

dred thousand; and in one place, between camps 91 and 97, there is a long wide valley, twenty miles in length, much of which is covered with the ruins of buildings and broken pottery.

These ruins are uniformly of the same kind; not one stone now remains on the top of the other; and they are only discoverable by the broken pottery around them, and stone laid in regular order, showing the trace of the foundation of a house.

Most of these outlines are rectangular, and vary from 40 x 50 to 200 and 400 feet front. The stone are unhewn, and are most of an amygdaloid, rounded by attrition.

Now of the tributaries which come into the Gila from the north, there are several besides the Salinas, which, at their mouths, are insignificant in size and can be stepped across; but in this whole region no legitimate inference can be drawn of the size of a river, throughout its course, from that at any one point.

It may be large near its source, and after traversing deserts of sand, through arid regions, unwatered by rains, become very small, and even disappear altogether.

Therefore, except the Salinas, of which we have oral accounts, nothing is known or can be inferred of the magnitude of these tributaries from their appearance at the junction. These tributaries come in near camp 81, where the mountains are so precipitous and bold no conjecture can be formed of their course.

The Salinas must have been the branch by which the expedition of Coronado ascended and crossed into New Mexico. Its general direction is not far from a line drawn from its mouth to Santa Fé, and nearly in this line are the seven towns mentioned as being on the head waters of the San José. Indians now pass from the Pimos village to New Mexico on this route.

I omitted to mention in its proper place, that we were informed by an intelligent Marricopas Indian that, about fifty miles from the mouth of the Salinas, was now standing, in a perfect state of preservation, the walls of a large three story building of mud, with its interior sides glazed and finely polished, and about it was to be seen many traces of large acequias, and broken pottery in great abundance.

There is another tribe of Indians called the Moquis, who, like the Pimos and Soones, cultivate the soil and live in peace with their neighbors; but the exact locality of this tribe I do not know, beyond the fact that it is on or near the head waters of some of the tributaries of the Gila.

I am, with great respect, your obedient servant,

W. H. EMORY.

APPENDIX No. 2.

COLLEGE OF PHYSICIANS AND SURGEONS,  
New York, February 10, 1848.

MY DEAR SIR: I have examined the interesting collection of plants which you kindly placed at my disposal, and herewith send you a list of them, as complete as my numerous engagements permit me to make at present. The route which you passed over is exceedingly rich in botanical treasures, as is evident from the number of new species and genera which you were enabled to make under great disadvantages, and in an expedition which was almost wholly military in its character. Most of the new plants which you found are only indicated, or, at most, very briefly described in the following list. A more full account of them will be given hereafter.

I am, my dear sir, very respectfully, yours,

JOHN TORREY.

To Lieutenant Colonel W. H. EMORY.

JULY 22, 1847.

MY DEAR SIR: I give you the following written sketch of the route, not being able, as you request, to get a trace made from my map.

From the 27th June to July 11th, we were traversing the country between Fort Leavenworth and the bend of the Arkansas, a rich rolling prairie embraced between the 39th and 38th parallels of latitude, and the 94th and 98th meridians of longitude.

From July 11th to July 13th, followed the Arkansas to Pawnee fork, in longitude about 99. At this point the fertile soil ceases, except on the immediate margin of the streams.

From the 14th July to August 1st, we were in the valley of the Arkansas, occasionally crossing the spurs of low hills which interrupt the direct course of the Arkansas. This part lies in latitude 38°, and between longitude 99° and 103° 1'.

From the 1st August to the 8th, crossing the plain in a southerly direction and mounting the Raton mountain, about 7,000 feet above the sea, between latitudes 38 and 36.

From the 8th August to the 14th, in the valleys of the tributaries to the Canadian, and crossing the extensive plains between these valleys.

From the 14th August to the 18th, ascending the great ridge between the head of the Canadian and the waters of the Del Norte,



halting at Santa Fé, in latitude  $35^{\circ} 41'$ , on a tributary of the Del Norte, about 15 miles distant from the Del Norte, and about 1,500 feet above that river and 6,850 above the sea.

From August 18th up to the 14th October, all the collections were made in New Mexico, in the valley of the Del Norte, or on the table lands adjacent, and between Santa Fé and the 33d parallel of latitude; (230 miles below Santa Fé.)

From the 14th October to the 19th, we were crossing the great dividing ridge between the waters of the Del Norte and the waters of the Gila, nearly on the 33d parallel of north latitude, and between the 107th and 109th meridians of longitude, measured from Greenwich. The greatest height of this dividing ridge along our trail was about 6,000 feet above the sea.

From the 19th of October to the 22d November, we were following the course of the Gila river, occasionally forced into the mountains to avoid the cañons. This route is never far from the 33d parallel of latitude, and is embraced between the  $109^{\circ}$  and  $114^{\circ} 30'$  meridians of longitude, falling, during that distance, very uniformly from about 5,000 feet to near the level of the sea.

From the 22d November to the 24th, we were on the Colorado of the west, traversing a low sandy bottom.

From the 24th November to the 28th we were crossing the great desert of drifting sand in a course little north of west.

On the 28th November, we encamped at the Cariso (Reed) creek or spring, the waters of which, when first exposed, are warm, and emit the smell of sulphuretted hydrogen.

From the 28th November we commenced to ascend the Cordilleras of California, (the continuation of which forms the peninsula of Lower California,) and reached the highest point of the route December 5th, 3,000 feet above the sea, and as many below the overhanging peaks. From that point we descended to San Diego, a seaport on the level of the sea, in latitude  $32^{\circ} 45'$  and longitude  $117^{\circ} 11'$  west of Greenwich. This point we reached December 12.

With great respect, very truly yours,

W. H. EMORY.

Professor TORREY, Princeton.

#### RANUNCULACEÆ.

*Ranunculus aquaticus*, Linn. Plains of the Arkansas.

*Clematis Virginiana*, Linn. Raton mountain. An undetermined species of this genus was found in fruit November 10th on the Gila. The plumose tails of the carpels are nearly three inches long.

#### BERBERIDACEÆ.

*Berberis pinnata*, Lagasca. Highlands bordering the Gila. This appears to be a common species in the southern part of Upper California, and in Northern Mexico.

#### CRUCIFERÆ.

*Lepidium ruderales*, Linn. Valley of the Arkansas.

*Erysimum Arkansanum*, Nutt. Tributaries of the Canadian.

#### CAPPARIDACEÆ.

*Polanisia graveolens*, Raf. In flower and fruit September 26—October 3, valley of the Del Norte. The plant is taller, and the flowers are considerably larger than in the form that is common in the northern United States.

*Cleome integrifolia*, Nutt. This beautiful species is abundant on both sides of the mountains, from the plains of Oregon, and the upper waters of the Platte, to latitude  $33^{\circ}$  north.

#### VIOLACEÆ.

*Viola cucullata*, Linn. Pawnee fork of the Arkansas.

#### PORTULACACEÆ.

*Portulaca oleracea*, Linn. On the Arkansas. Perhaps introduced.

*Sesuvium portulacastrum*, Linn. In flower and fruit, November 17. Saline soils along the Gila. Leaves spatulate. Flowers nearly sessile, stamens numerous. Styles 3.

#### GERANIACEÆ.

*Geranium Frémontii*, Torr. in Frém. 2d Rep. On the Raton.

#### TYGOPHYLLACEÆ.

*Kallstramia maxima*, Torr. and Gr. *Tribulus maximus*, Linn. Tributaries of the Canadian.

*Larrea Mexicana*, Moricand, l. c. t. 48. "Creosote plant." *Idodondo* of the New Mexicans. Used externally for rheumatism. A shrub from three to six feet high. Abundant from the upper waters of the Arkansas, and valley of the Del Norte, to the great sandy deserts of California. It likewise occurs in the northern parts of Mexico. The plant abounds in a strong smelling resinous matter. No animal seems to feed on it, and it is useless for fuel, as it can scarcely be made to burn.

#### ANACARDIACEÆ.

*Rhus glabra*, Linn. From the upper part of the Arkansas to longitude  $107^{\circ}$ .

*R. laurina*, Nutt. A large shrub. Mountains of California towards the sea coast.

*R. trilobata*, Nutt. On the Gila. A shrub 18 inches high, found



late in the autumn, with staminate aments nearly matured for the following spring. The whole plant is clothed with a dense velvety pubescence. It is perhaps, a distinct species from *R. trilobata*.

## MALVACEÆ.

*Malva Munroana*, Dougl. High sandy plains, and in the valley of the Gila. Flowers bright rose color.

*M. pedata*, Torr. and Gr. Upper part of the Arkansas.

*Sphæralcea stellata*, Torr. and Gr. Near Santa Fé, &c. Highlands between the del Norte and the Gila.

*Sida coccinea*, DC. On the Raton mountain. Several other undetermined Malvaceæ occur in the collection.

## SAPINDACEÆ.

*Sapindus marginatus*, (soap berry.) Valley of the Gila.

## RHAMNACEÆ.

*Ceanothus ovalis*, β., Torr. and Gr. On the Arkansas. A small scrubby species of this genus was found on the Cordilleras of California, towards San Diego. It has thorny branches, small ovate coriaceous, smooth entire leaves, which are supported on short petioles. The branches are glabrous and glaucous. There were neither flowers nor fruit on the specimen.

*C. ovalis*, var. *intermedias*, Torr. and Gr. On the Arkansas.

## LEGUMINOSÆ.

*Sesbania macrocarpa*, Muhl. On the Gila. In fruit November 20.

*Glycyrrhiza lepidota*, Nutt. Near Santa Fé. Not found in flowers.

*Psoralea esculenta*, Pursh. (Pomme de Prairie.) On the Arkansas.

*P. floribunda*, Nutt. With the preceding.

*Amorpha fruticosa*, Linn. On the Gila. The specimens were without flower and fruit, and we therefore cannot be certain of the species.

*Dalea formosa*, Torr. in Ann., lyc., N. York, 2. p. 178. This beautiful species was first detected by Dr. James in Long's first expedition. It is a shrub about three feet high, with numerous crooked branches, and purplish flowers. Near Santa Fé, and valley of the Del Norte.

*D. alopecuroides*, Willd. With the preceding.

*D. laxiflora*, Pursh. Valley of the Arkansas.

Besides these daleæ, there were two other species, both shrubby, in the collection; but I have not ascertained whether they may not be already described. One of them is densely branched; the leaflets are in six to seven pairs, broadly obovate connate about

3 lines long, glabrous above, very villous, and furnished with large dark colored glands toward the margin underneath; they are obscurely toothed. The flowers are in short dense spikes; calyx with plumose subulate-setaceous teeth, which are as long as the tube. This species was found on the Gila river. It is very near *D. ramosissima*, Benth. in Bot. Sulph., p. 11, t. 10.

The other species is canescently tomentose, and diffusely branched. The leaflets are narrowly oblong, in three to four pairs, which are distant. On both sides they are sparingly furnished with small red glands, which are nearly concealed in the down. The flowers are in short loose spikes, small, purple. Calyx-teeth subulate, shorter than the tube, plumose. Found on the great desert west of the Colorado.

*Petalostemon gracile*, β. *oligophyllum*. Stem erect; leaflets in 2—3, linear, slightly dotted underneath; calyx glabrous, longer than the subulate bracts, the teeth very short, ovate; petals oblong. Valley of the Del Norte.

*Prosopis glandulosa*, Torr. in Ann., Lyc. N. York, 2. p. 192, t. 2. (mezquite.) Abundant in the valleys of all the rivers, from Santa Fé, west. The trunk of this tree is sometimes 14 inches in diameter. The pods are long, flat, and filled with a sweetish pulp. They are excellent food for horses, and are sometimes used by men in times of scarcity.

*P. (Strombocarpa) Emoryi*, n. sp. Branches glabrous; spines in pairs, slender, short, straight, pinnæ a single pair; leaflets about 4 pairs, oblong, somewhat coriaceous; the under surface, and the petioles somewhat pubescent; legume spirally twisted into a compact cylinder. Found in fruit only; on the Gila river. This species is nearly allied to the *P. odorata* of Frémont's 2d report, but differs in its shorter, broader, and less numerous leaflets.

*Schrankia uncinata*, Willd. On the Arkansas, where it is called sensitive vine.

*Darlingtonia brachyloba*, DC. With the preceding.

Several other mimosæ are in the collection, but the specimens are mostly without leaves and flowers.

*Cassia chamæcrista*, Linn. On the Arkansas.

## ROSACEÆ.

*Cerasus ilicifolia*, Nutt. Mountains of California. The kernel of the fruit has a strong flavor of bitter almonds.

*Geum Virginianum*, Linn. On the Arkansas.

*Fallugia paradoxa*, Endl. gen. 6385, *Sieversia paradoxa*, Don. in Linn., trans. 14, p. 576, t. 22. A remarkable rosaceous shrub, with white flowers, and very long slender plumose tails to the carpels. It differs, in some respects, from Endlicher's character of the genus; but I have not had an opportunity of comparing it with Don's description and figure. It was found in various parts of the valley of the Del Norte. Can it be *Geum dryadoides*, DC.?

*Cercocarpus parvifolius*, Nutt., Torr. and Gr., fl. 2, p. 427. A shrub about 12 feet high, with numerous straight branches springing



from near the ground. The carpels, with their long plumose spirally contorted awns, bore into the earth, after they have fallen. The action of the wind communicates to them a twisting motion, and retrorse pubescence retains them in the soil.

*Spiraea Californica*, *n. sp.* Shrubby; leaves ovate, lanceolate, undivided, nearly glabrous, glandularly serrate, conspicuously petiolate; flowers in compound corymbs, perfect, calyx segments broad, about as long as the tube; disk coherent with the tube of the calyx; stamens numerous; carpels 5, distinct, 2-valved; seeds 2, ascending, the testa expanded at the superior extremity into a membranaceous wing. Grows on high mountains near the Gila. This species is remarkable for its ascending winged seeds and coriaceous leaves. It can scarcely be referred to any of the sections into which the genus *spiraea* is at present divided.

*Andenostoma fasciculata*, *Hook and Arn.* Abundant in the Cordilleras of California. A shrub about five feet high.

*A. sparsifolia*, *n. sp.* Leaves scattered, linear subulate, dotted with glands. Cordilleras of California. A tree 30 feet high, with very numerous slender branches. Leaves nearly half an inch long, scarcely half a line wide, somewhat triangular, apparently evergreen. Flowers in small terminal paniculate spikes. Pedicels short, with numerous minute scarious bracts at the base. Calyx turbinate, campanulate, 10-striate, 5-toothed; the teeth ovate, obtuse, conspicuously imbricated. Stamens about 10; the filaments inserted into a crenulate glandular ring at the summit of the calyx tube. Ovary obovate, compressed, with 2 collateral suspended ovules. Very different in appearance from *A. fasciculata*, and destitute of the fleshy glands, with which the throat of the calyx-tube is furnished in that species.

*Photinia arbutifolia*, *Linn.* Cordilleras of California. A shrub 4-5 feet high.

#### LYTHRACEÆ.

*Lythrum alatum*, *Pursh.* On the Arkansas.

#### ONAGRACEÆ.

*Zanschneria Californica*, *Presl.* Valley of the Gila. A shrub with bright crimson flowers, resembling those of a fuchsia.

*Oenothera albicaulis*, *Nutt.* Valley of the Del Norte.

*O. pinnatifida*, *Nutt.* Tributaries of the Canadian river.

*O. biennis*, *Linn.* Valley of the Del Norte.

Several other undetermined species of *Oenothera* exist in the collection.

*Gaura coccinea*, *Nutt.* Tributaries of the Canadian.

*G. parviflora*, *Deagl.* Valley of the Del Norte.

#### LOASACEÆ.

*Mentzelia pumila*, *Nutt.* Stem whitish, slender, branching, and a little roughened above, smoothish and somewhat shining below;

leaves pinnatifid, or sinuate toothed; flowers (small) 2-3 together, pedicellate; petals 10, lanceolate; stamens very numerous; the outer filaments dilated; capsule turbinate, cylindrical; seeds numerous, winged. Valley of the Del Norte. Plant about a foot high. Flowers less than an inch in diameter. Capsule three-fourths of an inch long, 3 valved at the summit.

*Cevallia sinuata*, *Lagasca.* This interesting plant, which has been admirably illustrated by Fenzl, occurs in many parts of the valley of the Del Norte, from Santa Fé to Saltillo.

#### CUCURBITACEÆ.

*Cucumis perennis*, *James, Torr. and Gr.* On the Gila river, abundant. We are yet uncertain of the genus of this plant, which seems to be common in various parts of Mexico, particularly in arid sandy wastes. No specimens of the fruit have yet been sent to us. There are three other undetermined Cucurbitaceæ in the collection, distinct from any described in the Flora of North America.

#### CACTACEÆ.

Several interesting plants of this family were noticed by Colonel Emory, but they cannot be satisfactorily described from dried specimens. They are probably included among the numerous new species of Mexican cactaceæ soon to be described by Dr. Englemann.

#### CORNACEÆ.

*Cornus paniculata*, *V. Her.* On the Arkansas.

#### CAPRIFOLIACEÆ.

*Symphoricarpus racemosus*, *Linn.* (Snow berry.) On the Arkansas.

#### COMPOSITAE.

*Vernonia fasciculata*, *Michx.* Bent's Fort.

*Liatris punctata*, *Hook.* Rayada Creek.

*Corethrogyne tomentella*, *Torr. and Gr. fl. N. Am. 2, p. 99.* Very abundant on the Cordilleras of the Pacific, and called by the natives *estafiat*. It is a celebrated remedy for cholera, as noticed by Colonel Emory in his notes.

*Dieteria incana*, *Torr. and Gr.?* *Diplopappus incanus*, *Lindl.?* On the Gila. Differs from Douglass's Californian plant in its slender stem, and nearly glabrous, spinulose dentate leaves.

*D. Coronopifolia*, *Nutt.* Valley of the Del Norte, and the head waters of the Canadian.

*D. asteroides*, *n. sp.* Minutely scabrous, pubescent, stem paniculately branched above; leaves oblong-cuneate, somewhat rigid,



sharply and rather coarsely toothed, involucre hemispherical, scales linear, in several series, with rather short herbaceous squarrose tips; rays 30 or more, violet; achenia, sparingly pubescent. Pappus of the ray much shorter than that of the disk. Elevated land between the Del Norte and the waters of the Gila. A well marked species, with leaves broader than in any other plant of the genus.

*Aster hebecladus*, DC. Valley of the Del Norte, and desert between the Colorado and Cordilleras of California.

*A.* (tripolium.) A branching species with the stems pubescent above, and middle sized flowers with purple rays. It seems to be undescribed. Valley of the Del Norte.

*Solidago elongata*, Nutt. Valley of the Gila.

*Linosyris graveolens*, Torr. and Gr. *Chrysocoma dracunculoides*, Pursh. A shrub about two feet high, and bright yellow heads of flowers. Abundant on the highlands between the Del Norte and the Gila.

*Aplopappus spinulosus*, DC. On Ocaté creek, &c., called *Pinette* by the natives.

*A.* *Menziesii*, Torr. and Gr.  $\beta$ . *dentatus*, leaves coriaceous, strongly dentate or pinnatifid, toothed, glutinous. Abundant in the great desert between the Colorado and the Cordilleras of California. Another form of this species was found near St. Diego, with the stem and their leaves clothed with a copious loose pubescence, and the serratures of the leaves few and small.

*Grindelia*. An apparently new species of this genus was found in ascending the Cordilleras of California, but the flowers had fallen from the heads, and one specimen is therefore scarcely sufficient for determination. The stem is very smooth and whitish; the leaves are oblong, clasping at the base, spinulose, serrate and glabrous, and the scales of the involucre are very acute, but scarcely recurved.

*Chrysopsis canescens*, Torr. and Gr. Near Ocaté creek: *C. echioides*, Benth. in Bot. Sulph. p. 25. Valley of the Gila.

*Perityle*, Benth. in Bot. Sulph. A new species of this genus (*P. Emoryi*, nob.) was found in ascending the Cordilleras of California. It differs from *P. Californica* of Bentham in its smaller and much more deeply lobed leaves, narrower achenia which are very hairy on the margins, and in other characters.

*Baccharis Douglasii*, DC. Valley of the Gila. Besides this there are three other species of *Baccharis* in the collection, none of which are described in the Flora of North America, but we cannot yet pronounce them new.

*Tessaria borealis*, DC. An aromatic shrub about three feet high, growing in all the deserted beds of the Gila, and in the valley of the Del Norte; usually with the *Frémontia*, both of which are abundant in those regions.

*Hymenoclea*, Torr. and Gr. ined. This remarkable new genus is allied to *ambrosia* and *xanthium*. Another species of it (*H. Sal-sola*) was found in Frémont's second expedition, which, with the characters of the genus to which it belongs, will be published in

another work. This species, from the scales of the involucre being in a single wheel, we propose to call *H. maogyra*, Torr. and Gr. It was found in various parts of the valley of the Gila.

*Franseria Hookeriana*, Nutt. (Yerba del sapo.)

*Ambrosia acanthocarpa*, Hooker. Very abundant from Santa Fé to the 33d parallel of latitude.

Another species of this genus, and apparently an undescribed one, exists in the collection. It is suffrescent hoary, with the leaves bipinnatifidly, divided into very small obtuse segments. The flowers are wanting.

*Ambrosia artemisiæfolia*, Binn. Banks of the Gila.

*Dicoris*, Torr. and Gr. Another new genus, allied to *Iva*, of which a full description and figure will hereafter be given. It was found in the valley of the Gila, and in the desert of drifting sands west of the Colorado. (5 to 6 inches long, and 4 to 5 wide.)

*Wyethia ovata*, n. sp., Torr. and Gr., ined. Stem very stout, leaves orbicular, ovate, entire; somewhat coriaceous, pubescent, (as are also the petioles and branches) scales of the involucre lanceolate, pappus of 3 to 4 acute rigid teeth, one of which is longer than the others. Abundant on the western side of the Cordilleras of California.

*Silphium laciniatum*, Linn. (Pilotweed.) On the Arkansas and its tributaries.

Another *Silphium*, with large ovate undivided leaves, was found on Cariso creek.

*Englemannia pinnatifida*, Torr. and Gr. fl. N. Am. 2, p. 283. Tributaries of the Canadian.

*Lepachys columnaris*, Torr. and Gr. *Rudbeckia columnaris*, Pursh. The rays vary from being wholly yellow to entirely purplish brown. From the head waters of the Canadian to Santa Fé.

*Encelia farinosa*, Gray, ined. An aromatic shrubby plant; exuding a yellowish resin from the branches. The leaves are ovate, softly pubescent, and hoary on both sides, with 3 to 5 prominent reticulated nerves underneath.

*Helianthus patularis*, Nutt. Upper part of the Arkansas, and valley of the Del Norte.

*H. lenticularis*, Dougl. With the preceding.

*Coreopsis palmata*, Nutt. Turkey Creek.

*Simsia*. A rayless, and probably new species of this genus, was found in the bed of the Agua Caliente, November 28th. It is a branching shrub, and the slender bark of the irregular twigs is covered with a whitish, very scabrous pubescence. The leaves are scarcely an inch long, ovate, entire obtuse, with short petioles, and scabrous on both sides. Chaff of the receptacle, embracing the obovate achenium, the margin of which is furnished with long silky hairs.

*Wulfia*? Specimens of a plant with the floral characters of this genus, but with different foliage, were found in abundance on the higher grounds bordering the valley of the Gila. It also resembles *Leighia*, but is destitute of a pappus. Some of the genera, to



which the plant is allied, will need revision before its place can be satisfactorily determined.

*Ximenesia*, *n. sp.*? Valley of the Del Norte, and along the Gila, September and October. This needs comparison with some of the Mexican species. It very nearly resembles *X. encelioides* Cavan.

*Riddellia tagetina*, *Nutt. Torr. and Gr. fl., N. Amer. 2, p. 362.* Valley of the Del Norte, about two hundred miles below Santa Fé. A beautiful plant with persistent flowers, first detected by Mr. Nuttall towards the sources of the Platte.

*BAILEYA*, *n. gen.* *Harv. and Gr., ined.* Two other species of this unpublished genus, dedicated to that profound observer of nature, Professor Bailey of Vest Point, exist among the California plants collected by Coulter, and will soon be described by Mr. Harvey and Dr. Gray. This is distinguished from the others by its numerous ray-flowers, and in the *B. multiradiata*, *Harv. and Gr.* The whole plant is clothed with a woolly pubescence, and varies from a few inches to a foot or more in height. The leaves are somewhat pinnately cut into several narrow segments. The heads are on long naked peduncles, and when the rays are fully expanded are more than an inch and a half in diameter. The rays are 40 or 50 in number, in two or more series, obovate cuneate, of a bright orange yellow, and 7-nerved, corolla of the disk, flowers with five short segments which are glandularly pubescent, with intra-marginal nerves. Branches of the style short, somewhat dilated and truncate at the extremity. Very abundant along the Del Norte, and in the dividing region between the waters of the Del Norte and those of the Gila. Flowers from October 4th to November.

*Gaillardia amblyodon*, *Gay.* On the upper part of the Arkansas. This species has been beautifully figured by Dr. Gray in *Mem. Amer. acad. (n. ser.) t. 4.*

*G. pulchella*, *Foug.* Valley of the Del Norte.

*Palafoxia linearis*, *Lag.* New Mexico.

*Hymenoxys odorata*, *DC.* Great desert west of the Colorado.

*Artemisia filifolia*, *Torr. in Am. lyc. N. York, 2, p. 211.* Valley of the Del Norte, and along the Gila; abundant.

*A. dracunculoides*, *Pursh.* Table lands of the Del Norte and Gila. A very common species of wormwood, often called *sage* by the hunters.

*A. cana*, *Pursh.* On the Raton Mountains.

*Senecio longilobus*, *Benth. in fl. Hartweg.* A bushy species about three feet high, growing abundantly in the region between the waters of the Del Norte and the Gila.

**TETRADYMIA?** (sub-genus *Polydymia*.) Heads about 16-flowered; the flowers all tubular and perfect. Involucre of 15 to 16 oblong obtuse coriaceous-chartaceous scales which are slightly concave but not ciliate. Receptacle naked. Corolla with a rather slender tube; the lobes short, ovate, erect, furnished with long villous hairs externally. Anthers included. Branches of the style tipped with a very short obtuse pubescent cone. Achenia oblong-turbinate, villous with short hairs. Pappus of numerous, somewhat rigid, denticulate bristles. A suffrutescent prostrate much branched plant,

canescently and densely tomentose; the leaves broadly obovate, toothed, narrowed into a petiole. Heads on short peduncles, terminating the somewhat corymbose branches.

**T.** (*Polydymia*) *ramosissima*, *n. sp.* Hills bordering the Gila. Stem spreading, with very numerous matted branches. Leaves about three-fourths of an inch in length, the lamina broader than long, with 5-7 indistinct rounded teeth, abruptly narrowed into a longish petiole. Heads about one-third of an inch in diameter, ovate. Involucral scales in several series, the exterior ones shorter than the interior. Hairs of the achenium smooth, slightly bifid at the summit. Pappus longer than the achenium. This plant is clearly allied to *Tetradymia*, but differs in the many flowered heads; numerous scales of the involucre; slightly cleft corolla tube, and in several other characters, so that it should perhaps form the type of a distinct genus.

*Cirsium undulatum*, *Spreng.* The locality of this plant is not recorded, but it was probably found on the upper part of the Arkansas.

*Stephanomeria paniculata*, *Nutt.* Ascending the Cordilleras of California.

*Mulgedium pulchellum*, *Nutt.* Pawnee Fork of the Arkansas.

#### ERICACEÆ.

*Arctostaphylos pungens*, *Kunth.*? Valley of the Gila and San Diego. Flowers in January.

*A. tomentosa*, *Dougl.*? A shrub 4 to 5 feet high. Cordilleras of California. This may be a smooth variety of Douglass plant. The leaves are orbicular-ovate, obtuse or truncate at the base, glabrous on both sides, with the petiole one-third the length of the lamina. It was not found in flower.

#### PLANTAGINACEÆ.

*Plantago*, *n. sp.*? Allied to *P. gnaphaloides*, *Nutt.* Great desert west of the Colorado, near the Cordilleras of California. The whole plant is clothed with a loose white tomentum, which is partly deciduous with age. The leaves are linear lanceolate, entire, and taper to a long narrow base. The peduncles are 5 to 6 inches long, and bear a close cylindrical spike, which is less than an inch in length. Sepals ovate, membranaceous, marked with a strong mid-rib, which is villous externally. Segments of the corolla ovate. Capsule 2 seeded.

#### PEDALIACEÆ.

*Martynia proboscidea*, *Linn.*? Abundant in the valley of the Del Norte. We have only the leaves and a drawing of the fruit. It is possibly *M. altheaefolia*. *Benth. in bot. Sulph.*