

REPORT ON A COLLECTION OF PLANTS MADE BY C. H. THOMPSON IN SOUTHWESTERN KANSAS IN 1893.

By A. S. HITCHCOCK.

INTRODUCTORY STATEMENT.

The plants of which a catalogue is here presented were collected by Mr. Thompson between June 23 and August 23, 1893, along the following route: Garden City south to Ivanhoe, west to Ulysses and Johnson, north to Syracuse, in various directions over Hamilton County, south along the west line of Stanton County to Richfield, southwest to Point of Rocks on the Cimarron, back to Richfield, east through Moonlight and Hugoton to Liberal, north through Springfield and Santa Fe to Garden City. Collections were made as follows: Ulysses, Grant County, numbers 1 to 66; Johnson, Stanton County, 67 to 73; southern part of Hamilton County, 74 and 75; Syracuse, Hamilton County, 76 to 121, and 123 to 163; Shilon, Hamilton County, 122; Point of Rocks, Morton County, 164 to 170; Richfield, Morton County, 172 and 173; Moonlight, Stevens County, 174 to 183; Liberal, Seward County, 184; Springfield, Seward County, 185 and 186.

The number of species of plants found upon the high prairie is small under favorable conditions. The season of 1893 was exceptionally dry for this normally dry country, thus placing many difficulties in the way of the collector.

In the summer of 1895 the writer had the pleasure of making a wagon trip through the same counties in which Mr. Thompson collected. The country for the most part consists of nearly level upland prairie, varying in altitude from 2,500 feet at Liberal to 3,500 feet at Syracuse and 3,750 feet at Johnson. The species of plants are few in number and quite widely and evenly distributed. The great bulk of the vegetation consists of buffalo grass (*Bulbilis dactyloides*) and grama grass (*Bouteloua oligostachya*). These grow closely intermingled, forming a dense, soft mat a few inches in height. The latter species shows an interesting adaptation for cross pollination. The flowers are arranged in one-sided spikes, of which there are usually two or three. The two stigmas protrude from the base of the partially opened glumes and recurve toward the main rachis. The anthers, as is usual in grasses,

hang on slender filaments, easily shaken by the slightest breeze. The spikes are so arranged that when acted upon by the wind they turn like vanes. This brings all the spikes in a direction nearly parallel to the wind, the stigmas being to windward and the anthers to leeward: thus the stigmas necessarily receive pollen from a different plant. The same adaptation is seen in other species of *Bouteloua* and in some other grasses.

The following species are also frequent in the uplands:

<i>Allionia linearis.</i>	<i>Ipomoea leptophylla.</i>
<i>Ambrosia psilostachya.</i>	<i>Lacinaria punctata.</i>
<i>Artemisia wrightii.</i>	<i>Lepachys columnaris.</i>
<i>Asclepias latifolia.</i>	<i>Linum rigidum.</i>
<i>Carduus ochrocentrus.</i>	<i>Lygodesmia juncea.</i>
<i>Engelmannia pinnatifida.</i>	<i>Meriolix serrulata.</i>
<i>Eriocarpum spinulosum.</i>	<i>Psoralea tenuiflora.</i>
<i>Evolvulus nuttallianus.</i>	<i>Solidago missouriensis.</i>
<i>Grindelia squarrosa.</i>	<i>Sophora sericea.</i>
<i>Gutierrezia sarothra.</i>	<i>Thelesperma gracile.</i>
<i>Hymenopappus tenuifolius.</i>	

All these are adapted to the dry climate by possessing the power to retard evaporation from the foliage. Many of them have small or narrow leaves, as in *Allionia* or *Lacinaria*, or the leaves are deeply lobed or cut, as in *Hymenopappus* and *Thelesperma*, or compound with small leaflets, as in *Sophora*. In *Ambrosia wrightii* the narrow lobes of the leaves are strongly revolute. The surface is often covered with a hairy coating (*Evolvulus*, *Engelmannia*), or is resinous (*Gutierrezia*, *Grindelia*). *Grindelia*, moreover, is strongly paraheliotropic, the sessile leaves twisting near the base and assuming a vertical position. In *Linum* and especially in *Lygodesmia* the leaves are reduced, the rod-like stems acting as foliage. *Asclepias latifolia* is the only plant with broad leaves. The leaves, however, are thick, and are either so arranged that they are shaded when on the opposite side from the sun, or set at such an angle as to present the edge to the sun. They are also set close together, so that they protect each other from rapid evaporation. Furthermore, the contiguous lobes at the bases of the leaves, which are opposite and sessile, are upturned, thus forming a depression near the base of each leaf, in which water collects after a rain or a dew at night. This water will remain for many hours and doubtless serves to modify evaporation.

Mr. Thompson collected no Cacti. There are three species common on the uplands: *Opuntia mesacantha*, with pink, pulpy fruit which is eaten by small animals; *O. polyacantha*, with smaller joints and small dry fruit; and *Cereus viridiflorus* Engelm. The two species of *Opuntia* when found on the uplands almost always have the joints in a vertical position, but appressed to the ground. The tufts of joints are thus not raised much above the buffalo grass. When they occur in the bottom land, as is frequently the case, many of the joints are lifted from the ground and often present the side to the sky. *O. polyacantha*

is usually distinguished by a reddish cast to the spines. *Cereus viridiflorus* is common only in the western half of the territory under consideration.

Many species of plants which may occur scattered here and there in the sod of the upland show a preference for broken prairie, such as fire guards, roadsides, and piles of earth thrown up by prairie dogs and other animals. From this disposition quickly to occupy bare soil they become in some cases troublesome weeds. The following are of this kind:

<i>Aristida fasciculata.</i>	<i>Helianthus annuus.</i>
<i>Chamaesaracha coniodes.</i>	<i>Lappula texana.</i>
<i>Chloris verticillata.</i>	<i>Malvastrum coccineum.</i>
<i>Cladothrix lanuginosa.</i>	<i>Martynia louisiana.</i>
<i>Dysodia papposa.</i>	<i>Munroa squarrosa.</i>
<i>Elymus elymoides.</i>	<i>Panicum capillare.</i>
<i>Erysimum asperum.</i>	<i>Physalis lobata.</i>
<i>Euphorbia glyptosperma.</i>	<i>Salvia lanceolata.</i>
<i>Euphorbia marginata.</i>	<i>Schedonnardus paniculatus.</i>
<i>Euphorbia stictospora.</i>	<i>Solanum rostratum.</i>
<i>Gaura coccinea.</i>	

In *Schedonnardus*, *Chloris*, and *Panicum* the whole inflorescence breaks away at maturity and "tumbles" before the wind. The first-mentioned grass is peculiar in the remarkable growth which takes place in the axes after flowering. The main axis may grow to a length of 2 feet or more, becoming at the same time loosely spiral. In *Elymus* the spike separates and becomes light from the spreading of the long awns. Bushels of these spikes will collect in favorable situations. *Aristida*, or "spear-grass," becomes in fruit very troublesome. Each fruit separates from the mother plant, the three awns reflex horizontally, and the wind carries them with the barbed callus forward ready to catch in the hair of animals or in clothing. Its abundance in certain localities makes it a great pest.

On the prairie of the valleys the common plants are—

<i>Andropogon hallii.</i>	<i>Astragalus mollissimus.</i>
<i>Andropogon nutans avenaceus.</i>	<i>Elymus canadensis.</i>
<i>Andropogon saccharoides glaucus.</i>	<i>Lepachys tagetes.</i>
<i>Argemone alba.</i>	<i>Sporobolus airoides</i> , or "bunch grass."

Astragalus mollissimus is the common "loco-weed" of this region. In dry years the bunches are conspicuous from their bright green color when the surrounding vegetation is brown. The name *loco* is applied to a number of species of *Astragalus* and also to *Spicesia lambertii*.

The above plants grow in what is usually called the "second bottom." Still lower, in the first bottom, and where subject to overflow, are found—

<i>Acuan illinoensis.</i>	<i>Grindelia grandiflora.</i>
<i>Baccharis salicina.</i>	<i>Heterotheca subarillaris.</i>
<i>Cleome serrulata.</i>	<i>Rhus radicans.</i>
<i>Euphorbia serpens.</i>	<i>Spartina cynosuroides.</i>
<i>Glycyrrhiza lepidota.</i>	

If the soil is sandy, *Aster tanacetifolius* and *Gaillardia pulchella* are common.

The *Grindelia* is considered by many to be a variety of *G. squarrosa*. As seen in the field it certainly seems a good species. It is a simple-stemmed annual, often 4 feet or more high, with larger, spinulose-margined leaves and larger heads of flowers which bloom earlier than *G. squarrosa*.

On the upland there are numerous depressions known as "buffalo wallows." These vary from a few feet in diameter to many acres in extent. They retain water some time after a rain and are therefore likely to present an interesting flora. Of Mr. Thompson's collection the following occur in such localities:

Lippia cuneifolia.

Panicum crus-galli.

Megapterium canescens.

The *Panicum* is erect, a foot or two high, with a contracted inflorescence resembling that of *P. colonum*, and with scarcely awned flowers.

Where the soil becomes salty or alkaline one finds *Agropyron repens glaucum*, *Atriplex expansa*, and *Distichlis spicata*. The *Atriplex* is a common weed in the Arkansas Valley.

The stony hills occurring along the streams furnish a characteristic flora. Here are found—

Aster ericifolius.

Galpinsia hartwegii.

Atriplex canescens.

Melampodium cinereum.

Bouteloua hirsuta.

Mentzelia decapetala.

Cassalpinia jamesii.

Paronychia jamesii.

Crassina grandiflora.

Parosela cuneandra.

Eriogonum lachnogynum.

Ptilipida acaulis.

Euphorbia fendleri.

Ptilipida scaposa.

Euphorbia lata.

Rhus trilobata.

Euphorbia petaloidea.

Yucca glauca.

The *Mentzelia* is a particularly gorgeous plant. Its numerous yellowish-white flowers, 3 or 4 inches in diameter, open toward evening. I observed the flowers of *Galpinsia* to be visited at dusk by a sphinx moth (apparently *Deilephila lineata*).

Along the Arkansas River, on the south side, lies an extensive range of sand hills. A similar tract is found along the Cimarron River. These regions yield a greater variety of interesting plants than any of the others. Mr. Thompson's collection shows the following:

Abronia fragrans.

Euphorbia geyeri.

Asclepias arenaria.

Fraxichia floridana.

Calamovilfa longifolia.

Gilia aggregata.

Cenchrus tribuloides.

Heliotropium convolvulaceum.

Commelina virginica.

Hymenopappus flavescens.

Cristatella erosa.

Mentzelia multiflora.

Croton texensis.

Parosela aurea.

Cycloloma atriplicifolium.

Parosela lanata.

Cyperus schweinitzii.

Pentstemon albidus.

Eragrostis orylopis.

Polanisia trachysperma.

Eriogonum annuum.

Polypteris hookeriana.

Eriogonum longifolium.

Sporobolus cryptandrus.

Many of these are annuals provided with long taproots. Others are deep-rooted perennials. *Asclepias arenaria* is furnished with a long and slender upright rootstock proceeding from a fleshy vertical root. A specimen dug up by myself showed a rootstock about 5 feet in length, with the diameter of a lead pencil. At the base of this was a fleshy root 1 inch in diameter and 6 inches in length, but cut off at the lower end by the spade.

Mr. Thompson did not collect the cryptogams. Of ferns I observed none. One species of *Equisetum* is found along the streams, and *Marsilia vestita* is common in the buffalo wallows.

Fairy rings were frequent this season on the uplands. They vary from a few feet to many rods in diameter. Some were formed by a species of large *Agaricus*, apparently *A. morgani*, but most were due to a large puffball (*Lycoperdon cyathiforme*). These occurred in large numbers and made nearly perfect circles.

In the following list of the species collected by Mr. Thompson the remarks following the designation of locality are taken from the collector's notebook.

CATALOGUE OF SPECIES.

RANUNCULACEÆ.

Cyrtorhyncha cymbalaria (Pursh) Britton, Mem. Torr. Club, v, 161 (1894); *Ranunculus cymbalaria* Pursh, Fl. ii, 392 (1814). Originally found "in saline marshes near the salt works of Onondaga, New York."

Syracuse, Hamilton County (No. 108). Collier's ranch, 7 miles above town, on the Arkansas River; very common.

PAPAVERACEÆ.

Argemone alba Lestib. Bot. Belg. ed. 2, iii, 133 (1799); *A. albiflora* Hornem. Hort. Hafn. 489 (1813-15).

Syracuse, Hamilton County (No. 144). Common.

BRASSICACEÆ.

Erysimum asperum (Nutt.) DC. Syst. ii, 505 (1821); *Cheiranthus asper* Nutt. Gen. ii, 69 (1818); *Erysimum lanceolatum* Pursh, Fl. ii, 436 (1814), not R. Br. Type distribution, "On the plains of the Missouri, commencing near the confluence of White River." Pursh's plant was collected "on the banks of the Missouri."

Shiloh, Hamilton County (No. 122). Frequent on upland prairie.

CAPPARIDACEÆ.

Cleome serrulata Pursh, Fl. ii, 441 (1814). Type found "on the banks of the Missouri."

Springfield, Seward County (No. 185). Common.

Cristatella erosa Nutt. Journ. Acad. Phila. vii, 86 (1834); *Cleome*, n. sp. Torr. Ann. Lyc. N. Y. ii, 168 (1827). "This plant was also found by Mr. Nuttall in the Arkansas Territory in 1819." This is No. 25 of Torrey's list of James's plants. The type data given in Torrey and Gray¹ are "In sand, Arkansas, Dr. James. Texas, Drummond."

Syracuse, Hamilton County (No. 93). Rather common on the sand hills.

¹ Torr. & Gr. Fl. i, 124 (1838), under *C. jamesii*.

Polanisia trachysperma Torr. and Gr. Fl. i, 669 (1840). Type locality, "Texas." Syracuse, Hamilton County (No. 121). Common in sandy soil, especially dry creek beds and sand bars.

VIOLACEÆ.

Calceolaria verticillata (Ort.) Kuntze, Rev. Gen. Pl. i, 41 (1891); *Viola verticillata* Ort. Dec. iv, 50 (1797). Type locality, "Nova Hispania."

Richfield, Morton County (No. 171). Frequent in "buffalo wallows;" confined to the high prairie.

POLYGALACEÆ.

Krameria secundiflora DC. Prodr. i, 341 (1824). Type collected "in Mexico."

Richfield, Morton County (No. 170). Sandy slopes under Point of Rocks; rare.

CARYOPHYLLACEÆ.

Paronychia jamesii Torr. & Gr. Fl. i, 170 (1838); *P. dichotoma* Torr. Ann. Lye. N. Y. ii, 206 (1827), not Nutt. Type collected "on the Arkansa?"

Ulysses, Grant County (No. 19). Valley of a tributary to North Fork Cimarron; rare. Richfield, Morton County. Numbers of this and No. 17 apparently interchanged in the specimens from Richfield.

PORTULACACEÆ.

Portulaca oleracea L. Sp. Pl. i, 445 (1753). Type distribution, "In Europa australi, India, Ins. Ascensionis, America."

Syracuse, Hamilton County (No. 151). Common along railway embankments.

MALVACEÆ.

Callirhoe involucrata (Nutt.) Gray, Pl. Fendl. 15 (1849); *Nuttallia involucrata* Nutt.; Torr. Ann. Lye. N. Y. ii, 172 (1826-28), *nomen nudum*. Type locality, "Valley of the Loup Fork."

Ulysses, Grant County (No. 46). In grassy meadow of North Fork Cimarron Valley; rare.

Malvastrum coccineum (Pursh) Gray, Pl. Fendl. 21 (1849); *Malva coccinea* Nutt. Fraser's Cat. (1813), *nomen seminudum*; *Cristaria coccinea* Pursh, Fl. ii, 453 (1814). Type distribution, "On the dry prairies and extensive plains of the Missouri."

Ulysses, Grant County (No. 12). Abundant.

LINACEÆ.

Linum rigidum Pursh, Fl. i, 210 (1814). The type was collected "on the Missouri." Syracuse, Hamilton County (No. 81). Common on irrigated land and along irrigating ditches.

ZYGOPHYLLACEÆ.

Tribulus maximus L. Sp. Pl. i, 386 (1753). Type collected "in Jamaicae aridis." Syracuse, Hamilton County (No. 89). Common along the railroad and the Arkansas River.

VITACEÆ.

Parthenocissus vitacea (Knerr) Hitchcock, Spring Fl. Manh. 26 (1894); *Ampelopsis quinquefolia vitacea* Knerr, Bot. Gaz. xviii, 71 (1893). Type locality not given.

Syracuse, Hamilton County (No. 111). Common in timber.

ANACARDIACEÆ.

Rhus trilobata Nutt.; Torr. & Gr. Fl. i, 219 (1838). Originally collected "in the central chain of the Rocky Mountains."

Syracuse, Hamilton County (No. 120). North slopes of sand hills; abundant.

Rhus radicans L. Sp. Pl. i, 266 (1753). The type was found "in Virginia, Canada."

Syracuse, Hamilton County (No. 102). North slopes of sand hills; common.

FABACEÆ.

Psoralea tenuiflora Pursh, Fl. ii, 475 (1814). The type was obtained "on the banks of the Missouri."

Syracuse, Hamilton County (No. 149). Common in lowlands and meadows.

Amorpha fruticosa L. Sp. Pl. ii, 713 (1753). Type collected "in Carolina."

Syracuse, Hamilton County (No. 112). Frequent along river banks.

Parosela aurea (Nutt.) Britton, Mem. Torr. Club, v, 196 (1894); *Dalea aurea* Nutt.; Pursh, Fl. ii, 740 (1818). Type collected "in Upper Louisiana."

Ulysses, Grant County (No. 27). Frequent on sandy land.

Parosela enneandra (Nutt.) Britton, Mem. Torr. Club, v, 196 (1894); *Dalea enneandra* Nutt. Fraser's Cat. no. 30 (1813). Type distribution, "Upper Louisiana and principally in the River Missouri."

Ulysses, Grant County (No. 38). Syracuse, Hamilton County (No. 191). Abundant on uplands and hillsides.

Parosela lanata (Spreng.) Britton, Mem. Torr. Club, v, 196 (1894); *Dalea lanata* Spreng. Syst. iii, 327 (1826). Type obtained "ad fl. Arkansa Amer. bor."

Syracuse, Hamilton County (No. 103). Abundant on otherwise entirely barren sand drifts and blows in the sand hills.

Kuhnistera compacta (Spreng.) Kuntze, Rev. Gen. Pl. i, 192 (1891); *Dalea compacta* Spreng. Syst. Veg. iii, 327 (1826). Type locality, "Ad fl. Rio Roxo in ditioe Arkansa Amer. bor."

Ulysses, Grant County (No. 26). On sandy knolls along the South Fork of the Cimarron; rare.

Kuhnistera multiflora (Nutt.) Heller, Mem. Torr. Club, v, 197 (1894); *Petalostemon multiflorus* Nutt. Journ. Acad. Phila. vii, 92 (1834).

Ulysses, Grant County (No. 40). Rare; on hillsides.

Kuhnistera purpurea (Vent.) MacMillan, Metasp. Minn. Val. 329 (1892); *Dalea purpurea* Vent. Jard. Cels, t. 40 (1800). Type locality, "le pays des Illinois."

Ulysses, Grant County (No. 9). On hillsides along the North Fork of the Cimarron and its tributary; very scarce.

Kuhnistera villosa (Nutt.) Kuntze, Rev. Gen. Pl. i, 192 (1891); *Petalostemon villosus* Nutt. Gen. ii, 85 (1818). The type grew "on sandy banks of Knife River, near Fort Mandan, Missouri."

Syracuse, Hamilton County (No. 96). Plentiful in the sand hills.

Astragalus mollissimus Torr. Ann. Lye. N. Y. ii, 178 (1826). Type collected "on the Platte."

Ulysses, Grant County (No. 3). Abundant, especially on the uplands.

Astragalus scobinatulus Sheldon, Bull. Geol. and Nat. Hist. Surv. Minn. ix, 24 (1894); *A. haydenianus major* Jones, Zoe, ii, 241 (1891). Range of former, "Kansas to Utah;" type of latter collected "at Johnson, Southern Utah, on alkaline flats, or meadows."

Syracuse, Hamilton County (No. 139). Abundant.

Phaca pectinata Hook. Fl. Bor. Amer. i, 141 (1833). Type distribution, "Pastures of the Saskatchewan, Drummond; and on the Red Deer and Eagle Hills, bordering on that river. Douglas."

No data accompany these specimens (No. 193).

Glycyrrhiza lepidota Pursh, Fl. ii, 480 (1814). Type collected "on the banks of the Missouri."

Ulysses, Grant County (No. 37). Frequent in the valleys.

Sophora sericea Nutt. Gen. i, 280 (1818). Type collected "on the elevated plains of the Missouri, near the confluence of the White River." Mr. Nuttall remarks in his description: "This is *Astragalus carnosus* of Mr. Pursh, Fl. 2, p. 740. Supplement; he having by mistake applied the description of the fruit of an *Astragalus* which I had published to this species of *Sophora*." Pursh's plant was collected "in upper Louisiana."

Syracuse, Hamilton County (No. 87). Common in the Arkansas Valley.

Cæsalpinia jamesii (Torr. & Gr.) Fisher, Bot. Gaz. xviii, 123 (1893); *Hoffmannseggia jamesii* Torr. & Gr. Fl. i, 393 (1840). Type locality, "Sources of Canadian River."

Ulysses, Grant County (No. 5). Also Johnson, Stanton County, and Syracuse, Hamilton County. On upland prairie and more frequently on old plowed land that has been undisturbed for a year or two.

Acuan illinoensis (Mx.) Kuntze, Rev. Gen. Pl. i, 158 (1891); *Mimosa illinoensis* Mx. Fl. ii, 254 (1803). Type distribution, "In pratensibus regionis Illinoensis."

Syracuse, Hamilton County (No. 155). Frequent along dry sloughs in the Arkansas Valley.

LYTHRACEÆ.

Lythrum alatum Pursh, Fl. i, 334 (1814). Type collected "in lower Georgia."

Ulysses, Grant County (No. 34). In creek bottom lands; very rare. The specimens are peculiar in showing many short stems from a strong caudex, probably a result of being annually burned off. The leaves approach closely No. 248 of Lindheimer's Texas plants. Kansas specimens of *L. alatum* show great variation in the leaves and the prominence of the disk.

ONAGRACEÆ.

Onagra biennis (L.) Scop. Fl. Carn. ed. 2, i, 269 (1772); *Enothera biennis* L. Sp. Pl. i, 346 (1753). Type said to grow "in Virginia unde 1614, nunc vulgaris Europæ."

Syracuse, Hamilton County (No. 163). On canal banks; rare.

Megapterium canescens (Torr. & Frem.) Britton, Mem. Torr. Club, v, 235 (1894); *Enothera canescens* Torr. & Frem. in Frem. Rep. 315 (1845). The authors make the statement: "This species was collected (we believe) on the upper waters of the Platte."

Syracuse, Hamilton County (No. 143). Only in "buffalo wallows;" common.

Galpinsia hartwegii (Benth.) Britton, Mem. Torr. Club, V, 236 (1894); *Enothera hartwegii*, Benth. Pl. Hartw. 5 (1839). Type locality, Mexican. Syracuse, Hamilton County (No. 106). Hillsides; not uncommon.

Meriolix serrulata (Nutt.) Walp. Repert. ii, 79 (1843); *Enothera serrulata* Nutt. Gen. i, 246 (1818). Type distribution, "From the River Platte to the mountains, on dry hills."

Ulysses, Grant County (No. 1). Common on upland prairies, especially in "buffalo wallows."

Gaura coccinea Pursh, Fl. ii, 733 (1814). Type collected "in upper Louisiana."

Johnson, Stanton County (No. 70). Common.

Gaura parviflora Dougl.; Hook. Fl. Bor. Amer. i, 208 (1833). Type locality, "Sandy banks of the Wallawallah River, northwest coast of America."

Syracuse, Hamilton County (No. 133). Occasionally found along ditch banks.

LOASACEÆ.

Mentzelia multiflora (Nutt.) Gray, Pl. Fendl. 48 (1849); *Bartonia multiflora* Nutt. Proc. Acad. Phila. iv, 23 (1847). Type locality, "Sandy hills along the borders of the Rio del Norte, Santa Fe (Mexico.)"

Hamilton County, Millsap's Farm, 16 miles south of Syracuse (No. 74). Frequent in cultivated land and in sedimentary deposits in the low land.

Mentzelia nuda (Pursh) Torr. and Gr. Fl. i, 535 (1840); *Bartonia nuda* Pursh, Fl. i, 328 (1814). Originally collected "on the banks of the Missouri."

Syracuse, Hamilton County (No. 123). Common along ditches.

CUCURBITACEÆ.

Cucurbita foetidissima H. B. K. Nov. Gen. & Sp. ii, 123 (1817). The type grew "prope Guanaxuato Mexicanorum, allit. 1080 hexap."

Ulysses, Grant County (No. 45). Not uncommon.

CAPRIFOLIACEÆ.

Symphoricarpos occidentalis Hook. Fl. Bor. Amer. i, 285 (1833); *Symphoria occidentalis* R. Br. in Richards. App. Frankl. Journ. 733 (1823), nomen nudum. Type distribution, "British America in the wooded country from latitudes 54° to 64° north."

Syracuse, Hamilton County (No. 100). Bottom land near Arkansas River; frequent.

CARDUACEÆ.

Vernonia baldwinii (Torr.) Ann. Lye. N. Y. ii, 211 (1827). Type plants found "on the Missouri above St. Louis, and on the lower part of the Ohio. Dr. Baldwin."

Syracuse, Hamilton County (No. 161). Abundant in timbered lowlands.

Vernonia marginata (Torr.) Britton, Mem. Torr. Club, v, 311 (1894); *Vernonia altissima?* *marginata* Torr. Ann. Lye. N. Y. ii, 210 (1827). Originally obtained "on the Arkansas?"

Richfield, Morton County (No. 173). By a pond in North Fork Cimarron; rare.

Lacinaria punctata (Hook.) Kuntze, Rev. Gen. Pl. i, 349 (1891); *Liatris punctata* Hook. Fl. Bor. Amer. i, 306 (1833). Type distribution, "Plains of the Saskatchewan, Drummond; and on the Red Deer and Eagle hills, in dry soils, common. Douglas."

Moonlight, Stevens County (No. 174). Common on the prairie.

Gutierrezia sarothræ (Pursh) Britton & Rusby, Trans. N. Y. Acad. Sci. vii, 10 (1887); *Solidago sarothræ* Pursh, Fl. ii, 540 (1814). Type collected "on the plains of the Missouri."

Richfield, Morton County (No. 168). Abundant on the higher land.

Grindelia squarrosa (Pursh) Dunal, in DC. Prodr. v, 315 (1836); *Donia squarrosa* Pursh, Fl. ii, 559 (1814). The type was found "in open prairies, on the banks of the Missouri."

Springfield, Seward County (No. 186). Very common.

Chrysopsis villosa hispida (Hook.) Gray, Syn. Fl. i, pt. ii, 123 (1884); Gray, Proc. Acad. Phila. 1863, 65 (1863); *Diplopappus hispidus* Hook. Fl. Bor. Amer. ii, 22 (1834). Type locality, "Carleton House Fort. Dr. Richardson."

Ulysses, Grant County (No. 7). Frequent on hillsides.

Eriocarpum spinulosum (Pursh) Greene, Erythea, ii, 108 (1894); *Amellus spinulosus* Pursh, Fl. 564 (1814). The type was found "in open prairies, on the Missouri."

Ulysses, Grant County (No. 6); abundant. Syracuse, Hamilton County (No. 192).

Solidago missouriensis Nutt. Journ. Acad. Phila. vii, 32 (1834). Type distribution, "On the upper branches of the Missouri and in Arkansas."

Moonlight, Stevens County (No. 175). Common in sandy land.

Aster ericæfolius Rothrock, Bot. Gaz. ii, 70 (1877); *Inula?* *ericoides* Torr. Ann. Lye. N. Y. ii, 219 (1827). Type collected "on the Canadian?"

Ulysses, Grant County (No. 65). Not common.

Aster tanacetifolius H. B. K. Nov. Gen. & Sp. iv, 95 (1820). Type locality, "In Norte Mexicano."

Ulysses, Grant County (No. 47). Lowlands; rare.

Erigeron divergens Torr. & Gr. Fl. ii, 175 (1841); *Erigeron divaricatum* Nutt. Trans. Amer. Phil. Soc. n. ser. vii, 311 (1841), not Mx. Type distribution, "In the Rocky Mountains and the plains of Oregon."

Syracuse, Hamilton County (No. 80), in damp ground, rare. In the sand hills (No. 90), rare.

Baccharis salicina Torr. & Gr. Fl. ii, 258 (1841); *B. salicifolia* Nutt. Trans. Amer. Phil. Soc. vii, 337 (1841), not Pers. Type locality, "Banks of the Arkansa."

Moonlight, Stevens County (No. 179). Frequent.

Baccharis wrightii Gray, Pl. Wright. i, 101 (1852). Type locality, "Valley of the Limpia."

Ulysses, Grant County (No. 41), in flower, very rare. Johnson, Stanton County (No. 67), in fruit; not common.

Melampodium cinereum DC. Prodr. v, 518 (1836). The type was obtained "in Mexico and San Fernando."

Ulysses, Grant County (No. 17). Not abundant.

Engelmannia pinnatifida Gray; Nutt. Trans. Amer. Phil. Soc. vii, 343 (1841); *Silphium*, n. sp. Nutt.; Torr. Ann. Lye. N. Y. ii, 215 (1826-28). Type locality, "The plains of the Red River."

Ulysses, Grant County (No. 14). Frequent.

Ambrosia psilostachya DC. Prodr. v, 526 (1836). Type found "in Mexico inter San Fernando et Matamoras."

Ulysses, Grant County (No. 28); on old plowed ground. Syracuse, Hamilton County (No. 160); abundant.

Xanthium canadense (?) Mill. Gard. Diet. ed. 8, no. 2 (1768).

Richfield, Morton County (No. 172). Common in moist places. Specimens immature.

Crassina grandiflora (Nutt.) Kuntze, Rev. Gen. Pl. i, 331 (1891); *Zinnia grandiflora* Nutt. Trans. Amer. Phil. Soc. vii, 348 (1841). Type distribution, "In the Rocky Mountains, toward Mexico."

Richfield, Morton County (No. 164). Sandy soil, Point of Rocks, abundant.

Lepachys columnaris (Pursh) Torr. & Gr. Fl. ii, 315 (1842); *Rudbeckia columnaris* Pursh, Fl. ii, 575 (1814). Originally collected "on the Missouri."

Ulysses, Grant County (No. 15). Common.

Lepachys tagetes (James) Gray, Pac. R. Rep. iv, 103 (1856); *Rudbeckia tagetes* James, Long Exped. ii, 68 (1823). Type locality, "about 15 miles southwest of the La Junta, Colorado."

Johnson, Stanton County (No. 68). Very common.

Helianthus annuus L. Sp. Pl. ii, 901 (1753). Type distribution, "In Peru, Mexico."

Ulysses, Grant County (No. 16 in part). In sand along the bank of North Fork Cimarron; rare.

Helianthus petiolaris Nutt. Journ. Acad. Phila. ii, 115 (1821). Type collected "on the sandy shores of the Arkansas."

With the last (No. 16 in part)

Thelesperma ambiguum Gray, Proc. Amer. Acad. xix, 16 (1883).

"This name is assigned to the radiate species which replaces *T. filifolium* in the western part of Texas and adjacent parts of New Mexico and Colorado."

Ulysses, Grant County (No. 52). Quite abundant in meadow land along West Fork Cimarron.

Thelesperma gracile (Torr.) Gray, Kew Journ. Bot. i, 252 (1849); *Bidens gracile* Torr. Ann. Lyc. N. Y. ii, 215 (1827). Type collected "on the Canadian?"

Ulysses, Grant County (No. 23). Frequent.

Hymenopappus flavescens Gray, Mem. Amer. Acad. ser. 2, iv, 97 (1849). The type was obtained "between San Miguel and Las Vegas, New Mexico." "Also a form of the same a few miles west of Willow Bar of the Cimarron," "and near the Cimarron by Dr. Wislizenus."

Ulysses, Grant County (No. 64). Hillsides.

Hymenopappus tenuifolius Pursh, Fl. ii, 742 (1814). Type collected "in Upper Louisiana."

Ulysses, Grant County (No. 24). On uplands.

Polypteris hookeriana (Torr. & Gr.) Gray, Proc. Amer. Acad. xix, 31 (1883); *Palafoxia hookeriana* Torr. & Gr. Fl. ii, 368 (1842); *Stevia sphacelata* Nutt.; Torr. Ann. Lyc. N. Y. ii, 214 (1827), *nomen seminudum*; *Palafoxia texana* Hook. Icon. Pl. ii, 148 (1837), not DC. Type locality, "Texas."

Syracuse, Hamilton County (No. 76). Common in the sand hills.

Dysodia papposa (Vent.) Hitch. Trans. St. Louis Acad. v, 503 (1891); *Tagetes papposa* Vent. Jard. Cels, t. 36 (1801). Type "découverte par Michaux dans le pays des Illinois, introduite chez Cels en l'an 5."

Johnson, Stanton County (No. 73). Common along roadsides.

Hymenatherum aureum (Gray) Gray, Proc. Amer. Acad. xix, 42 (1883); *Lowellia aurea* Gray, Mem. Amer. Acad. ser. 2, iv, 91 (1849). Type collected "between Cold Spring and Upper Spring, west of Cimarron Creek."

Syracuse, Hamilton County (No. 152). On an island in the Arkansas River, 5 miles east of Syracuse; rare.

Gaillardia pulchella Foug. Mem. Acad. Paris (1786).

Ulysses, Grant County (No. 61). In the hills south of river; rare.

Ptilepida acaulis (Pursh) Britton, Mem. Torr. Club, v, 339 (1894); *Gaillardia acaulis* Pursh, Fl. ii, 743 (1814). Type collected "in upper Louisiana."

Richfield, Morton County (No. 169). Sandy slopes under Point of Rocks; rare.

Ptilepida scaposa (DC.) Britton, Mem. Torr. Club, v, 340 (1894); *Cephalophora scaposa* DC. Prodr. v, 663 (1836). Originally found "in Mexicanae prov. Texas district. orientalibus."

Ulysses, Grant County (No. 11). Frequent on the uplands.

Artemisia wrightii Gray, Proc. Amer. Acad. xix, 48 (1883); *A. ludoviciana mexicana* forma *tenuifolia* Gray, Pl. Wright. ii, 98 (1852). Type locality, "Mountains around the copper mines."

Liberal, Seward County (No. 184). Abundant.

Carduus ochrocentrus (Gray) Greene, Proc. Acad. Phila. 1892, 363 (1893); *Cirsium ochrocentrum* Gray, Mem. Amer. Acad. ser. 2, iv, 110 (1849). Type locality, "Mountain sides around Santa Fe."

Ulysses, Grant County (No. 49). Common.

Lactuca pulchella (Pursh) DC. Prodr. vii, 134 (1838); *Sonchus pulchellus* Pursh, Fl. ii, 502 (1814). Type collected "on the banks of the Missouri."

Syracuse, Hamilton County (No. 162). Bank of irrigating ditch; scarce.

Lygodesmia juncea (Pursh) Don, Edinb. Phil. Journ. vi, 311 (1829); *Prenanthes juncea* Pursh, Fl. ii, 498 (1814). The type plant grew "on the banks of the Missouri." Ulysses, Grant County (No. 32). Abundant.

Lygodesmia rostrata (Gray) Gray, Proc. Amer. Acad. ix, 217 (1874); *L. juncea rostrata* Gray, Proc. Acad. Phila. 1863, 69 (1863). The type grew "on the plains." Syracuse, Hamilton County (No. 105), north slope of sand hills.

APOCYNACEÆ.

Apocynum cannabinum L. Sp. Pl. i, 213 (1753). Type collected "in Canada, Virginia."

Syracuse, Hamilton County (No. 146). On an island in Arkansas River; rare.

ASCLEPIADACEÆ.

Asclepias arenaria Torr. Bot. Mex. Bound. 162 (1859). Type locality, "Journado del Muerte and on the upper Rio Grande, in New Mexico."

Syracuse, Hamilton County (No. 98). Common on sand hills.

Asclepias latifolia (Torr.) Britton, Mem. Torr. Club, v, 263 (1894); *A. obtusifolia latifolia* Torr. Ann. Lye. N. Y. ii, 217 (1826-28). Type obtained "on the Canadian?"

Syracuse, Hamilton County (No. 140). Common.

Asclepias verticillata pumila Gray, Proc. Amer. Acad. xii, 71 (1876). Type range, "Nebraska to near Mexico."

Syracuse, Hamilton County (No. 84). Frequent along the hillsides bordering the north of the valley.

Acerates angustifolia (Nutt.) Dec. in DC. Prodr. viii, 522 (1844); *Polyotus angustifolius* Nutt. Trans. Amer. Phil. Soc. ser. 2, v, 201 (1837). Type plant found "in dry prairies from Fort Smith to Red River."

Syracuse, Hamilton County (No. 147). Frequent.

GENTIANACEÆ.

Eustoma russellianum (Hook.) Griseb. in DC. Prodr. ix, 51 (1845); *Lisianthus russellianus* Hook. Bot. Mag. t. 3626 (1839); *Lisianthus glaucifolius* Nutt. Trans. Amer. Phil. Soc. ser. 2, v, 197 (1837), not Jacq. Type found "on the sandy banks of the Great Salt River of Arkansas."

Syracuse, Hamilton County (No. 107). Common.

POLEMONIACEÆ.

Gilia aggregata (Pursh) Spreng. Syst. i, 626 (1825); *Cantua aggregata* Pursh, Fl. i, 147 (1814). Type obtained "on the banks of the Mississippi."

Moonlight, Stevens County (No. 176). Abundant in the sand hills.

Gilia inconspicua (Smith) Sweet, Hort. Brit. 286 (1826); *Ipomopsis inconspicua* Smith, Exot. Bot. i, 25 (1804).

Syracuse, Hamilton County (No. 153). On land subject to overflow by the river; rare.

BORAGINACEÆ.

Heliotropium convolvulaceum (Nutt.) Gray, Mem. Amer. Acad. vi, 403 (1857); *Euploca convolvulacea* Nutt. Trans. Phil. Soc. v, 190 (1837). Type locality, "On the sandy banks of the Arkansa."

Syracuse, Hamilton County (No. 95). Abundant in the sand hills.

Heliotropium curassavicum L. Sp. Pl. i, 130 (1753). Type distribution, "Americæ calidioris maritimis."

Ulysses, Grant County (No. 18). In bottom of dried-up ponds; abundant.

Lappula texana (Scheele) Britton, Mem. Torr. Club, v, 273 (1894); *Echinosperrum texanum* Scheele, Linnæa, xxv, 260 (1852); *Cynoglossum pilosum* Nutt. Gen. i, 114 (1818), not Ruiz & Pav. The type was found "on arid hills above Rapid River, Missouri."

Syracuse, Hamilton County (No. 79). On ditch banks; rare.

Oreocarya suffruticosa (Torr.) Greene, Pittonia, i, 57 (1887); *Myosotis suffruticosa* Torr. Ann. Lyc. N. Y. ii, 225 (1827). Type locality. "Barren deserts along the Platte."

Syracuse, Hamilton County (No. 97). Frequent in the sand hills.

Lithospermum angustifolium Mx. Fl. i, 130 (1803). Type collected "ad flumen Ohio."

Syracuse, Hamilton County (No. 85). Found occasionally in Arkansas Valley.

CONVOLVULACEÆ.

Ipomœa leptophylla Torr. in Frem. First Rep. 94 (1843). Type locality, "Forks of the Platte to Laramie River." It was also "collected about the sources of the Canadian" by Dr. James in Long's expedition.

Ulysses, Grant County (No. 33). Abundant.

Convolvulus incanus Vahl, Symb. iii, 23 (1794). Type locality, "America."

Ulysses, Grant County (No. 39). Very rare.

Evolvulus nuttalianus Roem. & Schult. Syst. vi, 198 (1820); *E. argenteus* Pursh, Fl. i, 187 (1814), not R. Br. Type collected "on the banks of the Missouri."

Ulysses, Grant County (No. 10). Sandy soil; abundant.

Cuscuta indecora neuropetala (Engelm.); *C. neuropetala* Engelm. Amer. Journ. Sci. xlv, 75 (1843). Type locality, "Texas, in wet prairies near Houston."

Syracuse, Hamilton County (No. 159). Frequent in lowlands.

SOLANACEÆ.

Solanum nigrum L. Sp. Pl. i, 186 (1753). Type locality not given.

Syracuse, Hamilton County (No. 114). Frequent in timbered land.

Solanum rostratum Dunal, Hist. Sol. 234 (1813).

Ulysses, Grant County (No. 30). Very abundant.

Physalis lobata Torr. Ann. Lyc. N. Y. ii, 226 (1827). Type collected "on the Canadian?"

Syracuse, Hamilton County (No. 77). Very common in damp places.

Physalis longifolia Nutt. Trans. Amer. Phil. Soc. v, 193 (1837). Type collected "on sandy banks of the Arkansas near Belle Point."

Syracuse, Hamilton County (No. 104). Sand hills; not common.

Physalis virginiana Mill. Dict. ed. 8, no. 4 (1768). No locality given.

Ulysses, Grant County (No. 31). On high uplands in "buffalo wallows."

Chamæsaracha coniodes (Moric.) Britton, Mem. Torr. Club, v, 287 (1894); *Solanum coniodes* Moric.; DC. Prodr. xiii, 64 (1852). The type was obtained "in Mexico inter Laredo et Bejar (Berlan. Pl. exsic. Mex. n. 1463, et 1494)."

Ulysses, Grant County (No. 29); Syracuse, Hamilton County (No. 190). Frequent about excavations.

SCROPHULARIACEÆ.

Pentstemon albidus Nutt. Gen. ii, 53 (1818). Type distribution, "On the plains of the Missouri, common from the confluence of the river Platte to the mountains."

Syracuse, Hamilton County (No. 83). In the sand hills; frequent.

PEDALIACEÆ.

Martynia louisiana Mill. Gard. Diet. ed. 8, no. 3 (1768); *M. proboscidia* Glox. Obs. 14 (1785). Type locality, "ad Mississippi flumen."

Ulysses, Grant County (No. 4). Roadsides and waste places. Syracuse, Hamilton County (No. 88).

VERBENACEÆ.

Verbena bracteosa Mx. Fl. ii, 13 (1803). The plant was originally found "in regione Illinoensi et in urbe Nash-ville."

Ulysses, Grant County (No. 42). Frequent around old cellars.

Verbena stricta Vent. Jard. Cels, t. 53 (1801). The type plant was "decouverte, en 1792, par Michaux dans le pays des Illinois, introduite chez Cels en l'an 5."

Syracuse, Hamilton County (No. 154). Frequent.

Lippia cuneifolia (Torr.) Steud. Nomencl. ii, 54 (1841); *Zapania cuneifolia* Torr. Ann. Lyc. N. Y. ii, 234 (1827). Type collected "on the Platte."

Ulysses, Grant County (No. 22). Abundant in lowlands.

LAMIACEÆ.

Mentha canadensis L. Sp. Pl. ii, 577 (1753). Originally collected "in Canada." Syracuse, Hamilton County (No. 158). Moist places; frequent.

Lycopus sinuatus Ell. Bot. S. Car. & Georg. i, 26 (1816). Type obtained "on the Ogeechee River, Vall' Ambrosa."

Syracuse, Hamilton County (No. 116). Dry sloughs; abundant.

Salvia lanceolata Willd. Enum. 37 (1809). Type locality not given.

Johnson, Stanton County (No. 69). Abundant on plowed ground.

Scutellaria lateriflora L. Sp. Pl. ii, 598 (1753). Originally found "in Canada, Virginia."

Syracuse, Hamilton County (No. 115). Abundant along dry sloughs.

Teucrium occidentale Gray, Syn. Fl. ii, pt. i, 349 (1878). Range, "Nebraska to New Mexico, Arizona, and on the Sacramento, California."

Syracuse, Hamilton County (No. 157). Common in the woods.

NYCTAGINACEÆ.

Allionia linearis Pursh, Fl. ii, 728 (1814). Originally collected "in upper Louisiana."

Ulysses, Grant County (No. 58). Frequent in the valleys.

Abronia fragrans Nutt.; Hook. Kew Journ. Bot. v, 261 (1853). Type found "on loamy, sandy, firm banks, within the high drift sand hills of the lower Platte."

Syracuse, Hamilton County (No. 124). Frequent on ditch banks.

Abronia micrantha Torr. in Frem. First Rep. 96 (1843). Type locality, "Near the mouth of Sweet Water River [Wyoming]." Dr. Gray changes the name of this plant to *A. cycloptera*¹ on the ground that Dr. Torrey's type "was founded on the precociously fertilized state of a species, the fully developed flowers of which are the very largest of the genus." He further states, "I will not hesitate in this case to change the specific name."

Syracuse, Hamilton County (No. 101). Rare; in gravelly washes along Arkansas River.

¹Amer. Journ. Sci., ser. 2, xv, 319 (1853).

AMARANTHACEÆ.

Amaranthus retroflexus L. Sp. Pl. ii, 991 (1753). Originally collected "in Pennsylvania."

Syracuse, Hamilton County (No. 137). Abundant on irrigated land.

Cladotrix lanuginosa (Nutt.) Moq. in DC. Prodr. xiii, pt. 2, 359 (1849); *Achyranthes lanuginosa* Nutt. Trans. Amer. Phil. Soc. ser. 2, v, 166 (1837). Type collected "on the sand beaches of Great Salt River, Arkansas."

Ulysses, Grant County (No. 28). On plowed ground and earth heaps.

Frœlichia floridana (Nutt.) Moq. in DC. Prodr. xiii, pt. 2, 420 (1849); *Oplotheca floridana* Nutt. Gen. ii, 79 (1818). Type collected "on the banks of the Altamaha, Florida."

Ulysses, Grant County (No. 66). On old building site, Syracuse, Hamilton County (No. 92). Frequent in sand hills.

CHENOPODIACEÆ.

Cycloloma atriplicifolium (Spreng.) Coulter, Mem. Torr. Club, v, 143 (1894); *Kochia atriplicifolia* Spreng. Nacht. Fl. Hal. i, 35 (1801).

Syracuse, Hamilton County (No. 119). Common along banks of Arkansas River.

Ulysses, Grant County (No. 51). North Fork Cimarron River, in sand.

Chenopodium album L. Sp. Pl. i, 219 (1753). Type collected "in agris Europæ."

Syracuse, Hamilton County (No. 130). Common on irrigated land.

Atriplex canescens (Pursh) James, Cat. 178 (1825); *Calligonum canescens* Pursh, Fl. i, 370 (1814). Type collected "in the plains of the Missouri, near the Big-bend."

Richfield, Morton County (No. 166). Frequent in the crevices of the rocks at Point of Rocks.

Atriplex expansa Wats. Proc. Amer. Acad. ix, 116 (1874); *Obione argentea* Torr. in Emory, Mil. Recon. 149 (1848). The type stated to be "abundant in sandy saline places on the Del Norte."

Syracuse, Hamilton County (No. 145). Abundant on irrigated land.

POLYGONACEÆ.

Eriogonum annuum Nutt. Trans. Amer. Phil. Soc. v, 164 (1837). Type plant found "on the banks of the Great Salt River of Arkansas, and near the confluence of the Kiawesha and Red rivers."

Moonlight, Stevens County (No. 178). Common in sandy land.

Eriogonum lachnogynum Torr.; Benth. DC. Prodr. xiv, 8 (1856). The type was collected "in Novo-Mexico (Fendler n. 765) in montibus scopulosis (Gordon)."

Richfield, Morton County (No. 165). Common on the crest of the rocks at Point of Rocks.

Eriogonum longifolium Nutt. Trans. Amer. Phil. Soc. v, 164 (1837). The type was found "on the ledges of the Cadron rocks and denudated prairies from Arkansas to Red River."

Moonlight, Stevens County (No. 177). Plentiful in the sand hills.

Polygonum convolvulus L. Sp. Pl. i, 364 (1753). Originally collected "in Europæ agris."

Syracuse, Hamilton County (No. 90). Rare; sheltered places.

EUPHORBIACEÆ.

Euphorbia dentata Mx. Fl. ii, 211 (1803). Type collected "in Tennessee, juxta Nashville."

Syracuse, Hamilton County (No. 148). Common.

Euphorbia fendleri Torr. & Gr. Pac. R. Rep. ii, 175 (1855). Type data, "Big Springs of the Colorado, April. This species is No. 800 of Fendler's New Mexico collection."

Richfield, Morton County (No. 167). Common about Point of Rocks.

Euphorbia geyeri Engelm.; Engelm. & Gr. Pl. Lindh. 52 (1845). Type locality, "Beardstown, Illinois, and Upper Missouri; Geyer."

Syracuse, Hamilton County (No. 94). Common.

Euphorbia glyptosperma Engelm. Bot. Mex. Bound. 187 (1859); *E. polygonifolia* Hook. Fl. Bor. Amer. ii, 140 (1838), not L. Type distributed, according to Engelmann, "on the Rio Grande; also on the Arkansas, and extending to the Upper Missouri." Hooker's habitat is: "Canada (Pursh) to Carleton House Fort, on the Saskatchewan. Drummond. On Menzies Island and at the Grand Rapids of the Columbia, N. W. America, Douglas."

Ulysses, Grant County (No. 2). On piles of earth thrown from cellars and wells; on high land. Syracuse, Hamilton County (No. 142). Common.

Euphorbia lata Engelm. Bot. Mex. Bound. 188 (1859); *E. dilatata* Torr. & Gr. Pac. R. Rep. ii, 175 (1855), not Hochst. Type locality, "Western Texas. Not uncommon in New Mexico."

Ulysses, Grant County (No. 20). Valley of a tributary to North Fork Cimarron; very rare.

Euphorbia marginata Pursh, Fl. ii, 607 (1814). Originally collected "on the Yellow-stone River."

Syracuse, Hamilton County (No. 150). Abundant.

Euphorbia petaloidea Engelm. Bot. Mex. Bound. 185 (1859). No type locality; var. *nuttallii* is made to replace *E. arcnaria* Nutt.,¹ the type distribution of which is "On the sandy banks of the Arkansas and Red rivers."

Ulysses, Grant County (No. 60). Sandy banks along south side of North Fork Cimarron; frequent.

Euphorbia serpens H. B. K. Nov. Gen. & Sp. ii, 52 (1817). The type was found "in umbrosis Cumanae prope Bordones et Punta Araya."

Syracuse, Hamilton County (No. 136). Common.

Euphorbia stictospora Engelm. Bot. Mex. Bound. 187 (1859). Type distribution, "From Kansas (Fendler, 798) to Santa Fe (Fendler, 797) and Dona Ana (Wright, 59), New Mexico, and Corallites, Chihuahua; Thurber."

Syracuse, Hamilton County (Nos. 128, 141). Common.

Croton texensis (Klotzsch) Muell. Arg. in DC. Prodr. xv, pt. 2, 692 (1862); *Hendecandra texensis* Klotzsch in Erichs. Archiv. i, 252 (1841); *Croton muricatus* Nutt. Trans. Amer. Phil. Soc. v, 153 (1837), not Vahl. The type grew "on the sandy beaches of the Great Salt River, Arkansas."

Ulysses, Grant County (No. 50). By the roadsides and in sandy places along the river; frequent. Johnson, Stanton County (No. 187).

Ditaxis humilis (Engelm. & Gr.) Pax, in Engler. & Prantl. Nat. Pfl. Fam. iii, abt. 5, 45 (1890); *Aphora humilis* Engelm. & Gr. Bost. Journ. Nat. Hist. 262 (1845). "In hard clayey soil west of the Brazos (also Texas, Drummond, collection second, No. 230, and Dr. Wright)."

Syracuse, Hamilton County (No. 86). Frequent.

¹Nutt. Pl. Ark. 171 (1837), not H. B. K.

SALICACEÆ.

Salix fluviatilis Nutt. Sylva, i, 73 (1842); *S. longifolia* Muhl. Neue Schrift Gesell. Naturf. Freunde Berlin, iv, 238 (1803), not Lam. The author states: "This species lines the immediate border of the Oregon a little below its confluence with the Wahlamet."

Syracuse, Hamilton County (No. 113). Abundant in lowland along the Arkansas River.

IRIDACEÆ.

Sisyrinchium bermudiana L. Sp. Pl. ii, 954 (1753). Type collected "in Virginia." Syracuse, Hamilton County (No. 118). Abundant in meadow land; Collier's ranch.

LILIACEÆ.

Yucca glauca Nutt. Fraser's Cat. 119, No. 89. The type was "collected 1,600 miles up the Missouri, about lat. 49°."

Hamilton County, 14 miles south of Syracuse (No. 75). Abundant throughout southwestern Kansas, especially on the sand hills.

COMMELINACEÆ.

Commelina virginica L. Sp. Pl. ed. 2, i, 61 (1762). Type collected "in Virginia." Syracuse, Hamilton County (No. 91). Common; north slope of sand hills.

CYPERACEÆ.

Cyperus schweinitzii Torr. Ann. Lyc. N. Y. iii, 276 (1836); *C. alternifolius* Schwein. in Keating, Nar. Long's 2d Exp. ii, 381 (1824), not R. Br. Type locality not given in the above, which is "a Catalogue of Plants collected in the Northwestern Territory by Mr. Thomas Say in the year 1823." Localities given by Torrey: "Dry sand in the shore of Lake Ontario, near Grace, Monroe County, New York, Dr. Samuel B. Bradley!; on the Arkansas River, Nuttall!; on the river St. Peter!, Mr. Say!."

Ulysses, Grant County (No. 8). On uplands; scarce.

Scirpus americanus Pers. Syn. i, 68 (1805); *Scirpus triquetus* Mx. Fl. i, 30 (1803), not L. Type collected "in Carolina inferiore."

Ulysses, Grant County (No. 35). Abundant in marshy places.

Scirpus lacustris L. Sp. Pl. i, 48. Type distribution, "In Europæ aquis puris stagnantibus & fluviatilibus."

Syracuse, Hamilton County (No. 117). Abundant in swampy land; Collier's ranch.

POACEÆ.

Andropogon hallii Hack. Sitz. Akad. Wiss. Wien. lxxxix, 127 (1884).

Moonlight, Stevens County (No. 182); Ulysses, Grant County (No. 13). Rare; in spots on high uplands, forming small patches a few feet in diameter.

Andropogon nutans avenaceus (Mx.) Hack. in DC. Monog. Phan. vi, 530 (1889); *Andropogon avenaceus* Mx. Fl. Bor. Amer. i, 58 (1803). Type distribution, "In vastissimus pratis Illinoensibus."

Moonlight, Stevens County (No. 181). Common in the Cimarron Valley.

Andropogon saccharoides glaucus (Torr.) Scribn. Mem. Torr. Club, v, 28 (1894); *A. glaucus* Torr. Anu. Lyc. N. Y. i, 153 (1824). Type collected "on the Canadian River."

Ulysses, Grant County (No. 54). Valley lands, rare.

Panicum capillare L. Sp. Pl. i, 58 (1753). Type locality, "Virginia, Jamaica."

Ulysses, Grant County (No. 56); Syracuse, Hamilton County (No. 134). Rare; in the valleys.

Panicum crus-galli L. Sp. Pl. i, 56 (1753). Type locality, "Europæ, Virginiae cultis."

Syracuse, Hamilton County (No. 131). Frequent in wet land.

Setaria viridis (L.) Beauv. Agrost. 51 (1812); *Panicum viride* L. Syst. Veg. ed. 10, ii, 870 (1759). No locality.

Syracuse, Hamilton County (No. 129). Frequent along irrigation ditches.

Cenchrus tribuloides L. Sp. Pl. ii, 1050 (1753). Type collected "in Virginiae maritims."

Syracuse, Hamilton County (No. 82). Common in sandy soil.

Aristida fasciculata Torr. Ann. Lye. N. Y. i, 154 (1824). Type distribution, "In forests of the Canadian River."

Ulysses, Grant County (No. 63). Abundant.

Sporobolus airoides (Torr.) Torr. Pac. R. Rep. vii, pt. iii, 21 (1856); *Agrostis airoides* Torr. Ann. Lye. N. Y. i, 151 (1824). Type obtained "on the branches of the Arkansas, near the Rocky Mountains."

Ulysses, Grant County (No. 36). Abundant in valleys.

Sporobolus cryptandrus (Torr.) Gray, Man. 576 (1848); *Agrostis cryptandra* Torr. Ann. Lye. N. Y. i, 151 (1824). Type collected "on the Canadian River."

Ulysses, Grant County (No. 44). Rare.

Calamovilfa longifolia (Hook.) Hack. True Grasses, 113 (1890); *Calamagrostis longifolia* Hook. Fl. Bor. Amer. i, 241 (1840). Type locality, "Saskatchewan."

Moonlight, Stevens County (No. 183). Common in the sand hills.

Spartina cynosuroides (L.) Willd. Enum. i, 80 (1809); *Dactylis cynosuroides* L. Sp. Pl. i, 71 (1753). Type locality, "Virginia, Canada, Lusitania."

Syracuse, Hamilton County (No. 156). Common in sloughs.

Spartina gracilis Trin. Mem. Acad. St. Petersb. ser. 6, iv, 110 (1840). Type locality, "Amer. bor."

Syracuse, Hamilton County (No. 110). In moist lowland; rare.

Chloris verticillata Nutt. Trans. Amer. Phil. Soc. n. ser. v, 150 (1837). Type collected "on the sandy banks of the Arkansas, near Fort Smith."

Ulysses, Grant County (No. 55). Common.

Schedonnardus paniculatus (Nutt.) Trelease; Branner & Coville, Rep. Geol. Surv. Ark. 1888, pt. 4, 236 (1891); *Lepturus paniculatus* Nutt. Gen. i, 81 (1818). Type found "on dry, saline plains, near Fort Mandan, on the Missouri."

Johnson, Stanton County (No. 71). Frequent along roadsides and about excavations.

Bouteloua curtipendula (Mx.) Torr. Bot. Emory Exped. 153 (1848); *Chloris curtipendula* Mx. Fl. i, 59 (1803). Type distribution, "In aridis regionis Illinoensis ad Wabash et in rupibus ad prairie du rocher."

Ulysses, Grant County (No. 57). Syracuse, Hamilton County (No. 127). Quite common.

Bouteloua hirsuta Lag. Var. Cienc. y Litter. 2, pt. 4, 141 (1805). Type locality as given in Lagasca, Genera et species, "In Imp. Mex."

Syracuse, Hamilton County (No. 125). Abundant everywhere.

Bouteloua oligostachya (Nutt.) Torr. in Gray, Man. ed. 2, 553 (1856); *Atheropogon oligostachyum* Nutt. Gen. i, 78 (1818). Type collected "on the plains of the Missouri."

Ulysses, Grant County (No. 53). Syracuse, Hamilton County (No. 126). Frequent. For method of cross pollination see page 537.

Bulbilis dactyloides (Nutt.) Raf. Kuntze, Rev. Gen. Pl. ii, 763 (1891); *Sesleria dactyloides* Nutt. Gen. i, 65 (1818). The type grew "on the open grassy plains of the Missouri."

Johnson, Stanton County; pistillate plant (No. 72) and staminate (No. 189).

Munroa squarrosa (Nutt.) Torr. Pac. R. Rep. iv, 158 (1856); *Crypsis squarrosa* Nutt. Gen. i, 49 (1818). Type found growing "on the arid plains near the 'Grand Detour' of the Missouri."

Ulysses, Grant County (No. 48). Rather frequent, and especially abundant on banks of earth thrown from wells and cellars; also on very sandy soil.

Eragrostis major Host, Gram. Austr. iv, 14 (1809); *Brica eragrostis* L. Sp. Pl. i, 70 (1753), not *Eragrostis eragrostis* (L.) Beauv. Type found "in Europa australi ad agrorum versuras."

Syracuse, Hamilton County (No. 138). Common on cultivated land.

Eragrostis oxylepis (Torr.) Torr. Pac. R. Rep. iv, 156 (1856); *Poa oxylepis* Torr. in Marcy, Expl. Red River, 269, t. 19 (1854); *Poa interrupta* Nutt. in Trans. Amer. Phil. Soc. n. ser. v, 146 (1837), not Lam. Type obtained "in bushy prairies near the sandy banks of the Arkansas."

Moonlight, Stevens County (No. 180). Abundant on the sand hills.

Eatonia obtusata (Mx.) Gray, Man. ed. 2, 558 (1856); *Aira obtusata* (Mx.) Fl. i, 62 (1803). The type was found "in aridis, a Carolina ad Floridam."

Ulysses, Grant County (No. 62). At edge of dry river bed.

Distichlis spicata (L.) Greene, Bull. Cal. Acad. ii, 415 (1887); *Uniola spicata* L. Sp. Pl. i, 71 (1753). Type locality, "in America borealis maritimis."

Ulysses, Grant County (No. 25). Abundant in lowlands.

Festuca elatior pratensis (Huds.) Hack. Monogr. Fest. Europ. 150 (1882), as subspecies; *Festuca pratensis* Huds. Fl. Angl. 37 (1762). Type locality, [England,] "In pratis et pascuis."

Syracuse, Hamilton County (No. 132). Rare; introduced along irrigation ditches.

Agropyron repens glaucum (Desf.) Scribner, Mem. Torr. Club, v, 57 (1894). *Triticum glaucum* Desf. Tabl. Bot. Mus. 16 (1801) will not hold for citation, since it is a *nomen nudum*. I am unable to determine with any certainty the name to be used for the form. The type locality of *Triticum glaucum* DC. and *Agropyron glaucum* Roem. & Schult. is European.

Ulysses, Grant County (No. 59). Not uncommon in meadows along the North Fork of the Cimarron.

Agropyron tenerum Vasey, Bot. Gaz. x, 258 (1885). The type "common throughout the Rocky Mountains."

Syracuse, Hamilton County (No. 109). Rare; moist lowland, Colher's ranch.

Hordeum jubatum L. Sp. Pl. 85 (1753). Type locality, "Canada."

Ulysses, Grant County (No. 21). Abundant along the bed of a tributary creek.

Elymus canadensis L. Sp. Pl. i, 83 (1753). Type locality, "Canada."

Syracuse, Hamilton County (No. 135). Rare; in moist places.

Elymus elymoides (Raf.) Swezey, Cat. Neb. Pl. 15 (1891); *Sitanion elymoides* Raf. Journ. Phys. lxxxix, 103 (1819). Type locality, "Missouri."

Ulysses, Grant County (No. 43). Found only in bottoms of deserted cellar excavations among rubbish deposited there by the wind.

LIST OF SPECIMENS.

1. *Meriolix serrulata* (Nutt.) Walp.
2. *Euphorbia glyptosperma* Engelm.
3. *Astragalus mollissimus* Torr.
4. *Martynia louisiana* Mill.
5. *Cæsalpinia jamesii* (Torr. & Gr.) Fisher.
6. *Eriocarpum spinulosum* (Pursh) Greene.
7. *Chrysopsis villosa hispida* (Hook.) Gray.
8. *Cyperus schweinitzii* Torr.
9. *Kuhnistera purpurea* (Vent.) MacMillan.
10. *Evolvulus nuttallianus* Roem. & Schult.
11. *Ptilipida scaposa* (DC.) Britton.
12. *Malvastrum coccineum* (Pursh) Gray.
13. *Andropogon hallii* Hack.
14. *Engelmannia pinnatifida* Gray.
15. *Lepachya columnaris* (Pursh) Torr. & Gr.
(*Helianthus annuus* L.
16. (*Helianthus petiolaris* Nutt.
17. *Melampodium cinereum* DC.
18. *Heliotropium curassavicum* L.
19. *Paronychia jamesii* Torr. & Gr.
20. *Euphorbia lata* Engelm.
21. *Hordeum jubatum* L.
22. *Lippia cuneifolia* (Torr.) Steud.
23. *Thelesperma gracile* (Torr.) Gray.
24. *Hymenopappus tenuifolius* Pursh.
25. *Distichlis spicata* (L.) Greene.
26. *Kuhnistera compacta* (Spreng.) Kuntze.
27. *Parosela aurea* (Nutt.) Britton.
28. *Ambrosia psilostachya* DC.
29. *Chamaesaracha coniodes* (Moric.) Britton.
30. *Solanum rostratum* Dunal.
31. *Physalis virginiana* Mill.
32. *Lygodesmia juncea* (Pursh) Don.
33. *Ipomoea leptophylla* Torr.
34. *Lythrum alatum* Pursh.
35. *Scirpus americanus* Pers.
36. *Sporobolus airoides* (Torr.) Torr.
37. *Glycyrrhiza lepidota* Pursh.
38. *Parosela enneandra* (Nutt.) Britton.
39. *Convolvulus incanus* Vahl.
40. *Kuhnistera multiflora* (Nutt.) Heller.
41. *Baccharis wrightii* Gray.
42. *Verbena bracteosa* Mx.
43. *Elymus elymoides* (Raf.) Swezey.
44. *Sporobolus cryptandrus* (Torr.) Gray.
45. *Cucurbita fetidissima* H. B. K.
46. *Callirhoe involucrata* (Nutt.) Gray.
47. *Aster tanacetifolius* H. B. K.
48. *Munroa squarrosa* (Nutt.) Torr.
49. *Carduus ochrocentrus* (Gray) Greene.
50. *Croton texensis* (Klotzsch) Muell.
51. *Cycloloma atriplicifolium* (Spreng.) Coulter.
52. *Thelesperma ambiguum* Gray.
53. *Bouteloua oligostachya* (Nutt.) Torr.
54. *Andropogon saccharoides glaucus* (Torr.)
Scribner.
55. *Chloris verticillata* Nutt.
56. *Panicum capillare* L.
57. *Bouteloua curtipendula* (Mx.) Torr.
58. *Allionia linearis* Pursh.
59. *Agropyron repens glaucum* (Desf.) Scribner.
60. *Euphorbia petaloidea* Engelm.
61. *Gaillardia pulchella* Foug.
62. *Eatonia obtusata* (Mx.) Gray.
63. *Aristida fasciculata* Torr.
64. *Hymenopappus flavescens* Gray.
65. *Aster ericaefolius* Rothrock.
66. *Frœlichia floridana* (Nutt.) Moq.
67. *Baccharis wrightii* Gray.
68. *Lepachys tagetes* (James) Gray.
69. *Salvia lanceolata* Willd.
70. *Gaura coccinea* Pursh.
71. *Schedonnardus paniculatus* (Nutt.) Trelease.
72. *Bulbilis dactyloides* (Nutt.) Raf.
73. *Dysodia papposa* (Vent.) Hitchcock.
74. *Mentzelia multiflora* (Nutt.) Gray.
75. *Yucca glauca* Nutt.
76. *Polypteris hookeriana* (Torr. & Gr.) Gray.
77. *Physalis lobata* Torr.
- 78.
79. *Lappula texana* (Scheele) Britton.
80. *Erigeron divergens* Torr. & Gr.
81. *Linum rigidum* Pursh.
82. *Cenchrus tribuloides* L.
83. *Pentstemon albidus* Nutt.
84. *Asclepias verticillata pumila* Gray.
85. *Lithospermum angustifolium* Mx.
86. *Ditaxis humilis* (Engelm. & Gr.) Pax.
87. *Sophora sericea* Nutt.
88. *Martynia louisiana* Mill.
89. *Tribulus maximus* L.
90. *Polygonum convolvulus* L.
91. *Commelina virginica* L.
92. *Frœlichia floridana* (Nutt.) Moq.
93. *Cristatella erosa* Nutt.
94. *Euphorbia geoyeri* Engelm. & Gr.
95. *Heliotropium convolvulaceum* (Nutt.) Gray.
96. *Kuhnistera villosa* (Nutt.) Kuntze.
97. *Oreocarya suffruticosa* (Torr.) Greene.
98. *Asclepias arenaria* Torr.
99. *Erigeron divergens* Torr. & Gr.
100. *Symphoricarpos occidentalis* Hook.
101. *Abronia micrantha* Torr.
102. *Rhus radicans* L.
103. *Parosela lanata* (Spreng.) Britton.
104. *Physalis longifolia* Nutt.
105. *Lygodesmia rostrata* (Gray) Gray.
106. *Galpinsia hartwegii* (Benth.) Britton.
107. *Eustoma russellianum* (Hook.) Griseb.
108. *Cyrtorhyncha cymbalaria* (Pursh) Britton.
109. *Agropyron tenerum* Vasey.
110. *Spartina gracilis* Trin.
111. *Parthenocissus vitacea* (Knerr) Hitchcock.
112. *Amorpha fruticosa* L.
113. *Salix fluviatilis* Nutt.
114. *Solanum nigrum* L.
115. *Scutellaria lateriflora* L.
116. *Lycopus sinuatus* Ell.
117. *Scirpus lacustris* L.
118. *Sisyrinchium bermudiana* L.
119. *Cycloloma atriplicifolium* (Spreng.) Coulter.
120. *Rhus trilobata* (Nutt.) Torr. & Gr.
121. *Polanisia trachysperma* Torr. & Gr.
122. *Erysimum asperum* (Nutt.) DC.
123. *Mentzelia nuda* (Pursh) Torr. & Gr.
124. *Abronia fragrans* Nutt.
125. *Bouteloua hirsuta* Lag.
126. *Bouteloua oligostachya* (Nutt.) Torr.

127. *Bouteloua curtipendula* (Mx.) Torr.
 128. *Euphorbia stictospora* Engelm.
 129. *Setaria viridis* (L.) Beauv.
 130. *Chenopodium album* L.
 131. *Panicum crus-galli* L.
 132. *Festuca elatior pratensis* (Huds.) Hack.
 133. *Gaura parviflora* Dougl.
 134. *Panicum capillare* L.
 135. *Elymus canadensis* L.
 136. *Euphorbia serpens* H. B. K.
 137. *Amaranthus retroflexus* L.
 138. *Eragrostis major* Host.
 139. *Astragalus scobinulatus* Sheldon.
 140. *Asclepias latifolia* (Torr.) Britton.
 141. *Euphorbia stictospora* Engelm.
 142. *Euphorbia glyptosperma* Engelm.
 143. *Megapterium canescens* (Torr. and Frem.)
 Britton.
 144. *Argemone alba* Lestib.
 145. *Atriplex expansa* Wats.
 146. *Apocynum cannabinum* L.
 147. *Acerates angustifolia* (Nutt.) Dec.
 148. *Euphorbia dentata* Mx.
 149. *Psoralea tenuiflora* Pursh.
 150. *Euphorbia marginata* Pursh.
 151. *Portulaca oleracea* L.
 152. *Hymenatherum aureum* (Gray) Gray.
 153. *Gilia inconspicua* (Smith) Sweet.
 154. *Verbena stricta* Vent.
 155. *Acuan illinoensis* (Mx.) Kuntze.
 156. *Spartina cynosuroides* (L.) Willd.
 157. *Teucrium occidentale* Gray.
 158. *Mentha canadensis* L.
 159. *Cuscuta indecora neuropetala* (Engelm.)
 Hitchcock.
 160. *Ambrosia psilostachya* DC.
 161. *Vernonia baldwinii* Torr.
 162. *Lactuca pulchella* (Pursh) DC.
 163. *Onagra biennis* (L.) Scop.
 164. *Crassina grandiflora* (Nutt.) Kuntze.
 165. *Eriogynum lachnogynum* Torr.
 166. *Atriplex canescens* (Pursh) James.
 167. *Euphorbia fendleri* Torr. & Gr.
 168. *Gutierrezia sarothrae* (Pursh) Britton &
 Rusby.
 169. *Ptilepida acaulis* (Pursh) Britton.
 170. *Krameria secundiflora* DC.
 171. *Calceolaria verticillata* (Ort.) Kuntze.
 172. *Xanthium canadense* (?) Mill.
 173. *Vernonia marginata* (Torr.) Britton.
 174. *Lacinaria punctata* (Hook.) Kuntze.
 175. *Solidago missouriensis* Nutt.
 176. *Gilia aggregata* (Pursh) Spreng.
 177. *Eriogonum longifolium* Nutt.
 178. *Eriogonum annuum* Nutt.
 179. *Baccharis salicina* Torr. & Gr.
 180. *Eragrostis oxylepis* (Torr.) Torr.
 181. *Andropogon nutans avenaceus* (Mx.) Hack.
 182. *Andropogon halii* Hack.
 183. *Calamovilfa longifolia* (Hook.) Hack.
 184. *Artemisia wrightii* Gray.
 185. *Cleome serrulata* Pursh.
 186. *Grindelia squarrosa* (Pursh) Dunal.
 187. *Croton texensis* (Klotzsch) Muell.
 188.
 189. *Bulbilis dactyloides* (Nutt.) Raf.
 190. *Chamaesaracha coniodes* (Moric.) Britton.
 191. *Parosela enneandra* (Nutt.) Britton.
 192. *Eriocarpum spinulosum* (Pursh) Greene.
 193. *Phaca pectinata* Hook.