Mexico. We have changed the specific name, because the wing of the seed is not short; Dr. Engelmann himself having ascertained that the specimens from which his description was drawn were not perfect. In our plant the wing is nearly an inch long. The leaves are sometimes nearly six inches in length.

*PINUS FLEXILIS*, James, in *Long's Exped.* 2, p. 27 & 35; *Torr. in Ann. Lyc. N. Hist. N. York.* 2, p. 249; *Nutt. Sylv.* 3, p. 107, t. 112. *P. Lambertiana*,  $\beta$ . *Hook. Fl. Bor.-Amer.* 2, p. 162, (ex. Nutt.) Sandia Mountains of New Mexico, "12,000 feet above the level of the sea," and on the San Francisco Mountain, in the western part of the same Territory. It is called *Rocky Mountain White Pine*. The ordinary height of the tree is from 40-50 feet, but Dr. Bigelow saw trunks of it that were more than 100 feet high. The seeds are edible like those of *P. Cembra*, which this species greatly resembles.

*PINUS INSIGNIS*, Dougl. in *Loud. Arb.* 4, p. 2265, t. 2170-2172. Mountains near Oakland; also on the south Yuba and on the Coast mountains, California. The cones, when fully grown, are about six inches long. They are usually gibbous and a little curved; the points of the scales much more developed on the gibbous side. The ordinary height of the tree is from 30-40 feet. This may be the same as the imperfectly described *P. Californica*, Lois.

*PINUS SABINIANA*, Dougl. in *Lamb. Pin. (ed. 2)*, 2, p. 146, t. 80; *Loud. Arb.* 4, p. 2246, f. 2138-40, 2142 & 2143; *Nutt. Sylv.* 3, p. 110, t. 103. Duffield's Ranch, etc., at the base of the Sierra Nevada. One of the species called *White Pine* in California. It is remarkable for its very large, heavy cones, the scales of which are produced into a long stout incurved point. See Dr. Bigelow's Report.

*PINUS CONTORTA*, Dougl. in *Loud. Encl. of Trees*, p. 975, f. 9148 & 915; *Endl. Syn. Conif.* p. 163. Near Sonora, California. Leaves about 2½ inches long. Cones scarcely 2 inches in length, ovate when closed, but nearly globose when expanded. Its range extends northward to Cape Disappointment.

*ABIES DOUGLASSI*, Lindl. in *Penny Cyclop.* 1, p. 32; *Loud. Arb.* 4, p. 2319, f. 2230; *Nutt. Sylv.* 3, p. 129, t. 115; *Hook. Fl. Bor.-Amer.* 2, p. 162, t. 183. From the Sandia Mountains, between the Pecos and Rio Grande, to the coast range of California, on most of the higher mountains. It extends also north to Oregon. Its common name is *Douglas' Spruce*. See Dr. Bigelow's Report.

*ABIES BALSAMEA*, Mill.? *Pinus balsamea*, Linn.? Sandia and San Francisco Mountains; also on the Sierra Nevada. We name this tree on the authority of Dr. Bigelow, who says (in his report) that it is identical with the eastern species; but the leaves are considerably longer. No good cones came with the specimens.

*JUNIPERUS TETRAGONA*, Schlecht. in *Linnaea*, 13, p. 495? *Torr. in Sitgreaves' Rep.* p. 173, var. *OSTOSPERMA*, near Bill Williams' Mountain, and on hills fifty miles west of the Colorado of California. This is the smooth-barked *Juniperus* of Sitgreaves' Report that was supposed might be *J. tetragona*, Schlecht. The short description given of that species by Schlechtendahl leaves us in doubt as to its identity with ours. The berries (not quite ripe) are said to be 3-4 lines in diameter, while in our plant they are nearly half an inch. Neither are the fructiferous

branchlets nodding as in that species. Indians are said to use the berries as food. Travellers call this and the following species *Sweet-berried Cedar*. The seeds are as large as a small pea, and the shell is very thick and hard. The branchlets are about a line and a half in diameter. Leaves nearly as broad as long, very closely appressed, (there are no acicular ones in any of our specimens), obtuse, or sometimes rather acute, convex and marked with a depressed gland.

*JUNIPERUS PACHYPHLEA* (n. sp.): arborea; foliis omnibus squamiformibus ovatis incrassatogibbis acutiusculis, dorso glandula elliptica impressa; ramulis obtuse quadrangulatis, fructiferis erectis galbulos globosos minute tuberculatos trispermos brevioribus. *Juniperus* No. 1, *Torr. in Sitgreaves' Report*, p. 173. On the Zuñi Mountains, Western New Mexico. This is the thick-barked *Juniperus* of Captain Sitgreaves. It seems to be undescribed, and is distinguished from the preceding species by the character of the bark, and by the berries (which are also very large and sweet) being 3-seeded. From the gland of each leaf a little drop of turpentine exudes. It is possible this may be *J. Mexicana*, *Schlecht.*, which has berries half an inch in diameter; but in that species the leaves are acuminate, and the berries conspicuously tuberculate, especially at the apex.

*JUNIPERUS OCCIDENTALIS*, *Hook. Fl. Bor.-Amer.* 2, p. 166. *J. Andina*, *Nutt. Sylv.* 3, p. 95, t. 110. Common on the mountains of New Mexico, in various places along the route as far as the Zuñi mountains. The glands are very obscure in the young leaves, but are plainly to be seen in the older ones. The berries are larger and the branchlets much stouter than in *J. Virginiana*.

*JUNIPERUS VIRGINIANA*, *Linn. Spec.* p. 1471; *Michx. Sylv.* 2, p. 353, t. 155. Near Zuñi, Western New Mexico. Resembles the eastern plant, except that the leaves are all scale-like, and the berries are a little larger.

#### LEMNACEÆ.

*LEMNA TRISULCA*, *Linn. Spec.* 1, p. 1376; *Kunth, Enum.* 3, p. 5. Stagnant waters, near San Francisco; mixed with *Azolla Caroliniana*; also on San Gabriel creek, California. We have never seen North American specimens of this species in flower or fruit.

*LEMNA MINOR*, *Linn. l. c.*; *Kunth, l. c.* On the surface of running water; Williams' Fork of the Colorado of California; not in flower.

#### TYPHACEÆ.

*TYPHA LATIFOLIA*, *Linn.* Wet places, near Shawneetown, on the Canadian; August; in fruit.

#### NAIADACEÆ.

*POTAMOGETON HYBRIDUS*, *Michx. Fl.* 1, p. 101. In tributaries of the Canadian River; August; with mature fruit. Easily distinguished by its cristate spiral fruit.

*POTAMOGETON PECTINATUS*, *Linn.*; *Torr. Fl. N. York*, 2, p. 257. With the preceding. Nutlets obovate; the pericarp very thick, with a small lunate cavity.

#### JUNCAGINEÆ.

*TRIGLOCHIN MARITIMUM*, *Linn.*; *Torr. Fl. N. York*, 2, p. 261; *Kunth, Enum.* 3, p. 145. Low places in reach of the tide; San Francisco and Corte Madera, April. The fruit, in some of the species, agrees very well with Nuttall's *T. elatum*, which we fear is not distinct from this species.

#### ALISMACEÆ.

*DAMASONIUM CALIFORNICUM*, *Torr. in Benth. Pl. Hartw.* p. 341.\* foliis oblongis seu lanceolatis basi cordatis obtusisve 3-5-nerviis; petals apice incis; scapis adscendentibus; verti-

\* We much regret not having received the portion of Bentham's *Plantæ Hartwegianæ* that contains most of the Endogens.



cillis 6-9-floris; staminibus 6; carpellis 8-10 uniovulatis basi gibbosis abrupte longirostratis. (Tab. XXI. In water, near Ione Valley, California; May, (in flower and fruit.) Tuber subglobose. Leaves all radical, on elongated petioles; the lamina 2-3 inches long, and often nearly an inch wide. On young plants the leaves are much smaller, and sometimes not more than 2-4 lines wide. Scapes 12-18 inches high, usually several from one root; whorls (3-4) distant; the longer pedicels 1-2 inches in length. Flowers nearly twice as large as in *A. Plantago*, white. Sepals oblong, obtuse. Stamens shorter than the sepals; anthers oblong; filaments subulate from a somewhat dilated base. Ovaries usually 8-9, connected at the base, with a tapering straight style; each with a solitary ascending anatropous ovule arising from near the base of the cell. Carpels 4-5 lines long, much compressed, abruptly narrowed to a long rigid beak, always one-seeded. This species greatly resembles *Damasonium stellatum*, *Dalech.* of Europe, but that differs in the entire petals, and in the carpels being almost uniformly six, with the beak gradually narrowed from a broad base. It is a little remarkable to find a representative of the genus or subgenus *Damasonium* in the Western Hemisphere.

*ECHINODORUS ROSTRATUS*, *Engelm. in Gray, Man. Bot. ed. 2, p. 439.* *Alisma rostrata*; *Nutt. in Trans. Amer. Phil. Soc. (n. ser.) 5, p. 159.* On Mohave creek, California. The seeds of this plant are collected by the Mohave Indians, and used as food. The species is widely diffused. We have it from Key West, Florida, (*Mr. Blodgett*); Georgia, (*Dr. Leavenworth*); St. Louis, (*Dr. Engelmann*); and Texas, (*Drummond, Coll. 2, No. 432*); the last a form with narrower leaves, which are not cordate at the base.

*SAGITTARIA SIMPLEX*, *Pursh, Fl. 2, p. 397; Engelm. in Gray, Man. Bot. ed. 2, p. 439.* In water, near the Shawnee villages, on the Canadian River. August. Plant larger than usual; the blade of the leaves being 5-6 inches long, an inch or more in breadth, and the scape a foot high. Flowers not much larger than in *Alisma Plantago*.

## JUNCACEÆ.

*LUZULA CAMPESTRIS*, *DC. L. campestris*, var. *J. E. Meyer, in Linnaea, 22, p. 407.* Near San Francisco, April. Stem  $1\frac{1}{2}$ -2 feet long. Leaves 3-4 lines wide. Flowers in sessile clusters, forming a compact ovate head. *L. comosa* of *E. Meyer*, if we may judge from specimens of *Scouler* and others referred to that species by *Hooker* and by *Meyer* himself, is hardly to be distinguished from *L. campestris*.

*JUNCUS BUFONIUS*, *Linn. Sp. p. 466; Torr. Fl. N. York, 2, p. 329.* Damp places, Los Angeles, etc., California; May. Wholly like the eastern plant.

*JUNCUS XIPHOIDES*, *C. A. Mey. in Reliq. Hawk. 2, p. 143, ex Kunth, Enum. 3, p. 331; Hook. & Arn. Bot. Beech. p. 161.* Low grounds, Napa Valley, California, April.

## IRIDACEÆ.

*SISSYRINCHIUM BERMUDIANA*, *Linn. Sp. 2, p. 954; Torr. Fl. N. York, 2, p. 291, var. 1 & 2.* Plains, near San Gabriel, California; March 23; mostly the var. *MUCRONATUM*, and with flowers larger than in the eastern plant.

*SISSYRINCHIUM LINEATUM* (*Torr. in Emory's Rep. Mex. Bound. ined.*): scapo late alato erecto simplici basi foliato; foliis linearibus gramineis; spatha triflora valde inæquali, folio exteriori flores longe superante; perianthio luteo lato-campanulato, phyllis obtusis, exterioribus 7-nerviis, interioribus 5-nerviis; filamentis brevibus glabris; capsula ovato-pyriforme. Punta de los Reyes, California; April 18. This species was first detected by *Dr. Parry*, who found it near San Diego. The flowers are one-third-larger than in *S. Bermudiana*. Another yellow-flowered *Sisyrinchium* occurs in New Mexico.

*IRIS LONGIPETALA*, *Herb. in Hook. & Arn. Bot. Beech. p. 395.* Grass Valley, and near San Francisco; May 19. Flowers as large as in *I. versicolor*.

*IRIS DOUGLASSIANA*, *Herb. l. c.* Hill-sides, Grass Valley, California; May 19. The tube of the perianth is longer than in our original Douglasian specimens of this plant.

Var. ? MAJOR: floribus majoribus; pedicellis elongatis (fere unc. longis). Corte Madera, California; April 10.

*IRIS MISSOURIENSIS*, *Nutt. Jour. Acad. Phil.* 7, p. 58? Sandia Mountains, New Mexico; October. In fruit only. Leaves rather rigid, 4-5 lines wide. Scape 1-2-flowered. Capsules 1-1½ inch long, obtusely triangled, abruptly contracted at the base; statutes slightly prominent. Seeds obovate, somewhat compressed, reddish brown. Rhizoma thick and creeping, clothed with strong brownish lanceolate scales.

*IRIS MACROSPHON* (sp. nov.): pumila; subcaulescens; rhizomate gracili; foliis angustis erectis; caule bifloro; perianthii imberbis tubo praelongo exserto; petalis apice denticulatis; ovario attenuato breviter pedunculato. Hill-sides, etc., Corte Madera, California; April 10. Leaves less than one-third of an inch wide. Stem (exclusive of the flower) 2-3 inches high, the bracts somewhat unequal. Flowers as large as in *I. versicolor*, bright purple. Tube of the perianth 2½ to 3½ inches long, very slender. Exterior sepals broadly obovate; the interior shorter.

### MELANTHACEÆ.

*PROSARTES HOOKERI*: foliis sinu profundo cordatis caulem amplectentibus; umbellis 3-4-floris; perianthio basi obtuso, phyllis lanceolatis obtusiusculis; antheris linearibus glabris; stigmatibus fere integerrimo. *Uvularia lanuginosa* β. major, *Hook. Fl. Bor.-Am.* 2, p. 174. Mountains, near Oakland, California; April 4. Very near *P. lanuginosa* of the Atlantic States, but differs in the strongly cordate and clasping leaves, more numerous-flowered umbels, and in the form of the sepals.

*PROSARTES TRACHYANDRA* (sp. nov.): foliis oblongo-ovatis basi rotundatis seu vix subcordatis arcte sessilibus, inferioribus amplexicaulibus; umbellis 2-3-floris; perianthio basi subacuto, phyllis rhomboideo-lanceolatis; antheris oblongo-linearibus hirtellis; stigmatibus integerrimo. Hill-sides, Duffield's Ranch, Sierra Nevada; May 10. This species is easily distinguished from the preceding by its scarcely cordate leaves, broader attenuate sepals, and especially by its hispid anthers. The stem is about two feet high, and dichotomously branched. The flowers are as large as in *Uvularia perfoliata*, and of a greenish white color. At the base of each sepal is a distinct nectariferous pit.

*VERATRUM VIRIDE*, *Ait. Kew. ed.* 1, 3, p. 422; *Torr. Fl. New York*, 1, p. 317. Swamps, near the South Yuba, California; May, (with unexpanded flowers); and marshes, near San Gabriel, (leaves only.)

*ANTICLEA NUTTALLII*, *Amianthum Nuttallii*, *Gray, Melanth. Revis. in Ann. Lyc. N. York*, 4, p. 123. *Amiantanthus Nuttallii*, *Kunth, Enum.* 4, p. 181. River banks, Mokelumne Hill, and Sonora, California; May, (in fruit.) This is the *Poison* or *Death Camass* of the Northwest Indians. The root is a bulb the size of a musket ball, and is covered with a blackish skin, but is white within. We find the sepals to vary in form, from very obtuse and emarginate to acute or acuminate. The gland is a small, roundish, discolored spot, without a very distinct margin.

*ANTICLEA FREMONTI*: foliis lato-linearibus planis, racemo composito interdum simplici; sepalis ovatis brevi unguiculatis acutiusculis 5-7-nerviis, glandula superne dentata, dentibus cum basis nervos incrassatos confluentibus. Mountains near Oakland, April 4, (in flower.) Also found by Mr. Rich near Monterey; and by Colonel Frémont at Santa Cruz, (flowering in February,) and on the Uinta River, Utah; June, (in fruit.) It is No. 2009 of Hartweg's Californian collection. We have specimens of it collected in California by Mr. Douglas, so that it is probably *Zygadenus chloranthus*, *Hook. & Arn. Bot. Beech.* (excl. syn.) Bulb tunicated, about as large as a pigeon's egg. The stem is from a few inches to 4 feet high, simple or paniculately branched above, the branches terminating in simple racemes. Flowers hermaphrodite, three-

fourths of an inch in diameter, the pedicels 1-2 inches long. Bracts linear-lanceolate, about half the length of the pedicels. Sepals greenish-white, narrowed into a short somewhat callous claw, from which spring 5-7 (rarely more) strong nerves. The gland is obscure, occupying the whole breadth of the base of the sepal, toothed on the upper edge, the teeth running into the thickened bases of the nerves. Stamens shorter than the sepals. Anthers roundish-kidney-form. Capsule about an inch long, almost as broad near the summit as at the base. Seeds broad and shining, compressed, variously indented, and angled. We have thrown this and the preceding species into the genus *Anticlea* of Kunth, as they are excluded from *Amianthium* by having a gland on the sepals. The character of *Anticlea* being drawn from *A. Sibirica* and *A. glauca* will require to be slightly modified to receive the species we here refer to it. *Zigadenus* will retain *Z. glaberrimus* and other species with a creeping rhizoma. *Z. elegans* of Pursh is pretty certainly *Anticlea glauca*.

#### SCOLIOPUS,\* Nov. Gen.

Flores hermaphrodite. Perianthium petaloideum 6-phyllum, patens, deciduum; foliola subaequilonga; 3 exteriora oblongo-lanceolata, multiervia; 3 interiora, angusto-linearia. Stamina 3, perianthii exterioris foliolis opposita; filamenta subulata; antheræ oblongæ, extrorsæ. Ovarium liberum, sessile, triquetrum, uniloculare; placentis 3, parietalibus. Stylus brevis, trigonus, trifidus; lobis linearis-subulatis, apice intus stigmatosis. Ovula plurima, biserialia, ascendentia, anatropa. Capsula (immatura) oblonga, subalato-triquetra, polysperma. Semina compressa, raphe valida percursa. Embryo haud visus. Herba Californica, glabra; caule spithameo e rhizomate brevi erecto vaginato apice diphylo; foliis ovalibus 7-9-nerviis membranaceis basi vaginantibus umbellam sessilem amplectentibus: pedicellis unifloris prælongis nudis flexuosis, in fructu tortuosis.

*SCOLIOPUS BIGELOWII*. (Tab. XXII.) Tamul Pass, Marin county, not far from San Francisco, on the opposite side of the bay; past flowering early in April. We have specimens in full flower, collected by Mr. Samuels, but in what part of California we have not been informed. The leaves are 6-8 inches long and 2-4 inches broad, varying from acute to rather obtuse. They are marked with from 5 to 7 primary nerves, which are narrowly winged on the under surface, and above they are sprinkled with minute purple dots. The pedicels are from 7 to 12 or more in number, 3-8 inches long, about the size of a packthread, and more or less tortuous. Dr. Bigelow informs us that they spread out and lie upon the ground after flowering. The exterior leaflets of the perianth (or rather sepals) are about 7 lines long, apparently of a dull purplish-color, and widely spreading. The inner leaflets, or petals, are scarcely half a line wide, and about the length of the sepals. Stamens one-third the length of the sepals, and inserted at their base: anthers more than a line long, manifestly extrorse. Ovary tapering upward; style 3-cleft nearly to the base; the segments subulate, recurved. Capsule (immature) about two-thirds of an inch long, acute at the base, apparently loculicidal. Ripe seeds not known. This remarkable new genus is placed at the end of *Melanthaceæ* chiefly on account of its extrorse anthers, notwithstanding its one-celled fruit and parietal placentation. The somewhat dichlamydeous flowers are suggestive of *Trilliaceæ*, but the extrorse anthers, as well as other characters, would seem to forbid its being placed in that group. In *Melanthaceæ*, however, *Tofieldia* and *Pleea* have introrse anthers. If it were not for the loculicidal placentation, (so rare a character in *Endogens*.) we might regard *Scoliopus* as intermediate between *Melanthaceæ* and *Trilliaceæ*.

#### LILIACEÆ.

*ERYTHRONIUM GRANDIFLORUM*, Pursh, *Fl.* 1, p. 231; Lindl. in *Bot. Reg. t.* 1786; Kunth, *Enum.* 4, p. 218. Hills near Forest City, California; May 21. All the specimens from this locality are one-flowered. The stigma is manifestly 3-cleft, with the segments recurved.

\* From *scolio* and *opus*, in allusion to the tortuous pedicels.

*ERYTHRONIUM GRANDIFLORUM*, var. *MULTIFLORUM*: foliis immaculatis; floribus 1-6 racemosis; sepalis lanceolatis acuminatis a basi fere reflexis; stigmatibus clavato-capitato. Hill-sides, Downieville, California; May 21. Some of the scapes, which had apparently been stung by an insect, were 10-15 flowered. Sepals bright lilac, yellow at the base on the inside.

*FRIILLARIA KAMTSCHATCENSIS*, *Fisch. in Hook. Fl. Bor.-Am. 2, p. 181, t. 193, A. F. biflora*, *Lindl. Bot. Reg. fol. 1663; Hook. & Arn. Bot. Beech. p. 397.* Laguna of Santa Rosa Creek, California; May, (in fruit.) The specimens are mostly single-flowered; stem about 14 inches high, mostly naked above. Lowest leaves verticillate in threes, the others few and scattered. Capsule subglobose, obtusely 6-angled. A variety? from hill-sides, Sonoma, has the stem 2-flowered, and the (immature) capsule acutely 6-angled.

*FRIILLARIA MUTICA*, *Lindl. l. c.; Hook. & Arn. l. c.* San Francisco, April 30, (in flower;) mountains near Oakland, California, April 4, (also in flower;) hill-sides, Martinez, April 23, (in fruit, but immature.) The capsule of this species is strongly 6-winged, as in *F. lanceolata*, *Pursh*, from this species is hardly distinct.

*FRIILLARIA LILIACEA*, *Lindl. l. c.; Hook. & Arn. l. c.* Hill-sides near Nevada; May 21, (flower.)

*FRIILLARIA PARVIFLORA* (sp. nov.): foliis anguste lanceolato-linearibus, infimis verticillatis, superioribus sparsis; floribus sparsis longe racemosis nutantibus; bracteis pedicellos recurvos multo longioribus; perianthio basi subangusto; stylo usque ad medium fere trifido; capsula hexaptera. Hill-sides near Murphy's, California; May 16, (in flower.) This species is near *F. lanceolata*, but it has more numerous (5-20) and much smaller flowers, (scarcely three-fourths of an inch long.) Sepals with an obscure nectariferous groove, greenish-purple, with darker strise, but not spotted.

*CYCLOBOTHA ALBA*, *Benth. in Hort. Trans. (n. ser.) 1, p. 413, t. 14, f. 3; Lindl. in Bot. Reg. t. 1661; Hook. & Arn. Bot. Beech. p. 399.* Grass Valley, May 19, (in fl. & fr. ;) hill-sides and ravines, Sonoma; May.

*CYCLOBOTHA PULCHELLA*, *Benth. l. c. t. 14, f. 1; Lindl. in Bot. Reg. t. 1662; Hook. & Arn. l. c.* Hill-sides, Napa Valley; April 27.

*CYCLOBOTHA ELEGANS*, *Lindl. l. c.; Kunth, Enum. 4, p. 229.* *Calochortus elegans*, *Pursh, Fl. 1, p. 240; Dougl. in Hort. Trans. 7, p. 278, t. 9, f. 13.* Hills near Punta de los Reys; April 17. The *Calochortus Tolmæi*, *Hook. & Arn. l. c.* (in a note) is perhaps not distinct from this species. The inflorescence appears racemose from the unequal forking of the stems, each division bearing from two to four flowers. It seems to be the plant described by *Pursh*, who remarks that the petals are "covered with long down." There are other forms of this species in Dr. Bigelow's collection: one from the mountains of Oakland, (April 4,) in which the petals are sparsely bearded not half way from the base; and another (a dwarf state) from the Sierra Nevada (May 11) with the petals glabrous except an adnate fringed scale at the base.

*CALOCHORTUS VENUSTUS*, *Benth. l. c. t. 15, f. 3; Hook. & Arn. l. c.; Lindl. in Bot. Reg. t. 1669.* Hill-sides, Knight's Ferry, Stanislaus River, California; May 7, (fl.)

*CALOCHORTUS LUTEUS*, *Dougl. Mss.; Lindl. in Bot. Reg. t. 1567?* In the same place as the preceding. This seems to be intermediate between *C. luteus* and *C. uniflorus*. With the former it agrees in its usually 3-flowered stem, and with the latter in its petals. It may perhaps be a variety of *C. elegans*.

*CALOCHORTUS NITIDUS*, *Dougl. in Hort. Trans. 7, p. 277, t. 9, f. A?* *Cyclobothra nitida*, *Kunth, Enum. 4, p. 230.* Grass Valley, May 19; and hill-sides, Sonoma, California, May 9. A dwarf plant, scarcely a span high. Stem 2-4-flowered. Pod drooping, ovate, not winged. Petals orange-yellow, copiously bearded.

*LILIUM CANADENSE*, *Linna.*, var. *PUBERULUM*: caule pedunculisque minute pubescentibus; foliis lato-lanceolatis margine nervisque puberulis; floribus paucis (2-7) longe pedunculatis; sepalis a medio valde revolutis intus purpureo-maculatis. Grows in all the region between Grass Valley and

Downieville, California. Colonel Frémont found it on Antelope Creek, one of the tributaries of the Upper Sacramento, and it is No. 2004 of Hartweg's California collection. If the character given above prove constant, this fine lily must be considered a distinct species from *L. Canadense*.

*YUCCA ALOPFLIA*, *Linn. Spec. p. 457; Kunth, Enum. 4, p. 270?* Near a mountain arroyo, Williams' River. "Plant 15 feet high." The specimens are with leaves only. Also found at Cajon Pass, Sierra Nevada, in March, with ripe capsules of the preceding season. (The same plant, or one very much resembling it, was found by Mr. Wright in New Mexico, and is his No. 1909. The flowers are very large and white.)

*YUCCA DRACONIS*, *Linn. l. c.; Kunth, l. c.* Var. *ARBORESCENS*: foliis lineari-lanceolatis rigidis, margine serrulato-scabris. Sandy and gravelly plains west of the Colorado, California. Dr. Bigelow states that this species attains the height of 30 feet, with a diameter of 18 or 24 inches. He found "whole forests" of this tree on the Mohave creek. The leaves are flat, about 3½ inches long, and from ¼ to ½ an inch wide, thick, convex below, flat or concave above, pointed with a strong spike, the broad flat base about half as long as the upper rigid and narrower portion. For want of more complete specimens we cannot be certain of the species.

*YUCCA ANGUSTIFOLIA*, *Pursh, Fl. 1, p. 227; Nutt. Gen. 1, p. 218.* Plains of Northern New Mexico. Leaves only: these are 12-15 inches long, and scarcely more than one-fourth of an inch wide, tapering upward, and ending in a strong sharp spine, thick and rigid, filamentous on the margin, along which is a narrow white line.

Dr. Bigelow collected in New Mexico (near Hurrah creek) specimens of a *Yucca* which seems to be undescribed. The leaves are a foot or more in length, and nearly an inch wide, very thick, entire, abruptly pointed with a short blunt spine, and furnished on the margin (especially towards the base and summit) with coarse tortuous fibres, tapering a little towards the base, and then dilated into a short sheathing base, which is of a brownish-red color. Flowers not seen. Fruit racemose, drooping, oval, as large as a hen's egg, pointed with the thick persistent style. It is of a soft fleshy consistence, and has a sweet taste. Endocarp thin and almost membranaceous, 3-celled, each cell partially divided into two others. Seeds piled horizontally in the cells, somewhat semi-circular, with thick edges, flat, black, wrinkled. Embryo straight, cylindrical, nearly the length of the seed; the albumen fleshy and somewhat indurated, a transverse section (parallel with the flat surfaces) appearing ruminated. The fleshy fruit, on account of the large quantity of grape sugar it contains, can be dried without decomposition, so as to have about the same consistence as a dry fig.

Still another species was found in rocky places near Pecan creek, a tributary of the Canadian. The leaves are a foot long, and three-fourths of an inch wide, flat and rather thin; the margin thin, sparingly furnished with very fine threads. No flowers were obtained. The fruit is in an elongated raceme. The pods are about two inches long, and more than an inch in diameter, erect and pedicellate; the mesocarp thin and somewhat fleshy, when dry a little papillose; cells divided by an accessory septum into 2 locelli. Seeds flat, smooth, and thin, black; the embryo two-thirds the length of the albumen. We need more complete specimens in order to determine whether the species is described.

*CAMASSIA ESCULENTA*, *Lindl. Bot. Mag. t. 1486; Kunth, Enum. 4, p. 347.* *Phalangium Quamash*, *Pursh, Fl. 1, p. 226.* Marshes, Punta de los Reyes, California; April 17. The *Scilla esculenta*, *Gawl. in Bot. Mag. t. 1574*, (*Phalangium esculentum*, *Nutt.*) is certainly a congener of this plant, and not a *Scilla*. In our specimens of the *C. esculenta*, *Lindl.*, we do not find the five upper sepals ascending, and the lowest one deflexed; but it is difficult to decide on such characters in dried specimens. In other respects the Northwest Coast species is so near the eastern one that they can be distinguished only by the considerably larger flowers, usually broader leaves, and more numerous ovules of the former. We find from 16- to 18 ovules in each cell of the ovary of *C. esculenta*, while in the other, which may be called *C. Fraseri*, the cells are only 8-ovuled. The genus *Scilla* has the sepals one-nerved, somewhat campanulate-con-

nivent or urceolate, and the filaments a little adnate to the base of the sepals. In *Camassia* the sepals are 3-5-nerved, and the filaments are free to the very base of the sepals.

*Scilla* (*Camassia*) *angusta*, *Engelm. & Gray in Bot. Journ. Nat. Hist.* 5, p. 29, is only a slender form of *C. Fraseri*.

*Chlorogalum pomeridianum*, *Kunth, Enum.* 4, p. 682. *C. divaricatum*, *Kunth, l. c.*? *Anthericum pomeridianum*, *Gawl. Bot. Reg. t.* 561. *Phalangium pomeridianum*, *D. Don, in Sweet's Flow. Gard. (ser. 2.) t.* 381. Hill-sides, Stanislaus River, California; May 8. This is the celebrated Amole or Soap Plant of California. It has an extensive range from north to south in that country, being found from the valley of the Upper Sacramento to Monterey. The bulb is ovate-conical, and varies from less than an inch to 4 inches in diameter. It is (especially when old) clothed with the black fibrous vestiges of the outer scales. The inner scales are mucilaginous when bruised, and are used by the Mexicans as a substitute for soap. There is but one Californian species of this genus that has come under our observation. The native country of the original species, which has long been cultivated in Europe, is not recorded in the books, but the plant is generally supposed to have been brought from Mexico. It is very doubtful whether *C. divaricatum* be a distinct species. The characters of the two as given by Gawler and Lindley seem blended in our plant. We suspect that Don was mistaken in describing the cells of the ovary as several-ovuled. In our specimens they have but two ovules, as described by Kunth.

*Allium cernuum*, *Roth; Bot. Mag. t.* 1324; *Kunth, Enum.* 4, p. 435. Mountains and rocky places, near Laguna Blanca, New Mexico; September.

*Allium acuminatum* *Hook. Fl. Bor.-Am.* 2, p. 185, t. 196; *Hook. & Arn. Bot. Beech.* p. 349. Hill-sides, Sonora, and near Marysville, California; May 3-25. A showy species, with deep rose-colored flowers.

*Allium falcifolium*, *Hook. & Arn. l. c.* Benicia, and on the Yuba River, California; April—May. About a span high. Also a much larger form, with the bracts as long as the flowers. Tamal Pass, April.

*Allium tribracteatum* (sp. nov.): humilis; foliis radicalibus plerumque 2 angusto-linearibus scapum 2-4 pollicarem multo superantibus; umbella multiflora; spatha e bracteis 3 ovatis; perianthio basi acuto, sepalis lanceolatis acutis; filamentis subulatis basi parum dilatatis sepala subaequantibus; capsula late obovato-trigastrica, lobis rotundatis, loculis dispermis. Hill-sides, Duffield's Ranch, Sierra Nevada, May 10. Bulb ovate, three-fourths of an inch long. Leaves mostly 2, about three lines wide, recurved. Scape 3-4 inches long. Umbell 15-20 flowered. Spathe of 3 ovate bracts. Pedicels scarcely longer than the flower. Sepals pale rose-color, with a purple midrib, about 4 lines long, not acuminate. Filaments inserted near the base of the sepals. Style filiform; stigma minute, obscurely 3-lobed. Capsule narrow at the base, but not stipitate; the cells rarely perfecting more than one seed. We cannot refer this *Allium* to any described species. It is remarkable for its dwarf habit, 3-leaved spathe, and the sepals marked with a strong purple central nerve.

*Allium amplexens* (sp. nov.): scapo flexuoso spithamaco superne bifoliato; foliis filiformibus; umbella pauci-(3-6-) flora; spatha e bracteis 2 orbiculatis concavis subacuminatis flores amplectentibus; sepalis oblongis obtusiusculis; filamentis e basi lata submonadelpha subulatis; capsula trigastrica apice depressa, loculis dispermis. Hill-sides, Sonoma, California; May 3. Bulb large for the size of the plant. Scape 6 inches high, more or less flexuous. Leaves scarcely a line wide, overtopping the scape. Easily distinguished by the small few-flowered umbel, which is almost enclosed in the concave purple bracts.

*Hesperocordium?* *maritimum* (sp. nov.): sepalis a basi fere distinctis; filamentis e basi vix dilatata subulatis. Sea shore, Punta de los Reyes, California; April 17. Bulb the size of a small pea. Leaves all radical, narrowly linear. Scape 3-6 inches long, shorter than the leaves. Umbel 10-12-flowered; the lower pedicels an inch in length, the others much shorter.

Bracteal leaves 4-6, subulate-linear, connate at the base. Flowers apparently white. Sepals oblong, rather acute, and minutely sacculate at the lip, slightly united at the base, membranaceous on the margin, the midrib broad and thick. Stamens 6, equal; filaments inserted a little above the base of the sepals, not connected; anthers oblong, 2-celled, inserted near the middle of the back. Ovary ovate, obtuse, 3-celled, with 10 anatropous ovules in each cell, in a double series. Style filiform, erect, slightly clavate upward; stigma minutely 3-cleft. This little plant seems to have been hitherto overlooked. It differs from *Hesperoscordium* in the sepals being distinct nearly to the base, and in the slender filaments.

*DICHELOSTEMMA CONGESTA*, *Kunth, Enum. 4, p. 470.* *Brodiea congesta, Smith, in Linn. Trans. 10, p. 3, t. 1; Hook. Fl. Bor.-Amer. 2, p. 186.* Cocomungo, March 8, and hill-sides, Martinez, California; April 20, (in fruit.) Our numerous specimens of this plant collected in various parts of California have the flowers all hexandrous, (as, indeed, they are shown in the early figure of Salisbury); nor do we find any hypogynous scales, except a slight callosity at the base of each adnate filament.

*BRODIEA GRANDIFLORA, Smith, l. c.; Kunth, Enum. 4, p. 471.* Var.? *BRACHYPODA*: umbella multiflora, pedicellis floribus multo brevioribus; staminibus sterilibus lato-lanceolatis integris. Plains of the Sacramento, May 26, (in flower and fruit.) The same plant was collected also by Colonel Frémont on Utah Lake, and by Dr. Stillman on the Sacramento.

Var. *MACROPODA*: scapo foliis multo breviori; umbella pauci-(3-6-) flora, pedicellis flores multoties excedentibus; staminibus sterilibus lato-linearibus emarginatis. Swamps, Santa Rosa creek, and Laguna, California; May 1. Tuber the size of a marble. Scape only 2-3 inches high. The longer pedicels 3-4 inches in length. Flowers bright purple, about three-fourths of an inch long.

#### STROPHOLIBION.\* Nov. Gen.

Perianthium corollaceum campanulato-infundibuliforme, 6-fidum; tubo subventricoso 6-sacculato; segmentis aequalibus ovatis obtusis uninerviis suberectis. Stamina fertilia 3, segmentis interioribus perianthii opposita; filamenta tubo adnata, summo apice appendicibus 2 linearibus emarginatis, antheram linearem bilocularem utrinque fissam, adaequantibus, aucta: sterilia linearia, uninervia, emarginata, glanduloso-ciliata fertilibus aequilonga. Ovarium oblongum, basi attenuatum (haud stipitatum), triloculare: ovula in loculis 4, biseriata anatropa, adscendentia: stylus ovario longior, triangularis, superne subfistulosus: stigma 3-lobum, lobis brevibus obtusis fimbriato-papillois. Capsula ovata, sessilis, trilocularis, loculicida; loculis sepius abortu monospermis. Semina ovata, nigra, longitudinaliter striata. (Embryo ignotus.) Herba Californica, glabra, foliis lato-linearibus breviusculis et scapo gracili nudo 2-4 pedali volubuli e cormo globoso exortis; umbella terminali multiflora densa, bracteis concavis spathaceis coloratis involucreta; pedicellis cum flore articulatis; floribus saturate roseis.

*STROPHOLIBION CALIFORNICUM.* (Tab. XXIII.) In rocky places, Knight's Ferry, Stanislaus River, May, (in flower and fruit); also at Sonora, Mokelumne Hill; Valley of the Sacramento, Colonel Frémont, Mr. Rich, and Dr. Stillman. It is No. 1992 of Hartweg's Californian collection. A remarkable plant, of which we have had specimens for many years. It seems to be common in the Valley of the Sacramento. The tall stem, which is not larger than a crow-quill, and often more than 4 feet (Dr. Kellogg, of San Francisco, found it even 12 feet) in length, twines around other plants. In Dr. Bigelow's specimens they were on Calliprora. Not unfrequently several stalks are twined together. The umbel is about 20-flowered, and much resembles that of some species of *Allium*, so that at first we took the plant for one of that genus. It most resembles *Dichelostemma*, but differs in having only three perfect stamens, and these furnished with appendages, while the abortive stamens are simple or undivided. There are also other characters, besides the habit, in which it differs from that genus.

\* From *στροφή*, to turn or twist, (in allusion to the twining stalk,) and *λίβων*, lily.

SEUBERTIA LAXA, *Kunth, Enum. 4, p. 475. Triteleia laxa, Benth. in Hort. Trans. (n. ser.) 1, p. 413, t. 15, f. 2; Hook. & Arn. in Bot. Beech. p. 401.* Plains of Benicia, California, April 14—23. It is No. 1998 of Hartweg's Californian collection. A showy plant, resembling *Brodiaea grandiflora*, but with larger hexandrous flowers, and the ovary elevated on a very long stipe.

CALLIPRORA LUTEA, *Lindl. in Bot. Reg. t. 1590; Hook. in Bot. Mag. t. 3588; Kunth, Enum. 4, p. 476.* Hills, near Sonora, and Grass Valley, California; May 19, (in flower and fruit.)

#### ODONTOSTOMUM,\* Nov. Gen.

Perianthium hypocraterimorphum, marcescens; segmentis 6 æqualibus patentissimis, 3 exterioribus 5-nerviis, interioribus 7-nerviis; tubo cylindrico segmentis æquilongo, ima basi ovario accreto, demum paulo supra basim transversim rupto deciduo. Stamina fertilia 6, conformia: filamenta lato-subulata, plana, discreta, faucis calycis inserta, cum appendicibus seu filamentis sterilibus totidem alternantibus: antheræ subrotundæ, biloculares, fissuris 2 transversis apice dehiscentes. Ovarium globosum, 3-loculare, loculis biovulatis: stylus gracilis, filiformis: stigma minutum. Ovula collateralia, e basi loculi adscendentia, anatropa. Capsula globoso-triloba, trilocularis loculicida; loculis dispermis. Herba Californica, bulbifera? caulescens, glabra; caule e basi parce dichotomo; foliis radicalibus lato-linearibus, caulinis angustioribus, summis in bracteas transeuntibus; floribus albidis racemosis vel paniculatis; pedicellis solitariis 1-2-bracteolatis haud articulatis.

ODONTOSTOMUM HARTWEGII. Wet places, Ione Valley, California; May 18. Valley of the Sacramento, *Dr. Stillman*. It is No. 2008 of Hartweg's Californian collection. Plant about two feet high. Radical leaves 3-6 lines wide, flat. Bracts lanceolate-subulate, about as long as the filiform pedicels, which are furnished with a subulate bracteole a little below the flower. Raceme 3-8 inches long. Flowers half an inch in diameter; the segments elliptical-oblong, rather obtuse, as long as the tube, at length reflexed. Seeds all empty shells in our specimens. This genus is allied to *Pasithea* and *Zephyra*; but these differ in the want of sterile filaments; the more numerous ovules; in the dehiscence of the anthers, and in several other characters. We received it several years ago from our friend *Dr. Stillman*, of New York, but it seems to have been first collected by *Mr. Hartweg*.

CLINTONIA ANDREWSIANA (n. sp.): umbellis 2-4 in parte superiori scapi subremotis, terminali multiflora, ceteris paucifloris; floribus erectiusculis; perianthiis subcampanulatis; ovarii loculis 8-10-ovulatis. Hill-sides, Tamul Pass; also along the *Redwood* (*Sequoia sempervirens*) ravines of Costa County, east of Pablo Bay, California. The only specimens of this interesting plant found by *Dr. Bigelow* have the flowers scarcely expanded; but we fortunately, while this report was in press, received it in a more advanced state from *Dr. Andrews*, lately of California, and to this gentleman, who has assiduously examined the botany of that State, we dedicate the species. No ticket accompanied his specimens, but they were probably collected not far from San Francisco. The root consists of numerous thick descending fibres, which proceed from a small fleshy tuber. The leaves grow from the summit of a slender, erect, or curved caudex, which is 5 or 6 inches long, and clothed below with sheathing scales. They are from 7 to 11 inches long, and 3-4 inches broad, narrowed and sheathing at the base, with a short abrupt acumination, glabrous and green on both sides, but the margin sparingly ciliate with slender deciduous hairs. The nerves are very numerous, and run from the base to the apex. The scape is about twice as long as the leaves, terete, and naked, except a lanceolate or linear foliaceous bract at the base of the lower umbel, or at some distance below it. Terminal umbel 10-20-flowered; the lateral ones 2-4-flowered and sessile. Pedicels about the length of the flower, somewhat elongated in fruit. Sepals 6, about 8 lines long, 5-7-nerved, oblong, obtuse, apparently greenish-yellow. Stamens 6; filaments subulate, flat; anthers

\* From *ὄδοντος*, tooth, and *στόμα*, mouth; in allusion to the tooth-like sterile filaments at the orifice of the flower.



oblong-linear somewhat versatile, the cells opening inward near the margin, the membranous connective produced externally nearly to the base of the cells. Ovary oblong-fusiform, tapering into a cylindrical thickish tubular style; stigma truncate, slightly 2-lipped, and perforate at the extremity. Ovules 8-10 in each cell, in a double series, obliquely ascending. Fruit (immature) subglobose, about one third of an inch in diameter. Seeds 6-8 in each cell, oblong.

This species is remarkable for bearing one or more few-flowered umbels besides the primary or terminal one; otherwise it has a general resemblance to *C. umbellata*. As in that species, the flowers are erect and numerous, but they are considerably larger and subcampanulate. It differs, too, in the numerous ovules.

*SMILACINA RACEMOSA*, Desf. in *Ann. du Mus. Paris*, 9, p. 51; Torr. *Fl. N. York* 2, p. 298, t. 130. Near Bolinas Bay; April 19; and mountains near Oakland, California; April 4. It seems to differ in no essential character from the eastern plant.

*SMILACINA STELLATA*, Desf. l. c.; Torr. l. c. *Asteranthemum vulgare*, Kunth, *Enum.* 5, p. 152. Mountains near Oakland, California; April 4.

*SMILACINA BIFOLIA*, Desf. l. c.; Torr. l. c. *Maianthemum bifolium*, DC. in *Redouté, Lil.* 4, t. 216, f. 2; Kunth, *Enum.* 5, p. 147. Marshes, Punta de los Reys, California; April 17. The plant of Oregon and California differs from the *S. bifolia* of the Atlantic States in the leaves being more deeply cordate, or almost auriculate, and in the longer petioles. It is much more like the European plant. The leaves are more commonly three than two.

### AMARYLLIDACEÆ

*DASYLIRION BIGELOWII* (sp. nov.): foliis longissimis (3-4-ped.) lineari-ensiformibus in apicem acutissimum sensim attenuatis integerrimis, margine lævibus; panicula ampla densa; fructibus lato-trilobatis trilocularibus sæpissime monospermis, localis 2 inanibus. Mountain sides, Williams' River. In fruit, February 10, (doubtless from the flowers of the preceding season.) "Scape about 3 feet high." We have not been furnished with Dr. Bigelow's notes on this plant, but it is evidently an undescribed species, of which flowering specimens are desirable. Kunth described the genus as having a one-celled ovary, while in three of his six species it is said to be three-celled!

At Plaza Larga, in Eastern New Mexico, Dr. Bigelow found another *Dasylyrion*, of which the leaves only are in the collection. These are nearly a yard long, and 3-4 lines wide at the base, gradually tapering upward, entire and nearly smooth on the margin, convex on the lower surface and concave above, except towards the apex, where they are somewhat triangular. It is allied to *D. Texanum*, but seems to be an undescribed species.

### SMILACEÆ.

*TRILLIUM SESSILE*, Linn. *Spec.* p. 484; Kunth, *Enum.* 5, p. 123.  $\beta$ . *GIGANTEUM*, Hook. & Arn. *Bot. Beech.* p. 402. Mountains near Oakland; April 4. The petals are more than three inches long, and of a dark purple color.

$\gamma$ . *ANGUSTIPETALUM*, Torr. in *Emory's Rep. Mex. Bound. Comm.* (ined.): foliis basi subito contractis; petalis lanceolato-linearibus acutis, sepala purpurea fere duplo superantibus. Wet ravines, Washington Mammoth Grove; May 15.

$\delta$ . *CHLOROPETALUM*: petalis viridulis obovato ellipticis, obtusiusculis, sepala duplo superantibus, Redwoods; April 12.

*TRILLIUM OVATUM*, Pursh, *Fl.* 1, p. 249; Hook. *Fl. Bor.-Am.* 2, p. 180; Kunth, l. c. Redwoods; April 12.

*SMILAX PSEUDO-CHINA*, Linn.? Banks of rivulets, Shawnee Villages, near the Canadian River; August, in fruit. Leaves orbicular-ovate, with a short abrupt acumination, often somewhat cordate, glabrous on both sides, paler underneath. Peduncles usually twice the length of the petioles. Berries black, mostly one-seeded.

## ORCHIDACEÆ.

*SPIRANTHES DECIPIENS*, *Hook. Fl. Bor.-Am.* 2, p. 203, t. 204. Low places, Mammoth Grove, Calaveras County; May, (in fruit of the preceding season.)

*SPIRANTHES CERNUA*, *Rich.; Torr. Fl. N. York*, 2, p. 283, t. 129. Prairies on the Canadian River, and valley of the Upper Rio Grande; September, October.

*CORALLORHIZA STRIATA*, *Lindl. Gen. & Sp. Orchid.* p. 534. Corte Madera, California; April. Scape 12-15 inches high, 20-30-flowered. Flowers larger than in any other North American species. Lip not spotted. *C. Macraei*, *Gray*, is a nearly allied species. (Tab. XXV.)

*APLECTRUM HYEMALE*, *Nutt. Gen.* 2, p. 197; *Torr. l. c.* p. 270, t. 127. Shawnee Villages, on the Canadian; August.

## CYPERACEÆ.

*CYPERUS INFLEXUS*, *Muhl.; Torr. Cyp.* p. 273. Low places near Albuquerque, and on the Upper Canadian River. *Bentham (Plant. Hartw.)* refers this plant to *C. aristatus* of *Rottboel*, which, indeed, it much resembles, as was remarked long ago in the work just quoted; but we are not yet satisfied that the two species should be united.

*CYPERUS MICHAUXIANUS*, *Schultes; Torr. l. c.* p. 259. Wet sandy places, headwaters of the Canadian River. This species is found as far west as the Great Colorado.

*CYPERUS DIANDRUS*, *Torr. Cyp.* p. 264. Wet sandy places near Albuquerque, New Mexico.

*CYPERUS REPENS*, *Ell. Sk.* 1, p. 69; *Torr. l. c.* *C. phymatodes*, *Muhl.* Grows with the last.

*CYPERUS LUTESCENS*, *Torr. & Hook. in Torr. Cyp.* p. 433. Alluvions of Pecan Creek; August; and prairies near the Upper Canadian. The heads are inclined to be compound, and contain more numerous spikelets than *Drummond's* specimens, from which the original description of this species was taken. The spikelets, too, become brownish when old, so that the name is not wholly appropriate.

*FURENA SQUARROSA*, var. *ARISTULATA*, *Torr. Cyp.* p. 291. Borders of running water, Upper Cross Timbers of the Canadian River. Our specimens agree exactly with those collected by *Dr. James* in *Long's Expedition*.

*HEMICARPHA SUBSQUARROSA*, *Nees. Cyp. in Endl. & Mart. Fl. Bras.* p. 61, t. 4, f. 1; *Torr. Fl. N. York*, 2, p. 362. *Isolepis subsquarrosa*, *Torr. Cyp.* p. 348. *Scirpus subsquarrosus*, *Muhl.* Wet sandy places near Albuquerque, New Mexico.

*ELEOCHARIS ACICULARIS*, *R. Brown; Torr. in Ann. Lyc. New York*, 3, p. 308. Var.? culmo crasso brevi, spica ovato-lanceolata valde compressa acuta 6-7-flora. Wet places near San Francisco; April 8; not mature. Differs from the ordinary form of the plant in its stout culm, (which is 2-3 inches high,) and much compressed dark chestnut-colored scales. There are 3 stamens and a 3-cleft style, which has a distinct tubercle at its base; but no bristles were found.

*ELEOCHARIS PYGMEA*, *Torr. l. c. (excl. syn. Vahl.)* Cocomungo, California; April 19. Although the specimens are rather too young for certain determination, they agree very well with the plant of the Eastern States. *Kunth (Enum.* 2, p. 158) retains *Scirpus pusillus* of *Vahl* in the genus *Scirpus*, although he seems to have examined the original specimens of that plant. He also refers to it the *S. pusillus* of *Willdenow's* herbarium; but quotes it again under his own *Eleocharis reclinata*! *Vahl's* plant was from New England, and seems to be only one of the forms of *E. acicularis*. *Willdenow's* is probably not different, as he received most of his North American plants from *Muhlenberg*, who refers *S. pusillus*, *Vahl*, to *S. trichodes*, which is undoubtedly *Eleocharis acicularis*.

*ELEOCHARIS PYGMEA*, var. *ANARHETA*. Moist places near Albuquerque, New Mexico. This variety was noticed in the botany of *Nicollet's Report*, p. 163. We have it also from the Red River, Louisiana, where it was collected by *Dr. Hale*.

*ELEOCHARIS CAPITATA*, *R. Br.*; *Torr. Cyp. p.* 305. With the last. We have this species from Texas, collected by Drummond, and also by Dr. Leavenworth.

*ISOLEPIS CARINATA*, *Hook. & Arn. in Torr. Cyp. l. c. p.* 349. Wet places, Laguna of Santa Rosa Creek, California; May 1. This agrees well with the eastern plant, except that the achenium is more minutely roughened, and the spikes are sometimes in pairs.

*ISOLEPIS LEPTOCAULIS* (sp. nov.): culmo sulcato angulato setaceo elongato basi 1-3-phylo; spica ovata 10-12-flora; involucre monophyllo spicam superante; squamis ovatis obtusis, infimo bracteiformi acuminato; stylo trifido. Cocomungo, California; March 18. The spike is apparently lateral, and indeed the one-leaved involucre (which is 5-6 times as long as the spike) may be regarded as a continuation of the culm. The species resembles *I. carinata*, but differs in being much more slender and taller, with smaller heads, and the scales are not acuminate. There were no mature achenia on the specimens.

*SCIRPUS TRIQUETER*, *Linn.?* Near San Francisco? The specimens are too young for satisfactory determination.

*SCIRPUS LACUSTRIS*, *Linn.*; *Torr. Cyp. p.* 321. Overflowed places, Comanche Plains, and near San Domingo, New Mexico.

*SCIRPUS MARITIMUS*, var. *MACROSTACHYOS*, *Michx.*; *Torr. l. c. p.* 323. Sandy alluvions of the Upper Canadian River; probably in saline soils.

*SCIRPUS SYLVATICUS*, *Linn.*; *Torr. l. c. p.* 323. Wet ravines, Upper Cross Timbers of the Canadian River.

*ERIOPHORUM GRACILE*, *Koch*; *Hook. Fl. Bor.-Amer. 2, p.* 232; *Gray, Bot. U. States, p.* 529. *E. angustifolium*, *Torr. Cyp. p.* 339, not of Roth. Swamps near Sonoma, California; May 3, (with mature achenia.) The peduncles are mostly erect, and much shorter than the spikes.

*FIMBRISTYLIS SPADICEA*, *Vahl*; *Torr. Cyp. p.* 346. Borders of streams, Upper Cross Timbers of the Canadian River.

*CAREX*\* *SITCHENSIS*, *Prescott, in Hook. Fl. Bor.-Am. 2, p.* 220, *t.* 221. Marshes at the head of Tomales Bay, and near San Francisco, California; April.

*CAREX DECIDUA*, *Boott, in Linn. Trans. 20, p.* 119. Mountains near Oakland, Los Angeles, Duffield's Ranch, Sierra Nevada, and other parts of California; April, May.

*CAREX LACINIATA*, *Boott, in Benth. Plant. Hartweg ined.* Swamps on Mark West's Creek, Bolinas Bay, etc., California; April. This is the same as Hartweg's No. 2022, and Coulter's 806. It is likewise (in part) 1241 *Herb. U. S. Expl. Exped.* from the Sacramento. It is very near *C. Jamesii*, *Torr.*, quæ foliis glaucis, auriculis pallidis discretis elongatis, perigyniis nervosis glabris bracteis brevioribus, squamis non ciliatis differt.

*CAREX XALAPENSIS*, *Kunth, Enum. 2, p.* 380. Low swampy places, Mark West's Creek, and Napa, California; April 25-30.

*CAREX DEWEYANA*, *Schwein.*; *Torr. & Schwein. Mon. Car. in Ann. Lyc. N. York, 1, p.* 316. Shady hill-sides, Napa Valley, California; May 5. The Oregon specimens and these have 6-8 approximate spicula.

*CAREX FESTIVA*, *Dew. in Sill. Jour. 29, p.* 351. Spica oblonga; in uno specimine spicula infima subremota. Punta de los Reyes, California; April 18.

*CAREX GETEBI*, *Boott, in Linn. Trans. 20, p.* 118. Flosculis feminiis 2-3, squamis inferioribus<sup>3</sup> foliaceis. Hill-sides, Duffield's Ranch, Sierra Nevada, California; May 10-12. This is like Dr. Parry's specimens collected in California. Kunze's figure, t. 47, has a solitary female flower.

*CAREX HOODII*, *Boott, in Hook. Fl. Bor.-Am. 2, p.* 211, *t.* 211. Mark West's Creek, California; May 1.

*CAREX LAGOPODIODES*, *Schk. Car. t. Ygg. f.* 177; *Torr. & Schw. l. c. p.* 313. Mark West's Creek, California; May 1.

\*The Carexes of this collection were determined by our valued friend Dr. Boott, whose names and remarks are given as they were received from him.

CAREX VESICARIA, *Linn.*; *Schk. Car. t. Ss. f. 106.* With the last; April 30. One of the specimens is *var. major*, *Boott, l. c.*

CAREX BICATA, *Deucey, in Sill. Journ. 10, p. 278, t. F. f. 18; and 14, p. 353.* *C. pallida*, *Meyer.* With the last species; April 30.

CAREX STELLULATA, *Good. in Linn. Trans. 2, p. 144; Schk. Car. t. 3, f. 14.* Swamps, Santa Rosa, California; May 3.

CAREX PROFINQUA, *Nees, et Mey. in Kunth, Enum. 2, p. 396.* Swamps, Mark West's Creek, California; April 30. No. 1622 of Coulter's California collection.

CAREX CHEROKEENSIS, *Schw.*; *Torr. & Schw. Car. in Ann. Lyc. N. York, 1, p. 369, t. 25, f. 1.* Swamps, Santa Rosa Creek, California; May 1. We can find no character that will distinguish this from the eastern plant. The specimens are young. The ovate abbreviate spikes and short bracts give it a peculiar aspect. It might be considered a *var. minor*. *C. Cherokeeensis*, like all its allies, is very variable; from solitary to geminate and ternate spikes, (my *C. Christiana*, in *Bost. Jour. Nat. Hist.*) Bigelow's specimens, if mature, would closely resemble the original figure of *C. Cherokeeensis*, *Torr. & Schwein. Monogr. of N. Amer. Car. in Ann. Lyc. N. York, 1, t. 25, f. 1.*

## GRAMINEÆ.

ALOPECURUS GENICULATUS, *Linn. Spec. p. 89; Kunth, Enum. 1, p. 24.* Low places, Napa Valley, California; April 26. *A. borealis*, *Trin.*, seems to be only a form of this variable species.

PHALARIS ARUNDINACEA, *Linn. Spec. p. 80; Torr. Fl. N. York, 2, p. 418.* *P. Californica*, *Hook. & Arn. Bot. Beech. p. 161.* Bolinas Bay, April 19, and Napa Valley, California; April 26.

HIEROCHLOA BOREALIS, *Ram. & Schult. Syst. 2, p. 513; Hook. Fl. Bor.-Amer. 2, p. 234.* Red-woods, California; April 12. Male flowers with a very short awn, or sometimes scarcely mucronate.

STIPA NEESIANA, *Trin. & Rupr. Stip. p. 27; Steud. Syn. Glum. p. 124.* *S. AVENACEA*, *Hook. & Arn. Bot. Beech. p. 403, non Linn.* Hill-sides, Sonoma, May 3, and Benicia, California; April 23. It is No. 2028 of Hartweg's collection. It differs from *S. avenacea* of the eastern States in its much larger flowers, the almost villous lower palea, the hairiness of the awn below the articulation, and in the pubescent leaves.

AGROSTIS MICROPHYLLA, *Steud. Syn. Pl. Glum. p. 164?* Mark West's creek, California, May 1. This species was founded on a grass collected by Douglas in "North America;" doubtless in California, though it is not taken up by Hooker and Arnott in the Botany of Beechey's Voyage. It is *Agraulis brevifolius*, *Nees, Mss.* Our plant differs somewhat from the grass described by Steudel. It is rather stout than "slender," and is nearly two feet high. The leaves are flat, about two lines wide, and, as well as the sheaths, are quite rough to the feel. Panicle about three inches long, contracted; the branches fasciculate and somewhat conglomerate. The flowers are of a purplish tinge. Glumes nearly equal, lanceolate, tapering to a long slender point, the lower one rough on the keel, otherwise glabrous; both of them without lateral nerves. Lower palea less than half the length of the glumes, truncate, with four short teeth at the summit, furnished a little below the middle of the back with a nearly straight slender awn, which is nearly twice the length of the valve. Upper palea wanting, or appearing as a very minute rudiment. Stamens 3. Styles plumose.

CALAMAGROSTIS GIGANTERA, *Nutt. in Trans. Amer. Phil. Soc. (n. ser.) 5, p. 143.* Prairies and ravines, along the Canadian River. Glumes somewhat coriaceous, one-nerved, the superior nearly 2-3 times the length of the palea, hairs at the base of the latter more than half the length of the valves. Caryopsis oblong, obtuse at each end, large for the size of the spikelet.

SPOROBOLUS CRYPTANDRUS, *Gray, Man. p. 542.* *Vilfa cryptandra*, *Torr. Fl. N. York, 2, 440.*

Var. ? *foliis angustioribus*; panícula exserta, axillis nudis; gluma superiore obtusiuscula. Low places, Galisteo, New Mexico; October. Utricle obovate, somewhat coriaceous, closely investing the ripe seed, but easily separated; loose before the seed is mature.

*VILFA TRICHOLEPIS* (n. sp.): culmo erecto simplici tereti, nodis distantibus, vaginis glabris, ligula truncata; foliis angustis ( $\frac{1}{2}$  lin. latis) utrinque glabris, panícula oblonga, ramulis flexuosis; glumis subæqualibus acutiusculis valvulas subæquales pilosas  $\frac{1}{2}$  brevioribus. Sandia mountains, New Mexico; October. Culms a foot or 18 inches long, growing in tufts. Branches of the panicle alternate, naked in the axils, when old somewhat open. Pedicels mostly rather longer than the spikelets, which are about a line in length. Glumes smooth and almost hyaline. Paleæ nearly equal, very hairy on the back and margins, particularly on the nerves; the lower palea 3-nerved. This seems to be a genuine *Vilfa*.

*MUHLENBERGIA GRACILLIMA* (n. sp.): cæspitosa, glabra; culmo simplici; foliis angustissimis involutis brevissimis (1- $\frac{1}{2}$  poll.), ligula elongata fissa; panícula diffusa capillari, ramis subsolitariis; pedicellis apicula ( $\frac{1}{2}$  lin.) subduplongioribus; glumis muticis lanceolatis, paleis vix duplo brevioribus, palea inferiore glabra apice minute bifido setam ipsa æqualem gerente; callo nudo. Llano Estacado, and near the Antelope hills of the Canadian River; September. Culms (including the panicle) about a foot high, densely cæspitose, erect. Leaves mostly in radical tufts, more or less tortuous. Panicle 5-6 inches long, pyramidal; the branches capillary and widely spreading, alternate, or sometimes opposite. Spikelets lanceolate, mostly purplish. Glumes acute. Inferior palea 3-nerved, slightly 2-toothed at the apex, with a straight awn about the length of the valve, between the teeth of which it is inserted. Superior palea not bicarinate, but rounded on the back. Caryopsis very slender and acute, nearly the length of the palea.

*GYMNOPOGON RACEMOSUS*, Beauv. *Agrost. p.* 41, *t.* 9, *f.* 5. *Anthopogon lepturoides*, Nutt. *Gen.* 1, *p.* 82. Prairies, on Pecan creek, Indian Territory.

*CHLORIS ALBA*, Presl; *Kunth, Enum.* 1, *p.* 264. Var. *ARISTULATA*: aristis valvule vix dimidio longioribus. *C. alba*, Benth. *Bot. Sulph. p.* 56; *Torr. in Emory's Rep. p.* 152. Banks of the Upper Rio Grande; October. This is the same as No. 395 of Drummond's 2d Texan collection. The awns are commonly less than half the length of the valves.

*BOUTELOUA ERIPODA*, Torr. in *Emory's Rep. p.* 154, (sub *Chondrosium*.) Pyramid mountain, near Laguna Colorado, and in deep ravines on the Llano Estacado; September.

*BOUTELOUA OLIGOSTACHYA*, Torr.; *Gray Man. Bot. ed.* 2, *p.* 553. *Atheropogon oligostachyum*, Nutt. *Gen.* 1, *p.* 78. Prairies on the Canadian; August.

*BOUTELOUA HIBSCUTA*, *Lagasca Elench. p.* 5. *Chondrosium hirtum*, *H.B.K.*; *Kunth, Enum.* 1, *p.* 276. *Atheropogon papillosus*, *Engelm.* High sandy prairies, Upper Cross Timbers of the Canadian; September.

*PAPPOPHORUM BOREALE*, Ledeb.; *Steud. Gram. p.* 200. *P. phleoides*, Turcz. Llano Estacado, in deep ravines. This agrees so well with the authentic specimen of *P. phleoides* received from Fischer that we can hardly regard it as even a variety. It is not uncommon in New Mexico.

*LEPTOCHLOA MUCRONATA*, *Kunth, Enum.* 1, *p.* 270. *Eleusine mucronata*, *Michx. Fl.* 1, *p.* 65. Banks of Boggy creek, Indian Territory; August.

*LEPTOCHLOA FASCICULARIS*, *Gray, Man. ed.* 2, *p.* 550. *L. ? polystachya*, *Kunth, Enum.* 1, *p.* 270. *Diplachne fascicularis*, *Torr. Fl. N. York,* 2, *p.* 472. *Festuca fasciculata*, *Lam.* Sandy banks of the Canadian River; August.

*AIRA ELONGATA*, *Hook. Fl. Bor.-Amer.* 2, *p.* 253, *t.* 138. Plains and hill-sides, Mark West's creek, April 30; Napa Valley, May 5, (a small form.) This is hardly a true *Aira*. The spikelets are commonly 2-flowered, with a plumose stipitate terminal rudiment. The upper perfect flower is distant from the lower one, on a hairy rachis. Glumes equal, subulate-pointed, obscurely 3-nerved. Paleæ bearded at the base; the inferior one unequally 5-toothed at the summit, awned below the middle; the awn twice the length of the palea, and somewhat

geniculate; upper palea hairy at the tip. Stamen solitary. No. 2030 of Hartweg's Californian collection is the same grass as this.

*AVENA FATUA*, *Linn. Spec. p.* 118; *Kunth, Enum. 1, p.* 302. Hills and plains, Feather River; Benicia, &c. April and May. This is the common wild oat of California. It may have been introduced by the Spaniards; but it is now spread over the whole country, many miles from the coast.

*TRICUSPIS MUTICA* (n. sp.): *cæspitosa*, *glabra*; *culmo simplicissimo erecto*; *foliis convolutis filiformibus*; *panicula terminali longe exserta racemosa*, *ramis brevibus oligostachyis*; *spiculis teretiusculis 5-8 floris*; *palea inferiore mutica integra vel bifida*, *marginibus dorsoque longe ciliata*. Laguna Colorado, New Mexico; September. About a foot high, growing in tufts. Root perennial. Culm rigid terete. Leaves 3-6 inches long. Panicle about 3 inches long, the short appressed bearing 3-5 spikelets. Glumes unequal 1-nerved, rather acute, scarcely half the length of the spikelets. Inferior palea (after flowering) usually more or less deeply notched, otherwise entire; or when old slightly toothed or eroded; the midnerve not at all produced into a mucro, and the lateral submarginal nerves scarcely reaching to the summit; the long white hairs confined to the lower half of the nerves. Superior palea one-third shorter than the inferior, notched at the apex, plumose on the margin. Stamens 3; anthers oblong. Styles short, stigmas plumose, purple. Caryopsis oblong, concave on the inner face, finely striated longitudinally.

*TRICUSPIS PULCHELLA*. *Uralespis pulchella*, *Kunth, Enum. p.* 108, *and Suppl. p.* 274. *Trichodia pulchella* *H. B. K. Nov. Gen. 1, t.* 47. Gravelly hills, near Albuquerque, New Mexico; October. A beautiful little grass with densely *cæspitose* culms and few-flowered panicles, which are crowded among the fasciculate leafy branches. It occurs along the Rio Grande, and southward to Mexico. The root appears to be annual, but Kunth says that it is perennial.

*TRICUSPIS PURPUREA*, *Gray, Man. Bot. ed. 2, p.* 556. *Uralespis purpurea* and *U. aristulata*, *Nutt. Gen. 1, p.* 62. Wet ravines, Elm creek, Indian Territory; August.

*ERAGROSTIS PURSHII*, *Schrad.; Gray, Man. ed. 2, p.* 564. *Poa pectinacea*, *Pursh, Fl. 1, p.* 81, *non Michx.* Sandy soils on the Rio Grande, near Albuquerque; October.

*ERAGROSTIS TENUIS*, *Gray, l. c.* *Poa tenuis*, *Ell. Sk. 1, p.* 156. Prairies, and along streams, Upper Cross Timbers of the Canadian; August. *E. Frankii*, *Mey.*, scarcely differs, except in the smaller number of flowers in the spikelets.

*ERAGROSTIS OXYLEPIS*, *Torr. in Marcy's Rep. p.* 301, *t.* 19, (sub *Poa*.) *Poa interrupta*, *Nutt. in Trans. Amer. Phil. Soc. n. ser. 5, p.* 146, *non Roth. nec R. Br.* Sandy ravines, near the Canadian river. Spikelets larger than usual, and some of them 30-40 flowered.

*POA ANNUA*, *Linn. Spec. p.* 99; *Kunth, Enum. 1, p.* 349. San Francisco, April. A common grass in the settled parts of California, and doubtless introduced from Europe.

*POA TRIVIALIS*, *Linn. Spec. l. c.; Kunth, l. c.* Mark West's creek, California; April 30. This also must be an introduced grass.

*FESTUCA MICROSTACHYS*, *Nutt. Pl. Gamb. in Jour. Acad. Phil. (n. ser.) 1, p.* 187. Hill-sides, Napa Valley, April 26, (an unusually large form); near San Francisco, April 8, (a dwarf state.) This is a polymorphous species. The sheaths of the leaves are often retrorsely pubescent, but not unfrequently smooth. The panicle, in the humbler form, is strict and spikelike; but in more luxuriant specimens several of the lower branches are somewhat elongated, and at length spreading or diverging and secund. In a variety (as we are inclined to regard it) from Mark West's creek the panicle is very open, and the spikelets are all distant and diverging. The paleæ in some of the specimens from Napa Valley are punctulate-scabrous, and not hairy. No. 2030 of Hartweg's collection is a variety of this species.

*FESTUCA TENELLA*, *Willd. Sp. 1, p.* 419? var. *ARISTULATA*. Hill-sides, Napa Valley. Very likely this may prove to be a distinct species from *F. tenella* of the Eastern States.

*FESTUCA PRATENSIS*, *Huds.; Kunth, Enum. 1, p.* 404. Corte Madera and Tomales Bay, April. Introduced?

*FESTUCA SCABRELLA*, *Hook. Fl. Bor.-Amer.* 2, p. 252, t. 233. Hills near Tomales Bay, California; April 19. A tall glaucous grass (2-3-feet high.) Spikelets 5-flowered and a rudiment. Paleae scabrous.

*BRIZOPYRUM DOUGLASSII*, *Hook. & Arn. Bot. Beech. p.* 404. *Poa Douglasii*, *Steud. Enum. Pl. Glum. p.* 261. Sandy sea shore. Punta de los Reyes. April 17.

*MELICA POEBOIDES*, *Nutt. Pl. Gamb. l. c.* Corte Madera, California; April 20. Spikelets 3-4-flowered, the uppermost abortive (male or neuter.) In depauperate specimens the spikelets are often but 2-flowered, with rudiment.

*MELICA IMPERFECTA*, *Trin. Gram. Suppl. in Act. Petrop. p.* 59, and *Icon. Gram. t.* 355; *Hook. & Arn. Bot. Beech. p.* 403, (sphalm. *M. imperforata*.) *M. cœlodioides*, *Nees in Tayl. Ann. Nat. Hist. 1 p.* 282; *Steud. Syn. Pl. Glum. p.* 291. Red-woods, April 12, (spikelets with two perfect flowers and a capitate rudiment; leaves glabrous;) Mark West's creek, California, April 30, (spikelets with a single perfect flower and a capitate rudiment; leaves pubescent.)

*UNIOLA STRICTA*, *Torr. in Ann. Lyc. N. York, 1, p.* 153, & in *Marcy's Rep. p.* 301 & 20. Dry salt marshes, Indian Territory; August.

*SESLERIA DACTYLOIDES*, *Nutt. Gen. 1, p.* 165; *Torr. in Emory's Rep. p.* 154, t. 10. Llano Estacado; September. As usual, with male flowers only. We have now examined specimens of this grass collected in very many places, and from an extensive range of country, but have not yet found it in seed, and very rarely with even abortive pistils.

*BROMUS CARINATUS*, *Hook. & Arn. Bot. Beech. p.* 403. Mark West's creek, April 30. As Hooker & Arnott truly remark, the grass is intermediate between *Bromus* & *Ceratochloa*; but it is nearer the former.

*BROMUS KALMI*, *Gray, Man. Bot. N. States, p.* 600? *Var. ARISTULATUS*; *glabriusculus*; *panicula debile, ramulis elongatis divergentibus, spiculis 6-7-floris*; paleis minute pubescentibus, inferiore integro, apice brevissime aristata. Mark West's creek, California. April 30.

*BROMUS CILIATUS*, *Linn., var. PURGANS*, *Gray, Man. ed. 2, p.* 567. *B. purgans*, *Linn.* Mountain ravines, on the Pecos, New Mexico; October.

*ARUNDO PHRAGMITES*, *Linn.* Sandy alluvions of the Canadian river, near the Antelope Hills; September.

*ELYMUS VILLOSUS*, *Muhl. Gram. p.* 175;  $\beta$ . *GLABRIUSCULUS*; *radice repente*; *culmo foliisque glabriusculis*; *vaginis inferioribus pubescentibus*; *spica erecta, spiculis 2-(raro 3); floris-glumis lanceolato-subulatis scabriusculis breviaristatis*; *palea superiore scabra arista ipsa 3-plo longiore*. Napa Valley, California; May 6. This grass, though apparently only a variety of *E. villosus*, is also closely related to *E. Europæus*.

*HORDEUM PRATENSE*, *Huds.; Kunth, Enum. 1, p.* 452. *H. secalinum*, *Schreb. H. Chilense, Brongn.* It is also No. 2025 of Hartweg, and No. 756 of Coulter. Corte Madera, California; April. Differs from our Swedish specimens of *H. pratense* in the lateral flowers being one-valved and neuter; but in this genus the awns of the neuter flowers are variable.

*SITANION ELYMOIDES*, *Raf. in Jour. de Phys. 89, p.* 103; *Steud. Syn. Pl. Glum. p.* 351. *Ægilops Hystrix*, *Nutt. Gen. 1, p.* 86. *Elymus?* *Sitanion*, *Schult. Mant. 2, p.* 426. *Polyantherix Hystrix*, *Nees, in Ann. Nat. Hist. 1, p.* 284; *Hook. & Arn. Bot. Beech. p.* 404. *Elymus v. nov. gen.* *Torr. in Nicolle's Rep. p.* 165. River banks, Mokelumne Hill, California; May 17. We restore the name given by Rafinesque to this grass, because it is the earliest. Our California specimens are nearly two feet high. Indeed, we have never seen the plant of so humble a stature as that described by Mr. Nuttall. It is a widely diffused grass, being found from northern Minnesota to Texas, and west of the Pacific. It is often mistaken for an *Elymus*.

*LEPTURUS PANICULATUS*, *Nutt. Gen. 1, p.* 81. Llano Estacado, and plains near Galisteo, New Mexico; September—October. This species is remarkable for its triangular branching rachis and long very slender spikes. There is but a single one-flowered spikelet at each joint of the rachis, without any trace of a rudimentary flower. Glumes 2, opposite, contrary to the rachis,

very unequal, lanceolate, sharply carinate, each terminating in a bristle as long as itself. Paleæ somewhat coriaceous, linear-lanceolate, almost terete, long as the upper glume; the inferior acute, rough on the keel; superior pubescent on the back, with two approximate nerves, which are produced into teeth at the summit. Stamens 3; anthers linear. Styles long; stigmas plumose on the inside. Caryopsis linear-fusiform.

MONROA. Nov. Gen.

Spæculæ 2-6-flor; flores sessiles distichi hermaphroditici v. terminali tabescente. Glumæ 2, suboppositæ mucronatæ, flores multobreviores. Paleæ 2 herbaeæ rigidæ, inferior apice mucronata vel brevissime aristata, ecarinata, æquilatera, lateribus in spicula superiores versus basim barbatis, in spicula infima plerumpue glabris. Caryopsis glaberrima, palea superiori obtecta. Gramen annuum, repens, ramosissimum, ramis fasciculatis. Spica capituliformi sæpius foliorum terminalium subspathæformibus suffultæ. Spiculæ 3, 2-6-floræ.

MONROA SQUARROSA. Crypsis squarrosa, *Nutt. Gen.* 1, p. 49. Hills and ravines, Anton Chico, New Mexico; September. "On the arid plains of the Upper Missouri, near the Grand Detour, it covers, almost exclusively, thousands of acres."—*Nutt.* This grass is very distinct from *Crypsis*, and belongs, as we think, to the tribe *Hordeaceæ*. In the notice of Dr. James' plants, collected in Long's 1st expedition, (*Ann. Lyc. Nat. Hist. N. York*, 2, p. 254,) it was intimated that it was probably a distinct genus. The culm is prostrate, much branched from the base; the branches 3-8 inches long. Leaves 1-2 inches long, flat, 1-2 lines wide, somewhat pungent, scabrous on the margin; those near the summit of the fasciculate branches with broad sheaths, embracing the small sessile heads, which thus appear involucrate. Spikelets mostly 3, closely approximated, usually 3-4-flowered. Glumes sometimes almost unilateral, linear-lanceolate, carinate. Paleæ 2-3 times longer than the glumes, lanceolate, acute; the lower one often bifid or 2-toothed at the summit, with a cusp or very short rigid bristle between the teeth, 3-nerved; the lateral nerves nearly marginal. In the uppermost spikelet, and often in the middle one, these nerves are bearded with long white hairs towards the base; but the flowers of the lowest spikelet are usually quite naked. Superior palea bicarinate, rather obtuse. Stamens 3; anthers linear. Styles long and slender; stigmas plumose. Achenium compressed, very smooth and even, usually covered with the introflexed margin of the superior palea. We dedicate this singular genus to Major Moore, of the East India Company's service, who has made the grasses an especial study.

TRITICUM (AGROPTUM) REPENS, *Linn.* Prairies, on the Canadian River; August. An awnless glabrous form, with narrow and somewhat involute leaves.

SETARIA GLAUCA, *Beauv.; Kunth, Enum.* p. 149. Banks of Little River, Indian Territory; August.

SETARIA VIRIDIS, *Beauv.; Kunth, l. c.* p. 151. Laguna Colorado, New Mexico; August.

PANICUM CRUS-GALLI, *Linn.* Oplismenus Crus-Galli, *Kunth, l. c.* 1, p. 143. With the last; also on the banks of the Pecos, New Mexico. All the specimens from the latter locality belong to the awnless variety.

PANICUM VIRGATUM, *Linn.; Kunth l. c.* p. 100; *Torr. Fl. N. Y.* 2, p. 425. With the last.

PANICUM SANGUINALE, *Linn.; Torr. l. c.* p. 423. Alluvial banks of the Canadian, and near Galisteo, New Mexico; August-October.

PANICUM LATIFOLIUM, *Linn.; Torr. l. c.* p. 425. With the last.

PANICUM OBTUSUM, *H. B. K.? Torr. in Marcy's Rep.* p. 299. Plains, Laguna Colorado, New Mexico; September.

CENCHRUS TRIBULOIDES, *Linn.; Torr. Fl. New York*, 2, p. 931. On the Canadian River, and near Galisteo, New Mexico; October.

TRIPSACUM DACTYLOIDES, *Linn.; Michx. Fl.* 1, p. 60. Pecan creek, Indian Territory. T.



cylindricum, *Michx. l. c.*, is a *Rottbolla*, (*R. cylindrica*.) and seems to be the same as *R. campestris*, *Nutt. l. c. p. 151*.

ANDROPOGON NUTANS, *Linna. A. avenaceus, Michx. Fl. 1, p. 60. Sorghum nutans, Gray, Man. ed. 2, p. 584.* With the last.

ANDROPOGON SCOPARIUS, *Michx. l. c.*; *Torr. Fl. New York, 2, p. 478.* With the preceding, and on the Llano Estacado; August--September.

ANDROPOGON FURCATUS, *Linna.* Pecan creek and Llano Estacado; August--September. Pedicels of the sterile spikelets clothed with longer and whiter hairs than in the eastern plant.

ANDROPOGON JAMESII, *Torr. in Marcy's Rep. p. 392. A. glaucus, Torr. in Ann. Lyc. New York, 1, p. 152. A. Torreyaanus, Steud. Syn. Pl. Glum. p. 392.* Comanche Plains, Indian Territory; August.

## LYCOPODIACEÆ.

SELAGINELLA STRUTHIOLOIDES. *Lycopodium struthioloides, Presl, Bot. Haenk. 1, p. 82, (ex. Hook. & Arn.) L. rupestre, ß. Hook. & Arn. Bot. Beech., p. 267.* Wet rocks, mountains of California and New Mexico; March.

SELAGINELLA RUPESTRIS, *Spring; Brackenridge, Fil. U. S. Expl. Exped. p. 331.* Mountains of New Mexico.

## EQUISETACEÆ.

EQUISETUM EBURNEUM, *Schreb.; Braun & Engelm. in Sill. Jour. 46, p. 84. E. fluviatile, J. E. Smith, Eng. Bot. t. 2022; Hook. Fl. Bor.-Amer. 2, p. 269. E. Telmateia, Ehrh.* Redwoods and mountains near Oakland, California; April. Plant sometimes 3-4 feet high. It is very doubtful whether this species grows on the borders of Lakes Erie and Superior. The station given for it long ago by Dr. Beck, in his Botany of the Northern States, was on my authority, and I was led into the error by the incorrect label attached to a specimen which I received from a correspondent.

EQUISETUM ARVENSE, *Linna.; Pursh, Fl. 2, p. 651; Eng. Bot. t. 2020; Braun & Engelm. l. c. Torr. Fl. N. York, 2, p. 480.* In overflowed places, Duffield's Ranch, Sierra Nevada; May 11.

EQUISETUM HYEMALE, *Linna.; Pursh, l. c. Eng. Bot. t. 914; Braun & Engelm. l. c.; Torr. Fl. N. York, l. c.* Santa Rosa Creek, California; May 1. We can hardly distinguish several of species allied to *E. hyemale*, described by Braun & Engelmann, l. c., for they seem to pass into each other by imperceptible gradations.

## FILICES.

POLYPODIUM VULGARE ß. OCCIDENTALE, *Hook. Fl. Bor.-Am. 2, p. 258. P. vulgare, Virginianum, Bong. Veg. Sitcha, p. 57.* Redwoods, California; April 12. This is nearer *P. vulgare* of Europe than is the plant of the Atlantic States, which we are now inclined to regard as a distinct species.

POLYPODIUM CALIFORNICUM, *Kaulf. Enum. Fñ. p. 102; Hook. & Arn. Bot. Beech. p. 161 & 405; Hook. Fl. Bor.-Amer. 2, p. 258.* Mountains near San Gabriel; April 5. Differs from the preceding in the membranaceous fronds, shorter and rather obtuse pinnæ. The figure in the Icones Filicum of Hooker and Greville (t. 56, P. Scouleri of that work) represents a dwarf state of this species.

POLYPODIUM INTERMEDIUM, *Hook. & Arn. l. c. p. 405; Hook. l. c.* Rocky ravines, Cajon Pass; March. This plant greatly resembles *P. Californicum*, and is chiefly distinguished from it by the oval sori.

ALLOSORUS ANDROMEDÆFOLIUS, *Kaulf. Enum. Fñ. p. 188. Pteris andromedæfolia, Hook. & Arn. Bot. Beech., p. 406.* Hill-sides, Cajon Pass, California. This seems to be the plant described

by Kaulfuss, although the next species has often been taken for it. Dr. Parry collected it near Monterey. Our specimens more than a foot high. The pinnules vary from 3 to 5-foliate.

*ALLOSORUS MUCRONATUS*, *D. C. Eaton*, in *Sill. Jour.* (2d ser.) 22, p. 138. Cajon Pass, Sierra Nevada; valley of the Sacramento, *Dr. Stillman*; California, *Douglas*. Our specimens are much larger than the plant described by Mr. Eaton, of which we have duplicates from that promising young botanist. It is often more than a foot high, the pinnae 10 to 20, and these pinnate, with the pinnules trifoliate, somewhat verticillate, and crowded. It is much more common than the last species.

*ADIANTUM CHILENSE*, *Kaulf. Enum.* p. 207; *Hook. Fil.* 2, p. 43, t. 75, B. Deep ravines near Los Angeles; also in Napa Valley and near the Redwoods, California; March.

*ADIANTUM PEDATUM*, *Lin.*; *Torr. Fl. N. York*, 2, p. 487; *Brack. l. c.* Redwoods; April. This differs somewhat from the plant of the Atlantic States, in being more slender, with the lobes of the frond broader at the base, and more deeply cut, but it can hardly be considered even as a distinct variety.

*PTERIS LANUGINOSA*, *Kaulf. l. c.*; *Hook. & Arn. l. c.* Rocks near San Francisco Mountain, Western New Mexico.

*ONYCHIUM DENSUM*, *Brackenridge*, *Ferns of the U. S. Expl. Exped.* 1, p. 120, t. 13. Wet places, Grass Valley, California; May. This neat and rare fern has much the appearance of *Allosorus acrostichoides*; and Sir William Hooker says it must be removed to that genus or to *Pellaea*. It is beautifully figured in the work here quoted.

*HYPOLEPIS CALIFORNICA*, *Hook. Fil.* 2, p. 71, t. 88, A. Mountains near San Gabriel, also near Marysville, California. Mr. Schott found it in Sonora.

*CHEILANTHES FENDLERI*, *Hook. Fil.* 2, p. 103, t. 107, B. On rocks near the mouth of White Cliff Creek, Western New Mexico.

*CHEILANTHES BRADBURI*, *Hook. l. c.* p. 97, t. 109, B. New Mexico, not rare.

*CHEILANTHES VESTITA*, *Swartz*; *Hook. l. c.* p. 98, t. 108, B. On rocks in various parts of New Mexico. Extremely woolly when young.

*NOTOHELINA DEALBATA*, *Kunze*, in *Sill. Jour.* (2d ser.) 6, p. 83. *Cheilanthes dealbata*, *Pursh*, *Fl.* 2, p. 675. Rocky hills, San Domingo, New Mexico. A beautiful and delicate fern, remarkable for the sharply zigzag branches of the rachis, and the white incrustation on the under surface of the frond.

*GYMNOGRAMMA TRIANGULARIS*, *Kaulf. Enum.* p. 73; *Hook. & Grev. Ic. Fil.* t. 153; *Hook. Fl. Bor.-Am.* 2, p. 259. Hills and rocky places, Cajon Creek, and Redwoods. Young fronds sulphur-yellow underneath, (in dry specimens); the old ones brown. This species occurs also in New Mexico.

*WOODWARDIA RADICANS*, *Willd. Sp.* 5, p. 418; *Hook. & Arn. Bot. Beech.* p. 162 & 405. *W. Chamissonis*, *Brack. l. c.* p. 138. Cajon Pass; March; in fine fruit, probably of the preceding season. Mr. Brackenridge considers this to be distinct from *W. radicans*. Like *W. Virginica*, it belongs to the genus *Doodia* of R. Brown, which is now generally regarded as a section of *Woodwardia*.

*CYSTOPTERIS FRAGILIS*, *Bernh.*; *Hook. l. c.* p. 260. *Aspidium tenue*, *Willd. Sp.* 5, p. 280. Hill-sides, Yuba River, Redwoods, and other parts of California. The indusium at first has a long lacerate apex which lies over the joint, but which finally breaks off, leaving the broad cucullate or cup-shaped base.

*ASPIDIUM MUNITUM*, *Kaulf. Enum.* p. 230; *Hook. & Arn. Bot. Beech.* p. 162. *Polystichum munitum*, *Presl.*; *Brack. l. c.* p. 203. Mountains near Oakland, and on hill-sides along the Yuba, Downville, California. This species varies greatly in size, and in the length of its pinnae. It is allied to *A. acrostichoides* of the Eastern States.

*ASPIDIUM (LASTRÆA) ARGUTUM*, *Kaulf. l. c.* p. 242; *Hook. & Arn. l. c.* *Lastrea arguta*, *Brack. l. c.* p. 196. Mountain ravines, Oakland, Cajon Pass, and near San Francisco. This species

as a general resemblance to *A. rigidum*, Sw. The sori are as large as in *A. marginale*. When young, the stipe and rachis are thickly clothed with chaffy scales.

*ASPIDIUM ACULEATUM*, Swartz; Hook. *Fl. Bor.-Am.* 2, p. 261; Torr. *Fl. N. York*, 2, p. 498. Deep ravines, Napa Valley, California. Some of our specimens agree better with *A. lobatum* than with *A. aculeatum*; but we fully agree with Hooker, that these and *A. angulare* constitute but one species. Kützing thinks that a part, at least, of the North American forms of *A. aculeatum* should be referred to *A. (Polystichum) Braunii*, Spenn. *Fl. Frib.*

## SALVINIACEÆ.

*AZOLLA CAROLENIANA*, Willd. *Sp.* 5, p. 541; Torr. *Fl. N. York*, 2, p. 513. *A. microphylla*, Kaulf.; Hook. & Arn. *Bot. Beech.* p. 162. On the surface of slow-flowing or stagnant waters, Western New Mexico and California.



## EXPLANATION OF THE PLATES.

### PLATE I. CROSSOSOMA CALIFORNICA.—PAGE 63.

A BRANCH OF THE NATURAL SIZE.

- C. Calif.*  
*enlarged*
- Fig. 1. A branch with the leaves more fully developed, and the carpels half mature.  
2. Plan of the flower.  
3. A sepal.  
4. A petal.  
5 and 6. Front and back views of a stamen.  
7. A flower, longitudinally divided, to show the insertion of the stamens; all the figures moderately and equally enlarged.  
8. Transverse section of an ovary; more enlarged.  
9. An ovule; considerably magnified.

### PLATE II. VIOLA SHELTONII.—PAGE 67.

AN ENTIRE PLANT OF THE NATURAL SIZE.

- Fig. 1. Three of the petals; enlarged.  
2-4. Different views of a stamen.  
5. An anther divided transversely.  
6. The pistil; all the figures magnified.

### PLATE III. THAMNOSMA MONTANUM.—PAGE 73.

TWO BRANCHES OF THE NATURAL SIZE—ONE IN FLOWER, THE OTHER IN FRUIT.

- Fig. 1. Plan of the flower.  
2. A separate flower; moderately enlarged.  
3. The same, with the calyx and petals removed.  
4. Immature fruit, showing the gynophore or prolongation of the glandular disk.  
5. Ovary, with one of the carpels longitudinally divided; and,  
6. The same transversely divided; magnified.  
7. An ovule; more magnified.  
8. The fruit; enlarged.  
9. Seed, longitudinally divided; magnified.

### PLATE IV. HOSACKIA INCANA.—PAGE 79.

A PLANT OF THE NATURAL SIZE.

- Fig. 1. The banner, a wing, and one of the keel-petals; considerably magnified.  
2. Staminal tube, laid open; equally magnified.  
3. The pistil, longitudinally divided; also equally magnified.  
4. An ovule; highly magnified.

### PLATE V. SPIRÆA MILLEFOLIUM.—PAGE 83.

UPPER PART OF THE PLANT OF THE NATURAL SIZE.

- Fig. 1. Plan of the flower.  
2. A petal; magnified.  
3. A stamen; equally magnified.  
4. Fructiferous calyx; also equally magnified.  
5. A separate carpel.

## PLATE VI. HORCKELIA TRIDENTATA.—PAGE 84.

AN ENTIRE PLANT OF THE NATURAL SIZE.

- Fig. 1. An expanded flower and two buds; enlarged.  
 2. The flower laid open; a little more enlarged.  
 3. A petal; magnified.  
 4. A stamen; more magnified.  
 5. The head of pistils.  
 6. An achenium, with its persistent style.

## PLATE VII. WHIPTLEA MODESTA.—PAGE 90.

AN ENTIRE PLANT OF THE NATURAL SIZE.

- Fig. 1. A separate flower; moderately enlarged.  
 2. A sepal; and,  
 3. A petal; both a little more enlarged.  
 4. Front view of a stamen.  
 5. Back view of the same; equally magnified.  
 6. Pistil, transversely divided; more magnified.  
 7. An ovule; more magnified.  
 8. A flower, longitudinally divided; considerably magnified.  
 9. Plan of the flower.

## PLATE VIII. CORNUS SESSILIS.—PAGE 94.

A BRANCH OF THE NATURAL SIZE.

- Fig. 1. Umbel of flowers and involucre.  
 2. The involucre; shown separately.  
 3. An exterior leaf of the same.  
 4. Interior leaf of the same.  
 5. A separate flower.  
 6. The same, with two of the petals and stamens removed to show the teeth of the calyx.  
 7. The fruit.

## PLATE IX. HOFMEISTERIA FLURISETA.—PAGE 96.

A PLANT OF THE NATURAL SIZE.

- Fig. 1. A separate flower; enlarged.  
 2. The corolla of the same laid open; more magnified.  
 3. A stamen; still more magnified.  
 4. Two pappi and a hair of the pappus; more magnified.  
 5. An achenium, crowned with its pappus; considerably magnified.  
 6. Involucre and receptacle; moderately magnified.

## PLATE X. ASTER BIGELOVIL.—PAGE 97.

UPPER PORTION OF THE PLANT OF THE NATURAL SIZE.

- Fig. 1. A ray flower.  
 2. A branch of the style from the same.  
 3. A disk flower.  
 4. A separate stamen from the same.  
 5. Style and its branches, from a disk flower.  
 6. An achenium.  
 7. A hair of the pappus; highly magnified.

## PLATE XI. APHANTOCHELETA EXILIS.—PAGE 100.

A PLANT OF THE NATURAL SIZE.

- Fig. 1. A head of flowers, moderately enlarged.  
 2. Involucre and receptacle, from which the flowers have fallen, more enlarged.  
 3 and 4. Scales of the involucre, equally magnified.  
 5. A pistillate flower.  
 6. A perfect flower.  
 7. A stamen, highly magnified.  
 8. Summit of the style of a pistillate flower, equally magnified.  
 9. Style of a perfect flower, equally magnified.  
 10. An achenium, enlarged.

## PLATE XI. EVAX CAULESCENS.—PAGE 101.

- Fig. 1. A plant of the natural size.  
 2. A head of flowers; vertical section, enlarged.  
 3. Involucre and receptacle; more enlarged.  
 4. Inside view of one of the pappi from the summit of the receptacle.  
 5. A male flower.  
 6. A stamen, from the same.  
 7. One of the pappi subtending the female flowers.  
 8. A female flower.  
 9. An achenium; the details all magnified.

## PLATE XII. LINOSYRIS BIGELOVII.—PAGE 98.

A BRANCH OF THE NATURAL SIZE.

- Fig. 1. A flower; enlarged.  
 2. A stamen; magnified.  
 3. The style; more magnified.  
 4. An achenium, with its pappus; enlarged.  
 5. Receptacle; enlarged.

## PLATE XIII. STYLOCLINE GRAPHALOIDES.—PAGE 101.

A PLANT OF THE NATURAL SIZE.

- Fig. 1. Involucre and receptacle.  
 2. Receptacle, with a male flower on its summit, and its subtending pappi.  
 3. A stamen.  
 4. One of the fertile flowers enclosed in its large pappi.  
 5. Dorsal view of a fertile pappi.  
 6. Vertical view of the same.  
 7. Transverse section of the same; to show the way in which the achenium is enclosed in a dorsal fold of the pappi.  
 8. A fertile flower.  
 9. An achenium; the details variously magnified.

## PLATE XIV. QUERCUS ECHINACEA.—PAGE 137.

A BRANCH OF THE NATURAL SIZE.

- Fig. 1. A leaf without serratures.  
 2. An acorn; both figures of the natural size.

## PLATE XV. SYNTRICHOPAPPUS FREMONTII.—PAGE 106.

AN ENTIRE PLANT OF THE NATURAL SIZE.

- Fig. 1. Involucre and receptacle.  
 2. A ray flower.  
 3. A disk flower.  
 4. A separate stamen.  
 5. Style and its branches.  
 6. Portion of the syntrichous pappus.  
 7. One of the leaves of the same; highly magnified.

## PLATE XVI. LAYIA PENTACHETA.—PAGE 108.

A FLOWERING BRANCH OF THE NATURAL SIZE.

- Fig. 1. Vertical section of part of a head of flowers; enlarged.  
 2. A ray flower, with its embracing involucre scale.  
 3. A marginal palea of the receptacle.  
 4. A disk flower.  
 5. A stamen of the same; magnified.  
 6. Style of a ray flower; magnified.  
 7. Style of a disk flower; equally magnified.  
 8. Involucre and receptacle; enlarged.  
 9. Achénium of a ray flower without its scale.  
 10. Achénium of a disk flower, with its pappus; the details variously magnified.

## PLATE XVII A. CALAIS BIGELOVII.—PAGE 113.

A PLANT OF THE NATURAL SIZE.

- Fig. 1. A separate flower; magnified.  
 2. Divisions of the style, showing the stigmatic lines; highly magnified.  
 3. An exterior achénium, and  
 4. An interior achénium; both moderately enlarged.  
 5. A separate palea of the pappus.

## PLATE XVII B. CALAIS TENELLA.—PAGE 114.

- Fig. 6. A separate flower; magnified.  
 7. Divisions of the style; highly magnified.  
 8. An achénium, destitute of pappus.  
 9. Another achénium crowned with two awned palea.  
 10. The receptacle. The last three figures equally magnified.

## PLATE XVIII. CALAIS CYCLOCARPHA.—PAGE 113.

- Fig. 1. A flower; magnified.  
 2. A stamen; more highly magnified.  
 3. The style; equally magnified.  
 4. An achénium crowned with its pappus; magnified.  
 5. A single palea; equally magnified.  
 6. Receptacle; enlarged.

## PLATE XIX. ERIOGONUM LACHNOGYNUM.—PAGE 132.

AN ENTIRE PLANT OF THE NATURAL SIZE.

- Fig. 1. An involucre, from which several flowers protrude; magnified.  
 2. Perianth laid open; more magnified.  
 3. A pedicel, with a pair of bracteoles at its base; equally magnified.  
 3a. A third and broader bracteole, inserted exterior to the others; equally magnified.  
 4. The pistil; more magnified.  
 5. A ripe achénium; considerably enlarged.  
 6. Embryo, from the same.

## PLATE XX. OBIONE HYMENELYTRA.—PAGE 129.

- Fig. 1. A branch, with male flowers, of the natural size.  
 2. A branch from a female plant, with fruit, of the natural size.  
 3. A male flower; magnified.  
 4. A female flower; also magnified.  
 5. The same, with one bract removed to show the pistil; more enlarged.  
 6. Embryo; considerably magnified.



## PLATE XXI. DAMASONIUM CALIFORNICUM.—PAGE 142.

AN ENTIRE PLANT OF THE NATURAL SIZE.

- Fig. 1. Plan of the flower.  
 2. A flower; somewhat magnified.  
 3. One of the sepals; also magnified.  
 4. An anther; more magnified.  
 5. A pistil, laid open to show the position of the ovule.  
 6. A ripe achenium; considerably magnified.  
 7. Seed; still more magnified.

## PLATE XXII. SCOLIOPUS BIGELOVIL.—PAGE 145.

A PLANT OF THE NATURAL SIZE.

- Fig. 1. A separate flower.  
 2. A sepal, with a stamen, seen anteriorly.  
 3. A petal.  
 4. Anther, with part of the filament, posterior view.  
 5. Pistil, with the ovary divided transversely; a petal and a stamen.  
 6. Portion of the ovary divided transversely and vertically.  
 7. An ovule. The details, except figure 1, more or less magnified.

## PLATE XXIII. STROPHOLIRION CALIFORNICUM.—PAGE 149.

AN ENTIRE PLANT OF THE NATURAL SIZE.

- Fig. 1. The perianth laid open; moderately enlarged.  
 2. The pistil; more enlarged.  
 3. A ripe pod, showing the dehiscence.  
 4. One of the carpels of the same, laid open and showing the seed.  
 5. Transverse section of a pod.  
 6. A seed; considerably magnified.  
 7 and 8 should be erased.

## PLATE XXIV. ODONTOSTOMUM HARTWEGIL.—PAGE 150.

AN ENTIRE PLANT (EXCLUSIVE OF THE ROOT) OF THE NATURAL SIZE.

- Fig. 1. The unopened perianth; magnified.  
 2. Flower laid open; equally magnified.  
 3. A stamen; more magnified.  
 4. Part of the ovary; longitudinally divided and magnified.  
 5. An ovule; also magnified.  
 6. Transverse section of an ovary.  
 7. Immature fruit.

## PLATE XXV. CORALLORHIZA STRIATA.—PAGE 152.

A PLANT OF THE NATURAL SIZE, IN FLOWER AND FRUIT.

- Fig. 1. A flower; moderately enlarged.  
 2. Lip of the same; magnified.  
 3. The column; equally magnified.

\* Incorrectly named *C. Macraei* on the plate.



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[The regular names of Species, Genera, and Natural Orders are in *Ital.* Synonyms and names of plants otherwise noticed are in Roman.]

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\* From some misunderstanding, the types have been reversed from their ordinary use in such cases. This was discovered after the index was set up, and it was too late to make the change. The author thinks it is proper to state that, owing to his distance from the press, and the rapidity with which the printing was done, he was not able to revise the proofs.

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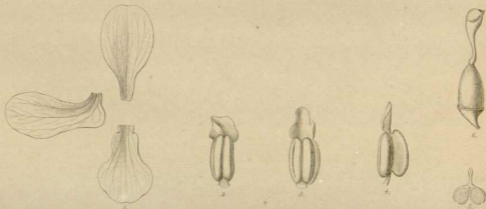




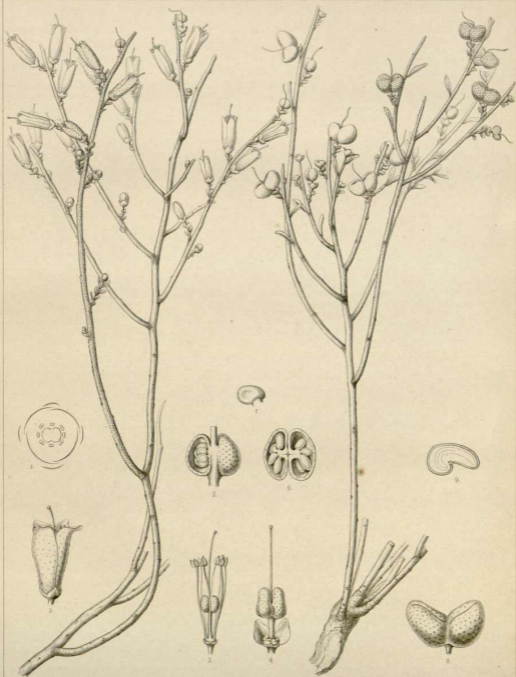
CROSSOSOMA GALEOBNICA

*Bigelovii* Wilson exd. fig. 1 & 2

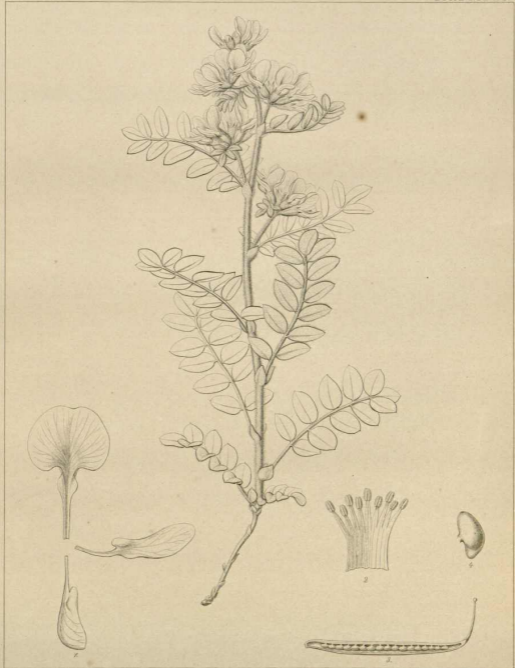
A. S. Peck, New York



VIOLA SHELTONII

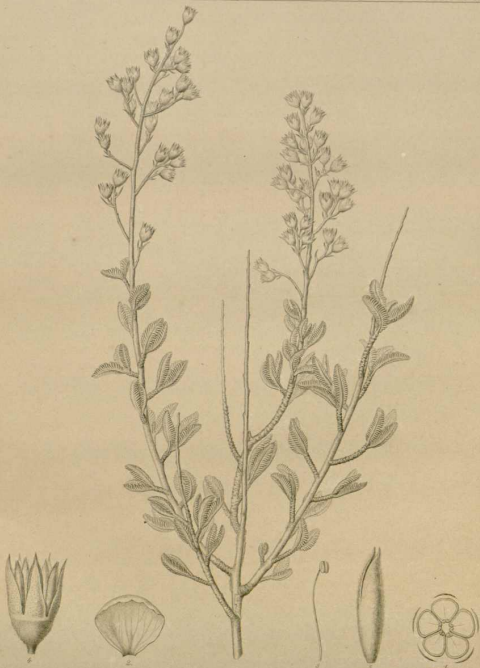


THAMOSMA MONTANUM

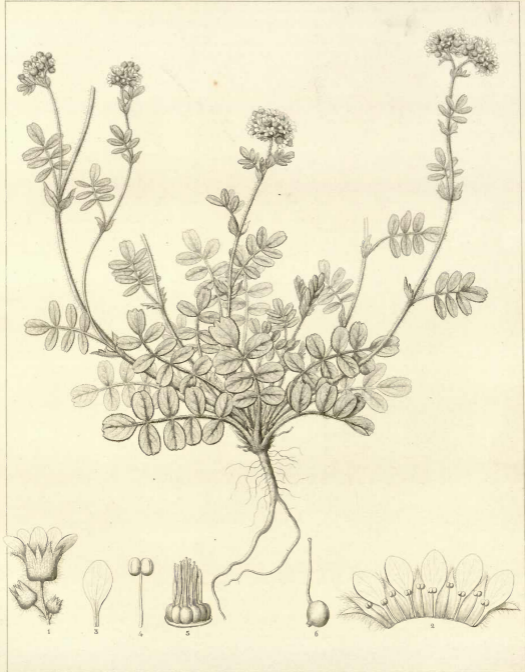


HOSACKIA INCANA.

*Ackerman Lith. W. Bradley N.Y.*

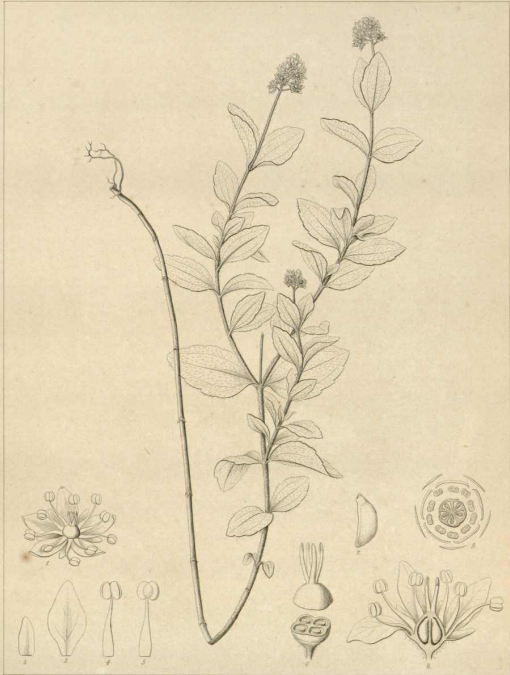


SPIRÆA MILLEFOLIUM



HORKELIA TRIDENTATA

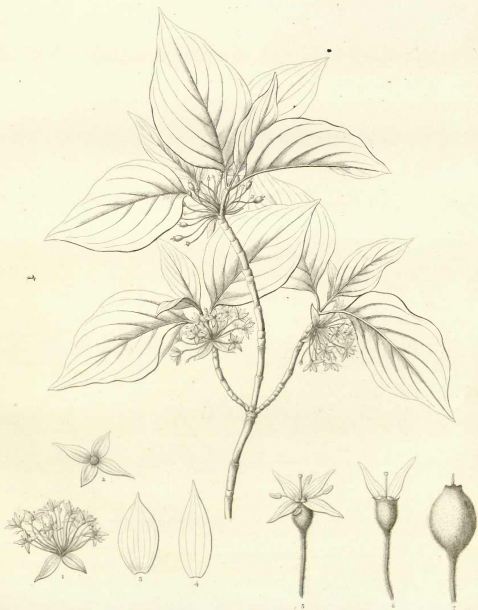
*A. Gray. Lith. J. B. Broun. N.Y.*



WHIPPLA A. MODESTA

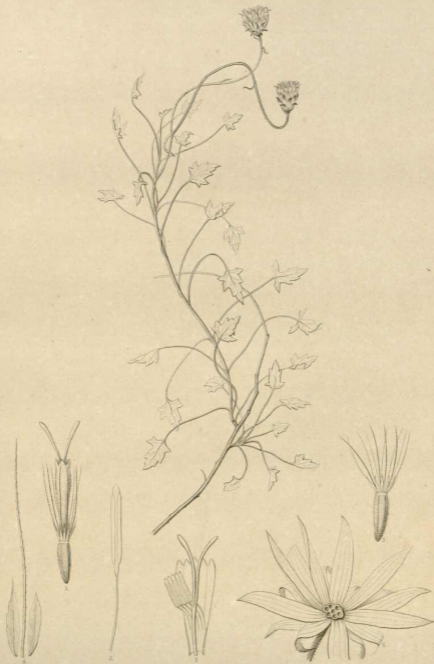
A. S. Hitchcock, del. J. M. Coulter, sculp.





CORNUS SESSILIS.

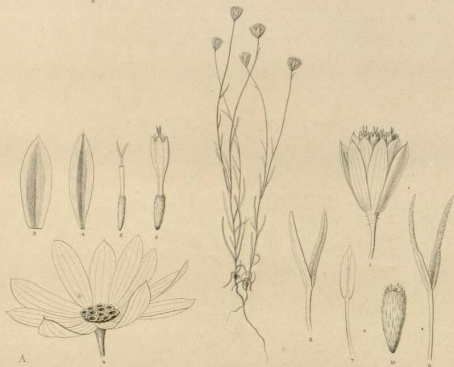
*Abrams, Lith. 29 Broadway, N.Y.*

*Hofmeisteria plurisetata*, N. P.

HOFMEISTERIA PLURISEATA.



ASTER BIGELOVII



A

APHANTOCHEATE EXILIS

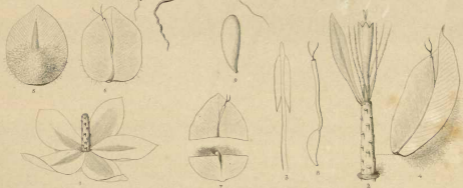


B

EVAX CAULESCENS.



LINOSYRIS BIGELOVII.



*Asplenium L. & C. New York, N.Y.*

STYLOCLINE GNAPHALOIDES.

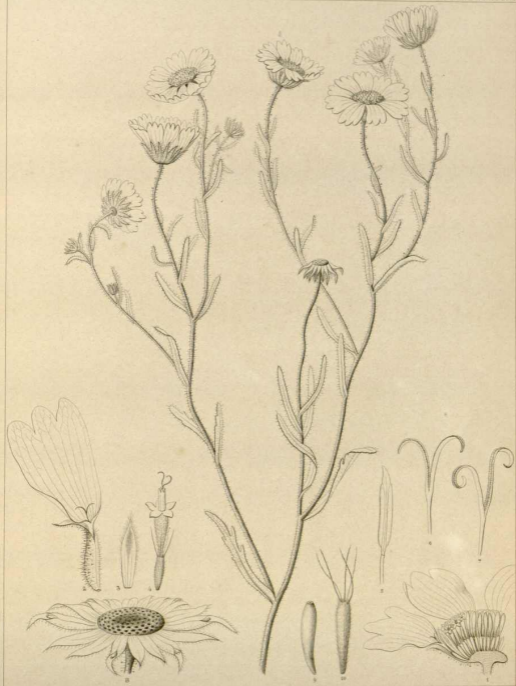


QUERCUS ECHINACEA.



SYNTRICHOPAPPUS FREMONTII.





LAYIA PENTACHETA

*Asterias* L. 39. *Franseria* N.Y.



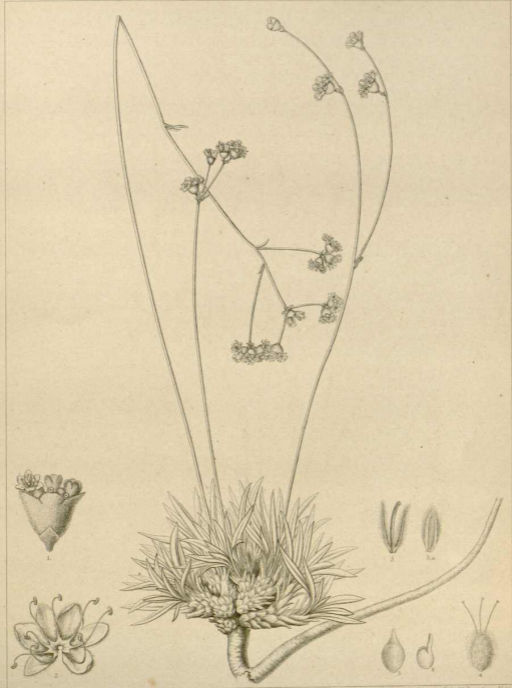
CALAIS BICOLOR

CALAIS TENELLA

*Lith. by J. H. Gregory & Co.*



CALAIS CYCLOCARPHA.



ERIOGONUM LACHNOGYNUM

Arthur C. M. Broadway N.Y.

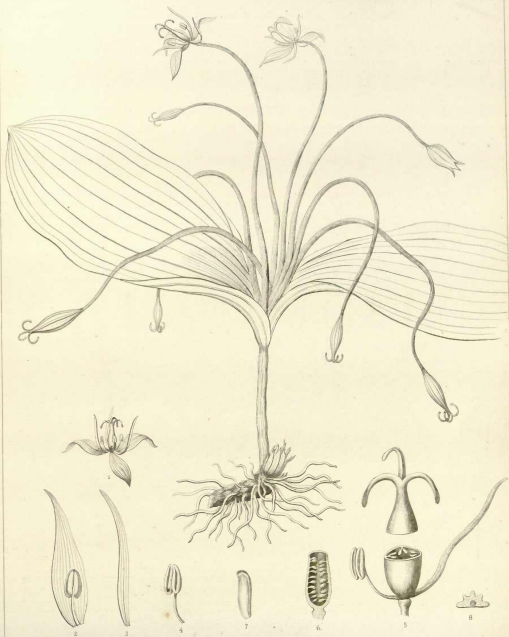


OBIONE HYMENELYTRA.

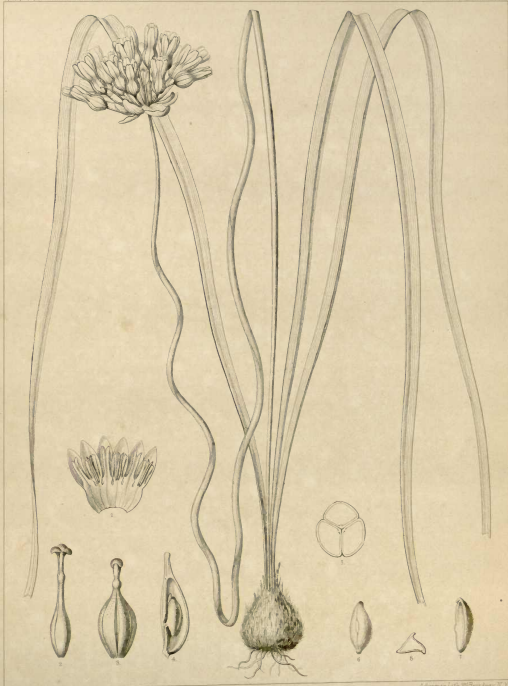


ALISMA CALIFORNICA.

*Alisma* Lea. 39. *Bradley* K. 1.



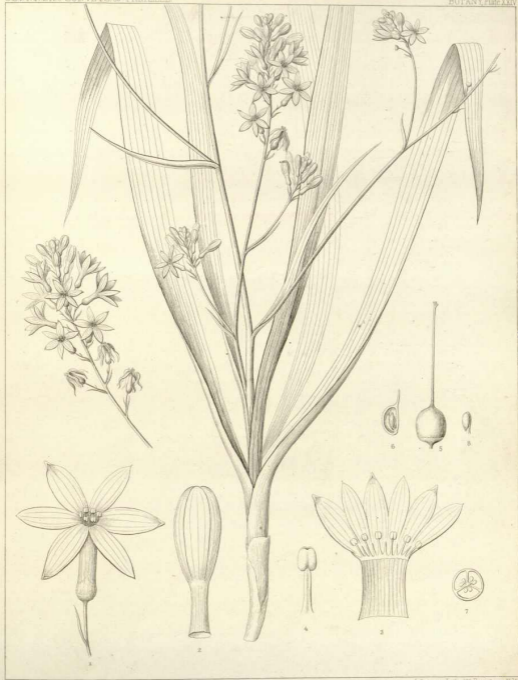
SCOLIOPUS BIGELOVII



A. N. S. P. 1883-1884, p. 117

STROPHOLIRION CALIFORNICUM.





ODONTOSTOMUM HARTWEGII



CORALLORHIZA MACRAEI

*Arthur L. D. S. Gray, N.Y.*