FLORA OF THE SAND HILLS OF NEBRASKA.

By P. A. Rydberg.

INTRODUCTORY NOTE.

May 23, 1893, the writer was appointed field agent of the Division of Botany in the United States Department of Agriculture for the purpose of making a botanical exploration and collection in the sand hill region of Nebraska. On the recommendation of Dr. Charles E. Bessey, of the University of Nebraska, Thomas and Hooker counties were selected as the principal field of exploration. The former county lies nearly in the center of the region, and affords perhaps the best representation of the central sand-hill flora.

The sand-hill region extends from 98° to 103° west longitude, and is bounded on the southwest by the North Platte River, and on the north by the Niobrara River. The southeastern limit is a broken line from a point near the mouth of the Niobrara to Dawson County. In pursuance of my instructions from the Department to confine my work to an area sufficiently restricted to admit of thorough examination, the field of exploration was practically limited to the two counties mentioned above and one-third of Grant County. On two occasions I crossed over into Cherry County and once into Arthur and McPherson counties.

ITINERARY.

I left Lincoln by the Burlington and Missouri River Railroad in company with Mr. N. P. Tulen, a student of Augustana College, Rock Island, Ill. Mr. Tulen stayed with me until August 25, and to him many thanks are due for his hearty coöperation.

Our first station was at Thedford, the county seat of Thomas County, which was to serve as our base of operations. Here we remained till June 24, by which time we had secured a team and outfit for the summer. During our stay I met Mr. C. C. Wright, one of the early settlers, who has several times sent collections of grasses to the Nebraska State fairs. From him much useful information was obtained, and specimens were received of a few grasses which I did not collect myself.

June 20 we collected around Natick, a flag station 7 miles east of Thedford, and on the 22d and 23d around Norway, a station 8 miles west of the same place. All these stations are situated in the Middle Loup Valley, which the Burlington and Missouri River Railroad follows from Dunning, Blaine County, to a point 5 miles east of Mullen, Hooker County. During the nine days of collecting we secured a nearly complete representation of the flora of this valley as well as of the surrounding sand hills.

June 24 we drove across the sand hills to Dismal River, 15 miles south of Thedford, in our two-horse spring wagon, our outfit consisting of a small A tent, 7 by 7 feet, two collecting cases, six presses with driers and specimen sheets, and the necessary bedding, clothing, provisions, and cooking utensils. The presses, which were found well adapted to our field work, were made of heavy wire netting supported by a stout frame of hard wood, with two crossbars. The parts are drawn together by means of strings, somewhat as in the Acme press of the trade. These presses have the advantage over board presses that they give free access of air to the driers and thus materially facilitate the drying, while at the same time the pressure may be regulated at pleasure.

Our first camp was pitched on the top of the sand hills, about half a mile from the river, a few miles below the point at which we first reached it. We remained here till the 30th of June, when we moved 10 or 12 miles up the stream to a place known as Plummer Ford. Here we stayed till July 10, enjoying the best collecting found anywhere during the summer. As there were no settlers in the neighborhood we were obliged to visit Thedford once a week to replenish our food supply, which incidentally afforded a good opportunity to study the sand hills.

July 10 we moved our camp to a place near the "forks" of the Dismal River, collecting there until July 15. Then we crossed the sand hills at a third point, and returning to the Middle Loup Valley, pitched our camp near the river, 1½ miles north of Mullen, the county seat of Hooker County.

On the 25th we again broke camp, and as there was no road along the river we drove to Mullen, and thence followed the dry valley through which the Burlington and Missouri River Railroad passes to Hecla, a flag station about 8 miles west of Mullen. Here we turned northward and struck the south branch, or as it is called here, "south prong," of the Middle Loup, a few miles above the junction, and a mile or two over the Cherry County line.

July 28 we broke camp again and followed up the south prong. The river, which was here only a small brook, soon disappeared from the surface, and was succeeded by a sand draw running through a valley, the grass of which became better and better as we proceeded. At the head of this draw we found a valley having in its eastern end a lake, at this time of the year only a small pool filled with *Batrachium divaricatum*. Here we pitched our camp near Mr. Taylor's ranch, about 3 miles northeast of Whitman.

In this locality we collected until August 2, when we drove south, passing through Whitman. Along the road there were no settlers and no springs, but 15 miles south of Whitman, near a windmill erected for the purpose of watering cattle, we found a suitable camping place. During this and the following nights a heavy dew fell, a phenomenon not observed again during the summer. The thermometer was only 57° F. at 9 o'clock the next morning.

In the morning of August 4 we moved camp again, following the post-road to a point about a mile south of Abby post-office. Here was a big wet valley, containing four ranches.

August 7 we set out for the head waters of the south fork of Dismal River, and at noon stopped near Swan Lake, collecting there for a few hours. Late in the evening we arrived at West Cody Lake, situated on a cattle range once occupied by Mr. W. F. Cody, better known as "Buffalo Bill." The Cody lakes are the head waters of South Dismal River, although the water runs beneath the surface of the sand for 2 or 3 miles before it forms a visible stream. The region around the lakes was a good collecting ground.

August 11 we moved our camp farther down the river to a place about 4 or 5 miles above the forks. August 15 we crossed the sand hills again to Mullen, when we drove down the Middle Loup Valley to Thedford. August 21 to 25 we made a collecting trip to Plummer Ford to get the fall flora of Dismal River.

I was absent from official duty from August 26 to September 6, but beginning work again I confined myself to the region along the Burlington and Missouri River Railroad, collecting around Thedford September 7 to 10 and 12 and 13, Halsey and Natick September 11, Mullen September 14, 15, and 18, Seneca September 16, and Whitman September 19 and 20.

FORMATION OF THE SAND-HILL REGION.

Even if the sand-hill region was at some earlier period a lake formation, it has, nevertheless, received its present form from the action of the wind—in fact it is still in the process of formation. The sand hills change their configuration constantly. Whenever the sand is not held together by the roots of plants or by moisture, or is not otherwise protected, it is little by little carried away by the wind. If a spot on a dry hill becomes bare the loose sand is blown away, a small hollow is made, the surrounding grass dies from drought, the dry sand, no longer held together by the roots, slides down into the hollow and in its turn is borne away, and thus the hollow becomes gradually larger and larger. Such "blowouts" were seen 100 meters in diameter and 15 to 20 meters deep. It sometimes happens that settlers a few years after breaking their land find a field transformed into a big blowout. The sand carried away by the wind is deposited in great drifts, by which new sand hills are formed or the old ones increased in height. There would be no stability whatever were it not for certain grasses that seem to thrive best just in these blowouts. When well established their roots bind the sand together and their decaying parts enrich the soil. Thus they give protection to the sand hills and render them suitable for other vegetation. Such blowout grasses are: *Calamorilfa longifolia, Redfieldia flexuosa, Eragrostis tenuis, Muhlenbergia pungens.*

TOPOGRAPHY AND FLORAL DISTRICTS.

As can be seen from the map, the route of our travel closely resembles a figure 8, the side of the figure following the Middle Loup River and its tributary, the Dismal, the ends and the cross at the middle traversing the sand hills. We also crossed the eastern half somewhat diagonally between Plummer Ford and Thedford. The region is divisible into five districts, each of which was traversed by our route:

1. Middle Loup Valley.
2. Dismal River Valley.
3. Sand hills of Thomas County, a barren sand-hill region.
4. Sand hills of Hooker County, a dry valley sand-hill region.
5. Sand hills of Grant County, a wet valley sand-hill region.

MIDDLE LOUP VALLEY.

The Middle Loup River is here a very swift stream, but without any true waterfalls. The slope of the valley, deduced from the altitude of the railroad at the stations, is, in Thomas County, between Seneca and Halsey, on an average, over 1.5 meters per kilometer, or 8⅛ feet to the mile. In Hooker County it is still greater, perhaps a little less than 2.5 meters per kilometer, or 13 feet to the mile. The fall of the river is perhaps only one-third or one-half as much, as the stream winds from one side of the valley to the other. In Thomas County the valley is from 1.3 to 4 kilometers, or from one-half to 1½ miles, wide and consists of rich meadow land. The soil in the whole region is, as a rule, sandy. The sand hills rise about 60 to 100 meters (200 to 300 feet), or sometimes higher, over the valley. North of Mullen, in Hooker County, the valley is much narrower, the river still more winding, and the bottom filled with lagoons and swamps—remains of old river beds. The valley here makes good pasture land, but is usually too rough for meadow. Still higher, especially above the forks, the valley is narrower yet, and the bottom land has almost disappeared.

DISMAL RIVER VALLEY.

Dismal River closely resembles the Middle Loup, but is a smaller stream. About 400 or 500 meters above the junction of the two forks of Dismal River each has a fall 3.5 or 4 meters in height. The ledge over which the water falls is not of a rocky, but rather of a clayey, formation. It is easily cut by a knife and crumbles when dried. The valley of Dismal River is much narrower than that of the Middle Loup, while the river is more winding, and here and there makes deep cuts (sometimes 100 meters deep) into the surrounding sand hills. The trail we followed left the valley at several places on account of these cuts and ran over ridges 100 meters high or followed dry valleys running parallel with the river. We were compelled to ford the river three times within a space of 10 miles. The valley of the lower Dismal River—for instance, south of Thedford—is swampy and resembles that of the Middle Loup at Mullen. Farther up the stream, especially on

the south side, the hills become much higher than those along the Middle Loup. At Plummer Ford they are about 150 meters high. Between Mr. Crumb's horse ranch and the forks, the valley becomes a narrow canyon, perhaps 200 meters deep, the road running on the hillside about 100 meters above the river. At the forks and along the South Dismal, the sand hills on the south side are at some distance from the river, leaving a dry sandy prairie 3 kilometers in width.

THE BARREN SAND HILLS.

I have used the term "barren", not because these sand hills are without vegetation, but because they are at present of very little use to man. Save near the Middle Loup Valley, where the hills are less sandy and are intermixed with small dry valleys, the district between Thedford and Dismal River is made up of sand hill after sand hill with scarcely a grassy valley between. This region contains nothing but the true sand-hill vegetation. Seen from one of the highest points, the hills appear like billows of the ocean. In the eastern part of Thomas County, as well as north of Middle Loup, the country assumes more and more the character of the next district.

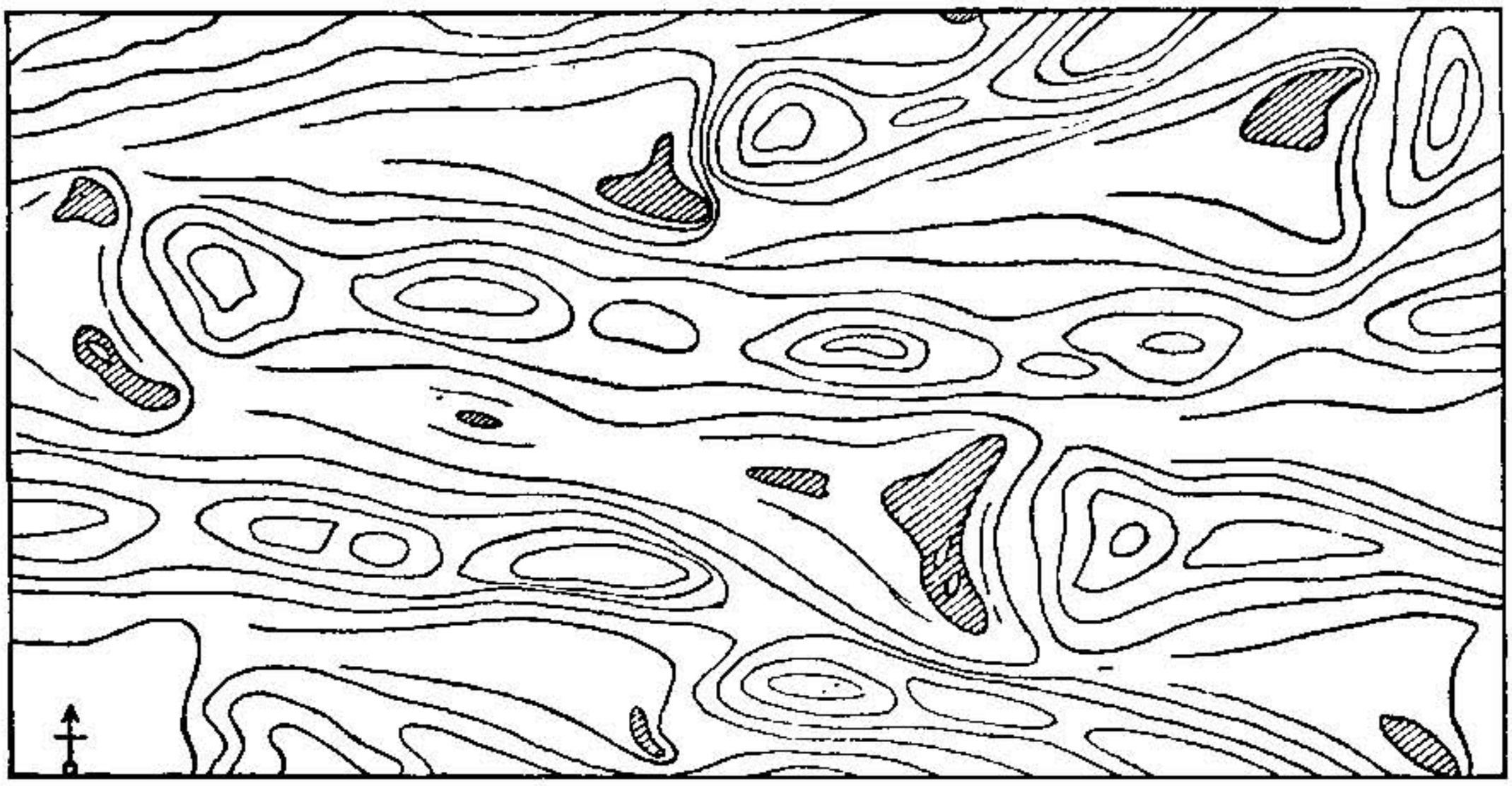
THE DRY VALLEY SAND HILLS.

This district consists of sand hills, mostly running east and west, intermixed with long continuous valleys with more or less perfect underground drainage. These valleys are sometimes 0.5 kilometer or more wide, the soil as a rule a sandy loam. Many of them are under cultivation, and in seasons of sufficient rainfall they yield good crops. Other valleys are utilized for pasture, and in wet seasons can be mowed for hay. The larger part of Hooker County is composed of such sand hills and valleys.

THE WET VALLEY SAND HILLS.

The arrangement of the sand hills is here more irregular, but the general trend, like that of the dry valley sand hills, is east and west. The hills are generally very high and steep, and it is difficult, sometimes nearly impossible, to cross from one valley to another in a north and south direction. East and west the valleys are somewhat connected, but the drainage from one to another is imperfect or wholly wanting. In shape the valleys are more or less elongated-triangular, with the apex toward the west and the base toward the east. In one or the other, or sometimes in both, of the eastern corners there is a smaller or larger pond or slough, invariably called a lake. Sometimes the two lakes are connected and form a single body of water occupying the whole of the eastern end. In most cases the highest hill was north of the lake; the next highest, east; and the lowest, south. Frequently each of the corners of the valley was connected east and west by a depression in the hills with adjacent valleys, the western end with a higher, the two eastern with lower ones. The accompanying figure shows schematically the form of the wet valleys northwest of Whitman.

These valleys are excellent meadows. In the summer the sloughs or lakes often dry out, and in general the amount of water varies much according to the season. Some years there may be a good meadow



where the year before was a lake or a dry valley. From Pound and Smith's report in the publication of the Botanical Survey of Nebraska, No. II, I find that regions like these were met with in Cherry County.

CLIMATIC CONDITIONS.

The altitude of the region is from about 800 meters to over 1,200 meters. The railroad tracks at Halsey are 2,695 feet or 821.4 meters above the sea level; those at Whitman, 3,588 feet or 1,095.6 meters. The hills rise much more than 100 meters above the valley in which the railroad runs, the highest therefore attaining an altitude of over 1,200 meters.

There have been local weather stations at Thedford and Whitman for four years. The reports from 1890 to 1892 are very incomplete, and the report for 1893 at date of writing is not yet published. It has therefore been impossible to obtain the exact data concerning temperature and rainfall. According to the excellent meteorological charts prepared by Prof. Goodwin D. Swezey, of Doan College, Crete, Nebr.,[1] and published in the Report of the Nebraska State Board of Agriculture, 1892, the average rainfall in this part of Nebraska during January, February, and March is less than 1 inch per month; during April, 1 to 2 inches; during May, June, and July, 3 to 4 inches; during August, 1 to 2 inches; and during September, October, November, and December, less than 1 inch. The average rainfall for the growing season, April to August, is 14 to 16 inches, and the average total per year is 20 inches. This seems to speak favorably for the sand hills, but another fact must be taken into consideration, viz, that the sand hills with their scant

[1] Now at the University of Nebraska.

vegetation become intensely heated by the sun, and generate hot winds which scorch the grain fields. On most days from July 4 to August 24 the thermometer records at noon 90° F., or at times 100° and even higher. The highest temperature recorded at Thedford was 112° in 1890 and 113° in 1892. The mean temperature there for those two years was 78.4° and 80.2° for June, and 82° and 81° for July.

The prevailing wind during the summer was from the southeast. From Professor Swezey's report this appears to have been the case during the year 1892 also. The most rain came from northwest, the clouds going against the wind. In most cases, however, the wind changed during the heaviest shower, both wind and cloud then coming from northwest. From June 13 to August 10 we had at least one rainy day each week, but after that time the showers were few. In the night between August 2 and 3, a heavy dew fell as before mentioned, and a less heavy one the next night. These were the only times any dew was noticed during my stay.

FLORA.

I have described five districts, the first two of which, the Middle Loup and the Dismal River, are really branches of one. Their vegetation is nearly uniform, and is also similar to that of the wet-valley district, but with the addition of some eastern plants which have ascended the river valleys. The plants of these three regions may be divided into four classes: (1) Sand-hill plants; (2) dry-valley or hillside plants; (3) wet-valley plants; (4) aquatic plants. In the fourth floral region district, the dry-valley region, the last two classes are lacking, and in the third, the barren sand hill region, plants of the first class only are found.

SAND-HILL VEGETATION.

The most characteristic plants of the sand hills are of course the four blowout grasses mentioned above, viz: *Calamovilfa longifolia*, *Eragrostis tenuis*, *Redfieldia flexuosa*, and *Muhlenbergia pungens*, of which the first two are also found on nearly every sand hill. Next to these four the following are the most common or the most characteristic herbaceous plants:

Andropogon scoparius.
Andropogon hallii.
Stipa spartea.
Stipa comata.
Psoralea lanceolata.
Psoralea digitata.
Carduus plattensis.
Opuntia rafinesquii.
Euphorbia petaloidea.
Euphorbia geyeri.
Chrysopsis villosa.
Cristatella jamesii.
Corispermum hyssopifolium.
Croton texensis.
Acerates viridiflora.
Acerates angustifolia.
Acerates lanuginosa.
Astragalus ceramicus longifolius.
Commelina virginica.
Tradescantia virginiana.
Yucca glauca.
Amaranthus torreyi.
Froelichia floridana.
Cyperus schweinitzii.
Lacinaria squarrosa.
Cycloloma atriplicifolia.
Argemone albiflora.

The following are characteristic undershrubs:

Prunus besseyi.
Ceanothus ovatus.
Amorpha canescens.
Kuhnistera villosa.

It must not be understood that those mentioned are confined to the sand hills alone. Many run down into the dry valleys, as for instance, the Stipæ, Amaranthus, and Argemone; some even to the river banks, as Tradescantia. As I have said before, and as may be seen from the list, the sand hills are far from destitute of vegetation. The plants, however, never grow close together, but usually 2 to 5 decimeters apart, so that the sand is always seen. In many places, a few centimeters below the surface, which is perfectly white, the sand is mixed with half-decayed, or, rather, poorly cured and half-burned vegetable matter, resembling black tea. Whether it is a product of the prairie fire or of the sun-heated sand, I can not tell.

DRY-VALLEY VEGETATION.

This is in fact identical with the general prairie flora of the State, with the addition of some sand-hill species, which run down from the hills. The most characteristic are of course the prairie grasses, some of which are enumerated below under the heading "Native forage plants." Other common plants are:

Sisyrinchium angustifolium.
Spiesia lambertii.
Œnothera serrulata.
Verbena stricta.
Potentilla arguta.
Ambrosia psilostachya.
Psoralea argophylla.
Allium nuttallii.
Monarda citriodora.
Verbena hastata.
Artemisia canadensis.
Artemisia gnaphalodes.

WET-VALLEY VEGETATION.

The wet-valley flora is of course the richest as far as species are concerned. To this belong most of the hay grasses of the region. Other common plants of the meadows are:

Equisetum laevigatum.
Galium trifidum.
Galium triflorum.
Galium aparine.
Stellaria longifolia.
Campanula aparinoides.
Lythrum alatum.
Potentilla monspeliensis.

Among the bushes the following are common:

Habenaria hyperborea.
Vagnera stellata.
Polygonatum commutatum.
Circæa lutetiana.
Geum strictum.
Thalictrum purpurascens.
Geum canadense.
Scutellaria galericulata.

AQUATIC FLORA.

Most of the aquatic plants are very local, each lake or pond having its peculiar species. Those common throughout the region are:

Lemna minor.
Lemna trisulca.
Sagittaria latifolia.
Utricularia vulgaris.
Potamogeton pectinatus.
Batrachium divaricatum.

The following are found in both rivers:

Lemna polyrrhiza.
Typha latifolia.
Sparganium eurycarpum.
Potamogeton lonchites.
Potamogeton pusillus.
Berula erecta.

WEEDS.

Several eastern weeds have come into the region, and many of the native plants also act as if they were likely to become more or less troublesome. The worst of the weeds introduced is the Russian thistle (*Salsola kali tragus*), but it has not yet established itself firmly. It was found along the railroad at Mullen, and more abundantly at Thedford, while a few specimens were also collected near Plummer Ford, 15 miles from the railroad. Other weeds or plants likely to become noxious are:

Helianthus annuus.
Helianthus petiolaris.
Chenopodium album.
Chenopodium leptophyllum.
Chenopodium hybridum.
Acnida tamariscina.
Portulaca oleracea.
Rumex venosus.
Cycloloma atriplicifolia.
Eragrostis major.
Eragrostis caroliniana.
Xanthium canadense.
Chamæraphis viridis.
Cenchrus tribuloides.
Panicum capillare.
Amaranthus albus.
Amaranthus blitoides.
Amaranthus retroflexus.
Lappula redowskii occidentalis.
Lappula deflexa americana.
Erigeron canadense.
Lepidium incisum.
Iva xanthifolia.
Ambrosia artemisiafolia.

Three plants were almost exclusively confined to the "prairie-dog towns" here as well as in western Nebraska, viz, *Solanum triflorum*,[1] *Cryptanthe crassisepala*, *Chenopodium fremontii incanum*.

NATIVE TREES AND SHRUBS.

The most abundant woody plant is *Amorpha canescens*, which is common all over the sand hills. Next comes the Western sand cherry (*Prunus besseyi*). On the sand hills around Thedford the third in order is *Ceanothus ovatus*. *Kuhnistera villosa*, which should, perhaps, be classed among the under-shrubs, is as common as any of the class. All these belong to the true sand-hill flora. Nearly all the other woody plants are confined to the Middle Loup and Dismal River valleys. A few, as, for instance, *Salix fluviatilis*, *Symphoricarpos occidentalis*, *Prunus americana*, *Amorpha fruticosa*, are also found in some of the wet valleys.

---

[1] Since this report was written a note concerning this plant has been found in E. P. James's catalogue of plants collected on Long's expedition which reads: "I have never seen it except immediately about the burrowing places of the marmots or prairie dogs, where it is almost constantly found."

Amorpha fruticosa and *Salix fluviatilis* line the rivers for long distances and are the most common woody plants of the lowlands. Two other Salices, *Cornus stolonifera*, *Ribes floridum*, an upright form of *Rhus radicans*, *Rosa fendleri*, and *Prunus americana* are also common on or near the river banks.

On the hillsides and in the dry parts of the valleys the most common woody plants are *Prunus demissa* and *Symphoricarpos occidentalis*. *Acer negundo*, *Rosa arkansana*, *Ribes aureum*, and *Rhus trilobata* were also found here and there on the hillsides; also *Fraxinus pennsylvanica* and its variety *lanceolata*, with several intermediate forms. None of the latter were of large size, and most of them were only stunted shrubs. At Norway, Mullen, on the south prong of Middle Loup, and also on the Dismal River, some cottonwood (*Populus deltoides*) was found. *Celtis occidentalis* occurs on both rivers, but is not very common. Near the forks of the Dismal there were some specimens between 4 and 5 dm. in diameter. *Juniperus virginiana* was found along the Dismal River. Judging from the stumps and brush left, it must earlier have been a very common tree and of considerable size. What now remains consists mostly of young trees. *Parthenocissus quinquefolia* and *Vitis vulpina* were occasionally met with on the river banks. More local were *Celastrus scandens* and *Rubus occidentalis*, found near Plummer Ford; *Ribes gracile*, near Crumb's horse ranch; *Crataegus coccinea*, near the forks of Dismal River; *Ulmus americana*, on the South Dismal about 4 miles above the forks; and *Rhus glabra*, 3 miles below our first camp on Dismal River.

NATIVE FORAGE PLANTS.

The principal hay lands in the region are the wet valleys and that part of the Middle Loup bottom land which can be mowed. The grass land along the Dismal and the upper part of the Middle Loup is too narrow and too much cut up by the river to admit of mowing and hence must be used as pasture. Grant County, which consists mostly of sand hills and wet valleys, is a fair stock-raising country. The wet valleys are used chiefly as hay lands, while the dry valleys, the hillsides, and even the sand hills are used as pasture. The hay crop is here made up principally of the following grasses, which are arranged according to their relative value, considering partly quantity and partly quality. Those in the left-hand column are regarded as the better:

Andropogon provincialis.	*Agrostis exarata.*
Panicum virgatum.	*Panicularia nervata.*
Agropyron repens glaucum.	*Panicularia americana.*
Andropogon nutans.	*Spartina cynosuroides.*
Muhlenbergia racemosa.	*Beckmannia erucæformis.*
Phalaris arundinacea.	*Carex trichocarpa aristata.*
Agropyron violaceum (?) majus.	*Scirpus triangularis.*
Calamagrostis canadensis.	*Distichlis spicata stricta.*
Elymus canadensis.	*Eleocharis palustris.*

The meadows along Middle Loup contain all enumerated above with

the exception of *Beckmannia*, *Phalaris*, and *Distichlis*, and in addition thereto—

Calamagrostis neglecta.
Muhlenbergia mexicana.
Panicum scoparium.
Panicum dichotomum.
Sporobolus asperifolius.
Agrostis hiemalis.
Carex stipata.
Carex filiformis.
Carex nebraskensis.
Carex aurea.
Carex echinata radiata.
Equisetum lævigatum.

The last one is claimed to be a valuable hay grass.

The bottom land of Dismal River being too rough to mow is instead used for summer ranches. The forage consists of about the same plants as that of the Middle Loup Valley, with two additions, *Alopecurus geniculatus aristulatus* and *Agrostis hiemalis.*

The forage plants of the dry valleys, hillsides, and pockets of the sand hills consist mostly of the following species, of which some are of little value, however:

Boutelona oligostachya.
Boutelona hirsuta.
Bulbilis dactyloides.
Ealonia obtusata.
Koleria cristata.
Andropogon scoparius.
Boutelona curtipendula.
Sieglingia purpurea.
Panicum virgatum.
Agropyron repens glaucum.
Stipa spartea.
Stipa comata.
Elymus canadensis.
Andropogon hallii.
Paspalum setaceum.
Sporobolus cryptandrus.

The first five in the left-hand column are regarded as the best pasture grasses, while the first six in the right-hand column are often cut for hay when they grow in quantity.

On the prairies of the Middle Loup Valley a valuable addition to the pasture is made by the following, which grow in some places in quantity:

Poa arida.
Poa arida var.
Poa sp.
Poa pratensis var.

STOCK RAISING.

From the foregoing it can be seen that stock raising is and probably always will be the principal industry of the region. Before the Burlington and Missouri River Railroad was built the sand hills were overrun by the herds of the cattle ranches, but after the railroad came in the good land began to be settled, the herd laws were enforced, and the "cattle kings" were compelled to move their herds farther west. It was nearly impossible to keep the cattle from the fields of the settlers, and they were, moreover, in many places cut off from water. In Grant County, where there is plenty of natural grass land, the settlers have turned stockmen, but on a small scale. The wet valleys are used as hay land, and the drier part of the valleys and the sand hills as summer pasture. Winter pasturing can scarcely be resorted to at all, as those plants which in western Nebraska constitute winter pasturage are here comparatively rare, viz:

Boutelona oligostachya.
Boutelona hirta.
Bulbilis dactyloides.
Carex filifolia.

In Thomas and Hooker counties, where the natural hay land area is very limited, the settlers were compelled to resort to farming also. As a rule this has not been very successful, and the homesteaders of those counties are generally not wealthy. Many therefore wish that the "cattle kings," who always had money, were still in the region. In order to bring money again into the counties, meetings have been called for the purpose of petitioning Congress to pass bills authorizing the sale of the sand-hill lands at 15 cents an acre. Few of the settlers, however, are able to pay even 15 cents an acre for the Government land that they are now using and need as pasture for their stock. Practically the land would be sold in township lots or other large areas to stockmen. As I have said before, the sand hills can not be used for winter pasturage. Hay is therefore needed for the winter. All the hay lands are in the hands of the settlers. The stockmen would be obliged either to ship in hay or drive their cattle away in the fall, or, which would be easier, to buy out, or perhaps starve out, the settlers. This latter would not be very difficult, as the settlers could not dispense with the summer pasturage of which they would thus be deprived.

AGRICULTURE.

A part of the Middle Loup Valley in Thomas County and some of the dry valleys in Hooker and the northern part of Thomas counties are used for agricultural purposes. Garden vegetables seem to thrive well. On July 11 we bought new potatoes as large as goose eggs, Fine cabbage, tomatoes, onions, watermelons, and cucumbers were also seen. At one place an experiment with alfalfa was in progress. It did not give good results, owing mainly, I think, to ignorance of the proper method of growing this crop. Fine specimens of Russian millet (*Panicum miliaceum*) were brought into Thedford by a settler who had a field of perhaps 3 or 4 acres. In June I saw a fine field of common millet (*Chamæraphis italica*). The grain mostly planted is corn. Fields of oats and barley were also seen. The country, however, seems not to be very well adapted to agriculture. In June and July we saw very fine cornfields, but when we returned to the same place in August it was apparent that the crop would be but light. I learned that during preceding years some fine crops had been obtained; but, as a rule. farming does not seem to be paying well in this region. Some claim that there is too little rainfall. From the experience of this summer and from the published reports, however, the conclusion seems justified that the annual rainfall is sufficient, and that the great difficulty consists in a season of drought in August with hot winds, which scorch the growing crops. As the wind in the summer is usually from the south or southeast, the general belief is that the hot winds come from Kansas or even from Texas. As a rule, however, they are of a much nearer origin. It will not require a long time or the traverse of a great distance for the wind, blowing over the highly heated sand hills, to become intensely hot. It seems to me certain that the hot winds which

scorch the cornfields are generated in the sand-hill region. The only remedy would be to cover the hills with a dense vegetation which would shade the ground. There is no sod-forming grass that will grow there, nor apparently any deep-rooted perennial herb that would grow thick enough to cover the ground. The woody flora is the only remaining resort, and thus the question presents itself how this may be utilized for this purpose.

REFORESTING THE SAND HILLS.

I say reforesting, as many, and among them Dr. Chas. E. Bessey, think that the sand hills at one time were probably covered with woods. Pine logs have at a few places been found buried in the sand. There is a canyon in Custer County which still contains living pines. It is hard to explain how pine seed could have been carried from the pine ridge in Dawes and Sheridan counties to Custer County and none have been sown in the intermediate tract. It would be still more strange if the seed had come from Long Pine on the Niobrara, which is about 75 miles north of this canyon, as it would then have had to cross perhaps one hundred ridges of sand hills. Very likely in former days the pines grew, if not all over the hills, at least in many places among them. The red cedar is at present not uncommon on the hillsides along the Dismal River, and I myself found stumps and fragments of this tree at several places in the sand hills, where there was no vestige of living trees.

Without doubt trees will grow on the sand hills, if the proper kinds are selected and these are given the proper treatment. What species would be best, only repeated trials can determine, but these trials must be made under the light of facts with which students of forestry are already acquainted. The known adaptations of trees are to be compared with the demands of the proposed environment. A tree that can be thought of for this location must fulfill the following conditions:

1. It must be able to withstand the hot dry winds in the summer and the cold dry winds in the winter. It must be a tree in which the evaporation is small. The conifers with their small leaf surface would suggest themselves as being the best fitted to meet these requirements.

2. It must be a tree with a deep root system, which can reach the permanent moisture. The bull pine or Rocky Mountain yellow pine (*Pinus ponderosa scopulorum*) is little grown by nurserymen, because its deep root makes it hard to transplant; but this very fact makes it a desirable tree for the sand-hill region. A very deep root system is not, however, as necessary as it may seem, for most of the sand hills are better supplied with moisture than is generally believed. In many places the sand keeps moist a few inches below the surface. Near Plummer Ford I collected *Penstemon haydeni* on one of the highest sand hills, the top of which had recently been formed by sand from a blowout. To my surprise, I found the roots of the plant surrounded by

wet sand. There are hills, however, on which no one should attempt to grow wood, viz, those that contain a blowout, or are likely to contain one. Such hills, as a rule, are characterized by the blowout grasses; but hills on which the Stipa, *Boutelona hirta*, and *Panicum virgatum* grow may very well be used for tree planting.

3. It must be a tree native in poor soil. The black jack or northern scrub pine (*Pinus divaricata*), growing on the sand barrens of Wisconsin and upper Michigan, I think, would be a suitable tree. It would seem, also, that the Scotch pine (*Pinus sylrestris*) would fulfill the conditions. There is a large region in Sweden, just as sandy, of which almost the only vegetation, when I saw it last, some twenty years ago, was heather. The Swedish Government undertook to plant it with forest trees, especially *Pinus sylrestris*. From the papers I learn that the whole region now is a fine young pine forest. However, from the experiment made by Messrs. E. G. and Hudson Brunner in Holt County, under the direction of the Forestry Division of the United States Department of Agriculture, *Pinus sylrestris* does not seem to be of much value for this region. Perhaps the partial failure resulted from the seedlings being received in poor condition, or perhaps this pine, being a northern tree, can not endure the hot winds. If the latter were the case, however. *Pinus divaricata* ought to be similarly affected, but in the experiment referred to this seemed to be the very best of the trees tested.

Many have taken tree claims in this region, but the most have failed to make their trees grow; in fact, statements have been made, sometimes publicly, that it is impossible to do so. I believe the contrary. Most have failed just because they have tried to fulfill the requirements of the tree-planting law. This was made to fit the conditions of a prairie region with a hard sod, not those of the sand hills. A thorough cultivation of the ground, although highly recommended and repeatedly urged, is the worst kind of treatment for a tree plantation in the sand hills. This has been plainly shown by the experiments made in Holt County. One of four lots planted with trees was cultivated, and at the end of the first year only 5 per cent of the trees were living. On the other lots, not cultivated, the result was good. After two years the average of living trees on the three lots was 51 per cent. A thorough cultivation of a field in the sand hills means to make it a blowout, or at least to dry up all its moisture. Besides this, cultivation here would prepare the ground for weeds instead of killing them. The less the ground is disturbed the better.

The best tree for planting seems to me to be *Pinus ponderosa scopulorum*. Perhaps it would be wisest to plant it mixed with *Pinus divaricata*, or other conifers, or even such deciduous trees as may be likely to succeed here. A tree claim was visited on one of the hills, 2 or 3 miles north of Middle Loup and 5 or 6 miles from Mullen, in which the species planted were box elder, green ash, and cottonwood. About 60 or 70 per cent had lived through, and all had made a good growth.

Perhaps the seeds of the Rocky Mountain yellow pine could be planted directly in the sand hills. Judge J. C. Tolivar, of Ainsworth, Nebr., gathered a few bushels of cones in the first part of September, 1893, and placed them in the sun to dry. The cones opened in a few days, and he immediately planted the seeds on the sand hills of his tree claim. A few days later the young pines came up, and they are said to have grown to a height of 6 to 8 inches before the frost set in. The rapidity of the germination of the seed has been confirmed in the greenhouse of the University of Nebraska. The method of Judge Tolivar, if successful, as it promises to be, will be the least expensive. It may be that the young trees will need some protection against the sun and hot winds the first two summers, but when 2 years old the roots will have reached the permanent moisture and no care will need to be taken of them except to keep away the prairie fires. It would be desirable to find some tree or shrub that would furnish the necessary protection the first two years. The box elder is excellent for shading, but it is not easier to grow than the pine itself. The native shrubs of the sand hills are mostly too low. *Prunus besseyi* generally trails in the sand. *Ceanothus ovatus* is mostly too bushy. *Amorpha canescens* and *Kuhnistera villosa* have a good amount of foliage and would give some shade for a year or two. Better than these would be *Pinus divaricata*, if it is as well adapted to the region as reports seem to indicate.

If forest trees are planted to produce climatic effects, they must be grown in large tracts. The groves on the tree claims do little or nothing toward changing the conditions of the region. Extensive planting could be done by the General Government or by the State, or at least under the direction of one of these, perhaps best on a cooperative plan, like the one proposed by Mr. Fernow, Chief of the Forestry Division, United States Department of Agriculture. This planting should of course be undertaken only on lands useless for agricultural purposes. In the region of our summer's collecting was a tract of land of this kind between Middle Loup and Dismal rivers, in Thomas County, a distance of about 15 miles. The land consists mostly of sand hills, with scarcely any grassy valleys between. The hills along the rivers could be used as summer pastures for a width of 4 or 5 miles. The cattle seldom go farther, indeed, as a rule, scarcely so far, from water. A belt about 6 miles in width is then left, of no use whatever. Even the hills near the rivers are worth so little for grazing that the land would increase many times in value if covered with woods.

CATALOGUE OF SPECIES.

In determining the plants of this collection, I have had help from the following botanists, to whom thanks are due: Mr. J. K. Small has determined the species of *Polygonum*, Mr. J. G. Smith those of *Sagittaria*, and Dr. William Trelease those of *Epilobium*. The Cactaceæ were sent to Prof. J. M. Coulter. The determination of the species of

Juncus has been verified by Mr. Frederick V. Coville, and that of the grasses by Prof. F. Lamson Scribner and Mr. L. H. Dewey.

Acknowledgment is also due to the Academy of Natural Sciences of Philadelphia for the loan of specimens for comparison. All the plants have been compared with the collections in the National Herbarium and the Herbarium of the University of Nebraska.[1]

RANUNCULACEÆ.

Clematis ligusticifolia Nutt.; Torr. & Gray Fl. i, 9 (1838).
Rare; on a hillside near Plummer Ford, Dismal River, August 22, 24 (No. 1717).

Anemone cylindrica Gray, Ann. Lyc. N. Y. iii, 221 (1836).
Banks of Dismal River, south of Thedford, June 27 (No. 1431).

Thalictrum purpurascens L. Sp. Pl. i, 546 (1753).

A tall, puberulent form with thick leaves, which are paler beneath, was very common among the bushes along the streams. On Middle Loup River at Natick, June 20, and Norway, June 22, 23; on Dismal River, south of Thedford, June 27; at Plummer Ford, July 3; South Dismal River, August 14 (No. 1413).

Batrachium divaricatum (Schrank) Wimm. Fl. Schles. 10 (1841); *Ranunculus divaricatus* Schrank, Baier. Fl. ii, 104 (1789).

The plant seems to be nearest this species, which has been regarded as the same as *R. circinatus* Sibth.; but my specimens differ from European ones of that species in having more flaccid leaves with longer and finer divisions. In the latter the lobes are short and rigid, spreading in a circle around the stem. The Nebraska specimens, viz, my No. 4 from Lodge Pole Creek (1891) and those of the present collection, have the very fine divisions more or less ascending. The sessile leaves and the much longer peduncles distinguish it from forms of *Batrachium trichophyllum*. It was collected in Middle Loup River, near Thedford, June 16, and in Dismal River, near Plummer Ford, July 3 (No. 1335). It was also seen in the lakes of Grant County.

Cyrtorrhyncha cymbalaria (Pursh) Britton, Mem. Torr. Club. v, 161 (1894); *Ranunculus cymbalaria* Pursh, Fl. i, 392 (1814).

The oldest name for this species, however, seems to be *Ranunculus salsuginosus* Pallas.[2] According to Ledebour[3] *R. salsuginosus* Pallas,[2] and *R. salsuginosus* DC.[4] are not the same. According to the same author, the former is *R. cymbalaria* Pursh, and the latter *R. plantaginifolius* Murr. and *R. ruthenicus* Jacq., a similar, but larger, plant. Pallas in his "Reise," does not give a description under the name *R. salsuginosus*, but bases this on an already described and figured plant, giving as synonym "*Ranunculus repens flore in caule singularis, fol. varie sectis;* Amman ruth. n. 107, tab. 13, fig. 2." As I have no access to Amman's Stirpium Rariorum Rutheno, I can not tell whether this is our *B. cymbalaria* or not. I am, however, strongly inclined to believe that Ledebour is right, as he cites the synonym given above, while neither De Candolle nor any American author, as far as I know, uses it as a reference to *R. salsuginosus*. De Candolle gives it as a synonym of *R. cymbalaria*. Common on moist, sandy soil; near Thedford, June 15, 16, and Whitman, August 1 (No. 1334).

---

[1] On my return from Washington, I visited Columbia College and Harvard University, staying one week at each place. I hereby extend my thanks to Dr. N. L. Britton and Dr. B. L. Robinson for the use of the herbaria and botanical libraries of their respective institutions, and to the former and Mr. J. M. Greenman for kind assistance given. The valuable notes taken at both places have been incorporated in the following catalogue.

[2] Reise d. versch. Prov. Russ. Reichs, iii, 213 (1776).

[3] Flora Ross. i, 33, 34.

[4] Syst. i, 251 and Prodr. i, 33.

Ranunculus sceleratus L. Sp. Pl. i, 551 (1753).

Banks of Middle Loup, Thedford, June 16; Mullen, July 18; dry lakes west of Whitman, September 19 (No. 1333).

Ranunculus pennsylvanicus L. f. Suppl. 272 (1781); or, *R. canadensis* Jacq. Misc. ii, 342 (1781).

Very variable; it has sometimes sessile leaflets. Specimens fully 1.5 meters high were found on the Middle Loup, near Mullen, July 17. It was also collected at the forks of that river July 26, and near Cody's Lakes, August 9 (No. 1559).

Ranunculus sp.

A low and apparently subcespitose plant, rooting in the mud. I found no specimens in bloom or in fruit. The leaves somewhat resemble in texture those of *R. nuttallii*, especially those of the variety *repens*,[1] but they are larger, ternately divided, the divisions cleft into 3-lobed segments. It is common in the dry lakes of Grant County; September 19 (No. 1789).

Delphinium carolinianum Walt. Fl. Car. 155 (1788).

A low, leafly form peculiar to the sand hills and dry plains of western Nebraska. The plant is glandular as well as pubescent, especially so on the peduncle. It is the same form as No. 8 of my western Nebraska collection. Thedford, June 19; Norway, June 22; Plummer Ford, July 8 (No. 1360).

PAPAVERACEÆ.

Argemone albiflora Hornem. Hort. Hafn. 489 (1813–15).

Dr. Watson referred the Argemone common on the plains east of the Rocky Mountains to *A. platyceras* Link & Otto, Icon. i, 85 t. 43 (1828). Hornemann's name is older, and that it belongs to this and not to the white-flowered form of *A. mexicana*, to which De Candolle referred it, can be seen from the original description: "Capsulis 5–6-valvibus pedunculatis, foliis subspinosis."

In *A. albiflora* the capsules are generally peduncled, while in *A. mexicana* they are, as a rule, subtended by the uppermost leaves. The figure and description of *A. albiflora*, published a few years after the original description in Bot. Mag. xlix, 2342, corresponds to our plant. Neither it nor our plant has the white blotches on the leaves characteristic of *A. mexicana*. Thedford, June 19; Dismal River, June 29; Mullen, July 19 (No. 1358).

NYMPHÆACEÆ.

Nymphæa advena Soland. in Ait. Hort. Kew. ii, 226 (1789).

This was collected only in Swan Lake, Grant County, August 7 (No. 1650).

CRUCIFERÆ.

Roripa palustris hispida (Desv.); *Brachylobus hispidus* Desv. Journ. Bot. iii, 183 (1809).

In the lake region of Grant County, rare; 3 miles northeast of Whitman, July 31, and northwest of the same place, September 19 (No. 1787).

Roripa obtusa (Nutt.) Britton, Mem. Torr. Club, v, 169 (1894); *Nasturtium obtusum* Nutt.; Torr. & Gr. Fl. i, 74 (1838).

In the lake region northeast of Whitman, July 29; 15 miles south of same place, August 3; west of same, September 19 (No. 1626).

? Cardamine hirsuta L. Sp. Pl. ii, 655 (1753).

Only three small specimens were collected, these in springs near Plummer Ford, August 3. On account of the scanty material I can not determine to which species they belong. I place them for the present under *C. hirsuta*, although they differ from

[1] *R. multifidus repens* Wats. Bot. King Surv. v, 8 (1871).

the European form of that species, in being perfectly smooth. My specimens are all small, only 1 dm. or less in length, rooting in the mud, and with rounded leaflets, sinuately 3-lobed at the apex. New to Nebraska (No. 1720).

Arabis glabra (L.) Bernh. Syst. Verz. Erf. 195 (1800); *Turritis glabra* L. Sp. Pl. ii, 666 (1753); *Arabis perfoliata* Lam. Encycl. i, 219 (1783).

This plant was found only at Plummer Ford, July 6 (No. 1508).

Arabis hirsuta (L.) Scop. Fl. Carn. ed. 2, ii, 30 (1772); *Turritis hirsuta* L. Sp. Pl. ii, 666 (1753).

Only one specimen was collected: Norway, June 22 (No. 1405).

Draba caroliniana micrantha (Nutt.) Gray, Man. ed. 5, 72 (1867); *Draba micrantha* Nutt.; Torr. & Gr. Fl. i, 109 (1838),

Rare; Thedford, June 15 (No. 1837).

Erysimum cheiranthoides L. Sp. Pl. ii, 661 (1753).

Not common; only a few specimens were secured. Plummer Ford, July 3; Forks of Dismal River, July 11 (No. 1454).

Lesquerella argentea (Pursh) MacMillan, Metasp. Minn. Val. 203 (1892); *Myagrum argenteum* Pursh, Fl. ii, 434 (1814).

Collected on the railroad embankment near Thedford, June 14 and 17 (No. 1281).

Lepidium intermedium Gray, Pl. Wright. ii, 15 (1852); *L. incisum* Roth, Neue Beitr. i, 224 (1802).

Thedford, June 15; Plummer Ford, July 4 (No. 1304).

Raphanus sativus L. Sp. Pl. ii, 669 (1753).

Escaped: near Thedford, August 26 (No. 1729).

CAPPARIDACEÆ.

Cleome serrulata Pursh, Fl. ii, 441 (1814).

Found only along the railroad embankment east of Mullen, July 20 (No. 1587).

Cristatella jamesii Torr. & Gr. Fl. i, 124 (1838).

In the sand hills, south of East Cody's Lake, August 9; Thedford, August 26; Natick, September 11 (No. 1664).

VIOLACEÆ.

Viola obliqua Hill, Hort. Kew. 316, t. 12 (1769); *Viola palmata obliqua* Hitchcock, Trans. St. Louis Acad. v, 487 (1891).

Only one plant collected on the banks of Middle Loup River, Thedford, June 16 (No. 1336).

CARYOPHYLLACEÆ.

Silene antirrhina L. Sp. Pl. i, 419 (1753).

Thedford, June 17; Dismal River, June 29 (No. 1349).

Lychnis drummondii (Hook.) Wats. Bot. King Surv. 37 (1871); *Silene drummondii* Hook. Fl. Bor. Amer. i, 89 (1830).

Hillside, near Plummer Ford, July 3 (No. 1471).

Alsine longifolia (Muhl.) Britton, Mem. Torr. Club, v, 150 (1894); *Stellaria longifolia* Muhl.; Willd. Enum. 479 (1809).

Spergulastrum graminеum[1] is the oldest name, but *A. graminea* is not available, as it is used for a European species. Very common in wet valleys; Thedford, June 15, 16; Plummer Ford, July 3 (No. 1295).

---

[1] Mx. Fl. i, 276 (1803).

AIZOACEÆ.

Mollugo verticillata L. Sp. Pl. i, 89 (1753).
On the railroad embankment west of Mullen, September 15 (No. 1773).

PORTULACACEÆ.

Portulaca oleracea L. Sp. Pl. i, 445 (1753).
This is a common weed in eastern Nebraska, but here grows very sparingly in fields. Forks of Dismal River, July 11; Mullen, July 17 (No. 1566).

Talinum teretifolium Pursh, Fl. i, 365 (1814).
My specimens are small, with flowers scarcely larger than those of *T. parviflorum*. Sand hills, Thedford, September 8 (No. 1732).

HYPERICACEÆ.

Hypericum canadense L. Sp. Pl. ii, 785 (1753).
In wet meadows; Cody's Lakes, August 9; South Dismal River, August 11 (No. 1656).

Hypericum canadense majus Gray, Man. ed. 5, 86 (1867).
Gray wrote the varietal name *major*, which form has been used by botanists nearly without an exception. Some hold this as a species distinct from *H. canadense*, but it often grows together with the species and grades into it. South Dismal River, August 11 (No. 1826).

Elodes virginica (L.) Nutt. Gen. ii, 17 (1818); *Hypericum virginicum* L. Sp. Pl. ed. 2, ii, 1104 (1763).
In wet valleys, but not common: Thedford, August 9; Natick, September 11 (No. 1703).

POLYGALACEÆ.

Polygala verticillata L. Sp. Pl. ii, 706 (1753).
Near the railroad, west of Mullen, July 24. No specimens in my collection.

MALVACEÆ.

Malvastrum coccineum (Nutt.) Gray, Mem. Amer. Acad. iv, 21 (1848); *Malva coccinea* Nutt., Fraser's Cat. (1813).
Sand hills near Thedford, June 14 (No. 1357).

LINACEÆ.

Linum rigidum Pursh, Fl. i, 210 (1814).
The most common form of this species in Nebraska is about 3 or 4 dm. high with several slender stems from a perennial caudex, and having the leaves distant. This was collected near Thedford, June 19, and on Dismal River, June 26 (No. 1361).
I collected also another form about 1.5 dm. high with a single stout, much-branched stem, the branches forming a nearly flat top. The internodes were about one-half the length of the leaves. Railroad embankment, Thedford, June 14; Mullen, July 20 (No. 1255).

OXALIDACEÆ.

Oxalis stricta L. Sp. Pl. i, 435 (1753).
River banks: Thedford, June 17; Dismal River, June 29 (No. 1348).

BALSAMINACEÆ.

Impatiens biflora Walt. Fl. Car. 219 (1788).
In swampy places near South Dismal River, August 12 (No. 1681).

CELASTRACEÆ.

Celastrus scandens L. Sp. Pl. i, 196 (1753).

Common near Plummer Ford on the wooded bank of Dismal River, July 3, but not seen elsewhere. It is interesting to find this so far from the woody region of Nebraska. (No. 1453.)

RHAMNACEÆ.

Ceanothus ovatus Desf. Hist. Arb. ii, 381 (1809).

It is lower and has thicker leaves than the form collected by me in the Black Hills of South Dakota. It is one of the most common woody plants of the region, growing on the sand hills. Thedford, June 16 (No. 1325).

Ceanothus ovatus pubescens Wats. Index, i, 166 (1878).

This variety is perhaps the most common form of the species in the sand hill region. It grades into the typical form, but at the same time there are broad-leafed specimens scarcely distinguishable from *C. americanus*. Perhaps the two are but the extreme forms of a variable species. Thedford, June 17 and 20; Plummer Ford, July 3; South Dismal River, August 14 (No. 1352).

VITACEÆ.

Vitis vulpina L. Sp. Pl. i, 203 (1753).

The common form in Nebraska has smooth leaves, with a broad sinus. It was collected on the banks of the Dismal River, south of Thedford, June 29 (No. 1448). Another form with larger and thinner leaves, a narrower sinus, and larger bunches of grapes was found at Plummer Ford, July 3 (No. 1466). When young the leaves of this form are pubescent beneath. I think it is this form which has been regarded by Nebraska collectors as *Vitis cordifolia*. The latter is distinguished by a different dentation of the leaves, which are scarcely ever lobed, by a narrow and *acute* sinus, and by more elongated clusters. It does not appear to grow in Nebraska.

Parthenocissus quinquefolia (L.) Planch. in DC. Monogr. Phan. v, pt. 2, 448 (1887); *Hedera quinquefolia* L. Sp. Pl. i, 202 (1753).

Banks of Middle Loup River, near Natick, June 20 (No. 1375).

ACERACEÆ.

Acer negundo L. Sp. Pl. ii, 1056 (1753).

Few large or even middle-sized trees were found. Here and there on the hillsides near the rivers: Norway, June 22; Plummer Ford, July 3 (No. 1406).

ANACARDIACEÆ.

Rhus glabra L. Sp. Pl. i, 265 (1753).

Not common. Banks of Dismal River, June 28; Plummer Ford, August 22 (No. 1443).

Rhus trilobata Nutt.; Torr. & Gr. Fl. i, 219 (1838).

Local on the hills near the rivers: Norway, June 22; Dismal River, June 29; Forks of Dismal River, July 11 (No. 1407).

Rhus radicans toxicodendron (L.) Pers. Syn. i, 325 (1805); *Rhus toxicodendron* L. Sp. Pl. i, 266 (1753).

I believe that the western form of the "poison ivy" has good right to a varietal name. It is always an upright, strict shrub, 0.3 to 1 m. high, never climbing and without aerial rootlets. These characters are not seen in herbarium specimens, which mostly consist of a short piece of the top of the plant. In eastern Nebraska, the true *Rhus radicans*[1] is not uncommon in the woods. It is always tall, climbing by

[1] L. Sp. Pl. i, 266 (1753).

means of aerial rootlets. If intermediate forms are found they are rare. The variety is growing both in the woods and on the prairies. Common near the rivers: Natick, June 20 (No. 1416).

LEGUMINOSÆ.

Melilotus alba Desr. in Lam. Encyl. iv, 63 (1797).
Escaped: Banks of Middle Loup River, Thedford, August 26 (No. 1726).

Medicago sativa L. Sp. Pl. ii, 778 (1753).
Escaped: Thedford, June 16 (No. 1328).

Lotus americanus (Nutt.) Bisch. Linnæa, xiv, Suppl. 132 (1840); *Trigonella americana* Nutt. Gen. ii, 120 (1818).

The oldest name is *Lotus sericeus* Pursh,[1] but this name is preoccupied by *L. sericeus* DC.[2] Railroad embankment, near Mullen, July 24; Forks of Middle Loup, July 26 (No. 1592).

Psoralea argophylla Pursh, Fl. ii, 475 (1814).

The oldest name, *P. incana* Nutt.,[3] is a *nomen nudum*. Prairies: Thedford, June 21; Plummer Ford, July 3 (No. 1390).

Psoralea digitata Nutt.; Torr. & Gr. Fl. i, 300 (1838).

This includes also *P. campestris* Nutt.,[4] which should have narrower bracts and obtuse leaves. It can, however, scarcely be separated from *P. digitata*, even as a variety. Thedford, June 17, 20; Norway, June 22; Dismal River, June 27 (No. 1341).

Psoralea lanceolata Pursh, Fl. ii, 475 (1814).

Common in the sand hills. It spreads by long, slender rootstocks, sending up shoots here and there. At Seneca I found in a blowout a specimen, which had such a rootstock about 10 m. long. My specimens belong to the form which Miss A. M. Vail[5] calls *P. micrantha* Gray. I can not find any character that will separate the two even as varieties. They grow together and grade into each other as shown very well in the case of my No. 53 (1891) from Kearney. Thedford, June 17, 20; Norway, June 22; Dismal River, June 27 (No. 1327).

Amorpha fruticosa L. Sp. Pl. ii, 713 (1753).

Common along the streams. It was collected at Thedford, in flower, June 15; in fruit, September 8 (No. 1314).

Amorpha canescens Pursh, Fl. ii, 467 (1814).

Common all over the sand hills: Norway, June 22; Dismal River, June 29; Plummer Ford, July 8; Thedford, September 8 (No. 1417).

Kuhnistera villosa (Nutt.) Kuntze, Rev. Gen. Pl. i, 192 (1891); *Petalostemon villosus*, Nutt. Gen. ii, 85 (1818).

Common on the sand hills: Mullen, July 24; North of Whitman, July 31 (No. 1589).

Kuhnistera purpurea (Vent.) MacMillan, Metasp. Minn. Val. 329 (1892); *Dalea purpurea* Vent. Hort. Cels. t. 40 (1800).

Plummer Ford, July 3 (No. 1472).

Kuhnistera candida occidentalis Rydberg.[6]

Plummer Ford, July 3 to 8; Mullen, July 24 (No. 1480).

---

[1] Fl. ii, 489 (1814).
[2] Cat. Hort. Monsp. (1813).
[3] Fraser's Cat. (1813).
[4] Torr. & Gr. Fl. i, 301.
[5] Bull. Torr. Club xxi, 94 (1894).
[6] In order to make *K. candida* better understood the following descriptions and localities are given:

KUHNISTERA CANDIDA (Willd.) Kuntze, Rev. Gen. Pl. i, 192 (1891); *Dalea candida* Willd. Sp. Pl. iii, 1337 (1803).

Flowers white, calyx angularly 10-striate, nearly glabrous, pubescent only on the

Kuhnistera candida multiflora (Nutt.) Rydberg; *Petalostemon multiflorus* Nutt. Journ. Acad. Phila. vii, 22 (1834).

My specimens approach the preceding variety as to the length of the head, etc. Mullen, July 18 (No. 1850).

Astragalus carolinianus L. Sp. Pl. ii, 757 (1753).

This includes also *A. canadensis* L., by which name it has generally been known. *Astragalus carolinianus* appears first on the page, and the description under it fits better our western plant. Forks of Dismal River, July 11; South Dismal, August 14 (No. 1537).

---

margin, teeth short with a pair of glands at the base, leaflets 3 to 6 pairs. Stem (in the typical form) stout, generally upright, leaflets 1 to 3.5 cm. long and 3 to 10 mm. wide; heads oblong to cylindrical, dense even in fruit; bracts lanceolate or the upper ovate and cuspidate, much longer than the calyx, more persistent than in the other forms.

Illinois: Chicago, Henry H. Babcock.

Arkansas: Fort Smith, 1853, Bigelow (Whipple Exp.).

Louisiana: (Collector not given).

Kansas: Hutchinson, 1890, B. B. Smyth (a narrow-leafed form).

Nebraska: 1889, J. H. Holmes.

KUHNISTERA CANDIDA OCCIDENTALIS var. nov.

Stem generally slender and ascending, sometimes prostrate; leaflets 0.5 to 2 cm. long and 2 to 6 mm. wide; heads oblong to cylindrical, in fruit comparatively lax; bracts ovate and cuspidate, a little longer or sometimes shorter than the calyx, falling early.

Arizona: Fort Verde, 1883, H. H. Rusby; mesas around Mustang Mountains, 1884, C. G. Pringle; 1869 and 1890, Dr. Edward Palmer.

New Mexico: 1847, A. Fendler's No. 135; Calva Springs, 1878, W. B. Pease, No. 23; Las Vegas, 1881, Dr. G. R. Vasey.

Mexico: Hills near Guerrero, 1887, C. G. Pringle, No. 1216.

Texas: Mexican Boundary Survey, No. 241.

Colorado: E. Hall, No. 112 (with broad leaves); 1868, Dr. G. R. Vasey.

Nebraska: Scott's Bluff County and Lawrence Fork, 1891, P. A. Rydberg, No. 58b; No. 1480 of this collection.

South Dakota: Hot Springs, 1892, P. A. Rydberg, No. 612.

Specimens from two localities differ from the rest in being prostrate and having small (about 0.5 cm. long and 3 mm. wide) obovate, crowded leaflets.

Nebraska: Deuel County, 1891, P. A. Rydberg, No. 58.

N. W. Terr., British America: Moose Jaw Lake, 1880, John Macoun.

KUHNISTERA CANDIDA MULTIFLORA (Nutt.) nom. nov.

Stem slender, upright or ascending, corymbosely branched; heads capitate, short; bracts ovate and cuspidate, shorter than the calyx, deciduous.

Texas: Industry, 1843, F. Lindheimer; 1849, Charles Wright, No. 118; Delaware Mountains, 1853, Bigelow (Whipple Exp.); Gillespie County, G. Jermy, No. 609; Williams Creek, G. Jermy, No. 752; Hempstead, 1872, E. Hall, No. 138; Corpus Christi, 1889, Neally, No. 336.

Indian Territory: 1868, Dr. Edward Palmer, No. 89; Wichita Mountains, 1891, C. S. Sheldon, No. 259; Cimarron Canyon, 1891, M. A. Carleton, No. 369.

Kansas: Pratt, 1890, B. B. Smyth, Nos. 103 and 104; Onago, 1892, F. F. Crevecoeur, No. 1.

Nebraska: Kiowa Valley, 1891, P. A. Rydberg, No. 58c; No. 1850 of this collection.

Upright or ascending, or in one form prostrate, much branched; leaflets 2 to 5 pairs, conspicuously glandular-punctate, linear-oblong or obovate, 0.5 to 2 cm. long, 2 to 6 mm. wide; obtuse or acutish; spikes oblong to cylindrical, 2 to 8 cm. long and generally less than 1 cm. in diameter, when young mostly acute, in fruit becoming long

Astragalus crassicarpus Nutt. Fraser's Cat. (1813).

From the characters of the fruit given in Fraser's Catalogue, this can be identified with *Astragalus caryocarpus* Ker;[1] which will therefore come under Nuttall's name. Not common in the region. Collected in fruit only: Norway, June 22 (No. 1419).

Astragalus lotiflorus Hook. Fl. Bor. Amer. i, 152 (1834).

Rare: only a few specimens collected in fruit near the Forks of Dismal River, July 13 (No. 1547).

Astragalus ceramicus longifolius (Pursh) nom. nov.; *Psoralea longifolia* Pursh, Fl. ii, 741 (1814).

The name *longifolius* could not be used as a specific name under *Astragalus* as there is already an *A. longifolius*,[2] but it may well be adopted as a varietal name under *Astragalus ceramicus*.[3] Common in the sand hills: Thedford, June 16 and 17; Norway, June 22 (No. 1322).

Spiesia lambertii (Pursh) Kuntze, Rev. Gen. Pl. i, 207 (1891); *Oxytropis lambertii* Pursh, Fl. ii, 740 (1814).

On the sand hills near Thedford, June 17; Norway, June 17 (No. 1285).

Glycyrrhiza lepidota Pursh, Fl. ii, 480 (1814).

In meadows: Thedford, June 20; Mullen, July 20 (No. 1384).

Meibomia canadensis (L.) Kuntze, Rev. Gen. i, 195 (1891); *Hedysarum canadense* L. Sp. Pl. ii, 748 (1753).

Miss Anna M. Vail, in a Torrey Bulletin,[4] gives it as a character of *M. canadensis* that the leaves are not reticulated below. In the form growing in the open mead-

---

and comparatively lax; bracts mostly ovate, abruptly acuminate, a little longer, or sometimes shorter, than the calyx, deciduous, generally fallen at anthesis.

This has been a puzzling form for a long time. Dr. Gray called it *Petalostemon gracilis* in Plantæ Fendlerianæ remarking as follows: "Some of the specimens, I know not from which locality, have awn-pointed or cuspidate bracts, which are longer than the flower buds and are scarcely, if at all, distinguishable from *P. candidus*, to which the whole species is perhaps too closely related." Dr. Torrey in the Botany of the Mexican Boundary Survey, calls it *P. candidus*, adding the following note: "Our plant resembles Fendler's specimens named *P. gracilis* by Dr. Gray, but is erect." Later, it was named in manuscript by Dr. Gray, *Petalostemon candidus occidentalis*. As it is found in several herbaria under this name, I adopt the last part as a varietal name. I thought I had found characters which would distinguish the plant specifically from *K. candida*, viz, the more abrupt acumination of the bracts, and the less persistency of these and the bristles of the rachis, characters fairly constant in Nebraska specimens; but Mr. J. N. Rose, Assistant Botanist of the United States Department of Agriculture, who has also examined the plant, has shown me that these characters are not reliable. It is, I think, more nearly related to *K. multiflora;* in fact, can scarcely be distinguished from it except by the length and arrangement of the spikes. This is especially the case with my specimens from the Black Hills, in which the bracts are generally shorter than the calyx. As no definite line can be drawn between the present variety and *K. candida* on the one hand and *K. multiflora* on the other, I think it best to include all as varieties under one species. Perhaps *K. gracilis* should also be included therein. The Texas specimens in the National Herbarium, labeled *Petalostemon gracilis* belong to *K. candida occidentalis*. The Florida specimens are somewhat different and may be distinct.

[1]Edw. Bot. Mag. ii, 176 (1816).

[2]Lam. Encycl. i, 322 (1783).

[3]Sheldon, Minn. Bot. Stud. Bull. No. 9, 19 (1894).

[4]Bull. Torr. Club, xix, 114 (1892).

ows, however, they are so reticulated. Mullen, July 17 and 24 (No. 1565). In another form growing in the shade, the leaves are very thin and smooth with the nerves not prominent beneath and scarcely reticulated: South Dismal, August 12 (No. 1692).

Lespedeza capitata sericea Hook. Comp. Bot. Mag. i, 23 (1835).
Rare: on the prairies near Halsey, September 11 (No. 1746).

Lathyrus ornatus Nutt.; Torr. & Gr. Fl. i, 277 (1838).
This has been confounded with *L. polymorphus*. Sand hills, Thedford, June 16 and 19 (No. 1320).

Apios apios (L.) MacMillan, Bull. Torr. Club, xix, 15 (1892); *Glycine apios* L. Sp. Pl. ii, 753 (1753).
On the wooded banks of Dismal River, near Plummer Ford, August 22 (No. 1714).

Phaseolus pauciflorus Benth. Comm. Leg. Gen. 76 (1837).
South Dismal River, August 12; Thedford, August 19 (No. 1687).

Falcata comosa (L.) Kuntze, Rev. Gen. Pl. i, 182 (1891); *Glycine comosa* L. Sp. Pl. ii, 754 (1753).
Rare: on the banks of Middle Loup River, near Halsey, September 11 (No. 1749).

Falcata pitcheri (Torr. & Gr.) Kuntze, Rev. Gen. Pl. i, 182 (1891); *Amphicarpea pitcheri* Torr. & Gr. Fl. i, 292 (1838).
More common than the last, on the banks of both rivers: Plummer Ford, August 23; Halsey, September 11 (No. 1715).

ROSACEÆ.

Prunus americana Marsh. Arb. Amer. 111 (1785).
A very variable tree or shrub. The common form in eastern Nebraska is a tree 3 to 6 m. high with oval or obovate leaves. This form was collected at Norway, June 22; Dismal River, June 29; Thedford, August 21; Mullen, September 15 (No. 1766). Another form with narrower leaves, with long acumination, was also found. The trees were generally much smaller, 2 to 4 m. high. Thedford, June 15; Mullen, September 15 (No. 1289). A third form is a low bush, 1 to 1.5 m. high, with smaller, conduplicate leaves, having more rounded teeth and generally two glands on the leaf-stalk. The branches are more divergent and the fruit about one-half the size of the typical form. South Dismal River, August 14 (No. 1693).

Prunus besseyi Bailey, Bull. Cornell Agr. Exp. Sta. 70, 261 (1894).
The main branches prostrate, generally buried in the sand, but the shoots of the year mostly upright; leaves obovate, in form resembling those of *P. cuneata*,[1] as redescribed by Prof. L. H. Bailey,[2] but much thicker and firmer and a little smaller, serrate, but not as sharply as in *P. pumila;* fruit large, generally about 1.5 to 2 cm. in diameter, on a short, stout peduncle. The specimens of *P. pumila* in the National Herbarium have much narrower leaves. In the sand cherry of western Nebraska the leaves are somewhat smaller and narrower than in that from the sand hills and come nearer to those of *P. pumila*.
Common throughout the sand hills and westward: Thedford, June 16, etc. (No. 1324).

Prunus demissa (Nutt.) Walp. Repert. ii, 10 (1843); *Cerasus demissa* Nutt.; Torr. & Gr. Fl. i, 411 (1840).
On the hillsides and in the drier part of the valleys, along both rivers: Thedford, June 14; Norway, June 22; Mullen, July 27; Dismal River, June 27 (No. 1256).

---

[1] Raf. Ann. Nat. 11 (1820).
[2] Bull. Cornell Agr. Exp. Sta. 38, 63 (1892).

Rubus occidentalis L. Sp. Pl. i, 493 (1753).

In my specimens the fruit was very dark purple, rather than black, and hemispherical. On the wooded banks of Dismal River, near Plummer Ford, July 3 (No. 1465).

Fragaria vesca americana Porter, Bull. Torr. Club, xvii, 15 (1890).

Our American form has thinner and smoother leaves than the European, and as a rule also shorter peduncles and oftener elongated berries. Dr. Britton[1] makes it a distinct species and points out as a distinctive character that the achenes are superficial in the American species. But this is also the case in the European. In fact, De Candolle in his Prodromus uses just this character to separate *F. vesca* from *F. elatior* and *F. virginiana*. Plummer Ford, July 6 (No. 1481).

Potentilla arguta Pursh, Fl. ii, 736 (1814).

Plummer Ford, July 5 (No. 1474).

Potentilla pennsylvanica strigosa Pursh, Fl. i, 356 (1814).

Comparatively rare in the region: Forks of Middle Loup River, July 27; South Dismal, August 14 (No. 1611).

Potentilla pentandra Engelm.; Torr. & Gr. Fl. i, 447 (1840).

Very much branched and nearly as stout as the next. Perhaps this is a good species. Meadow, Haney's ranch, August 5 (No. 1819).

Potentilla monspeliensis L. Sp. Pl. i, 499 (1753).

Common: Plummer Ford, July 3; Haney's ranch, Grant County, August 4; Cody's Lakes, August 10 (No. 1469).

Geum canadense Jacq. Hort. Vind. ii, 82 (1772), not Murr. (1783).

This is an older name for *Geum album* Gmelin.[2] Plummer Ford, July 3 (No. 1456).

East of Mullen, July 19, two specimens were found with larger, light-yellow petals, and more incised leaves (No. 1608), perhaps a hybrid with *Geum strictum*.

Geum strictum Ait. Hort. Kew. ii, 217 (1789).

Common in the meadows along the rivers: Thedford, June 21; Dismal River, June 27; Natick, June 20 (No. 1364).

Some forms collected at Thedford, June 21, and Natick, June 20 (No. 1851), connect this with the next. They may be hybrids, but I incline to believe that *Geum strictum* and the next are varieties of the same species.

Geum macrophyllum Willd. Enum. i, 557 (1809).

This has been regarded as the same as *Geum japonicum* Thunberg. There is a specimen from Japan in the National Herbarium, labeled *G. japonicum*, but our plant is of another species. Natick, June 20; Plummer Ford, July 3 (No. 1458).

Agrimonia striata Mx. Fl. i, 287 (1803).

I had long been in doubt whether this was *Agrimonia eupatoria* L.[3] or not. To me it seemed different from the European form. Dr. N. L. Britton[4] shows that the American plant usually referred to *A. eupatoria* is distinct. Plummer Ford, July 4; Forks of Dismal River, July 11; Mullen, July 27 (No. 1495).

Rosa arkansana Porter, Port. & Coult. Fl. Col. 38 (1874).

Common throughout the State, but in the sand-hill region confined to the hills nearest to the streams. Thedford, June 21; Dismal River, June 28; Plummer Ford, July 5 (No. 1392).

Rosa fendleri Crepin, Bull. Soc. Bot. Belg. xv, 91 (1876).

I include under this all the forms collected on the lowlands and banks of the rivers. If all belong to *Rosa fendleri*, this species is a variable one, and yet I can not make out any constant characters that will warrant a distinction even of varieties. The

---

[1] Bull. Torr. Club, xix, 222 (1892).

[2] Syst. ii, 861 (1796).

[3] Sp. Pl. i, 448.

[4] Bull. Torr. Club, xviii, 366, (1891).

form I think most typical has thin, nearly smooth leaves. The lower stipules are generally narrow and often entire, while the upper are broad and glandular-toothed. Thedford, June 21; Dismal River, June 28; Plummer Ford, July 5 (No. 1354). No. 1313 is a similar form, but with smaller leaflets; Thedford, June 16. No. 1849 is a form similar to the first, but with the leaves more hairy beneath, the fruit larger, spherical, and bright red, the stipules mostly narrow; Mullen, August 17; Thedford, September 7. The other forms collected have the leaves distinctly pubescent beneath and even somewhat glandular. In one the fruit is large and spherical, the sepals sometimes lobed and deciduous; in the other the fruit is smaller and pear-shaped, the sepals persistent. Notwithstanding this, I believe they are but forms of the same species. The first of the two (No. 1848) was collected at Natick, June 20; Dismal River, June 29; the other (No. 1606) near the Forks of Loup River, June 27.

Cratægus coccinea L. Sp. Pl. i, 476 (1753).

In my specimens the corymbs are slightly villose. The trees were small, the tallest only about 4 m. high. Near the Forks of Dismal River, July 11 (No. 1528).

RIBESIACEÆ.

Ribes floridum L'Her. Stirp. i, 4 (1784).

My specimens are more tomentose than usual. Common along the streams: Norway, June 22; Dismal River, June 27 (No. 1415).

Ribes aureum Pursh, Fl. i, 164 (1814).

The form with black fruit was not uncommon on the hillsides near the streams. Norway, June 22; Natick, June 20; Plummer Ford, July 3; Mullen, July 27 (No. 1366).

The form with golden-yellow fruit was found only on the Middle Fork of Middle Loup River, July 27 (No. 1601).

Ribes gracile Mx. Fl. i, 111 (1803).

Only a few bushes were found near Crumb's horse range, on the Dismal River, July 10 (No. 1523).

HALORRHAGIDACEÆ.

Myriophyllum spicatum L. Sp. Pl. ii, 992 (1753).

What I take as the typical form was collected in leaf only on a lake in Grant County, northwest of Whitman, September 19 (No. 1785). Another form having smaller leaves, with shorter, more or less fleshy lobes, was found in bloom in Swan Lake, 25 or 30 miles south of Whitman, August 7 (No. 1784).

Hippuris vulgaris L. Sp. Pl. i, 4 (1753).

This is new to the State. The only locality known is a swamp, near Haney Bros.' ranches, 25 miles south of Whitman; August 4 (No. 1645).

LYTHRACEÆ.

Lythrum alatum Pursh, Fl. i, 334 (1814).

Common in meadows: Plummer Ford, July 3; Forks of Dismal River, July 12 (No. 1468).

ONAGRACEÆ.

Epilobium lineare Muhl. Cat. 39 (1813).

In the western part of the region: Middle Fork of Middle Loup River, July 26; northeast of Whitman, July 31 (No. 1603).

Epilobium adenocaulon Hausk. Œst. Bot. Zeit. xxix, 119 (1879).

Along the banks of Middle Loup River, north of Mullen, July 16 to 19. No. 1556 is a more simple and broad-leafed form; No. 1576, a more branched and narrow-leafed form.

Circæa lutetiana L. Sp. Pl. i, 9 (1753).

Common in shaded, wet places: Plummer Ford, July 3; Forks of Dismal River, July 11 (No. 1463).

Œnothera biennis L. Sp. Pl. i, 346 (1753).

Common on the banks of the Middle Loup River at Mullen, July 17, 18: also in Grant County, July 31 (No. 1578). Grades into the next by several forms.

Œnothera biennis parviflora (L.) Torr. & Gr. Fl. i, 492 (1840); *Œ. parviflora* L. Sp. Pl. ed. 2, i, 492 (1762).

Flowers very small, of the size of the next species. Mullen, July 18; Middle Fork of Middle Loup River, July 26; South Dismal River, August 14 (No. 1573).

Œnothera sinuata L. Mant. ii, 228 (1767).

All my specimens are low, generally less than 1 dm. high, the leaves sinnately toothed or entire. This is the only form growing in Nebraska. Thedford, June 15 (No. 1302).

Œnothera rhombipetala Nutt.; Torr. & Gr. Fl. i, 493 (1840).

This is common on the sand hills near Plummer Ford; July 6 to 8 (No. 1510).

Œnothera albicaulis Pursh, Fl. ii, 733 (1814); *Œ. pinnatifida* Nutt. Gen. i, 245 (1818).

Œ. albicaulis of Fraser's Catalogue is a *nomen nudum*, and the first plant described under this name is the present, which Mr. Pursh inaccurately supposed to be identical with that of Fraser's Catalogue.

Rare in the region, only a few specimens secured at Mullen, July 15 (No. 1293).

Œnothera pallida Lindl. Bot. Reg. xiv, t. 1142 (1828); *Œ. albicaulis* Nutt. Gen. i, 245 (1818), not Pursh.

The common form in Nebraska has a tall, upright white stem and narrower, linear or linear-lanceolate, or linear-oblong leaves, with mostly entire margins. It generally grows on prairie soil. Mullen, July 19 (No. 1586).

Œnothera pallida latifolia var. nov.

Leaves broad, 6 to 9 cm. long and 2 to 3 cm. wide, remotely dentate, cinereous on both sides; stem diffuse and much branched.

It grows in sand draws and on the banks of rivers. Mullen, July 17; Grant County, August 4 (No. 1544). No. 112 of my western Nebraska collection is the same. In a species as variable as *Œ. pallida*, perhaps the number of varietal names should not be increased; but this is so remarkable and so different from the common form, that I feel justified in adding another name. It is true that there are some intermediate forms, as for instance No. 1813 of this collection (Mullen, July 17), but such forms are very rare. If no intermediate forms were found, we should call them distinct species.

Œnothera serrulata Nutt. Gen. i, 246 (1818).

A common plant throughout the region. Thedford, June 16; Plummer Ford, July 3 (No. 1303).

Gaura coccinea Pursh, Fl. ii, 733 (1814).

Rather common on the prairies. Thedford, June 17 (No. 1343).

Gaura parviflora Dougl.; Hook. Fl. Bor. Amer. i, 208 (1834).

Rare: only one poor specimen secured, at Plummer Ford, July 3 (No. 1460).

Gaura biennis L. Sp. Pl. i, 347 (1753).

Rare: on banks of Middle Loup River, above Seneca, September 16 (No. 1777).

LOASACEÆ.

Mentzelia nuda (Pursh) Torr. & Gr. Fl. i, 535 (1840); *Bartonia nuda* Pursh, Fl i, 328 (1814).

On a hill on the west side of South Dismal River, August 14 (No. 1689).

CACTACEÆ.

Cactus viviparus Nutt. Fraser's Cat. (1813).
Here and there in the sand hills around Thedford, June 20, etc., (No. 1379).

Opuntia humifusa Raf. Ann. Nat. 15 (1820); *O. rafinesquii* Engelm. Pac. R. Rep. iv, 41 (1856).
Common throughout the sand hills: Dismal River, June 26; Plummer Ford, July 6 and 8 (No. 1447).

Opuntia polyacantha Haw. Syn. Pl. Succ. Suppl. 82 (1819); *O. missouriensis* DC. Prodr. iii, 472 (1828).
Above Plummer Ford, July 5 (No. 1501)). A young stage with long, cylindrical, finger-like joints was collected near the Forks of Dismal River, July 11 (No. 1526).

UMBELLIFERÆ.

Sium cicutæfolium Gmelin, Syst. ii, 482 (1791).
In the lakes of Grant County, July 29 to 31; South Dismal River, August 14 (No. 1615).
New to Nebraska.

Berula erecta (Huds.) Coville, Contr. Nat. Herb. iv, 115 (1893); *Sium erectum* Huds. Fl. Angl. 103 (1762).
Common in and along Dismal River: Plummer Ford, July 5 (No. 1497); South Dismal River, August 4 (No. 1517).

Cicuta virosa maculata (L.) Coult. & Rose, Rev. Umb. 130 (1888); *Cicuta maculata* L. Sp. Pl. i, 256 (1753).
Common in the rivers: Plummer Ford, July 4; Mullen, July 17; Forks of Middle Loup River, July 26 (No. 1491).

Cicuta bulbifera L. Sp. Pl. i, 255 (1753).
In swampy places in Grant County, August 4 and September 20; Thedford, September 7 (No. 1737).

Sanicula canadensis L. Sp. Pl. i, 235 (1753).
In woods, near Plummer Ford, July 3 (No. 1462).

CORNACEÆ.

Cornus stolonifera Mx. Fl. i, 92 (1803).
Common along the streams: Dismal River, June 27; Plummer Ford, July 6; South Dismal River, August 14 (No. 1435); Norway, June 12; Plummer Ford, July 3; Forks of Dismal River, July 11 (No. 1414). The latter is a form with slightly smaller leaves and more wooly pubescence.

CAPRIFOLIACEÆ.

Symphoricarpos occidentalis Hook. Fl. Bor. Amer. i, 285 (1834).
Common on the prairies: Thedford, September 8; Dismal River, June 28 and July 3; Hooker County, July 17 and 27 (No. 1442).

RUBIACEÆ.

Galium trifidum L. Sp. Pl. i, 105 (1753).
A small form was collected in wet meadows at Norway, June 22; near Whitman, July 31 and September 20 (No. 1418). No. 1840 is a taller form, which is named *G. tinctorum* L. by A. A. Heller: Dismal River, June 26.

Galium trifidum latifolium Torr. Fl. U. S., 165 (1824).
In a wet meadow, near Whitman, July 31 (No. 1815).

Galium triflorum Mx. Fl. i, 80 (1803).
In wet meadows near the Forks of Dismal River, July 11 (No. 1519).

Galium aparine L. Sp. Pl. i, 108 (1753).
In a swampy place near Dismal River, July 27 (No. 1437).

COMPOSITÆ.

Kuhnia glutinosa Ell. Bot. S. Car. & Georg. ii, 292 (1824); *Kuhnia eupatorioides glutinosa* Hitchcock, Trans. St. Louis Acad. v, 498 (1891).
Sand hills, northeast of Whitman, August 1; Thedford, September 8 (No. 1636).

Lacinaria squarrosa (L.) Hill, Syst. Veg. iv, 49 (1762); *Serratula squarrosa* L. Sp. Pl. ii, 818 (1753).
The specimens from the sand hills have been placed with the variety *intermedia*, but I am inclined to believe that they belong to the species: Plummer Ford, July 6; Mullen, July 19; Middle Fork of Middle Loup River, July 26; Plummer Ford, August 23; north of Whitman, July 31 (1505).

Lacinaria punctata (Hook.) Kuntze, Rev. Gen. Pl. i, 349 (1891); *Liatris punctata* Hook. Fl. Bor. Amer. i, 306 (1834).
Also comparatively common: Plummer Ford, August 22; Thedford, September 13 (No. 1761). No. 1706 is a stunted form with broader leaves, collected on the railroad embankment near Thedford, August 19.

Eupatorium purpureum L. Sp. Pl. ii, 838 (1753).
Common along South Dismal River, August 12 (No. 1682).

Eupatorium perfoliatum L. Sp. Pl. ii, 838 (1753).
Together with the preceding, August 12 (No. 1683).

Grindelia squarrosa (Pursh) Dunal. in DC. Prodr. v, 315 (1836); *Donia squarrosa* Pursh, Fl. ii, 559 (1814).
Only a few stunted specimens were collected, 2 miles west of Thedford, September 12 (No. 1760).

Chrysopsis villosa (Pursh) Nutt. Gen. ii, 151 (1818); *Amellus villosus* Pursh, Fl. ii, 564 (1814).
Otto Kuntze and Mr. MacMillan have adopted Diplogon Raf., which was published earlier in the year 1818; but this name had been used before by Poiret for Diplopogon.
This plant is very variable, and two of my forms might have as good right to varietal names as others already described. Specimens of a more typical form were collected: 3 miles northeast of Whitman, July 31; Cody's Lakes, August 9 to 12; Thedford, August 24 and September 11 (No. 1633).
A form with oblong, nearly glabrous or slightly scabrous, thin leaves with setose-ciliate margins was found near Whitman, September 19 (No. 1781).
Another similar form having linear-lanceolate leaves with revolute margins was found near Mullen, September 14 (No. 1766).

Solidago missouriensis Nutt. Journ. Acad. Phila. vii, 32 (1834).
The original *S. missouriensis* is the low form with a short, crowded panicle, which was named by Gray variety *montana*. It was collected at Thedford, September 11 (No. 1750). The taller form with more spreading panicle, the *S. missouriensis* of Gray's Synoptical Flora, should have the name *S. missouriensis glaberrima*[1] if held as a distinct variety. The great variation in the species of *Solidago* is well known. If this variety is admitted, I am afraid that, in order to be consistent, we should be obliged to add one or two varieties to nearly every one of the species in that genus: Plummer Ford, August 23; northeast of Whitman, July 31 (No. 1632).

---

[1] *S. glaberrima* Martens, Bull. Acad. Brux. viii, 68, 1841.

Solidago serotina Ait. Hort. Kew. iii, 211 (1789), not Willd.

Here and there, in copses: Haney's ranch, August 5; Cody's Lakes, August 10; South Dismal River, August 12 (No. 1648).

Solidago canadensis L. Sp. Pl. ii, 878 (1753).

A hirsute form approaching the varieties *scabra* and *procera* of Torrey & Gray: Thedford, September 12; Mullen, September 14 (No. 1757).

Solidago canadensis gilvocanescens var. nov.

Low, 3 to 4 dm. high; leafy; leaves 3 to 6 cm. long, oblanceolate to lanceolate, remotely serrate above the middle or entire; the whole plant finely puberulent-canescent and of a yellowish hue, often somewhat scabrous; inflorescence dense, contracted, with short recurved branches; heads smaller than in *S. canadensis*.

It resembles somewhat the varieties *canescens* and *arizonica* in the pubescence, but differs from both in being much lower and more leafy. The leaves resemble somewhat those of the latter, but the bracts are very different. It was growing in sandy soil near water, Cody's Lakes, Hooker County, Nebr. (No. 1662). Specimens of this variety are preserved in the National Herbarium, from the following localities: Dodge City, Kans., August 19, 1890, B. B. Smyth, No. 162; Montana (locality not given), L. F. Ward (this is labeled *S. nemoralis*). No. 34 of Nicollet's Northwestern Expedition, labeled *S. incana β.* (?) Torr. & Gr., collected July 25, 1839, on saline, swampy margins of the Lake of the Woods near Devil's Lake, Minn., is a form with narrower leaves.

Solidago nemoralis Ait. Hort. Kew. iii, 213 (1789).

Two forms were collected. One is about 6 to 8 dm. high with an open panicle, resembling somewhat a large form of *S. canadensis;* evidently scabrous: Thedford, September 8; Cody's Lakes, August 9 to 12 (No. 1663).

The other form is lower, 4 to 6 dm. high, with a narrow, nearly spicate panicle: Thedford, September 8 (No. 1751).

Solidago mollis Bartl. Ind. Sem. Gœtt. 5 (1836); *Solidago incana* Torr. & Gr. Fl. ii, 221 (1841); *S. nemoralis incana* Gray, Proc. Amer. Acad. xvii, 197 (1882).

This is a good species, and perfectly distinct as well from *S. nemoralis* as from *S. radula,* to which it has been referred.

My plant is low, 2 to 3 dm. high, very leafy; leaves thick, triple-nerved, diminishing upward; the lower 5 to 7 cm. long and 2 to 3 cm. wide, obovate, coarsely and remotely serrate scabrous and somewhat canescent; panicle short, of short recurved branches; heads larger and with broader bracts than in *S. californica*, lower forms of which it resembles. Specimens in the National Herbarium collected by Orcutt (No. 89, partly) in California and by C. G. Pringle, at Tehachipi Pass, California, resemble this in growth, but have the pubescence of *S. californica.* The specimens in the National Herbarium are as follows: Whipple Expedition, Antelope Hill, on the Canadian River; S. M. Rothammer, No. 188, Upper Missouri; two sheets collected by L. F. Ward, in Montana, 1883; two sheets by Dr. Wilcox, Nebraska, 1887; P. A. Rydberg, No. 157, western Nebraska, 1891. A specimen, collected by Dr. Palmer in Arizona, 1869, has no name. Near the railroad, Mullen, September 18 (No. 1770).

Solidago rigida L. Sp. Pl. ii, 880 (1753).

West Cody's Lake, August 10; Plummer Ford, August 22 (1666).

Euthamia graminifolia (L.) Nutt. Gen. ii, 162 (1818); *Chrysocoma graminifolia* L. Sp. Pl. ii, 841 (1753); *Solidago lanceolata* L. Mant. 114 (1767).

Thedford, September 8 (No. 1738).

Eriocarpum spinulosum (Pursh) Greene, Erythea, ii, 108 (1894); *Amellus spinulosus* Pursh, Fl. ii, 564 (1814).

Throughout the sand hills, but local: Thedford, June 19, August 9; Dismal River, June 27; Plummer Ford, July 4 to 8; Mullen, July 26 (No. 1403).

Aster novæ-angliæ L. Sp. Pl. ii, 875 (1753).

I found specimens with red as well as with blue rays, but do not think this difference in color should make it a variety: Thedford, September 7; Halsey, September 11 (No. 1735).

Aster oblongifolius Nutt. Gen. ii, 156 (1818).

Not common: Grant County, near Whitman, September 19 (No. 1780).

Aster oblongifolius rigidus Gray, Syn. Fl. i, pt ii, 179 (1886).

More common than the species. On the sand hills and dry prairies: Thedford, September 9 (No. 1743).

Aster multiflorus Ait. Hort. Kew. iii, 203 (1789).

Dry prairies: Thedford, August 26, September 9 (No. 1731).

Aster multiflorus stricticaulis Torr. & Gr. Fl. ii, 125 (1841).

Rare: meadow at Thedford, September 9 (No. 1752).

Aster multiflorus incano-pilosus (Lindl.) nom. nov; *Aster ramulosus incano-pilosus* Lindl.; Hook. Fl. Bor. Amer. ii, 13 (1834).

This is *A. commutatus* Gray.[1] I believe, however, that it should be regarded as a variety of *A. multiflorus*, as it is very hard to draw a line between the two. Mullen, September 14 (No. 1765). Specimens with blue rays were collected at Halsey, September 11 (No. 1754).

Aster salicifolius Lam. Encyel. i, 306 (1783).

This seems to have a little larger head than usual, resembling somewhat *A. longifolius*. The bracts are narrow, thin, acute, but with a broader green tip. Meadows: Thedford, September 7; Whitman, September 19 (No. 1739).

Aster salicifolius subasper (Lindl.) Gray, Syn. Fl. i, pt. ii, 188 (1884); *Aster subasper* Lindl. Hook. Comp. Bot. Mag. i, 97 (1835).

I refer two asters growing commonly along the streams to this species, although with some doubt. They both differ from the common form of *A. salicifolius* in having larger heads, pubescent stem, and much elongated foliaceous bracts. The latter character led me to believe at first that they belonged to *A. foliaceus* Lindl. Comparing them with the collection of forms in the National Herbarium I found that they are not related to that species. One form has the leaves of the typical *A. paniculatus*. This was collected at Thedford, September 7, and near Whitman, September 18 (No. 1739). The other has shorter, more or less oval, thicker leaves. Plummer Ford, August 22.

Aster junceus Ait. Hort. Kew. iii, 201 (1789).

My plant is like Minnesota specimens in the National Herbarium under this name. It seems, however, to have narrower leaves than usual. The bracts have also broader, more or less purplish tips. It resembles somewhat a simple, narrow-leafed *A. tradescanti*, but the heads are larger. It also comes near *A. ericoides pringlei* Gray, from which it is distinguished by the broader bracts. In wet meadows, near Thedford, August 9 (No. 1701).

The same form was collected by me in the Black Hills of South Dakota in 1892.

Aster umbellatus pubens Gray, Syn. Fl. i, pt. ii, 197 (1884).

On the banks of Middle Loup River, Halsey, September 11 (No. 1748). This has not been reported for Nebraska before.

Aster canescens Pursh, Fl. ii, 547 (1814), var.

A very tall form with many large, subracemose heads and broad, glabrous, dentate leaves; otherwise like the next. Plummer Ford, August 23 (No. 1721).

---

[1] Syn. Fl. i, pt. ii, 185 (1884).

Aster canescens viscosus Gray, Syn. Fl. i, pt. ii, 206 (1884); *Dieteria viscosa* Nutt. Trans. Amer. Phil. Soc. vii, 300 (1841).

Gray cites *Diplopappus incanus*[1] as a synonym, but to me this seems to be something else. Mullen, September 18 (No. 1834).

Erigeron bellidiastrum Nutt. Trans. Amer. Phil. Soc. n. ser. vii, 307 (1841).

Smaller forms of this can not be separated from *E. divergens*, except by the achenes. In *E. bellidiastrum* these are truncate, tipped with a whitened disk, which bears a simple pappus. The pappus of *E. divergens* is double, the outer of squamellate, short bristles. On rich soil, especially among bushes, it becomes 6 to 8 dm. high, with larger leaves and heads: Thedford, June 17; Forks of Middle Loup River, July 26; Dismal River, June 27 (No. 1350). On poorer soil it becomes lower, 1 to 3 dm. high, more grayish, and with smaller heads and leaves. This form has been mistaken for *E. divergens:* Forks of Dismal River, July 11 (No. 1536).

Erigeron ramosus beyrichii (Fisch. & Mey.) Smith & Pound, Bot. Surv. Nebr. ii, 11 (1893); *Stenactis beyrichii* Fisch. & Mey., Ind. Sem. Petrop. v, 27 (1838).

This is the common form of *E. ramosum* (Walt.) B. S. P., in the central and western parts of Nebraska: Plummer Ford, July 3; Dismal River, July 11 (No. 1451).

Erigeron canadensis L. Sp. Pl. ii, 863 (1753).

This is a very variable plant. The height varies from 2 m. down to a few cm. The taller and simpler, or more typical form, was collected on the South Dismal, August 12 (No. 1678). In a prairie-dog town near Thedford all specimens were low, much branched from the base and very diffuse. These could not be distinguished from *E. diraricatus* except by their slightly broader leaves, the more racemosely disposed panicle, and the white rays: August 19 and September 8 (No. 1699).

Antennaria plantaginifolia (L.) Richards. Bot. App. ed. 2, 30 (1823); *Gnaphalium plantaginifolium* L. Sp. Pl. ii, 850 (1753).

This is the common Antennaria of the plains extending into the Black Hills of South Dakota and the Rocky Mountains. The general habit is that of *A. dioica* except that the stolons are short, but the heads are more like those of *A. plantaginifolia.* The leaves are spatulate, 3 to 4 cm. long, 1-nerved or indistinctly 3-nerved; heads about 1 cm. high; bracts of the sterile heads broad and obtuse; those of the fertile ones narrow, acute or obtuse, in both the base light-brown with a papery portion, constituting more than half the length of the scale. All western forms I have seen which were labeled *A. plantaginifolia* belong here, so also a few labeled *A. dioica.* It never has those large thin leaves which characterize the eastern *A. plantaginifolia.* It is common in Nebraska and the Black Hills, but rare in the sand-hill region: Thedford, June 15 (No. 1292).

Iva xanthifolia Nutt. Gen. ii, 185 (1818).

In old fields: Thedford, September 7; near Whitman, September 19 (No. 1740).

In brackish soil near a dry lake, in Grant County, I found a low form with small leaves, 3 to 5 cm. long, entire or 3-lobed, oblong to ovate, more green beneath; with more rounded teeth than in the typical form, and with the heads more or less crowded together in glomerules: September 19 (No. 1783).

Ambrosia artemisiæfolia L. Sp. Pl. ii, 988 (1753).

Not common in the region: West Cody's Lake, August 10; Thedford, September 11 (No. 1667).

Ambrosia psilostachya DC. Prodr. v, 526 (1836).

As the preceding, very variable. When young, they are very hard to distinguish from each other. *A. psilostachya* is very common throughout the region: East Cody's Lake, August 10; Plummer Ford, August 22; Grant County, near Whitman, August

[1] Lindl. Bot. Reg. t. 1693.

(No. 1668). A stout, very hairy and strigose form was collected near West Cody's Lake, August 10 (No. 1824).

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

Not common: Cody's Lakes, August 9; 3 miles northwest of Whitman, September 19 (No. 1675).

Rudbeckia hirta L. Sp. Pl. ii, 907 (1753).

Plummer Ford, July 3; Mullen, July 18 (No. 1170).

Lepachys columnaris (Pursh) Torr. & Gr. Fl. ii, 315 (1842); *Rudbeckia columnaris* Pursh, Fl. ii, 575 (1814).

Thedford, June 21; Dismal River, June 27; Plummer Ford, July 3 (No. 1395).

The form known as variety *pulcherrima*[1] was collected near Dismal River, June 28; Mullen, July 17 (No. 1445).

Helianthus annuus L. Sp. Pl. ii, 904 (1753).

Not common, its place in the region being mostly taken by the next: banks of South Dismal River, August 12 (No. 1676).

Helianthus petiolaris Nutt. Journ. Acad. Phila. ii, 115 (1821).

In the typical form, the leaves are small, ovate and cuneate at the base. Common: Thedford, June 19; Grant County, near Whitman, August 3; Mullen, July 22 (No. 1362).

Helianthus petiolaris patens (Lehm.) Rydberg, Bull. Torr. Club, v, 334 (1894); *Helianthus patens* Lehm. Ind. Sem. Hamb. 1821, ex DC. Prodr. v, 556 (1836).

My specimens agree fully with the description of *H. patens* as given in DC. Prodr., but I believe it should be placed as a variety of *H. petiolaris*. It differs, however, considerably from the typical form, approaching in many respects *H. annuus*. The heads are as large as a middle sized *H. annuus*, but with the bracts of *H. petiolaris*. They are borne on long peduncles, which are more or less fleshy just below the head. The leaves are large, broadly ovate or subcordate as in *H. annuus*, but with longer petioles. In a fire-break, 3 miles northeast of Whitman, August 1 (No. 1635).

Helianthus scaberrimus Ell. Bot. S. Car. & Georg. 423 (1824); *H. rigidus* Desf. Cat. Hort. Paris, ed. 3, 181 (1829).

Gray cites *Helianthus diffusus* Sims,[2] also as a synonym of *H. rigidus* (Cass.) Desf. Although the description fits approximately, the plate seems so different from our *H. rigidus* that it must be something else. As this plant takes the name *H. scaberrimus* Ell., *H. scaberrimus* Benth.[3] must take the name *H. bolanderi* Gray.[4]

Sand hills, 3 miles northeast of Whitman, July 29 to 31 (No. 1627).

Helianthus sp.

The head is not unlike those of *H. grosse-serratus* and *H. maximiliani*, but the leaves are very thin, on slender, margined ciliolate petioles. Only one specimen in bloom secured; near Cody's Lakes, August 10 (No. 1825).

Helianthus giganteus L. Sp. Pl. ii, 905 (1753).

Only a few specimens belonging to this species were secured: near West Cody's Lake, August 10 (No. 1669).

Helianthus maximiliani Schrad. Ind. Sem. Hort. Gott. (1835).

The specimens differ somewhat from the common form in that the stem is unusually smooth and shining: West Cody's Lake, August 10; Halsey, September 11; Thedford, August 19 (No. 1673). Another form was seen frequently throughout Grant County. It must belong to the species, although the leaves were all opposite. The bracts of the involucre were very broad, undoubtedly monstrous, this growth

---

[1] Torr. & Gr. Fl. i, 315 (1838).

[2] Bot. Mag. xlv, t. 2020 (1818).

[3] Bot. Sulph. 28 (1844).

[4] Proc. Amer. Acad. vi, 544 (1865).

very likely due to the action of the insects. The plants were generally only 2 to 3 dm. high. Collected 15 miles south of Whitman, August 3 (No. 1640).

Helianthus grosse-serratus Martens, Sel. Sem. Hort. Lovan, 1839.
The leaves of my specimens are shorter and less coarsely serrate than usual: Mullen, September 14 (No. 1767).

Bidens lævis (L.) B. S. P. Cat. Pl. N. Y. 29 (1888); *Helianthus læris* L. Sp. Pl. ii, 906 (1753).
I have been in doubt whether to place our Nebraska specimens with *B. lævis* or with *B. cernua*. The heads are little nodding if at all, but the rays are much shorter than in the true *B. lævis* and the outer bracts often longer than the heads. Common: Mullen, August 17; Thedford, August 26 (No. 1696).

Bidens frondosa L. Sp. Pl. ii, 832 (1753).
Thedford, August 19 and 26; Halsey, September 11 (No. 1707).

Bidens trichosperma tenuiloba (Gray) Britton, Bull. Torr. Club, xx, 281 (1893); *Corcopsis trichosperma tenuiloba* Gray, Syn. Fl. i, pt. ii, 295 (1884).
Some specimens not yet in bloom, with broader lobes, were collected in Grant County, August 3. These may be the true *Bidens trichosperma* or, perhaps, *B. involucrata*. Thedford, August 19 to 26; Cody's Lakes, August 10 (No. 1642).

Thelesperma gracile (Torr.) Gray, Kew Journ. Bot. i, 252 (1849); *Bidens gracilis* Torr. Ann. Lyc. N. Y. ii, 215 (1828).
On the sand hills: near Dismal River, July 28; Plummer Ford, July 3; Mullen, July 17 to 24 (No. 1444).

Hymenopappus filifolius Hook. Fl. Bor. Amer. i, 317 (1834).
This appears to be the original *H. filifolius* of Hooker. Gray includes also *H. luteus* Nutt. in this species, which I think makes it a very complex one. Then *H. tenuifolius* could, with perhaps equal right, be included also. Our specimens have always yellow flowers and are scarcely scapose. Mullen, July 17; 20 miles south of Whitman, August 5 (No. 1554). No. 1321 is a more leafy form with larger, more or less corymbose heads. Thedford, June 16; Mullen, July 17; Plummer Ford, July 8; Dismal River, June 27.

Helenium autumnale L. Sp. Pl. ii, 886 (1753).
Common: along the South Dismal River, August 14; Plummer Ford, August 22 (No. 1690).

Artemisia biennis Willd. Phytogr. 11 (1794).
All my specimens are weak and bright green, and seem to be annual. In dry lakes northwest of Whitman, September 19 (No. 1779).

Artemisia frigida Willd. Sp. Pl. iii, 1838 (1803).
On a dry hill, south of Thedford, August 8 (No. 1733).

Artemisia canadensis Mx. Fl. ii, 128 (1803).
Sandy prairie, Thedford, August 26 and September 8 (No. 1730).

Artemisia gnaphalodes Nutt. Gen. ii, 143 (1818).
The relationship between this and *A. ludoviciana* of Nuttall is a little obscure, but as *A. gnaphalodes* appears first on the page in the Genera, it must be regarded as the species, and must retain its name, even if the two are regarded as one species. Thedford, August 26 (No. 1725).

Senecio compactus (Gray) Rydberg, Bull. Torr. Club, v, 312 (1894); *Senecio aureus compactus* Gray, Syn. Fl. i, pt. ii, 391 (1884).
My specimens differ in having a more open cyme of fewer heads. The narrow, fleshy, and stiff leaves, toothed only at the apex, present a conspicuous character, which makes it, I believe, deserving of specific rank. Sand hills: Thedford, June 15, 16, and 19 (No. 1311).

CARDUUS PLATTENSIS Rydberg.

Senecio douglassii DC. Prodr. vi, 429 (1837).

In the sand hills: South Dismal River, August 12; Plummer Ford, August 23; northwest of Whitman, September 19 (No. 1677).

Carduus altissimus L. Sp. Pl. ii, 824 (1753).

Not very common, though abundant in eastern Nebraska. South Dismal River, August 12 (No. 1685). No. 1724 is a form approaching the variety *discolor* (Muhl.) Gray, Syn. Fl. i, pt. ii, 404 (1884). Plummer Ford, August 22.

Carduus plattensis sp. nov.; *Cnicus hookerianus* var., Gray Pac. R. Rep. xxi, 45, and *Cnicus pitcheri* Gray, Syn. Fl. i, pt. ii, 403, as to Suckley's Dakota plant.

Generally 5 to 7 dm. high, white-tomentose especially on the lower surface of the leaves; the lower leaves 2 dm. long, deeply pinnately divided into oblong divisions 3 to 5 cm. long and 0.5 to 1 cm. wide, tipped with a slender, short spine and sparingly spinosely toothed; the upper shorter and more spinose; head hemispherical, about 4 to 5 cm. high; bracts ovate-lanceolate, the outer very thick and dark from the broad glandular spot, tipped with a weak, spreading, more or less triangular-flattened spine; the inner narrower, spineless, with a more or less elongated, erose tip or appendage; corollas apparently always ochroleucous, limb obliquely divided into long, linear lobes. (Plate I.)

The head is much like that of *C. pitcheri*, but the inner bracts have more tendency to be elongated and erose. The main difference is in the leaves, the lobes of which in *C. plattensis* are scarcely half as long but more than twice as wide as in *C. pitcheri*. From *C. undulatus*, it differs in the broader heads, the ochroleucous flowers, the form of the bracts, especially the inner ones, the deep-orange taproot and, in the typical form,[1] the less spiny leaves, the lobes of which have a tendency to be more rounded at the end and cuspidately spinose-tipped.

In the Gray Herbarium, there is only one specimen, viz, that of Suckley from "L'Eau qui Court," Dakota. Undoubtedly Dr. Gray saw the difference between this and *C. pitcheri*, but did not think it advisable to describe it as new from a single specimen.

C. plattensis is common in the sand-hill region of Nebraska. The following specimens are in the Herbarium of the University of Nebraska:

No. 213, Rydberg, Kearney County, Nebr., June 15, 1891, and Scott's Bluff County, July 24, 1891; No. 64 (in part), J. G. Smith and Roscoe Pound, Boxbutte County, Nebr., July 7, 1892, and the specimens of this collection, No. 1356, Thedford, June 17, and Plummer Ford, July 5. (Type specimen from which the plate is drawn is from the latter place and preserved in my own herbarium.)

Lygodesmia juncea (Pursh) Don, Edinb. N. Phil. Journ. January-March, 1829, 311; *Prenanthes juncea* Pursh, Fl. ii, 498 (1814).

Dismal River, June 27; Mullen, July 17 (No. 1432).

Lygodesmia rostrata (Gray) Gray, Proc. Amer. Acad. ix, 217 (1874); *L. juncea rostrata* Gray, Proc. Acad. Phila. 1863, 69 (1863).

---

[1] A form evidently belonging to the same species, but of somewhat different habit, is also growing in Nebraska. It may be known as variety *spinosior*. It is like the species, but the lobes of the leaves are short, broad, and more spiny, resembling somewhat those of *C. undulatus*, the heads generally smaller and the bracts darker.

Two specimens of this form are in the Gray Herbarium: one with larger heads, No. 73, Fendler, collected near Fort Kearney, July, 1849, is referred to *Cnicus undulatus;* the other with smaller heads, collected in the sand hills of the Upper Platte by Dr. Hayden, is placed with *Cn. undulatus canescens*. It is, however, scarcely *Cirsium canescens* Nutt., as the root is not "creeping as in *arrense*" nor are the flowers "pale rose."

In the Herbarium of the University of Nebraska, there are two specimens, both from the State: No. 64 (in part), J. G. Smith and Roscoe Pound, Boxbutte County, July 7, 1892; No. 2964, Fred Clements, Paddock, Holt County, July 25, 1893.

The pappus is white or sordid, finely papillose under the lens, which makes the distinction between Lygodesmia and Stephanomeria still smaller. Perhaps the two should make one genus. Dismal River, June 27; Mullen, July 17 (No. 1584).

Nothocalais cuspidata (Pursh) Greene, Bull. Cal. Acad., ser. 2, ii, 55 (1886); *Troximon cuspidatum* Pursh, Fl. ii, 742 (1814).

Only four small specimens in fruit, found west of Thedford, June 14 (No. 1252).

Lactuca canadensis L. Sp. Pl. ii, 796 (1753).

Few of the upper leaves are pinnatifid and the panicle is sometimes more open. Plummer Ford, August 23; Thedford, September 12 (No. 1755).

Lactuca ludoviciana (Nutt.) DC. Prodr. vii, 141 (1839); *Sonchus ludovicianus* Nutt. Gen. ii, 125 (1818).

River bank, near Mullen, July 17 (No. 1555). A lower purplish form was growing on the hillsides, near Plummer Ford: July 6 (No. 1507).

Lactuca pulchella (Pursh) DC. Prodr. vii, 134 (1839); *Sonchus pulchellus* Pursh, Fl. ii, 502 (1814).

Mullen, July 18; northeast of Whitman, August 2 (No. 1570).

CAMPANULACEÆ.

Lobelia syphilitica L. Sp. Pl. ii, 931 (1753).

Not uncommon on South Dismal River, August 9 to 14 (No. 1680).

Lobelia spicata hirtella Gray, Syn. Fl. ii, pt. i, 6 (1878).

Rare: in a meadow 4 miles northeast of Whitman, August 1; Thedford, August 26 (No. 1818).

Legouzia perfoliata (L.) Britton, Mem. Torr. Club, v, 309 (1894); *Campanula perfoliata* L. Sp. Pl. i, 169 (1753).

Legouzia Dur. is the oldest generic name that can be used, *Pentagonia* Sieg., *Speculum* Hall, and *Specularia* Heist. being older than 1753 and, as far as I have been able to find, not used between that date and 1782. On hillsides here and there: Thedford, June 17; Dismal River, June 29 (No. 1346).

Campanula aparinoides Pursh, Fl. i, 159 (1814).

Common in wet meadows throughout the region: Plummer Ford, July 3 and 4; West Cody's Lake, August 10 (No. 1457).

PRIMULACEÆ.

Androsace occidentalis Pursh, Fl. i, 137 (1814).

Only three small specimens collected in a prairie-dog town southeast of Thedford, June 15 (1299).

Naumburgia thyrsiflora (L.) Duby, in DC. Prodr. viii, 60 (1844); *Lysimachia thyrsiflora* L. Sp. Pl. i, 147 (1753).

The flowers in my specimens are smaller than usual, and the teeth between the lobes of the corolla are obsolete. The leaves of all the specimens found near Thedford seemed to be hairy beneath. The apparent hairs, however, were probably a parasitic alga. Middle Loup River, near Thedford, June 14 to 16; 3 miles northeast of Whitman, July 29 (No. 1262).

OLEACEÆ.

Fraxinus pennsylvanica Marsh. Arb. Amer. 51 (1785).

This seems to grade directly into the next. Thedford, June 21 (No. 1839).

Fraxinus pennsylvanica lanceolata (Borckhausen) Sargent, Silva Amer. vi, 50 (1894); *Fraxinus lanceolata* Borck. Handb. Forstbot. i, 826 (1800).

This has been regarded as a distinct species under the name of *Fraxinus viridis* Mx., but seems not to be different from the preceding except in the lack of the pubescence on the young shoots. Both are found here and there on the hillsides, but no large trees were seen. Seneca, September 9; Dismal River, July 3 (No. 1391). A few young trees were found on the South Dismal River, that had very large leaflets.

APOCYNACEÆ.

Apocynum cannabinum L. Sp. Pl. i, 213 (1753).

The specimens from Thedford and Natick are low and with smaller leaves than usual. Thedford, June 17; Natick, June 20; Norway, June 22; northeast of Whitman, August 1 (No. 1353).

ASCLEPIADACEÆ.

Asclepias incarnata L. Sp. Pl. i, 215 (1753).

Common in the meadows: Forks of Dismal River, July 11; Middle Loup, Mullen, July 17; South Dismal River, August 14; Thedford, September 7 (No. 1518).

Asclepias speciosa Torr. Ann. Lyc. N. Y. ii, 218 (1834).

Throughout the region, but local. Railroad embankments, Thedford, June 21; Dismal River, June 28 and 29 (No. 1383).

Asclepias syriaca L. Sp. Pl. ed. 2, i, 313 (1762).

Rare: Forks of Dismal River, July 12; Middle Loup River, Mullen, July 19 (No. 1532).

Asclepias arenaria Torr. Bot. Mex. Bound. 162 (1859).

This is very common in the sand hills around Dismal River, but only a few specimens in bloom were secured. Plummer Ford, July 5; South Dismal River, August 14 (No. 1500).

Asclepias verticillata pumila Gray, Proc. Amer. Acad. xii, 71 (1876).

In a prairie-dog town, Thedford, August 9 (No. 1700).

Acerates angustifolia (Nutt.) Dec. in DC. Prodr. viii, 522 (1844); *Polyotus angustifolius* Nutt. Trans. Amer. Phil. Soc. ser. 2, v, 201 (1833–37).

Mr. J. M. Holzinger unites *Asclepias stenophylla* with *Acerates auriculata*. In Nebraska they seem to be different in certain points. *Asclepias stenophylla* Gray, which is the same as *Acerates angustifolia* (Nutt.) DC., usually has several stems from each root; these stems are more or less ascending and more or less hairy or pruinose; the divisions of the hood are yellowish-white and narrow. In *Acerates auriculata* the stem is single from the root, perfectly smooth and even, with a bloom; the divisions of the hood orange-yellow and broad. Evidently they are very nearly related and they perhaps grade into each other, though I have not found them to do so in Nebraska. They should, however, belong to the same genus, and to Acerates rather than to Asclepias. *Acerates auriculata* grows on the table-land; *A. angustifolia* in the sand hills. This may account for the difference. Norway, June 23; Plummer Ford, July 3 to 6 (No. 1420).

Acerates languinosa (Nutt.) Dec. in DC. Prodr. viii, 523 (1844); *Asclepias lanuginosa* Nutt. Gen. i, 168 (1818).

Sand hills, Thedford, June 16, 17, and 19 (No. 1326).

Acerates viridiflora (Raf.) Ell. Bot. S. Car. & Georg. 317 (1823);[1] *Asclepias viridiflora* Raf. Med. Rep. xi, 360 (1808).

Very variable. Generally two varieties have been acknowledged, but they grade into the typical form and into each other. They should be regarded as forms rather than varieties. The typical form was collected at Norway, June 22 (No. 1424). The

[1] The name is not given by Elliott, but he suggests that this species also may be included in Acerates.

form known as variety *lanceolata*[1] was more common. Thedford, June 15; Norway, June 23; Plummer Ford, July 3.(No. 1305).

The form corresponding to variety *linearis*[2] was collected at Norway, June 23; Plummer Ford, July 3 (No. 1423).

GENTIANACEÆ.

Gentiana andrewsii Griseb. in Hook. Fl. Bor. Amer. ii, 55 (1838).

Not uncommon in the meadows: Thedford, September 7; Mullen, September 16 (No. 1736).

POLEMONIACEÆ.

Collomia linearis Nutt. Gen. i, 126 (1818).

In fruit only: Plummer Ford, July 5 (No. 1502).

Gilia longiflora (Torr.) Don, Gard. Dict. iv, 245 (1838); *Cantua longiflora* Torr. Ann. Lyc. N. Y. ii, 221 (1827).

Professor Greene separates *Gilia* and *Navarretia*. If they should constitute only one genus, the name becomes *Navarretia longifolia*.[3] Forks of Middle Loup River, July 27; Plummer Ford, August 23; south of Whitman, August 3; Cody's Lakes, August 11 (No. 1605).

HYDROPHYLLACEÆ.

Macrocalyx nyctelea (L.) Kuntze, Rev. Gen. Pl. ii, 434 (1891); *Ipomœa nyctelea* L. Sp. Pl. i, 160 (1753).

Only four small specimens in fruit were collected in a prairie-dog town near Thedford, June 15 (No. 1301).

BORAGINACEÆ.

Lappula redowskii occidentalis (Wats.) nom. nov.; *Echinospermum redowskii occidentalis* Wats. Bot. King Surv. 246 (1871).

Professor MacMillan[4] has *Lappula redowskii pilosa;* but this should not be used, as Nuttall's *Cynoglossum pilosum*[5] is simply a misidentification. Nuttall mistook our plant for *C. pilosum* of Ruiz & Pavon.[6] Sandy soil: Thedford, June 14; Plummer Ford, July 3 (No. 1259).

Lappula deflexa americana (Gray) Greene, Pittonia, ii, 183 (1891); *Echinospermum deflexum americanum* Gray, Proc. Amer. Acad., xvii, 224 (1882).

The American form is quite different from the European.

Nebraska specimens have much broader and shorter leaves than the usual form. Rare: Plummer Ford, August 22 (No. 1475).

Cryptanthe crassisepala (Torr. & Gr.) Greene, Pittonia, i, 112 (1887); *Eritrichium crassisepalum* Torr. & Gr. Pac. R. Rep. ii, 171 (1854).

Prairie-dog towns: Thedford, June 20; Dismal River, June 27 (No. 1307).

Cryptanthe fendleri (Gray) Greene, Pittonia, i, 120 (1887); *Krynitzkia fendleri* Gray, Proc. Amer. Acad. xx, 268 (1885).

Prairie near Dismal River, June 27 (No. 1429).

Oreocarya suffruticosa (Torr.) Greene, Pittonia, i, 57 (1887); *Myosotis suffruticosa* Torr. Ann. Lyc. N. Y. ii, 225 (1827).

Prairies: Plummer Ford, July 8; Forks of Dismal River, July 11 (No. 1514).

---

[1](Ives) Gray, Syn. Fl. ii, pt. i, 99 (1878); *A. lanceolata* Ives, Amer. Journ. Sci. i, 252 (1819).

[2]Gray, Syn. Fl. ii, pt. i, 99 (1878).

[3](Torr.) Kuntze, Rev. Gen. Pl. ii, 433 (1891).

[4]Metasp. Minn. Val. 441, 1892.

[5]Gen. i, 114 (1818).

[6]Fl. Peruv. ii, 6 (1799).

Lithospermum angustifolium Mx. Fl. i, 130 (1803).
Collected in fruit only, near Thedford, June 20 (No. 1389).

Lithospermum gmelini (Mx.) Hitchcock, Spring Fl. Manhattan, 30 (1894); *Batschia gmelini* Mx. Fl. i, 130 (1803).
This is a true sand-hill species. Thedford, June 15 (No. 1355).

Onosmodium molle Mx. Fl. i, 133 (1803).
If this and *O. carolinianum* are to be united as one species, as they very probably should be, *O. molle* is the older name, and the form it represents should be regarded as the type. Thedford, June 20 (No. 1365).

CONVOLVULACEÆ.

Ipomœa leptophylla Torr. Pl. Frem. 94 (1853).
On the prairies near Plummer Ford, July 8 (No. 1511).

Cuscuta indecora pulcherrima (Scheele) Engelm. Trans. St. Louis Acad. i, No. 3, 502 (1859); *C. pulcherrima* Scheele, Linnæa xxi, 750 (1848).
The most common Cuscuta in the region: northeast of Whitman, August 1, host plants, *Helianthus petiolaris, Rumex venosus;* South Dismal River, August 14, host, *Helianthus petiolaris;* Mullen, September 19, hosts, *Cycloloma atriplicifolia, Chenopodium leptophyllum, Corispermum hyssopifolium,* and *Polygonum ramosissimum* (No. 1634). In a few specimens the corolla is smaller and the plant approaches the true *C. indecora.* Mullen, August 17; hosts, *Psoralea lanceolata* and *Artemisia canadensis;* Thedford, August 19, host, *Lotus americanus* (No. 1694).

Cuscuta coryli Engelm. Amer. Journ. Sci. xliii, 337 (1842).
More rare: South Dismal River, August 14; host, *Salix cordata angustifolia.* Thedford, August 26, host, Aster sp. (No. 1688).

Cuscuta cuspidata Engelm. Bost. Journ. Nat. Hist. v, 224 (1845).
Collected only at a point 4 miles northeast of Whitman, August 1; host, *Ambrosia psilostachya* (No. 1639).

SOLANACEÆ.

Solanum nigrum L. Sp. Pl. i, 136 (1753).
The specimens from Mullen, July 20, are tall, hairy, with the younger parts subcanescent. Those from Thedford, June 21, are greener and with thin leaves (No. 1385).

Solanum triflorum Nutt. Gen. i, 128 (1818).
The only places in which I have seen this plant growing are prairie-dog towns (see note, page 141). Thedford, June 21, August 19 (No. 1393).

Solanum rostratum Dunal, Sol. 234 (1816).
Rare in the region; I collected only one specimen and Mr. Tulen only a few: Thedford, September 12 (No. 1758).

Physalis heterophylla Nees, Linnæa, vi, 463 (1831); *Physalis virginiana* American authors, not Mill. Dict. ed. 8, No. 4 (1768).
Under this I place several different forms. They appear to belong to one species, very probably the one named, but they differ somewhat from the form found in eastern Nebraska. One form is very low, only 1 to 1.5 dm. high, very glandular and with thick, cordate leaves. It is of such a character as one would expect *P. heterophylla* to assume in such a locality as the sand hills. Thedford, June 14 (No. 1287). Another form, more grayish and less glandular, was collected near Cody's Lakes, August 11, and near Mullen, July 23 (No. 1808); a third, much taller, resembling more the true *P. virginiana*, but villose rather than viscid, was found on a hillside near Plummer Ford, July 3.

Physalis heterophylla umbrosa, var. nov.

It resembles a tall form of *P. virginiana*, and its peculiarity is perhaps due to the shaded locality in which it grows. It has very thin, large leaves, nearly smooth; plant not at all viscid, but with a fine pubescence mixed with long, jointed hairs. The same plant was collected by Smith & Pound, in 1892, in Cherry County, Nebr., and a similar one, but with smaller leaves, which are scarcely toothed, by myself at Scott's Bluffs, Nebraska, in 1881. I named the latter *Physalis mollis cinerascens*, which it resembles in the form of the leaves; in fact, it stands between the present form and the variety mentioned. Among bushes, Thedford, June 21 and August 22 (No. 1398).

Physalis lanceolata Mx. Fl. i, 149 (1803).

Dr. Gray,[1] I think, includes two distinct species under *P. lanceolata* Mx. Which of the two is the original *P. lanceolata* I am not ready to say, as I have not seen any type specimens. In his Manual[2] Dr. Gray acknowledges two forms which he calls *P. pennsylvanica* and *P. pennsylvanica* variety *lanceolata*. He describes the latter as "the narrow-leafed and pubescent form (5 to 15 inches high), especially the state with a hairy calyx (*P. lanceolata* Mx., *P. maritima* M. A. Curtis)." *P. maritima* he afterwards includes in *P. viscosa*. What Dr. Gray held to be the typical *P. lanceolata* Mx. seems therefore to be my plant. In the Synoptical Flora he describes under this name rather the form which in the Manual he calls *P. pennsylvanica*, hence I have hitherto regarded that as the true *P. lanceolata*. As synonyms under this Gray gives *P. pumila* Nutt.[3] and *P. elliotti* Kunze.[4] Nuttall's type specimen, preserved in the Philadelphia Academy of Science, I have seen. It is a more hairy form, but evidently belongs to *P. lanceolata* and is *P. lanceolata hirta* Gray, type specimens of which are in the National Herbarium. It is not different from Nuttall's plant. From the description in Linnæa of *P. elliotti* Kunze, it may seem likely to be the other species included by Gray under *P. lanceolata*, but the type specimens show that it is *P. viscosa spatulæfolia* (Torr.) Gray. As far as I know them the distinctions between the two are as follows:

The true *P. lanceolata* Mx. (*P. pennsylvanica lanceolata* Gray, Man. ed. 5; *P. lanceolata* Gray, Syn. Fl. in part) is low, 2 to 3 dm. high, upright or often decumbent; pubescence on the leaves short and stiff or none; on the stem, especially the younger parts, and on the calyx longer, hirsute; corolla scarcely 1.5 cm. in diameter; fruiting calyx globose-ovoid, scarcely angled and scarcely sunken at the base; berry yellow; leaves obovate, oblanceolate, or spatulate, mostly entire.

The other form or species, which is a variety of *P. virginiana* Mill. not Gray (*P. pennsylvanica* Gray, Man. ed. 5; *P. lanceolata* Gray, Syn. Fl. mainly), is generally taller, 3 to 5 dm. high, mostly upright, more or less pruinose, scarcely hispid at all; corolla 2 to 2.5 cm. in diameter, sulphur-yellow with dark eyes; fruiting calyx angled, with a deeply sunken, pyramidal base; fruit reddish; leaves ovate to lanceolate, angulately few-toothed or undulate, generally with an oblique base, and thinner than in the preceding.

My specimens in this collection belong to the true *P. lanceolata*. Thedford, June 16; South Whitman, July 5; Mullen, July 24 (No. 1330).

Datura tatula L. Sp. Pl. ed. 2, i, 256 (1762).

Introduced: near a hog pasture, Thedford, August 26 (No. 1727).

SCROPHULARIACEÆ.

Pentstemon haydeni Wats. Bot. Gaz. xvi, 311 (1891).

Collected in fruit only, on one of the highest sand hills, Plummer Ford, July 6 (No. 1506).

---

[1] Proc. Amer. Acad. x, 67 (1874), and Syn. Fl. ii, pt. i, 236.

[2] Ed. 5, 382 (1867).

[3] Trans. Amer. Phil. Soc. n. ser. v, 193.

[4] Linnæa, xx, 33.

Pentstemon angustifolius Pursh, Fl. ii, 738 (1814), not Lindl. (1827); *Pentstemon cæruleus* Nutt. Gen. ii, 52 (1818).

Sand hills rare: Thedford, June 14 to 17; in fruit, Mullen, July 19 (No. 1284).

Pentstemon albidus Nutt. Gen. ii, 53 (1818).

Thedford, June 15 to 19; in fruit, Mullen, July 19 (No. 1316).

Mimulus glabratus jamesii (Torr. & Gr.) Gray, Syn. Fl. ii, pt. i, Suppl. 447 (1886); *M. jamesii* Torr. & Gr.; DC. Prodr. x, 371 (1846).

In and near the Middle Loup River: Thedford, June 16; Mullen, July 17 (No. 1331).

Veronica americana Schwein; Benth. in DC. Prodr. x, 468 (1846).

Same situations as the preceding: Thedford, June 16 (No. 1332).

Veronica peregrina L. Sp. Pl. i, 14 (1753).

In a prairie-dog town, near Thedford, June 15 (No. 1309).

Gerardia tenuifolia Vahl. Symb. Bot. iii, 79 (1794).

It may be *G. erecta* Walt.,[1] which is an older name, but the identity is doubtful. West Cody's Lake, August 10; Mullen, August 17; Thedford, September 11; Plummer Ford, August 22 (No. 1671).

Castilleja sessiliflora Pursh, Fl. ii, 738 (1814).

Rare: Thedford, June 17; Norway, June 23 (No. 1312)

OROBANCHACEÆ.

Thalesia fasciculata (Nutt.) Britton, Mem. Torr. Club, v, 298 (1894); *Orobanche fasciculata* Nutt. Gen. ii, 59 (1818).

Rare: Thedford, June 16 (No. 1323).

LENTIBULARIACEÆ.

Utricularia vulgaris L. Sp. Pl. i, 18 (1753).

Common in ponds near the rivers and in the lake region: Thedford, June 16 to 21; northeast of Whitman, July 31 (No. 1338).

VERBENACEÆ.

Verbena stricta Vent. Hort. Cels. t. 53 (1800).

Common: Norway, June 23; Dismal River, June 27; Forks of Dismal River, July 11; Mullen, July 18 (No. 1422).

Two miles northeast of Whitman Mr. Tulen found a patch a few rods in diameter, in which every plant had white flowers.

Verbena hastata × stricta.

This hybrid was reported and described by Dr. Englemann[2] under the name *V. paniculata × stricta*. On the banks of Middle Loup, north of Mullen, together with the preceding and the following, July 18 (No. 1564).

Verbena hastata L. Sp. Pl. i, 20 (1753).

Forks of Dismal River, July 11; Mullen, July 18; Thedford, September 8 (No. 1515).

Verbena urticifolia L. Sp. Pl. i, 20 (1753).

Rare: woods near Plummer Ford, August 22 (No. 1716).

Verbena bracteosa Mx. Fl. ii, 13 (1803).

Dry prairies: Thedford, June 21 (No. 1306).

Phryma leptostachya L. Sp. Pl. ii, 601 (1753).

In damp woods: Forks of Dismal River, July 12; Forks of Middle Loup, July 26 (No. 1529).

---

[1] Fl. Car. 170 (1778).

[2] Amer. Journ. Sci. xlvi, 100 (1844).

LABIATÆ.

Teucrium occidentale Gray, Syn. Fl. ii, pt. i, 349 (1878).

Among bushes: Forks of Middle Loup River, July 27; 15 miles south of Whitman, August 3; 3 miles northeast of the same, July 31 (No. 1610).

Mentha canadensis L. Sp. Pl. ii, 577 (1753).

In wet places: northeast of Whitman, July 31; Cody's Lakes, August 11 (No. 1628).

Lycopus virginicus L. Sp. Pl. i, 21 (1753).

The leaves in my specimen are subsessile and the stem more acutish-angled, pubescent. Among bushes, near Thedford, August 17 (No. 1830). In open places the plant becomes lower and more strict. Grant County, August 3; Cody's Lakes, August 9 (No. 1641).

Lycopus lucidus Turcz.; Benth. in DC. Prodr. xii, 178 (1848).

Cody's Lakes, August 10; South Dismal River, August 14; Mullen, August 17 (No. 1658). A form of the same with inconspicuous bracts, which, as also the calyx lobes, are slender and subulate, and with the perennial part of the rootstock much thickened-swollen, was found at Thedford, August 19 (No. 1702).

Lycopus sinuatus Ell. Bot. S. Car. & Georg. i, 27 (1816).

Mullen, July 17; Cody's Lakes, August 9 (No. 1655).

Kœllia lanceolata (Willd.) Kuntze, Rev. Gen. ii, 520 (1891); *Brachystemum lanceolatum* Willd. Enum. 623 (1809).

Banks of Middle Loup River, Mullen, July 17; South Dismal River, August 14 (No. 1560).

Hedeoma hispida Pursh, Fl. ii, 414 (1814).

Not common: Thedford, June 16 and 20 (No. 1312).

Monarda fistulosa L. Sp. Pl. i, 22 (1753).

Forks of Dismal River, July 11; Mullen, July 17; Forks of Middle Loup River, July 26 (No. 1531).

Monarda citriodora Cerv.; Lag. Nov. Gen. & Sp. 2 (1816).

On dry prairies: Thedford, June 21; Dismal River, June 27 (No. 1387).

Prunella vulgaris L. Sp. Pl. ii, 600 (1753).

On moist hillsides: Thedford, June 21; Mullen, July 20 (No. 1347).

Scutellaria galericulata L. Sp. Pl. ii, 599 (1753).

On the river banks and in wet meadows: Plummer Ford, July 3; Forks of Dismal River, July 11; northeast of Whitman, July 31; Cody's Lakes, August 11 (No. 1490).

Scutellaria lateriflora L. Sp. Pl. ii, 598 (1753).

River banks: South Dismal River, August 14; Thedford, September 9 (No. 1691).

PLANTAGINACEÆ.

Plantago purshii Rœm. & Schult. Syst. iii, 120 (1818).

Prairies: Thedford, June 15 (No. 1310). In very dry places, e. g., in prairie-dog towns, the plant becomes very delicate and less woolly, with oval few-flowered heads. Thedford, June 14 (No. 1294).

NYCTAGINACEÆ.

Allionia hirsuta Pursh, Fl. ii, 728 (1814).

Under this I place several forms, of which, perhaps, one or two good varieties might be made; but as I have not seen them from other localities, it is not advisable to separate them at present. These forms are as follows:

1. The more typical form with lanceolate or oblong leaves and the stem little hairy except at the nodes. I have collected a similar form, but with still narrower,

nearly linear-lanceolate leaves, in western Nebraska and in the Black Hills of South Dakota. Dismal River, near Plummer Ford, July 6 to 8; Forks of Middle Loup, July 27; sand hills northeast of Whitman, July 29; Mullen, July 18 (No. 1509).

2. A stouter form, hirsute all over; leaves ovate or oblong-ovate. Plummer Ford, July 4; Mullen, July 19; Dismal River, July 27 (No. 1433).

3. A very stout form with purplish stem, hirsute all over, and with broad leaves, the lower broadly ovate, obtuse. Forks of Middle Loup, July 27 (No. 1810).

4. A few specimens with thick and fleshy leaves, hirsute, especially on the ribs; stem densely hirsute, panicle crowded. Mullen, July 18 (No. 1799).

Allionia nyctaginea Mx. Fl. i, 100 (1803).

Not common in the sand-hill region. Plummer Ford, July 5; Mullen, July 20 (No. 1496).

Abronia fragrans Nutt.; Hook. Kew Journ. Bot. v, 261 (1853).

Planted from seeds collected in the neighborhood; but I did not see any wild plant. Farther west it is very common. Thedford, June 19 (No. 1263).

AMARANTHACEÆ.

Amaranthus retroflexus L. Sp., Pl. ii, 991 (1753).

In an old field: Mullen, July 18 (No. 1798).

Amaranthus blitoides Wats. Proc. Amer. Acad. xii, 273 (1877).

The stem is often more or less succulent. Thedford, June 21; Mullen, July 18 (No. 1291). No. 1695 is a form with smaller leaves and the peduncles more or less thickened; road: Mullen, July 19.

Amaranthus albus L. Sp. Pl. ed. 2, ii, 1404 (1763).

In my specimens the seeds are evidently not rugose. Thedford, August 26; northeast of Whitman, July 29 (No. 1614).

Amaranthus torreyi[1] (Gray) Benth.; Wats. Bot. Cal. ii, 42 (1880); *Amblogyne torreyi* Gray, Proc. Amer. Acad. v, 167 (1861).

Common in the sand hills along Dismal River, especially around Plummer Ford. July 8 (No. 1370).

This has been confused with *Acnida tuberculata*. The leaves are thicker, more veiny, obovate to ovate, obtuse, but mucronate, resembling those of *Amaranthus blitoides*. On the sand hills, Natick, June 20; Plummer Ford, July 8 (No. 1370).

Acnida tuberculata Moq. in DC. Prodr. xiii, pt. ii, 277 (1849).

The form common in eastern Nebraska with large thin leaves, lanceolate to oval, generally tapering at both ends, was growing on lowlands: Forks of Middle Loup, July 29; northeast of Whitman, August 1; West Cody's Lake, August 10 (No. 1674). At Plummer Ford, July 8, was found a similar form, but with narrowly oblong to lanceolate, mucronate leaves, and the lower fertile flowers in small heads (No. 1513). In the dry alkaline lakes west and north of Whitman was found a low-branched form, with small leaves and reddish stems and flowers, July 31 and September 20 (No. 1778).

Frœlichia floridana (Nutt.) Moq. in DC. Prodr. xiii, pt. ii, 420 (1849); *Oplotheca floridana* Nutt. Gen. ii, 79 (1818).

Mr. J. M. Holzinger has united this with *F. gracilis*. As they present themselves in this state, however, they are distinct. In *F. floridana* the wings of the fruiting calyx are erose-dentate, not spiny except the lower teeth; in *F. gracilis* the teeth all become spines: Mullen, July 24 (No. 1594). In the sand hills near Plummer Ford, August 21, I found a giant form, 10 to 12 dm. high, with bracts nearly black in age, and large leaves, somewhat over 1 dm. in length (No. 1838).

---

[1] Determined by Prof. J. M. Coulter.

CHENOPODIACEÆ.

Cycloloma atriplicifolium (Spreng.) Coulter, Mem. Torr. Club, v, 143 (1894); *Kochia atriplicifolia* Spreng. Nacht. Fl. Hall. ii, 35 (1801); *Salsola platyphylla* Mx. Fl. i, 174 (1803).

Mullen, July 17 and 24; Natick, September 11 (No. 1585).

Chenopodium leptophyllum (Moq.) Nutt.; Moq. in DC. Prodr. xiii, pt. ii, 71 (1849); *C. album leptophyllum* Moq. in DC. Prodr. loc. cit.

My specimens have a little broader leaves than usual. Common: Thedford, June 21; Mullen, July 18; Norway, June 22 (No. 1386).

No. 1835 is a form of this species that deserves a varietal name perhaps better than the next. It has the leaves large, sometimes 5 cm. long and 2.5 cm. wide, very thin, glabrate above and somewhat hastately lobed at the base. Mullen, July 17; Plummer Ford, August 22.

Chenopodium leptophyllum oblongifolium Wats. Proc. Amer. Acad. ix, 95 (1874).

Scarcely deserving a varietal name. Dry soil: Mullen, July 24 (No. 1836).

Chenopodium leptophyllum subglabrum Wats. Proc. Amer. Acad. ix, 95 (1874).

This may be a distinct species, at least is a good variety. In its slender peduncles, distant flowers, and smooth leaves it resembles somewhat *C. boscianum*, from which, however, it is easily distinguished by its narrow leaves. Norway, June 23; Thedford, June 27; Plummer Ford, July 3 to 6; Mullen, July 17 and 18 (No. 1351).

Chenopodium fremontii Wats. Bot. King Surv. 287 (1871).

This is the same as Nos. 570 and 1734 of Wright's collection, which constitute a part of the material on which Watson based this species. Watson's own specimens, No. 973 in the King Survey collection, however, are undeveloped, and have very small leaves, and to me they seem to belong to a different species.

Always growing in shade: Dismal River, June 29; Plummer Ford, August 22; Whitman, September 20. Some of the specimens from Plummer Ford are more mealy than usual (No. 1450).

Chenopodium fremontii incanum Wats. Proc. Amer. Acad. ix, 94 (1874).

Perhaps also a good species; apparently found only in prairie-dog towns. Thedford, June 19 and 21; September 7 (No. 1394).

Chenopodium album L. Sp. Pl. i, 219 (1753).

The common form was rare. Its place as a weed seems to be taken by *C. leptophyllum*. Forks of Dismal River, June 11 (No. 1524). A form with thin leaves was collected near the Forks of Dismal River, July 13; Mullen, July 17 (No. 1542).

Chenopodium hybridum L. Sp. Pl. i, 219 (1753).

Not uncommon along Dismal River: Plummer Ford, August 22; Forks of Dismal River, July 12 (No. 1525).

Chenopodium rubrum L. Sp. Pl. i, 218 (1753).

Swampy place near a lake, northwest of Whitman, September 20 (No. 1791). A low, autumnal form was collected in a dry lake, west of Whitman, September 19 (No. 1782).

Corispermum hyssopifolium L. Sp. Pl. i, 4 (1753).

Not uncommon: Mullen, July 17, September 16; Natick, September 11 (No. 1647).

Salsoli kali tragus (L.) Moq. in DC. Prodr. xiii, pt. ii, 187 (1869); *Salsola tragus* L. Sp. Pl. ed. 2, i, 322 (1762).

This weed is rapidly spreading through Nebraska. The railroads, especially through the cattle cars, seem to be the principal means by which it is distributed. It had established itself along the railroad at Thedford, August 28; less fully at Mullen, July 24 and September 16. I found a few specimens even near Plummer Ford, 15 miles from the railroad, August 22 (No. 1593).

Sarcobatus vermiculatus (Hook.) Torr. Emory's Rep. 150 (1848); *Batis* (?) *vermiculatus* Hook. Fl. Bor. Amer. ii, 128 (1838).

This was seen on the railroad embankment near Mullen July 24, but no specimens were secured.

POLYGONACEÆ.

Eriogonum annuum Nutt. Trans. Amer. Phil. Soc. n. ser. v, 184 (1833–37).

On the sand hills northeast of Whitman, July 31; Mullen, July 19 and 22; Cody's Lakes, August 10; Natick, September 11 (1580).

Rumex venosus Pursh, Fl. ii, 733 (1814).

On the railroad embankment near Thedford, June 14 and 17 (No. 1298).

Rumex britannica L. Sp. Pl. i, 334 (1753).

Cody's Lakes, August 10; Plummer Ford, August 22 (No. 1670). This has not hitherto been reported from Nebraska.

Rumex persicarioides L. Sp. Pl. i, 335 (1753).

Along Middle Loup and in the wet valleys of Grant County: Mullen, July 18; northeast of Whitman, July 31; Cody's Lakes, August 10; Thedford, August 29 (No. 1572).

Polygonum aviculare L. Sp. Pl. i, 362 (1753).

Common throughout the region: Forks of Dismal River, July 12; Cody's Lakes, August 9; Thedford, September 7 (No. 1535). A form growing in shade, with very thin leaves, may belong here. As no fruits were found, the identification is somewhat doubtful. Mullen, September 15 (No. 1772).

Polygonum litorale Link, Schrad. Journ. Bot. i, 51 (1799).

Common along the railroad embankment near Mullen, July 11 and September 15 (No. 1771).

Polygonum camporum Meisn. in Mart. Fl. Bras. v, pt. i, 21 (1855).

Along the railroad at Thedford, September 7; Mullen, September 13 (No. 1763).

Polygonum ramossisimum Mx. Fl. i, 237 (1803).

The typical form was collected at Mullen, July 18 and September 16; Cody's Lakes, August 10 (No. 1579). A very slender form with appressed branches was collected in Grant County, August 4 (No. 1820). Another form with small leaves somewhat resembling the preceding in appearance was found at Mullen, September 14 (No. 1769). A few specimens were nearly prostrate. Mr. Small says that they belong probably to what has been named *P. ramosissimum patulum* by Engelmann in manuscript. These specimens look very different from those referred to the same variety in my Black Hills collection, having very thin leaves, resembling somewhat those of *P. erectum*, but this may be explained by the fact that they were growing in shade. Mullen, September 14 (No. 1768).

Polygonum punctatum leptostachyum (Meisn.) Small, Bull. Torr. Club, xix, 356 (1892); *Polygonum acre leptostachyum* Meisn. in DC. Prodr. xiv, 108 (1856).

The style is often 2-parted and the achenes are lenticular and smooth and shining. In some places the plants were simple, slender, and scarcely rooting: Mullen, August 17; Thedford, September 9; Forks of Middle Loup, July 26 (No. 1602). In other places, the plants were very much branched and the leaves larger: West Cody's Lake, August 10 (No. 1672).

Polygonum lapathifolium L. Sp. Pl. i, 360 (1753).

The more common form with stout stem and large leaves was collected on river banks: Mullen, July 17; Forks of Middle Loup, July 28; northeast of Whitman, July 31 (No. 1571). No. 1629 is a form with smaller leaves, the whole plant more yellowish: Grant County, July 31. Another form, with low stem, short and dense spikes, and larger flowers was collected in dry lakes in Grant County, September 20 (No. 1794).

Polygonum persicarioides H. B. K. Nov. Gen. and Sp. ii, 179 (1817).

This was collected by Herbert J. Webber at Thedford in 1889, but was not found by the present collector.

Polygonum hartwrightii Gray, Proc. Amer. Acad. viii, 294 (1870).

Two forms were found, one upright and more hairy, the other procumbent and rooting in the mud. The first was collected at Swan Lake, August 7, and northeast of Whitman, July 29 (No. 1649); the other was found near a lake, northwest of Whitman, September 20 (No. 1793).

Polygonum emersum (Mx.) Britton, Trans. N. Y. Acad. viii, 73 (1889); *Polygonum amphibium emersum* Mx. Fl. i, 240 (1803).

More or less hairy, leaves even subcanescent beneath, upper part of the stem and ocreæ strigose, peduncles strigose or glandular, bracts *conspicuously strigose* and *ciliate*. Dry lakes in Grant County, July 29 to 31 (No. 1613). One specimen was found in Swan Lake, August 7, that had plainly ciliate ocreæ and shorter spike, perhaps a hybrid with the preceding (No. 1822).

Polygonum amphibium L. Sp. Pl. i, 361 (1753).

I secured one specimen in Swan Lake, August 7 (No. 1653); Mr. N. P. Tulen collected several.

Polygonum pennsylvanicum L. Sp. Pl. i, 362 (1753).

I refer this questionable plant to *P. pennsylvanicum*, which it resembles, although the flowers are smaller, the stamens 5 instead of 8, and the glands sparser and less stipitate. Mr. Small did not name it as he did not feel satisfied as to where it should be placed. Dry pond among the sand hills: Mullen July 24 (No. 1591).

Polygonum sagittatum L. Sp. Pl. i, 363 (1753).

Common in wet meadows in Thomas County: Thedford, August 19; Plummer Ford, August 22 (No. 1708).

Polygonum scandens L. Sp. Pl. i, 364 (1753).

Common along South Dismal River, August 11 (No. 1679).

Polygonum convolvulus L. Sp. Pl. i, 364 (1753).

Mullen, July 11 (No. 1521).

Fagopyrum fagopyrum (L.) Karst. Deutsch. Fl. 522 (1880–1883); *Polygonum fagopyrum* L. Sp. Pl. i, 364 (1753).

Escaped: Mullen, July 18; Thedford, August 26 (No. 1567).

SANTALACEÆ.

Comandra pallida A. DC. Prodr. xiv, 636 (1857).

On the sand hills: Thedford, June 19 (No. 1363).

EUPHORBIACEÆ.

Euphorbia petaloidea Engelm. Bot. Mex. Bound. 185 (1859).

In the common form the leaves are about 2 to 3 cm. long and 6 mm. wide and the gland-appendages large. Thedford, June 20 and September 7; Dismal River, June 27; Plummer Ford, July 3; Mullen, July 27 (No. 1372). An autumnal form has narrower and shorter leaves and smaller gland-appendages. Thedford, September 9 (No. 1744).

Euphorbia geyeri Engelm.; Engelm. & Gr. Bost. Journ. Nat. Hist. v, 260 (1845).

In most of the specimens the seeds are large, in this respect and in form and color resembling those of *E. petaloidea*. In the sand hills: Plummer Ford, July 6; Cody's Lakes, August 9; Natick, September 11 (No. 1504). In a few specimens the seeds are much smaller, and also the leaves: Thedford, September 9 (No. 1753).

Euphorbia serpyllifolia Pers. Syn. Pl. ii, 14 (1807).

Only a small specimen collected on the railroad embankment near Mullen, July 24. This seems to be nearest the variety *consanguinea*, but the material is too meager to decide (No. 1833).

Euphorbia glyptosperma Engelm. Bot. Mex. Bound. ii, 187 (1859).

Very variable. Some forms are prostrate and spreading, with broad leaves resembling those of *E. geyeri*, except that they are slightly toothed near the apex: Thedford, June 18; Forks of Dismal River, July 12; Mullen, July 18; Forks of Middle Loup, July 27 (No. 1373). Another form has narrower, that is, oblong, leaves and ascending stem: Forks of Dismal River, July 11; northeast of Whitman, August 4; Mullen, July 19 and September 16 (No. 1527). A third form, collected at Thedford, September 9, is upright and slender, and has very narrow leaves (No. 1742).

Euphorbia hexagona Nutt.; Sprong. Syst. iii, 791 (1826).

Sand hills: Mullen, July 17 and September 16 (No. 1545).

Croton texensis (Klotzsch) Muell. Arg. in DC. Prodr. xv, 692 (1866); *Hendecandra texensis* Klotzsch, in Erichs. Archiv. i, 252 (1841).

Common in the sand hills: Thedford, June 17; Dismal River, July 29; Plummer Ford, July 3; Forks of Dismal River, July 12; Mullen, July 22 (No. 1430).

ULMACEÆ.

Ulmus americana L. Sp. Pl. i, 226 (1753).

This was collected only in leaf, on the banks of South Dismal River, July 13. Some of the trees were of the common form with smooth twigs (No. 1540). Others had the young twigs pubescent, as in *U. fulva*, otherwise agreeing fully with *U. americana* (No. 1541). The first form was known as white elm, the latter as water elm.

Celtis occidentalis L. Sp. Pl. ii, 1044 (1753).

Here and there on the hillsides near the rivers and on the banks: Norway, June 23; Dismal River, July 11 (No. 1410). At the last place I found trees about 0.5 m. in diameter.

URTICACEÆ.

Humulus lupulus L. Sp. Pl. ii, 1028 (1753).

Forks of Dismal River, July 13; but neither flowers nor fruit were seen (No. 1539).

Urtica dioica L. Sp. Pl. ii, 984 (1753).

A slender plant with thin, broadly cordate leaves, which I take to be a form of this species, although the leaves are not at all downy beneath. Flowers are wanting (No. 1790).

Urtica gracilis Ait. Hort. Kew. iii, 341 (1789).

Very variable. One form collected has narrow, sharply serrate, short-petioled leaves, which are bristly along the veins and on the petioles; flower cluster short. Collected 20 miles south of Whitman, August 4; Plummer Ford, August 23 (No. 1821). Another form is similar except that it has broader leaves and longer petioles and peduncles: Mullen, July 17 (No. 1558). The third, with narrow leaves and slender peduncles, is the most common form: Plummer Ford, July 4 and August 22; Mullen, September 16 (No. 1520).

Adicea pumila (L.) Raf. Ann. Nat. 179 (1815); *Urtica pumila* L. Sp. Pl. ii, 984 (1753).

Mullen, July 27 and August 19; South Dismal River, August 12; Thedford, September 7; west of Whitman, September 19 (No. 1609).

Bœhmeria cylindrica (L.) Willd. Sp. Pl. iv, 340 (1805); *Urtica cylindrica* L. Sp. Pl. ii, 984 (1753).

Wet meadows, among bushes: Halsey and Natick, September 11 (No. 1745).

Parietaria pennsylvanica Muhl.; Willd. Sp. Pl. iv, 955 (1805).

In shady places: Dismal River, June 29; Forks of Dismal River, July 12; Mullen, July 26; Cody's Lakes, August 11 (No. 1473).

SALICACEÆ.

Salix fluviatilis Nutt. Sylva, 73 (1842); *S. longifolia* Muhl. Neue Schrift. Gesell. Naturf. Freunde Berlin, iv, 238 (1803), not Lam.

Common along the streams: Thedford, June 15; Norway, June 23; South Dismal River, August 14; Mullen, July 20 (No. 1315).

? Salix cordata Muhl. Neue Schrift. Gesell. Naturf. Freunde Berlin, iv, 236 (1803).

This is a common willow in Nebraska and has gone under this name, although it does not agree with the description in all respects. Plummer Ford, July 5 (No. 1498).

Salix cordata angustata (Pursh) Anders. Monogr. Sal. 159 (1867); *S. angustata* Pursh, Fl. ii, 613 (1814).

Collected in fruit only; but it seems to agree fully with the specimens collected and named by Mr. Bebb. Norway, June 22 (No. 1412); Thedford, July 16; South Dismal River, August 12 (No. 1329).

Salix cordata vestita Anders. Monogr. Sal. 159 (1867).

Neither fruit nor flowers seen. On the banks of Middle Loup, north of Mullen, July 19 (No. 1581).

Populus deltoides Marsh. Arb. Amer. 106 (1785).

According to Mr. Sudworth this is an older name for *Populus monilifera* Ait.[1] Here and there on the hills, near the streams: Norway, June 22; Mullen, July 19 (No. 1411).

CERATOPHYLLACEÆ.

Ceratophyllum demersum L. Sp. Pl. ii, 992 (1753).

Swan Lake, Grant County, August 7 (No. 1823).

ORCHIDACEÆ.

Habenaria hyperborea (L.) R. Br.; Ait. Hort. Kew, ed. 2, v, 193 (1813); *Ophrys hyperborea* L. Mant. i, 121 (1767).

In wet meadows: Thedford, June 15 and 19, September 7; Forks of Dismal River, July 12 (No. 1297).

Near Thedford: specimens not secured.

Leptorchis lœselii (L.) MacMillan, Metasp. Minn. Val. 173 (1893); *Ophrys lœselii* L. Sp. Pl. ii, 946 (1753); *Liparis lœselii* L. C. Richard; Lindl. Bot. Reg. t. 882 (1825).

Gyrostachys cernua (L.) Kuntze, Rev. Gen. Pl. pt. ii, 664 (1891); *Ophrys cernua* L. Sp. Pl. ii, 946 (1753).

Not very common, in wet meadows: Plummer Ford, August 23; Thedford, August 26 (No. 1719).

IRIDACEÆ.

Sisyrinchium bermudiana L. Sp. Pl. ii, 954 (1753).

Prairies near Thedford, June 16 (No. 1251).

LILIACEÆ.

Allium mutabile Mx. Fl. i, 195 (1803).

Prairies, Thedford, June 15 (No. 1290).

Polygonatum biflorum (Walt.) Ell. Bot. S. Car. & Georg. i, 393 (1817–18); *Convallaria biflora* Walt. Fl. Car. 122 (1788).

---

[1] Hort. Kew. iii, 406 (1789).

A form approaching the next, from which it differs little, except in its smaller, scarcely amplexicaul leaves and its 1- or 2-flowered peduncles. Hillside about 100 meters above the bed of Dismal River, near Plummer Ford, July 5 (No. 1483).

Polygonatum biflorum commutatum (Rem. & Schult.) Morong, Bull. Torr. Club, xx, 480 (1893); *Convallaria commutata* Rem. & Schult. Syst. Veg. vii, 1671 (1830).

Hillside, Norway, June 22 (No. 1408).

Vagnera stellata (L.) Morong, Mem. Torr. Club, v, 114 (1894); *Convallaria stellata* L. Sp. Pl. i, 316 (1753).

Among bushes on the banks of Middle Loup, Thedford, June 17 (No. 1340).

Yucca glauca Nutt. Fraser's Cat. (1813).

On the sand hills: Thedford, June 19; Plummer Ford, July 5 (No. 1359).

Smilax herbacea L. Sp. Pl. ii, 1030 (1753).

Hillsides: Plummer Ford, July 3; Forks of Middle Loup River, July 26; Seneca, September 16 (No. 1455).

COMMELINACEÆ.

Commelina virginica L. Sp. Pl. ed. 2, i, 61 (1762).

Not uncommon in the sand hills: Thedford, June 17; Dismal River, June 29 (No. 1345).

Tradescantia virginiana L. Sp. Pl. i, 288 (1753).

In eastern Nebraska this plant grows only on lowlands with alluvial soil, but here it is found from the tops of the sand hills down into the valleys, most commonly on the tops. Thedford, June 18, etc. (No. 1380).

JUNCACEÆ.

Juncus balticus montanus Engelm. Trans. St. Louis Acad. ii, 442 (1866).

Not uncommon. The typical form of this variety was found near Thedford, June 21 (No. 1401). A more slender form, with wiry stems and more elongated clusters, was collected near Natick, June 20 (No. 1376).

Juncus tenuis Willd. Sp. Pl. ii, 214 (1799).

This plant is very variable. Even this collection displays a great variety of forms. Perhaps the most typical one was collected at Plummer Ford, July 4; Forks of Dismal River, July 11; northeast of Whitman, August 1 (No. 1487). A taller form with broad sheaths and narrow, involute or channeled leaves, sepals longer than the pods and panicle dense and many-flowered, at Mullen, July 26; Natick, June 20 (No. 1374). A slender form, greener, and with open panicle, at Natick, June 20; Plummer Ford, July 3 (No. 1845). A similar form, but with very slender semi-flowered or 1-flowered pedicels and thread-like leaves, Plummer Ford, July 3 (No. 1464). No. 1318 is an unusually low form: Thedford, June 16; northeast of Whitman, August 1. No. 1841 is similar, but greener and more tufted: Mullen, July 18, September 9.

Juncus nodosus L. Sp. Pl. ed. 2, i, 466 (1762).

Common: Norway, June 22; Natick, June 20; Forks of Dismal River, July 12; Thedford, August 26 (No. 1369). All these specimens are low. On the Dismal River, June 27, were found taller (4–6 dm. high), more slender ones (No. 1441).

Juncus torreyi Coville, Bull. Torr. Club. xxii, 303 (1895); *Juncus nodosus megacephalus* Torr. Fl. N. Y. ii, 326 (1843), not *J. megacephalus* Curtis, 1835.

The most common form in Nebraska, having a few crowded heads, was collected south of Whitman, August 4 (No. 1817). A form with many heads in a compound panicle, was found at Mullen, July 18 (No. 1575).

Juncus marginatus Rostk. Monogr. June. 38 (1801).

This is comparatively rare in Nebraska. It was collected near Cody's Lakes, August 9 (No. 1827).

TYPHACEÆ.

Typha latifolia L. Sp. Pl. ii, 971 (1753).
River bank, Norway, June 22 (No. 1425).

Sparganium eurycarpum Engelm. in Gray Man. ed. 2, 430 (1856).
River banks: Thedford, June 16; Mullen, July 17 (No. 1339).

LEMNACEÆ.

Lemna minor L. Sp. Pl. ii, 970 (1753).
Common in pools along the rivers and in the lakes of Grant County: Thedford, June 14, etc. (No. 1257).

Lemna perpusilla Torr. Fl. N. Y. ii, 245 (1843).
I took this for *L. valdiviniana* Philippi, as the fronds are more or less elongated and as only one nerve could be seen. But comparison with the specimens in the National Herbarium persuaded me that it was *L. perpusilla*. The former has much narrower and thicker fronds. This is new to the State of Nebraska. In a spring near Plummer Ford, August 29 (No. 1723).

Lemna trisulca L. Sp. Pl. ii, 970 (1753).
Common in pools and lakes throughout: Thedford, June 21; west of Whitman, September 19 (No. 1397).

Lemna gibba L. Sp. Pl. ii, 970 (1753).
The specimens collected are much smaller than the specimens in the National Herbarium, which, however, are all European. The lower surface of the fronds is also of a darker color. In pools near Dismal River, Plummer Ford, July 5 (No. 1503). Also new to Nebraska.

Spirodela polyrrhiza (L.) Schleid. Linnæa, xiii, 392 (1839); *Lemna polyrrhiza* L. Sp. Pl. ii, 970 (1753).
Rare, in pools with *Lemna minor*, June 14 (No. 1258).

ALISMACEÆ.

Alisma plantago L. Sp. Pl. i, 342 (1753).
In dry lakes, northeast of Whitman, July 29 to 31 (No. 1616).

Sagittaria latifolia Willd. Sp. Pl. iv, 409 (1806).
The typical form was growing in the edges of streams and lakes: Mullen, July 17 (No. 1563). The form with narrower lobes, which has been called variety *angustifolia*, was growing in deeper water, outside of the typical form. Mullen, July 17 (No. 1562). Another form (marked on the label: Form C, by Jared G. Smith), with leaves about half as large as in the typical, was growing on sandy banks of the rivers. Forks of Dismal, July 12 (No. 1533). No. 1812 is a diminutive form of the same. Forks of Middle Loup, July 27.

Sagittaria arifolia Nutt.; J. G. Smith, Ann. Rep. Mo. Bot. Gard. vi [reprint 6], pl. i (1894).
The character that first arrested my attention was the bracts, which are lanceolate and much longer than in *S. latifolia*. In streams: Forks of Middle Loup River, July 26; South Dismal River, August 14 (No. 1809). No. 1811 is a form having thinner, nearly membranaceous leaves with shorter lobes. Forks of Middle Loup River, July 27.

NAIADACEÆ.

Triglochin maritima L. Sp. Pl. i, 339 (1753).
In a meadow, near Thedford, June 14 (No. 1280).

Potamogeton natans L. Sp. Pl. i, 126 (1753).
In lakes in Grant County: Swan Lake, August 7; northwest of Whitman, September 19 (No. 1652).

Potamogeton oakesianus Robbins, in Gray, Man. ed. 5, 485 (1867).

This was collected by Herbert J. Webber in 1889, near Thedford, but was not obtained by the present collector.

Potamogeton lonchites Tuckerm. Amer. Journ. Sci. n. ser. vi, 226 (1848).

Near to the typical form, but with smaller leaves. Norway, June 23 (No. 1421). Another form is also referred here, differing somewhat in the shape of the leaves. The floating ones are narrow and thin, and only 9- to 13-nerved. Dismal River, June 26 (No. 1846).

Potamogeton amplifolius Tuckerm. Amer. Journ. Sci. n. ser. vi, 225 (1848).

Common: Dismal River, June 26; Swan Lake, August 7; northwest of Whitman, September 19 (No. 1440).

Potamogeton perfoliatus L. Sp. Pl. i, 126 (1753).

This plant approaches the variety *richardsonii* A. Bennett, Journ. Bot. xxvii, 25 (1889).

In a lake northwest of Whitman, September 20 (No. 1792).

Potamogeton pusillus L. Sp. Pl. i, 127 (1753).

In a pool, near Middle Loup River, Thedford, June 21 (No. 1396).

Potamogeton pectinatus L. Sp. Pl. i, 127 (1753).

East Cody's Lake, August 9; lake northwest of Whitman, September 19 (No. 669). The specimens from the latter locality are of the form that has been called variety *scoparium* Wallr.

Potamogeton interruptus Kitaibel, in Schultes, Est. Fl. ed. 2, 328 (1814).

This identification is somewhat doubtful. I have no mature fruit, but the long, broad leaves with strong transverse veins point to this species rather than to *P. pectinatus*, to one of which it must belong (No. 1439).

Zannichellia palustris L. Sp. Pl. ii, 969 (1753).

A small form, less than a decimeter high, rooting in the sand: East Cody's Lake, August 9, 10 (No. 1661).

Naias flexilis (Willd.) Rostk. & Schmidt, Fl. Sed. 384 (1824); *Caulinia flexilis* Willd. Abh. Akad. Berl. 95 (1803).

Only a few specimens collected, East Cody's Lake, August 9 (No. 1660). A more slender form, in appearance resembling more the next, but with broader, ovate fruit, not pitted, was found at the other end of the same lake, August 11 (No. 1828).

Naias guadalupensis (Spreng.) Morong, Mem. Torr. Club, iii, 60 (1893); *Caulinia guadalupensis* Spreng. Syst. i, 20 (1825).

In a lake, northwest of Whitman, September 19 (No. 1786). A rare plant in this latitude. It was first collected in Nebraska by Prof. Thomas A. Williams.

CYPERACEÆ.

Cyperus schweinitzii Torr. Ann. Lyc. N. Y. iii, 276 (1836).

A very common plant in the sand hills: Thedford, June 20; Norway, June 23; Plummer Ford, July 8; Mullen, July 19; northeast of Whitman, July 31 (No. 1371).

Cyperus houghtonii Torr. Ann. Lyc. N. Y. iii, 277 (1836).

A rare plant that for some time has been lost to science. It has been held not distinct from the preceding, but it can easily be distinguished by the less sharp angles of the culm, which are not scabrous, and by its not cuspidate glumes. My specimens agree fully with Torrey's description, except that the leaves are a little rough on the margin. Old field, near Natick, September 11 (No. 1747).

Cyperus strigosus L. Sp. Pl. i, 47 (1753).

A common plant on moist, sandy soil: Cody's Lakes, August 9; Thedford, August 26 (No. 1654).

Cyperus diandrus Torr. Cat. Pl. N. Y. 90 (1819).

An unusually low and cespitose form, growing on the sandy banks of the rivers: Plummer Ford, August 22; Thedford, August 26 (No. 1718).

Cyperus aristatus Rottb. Desc. & Icon. 23 (1773).

Near a dried-up pond in the sand hills, Mullen, July 28 (No. 1599).

Eleocharis palustris (L.) Roem. & Schult. Syst. Veg. ii, 151 (1817); *Scirpus palustris* L. Sp. Pl. i, 47 (1753).

Approximately typical forms were collected at Dismal River, June 29; Plummer Ford, July 4; Cody's Lakes, August 7 (No. 1485). A lower more slender form with more obovate achenes with a short tubercle: Thedford, June 14 to 20 (No. 1265).

Eleocharis palustris glaucescens (Willd.) Gray, Man. ed. 5, 558 (1867); *Scirpus glaucescens* Willd. Enum. 76 (1809).

Natick, June 19; Dismal River, June 27; Plummer Ford, July 3; Forks of Dismal River, July 11 (No. 1436).

Eleocharis acicularis (L.) Roem. & Schult. Syst. Veg. ii, 154 (1817); *Scirpus acicularis* L. Sp. Pl. i, 47 (1753).

In the specimens from Nebraska the spikes are lighter in color than usual: Thedford, June 17 and 20; Dismal River, June 27; Plummer Ford, July 3; north of Whitman, September 20 (No. 1337).

Fimbristylis castanea (Mx.) Vahl. Enum. ii, 292 (1806); *Scirpus castaneus* Mx. Fl. i, 31 (1803).

Perhaps this plant should have the name *F. umbellata* from *Schœnus umbellatus* Walt.,[1] but the identity is doubtful. Nebraska specimens are slender with heads of thin, bright-brown scales. In a meadow, near Thedford, August 19 (No. 1712).

Scirpus americanus Pers. Syn. Pl. i, 68 (1805).

Common in Nebraska: Thedford, June 15; Plummer Ford, July 4 (No. 1319).

Scirpus lacustris L. Sp. Pl. i, 48 (1753).

In Middle Loup River, Thedford, June 14 and 16 (No. 1276).

Scirpus lacustris occidentalis Wats. Bot. Cal. ii, 218 (1880).

This appears to be the first time this western plant has been collected east of the Rocky Mountains. In Middle Loup River, Thedford, June 21; Mullen, July 19 (No. 1388).

Scirpus atrovirens pallidus Britton, Trans. N. Y. Acad. ix, 14 (1889).

Dismal River, June 27; Forks of Dismal River, July 11 (No. 1427).

Scirpus fluviatilis (Torr.) Gray, Man. 527 (1848); *Scirpus maritimus fluviatilis* Torr. Ann. Lyc. N. Y. iii, 324 (1836).

Rare: in a dry lake northeast of Whitman, July 29 (No. 1612).

Eriophorum gracile Koch; Roth, Cat. ii, 259 (1800).

Collected in a swamp, near Dismal River, June 28 (No. 1446).

Carex pseudo-cyperus L. Sp. Pl. ii, 978 (1753).

This is perhaps the variety *americana* Hochst.[2] Not previously collected in Nebraska. Swamp, 20 miles south of Whitman, August 4 (No. 1646).

Carex hystricina Muhl.; Willd. Sp. Pl. iv, 282 (1805).

Common: Thedford, June 14; Dismal River, June 27 (No. 1277).

Carex trichocarpa aristata (R. Br.) Bailey, Bot. Gaz. x, 294 (1885); *Carex aristata* R. Br.; Richards. Bot. App. 751 (1823).

A tall plant growing in swampy places: Forks of Middle Loup River, July 27; 20 miles south of Whitman, August 4 (No. 1622).

---

[1] Fl. Car. 70 (1788).

[2] Herb. Unio Itin. (1837).

Carex filiformis lanuginosa (Mx.) B. S. P. Prel. Cat. N. Y. 63 (1888); *Carex lanuginosa* Mx. Fl. ii, 175 (1803).

Together with preceding, south of Whitman, August 4 (No. 1816). A lower, more strict, and more leafy form was collected at Thedford, June 14 (No. 1266). Nearly all the specimens of the latter lacked the staminate spikes.

Carex rigida goodenovii (Gay) Bailey, Britten's Journ. Bot. xxviii, 172 (1890); *C. goodenovii* Gay, Ann. Sci. Nat. ser. 2, xi, 191 (1839).

This reference is made with some doubt. The specimen agrees well with the description of this species, but the achenes are deciduous, which should place it with *C. decidua* Boott. It also somewhat resembles *C. interrupta*, but the locality is out of the range of both these species. Norway, June 22 (No. 1797).

Carex nebraskensis Dewey, Amer. Journ. Sci. xviii, 102 (1854).
Common around Thedford, June 14; Mullen, July 17 (No. 1264).

Carex laxiflora varians Bailey, Mem. Torr. Club, i, 32 (1889).
Only three specimens secured at Plummer Ford, July 3 (No. 1461). The staminate spikes are small and subsessile.

Carex aurea Nutt. Gen. ii, 205 (1818).
Common: Thedford, June 16 (No. 1296).

Carex pennsylvanica Lam. Encycl. iii, 338 (1789).
On the prairies, but comparatively rare in this region: Thedford, June 20 (No. 1382).

Carex stenophylla Wahl. Kongl. Acad. Handl. ser. 2, xxiv, 142 (1803).
On the prairies, near Thedford, June 14 (No. 1254).

Carex longirostris Torr.; Schwein. Ann. Lyc. N. Y. i, 71 (1824).
In the woods, near Plummer Ford, July 3 (No. 1478).

Carex teretiuscula Good. Trans. Linn. Soc. ii, 163 (1794).
In the meadows, near Thedford, June 21 (No. 1399).

Carex marcida Boott; Hook. Fl. Bor. Amer. ii, 212 (1839).
The typical form, with narrow, at maturity nearly black, perigynia, was collected at Mullen, July 24 (No. 1805). Another form with greenish-brown (not mature) perigynia with broader wings, I refer also here: Thedford, June 16 (No. 1317). Also a similar form, but more slender and with more open spikes: Thedford, June 14 (No. 1274).

Carex douglasii Boott; Hook. Fl. Bor. Amer. ii, 213 (1839).
Prairie, Thedford, June 14 (No. 1250).

Carex interior Bailey, Bull. Torr. Club, xx, 426 (1893).
It is new to the State of Nebraska, but is rather common in the sand-hill region. Thedford, June 14 and 16 (No. 1261).

Carex stipata Muhl.; Willd. Sp. Pl. iv, 233 (1805).
Not common: Thedford, June 16; Plummer Ford, July 3 (No. 1298).

Carex scoparia Schk. Riedgr. Nacht. 20 (1806).
Rare; only a few specimens secured: Thedford, June 14 (No. 1268).

Carex straminea Willd.; Schk. Riedgr. 49 (1801).
Thedford; specimens not secured.

GRAMINEÆ.

Paspalum setaceum ciliatifolium (Mx.) Vasey, Contr. Nat. Herb. iii, No. 1, 17 (1892); *P. ciliatifolium* Mx. Fl. i, 44 (1803).

The specimens in the collection are lighter-colored and with larger flowers than usual. The leaves are ciliate, with long, silky hairs from small warts. Mullen, July 17 to 24 (No. 1582).

Beckmannia erucæformis (L.) Host, Gram. Austr. iii, 5, t. 6 (1805); *Phalaris erucæformis* L. Sp. Pl. i, 55 (1753).

Found only in one wet meadow, northeast of Whitman, July 29 (No. 1624).

Spartina cynosuroides (L.) Willd. Enum. i, 80 (1809); *Dactylis cynosuroides* L. Sp. Pl. i, 71 (1753).

Common near water: Mullen, July 18; northeast of Whitman, July 29 (No. 1577).

Panicum capillare L. Sp. Pl. i, 58 (1753).

Very large specimens were collected in an old field near the Forks of Dismal River, June 13 (No. 1538). Another form was collected in a dry lake west of Whitman, September 19 (No. 1788). In this the leaves are narrower and, as well as the sheaths, less hairy. Stem more slender and branched from the root; spikelets, as also the fertile flowers, acute. It seems to agree with variety *agreste* Gattinger,[1] but the spikelets are much larger and more pointed. This form is named variety *occidentale* in the National Herbarium, but no description has been published as far as I know.

Panicum virgatum L. Sp. Pl. i, 59 (1753).

The leaves are more or less hairy on the upper side, especially just above the ligule. In richer soil, it grows to 6 to 10 dm. high, and has an open panicle. Mullen, July 17; Forks of Middle Loup River, July 26; Grant County, July 29 (No. 1561) On the sand hills it is lower, 3 to 5 dm. high, more glaucous, and with shorter and denser panicle. Mullen, July 24; South Dismal River, August 14 (No. 1597). One of the best hay grasses.

Panicum scoparium Lam. Encycl. iv, 744 (1797).

In the region this was lower than it usually is in Nebraska. Thedford, June 14 (No. 1279). In some localities the plants were very low, only 1 to 1.5 dm. high, with crowded leaves and small panicle, partly included in the sheath. Dismal River, June 29 (No. 1493). A similar form, which has also very narrow linear-lanceolate leaves, has been placed with *P. wilcoxianum* in the National Herbarium, but I think it should be referred to *P. scoparium*. Mullen, July 24 (No. 1604).

Panicum wilcoxianum Vasey, Bull. 8, U. S. Dept. Agric. Bot. Div. 32 (1889).

This can be described by the statement that it has the leaves of *P. depauperatum*, but panicle and flowers more like those of *P. scoparium*: Thedford, June 16 and 19 (No. 1308).

Panicum dichotomum L. Sp. Pl, i, 58 (1753).

Wet meadow, Natick, June 20 (No. 1368).

Panicum crus-galli L. Sp. Pl. i, 56 (1753).

Two forms of this were collected: one prostrate, probably introduced, in a road, north of Mullen, July 21 (No. 1590); the other a tall, erect, glaucous form, undoubtedly native, in a swamp, 15 miles south of Whitman, August 4, and west of the same place, September 9 (No. 1643).

Chamæraphis viridis (L.) Porter, Bull. Torr. Club, xx, 196 (1893); *Panicum viride* L. Sp. Pl. ed. 2, i, 83 (1762).

Old field, Mullen, July 18 (No. 1568).

Cenchrus tribuloides L. Sp. Pl. ii, 1050 (1753).

Strangely, the sand bur was not common in the sand hills. Mullen, July 17 (No. 1548).

Homalocenchrus oryzoides (L.) Poll. Hist. Pl. Palat. i, 52 (1776); *Phalaris oryzoides* L. Sp. Pl. i, 55 (1753).

Wet meadows in Grant County, August 4, September 20 (No. 1644).

---

[1] Tenn. Fl. 91 (1887).

Zizania aquatica L. Sp. Pl. ii, 991 (1753).

Swamps, northeast of Whitman, July 31; south of the same, August 3 (No. 1630).

Andropogon provincialis Lam. Encycl. i, 376 (1783).

The typical form, with slender, more or less purplish stem and spikes, bluish-green leaves, which are generally hairy on the upper surface, just above the ligules, slender spikes and twisted and bent awns, which are much longer than the glumes, grows nearly without exception on low, moist soil. This species, *Panicum virgatum*, and *Andropogon nutans avenaceus*, are the principal hay grasses of Grant County. Wet valley northeast of Whitman, July 29 to 31 (No. 1618).

Andropogon provincialis pycnanthus Hack. in DC. Monogr. Phan. vi, 443 (1889).

This approaches *A. hallii* in its large spikelets and more or less glaucous leaves and stem. Northeast of Whitman, in the drier part of the valley, July 31 (No. 1813).

Andropogon hallii Hack. Sitz. Akad. Wiss. Wien, 89, 127 (1884).

Some of the forms here referred to this species approach *A. provincialis* in many respects. Either the two are but one species or else they hybridize frequently, as nearly every grade between the two is found. In No. 1596 the size, hairiness, etc., of the rachis and spikelets are those of *A. hallii*, but the awn, that of *A. provincialis*. On hillsides: Mullen, July 24; Whitman, July 31.

On a sand hill near Dismal River, June 27, a very low and slender form, with short spikes, was collected. This bloomed a month earlier and nearly all the spikelets were infested with smut (No. 1449).

No. 1607 is a form that perhaps deserves a varietal name as well as those below. In this the rachis and pedicels are nearly destitute of hairs and the flowering glumes of the fertile flower awnless. Sand hills: Forks of Middle Loup, July 27; northeast of Whitman, July 31.

Andropogon hallii flaveolus Hack. Sitz. Akad. Wiss. Wien, 89, 128 (1884).

Sand hills: Cody's Lakes, August 7 to 9; Mullen, July 24 (No. 1802).

Andropogon hallii muticus Hack. DC. Monogr. Phan. vi, 444 (1889).

This is the most common form on the sand hills: Whitman, July 29 (No. 1595). It grades, however, into the other forms of *A. hallii*, and these into the forms of *A. provincialis*. *A. hallii* is a sand-hill plant, always more or less glaucous. *A. provincialis* grows in the wet valleys. On the hillsides and the dry parts of the valleys the intermediate forms are found.

Andropogon scoparius Mx. Fl. i, 57 (1803).

Specimens from the sand hills are always tufted, with flat sheath, glaucous, and with the joints of the spikes more hairy than usual. This is common on the sand hills, but regarded as a worthless grass. Cody's Lakes, August 9; South Dismal River, August 14 (No. 1665).

Andropogon nutans avenaceus (Mx.) Hack. in DC. Monogr. Phan. vi, 530 (1889); *Andropogon avenaceum* Mx. Fl. i, 58 (1803).

This is common on the lowlands and is one of the best hay grasses. Grant County, August 1, 4, and 10; South Dismal River, August 14 (No. 1638).

Phalaris arundinacea L. Sp. Pl. i, 55 (1753).

The specimens collected have usually narrow panicles, and are perhaps of a distinct form. Northeast of Whitman, in a wet valley, July 29 (No. 1621).

Aristida fasciculata Torr. Ann. Lyc. N. Y. i, 154 (1824).

A low and slender form with very long awns. On a dry hill near Thedford, June 15 and September 8 (No. 1300).

Aristida basiramea Engelm.; Vasey, Bot. Gaz. ix, 76 (1884).

The specimens in the collection were furnished me by Mr. C. C. Wright. The plants were low, with lateral awns 8 mm. long. Thedford, date not known (No. 1847).

Stipa spartea Trin. Mem. Acad. St. Petersb. ser. 6, i, 82 (1829).
Sand hills: Thedford, June 19 (No. 1402).

Stipa comata Trin. & Rupr. Mem. Acad. St. Petersb. ser. 6, v, 75 (1842).
Sand hills: Thedford, June 17; Norway, June 23; Dismal River, June 27; Mullen, July 17 (No. 1344). This and the preceding are said to make good hay if cut early.

Stipa viridula Trin. Mem. Acad. St. Petersb. ser. 6, ii, 39 (1836).
Rare; only one specimen in poor condition secured: Mullen, July 24 (No. 1598).

Oryzopsis micrantha (Trin. & Rupr.) Thurb. Proc. Acad. Phila. 1863, 78 (1863); *Urachne micrantha* Trin. & Rupr. Mem. Acad. St. Petersb. ser. 6, v, 16 (1842).
In shady places, mostly in woods: Plummer Ford, July 3; Mullen, July 19 (No. 1482).

Oryzopsis membranacea (Pursh) Vasey, Grasses S. W. pt. 2, t. 10 (1891); *Stipa membranacea* Pursh, Fl. ii, 728 (1814).
In a canyon, near Middle Loup, north of Mullen, July 17 (No. 1550).

Alopecurus geniculatus fulvus (J. E. Smith) Scribn. Mem. Torr. Club, v, 38 (1894); *Alopecurus fulvus* Smith, Engl. Bot. x, 1467 (1793).
Near the river at Plummer Ford, July 4 (No. 1488). It is regarded as a fair pasture grass, but is comparatively rare, and therefore of little importance.

Muhlenbergia pungens Thurb. Proc. Acad. Phila. 1863, 78 (1863).
This is one of the blowout grasses growing in the driest parts of the sand hills, generally in or near a blowout. Mullen, July 17 and 19, September 24; Cody's Lakes, August 9; Thedford, September 9 (No. 1551).

Muhlenbergia racemosa (Mx.) B. S. P. Cat. Pl. N. Y. 67 (1888); *Agrostis racemosa* Mx. Fl. i, 53 (1803).
Two forms were collected. One is strict and slender, with the flowering glumes cuspidate, and palets three-fourths the length of the glume. Meadows: Mullen, August 17; Thedford, August 19 (No. 1709). The other is branched near the base, and has the outer glumes with the awns one-half longer than the acute, but not pointed, flowering glume and palet, which are equal in length; hairs of the base of the flowers nearly one-half the length of the flowers. Thedford, September 13 (No. 1762). One of the best hay grasses.

Muhlenbergia mexicana (L.) Trin. Unifl. 189 (1824); *Agrostis mexicana* L. Mant. 31 (1767).
Of this species there were at least two distinct forms, one growing in the meadows and the other in the woods. The one which agrees best with the description in Mantissa, and may, therefore, be taken as typical, is nearly upright, resembling *M. racemosa* in habit, but more slender and with a narrower spike. In a meadow on South Dismal River (where it filled a space of a couple of acres and made a good hay crop), August 12 (No. 1686). More slender specimens were collected at Natick, September 11 (No. 1756), and a similar but shorter-leafed, purplish one at Thedford, September 13 (No. 1764).
The other form, which perhaps deserves a varietal name, is more of the habit of *M. sylvatica*, from which it differs mainly in the lack of the awn. The plant is slender, prostrate, with broader leaves and a more branched panicle. In mine the flowering glumes are scarious except the green nerves. Among high bushes, near the river, Thedford, August 19 (No. 1704).

Sporobolus cryptandrus (Torr.) Gray, Man. 576 (1848); *Agrostis cryptandra* Torr. Ann. Lyc. N. Y. i, 151 (1824).
The most common form in Nebraska with more or less included spikes and lead-colored flowers, was collected at Mullen, July 24, and August 17; Cody's Lakes, August 9 (No. 1697).
Another form with exserted purplish panicle, with reflexed branches, was collected on the banks of Middle Loup River, Thedford, August 19 (No. 1705).

Sporobolus cryptandrus robustus Vasey, Contr. Nat. Herb. i, 56 (1890).
On the sand hills: Mullen, July 17 and 21; Cody's Lakes, August 10 (No. 1549).

Sporobolus filiformis (Thurb.) nom. nov.; *Vilfa depauperata filiformis* Thurb.; Wats. Bot. King Surv. v, 376 (1872).

The latter is an older name than *Vilfa gracillima* Thurb. Bot. Cal. ii, 268 (1880), which was changed to *Sporobolus gracillimus* by Scribner. This western species, as far as I know, has not before been collected east of Utah and Montana. It was found abundantly around a spring, 2 miles west of Thedford, September 9 (No. 1741). These specimens are taller than those from the mountains. Stems often 2 dm. or more long, but slender, more or less decumbent. A few specimens were found one-half mile farther down the river, September 7 (No. 1759). These have larger flowers, nearly as large as *S. cuspidatus*, from which they are easily distinguished by the short outer glumes and annual roots. Professor Scribner thinks this is scarcely distinct from *S. depauperatus*.

Sporobolus asperifolius (Nees & Meyen) Thurb. Bot. Cal. ii, 269 (1880); *Vilfa asperifolia* Nees & Meyen; Trin. Mem. Acad. St. Petersb. ser. 6, iv, 95 (1840).
In wet meadows: Cody's Lakes, August 17; Mullen, August 17; Thedford, September 8 (No. 1657).

Agrostis alba L. Sp. Pl. i, 63 (1753).
A light-colored, slender form growing in shade: South Dismal River, July 13 (No. 1546).

Agrostis exarata Trin. Unifl. 207 (1824).
An approximately typical form was found near Plummer Ford, July 3 (No. 1842); a slender form with narrow spike-like panicle at Mullen, July 17 (No. 1800); a robust one with large panicle and broad (up to 6 or 7 mm. wide) leaves, Plummer Ford, July 4 (No. 1492).

Agrostis hiemalis (Walt.) B. S. P. Cat. Pl. N. Y. 68 (1888); *Cornucopiæ hyemalis* Walt. Fl. Car. 74 (1784).
Dismal River, June 27; Plummer Ford, July 4; Mullen, July 19 (No. 1438).
A variety of this species differing in the more robust and strict stem, the larger panicle, the broader, flat leaves (3 to 4 mm. wide), and the larger flowers with outer glumes that are nearly equal. It was mistaken for *A. altissima laxa* Tuckerm., but Professor Scribner has corrected the error and regards it as a luxuriant form or variety of *A. scabra*, which is held to be the same as Walter's *Cornucopiæ hyemalis*. Plummer Ford, July 4 (No. 1489).

Calamovilfa longifolia (Hook.) Hack. True Grasses, 113 (1890), *Calamagrostis longifolia* Hook. Fl. Bor. Amer. ii, 241 (1840).
Common on the sand hills, throughout: Mullen, July 22; northeast of Whitman, July 31 (No. 1804).

Calamagrostis canadensis (Mx.) Beauv. Agrost. 15 (1812); *Arundo canadensis* Mx. Fl. i, 73 (1803).
A slender form with loose panicle and broad, less acuminate, outer glumes: Whitman, July 29 (No. 1620).

Calamagrostis neglecta (Ehrh.) Gaertn. Fl. Wett. i, 94 (1799); *Arundo neglecta* Ehrh. Beitr. vi, 137 (1791).
Very variable. In some plants the panicle is nearly spike-like: Dismal River, June 27, Norway, June 22 (No. 1426). The specimens from Norway are more leafy, with narrower leaves. Some have a more open panicle, as those from Plummer Ford, July 4 (No. 1494). in a few specimens from Mullen, July 17, the panicle is large and dense and the leaves broad.

Schedonnardus paniculatus (Nutt.) Trelease: Brannor & Coville, Rep. Geol. Surv. Ark. 1888, pt. 4, 236 (1891); *Lepturus paniculatus* Nutt. Gen. i, 81 (1818).
Rare: on sandy soil, Thedford, August 19 (No. 1710).

Bouteloua hirsuta Lag. Var. Cienc. y Litter. ii, pt. 4, 141 (1805).
Not common: Mullen, July 17, 18; Cody's Lakes, August 10 (No. 1552).

Bouteloua oligostachya (Nutt.) Torr.; Gray, Man. ed. 2, 553 (1856); *Atheropogon oligostachyum* Nutt. Gen. i, 78 (1818).
Rare: Plummer Ford, August 23; Mullen, July 19 (No. 1574). No. 1803 is a low form with a few glandular warts on the outer glumes, which are so characteristic of *B. hirsuta:* Mullen, July 24. This and the preceding constitute the winter pasturage of western Nebraska. In the fall, they become self-cured and make a good pasturage for the cattle.

Bouteloua curtipendula (Mx.) Torr. Emory's Rep. 153 (1848); *Chloris curtipendula* Mx. Fl. i, 59 (1803).
Not common: Plummer Ford, July 5; Forks of Dismal River, July 13 (No. 1499).

Bulbilis dactyloides (Nutt) Raf.; Kuntze, Rev. Gen. Pl. ii, 763 (1891); *Sesleria dactyloides* Nutt. Gen. i, 65 (1818).
Not common in the region; otherwise regarded as a good pasture plant, especially for winter pasture. This species is often monœcious, although more often dioecious. Prairie: Thedford, June 14, Norway, June 23 (No. 1253).

Sieglingia purpurea (Walt.) Kuntze, Rev. Gen. Pl. ii, 789 (1891); *Aira purpurea* Walt. Fl. Car. 78 (1788).
In sandy soil, mostly on the river banks: Mullen, August 17; Thedford, August 19; Plummer Ford, August 22; Natick, September 11 (No. 1698).

Leptochloa fascicularis (Lam.) Gray, Man. 588 (1848); *Festuca fascicularis* Lam. Tabl. Encyel. i, 189 (1791).
On sandy prairies, local: Thedford, August 21 (No. 1713).

Phragmites phragmites (L.) Karst. Deutsch. Fl. 379 (1880–83); *Arundo phragmites* L. Sp. Pl. i, 81 (1753).
In or near water: Plummer Ford, August 22; lakes in Grant County, July 31 (No. 1631).

Kœleria cristata (L.) Pers. Syn. Pl. i, 97 (1805); *Aira cristata* L. Sp. Pl. i, 63 (1753).
Wherever it grows abundantly it is an important factor in making up the pasturage in early spring: Thedford, June 14; Mullen, July 19 (No. 1273).

Kœleria nitida Nutt. Gen. i, 74 (1818).
Professor Scribner holds this to be a distinct species. It has generally been regarded as a variety of the preceding.
Thedford, September 9 (No. 1844).

Eatonia obtusata (Mx.) Gray, Man. ed. 2, 558 (1856); *Aira obtusata* Mx. Fl. i, 62 (1803).
Also an early pasturage grass on the dry prairies: Plummer Ford, July 4 (No. 1486).

Eatonia obtusata robusta Vasey, var. nov.[1]
Taller than the species, more robust, with broad leaves, 5 to 6 mm. wide. This grows in wet places, generally near rivers, and blooms later than the species: Mullen, July 17 (No. 1807).

Munroa squarrosa (Nutt.) Torr. Pac. R. Rep. iv, 158 (1856); *Crypsis squarrosa* Nutt. Gen. i, 49 (1818).
Rare in the region: Norway, June 23; Forks of Dismal River, July 12 (No. 1534).

Catabrosa aquatica (L.) Beauv. Agrost. 157 (1812); *Aira aquatica* L. Sp. Pl. i, 64 (1753).
In springs: Thedford, June 17; Plummer Ford, July 3 (No. 1381).

---

[1] This name was given in the Report of the Commissioner of Agriculture for 1881, p. 322, with a reference to utility and habitat, but without description.

Eragrostis major, Host, Gram. Austr. iv, 14 (1809).

The common low, nearly prostrate form was found in roads and old fields: Mullen, July 20 and September 17; Thedford, September 7 (No. 1588). Another form, nearly upright and with many broad leaves, was found in fields: Forks of Dismal River, July 11; Natick, September 7 (No. 1522).

Eragrostis caroliniana (Spreng.) Scribn. Mem. Torr. Club, v, 49 (1894); *Poa caroliniana* Spreng. Mart. Fl. Hal. i, 33 (1807).

This has been confused with *E. pilosa*, from which it is very hard to distinguish it. Perhaps only a Western form of that species. Railroad embankment: Mullen, September 15 (No. 1774).

Eragrostis tenuis (Ell.) Gray, Man. ed. 2, 564 (1856); *Poa tenuis* Ell. Bot. S. Car. and Georg. i, 156 (1817).

This is one of the blowout grasses, growing on the drier sand hills. It is one of the most common plants in the region, and is very variable, its character probably depending upon the conditions under which it grows. A form with strict, elongated panicle, with many large spikelets, I take as typical. This has broad leaves, about 4 mm. wide, and conspicuous tufts of hairs at the mouth of the sheath: Cody's Lakes, August 10 (No. 1829). Another form with large, spreading panicle and long, involute leaves was collected at Thedford, September 13; Plummer Ford, August 22 (No. 1831). A third form was like the typical except that it was much smaller, its panicle small with comparatively few spikelets: Plummer Ford, August 23 (No. 1832). Near Mullen, July 18, a form was met having few-flowered (mostly 1- to 3-flowered) spikelets, with probably abortive flowers (No. 1569). This is, according to Professor Scribner, the variety *texensis* Vasey.

Eragrostis pectinacea (Mx.) Steudel, Syn. Pl. Gram. 272 (1855); *Poa pectinacea* Mx. Fl. i, 69 (1803).

A really ornamental grass with its large panicle of spikelets of a brilliant red color: Thedford, August 19; Plummer Ford, August 23 to 26 (No. 1711).

Poa arida Vasey, Contr. Nat. Herb. i, 270 (1893).

Three forms of this species, no one of which is typical. The first differs from the type, in being lower, and in having a smaller and narrower panicle (No. 1270). The second differs in its larger and more hairy spikelets, its stouter habit, its narrow, crowded panicle, and the flowering glumes, which are more hairy (No. 1286). The third is like the second, but has a more open panicle (No. 1271). The last two forms, together with specimens collected in Nebraska by Corbett (preserved in the Herbarium of the University of Nebraska) and specimens collected by Prof. Thos. A. Williams in South Dakota (one sheet preserved in the National Herbarium), very probably deserve to be regarded as a good variety. All the above forms were collected in meadows, near Thedford, June 14.

Poa pratensis L. Sp. Pl. i, 67 (1753).

Two distinct forms which probably belong to this were collected. One resembles the common form cultivated for lawns, but has smaller spikelets. Prairies, Thedford, June 14 (No. 1275). The other is a tall grass, which looks very different from the ordinary one. The panicle is denser, the branches less spreading, the spikelets large, the empty glumes scabrous on the margin, and the leaves longer and broader. Meadows, Thedford, June 14; Plummer Ford, July 1 (No. 1278).

Poa sp.

Differs from *P. fendleriana* (Steud.) Vasey[1] in not being a bunch grass, in the more hairy glumes, which have a narrower scarious portion, and in the long and broad leaves (1 to 2 dm. long and 5 mm. broad). The latter resemble much those of *Poa*

[1] Ill. N. A. Grasses, ii, 94 (1893); Steud. Syn. Gram. 278, 1855.

alpina, but are longer. From this species it also differs in its larger size, acute ligule, and the long, creeping rootstock. Rare: Thedford, June 14 (No. 1272).

Redfieldia flexuosa (Thurb.) Vasey, Bull. Torr. Club, xiv, 133 (1887); *Graphephorum* (?) *flexuosum* Thurb. Proc. Acad. Phila. 1863, 78 (1863).

A blowout grass, growing in the very driest and loosest sand. Near Middle Loup, north of Mullen, July 19; railroad embankment, east thereof, July 20 and August 17 (No. 1583).

Distichlis spicata stricta (Torr.) Scribner, Mem. Torr. Club, v, 51 (1894); *Uniola stricta* Torr. Ann. Lyc. N. Y. 155 (1824).

On sandy soil, near water: northeast of Whitman, July 29 (No. 1623); Cody's Lakes, August 9 (No. 1814).

Scolochloa festucacea (Willd.) Link, Hort. Berol. i, 137 (1827); *Arundo festucacea* Willd. Enum. i, 126 (1809).

This rare plant was collected in a lake, northwest of Whitman, September 20 (No. 1795). It is new to Nebraska.

Panicularia nervata (Willd.) Kuntze, Rev. Gen. Pl. ii, 783 (1891); *Poa nervata* Willd. Sp. Pl. i, 389 (1798).

The Nebraska forms of this species are much more slender than usual, and have a more or less drooping panicle of small spikelets: Thedford, June 14; Dismal River, June 27; Plummer Ford, July 3 (No. 1269). No. 1400 is a taller form with more spreading panicle, but not as robust as the species often grows in the East: Thedford, June 21; Plummer Ford, July 4.

Panicularia aquatica (L.) Kuntze, Rev. Gen. Pl. ii, 282 (1891); *Poa aquatica* L. Sp. Pl. i, 67 (1753).

In rivers: Plummer Ford, July 3; Mullen, July 18 (No. 1459).

Festuca octoflora Walt. Fl. Car. 81 (1788).

A worthless little grass. Dry soil, Thedford, June 14 (No. 1282).

Bromus ciliatus L. Sp. Pl. i, 76 (1753).

Meadows: Mullen, July 19; Plummer Ford, July 3; Forks of Dismal River, July 12 (No. 1404).

Bromus ciliatus porteri nom. nov.; *Bromus kalmii porteri* Coulter, Man. Rock. Mount. Reg. 425 (1885).

I can not find any authentic specimen of this variety in the National Herbarium. My specimens agree well with the description in Coulter's Manual and are exactly like specimens so labeled in the Herbarium of the University of Nebraska, the authenticity of which, however, is doubtful. Professor Scribner thinks that my specimens belong to a form of *B. ciliatus*, not of *B. kalmii*. Meadows: Mullen, August 19; Thedford, September 13 (No. 1775).

Agropyron repens glaucum (Desf.) Scribner, Mem. Torr. Club, v, 57 (1894); *Triticum glaucum* Desf. Tabl. Bot. Mus. 16 (1804).

Common throughout the region in the drier parts of the valleys: Plummer Ford, July 3; Dismal River, June 27. In an old haystack, northeast of Whitman, August 1, a form was found with broad, flat leaves, approaching the true *A. repens* (No. 1434). In rich soil, the spikelets often become large and double: Thedford, June 16, Plummer Ford, June 3 (No. 1796).

Agropyron violaceum (?) **majus** Vasey, Contr. Nat. Herb. i, 280 (1893).

Very similar to *A. tenerum*, but stouter; 10 to 12 dm. high; spike 15 to 25 cm. long, of numerous spikelets, which are larger and more crowded than in *A. tenerum;* glumes strongly veined, the empty ones often purplish; tinged and generally shorter than the spikelet; glumes mucronate or short-awned; joints of the spikelets pilose. This latter character may not be constant, but I have found it in all Nebraska specimens

examined, viz, from three localities in 1893, from Scott's Bluff in 1891, and also in Mr. Herbert Webber's specimens from Thedford in 1889. These latter were sent to Dr. Vasey for identification, by whom they were named *A. unilaterale* Vasey & Scribner. Dr. Vasey afterwards transferred them to *A. violaceum majus*. The type specimens of this variety seem to be tufted as in *A. tenerum* and not spreading by a creeping rootstock as in the Nebraska specimen. The hairiness of the joints of the spikelets is also lacking in the type specimens, but otherwise they are very similar. Valley, Grant County, July 20 and 31. Also seen at Mullen and Thedford (No. 1619).

Agropyron tenerum Vasey, Bot. Gaz. x, 258 (1885).
Rare: Dismal River, July 11 (No. 1516).

Agropyron caninum (L.) Rœm. & Schult. Syst. Veg. ii, 756 (1877); *Triticum caninum* L. Sp. Pl. i, 86 (1753).
In wet meadows, northeast of Whitman, July 29 (No. 1617).

Elymus macounii Vasey, Bull. Torr. Club, xiii, 119 (1886).
It may be this should be included in Agropyron. Perhaps Elymus and Agropyron should be made one genus, as there is no character that will absolutely separate them. Meadows in Grant County, July 29 (No. 1625).

Elymus striatus Willd. Sp. Pl. i, 470 (1797).
In shady places: Plummer Ford, July 3 (No. 1476).

Elymus canadensis L. Sp. Pl. i, 83 (1753).
The more typical form was collected at the Forks of Dismal River, July 13 (No. 1543). Another form with narrow, involute leaves and small spikes was growing common on the hills: Plummer Ford, July 13; Mullen, July 17; Middle Loup, July 26 (No. 1477). In a damp place at the foot of a sand hill near Middle Loup, Hooker County, July 22, a few specimens were found of a form which had spikes up to 2 or 3 dm. long, and leaves 10 or 12 mm. wide (No. 1806.) This has been called variety *robustus*, but without description.

Elymus virginicus L. Sp. Pl. i, 84 (1753).
This is a variety with a slender stem, the spike slender, upright but long-exserted. It resembles a form named in manuscript by Dr. Vasey *E. virginicus minor*, but it is intermediate between this and *E. canadensis intermedius*, from which it differs in having the flowers smooth and the lower glume as in *E. virginicus*. Rare: Mullen, July 17 (No. 1553).

Hordeum pusillum Nutt. Gen. i, 87 (1818).
I took this for *H. nodosum* L., but Mr. Dewey, of the United States Department of Agriculture, has pointed out a good and easy character by which to distinguish the two. In *H. nodosum*, the outer glumes are narrow, gradually acuminating upward; in *H. pusillum* they widen from a narrow base, and then acuminate abruptly into an awn. Prairies: Thedford, June 14 (No. 1267).

Hordeum jubatum L. Sp. Pl. i, 85 (1753).
This worthless grass was collected only near Natick, June 20 (No. 1367).

CONIFERÆ.

Juniperus virginiana L. Sp. Pl. ii, 1039 (1753).
Along Dismal River. Apparently, it has been rather common, but most of the trees are cut down. Plummer Ford, July 3; Dismal River, June 27 (No. 1428.)

SALVINIACEÆ.

Azolla caroliniana Willd. Sp. Pl. v, 541 (1810).
This interesting little plant was found in pools near a spring at Plummer Ford, August 24, growing together with *Lemna minor* and *L. perpusilla* (No. 1728).

OPHIOGLOSSACEÆ.

Botrychium virginianum (L.) Swartz, Schrad. Journ. Bot. ii, 111 (1800); *Osmunda virginianà* L. Sp. Pl. ii, 1064 (1753).

In woods, Plummer Ford, July 3; Forks of Dismal River, July 11 (No. 1467).

FILICES.

Onoclea sensibilis L. Sp. Pl. ii, 1062 (1753).

Natick, June 20; Plummer Ford, August 23 (No. 1377). Common among bushes along the rivers.

Dryopteris thelypteris (L.) Gray, Man. 630 (1848); *Acrostichum thelypteris* L. Sp. Pl. ii, 1071 (1753).

Common throughout in meadows; Halsey, September 11; South Dismal, August 12 to 14 (No. 1684).

Dryopteris spinulosa (Retz.) Kuntze, Rev. Gen. Pl. ii, 810 (1891); *Polypodium spinulosum* Retz. Fl. Scand. ed. 2, 250 (1795).

Rare, Plummer Ford, July 4 (No. 1484).

Dryopteris cristata (L.) Gray, Man. 631 (1848); *Polypodium cristatum* L. Sp. Pl. ii, 1090 (1753).

In damp places among trees, on the bank of Dismal River; at the Forks, July 12; South Dismal River, August 14 (No. 1530). New to the State of Nebraska.

Cystopteris fragilis (L.) Bernh. Schrad. Neues Journ. Bot. i, pt. 2, 27 (1806); *Polypodium fragile* L. Sp. Pl. ii, 1091 (1753).

On the wooded banks of Dismal River, Plummer Ford, July 3 (No. 1452).

Woodsia oregana Eaton, Can. Nat. ii, 90 (1865).

On the wooded hillsides near Plummer Ford, July 5 (No. 1479).

EQUISETACEÆ.

Equisetum arvense L. Sp. Pl. ii, 1061 (1753).

Only the sterile fronds, collected at Natick, June 20; Thedford, September 9 (No. 1378).

Equisetum variegatum Schleich. Cat. Pl. Helvet. 27 (1807).

On the banks of Middle Loup River north of Mullen, July 17 (No. 1801).

Equisetum lævigatum A. Br.; Engelm. Amer. Journ. Sci. xlvi, 87 (1844).

Two forms of this are found in Nebraska. The more common one corresponds to the description given in the manuals, except that it is often branching at the base, like the preceding. The spikes are narrow and often somewhat stalked. Thedford, June 14 (No. 1260). The other form nearly equals *E. robustum* in size, 6 to 10 dm. high; ridges with 2 lines of tubercles, sheath 8 to 12 mm. long widening upward, with a black margin and sometimes with a slightly brownish shade at the base. In meadows, Thedford, June 14 (No. 1283). This is said to be a good "hay grass."

Equisetum robustum A. Br.; Engelm. Amer. Journ. Sci. xlvi, 88 (1844).

On a hillside near Plummer Ford, August 24 (No. 1722).

CATALOGUE OF SPECIMENS.

Thedford, Thomas County, June 14.

1250. Carex douglasii Boott.
1251. Sisyrinchium bermudiana L.
1252. Nothocalais cuspidata (Pursh) Greene.
1253. Bulbilis dactyloides (Nutt.) Raf.
1254. Carex stenophylla Wahl.
1255. Linum rigidum Pursh.
1256. Prunus demissa (Nutt.) Walp.
1257. Lemna minor L.
1258. Spirodela polyrrhiza (L.) Schleid.
1259. Lappula redowskii occidentalis (Wats.) Rydberg.
1260. Equisetum lævigatum A. Br.
1261. Carex interior Bailey.
1262. Naumburgia thyrsiflora (L.) Duby.
1263. Abronia fragrans Nutt.
1264. Carex nebraskensis Dewey.
1265. Eleocharis palustris (L.) Roem & Schult.
1266. Carex filiformis lanuginosa (Mx.) B. S. P.
1267. Hordeum pusillum Nutt.
1268. Carex scoparia Schk.
1269. Panicularia nervata (Willd.) Kuntze.
1270. Poa arida Vasey.
1271. Poa arida Vasey.
1272. Poa sp.
1273. Koeleria cristata (L.) Pers.
1274. Carex marcida Boott.
1275. Poa pratensis L.
1276. Scirpus lacustris L.
1277. Carex hystricina Muhl.
1278. Poa pratensis L.
1279. Panicum scoparium Lam.
1280. Triglochin maritima L.
1281. Lesquerella argentea (Pursh) MacMillan.
1282. Festuca octoflora Walt.
1283. Equisetum lævigatum A. Br.
1284. Pentstemon angustifolius Pursh.
1285. Spiesia lambertii (Pursh) Kuntze.
1286. Poa arida Vasey.
1287. Physalis heterophylla Nees.
1288. Rumex venosus Pursh.

Thedford, Thomas County, June 15.

1289. Prunus americana Marsh.
1290. Allium mutabile Mx.
1291. Amaranthus blitoides Wats.
1292. Antennaria plantaginifolia (L.) Richards.
1293. Œnothera albicaulis Pursh.
1294. Plantago purshii Roem. & Schult.
1295. Alsine longifolia (Muhl.) Britton.
1296. Carex aurea Nutt.
1297. Habenaria hyperborea (L.) R. Br.
1298. Carex stipata Muhl.
1299. Androsace occidentalis Pursh.
1300 Aristida fasciculata Torr.
1301. Macrocalyx nyctalea (L.) Kuntze.
1302. Œnothera sinuata L.
1303. Œnothera serrulata Nutt.
1304. Lepidium intermedium Gray.
1305. Acerates viridiflora lanceolata (Ives) Torr.
1306. Verbena bracteosa Mx.
1307. Cryptanthe crassisepala (Torr. & Gray) Greene.
1308. Panicum wilcoxianum Vasey.
1309. Veronica peregrina L.
1310. Plantago purshii Roem. & Schult.
1311. Senecio compactus (Gray) Rydberg.
1312. Hedeoma hispida Pursh.
1313. Rosa fendleri Crepin.
1314. Amorpha fruticosa L.
1315. Salix fluviatilis Nutt.
1316. Pentstemon albidus Nutt.
1317. Carex marcida Boott.
1318. Juncus tenuis Willd.
1319. Scirpus americanus Pers.

Thedford, Thomas County, June 16.

1320. Lathyrus ornatus Nutt.
1321. Hymenopappus filifolius Hook.
1322. Astragalus ceramicus longifolius (Pursh) Rydberg.
1323. Thalesia fasciculata (Nutt.) Britton.
1324. Prunus besseyi Bailey.
1325. Ceanothus ovatus Desf.
1326. Acerates lanuginosa (Nutt.) Dec.
1327. Psoralea lanceolata Pursh.
1328. Medicago sativa L.
1329. Salix cordata angustata (Pursh) Anders.
1330. Physalis lanceolata Pursh.
1331. Mimulus glabratus jamesii (Torr. & Gr.) Gray.
1332. Veronica americana Schwein.
1333. Ranunculus sceleratus L.
1334. Cyrtorrhyncha cymbalaria (Pursh) Britton.
1335. Batrachium divaricatum (Schrank) Wimm.
1336. Viola obliqua Hill.
1337. Eleocharis acicularis (L.) Roem. & Schult.
1338. Utricularia vulgaris L.
1339. Sparganium eurycarpum Engelm.

Thedford, Thomas County, June 17.

1340. Vagnera stellata (L.) Morong.
1341. Psoralea digitata Nutt.
1342. Castilleja sessiliflora Pursh.
1343. Gaura coccinea Pursh.
1344. Stipa comata Trin.
1345. Commelina virginica L.
1346. Legouzia perfoliata (L.) Britton.
1347. Prunella vulgaris L.
1348. Oxalis stricta L.
1349. Silene anthirrhina L.
1350. Erigeron bellidiastrum Nutt.
1351. Chenopodium leptophyllum subglabrum Wats.
1352. Ceanothus ovatus pubescens Wats.
1353. Apocynum cannabinum L.
1354. Rosa fendleri Crepin.
1355. Lithospermum gmelini (Mx.) Hitchcock.
1356. Carduus plattensis Rydberg.
1357. Malvastrum coccineum (Nutt.) Gray.

Thedford, Thomas County, June 19.

1358. Argemone albiflora Hornem.
1359. Yucca glauca Nutt.
1360. Delphinium carolinanum Walt.
1361. Linum rigidum Pursh.
1362. Helianthus petiolaris Nutt.
1363. Comandra pallida A. DC.

Natick, Thomas County, June 20.

1364. Geum strictum Ait.
1365. Onosmodium molle Mx.
1366. Ribes aureum Pursh.
1367. Hordeum jubatum L.
1368. Panicum dichotomum L.
1369. Juncus nodosus L.
1370. Amaranthus torreyi (Gray) Benth.
1371. Cyperus schweinitzii Torr.
1372. Euphorbia petaloidea Engelm.
1373. Euphorbia glyptosperma Engelm.
1374. Juncus tenuis Willd.
1375. Parthenocissus quinquefolia (L.) Planch.
1376. Juncus balticus montanus Engelm.
1377. Onoclea sensibilis L.
1378. Equisetum arvense L.
1379. Cactus viviparus Nutt.
1380. Tradescantia virginiana L.
1381. Catabrosa aquatica (L.) Beauv.
1382. Carex pennsylvanica Lam.

Thedford, Thomas County, June 21.

1383. Asclepias speciosa Torr.
1384. Glycyrrhiza lepidota Pursh.
1385. Solanum nigrum L.
1386. Chenopodium leptophyllum Wats.
1387. Monarda citriodora Cerv.
1388. Scirpus lacustris occidentalis Wats.
1389. Lithospermum angustifolium Mx.
1390. Psoralea argophylla Pursh.
1391. Fraxinus pennsylvanica lanceolata (Borckh.) Sargent.
1392. Rosa arkansana Porter.
1393. Solanum triflorum Nutt.
1394. Chenopodium fremontii incanum Wats.
1395. Lepachys columnaris (Pursh) Torr. & Gray.
1396. Potamogeton pusillus L.
1397. Lemna trisulca L.
1398. Physalis heterophylla umbrosa Rydberg.
1399. Carex teretiuscula Good.
1400. Panicularia nervata (Willd.) Kuntze.
1401. Juncus balticus montanus Engelm.
1402. Stipa spartea Trin.
1403. Eriocarpum spinulosum (Pursh) Greene.

Norway, Thomas County, June 22.

1404. Bromus ciliatus L.
1405. Arabis hirsuta (L.) Scop.
1406. Acer negundo L.
1407. Rhus trilobata Nutt.
1408. Polygonatum biflorum commutatum (Ker. & Schult.) Morong.
1409. Calamagrostis robusta Vasey.
1410. Celtis occidentalis L.
1411. Populus deltoides Marsh.
1412. Salix cordata angustata (Pursh) Anders.
1413. Thalictrum purpurascens L.
1414. Cornus stolonifera Mx.
1415. Ribes floridum L'Her.
1416. Rhus radicans toxicodendron (L.) Pers.
1417. Amorpha canescens Pursh
1418. Galium trifidum L.

Norway, Thomas County, June 23.

1419. Astragalus lotiflorus Nuttallianus DC.
1420. Acerates viridiflora (Nutt.) Dec.
1421. Potamogeton lonchites Tuckerm.
1422. Verbena stricta Vent.
1423. Acerates viridiflora linearis Gray.
1424. Acerates viridiflora (Raf.) Ell.
1425. Typha latifolia L.

Dismal River, Thomas County, June 27.

1426. Calamagrostis neglecta (Ehrh.) Gaertn.
1427. Scirpus atrovirens pallidus Britton.
1428. Juniperus virginiana L.
1429. Cryptanthe fendleri (Gray) Greene.
1430. Croton texensis (Klotzsch) Muell.
1431. Anemone cylindrica Gray.
1432. Lygodesmia juncea (Pursh) Don.
1433. Allionia hirsuta Pursh.
1434. Agropyron repens glaucum (Desf.) Scribner
1435. Cornus stolonifera Mx.
1436. Eleocharis palustris glaucescens (Willd.) Gray.
1437. Galium aparine L.
1438. Agrostis hiemalis (Walt.) B. S. P.
1439. Potamogeton interruptus Kitaibel.
1440. Potamogeton amplifolius Tuckerm.
1441. Juncus nodosus L.

Dismal River, Thomas County, June 28.

1442. Symphoricarpos occidentalis Hook.
1443. Rhus glabra L.
1444. Thelesperma gracile (Torr.) Gray.
1445. Lepachys columnaris pulcherrima (Don) Torr. & Gr.
1446. Eriophorum gracile Koch.
1447. Opuntia humifusa Raf.

Dismal River, Thomas County, June 29.

1448. Vitis vulpina L.
1449. Andropogon hallii Hack.
1450. Chenopodium fremontii Wats.

Plummer Ford, Dismal River, Thomas County, July 3.

1451. Erigeron ramosum beyrichii (Fisch. & Mey.) Smith & Pound.
1452. Cystopteris fragilis (L.) Bernh.
1453. Celastrus scandens L.
1454. Erysimum cheiranthoides L.
1455. Smilax herbacea L.
1456. Geum canadense Jacq.
1457. Campanula aparinoides Pursh.
1458. Geum macrophyllum Willd.
1459. Panicularia aquatica (L.) Kuntze.
1460. Gaura parviflora Dougl.
1461. Carex laxiflora varians Bailey.
1462. Sanicula canadensis L.
1463. Circæa lutetiana L.
1464. Juncus tenuis Willd.
1465. Rubus occidentalis L.
1466. Vitis vulpina L.
1467. Botrychium virginianum (L.) Swartz.

1468. Lythrum alarum Pursh.
1469. Potentilla monspeliensis L.
1470. Rudbeckia hirta L.
1471. Lychnis drummondii (Hook.) Wats.
1472. Kuhnistera purpurea (Vent.) MacMillan.
1473. Parietaria pensylvanica Muhl.
1474. Potentilla pumila Pursh.
1475. Lappula deflexa amer[illegible]) Greene.
1476. Elymus striatus Willd.
1477. Elymus canadensis L.
1478. Carex longirostris Torr.; Schwein.
1479. Woodsia oregana Eaton.
1480. Kuhnistera candida occidentalis Rydberg.
1481. Fragaria vesca americana Porter.
1482. Oryzopsis micrantha (Trin. & Rupr.) Thurber.

Plummer Ford, Dismal River, Thomas County, July 4.

1483. Polygonatum biflorum (Walt.) Ell.
1484. Dryopteris spinulosa (Retz.) Kuntze.
1485. Eleocharis palustris (L.) Roem. & Schult.
1486. Eatonia obtusata (Mx.) Gray.
1487. Juncus tenuis Willd.
1488. Alopecurus geniculatus fulvus (Smith) Scribner.
1489. Agrostis hiemalis (Walt.) B. S. P.
1490. Scutellaria galericulata L.
1491. Cicuta virosa maculata (L.) Coult. & Rose.
1492. Agrostis exarata Trin.
1493. Panicum scoparium Lam.
1494. Calamagrostis neglecta (Ehrh.) Gærtn.
1495. Agrimonia striata Mx.

Plummer Ford, Dismal River, Thomas County, July 5.

1496. Allionia nyctaginea Mx.
1497. Berula erecta (Huds.) Coville.
1498. Salix cordata Muhl.
1499. Boutelona curtipendula (Mx.) Torr.
1500. Asclepias arenaria Torr.
1501. Opuntia polyacantha Haw.
1502. Collomia linearis Nutt.
1503. Lem[illegible] gibba L.
1504. Eu[illegible]orbia geyeri Engelm.
1505. Lacinaria squarrosa (L.) Hill.
1506. Pentstemon haydeni Wats.
1507. Lactuca ludoviciana (Nutt.) DC.
1508. Arabis glabra (L.) Bernh.
1509. Allionia hirsuta Pursh.
1510. Œnothera rhombipetala Nutt.

Plummer Ford, Dismal River, Thomas County, July 8.

1511. Ipomœa leptophylla Torr.
1512. Kuhnistera candida multiflora (Nutt.) Rydberg.
1513. Acnida tuberculata Moq.
1514. Oreocarya suffruticosa (Torr.) Greene.

Forks of Dismal River, Hooker County, July 11.

1515. Verbena hastata L.
1516. Agropyron tenerum Vasey.
1517. Berula erecta (Huds.) Coville.
1518. Asclepias incarnata L.
1519. Galium triflorum Mx.
1520. Urtica gracilis Ait.
1521. Polygonum convolvulus L.
1522. Eragrostis major Host.
1523. Ribes gracile Mx.
1524. Chenopodium album L.
1525. Chenopodium hybridum L.
1526. Opuntia polyacantha Haw.
1527. Euphorbia glyptosperma Engelm.
1528. Crataegus coccinea L.

Forks of Dismal River, Hooker County, July 12.

1529. Physma leptostachya L.
1530. Dryopteris cristata (L.) Gray.
1531. Monarda fistulosa L.
1532. Asclepias syriaca L.
1533. Sagittaria latifolia Willd.
1534. Munroa squarrosa (Nutt.) Torr.
1535. Polygonum aviculare L.
1536. Erigeron bellidiastrum Nutt.
1537. Astragulus caroliniamus L.

Forks of Dismal River, Hooker County, July 13.

1538. Panicum capillare L.
1539. Humulus lupulus L.
1540. Ulmus americana L.
1541. Ulmus americana L.
1542. Chenopodium album L.
1543. Elymus canadensis L.
1544. Œnothera pallida latifolia Rydberg.
1545. Euphorbia hexagona Nutt.
1546. Agrostis alba L.
1547. Astragalus lotiflorus Hook.

Middle Loup, north of Mullen, Hooker County, July 17.

1548. Cenchrus tribuloides L.
1549. Sporobolus cryptandrus robustus Vasey.
1550. Oryzopsis membranacea (Pursh) Vasey.
1551. Muhlenbergia pungens Thurb.
1552. Boutelona hirsuta Lag.
1553. Elymus virginicus L.
1554. Hymenopappus filifolius Hook.
1555. Lactuca ludoviciana (Nutt.) DC.
1556. Epilobium adenocaulon Hausk.
1557. Calamagrostis neglecta (Ehrh.) Gartn
1558. Urtica gracilis Ait.
1559. Ranunculus pennsylvanicus L. f.
1560. Koellia lanceolata (Willd.) Kuntze.
1561. Panicum virgatum L.
1562. Sagittaria latifolia Willd.
1563. Sagittaria latifolia Willd.

Middle Loup, north of Mullen, Hooker County, July 18.

1564. Verbena hastata × stricta Rydberg.
1565. Meibomia canadensis (L.) Kuntze.
1566. Portulaca oleracea L.
1567. Fagopyrum fagopyrum (L.) Karst.
1568. Chamaeraphis viridis (L.) Porter.
1569. Eragrostis tenuis (Ell.) Gray.
1570. Lactuca pulchella (Pursh) DC.
1571. Polygonum lapathifolium L.
1572. Rumex persicarioides L.
1573. Œnothera biennis parviflora (L.) Torr. & Gr.
1574. Boutelona oligostachya (Nutt.) Torr.
1575. Juncus torreyi Coville.

1576. Epilobium adenocaulon Hausk.
1577. Spartina cynosuroides (L.) Willd.
1578. Œnothera biennis L.
1579. Polygonum ramosissimum Mx.

Middle Loup, north of Mullen, Hooker County, July 19.

1580. Eriogonum annuum Nutt.
1581. Salix cordata vestita Anders.
1582. Paspalum setaceum ciliatifolium (Mx.) Vasey.
1583. Redfieldia flexuosa (Thurb.) Vasey.
1584. Lygodesmia rostrata Gray.
1585. Cycloloma atriplicifolium (Spreng.) Coulter.
1586. Œnothera pallida Lindl.

Middle Loup, north of Mullen, Hooker County, July 20.

1587. Cleome serrulata Pursh.
1588. Eragrostis major Host.

Middle Loup, north of Mullen, Hooker County, July 24.

1589. Kuhnistera villosa (Nutt.) Kuntze.
1590. Panicum crus-galli L.
1591. Polygonum pennsylvanicum L.
1592. Lotus americanus (Nutt.) Bisch.
1593. Salsola kali tragus (L.) Moq.
1594. Fœlichia floridana (Nutt.) Moq.
1595. Andropogon hallii muticus Hack.
1596. Andropogon hallii Hack.
1597. Panicum virgatum L.
1598. Stipa viridula Trin.
1599. Cyperus aristatus Rottb.

Forks of Middle Loup, Hooker County, July 26.

1600. Elymus canadensis L.
1601. Ribes aureum Pursh.
1602. Polygonum punctatum leptostachyum (Meisn.) Small.
1603. Epilobium lineare Muhl.
1604. Panicum scoparium Lam.

Forks of Middle Loup, Hooker County, July 27.

1605. Gilia longiflora (Torr.) Don.
1606. Rosa fendleri Crepin.
1607. Andropogon hallii Hack.
1608. Geum canadense Jacq.
1609. Adicea pumila (L.) Raf.
1610. Teucrium occidentale Gray.
1611. Potentilla pennsylvanica strigosa Pursh.

Headwaters of South Fork of Middle Loup, northeast of Whitman, Grant County, July 29.

1612. Scirpus fluviatilis (Torr.) Gray.
1613. Polygonum emersum (Mx.) Britton.
1614. Amaranthus albus L.
1615. Sium cicutæfolium Gmel.
1616. Alisma plantago L.
1617. Agropyron caninum (L.) Roem & Schult.
1618. Andropogon provincialis Lam.
1619. Agropyron violaceum majus Vasey.
1620. Calamagrostis canadensis (Mx.) Beauv.
1621. Phalaris arundinacea L.
1622. Carex trichocarpa aristata (R. Br.) Bailey.
1623. Distichlis spicata stricta (Torr.) Scribner.
1624. Beckmannia eruciformis (L.) Host.
1625. Elymus macounii Vasey.
1626. Koripa obtusa (Nutt.) Britton.
1627. Helianthus scaberrimus Ell.

Headwaters of South Fork of Middle Loup, northeast of Whitman, Grant County, July 31.

1628. Mentha canadensis L.
1629. Polygonum lapathifolium L.
1630. Zizania aquatica L.
1631. Phragmites phragmites (L.) Karst.
1632. Solidago missouriensis Nutt.
1633. Chrysopsis villosa (Pursh) Nutt.

Headwaters of South Fork of Middle Loup, northeast of Whitman, Grant County, August 1.

1634. Cuscuta indecora pulcherrima (Scheele) Engelm.
1635. Helianthus petiolaris patens (Lehm.) Rydberg.
1636. Kuhnia glutinosa Ell.
1637. Lobelia spicata hirtella Gray.
1638. Andropogon nutans avenaceum (Mx.) Hack.
1639. Cuscuta cuspidata Engelm.

Camp, 15 miles south of Whitman, August 3.

1640. Helianthus maximiliani Schrad.
1641. Lycopus virginicus L.
1642. Bidens trichosperma tenuiloba (Gray) Britton.
1643. Panicum crus-galli L.
1644. Homalocenchrus oryzoides (L.) Poll.

Haney's ranch, August 4.

1645. Hippuris vulgaris L.
1646. Carex pseudo-cyperus L.

Haney's ranch, August 5.

1647. Corispermum hyssopifolium L.
1648. Solidago serotina Ait.

Swan Lake, August 7.

1649. Polygonum hartwrightii Gray.
1650. Nymphæa advena Soland.
1651. Myriophyllum spicatum L.
1652. Potamogeton natans L.
1653. Polygonum amphibium L.

Cody's Lakes, August 9.

1654. Cyperus strigosus L.
1655. Lycopus sinuatus Ell.
1656. Hypericum canadense L.
1657. Sporobolus asperifolius (Nees. & Meyen.) Thurber.
1658. Lycopus lucidus Turcz.
1659. Potamogeton pectinatus L.
1660. Naias flexilis (Willd.) Rostk. & Schmidt.
1661. Zanichellia palustris L.
1662. Solidago canadensis gilvocanescens Rydberg.
1663. Solidago nemoralis Ait.
1664. Cristatella jamesii Torr. & Gr.
1665. Andropogon scoparius Mx.

Cody's Lakes, August 10.

1666. Solidago rigida L.
1667. Ambrosia artemisiæfolia L.
1668. Ambrosia psilostachya DC.
1669. Helianthus giganteus L.
1670. Rumex britannica L.

1671. Gerardia tennifolia Vahl.
1672. Polygonum punctatum leptostachyum (Meisn.) Small.
1673. Helianthus maximiliani Schrad.
1674. Acnida tuberculata Moq.
1675. Xanthium canadense Mill.

South Dismal River, August 11.

1676. Helianthus annuus L.
1677. Senecio douglasii DC.
1678. Erigeron canadensis L.
1679. Polygonum scandens L.
1680. Lobelia syphilitica L.

South Dismal River, August 12.

1681. Impatiens biflora Walt.
1682. Eupatorium purpureum L.
1683. Eupatorium perfoliatum L.
1684. Dryopteris thelypteris (L.) Gray.
1685. Carduus altissimus L.
1686. Muhlenbergia mexicana (L.) Trin.
1687. Phaseolus pauciflorus Benth.

South Dismal River, August 14.

1688. Cuscuta coryli Engelm.
1689. Mentzelia nuda (Pursh) Torr. & Gray.
1690. Helenium autumnale L.
1691. Scutellaria lateriflora L.
1692. Meibomia canadensis (L.) Kuntze.
1693. Prunus americana Marsh.

Mullen, Hooker County, August 17.

1694. Cuscuta indecora pulcherrima (Scheele) Engelm.
1695. Amaranthus blitoides Wats.
1696. Bidens lævis (L.) B. S. P.
1697. Sporobolus cryptandrus (Torr.) Gray.
1698. Sieglingia pupurea (Walt.) Kuntze.

Thedford, Thomas County, August 19.

1699. Erigeron canadensis L.
1700. Asclepias verticillata pumila Gray.
1701. Aster junceus Ait.
1702. Lycopus lucidus Turcz.
1703. Elodes virginica (L.) Nutt.
1704. Muhlenbergia mexicana (L.) Trin.
1705. Sporobolus cryptandrus (Torr.) Gray.
1706. Lacinaria punctata (Hook.) Kuntze.
1707. Bidens frondosa L.
1708. Polygonum sagittatum L.
1709. Muhlenbergia racemosa (Mx.) B. S. P.
1710. Schedonnardus paniculatus (Nutt.) Trelease.
1711. Eragrostis pectinacea (Mx.) Steudel.
1712. Fimbristylis castanea (Mx.) Vahl.
1713. Leptochloa fascicularis (Lam.) Gray.

Plummer Ford, Thomas County, August 22.

1714. Apios apios (L.) MacMillan.
1715. Falcata pitcheri (Torr. & Gr.) Kuntze.
1716. Verbena urticifolia L.
1717. Clematis ligusticifolia Nutt.
1718. Cyperus diandrus Torr.

Plummer Ford, Thomas County, August 23.

1719. Gyrostachys cernua (L.) Kuntze.
1720. Cardamine hirsuta L.
1721. Aster canescens Pursh.

Plummer Ford, Thomas County, August 24.

1722. Equisetum robustum A. Br.
1723. Lemna perpusilla Torr.
1724. Carduus altissimus L.

Thedford, Thomas County, August 26.

1725. Artemisia gnaphalodes Nutt.
1726. Melilotus alba Desr.
1727. Datura tatula L.

Plummer Ford, August 24.

1728. Azolla caroliniana Willd.

Thedford, Thomas County, August 26.

1729. Raphanus sativus L.
1730. Artemisia canadensis Mx.
1731. Aster multiflorus Ait.
1732. Talinum teretifolium Pursh.

Thedford, Thomas County, September 7.

1733. Artemisia frigida Willd.
1734.
1735. Aster novæ-angliæ L.
1736. Gentiana andrewsii Griseb.
1737. Cicuta bulbifera L.
1738. Euthamia graminifolia (L.) Nutt.
1739. Aster salicifolius subasper (Lindl.) Gray.
1740. Iva xanthifolia Nutt.

Thedford, Thomas County, September 9.

1741. Sporobolus filiformis (Thurb.) Rydberg
1742. Euphorbia glyptosperma Engelm.
1743. Aster oblongifolius rigidus Gray.
1744. Euphorbia petaloidea Engelm.

Halsey and Natick, Thomas County, September 11.

1745. Bœhmeria cylindrica (L.) Willd.
1746. Lespedeza capitata sericea Hook.
1747. Cyperus houghtonii Torr.
1748. Aster umbellatus pubens Gray.
1749. Falcata comosa (L.) Kuntze.
1750. Solidago missouriensis Nutt.
1751. Solidago nemoralis Ait.
1752. Aster multiflorus strictieaulis Torr. & Gray.
1753. Euphorbia geyeri Engelm.
1754. Aster multiflorus incano-pilosus (Lindl.) Rydberg.

Thedford, Thomas County, September 12.

1755. Lactuca canadensis L.
1756. Muhlenbergia mexicana (L.) Trin.
1757. Solidago canadensis L.
1758. Solanum rostratum Dunal.
1759. Sporobolus filiformis (Thurb.) Rydberg.
1760. Grindelia squarrosa (Pursh) Dunal.

Thedford, Thomas County, September 13.

1761. Lacinaria punctata (Hook.) Kuntze.
1762. Muhlenbergia racemosa (Mx.) B. S. P.
1763. Polygonum camporum Meisn.
1764. Muhlenbergia mexicana (L.) Trin.

Mullen, Hooker County, September 14.

1765. Aster multiflorus incano-pilosus (Lindl.) Rydberg.
1766. Chrysopsis villosa (Pursh) Nutt.
1767. Helianthus grosse-serratus Martens.

1768. Polygonum ramosissimum Mx. (form).
1769. Polygonum ramosissimum Mx.
1770. Solidago mollis Bartl.

Mullen, Hooker County, September 15.

1771. Polygonum litorale Link.
1772. Polygonum aviculare L.
1773. Mollugo verticillata L.
1774. Eragrostis caroliniana (Spreng.) Scribner.
1775. Bromus ciliatus porteri Rydberg.
1776. Prunus americana Marsh.

Seneca, Thomas County, September 16.

1777. Gaura biennis L.

Whitman, Grant County, September 19.

1778. Acnida tuberculata Moq.
1779. Artemisia biennis L.
1780. Aster oblongifolius Nutt.
1781. Chrysopsis villosa (Pursh) Nutt.
1782. Chenopodium rubrum L.
1783. Iva xanthifolia Nutt.
1784. Myriophyllum spicatum L.
1785. Myriophyllum spicatum L.
1786. Naias guadalupensis (Spreng.) Morong.
1787. Roripa palustris hispida (Desv.) Rydberg.
1788. Panicum capillare L.
1789. Ranunculus sp.
1790. (?) Urtica dioica L.

Whitman, Grant County, September 20.

1791. Chenopodium rubrum L.
1792. Potomogeton perfoliatus L.
1793. Polygonum hartwrightii Gray.
1794. Polygonum lapathifolium L.
1795. Scolochloa festucacea (Willd.) Link

The following did not receive any number in the field, but were numbered afterwards:

1796. Agropyron repens glaucum (Desf.) Scribner, June 16.
1797. (?) Carex rigida goodenovii (Gay) Bailey, June 22.
1798. Amaranthus retroflexus L., July 18.
1799. Allionia hirsuta Pursh, July 18.
1800. Agrostis exarata Trin., July 17.
1801. Equisetum variegatum Schleich., July 17.
1802. Andropogon hallii flaveolus Hack., July 24.
1803. Bouteloua oligostachya (Nutt.) Torr., July 24.
1804. Calamovilfa longifolia (Hook.) Hack., July 22.
1805. Carex marcida Boott, July 24.
1806. Elymus canadensis L., July 22.
1807. Eatonia obtusata robusta Vasey, July 17.
1808. Physalis heterophylla Nees, July 23.
1809. Sagittaria arifolia Nutt., July 26.
1810. Allionia hirsuta Pursh, July 27.
1811. Sagittaria arifolia Nutt., July 27.
1812. Sagittaria latifola Willd., July 27.
1813. Andropogon provincialis pycnanthus Hack., July 31.
1814. Distichlis spicata stricta (Torr.) Scribner, July 31.
1815. Galium trifidum latifolium Torr., July 31.
1816. Carex filiformis lanuginosa (Mx.) B. S. P., Aug. 4.
1817. Juncus torreyi Coville, Aug. 4.
1818. Lobelia spicata hirtella Gray. Aug. 1.
1819. Potentilla pentandra, Engelm., Aug. 4.
1820. Polygonum ramosissimum Michx., Aug. 4.
1821. Urtica gracilis Ait., Aug. 4.
1822. Polygonum emersum (Mx.) Britton, Aug. 7.
1823. Ceratophyllum demersum L., Aug. 7.
1824. Ambrosia psilostachya DC., Aug. 10.
1825. Helianthus sp., Aug. 10.
1826. Hypericum canadense majus Gray, Aug. 11.
1827. Juncus marginatus Rostk., Aug. 9.
1828. Naias flexilis (Willd.) Rostk. & Schmidt, Aug. 11.
1829. Eragrostis tenuis (Ell.) Gray, Aug. 10.
1830. Lycopus virginicus L., Aug. 17.
1831. Eragrostis tenuis (Ell.) Gray, Aug. 22.
1832. Eragrostis tenuis (Ell.) Gray, Aug. 23.
1833. Euphorbia serpyllifolia Pers., Sept. 15.
1834. Aster canescens viscosus Gray, Sept. 18.
1835. Chenopodium leptophyllum Nutt., July 17.
1836. Chenopodium leptophyllum oblongifolium Wats., July 24.
1837. Draba caroliniana micrantha (Nutt.) Gray, June 15.
1838. Fraelichia floridana (Nutt.) Moq., Aug. 21.
1839. Fraxinus pennsylvanica Marsh., June 21.
1840. Galium trifidum L., June 26.
1841. Juncus tenuis Willd., July 18.
1842. Agrostis exarata Trin., July 3.
1843. Œnothera pallida latifolia Rydberg, July 17.
1844. Koeleria nitida Nutt., Sept. 9.
1845. Juncus tenuis Willd., July 3.
1846. Potamogeton lonchites Tuckerm., June 27.
1847. Aristida basiramea Engelm., July —.
1848. Rosa fendleri, Crepin, June 20 and 27.
1849. Rosa fendleri Crepin, Aug. 17.
1850. Kuhnistera candida multiflora (Nutt.) Rydberg, July 17.
1851. Geum strictum Ait. (form), July 17.