
EXPLORATIONS IN NEBRASKA AND DAKOTA.

CATALOGUE OF THE COLLECTIONS

IN

GEOLOGY AND NATURAL HISTORY,

OBTAINED BY

THE EXPEDITION UNDER COMMAND OF LIEUT. G. K. WARREN,
TOPOGRAPHICAL ENGINEERS,

BY

F. V. HAYDEN, M. D.

WASHINGTON, D. C., November 28, 1858.

SIR: In compliance with your request I have prepared a catalogue of the collections in geology and natural history, obtained in Nebraska and portions of Kansas, during several expeditions to those Territories under your command.

The list cannot be made out at this time as complete as could be desired, but it will be at once evident to all that the amount of new and valuable material thus secured, will, when properly studied and illustrated, form a large and positive addition to science. Of the fossil *Mollusca* collected, most of the new species have been indicated in scientific journals by my associate, Mr. Meek, and myself, and about seven hundred figures prepared, making, when arranged for the engraver, about fifty quarto plates. The fossil plants from Cretaceous formation No. 1 will also be included in the volume, and consist of eighteen species, all of which are supposed to be new to science. The fossil plants of the Tertiary era, of which there is a large series, remarkably well preserved and of great beauty, have not yet been studied to any extent. We simply know that they comprise about fifty species, all of which are supposed to be new, and would alone form a good-sized quarto volume. Descriptions and suitable illustrations of these plants will be made during the winter or spring.

The fossil *Mollusca* are arranged in their stratigraphical order, thus bringing at once before the geologist the characteristic fossils of each formation known in the Northwest, from the Carboniferous to the Tertiary, inclusive. The work will thus form a standard of reference for those who may wish to study the geology of the West, and will enable the explorer, even though but moderately versed in the science, to determine the age of the formations over which he may be traveling.

The fossil *Vertebrata*, which are very numerous in species, a large proportion of which were entirely new to science, have been placed in the hands of Dr. Leidy, the great comparative anatomist of Philadelphia, who informs us that the drawings are nearly ready for the engraver.

The following is a list of the memoirs already published in the transactions of scientific societies on the geology and paleontology of Nebraska and Kansas, by F. B. Meek and F. V. Hayden:

1. Descriptions of sixty-three new species of *Acephala*, *Gasteropoda*, and *Cephalopoda*, from the Cretaceous formation of Nebraska Territory.—(Proceedings of the Academy of Natural Sciences Philadelphia, March, 1856, p. 16.)

2. Descriptions of new species of *Acephala* and *Gasteropoda* from the Tertiary formations of Nebraska Territory, with some general remarks on the geology of the country about the sources of the Missouri River.—(Proc. Acad. Nat. Sci. Pa., June, 1856, p. 16.)

3. Descriptions of new fossil species of *Mollusca*, collected by Dr. F. V. Hayden in Nebraska Territory, together with a complete catalogue of all the remains of *Invertebrata* hitherto described and identified from the Cretaceous and Tertiary formations of that region.—(Proc. Acad. Nat. Sci. Pa., November, 1856, p. 22.)

4. Descriptions of new species and genera of fossils collected by Dr. F. V. Hayden in Nebraska Territory, under the direction of Lieut. G. K. Warren, United States Topographical Engineers, with some remarks on the Tertiary and Cretaceous formations of the Northwest, and the parallelism of the latter with those of other portions of the United States and

Territories. Communicated by permission of the Secretary of War.—(Proc. Acad. Nat. Sci. Pa., May, 1857, p. 34.)

5. Descriptions of new organic remains from Northeastern Kansas, indicating the existence of Permian rocks in that Territory.—(Transactions of the Albany Institute, Vol. IV—read March 2, 1858.)

6. Descriptions of new organic remains collected in Nebraska Territory in the year 1857, by Dr. F. V. Hayden, geologist to the exploring expedition under the command of Lieut. G. K. Warren, Topographical Engineers, United States Army, together with some remarks on the geology of the Black Hills and portions of the surrounding country.—(Proc. Acad. Nat. Sci. Pa., March, 1858, p. 19.)

By F. V. HAYDEN:

7. Notes explanatory of a map and section, illustrating the geological structure of the country bordering on the Missouri River, from the mouth of the Platte to Fort Benton, in latitude $47^{\circ} 30'$ N., longitude $110^{\circ} 30'$ W.—(Proc. Acad. Nat. Sci. Pa., May, 1857, p. 10.)

8. Notes on the geology of the Mauvaises Terres of White River.—(Proc. Acad. Nat. Sci. Pa., June, 1857, p. 8.)

9. Explanations of a second edition of a geological map of Nebraska and Kansas, based upon information obtained during an expedition to the Black Hills, under the command of Lieut. G. K. Warren, Topographical Engineers, United States Army.—(Proc. Acad. Nat. Sci. Pa., June, 1868, p. 22.)

Dr. Leidy's descriptions of the new *Vertebrata*, collected from time to time, are distributed through various numbers of the Proceedings of the Philadelphia Academy for the years 1856, 1857, and 1858. The principal paper was published in March last, and bears the following title: "Notice of remains of extinct *Vertebrata* from the valley of the Niobrara River, collected by Dr. F. V. Hayden, geologist to the expedition under the command of Lieut. G. K. Warren, Topographical Engineers, United States Army, by Joseph Leidy, M. D."

The details of the geology of the regions explored will be reserved for your final report.

The following is the number of species comprised in the collection from each department of natural history as far as they have been studied, up to this time. The catalogue includes none of the insects, of which there are many species, nor the cryptogamic plants, which have not yet been identified:

Number of species of fossil <i>Vertebrata</i>	77
Number of species of fossil <i>Mollusca</i>	251
Number of fossil plants	70
Number of minerals and geological specimens	423
Number of species of recent mammals	47
Number of species of birds	186
Number of species of recent <i>Mollusca</i>	65
Number of species of fishes	24
Number of species of reptiles	28
Number of species of recent plants	1, 500

Of the fossil *Mollusca* named in this catalogue, 186 species were new to science; upwards of 50 of the *Vertebrata* and all the fossil plants are supposed to be new. A number of rare or entirely new species were discovered in all departments of natural history. The specimens are now deposited in the museum of the Smithsonian Institution, and in

behalf of the expedition I would return my grateful thanks to the distinguished Secretary of that institution for the numerous facilities he has very kindly afforded for their investigation.

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GEOLOGY AND PALEONTOLOGY.

In order to render this catalogue something more than a mere list of species, I have attempted to present a summary of the geological formations, as far as they are at present known, in Kansas and Nebraska. This will render more clear the geological relations of the fossils from the Potsdam sandstone to the Pliocene Tertiary.

The rocks of Nebraska, as far as they are at present known, are referrible to the following geological systems:

1. Metamorphosed azoic rocks, including coarse granite.
2. Lower Silurian. (Potsdam sandstone.)
3. Devonian.
4. Carboniferous.
5. Permian.
6. Jurassic.
7. Cretaceous, Upper, Middle, and Lower, (including Wealden?)
8. Tertiary.
9. Post Pliocene or Quaternary.

Passing over the granitic and azoic rocks, we find that the Potsdam sandstone, or the lowest member of the Silurian period, is quite well developed in the Black Hills. It is there brought to the surface by the upheaval of the igneous rocks, and forms a narrow belt around the most elevated portion of the Black Hills. This formation, though well known and studied in many parts of the United States, had not been discovered in the region of the Rocky Mountains prior to Lieutenant Warren's exploration of the Black Hills, during the summer of 1857. So far as is yet understood, this member of the geological series has revealed the first indications of organic life on our planet. The following species of fossils, belonging to what Barrande, the great paleontologist of Bohemia, has called the "Primordial Fauna," have been identified from the Potsdam sandstone of the Black Hills and suitable illustrations prepared: *Lingula antiqua*, (Hall;) a species of *Lingula* very similar to *L. prima*, (Conrad,) occurs in vast numbers, forming layers several inches in thickness; a species of *Obolus*, very closely allied to *O. oppolinus*, as figured by Muchison and De Verneuil in their work on the geology of Russia, and fragments of a trilobite, apparently identical with one of the forms figured by Dr. Owen from the Potsdam sandstone of Minnesota.

The discovery of this formation in the far West is a matter of the highest geological interest, and its existence in the Black Hills being now well established, we may look for its discovery in many other parts of the West, and it will undoubtedly be found holding a similar position all along the eastern slope of the Rocky Mountains.

No well-marked fossils have yet been obtained from the supposed Devonian period in Kansas or Nebraska, and its existence there is, with our present evidence, quite problematical.

A large collection of fossils was secured from the Carboniferous group, in the Black Hills, near the Laramie range of mountains, in the south-eastern portion of Nebraska and in various parts of Kansas. A large and fine collection of Carboniferous and Permian fossils were collected by Mr. F. B. Meek and the writer, in Kansas, during the past summer. These fossils are now being investigated at the Smithsonian Institution. I will therefore omit a catalogue of the Carboniferous fossils until our results are more complete. The organic remains from all the localities above mentioned, as well as from many other parts of the West and South-west, have several species in common, and the others are of the same types; so that the evidence seems to be conclusive that these limestones are all of the same geological age, and belong to the true Coal-Measures.

One of the most interesting series of rocks in the West are best developed in Kansas, but most probably exist near the Black Hills also. These rocks were at first supposed to be the American representatives of the Permian group of Europe; but much more study will be required to give them their exact position in the geological scale. A large collection of fossils from these rocks has been studied with considerable care by Mr. Meek and the writer, and they seem to warrant the conclusion that by far the greater portion of the strata of the so-called Permian in the West hold an intermediate position between the Carboniferous and the Permian of the Old World. A thorough and clear solution of this problem becomes, therefore, the most interesting feature in American geology at the present time.*

The following species, most of which are of Permian types, have been described by Mr. Meek and the writer, and published in the Transactions of the Albany Institute. The larger part of them were obtained by Mr. Hawn and Dr. Cooper in Kansas, and the remainder were collected by the writer in Nebraska, opposite the northern boundary of the State of Missouri, and in the Black Hills, while attached to Lieutenant Warren's party:

1. *Monotis Hawni*, Meek and Hayden.
2. *Myalina (Mytilus) perattenuatus*, Meek and Hayden.
3. *Bakevellia parva*, Meek and Hayden.
4. *Edmdonia? Calhouni*, Meek and Hayden.
5. *Pleurophorus? occidentalis*, Meek and Hayden.
6. *Pleurophorus (Cardinia) subcuneata*, Meek and Hayden.
7. *Lyonsia (Panopaea) concava*, Meek and Hayden.
8. *Panopaea Cooperi*, Meek and Hayden.
9. *Nautilus eccentricus*, Meek and Hayden.
10. *Leda (Nucula) subscitula*, Meek and Hayden.

A fine series of fossils, which we have supposed to be of Jurassic age, were obtained from the Black Hills during the summer of 1857. None of the species, so far as examined, seem to be positively identical with those found in the Jura of Europe, but they all belong to the same genera, and many of the species are closely allied to forms which are characteristic of that period in the Old World. In order to render more clear our opinion that these fossils are Jurassic, I will repeat, in connection with the names of each species, the evidence derived from the study of the fossils, which has already been published by Mr. Meek and myself, in March, 1858:

* The upper portion of the so-called Permian in Kansas seems to be destitute of true Carboniferous fossils, but contains an abundance of those belonging to Permian types. We are therefore of the opinion that the upper two or three hundred feet of these rocks are probably on a parallel with the Permian of Europe, and that the intermediate group which we have mentioned fills up the hiatus between the Carboniferous and Permian of the Old World.

1. *Lingula brevirostris*, Meek and Hayden.
2. *Aricula (Monotis) tenuicostata*, M. and H., a closely-allied representative of the Liassic species *Monotis sustriata*, Munster.
3. *Mytilus pertenuis*, M. and H.
4. *Arca (Cucullea) inornata*, M. and H. Very similar to *C. Munsteri* (Leiten) from the Lias.
5. *Panopæa (Myacites) subelliptica*, M. and H. Very similar to the Liassic forms, *M. liassensis* and *M. Alduininus* of Quensted.
6. *Ammonites cordiformis*, M. and H., may be regarded as the American representative of the European Liassic species, *A. cordatus* of Sow-erby.
7. *Ammonites Henryi*, M. and H.
8. *Bêlemnites densus*, M. and H. This species is so closely allied to the oolitic *B. eccentricus*, Blainville, that we are in great doubt whether it is really distinct. It is also allied to the *B. panderianus* of d'Orbigny, from the Lower Oolite.
9. *Pentacrinus asteriscus*, M. and H., so closely resembles the *P. scalaris*, Golfuss, that it was with considerable hesitation that it was described as new.

From the above evidence we think we may safely consider the group of rocks from which the fossils were collected as the American representative of the Jurassic rocks of the Old World. We have still in the collection several undescribed species, which are all of Jurassic types.

There is, also, at the base of No. 1, in the Black Hills, a fresh-water deposit, which we are in doubt whether to place with the Jurassic or Lower Cretaceous. The fossils are a species of *Unio* (*U. nucalis*, Meek and Hayden,) and a small *Planorbis*.

Near the mouth of the Judith River, on the Missouri, is a most interesting series of strata, deposited in a basin-like depression in Cretaceous formation, No. 1. These beds are composed of sand, sandstone, clays, and very impure lignite, with remains of fresh-water, land, and a few estuary shells; also, remains of saurians, turtles, fishes, &c. The exact age of this deposit has not yet been determined, the *Mollusca* pointing to the conclusion that it belongs to the Tertiary period, while the *Vertebrata* are considered by Dr. Leidy to belong to Wealden types, and allied to those forms discovered by Dr. Mantell in the Wealden strata of England. With evidence so conflicting before us, it will be necessary to make a second exploration of that region before we can come to any positive conclusion as to its age. The following section, in descending order, will represent the different beds with sufficient accuracy and detail for our present purpose :

5 N D

Section of fresh-water and estuary deposits near the mouth of Judith River.

A.	80 feet...	Yellow arenaceous marl passing downwards into gray grit, with small seams of lignite; contains great numbers of <i>Ostrea subtrigonalis</i> ?, <i>Cyrena occidentalis</i> , <i>Melania convexa</i> , &c.
B.	10 feet...	Impure lignite, containing much sand. <i>Ostrea subtrigonalis</i> ? and silicified wood.
C.	80 feet...	Alternations of sand and clay, with particles of lignite; also reddish argillaceous concretions with a few saurian teeth, and fresh-water shells.
D.	20 feet...	Alternate strata of sand and clay, with impure lignite and silicified wood in a good state of preservation.
E.	100 feet...	Variable bed, consisting of alternations of sand and clay with large concretions containing great numbers of <i>Melania</i> , <i>Paludina</i> , <i>Helix</i> , <i>Planorbis</i> , <i>Cyclas</i> , &c., associated with saurian remains resembling the <i>Iguanodon</i> and <i>Megalosaurus</i> , <i>Trionyx</i> , &c.
F.	25 feet...	Alternations of impure lignite and yellowish-brown clay, the latter containing great numbers of <i>Unio</i> , <i>Paludina</i> , <i>Melania</i> , <i>Cyclas</i> , and the fresh remains referred by Dr. Leidy to the genus <i>Lepidotus</i> .
G.	100 feet...	Ferruginous sand and clay, having in upper part a seam three or four inches in thickness, nearly made up of shells of <i>Unio</i> . Lower part ferruginous and coarse gray grit, with a seam near the base entirely composed of remains of <i>Unio Danai</i> , <i>U. Dewyi</i> , and <i>U. subspatulata</i> .

Table showing the stratigraphical position of the fossils from the "Bad Lands" of the Judith.

	A.	B.	C.	D.	E.	F.	G.
VERTEBRATA.							
1. <i>Paleoscincus costatus</i> , Leidy					*		
2. <i>Trachodon mirabilis</i> , Leidy				*	*		
3. <i>Troodon formosus</i> , Leidy				*	*		
4. <i>Deinodon horridus</i> , Leidy				*	*		
5. <i>Crocodylus humilis</i> , Leidy				*	*		
6. <i>Trionyx foveatus</i> , Leidy					*		
7. <i>Lepidotus occidentalis</i> , Leidy						*	
8. <i>Lepidotus Haydeni</i> , Leidy						*	
MOLLUSCA.							
9. <i>Cyrena occidentalis</i> , Meek and Hayden	*						
10. <i>Corbula subtrigonalis</i> , Meek and Hayden	*						
11. <i>Corbula perundata</i> , Meek and Hayden	*						
12. <i>Physa subelongata</i> , Meek and Hayden					*		
13. <i>Paludina vetula</i> , Meek and Hayden	*						
14. <i>Paludina Conradi</i> , Meek and Hayden	*						
15. <i>Melania subtortuosa</i> , Meek and Hayden			*				
16. <i>Melania omitta</i> , Meek and Hayden							*
17. <i>Melania subleavis</i> , Meek and Hayden							*
18. <i>Melania invenusta</i> , Meek and Hayden	*						
19. <i>Vitrina obliqua</i> , Meek and Hayden					*		
20. <i>Helix occidentalis</i> , Meek and Hayden					*		
21. <i>Helix vitrinoides</i> , Meek and Hayden					*		
22. <i>Planorbis tenuivolvis</i> , Meek and Hayden					*		
23. <i>Planorbis amplexus</i> , Meek and Hayden			*				
24. <i>Unio Danai</i> , Meek and Hayden							*
25. <i>Unio Deweyanus</i> , Meek and Hayden							*
26. <i>Unio subspatulatus</i> , Meek and Hayden							*

The Cretaceous group, which occupies so extensive an area on the Upper Missouri, has been separated into five divisions, which present well-marked lithological differences, and contain, for the most part, distinct species of organic remains.

Vertical section of the Cretaceous formations of Nebraska Territory, so far as determined.

CRETACEOUS SYSTEM.	No. 5.	Gray and yellowish arenaceous clays and sandstones, sometimes weathering to a pink color, containing <i>Belemnitella bulbosa</i> , <i>Nautilus Dekayi</i> , <i>Ammonites placenta</i> , <i>A. lobatus</i> , <i>Scaphites Conradi</i> , <i>Baculites ovatus</i> , and great numbers of other marine <i>Mollusca</i> .	Moreau trading-post and under the Tertiary at Sage and Bear Cr'ks. Fox Hills.	100 to 150 feet.
	No. 4.	Bluish and dark-gray plastic clays, containing <i>Nautilus Dekayi</i> , <i>Ammonites placenta</i> , <i>Baculites ovatus</i> , and <i>B. compressus</i> , with numerous other marine <i>Mollusca</i> —remains of <i>Mosasauras</i> .	Great area about Ft. Pierre and along the Missouri below there. Under No. 5 at Sage and Bear Cr'ks. Great Bend of the Missouri. Near Milk and Muscule Shell Rivers.	350 feet.
	No. 3.	Dark, very fine unctuous clay, containing much carbonaceous matter, with veins and seams selenite, sulphuret of iron, fish and scales, (local.)	Bluffs along the Missouri, below the Great Bend. Extends to Big Sioux River, and occurs along the latter stream.	20 feet.
		Lead-gray calcareous marl, weathering above to a yellowish tint. Scales and other remains of fishes— <i>Ostrea congesta</i> —passing downward into—		100 feet.
		Light-gray or yellowish limestone, containing great numbers of <i>Inoceramus problematicus</i> , fish-scales, and <i>Ostrea congesta</i> .		30 feet.
	No. 2.	Dark-gray laminated clay scales and other remains of fishes, small <i>Ammonites</i> , <i>Inoceramus problematicus</i> ?, <i>Serpula</i> , small oyster-like <i>O. congesta</i> , &c.	Along the Missouri Bluffs from ten miles above James River to Big Sioux River.	90 feet. Wanting in
No. 1.	Yellowish and reddish friable sandstone, with alternations of dark and whitish clays. Seams and beds of impure lignite, fossil wood, impressions of dicotyledonous leaves, <i>Solen</i> , <i>Pectunculus</i> , <i>Cyprina</i> , &c. Lower Cretaceous.	Near the mouth of Big Sioux River and between there and Council Bluffs. Near Judith River.?	90 to 100 feet, or more.	

Formation No. 1 seems to constitute paleontologically an independent division, none of its organic remains ranging in other formations above or below. Nos. 2 and 3 seem to form one group, the *Ostrea congesta* and *Inoceramus problematicus* passing from one to the other.

Divisions 4 and 5, which are the most fossiliferous formations on the Upper Missouri, contain many species in common, especially of the *Cephalopoda*, and therefore form a third group.

The Cretaceous system, as developed on the Upper Missouri, therefore forms lithologically five well-marked subdivisions, while paleontologically it admits of separation into three independent groups. The age and geological position of divisions 2, 3, 4, and 5, have been sufficiently attested by the numerous species of organic remains which have been published, from time to time, by my associate, Mr. Meek, and myself. In regard to the age of No. 1 much doubt existed, until we had an opportunity to examine a fine series of dicotyledonous leaves, which I had discovered in this formation near Blackbird Hill, on the Missouri, while attached to Lieutenant Warren's party, in the spring of 1857. These leaves proved to us that the formation under consideration could not be older than Cretaceous, and this conclusion was published by us in several of our later papers. Although the evidence that it is of Lower Cretaceous age was perfectly satisfactory to us, some writers have considered it Triassic, while others have regarded it as Jurassic and even Miocene Tertiary. In a late publication addressed to Mr. Meek and the writer, Professor Marcon says: "Allow me respectfully to suggest to you that I cannot see anything of Cretaceous in what you call No. 1 of your Nebraska section. It appears to me that you put in your No. 1, or Lower Cretaceous, all sorts of strata of different ages, except true Cretaceous rocks." That the rocks in question are not newer than Cretaceous I will endeavor to prove, both from stratigraphical and paleontological evidence.

Evidence from stratigraphical position.

Near the old Otoe village, on the Platte River, about five miles above its mouth, No. 1 rests directly upon limestone strata of the true Coal-Measures; and at this point I found a species of *Laurus*, apparently identical with a plant obtained near the mouth of the Big Sioux, and at Blackbird Hill. Near De Soto, about twenty miles above Omaha City, the Carboniferous limestone ceases to appear, and No. 1 rests with concordant stratification upon it. There is not the slightest disturbance of the strata in this region, but they dip gently toward the northwest. I traced No. 1 with great care to Blackbird Hill, about sixty miles above De Soto, and found a few plants at different localities. At Blackbird Hill an extensive quarry had been opened to procure stone for building the large mission establishment at that place. From this quarry I collected the fine series of dicotyledonous leaves, before mentioned. I then directed my course toward the mouth of the Big Sioux, about forty miles further up the Missouri, and examined the country with great care. The red sandstone, No. 1, was the principal rock in that region, but upon the summits of the bluffs, resting upon the sandstone apparently, I often found layers of a yellowish-white, rather soft limestone, fully charged with *Inoceramus problematicus* and fish-remains. Near Sioux City, about two miles below the mouth of Big Sioux River, is a vertical section of No. 1, rising about thirty feet above the water's edge. At the base of this vertical cut I collected a number of leaves, similar to those observed at Blackbird Hill. From the high bluffs, bordering upon the Missouri, the inhabitants of this region obtain immense quantities of the calcareous rock of No. 3, composed almost entirely of *I. problematicus*, and convert it into lime. On the Big Sioux River, about six miles above its mouth, I took the following section of the strata from a vertical cut with considerable care:

Yellow marl, a recent deposit.

No. 3. Shaly limestone, gradually passing into bed below, with an abundance of *Inoceramus problematicus*, and fish-remains.

No. 2. Dark plastic shaly clay, with ferruginous concretions.

No. 1. *a*—Yellow friable sand.

b—Earthy lignite, 6 inches.

c—Variegated sandstones and clays, extending to water's edge, with dicotyledonous leaves.

Section near the mouth of Iowa Creek.

No. 3. Gray and yellow marl, with immense numbers of *I. problematicus*, *Ostrea congesta*, and fish-remains.

No. 2. Dark plastic clay with *Ammonites* resting concordantly upon the bed below.

No. 1. Sandstone just above water-edge.

At this last locality I found in No. 1 the plant which Professor Heer refers to, *Laurus primigenia*, and a shell which we have described as *Solen Dakotaensis*. Here No. 1 passes from sight beneath the well-known Cretaceous bed No. 2.

With regard to our No. 1 holding a position beneath well-marked Cretaceous beds, I think I need not say anything further.

Paleontological evidence.

The fine series of fossil plants from No. 1, which I collected on the Missouri, as well as those obtained by my friend, Mr. Meek, and myself, during our recent trip to Kansas, were placed in the hands of our friend, Dr. J. S. Newberry, the well-known authority in fossil botany, and from him we received the following notes :*

"They include so many highly-organized plants, that were there not among them several genera exclusively Cretaceous, I should be disposed to refer them to a more recent era."

"A single glance is sufficient to satisfy any one they are not Triassic. Up to the present time no angiosperm dicotyledonous plants have been found in rocks older than Cretaceous, while of the eighteen species which comprise your collection, sixteen are of this character."

"The species of your fossil plants are probably all new, though generally closely allied to the Cretaceous species of the Old World. From the limited study I have given them, I have referred them to the following genera :

Sphenopteris.

Abietites.

Acer.

Fagus.

Populus.

Cornus.

Liriodendron.

Pyrus.

Alnus.

Salix.

Magnolia.

Credneria.

Ettingshausinia.

"Of these the last two are exclusively Cretaceous and highly characteristic of that formation in Europe."

From the evidence which we have given, we think we are warranted in regarding our No. 1 as Cretaceous, and probably of Lower Cretaceous age. This matter will be discussed more fully hereafter. The red sandstone at the mouth of Big Sioux is the type of our No. 1, and its relations to the sandstone strata, near the Judith River, are not positively determined.

* Dr. Newberry's remarks will appear in the January number of Silliman's Journal with our joint paper.

Table showing the stratigraphical position of the Cretaceous fossils hitherto identified from Nebraska Territory.

	Formations in ascending order.				
	1	2	3	4	5
1. GENUS CALLIANASSA.					
1. <i>Callianassa Danai</i> , Hall and Meek				*	
2. GEN. BELEMNITELLA.					
2. <i>Belemnitella mucronata</i> , Schlotheim				*	
3. <i>Belemnitella? halhaser</i> , Meek and Hayden				*	
3. GEN. NAUTILUS.					
4. <i>Nautilus De Kayi</i> , Morton				*	*
4. GEN. AMMONITES.					
5. <i>Ammonites placenta</i> , De Kay				*	*
6. <i>Ammonites lobatus</i> , Tuomy				*	*
7. <i>Ammonites opalus</i> , Owen				*	
8. <i>Ammonites complexus</i> , Hall and Meek				*	
9. <i>Ammonites percarinatus</i> , Hall and Meek		*	*		
10. <i>Ammonites Halli</i> , Meek and Hayden				*	
5. GEN. TURRILITES.					
11. <i>Turrilites Nebrascensis</i> , Meek and Hayden					
12. <i>Turrilites Cheyennensis</i> , Meek and Hayden					
13. <i>Turrilites umbilicatus</i> , Meek and Hayden					
14. <i>Turrilites (Helicoceras) cochleatus</i> , Meek and Hayden					
6. GEN. ANCYLOCERAS.					
15. <i>Ancyloceras? Nicolletti</i> , Hall and Meek				*	
16. <i>Ancyloceras? Mortoni</i> , Hall and Meek				*	
17. <i>Ancyloceras (Hamites) uncus</i> , Meek and Hayden				*	
7. GEN. PTYCHOCERAS.					
18. <i>Ptychoceras Mortoni</i> , Meek and Hayden				*	
8. GEN. HELICOCERAS.					
19. <i>Helicoceras tenuicostatus</i> , Meek and Hayden				*	
20. <i>Helicoceras? tortus</i> , Meek and Hayden				*	
9. GEN. BACULITES.					
21. <i>Baculites ovatus</i> , Say				*	*
22. <i>Baculites compressus</i> , Say				*	*
23. <i>Baculites grandis</i> , Hall and Meek				*	*
10. GEN. SCAPHITES.					
24. <i>Scaphites Conradi</i> , Morton, sp					*
25. <i>Scaphites Mandenensis</i> , Morton, sp					*
26. <i>S. Nicolletti</i> , Morton, sp				*	*
27. <i>S. nodosus</i> , Owen				*	*
28. <i>S. larviformis</i> , Meek and Hayden		*		*	*

Table showing the stratigraphical position, &c.—Continued.

	Formations in ascending order.				
	1	2	3	4	5
11. GEN. SCALARIA.					
29. <i>S. cerithiformis</i> , Meek and Hayden					*
12. GEN. TURRITELLA.					
30. <i>T. ? convexa</i> , Meek and Hayden				*	
31. <i>T. Moreauensis</i> , Meek and Hayden					*
13. GEN. ACTEON.					
32. <i>A. concinnus</i> , Hall and Meek				*	*
33. <i>A. subellipticus</i> , Meek and Hayden				*	
34. <i>A. (Solidula) attenuata</i> , Meek and Hayden				*	*
14. GEN. AVALANA.					
35. <i>A. subglobosa</i> , Meek and Hayden					*
15. GEN. NATICA.					
36. <i>N. Tuomyana</i> , Meek and Hayden	*				
37. <i>N. obliquata</i> , Hall and Meek				*	
38. <i>N. coccinea</i> , Hall and Meek				*	
39. <i>N. paludinaformis</i> , Hall and Meek				*	
40. <i>N. ambigua</i> , Meek and Hayden					*
41. <i>N. subcrassa</i> , Meek and Hayden	*				
42. <i>N. occidentalis</i> , Meek and Hayden					*
43. <i>N. Moreauensis</i> , Meek and Hayden					*
16. GEN. SOLARIUM.					
44. <i>S. flexuistriatum</i> , Evans and Shumard				*	
17. GEN. TURBO.					
45. <i>T. Nebrascensis</i> , Meek and Hayden				*	
46. <i>T. tenuilineatus</i> , Meek and Hayden				*	
18. GEN. ROSTELLARIA.					
47. <i>R. Nebrascensis</i> , Evans and Shumard				*	
48. <i>R. fusiformis</i> , Hall and Meek				*	
49. <i>R. biangulata</i> , Meek and Hayden				*	
19. GEN. FUSUS.					
50. <i>F. Shumardi</i> , Hall and Meek				*	
51. <i>F. tenuilineatus</i> , Hall and Meek				*	
52. <i>F. Dakotaensis</i> , Meek and Hayden					*
53. <i>F. Galpinianus</i> , Meek and Hayden					*
54. <i>F. contortus</i> , Meek and Hayden					*
55. <i>F. Culbertsoni</i> , Meek and Hayden					*
56. <i>F. flexuocostatus</i> , Meek and Hayden					*
57. <i>F. Newberryi</i> , Meek and Hayden					*
58. <i>F. Vaughani</i> , Meek and Hayden					*
59. <i>F. subturritus</i> , Meek and Hayden				*	
60. <i>F. intertextus</i> , Meek and Hayden				*	*
61. <i>F. (Pleurotoma) Scarboroughi</i> , Meek and Hayden					*

Table showing the stratigraphical position, &c.—Continued.

	Formations in ascending order.				
	1	2	3	4	5
20. GEN. BUSYCON.					
62. <i>B. Bairdi</i> , Meek and Hayden					*
21. GEN. FASCIOLARIA.					
63. <i>F. cretacea</i> , Meek and Hayden					*
64. <i>F. buccinoides</i> , Meek and Hayden					*
22. GEN. BUCCINUM.					
65. <i>B. ? vinculum</i> , Hall and Meek				*	
66. <i>B. constrictum</i> , Hall and Meek				*	
23. NEW GEN. PSEUDOBUCINUM, Meek and Hayden.					
67. <i>P. Nebrascensis</i> , Meek and Hayden					*
24. GEN. CAPULUS, Hall and Meek.					
68. <i>C. occidentalis</i> , Hall and Meek				*	
69. <i>C. fragilis</i> , Meek and Hayden					*
25. GEN. HELCION.					
70. <i>H. borealis</i> , Morton, sp.				*	
71. <i>H. sexcucatus</i> , Meek and Hayden				*	
72. <i>H. patelliformis</i> , Meek and Hayden				*	
73. <i>H. alveolus</i> , Meek and Hayden				*	
74. <i>H. subovatus</i> , Meek and Hayden				*	
75. <i>H. carinatus</i> , Meek and Hayden				*	
26. GEN. DENTALIUM.					
76. <i>D. gracilis</i> , Hall and Meek				*	
77. <i>D. fragilis</i> , Meek and Hayden				*	
27. GEN. BULLA.					
78. <i>B. volvaria</i> , Meek and Hayden					*
79. <i>B. minor</i> , Meek and Hayden					*
80. <i>B. occidentalis</i> , Meek and Hayden				*	
81. <i>B. subcylindricus</i> , Meek and Hayden				*	
28. GEN. XYLOPHAGA.					
82. <i>X. elegantula</i> , Meek and Hayden				*	
83. <i>X. Stimpsoni</i> , Meek and Hayden				*	
29. GEN. PHOLAS.					
84. <i>P. cuneata</i> , Meek and Hayden					*
30. GEN. TEREDO.					
85. <i>T. globosa</i> , Meek and Hayden					*
31. GEN. SOLEN.					
86. <i>S. ? Dakotaensis</i> , Meek and Hayden	*				

Table showing the stratigraphical position, &c.—Continued.

	Formations in ascending order.				
	1	2	3	4	5
32. GEN. PHOLODOMYA.					
87. <i>P. elegantula</i> , Evans and Shumard				*	
88. <i>P. (Gonomya) Americana</i> , Meek and Hayden					*
89. <i>P. undata</i> , Meek and Hayden	*				
90. <i>P. fibrosa</i> , Meek and Hayden				*	
91. <i>P. subventricosus</i> , Meek and Hayden	*				
33. GEN. PANOPEA.					
92. <i>P. occidentalis</i> , Meek and Hayden	*				
34. GEN. SOLEMYA.					
93. <i>S. subplicata</i> , Meek and Hayden					*
35. GEN. MACTRA.					
94. <i>M. formosa</i> , Meek and Hayden	*				
95. <i>M. Warrenana</i> , Meek and Hayden					*
96. <i>M. alta</i> , Meek and Hayden	*				
36. GEN. TELLINA.					
97. <i>T. ? Cheyennensis</i> , Meek and Hayden	*?				
98. <i>T. equilateralis</i> , Meek and Hayden				*	
99. <i>T. scitula</i> , Meek and Hayden					*
100. <i>T. subelliptica</i> , Meek and Hayden					*
101. <i>T. Prouti</i> , Meek and Hayden				*	
102. <i>T. subtortuosa</i> , Meek and Hayden	*				
37. GEN. CYTHEREA.					
103. <i>C. Missouriiana</i> , Morton				*	
104. <i>C. orbiculata</i> , Hall and Meek		*			
105. <i>C. tenuis</i> , Hall and Meek		*			
106. <i>C. Deweyi</i> , Meek and Hayden					*
107. <i>C. Nebrascensis</i> , Meek and Hayden					*
108. <i>C. pellucida</i> , Meek and Hayden				*	
109. <i>C. Owenana</i> , Meek and Hayden	*				
38. GEN. VENUS.					
110. <i>V. ? circularis</i> , Meek and Hayden				*	
39. GEN. LEDA.					
111. <i>L. ventricosa</i> , Meek and Hayden					*
112. <i>L. Moreauensis</i> , Meek and Hayden					*
40. NEW GEN. CORBULAMELLA, Meek and Hayden.					
113. <i>C. gregaria</i> , Meek and Hayden				*	
41. GEN. THRACIA.					
114. <i>T. ? gracilis</i> , Meek and Hayden	*				
42. GEN. ASTARTE.					
115. <i>A. gregaria</i> , Meek and Hayden					*

Table showing the stratigraphical position, &c.—Continued.

	Formations in ascending order.				
	1	2	3	4	5
43. GEN. CRASSATELLA.					
116. <i>C. Evansi</i> , Hall and Meek				*	
44. GEN. LUCINA.					
117. <i>L. subundata</i> , Hall and Meek				*	
118. <i>L. occidentalis</i> , Meek and Hayden				*	
45. GEN. HETTANGIA.					
119. <i>H. Americana</i> , Meek and Hayden	*				
46. GEN. CYPRINA.					
120. <i>C. arenaria</i> , Meek and Hayden	*				
121. <i>C. cordata</i> , Meek and Hayden					*
122. <i>C. compressa</i> , Meek and Hayden					*
123. <i>C. ovata</i> , Meek and Hayden					*
124. <i>C. subtumida</i> , Meek and Hayden				*	*
47. GEN. CARDIUM.					
125. <i>C. speciosum</i> , Meek and Hayden	*				
48. GEN. NUCULA.					
126. <i>N. subnasuta</i> , Hall and Meek				*	
127. <i>N. ventricosa</i> , Hall and Meek				*	
128. <i>N. scitula</i> , Meek and Hayden					*
129. <i>N. Evansi</i> , Meek and Hayden					*
130. <i>N. equilateralis</i> , Meek and Hayden					*
131. <i>N. subplana</i> , Meek and Hayden				*	
132. <i>N. cancellata</i> , Meek and Hayden					*
133. <i>N. planomarginata</i> , Meek and Hayden					*
134. <i>N. obsoletastriata</i> , Meek and Hayden				*	
49. GEN. PECTUNCULUS.					
135. <i>P. parvula</i> , Meek and Hayden					*
136. <i>P. subimbricatus</i> , Meek and Hayden					*
50. GEN. CUCULLEA.					
137. <i>C. Nebrascensis</i> , Owen					*
138. <i>C. cordata</i> , Meek and Hayden					*
139. <i>C. Shumardi</i> , Meek and Hayden					*
140. <i>C. exigua</i> , Meek and Hayden				*	
51. GEN. MYTILUS.					
141. <i>M. attenuatus</i> , Meek and Hayden					*
142. <i>M. Galpinianus</i> , Evans and Shumard					*
143. <i>M. subarcuatus</i> , Meek and Hayden	*				
52. GEN. AVICULA.					
144. <i>A. triangularis</i> , Evans and Shumard				*	
145. <i>A. linguiformus</i> , Evans and Shumard				*	
146. <i>A. Haydeni</i> , Hall and Meek				*	

Table showing the stratigraphical position, &c.—Continued.

	Formations in ascending order.				
	1	2	3	4	5
53. GEN. GERVILIA.					
147. <i>G. subtortuosa</i> , Meek and Hayden.....				*	
54. GEN. INOCERAMUS.					
148. <i>I. problematicus</i> , Schlothein			*		
149. <i>I. Barabini</i> , Morton				*	
150. <i>I. Sagensis</i> , Owen				*	
151. <i>I. Nebrascensis</i> , Owen.....				*	
152. <i>I. subleavis</i> , Hall and Meek				*	
153. <i>I. convexus</i> , Hall and Meek				*	
154. <i>I. tenuilineatus</i> , Hall and Meek.....				*	
155. <i>I. Conradi</i> , Hall and Meek.....		*			
156. <i>I. fragilis</i> , Hall and Meek		*			
157. <i>I. ventricosus</i> , Meek and Hayden	*				
158. <i>I. pertenuis</i> , Meek and Hayden.....	*				
159. <i>I. incurvus</i> , Meek and Hayden				*	
160. <i>I. umbonatus</i> , Meek and Hayden.....				*	
55. GEN. PECTEN.					
161. <i>P. rigida</i> , Hall and Meek				*	
162. <i>P. Nebrascensis</i> , Meek and Hayden				*	*
56. GEN. OSTREA.					
163. <i>Ostrea congesta</i> , Conrad.....			*		
164. <i>Ostrea larva</i> , Lamark				*	
165. <i>Ostrea patina</i> , Meek and Hayden				*	
166. <i>Ostrea glabra</i> , Meek and Hayden	*				
57. GEN. CAPRINELLA.					
167. <i>Caprinella coraloidea</i> , Hall and Meek				*	
58. GEN. LINGULA.					
168. <i>Lingula subspatulata</i> , Hall and Meek				*	
59. GEN. SERPULA.					
169. <i>Serpula? tenuicarinata</i> , Meek and Hayden		*			
60. GEN. HEMIASTER.					
170. <i>Hemiaster? Humphreysianus</i> , Meek and Hayden				*	
61. VERTEBRATA.					
171. <i>Mosagarus Missouriensis</i> , Leidy				*	

There are still in the collection several undescribed species of *Mollusca*, also remains of fishes from Nos. 2, 3, and 4.

The great Lignite Tertiary basin differs from the Tertiary basin of White River, by its numerous beds of Lignite, more or less pure, and by the extent and beauty of its fossil flora. Some of the beds of Lignite

are seven feet in thickness, but they usually vary from two to four feet. The collection of fossil plants from this deposit is very fine, consisting of nearly fifty species, all of which are as yet undescribed, but are supposed to be new to science. Many of the leaves strongly resemble those of existing forest-trees, and seem to belong to the genera *Platanus*, *Acer*, *Ulmus*, *Alnus*, *Populus*, *Betula*, *Shulex*, &c. The *Molusca* consists of land and fresh water, with a few estuary shells. These have all been described, and drawings made. Five species of *Vertebrata* have been discovered in this deposit. The following species of organic remains have, up to this time, been described from this basin:

VERTEBRATA.

1. *Thespesius occidentalis*, Leidy.
2. *Ischyrotherium antiquum*, Leidy.
3. *Mylognathus priscus*, Leidy.
4. *Compsemys victus*, Leidy.
5. *Emys obscurus*, Leidy.

MOLLUSCA.

6. *Cyclas formosa*, Meek and Hayden.
7. *Cyclas fragilis*, Meek and Hayden.
8. *Cyclas subellipticus*, Meek and Hayden.
9. *Cyrena moreauensis*, Meek and Hayden.
10. *Cyrena intermedia*, Meek and Hayden.
11. *Corbula mactrifomis*, Meek and Hayden.
12. *Unio priscus*, Meek and Hayden.
13. *Bulimus teres*, Meek and Hayden.
14. *Bulimus vermiculus*, Meek and Hayden.
15. *Bulimus limneaformis*, Meek and Hayden.
16. *Bulimus Nebrascensis*, Meek and Hayden.
17. *Pupa helicoides*, Meek and Hayden.
18. *Limnea tenuicosta*, Meek and Hayden.
19. *Physa longiuscula*, Meek and Hayden.
20. *Physa rhomboidea*, Meek and Hayden.
21. *Physa Nebrascensis*, Meek and Hayden.
22. *Planorbis subumbilicatus*, Meek and Hayden.
23. *Planorbis convolutus*, Meek and Hayden.
24. *Planorbis fragilis*, Meek and Hayden.
25. *Velletia (Ancylus) minuta*, Meek and Hayden.
26. *Paludina multi lineata*, Meek and Hayden.
27. *Paludina Leai*, Meek and Hayden.
28. *Paludina retusa*, Meek and Hayden.
29. *Paludina peculiaris*, Meek and Hayden.
30. *Paludina trochiformis*, Meek and Hayden.
31. *Paludina Leidyi*, Meek and Hayden.
32. *Valvata parvula*, Meek and Hayden.
33. *Melania minutula*, Meek and Hayden.
34. *Melania Anthonyi*, Meek and Hayden.
35. *Melania multistriata*, Meek and Hayden.
36. *Melania Nebrascensis*, Meek and Hayden.
37. *Melania Warrenana*, Meek and Hayden.
38. *Melania tenui carinata*, Meek and Hayden.
39. *Cerithium Nebrascensis*, Meek and Hayden.

The Tertiary basin of White and Niobrara rivers forms one of the most interesting and remarkable fresh-water deposits on our continent.

It differs, both lithologically and paleontologically, from the two basins previously alluded to. It contains no fossil plants, no lignite beds, and not one of the numerous species of organic remains which have been collected from it is identical or allied to species found in other portions of the Tertiary of the Northwest. Two distinct faunas are represented by the collections from this deposit—the fauna of the Miocene period from the region of White River and the fauna of the Pliocene period from the Niobrara. The latter fauna has enabled Dr. Leidy, the distinguished comparative anatomist, to arrive at some important conclusions. He says:

“The extinct fauna of the Niobrara is especially rich in remains of ruminating and equine animals. Among the former are several peculiar genera, of which two are closely allied to *Oreodon* and *Leptauchenia*, of the Miocene deposit of the Mauvaises Terres; one is allied to the musk-deer and another closely approaches the camel. Besides the remains of a true species of *Equus*, the collection contains those of two species of *Hipparion*, and several peculiar genera of the equine family. There are also remains of several species of canine and feline animals, of a small species of beaver, and of a species of porcupine more nearly allied to that of the Old World than to our own recent one. The collection further contains remains of a rhinoceros resembling those of India, those of a new species of mastodon, and those of a large elephant.

“One of the most remarkable circumstances in relation with this extinct fauna is, that it is more nearly allied to the present recent one of the Old World than to that of our own continent. From a comparison of our recent fauna and flora with that of the eastern continent, the deduction has been made that the western continent is the older of the two, geologically speaking, whereas the Niobrara fauna would indicate just the reverse relationship of age. A number of similar instances show that totally different fauna and flora may be cotemporaneous, and do not necessarily indicate different periods of existence.”

Vertical section, showing the order of superposition of the different beds of the Tertiary basin of White and Niobrara Rivers.

Subdivisions.		Localities.	Estimated thickness.
POST PLIOCENE.	Yellow siliceous marl, similar in its character to the Loess of the Rhine, passing down into variegated indurated clays and brown and yellow fine grits; contains remains of extinct quadrupeds, mingled with those identical with recent ones; also a few mollusca, mostly identical with recent species so far as determined.	Most fully developed along the Missouri River, from the mouth of the Niobrara to Saint Joseph; also in the Platte Valley and on the Loup Fork.	300 to 500 feet.

Vertical section, &c.—Continued.

		Subdivisions.	Localities.	Estimated thickness.
PLIOCENE TERTIARY.	Bed F.	1st. Dark-gray or brown sand, loose, incoherent, with remains of mastodon, elephant, &c. 2d. Sand and gravel, incoherent. 3d. Yellowish-white grit, with many calcareous, arenaceous concretions. 4th. Gray sand with a greenish tinge; contains the greater part of the organic remains. 5th. Deep yellowish-red arenaceous marl. 6th. Yellowish-gray grit, sometimes quite calcareous, with numerous layers of concretionary limestone, from two to six inches in thickness, containing freshwater and land shells, Succinea, Limnea, Paludina, Helix, &c., closely allied and perhaps identical with living species; also much wood of coniferous character.	Covers a very large area on Loup Fork, from the mouth of North Branch to source of Loup Fork; also in the Platte Valley. Most fully developed on the Niobrara River, extending from the mouth of Turtle River three hundred miles up the Niobrara; also on Bijoux Hills and Medicine Hills. Thinly represented in the valley of White River.	300 to 400 feet.
	Bed E.	Usually a coarse-grained sandstone; sometimes heavy bedded and compact; sometimes loose and incoherent; varies much in different localities. Forms immense masses of conglomerate; also contains layers of tabular limestone, with indistinct organic remains; very few mammalian remains detected, and those in a fragmentary condition. Passes gradually into the bed below.	Most fully developed along the upper portion of Niobrara River and in the region around Fort Laramie. Seen also on White River and on Grindstone Hills.	180 to 200 feet.
MIOCENE.	Bed D.	A dull reddish-brown indurated grit, with many layers of silico-calcareous concretions, sometimes forming a heavy-bedded fine-grained sandstone; contains comparatively few organic remains.	Niobrara and Platte Rivers; well developed in the region of Fort Laramie; also in the valley of White River. Conspicuous, and composing the main part of the dividing ridge between White and Niobrara rivers.	350 to 400 feet.
MIOCENE.	Bed C.	Very fine yellow calcareous sand, not differing very materially from Bed D, with numerous layers of concretions and rarely organic remains, passing down into a variegated bed, consisting of alternate layers of dark-brown clay and light-gray calcareous grit, forming bands, of which I counted twenty-seven at one locality, varying from one inch to two feet in thickness.	White River, Bear Creek, Ash Grove Spring, head of Shyenne River. Most conspicuous near White River.	50 to 80 feet.
	Turtle and Oreodon, Bed B.	A deep flesh-colored argillo-calcareous indurated grit. The outside, when weathered, has the appearance of a plastic clay. Passes down into a gray clay, with layers of sandstone, underlaid by a flesh-colored argillo-calcareous stratum, containing a profusion of mammalian and chelonian remains. Turtle and Oreodon Bed.	Old Woman's Creek, a fork of Shyenne River; also on the head of the South Fork of the Shyenne; most conspicuous on Sage and Bear Creeks, and at Ash Grove Spring. Well developed in numerous localities in the valley of White River.	80 to 100 feet.

Vertical section, &c.—Continued.

		Subdivisions.	Localities.	Estimated thickness.
MIOCENE.	Titanotherium, Bed A.	Light-gray fine sand, with more or less calcareous matter, passing down into an ash-colored plastic clay, with large quantities of quartz grains disseminated through it, sometimes forming aggregated masses like quartzose sandstone cemented with plastic clay; then an ash-colored clay, with a greenish tinge, underlaid at base by a light-gray and ferruginous siliceous sand and gravel, with pinkish bands. Immense quantities of silex, in the form of seams, all through the beds. Titanotherium Bed.	Old Woman's Creek; also in many localities along the valley of the South Fork of Shyenne. Best development on Sage and Bear Creeks. Seen at several localities in the valley of White River.	80 to 100 feet.
CRETACEOUS.	Nos. 4 and 5.	Cretaceous beds 5 and 4, with their usual lithological characters and fossils.	Exposed underneath the Tertiary Beds on the South Fork of Shyenne and its southern branches; also in White River Valley, near its source.	

Catalogue of all the fossils hitherto described, from the Tertiary formations of White and Niobrara Rivers, with a table showing their stratigraphical position.

	Beds in ascending order.					
	A.	B.	C.	D.	E.	F.
RUMINANTIA.						
1. <i>Oreodon gracilis</i> , Leidy		*	*	*		
2. <i>Oreodon Culbertsoni</i> , Leidy		*	*	*		
3. <i>Oreodon major</i> , Leidy		*		*		
4. <i>Agriochærus major</i> , Leidy		*		*		
5. <i>Agriochærus antiquus</i> , Leidy		*		*		
6. <i>Poebrotherium Wilsoni</i> , Leidy		*				
7. <i>Leptomeryx Evansi</i> , Leidy		*		*		
8. <i>Leptauchenia decora</i> , Leidy				*		
9. <i>Leptauchenia major</i> , Leidy				*		
10. <i>Protomeryx Halli</i> , Leidy				*		
11. <i>Merycodus necatus</i> , Leidy						*
12. <i>Megalomeryx niobrahensis</i> , Leidy						*
13. <i>Merychochærus proprius</i> , Leidy				*		
14. <i>Procamelus occidentalis</i> , Leidy						*
15. <i>Procamelus robustus</i> , Leidy						*
16. <i>Procamelus gracilis</i> , Leidy						*
17. <i>Merychyus elegans</i> , Leidy						*
18. <i>Merychyus medius</i> , Leidy						*
19. <i>Merychyus major</i> , Leidy						*
20. <i>Cervus Warreni</i> , Leidy						*

Catalogue of all the fossils hitherto described, &c.—Continued.

	Beds in ascending order.					
	A.	B.	C.	D.	E.	F.
MULTUNGULA.						
21. <i>Chaeropotamus (Hypotamus) americanus</i> , Leidy	*					
22. <i>Entelodon Mortoni</i> , Leidy		*		*		
23. <i>Entelodon ingens</i> , Leidy		*		*		
24. <i>Titanotherium Prouti</i> , Leidy	*					
26. <i>Paleocharus probus</i> , Leidy		*		*		
27. <i>Leptocharus spectabilis</i> , Leidy		*		*		
28. <i>Rhinoceros occidentalis</i> , Leidy		*	*	*	*	
29. <i>Rhinoceros (Hyracodon) nebrascensis</i> , Leidy		*	*	*	*	
30. <i>Rhinoceros crassus</i> , Leidy						*
31. <i>Mastodon (Tetralophodon) merificus</i> , Leidy						*
32. <i>Elephas (Euelephas) imperator</i> , Leidy						*
SOLIDUNGULA.						
33. <i>Hipparion, S. Hippotherium occidentale</i> , Leidy						v
34. <i>Hipparion, S. Hippotherium speciosum</i> , Leidy						*
35. <i>Anchitherium Bairdi</i> , Leidy		*				
36. <i>Anchitherium (Hypohippus) affinis</i> , Leidy				*		
37. <i>Anchitherium (Parahippus) cognatus</i> , Leidy				*		
38. <i>Merychippus insignis</i> , Leidy						*
39. <i>Merychippus mirabilis</i> , Leidy						*
40. <i>Equus excelsus</i> , Leidy						*
41. <i>Equus (Protohippus) perditus</i> , Leidy						*
RODENTIA.						
42. <i>Stenofiber nebrascensis</i> , Leidy			*	*		
43. <i>Ischyromys typus</i> , Leidy			*	*		
44. <i>Palaolagus Haydeni</i> , Leidy			*	*		
45. <i>Eumys elegans</i> , Leidy		*				
46. <i>Hystrix (Hystriopsis) venustus</i> , Leidy				*		*
47. <i>Castor (Eucastor) tortus</i> , Leidy						*
CARNIVORA.						
48. <i>Hyaenodon horridus</i> , Leidy		*				
49. <i>Hyaenodon cruentus</i> , Leidy		*				
50. <i>Hyaenodon crucians</i> , Leidy		*				
51. <i>Amphicyon vetus</i> , Leidy		*				
52. <i>Amphicyon gracilis</i> , Leidy		*				
53. <i>Leptarctus primus</i> , Leidy						*
54. <i>Deinictis felina</i> , Leidy		*				
55. <i>Machairodus primævus</i> , Leidy		*				
56. <i>Felis (Pseudalurus) intrepidus</i> , Leidy						*
57. <i>Æluroidon ferox</i> , Leidy						*
58. <i>Canis-sævus</i> , Leidy						*
59. <i>Canis temerarius</i> , Leidy						*
60. <i>Canis vafer</i> , Leidy						*
61. <i>Canis (Epicyon) Haydeni</i> , Leidy						*
CHELONIA.						
62. <i>Testudo nebrascensis</i> , Leidy		*	*	*	*	
63. <i>Testudo (Stylenmys) niobrahensis</i> , Leidy						*
MOLLUSCA.						
64. <i>Helix Leidyi</i> , Hall and Meek		*				

Catalogue of all the fossils hitherto described, &c.—Continued.

	Beds in ascending order.					
	A.	B.	C.	D.	E.	F.
MOLLUSCA—Continued.						
65. <i>Planorbis nebrascensis</i> , Evans and Shumard				*		
66. <i>Lymnea diaphana</i> , Evans and Shumard				*		
67. <i>Lymnea nebrascensis</i> , Evans and Shumard				*		
68. <i>Physa secalina</i> , Evans and Shumard				*		
CRUSTACEA.						
69. <i>Cypris Leidyi</i> , Evans and Shumard				*		

MINERALS AND GEOLOGICAL SPECIMENS.

I.—IGNEOUS AND METAMORPHIC ROCKS.		
1	Gneiss ferruginous	Twelve miles northwest of Fort Laramie.
2	Mica slate	Do.
3	Mica, more micaceous	Do.
4	Granite, coarse	Laramie Peak.
5	Mica slate, with silvery mica	Four miles north of Fort Laramie.
6	Granite, pulverulent	Raw Hide Butte.
7	Felspar, flesh-colored from No. 6	Do.
8	Granite, fine-grained, micaceous	Do.
9	Granite, gray	Laramie Hills.
10	Quartz, white	Do.
11	Hornblende slate	Do.
12	Hornblende rock	Do.
13	Mica slate	Do.
14	Hornblende rock in granite	Do.
15	Red felspar from 14	Do.
16	Crystalline quartz from 14	Do.
17	Flesh-colored felspar from 14	Do.
18	Mica slate, with garnets	Do.
19	do	Do.
20	Mica, containing iron	Do.
21	Flesh-colored felspar in large crystals	Do.
22	Chlorite slate	Do.
23	Mica slate	Do.
24	Granite, coarse, over No. 23	Do.
25	Felspathic granite, pink	Do.
26	Quartz veins in 25	Do.
27	Hornblende rock, masses in granite	Do.
28	Granite, fine-grained	Do.
29	Hornblende rock	Do.
30	Hornblendic granite	Do.
31	Hornblende, with crystals of felspar	Do.
32	Mica slate, hornblendic	Do.
33	do	Do.
34	Mica slate, with large plates of mica	Do.
35	Granite, white felspathic	Do.
36	Quartz, veins in 35	Do.
37	Siliceous limestone, Silurian or Devonian	Do.
38	Siliceous limestone, Silurian or Devonian, highly crystalline	Do.
39	do	Do.
39½	Syenite, pink, under 39	Do.

Minerals and geological specimens—Continued.

I.—IGNEOUS AND METAPHORIC ROCKS—Con'd.		
40	Metamorphic siliceous limestone	Raw Hide Butte.
41	Metamorphic siliceous limestone, purplish ...	Do.
42	Quartz, in granite	Do.
43	Metamorphic limestone, gray	Do.
44	Mica slate	Do.
45	Micaceous granite	Do.
46	do	Do.
47	Mica slate, fine-grained	Do.
48	Metamorphic limestone, crystalline	Do.
49	Metamorphic limestone, purplish	Do.
50	Metamorphic limestone, similar to 48	Do.
51	Talcose slate	Do.
52	Felspathic granite, flesh-colored	Do.
53	Mica slate, with garnets	Do.
54	Mica slate, very fine grained	Do.
55	Talcose slate, dark	Do.
56	Talcose slate, light	Do.
57	Porphyritic trap	Black Hills.
58	Hornblende slate	Do.
59	Felspathic granite, pink	Do.
60	Plates of mica from 59	Do.
61	Quartz vein in chlorite slate	Do.
62	Chlorite slate	Do.
63	Trachyte	Do.
64	Quartz veins in 63	Do.
65	do	Do.
66	Chlorite slate	Raw Hide Butte, west side.
67	Hornblende rock, underlying Tertiary series ..	Do.
68	Schornl in quartz from clay slate	Black Hills.
69	do	Do.
70	Augite	Do.
71	Quartz, with felspar	Laramie Hills.
72	Porphyritic trap, columnar	Stone Butte, Black Hills.
73	do	Do.
74	do	Do.
75	Trachyte	Do.
76	Vesicular trap	Do.
77	Trachyte	Do.
78	Siliceous limestone	Raw Hide Butte.
79	Porphyritic trachyte	Stone Butte, Black Hills.
80	Compact trachyte, with scales of mica	Bear Peak, Black Hills.
81	do	Do.
82	Gray basaltic trap	Do.
83	Porphyritic trachyte	Do.
84	do	Do.
85	Quartzite	Do.
86	Gray trachyte	Do.
87	Metamorphic sandstone	Do.
II.—SEDIMENTARY ROCKS.		
<i>Silurian and Devonian.</i>		
89	Potsdam sandstone, red, with <i>Lingula antiqua</i> ..	Do.
90	Potsdam sandstone, gray, fine, with <i>Obolus</i> ...	Do.
91	Potsdam sandstone, porous, with <i>Trilobites</i> ...	Do.
92	Metamorphic, conglomerate over granite	Laramie Hills.
93	Metamorphic, with cherty pebbles	Do.
94	do	Do.
95	Argillaceous limestone, Devonian	Do.
96	Metamorphic conglomerate	Do.
<i>Carboniferous.</i>		
97	Limestone, with <i>Spirifer</i>	Black Hills.

Minerals and geological specimens—Continued.

II.—SEDIMENTARY ROCKS—Continued.		
<i>Carboniferous—Continued.</i>		
98	Blue cherty limestone, with <i>Spirigera subtilita</i> .	Black Hills.
99	Blue cherty limestone, with corals	Do.
100	Blue cherty limestone, with <i>Spirifer lineatus</i> ..	Do.
101	<i>Rhynconella mormoni</i>	Do.
102	<i>Rhynconella mormoni</i> , with <i>Cyathophyllum</i>	Do.
103	<i>Rhynconella mormoni</i> , with <i>Zaphrentis</i>	Do.
104	<i>Rhynconella mormoni</i> , with <i>Syringapora</i>	Do.
105	<i>Rhynconella mormoni</i> , <i>Porites</i>	Do.
106	Yellowish cherty limestone, over 98, with <i>Spirifer rockymontana</i> .	Do.
107	Yellowish cherty limestone, over 98, with <i>Spirifer cameratus</i> and <i>lineatus</i> .	Do.
108	Cherty nodules in 98.....	Do.
109	Aragonite in 98.....	Do.
110	Coarse, granular limestone, with crinoidal columns.	Fort Laramie.
111	Blue compact limestone, <i>Productus</i> and <i>Tere-</i> <i>bratula subtilita</i> .	Do.
112	Blue compact limestone, corals	Do.
113	Blue compact limestone, with <i>Spirifer lineatus</i> ..	Do.
114	Yellowish cherty limestone, with <i>Productus</i> ..	Warm Spring near Fort Laramie.
115	White limestone, with <i>Spirifer rockymontana</i> ..	Near Fort Laramie.
116	<i>Terebratula subtilita</i> from, 110.....	
117	<i>Panopæa</i>	Near Tecama, Nebraska.
118	<i>Allorisma</i>	Bellevue, Nebraska.
119	<i>Productus</i>	Do.
120	<i>Spirifer cameratus</i>	Do.
121	<i>Terebratula subtilita</i>	Do.
122	<i>Bellerophon</i>	Do.
123	<i>Chonetes</i>	Do.
124	<i>Chonetes</i>	Do.
<i>Permo-Carboniferous and Permian.</i>		
125	Arenaceous limestone, foliated with <i>Bakevellia</i> .	Black Hills.
126	Red sandstone, soft, very fine grain, under 125.	Do.
127	Pink sandstone, over 126.....	Do.
128	Limestone, (125,) with <i>Orthoceratite</i>	Do.
129	Limestone, with <i>Bellerophon</i>	Do.
130	Limestone, with <i>Pleurotomania</i>	Do.
131	Limestone, with <i>Spirifer</i>	Do.
132	Limestone, with <i>Allorisma</i>	Big Blue, Kansas Territory.
133	Yellow magnesian limestone, with <i>Nautilus</i> , <i>Monotis</i> , <i>Bakevellia</i> , <i>Myalina</i> .	Smoky Hill Fork.
134	Yellow magnesian limestone, compact, with <i>Mytilus</i> .	Banks of Missouri, south line of Nebraska.
135	Magnesian limestone, with <i>Monotis</i>	Big Cottonwood.
136	Magnesian limestone, with <i>Avicula</i>	12 miles west of Big Blue.
137	Chert rock, gray, with <i>Avicula</i> and <i>Myalina</i> ..	Black Hills.
138	Chert rock, (Burch stone,) with crinoidal col- umns.	Do.
139	Saccharoid gypsum, over 133.....	Smoky Hill Fork.
140	<i>Monotis</i> , from 136	Do.
141	Blue limestone, porous, with fenestella	Big Blue.
142	Cellular calcareous rock	Smoky Hill Fork.
143	Cellular calcareous rock, more compact	Do.
144	Cellular calcareous rock, with spherical cavi- ties.	Do.
145	Cellular calcareous rock, more argillaceous...	Near Cottonwood Creek.

Minerals and geological specimens—Continued.

II.—SEDIMENTARY ROCKS—Continued.		
<i>Jurassic.</i>		
146	Arenaceous limestone, light brown, with <i>Avicula tenuicostata</i> .	Black Hills.
147	Arenaceous limestone, bluish, over 146, with <i>Avicula</i> .	Do.
143	Ferruginous limestone, with <i>Cypricardia</i>	Do.
149	Ferruginous limestone, red, with <i>Avicula</i>	Do.
150	Yellow arenaceous limestone, with <i>Serpula</i> ...	Do.
151	Limestone bored, with lithophagous mollusks.	Do.
152	Red marl, overlying 141, containing snowy gypsum.	Do.
153	Snowy gypsum, from 152.....	Do.
154	Crystalline gypsum, from seams in 152.....	Do.
155	Fibrous gypsum, from seams in 152.....	Do.
156	Blue compact limestone, (fresh water,) in 158, containing <i>Unio nucalis</i> and <i>Planorbis</i> .	Do.
157	Arenaceous limestone, same as 150, containing <i>Pentacrinus</i> , with <i>Serpula</i> and <i>Ostrea</i> attached to surfaces.	Do. Do.
158	Yellowish argillo-arenaceous limestone, with <i>Ostrea</i> , Upper Jurassic.	Do.
159	Gray shell limestone, containing <i>Ammonites</i> , <i>Belemites</i> , &c., interstratified with 158.	Do.
160	Snowy gypsum, with no stains, equivalent of 153.	Big Horn River.
161	Gypsum, with crystals of selenite.....	
162	Snowy gypsum.....	Near sources of Yellowstone.
CRETACEOUS.		
<i>Formation No. 1.</i>		
163	Conglomerate and sandstone, with <i>Unios</i>	Bad-lands of Judith.
164	Conglomerate.....	Do.
165	Conglomerate, fine, with <i>Melantias</i> and <i>Cyclas</i> .	Do.
166	Gray arenaceous limestone, with <i>Melania</i> and <i>Helix</i> .	Do.
167	Conglomerate, same as 165.....	Do.
168	Arenaceous limestone, (166,) with leaves of <i>Credneria</i> , <i>Melantias</i> , &c.	Do.
169	Indurated ferruginous clay, with <i>Melantias</i>	Do.
170	Ferruginous sand, with <i>Unio danai</i>	Do.
171	Indurated clay, with <i>Melantias</i> and scales of <i>Lepidotus</i> , above 166.	Do.
172	Shell limestone containing <i>Melantias</i>	Do.
173	Impure sandy lignite, (stratum D of section).	Do.
174	Shell limestone, same as 172.....	Do.
175	Cream-colored shale, burnt, from over lignite beds.	Do.
176	Compact argillaceous limestone, with <i>Cytherea oweni</i> , (marine,) beneath fresh-water beds.	Do.
177	Ferruginous sandstone, with <i>Tellina subtor-tuosa</i> .	Do.
178	Rough gray limestone, with <i>Ostrea glabra</i>	Do.
179	Ferruginous sandstone, with <i>Inoceramus pe-tenuis</i> , upper marine strata.	Do.
180	Lignite, over 179.....	Do.
181	Carbonaceous sand from decomposition of lignite bed, over 179.	Rocky Mountain Creek.
182	Impure shaly lignite, with selenite.....	Near Ammel's Island.
183	Limestone, with <i>Cypris</i> , lower part of formation No. 1.	Black Hills, east base.
184	Silicified wood, ferruginous.....	Do.
185	Silicified wood, coniferous.....	Do.

Minerals and geological specimens—Continued.

CRETACEOUS—Continued.		
<i>Formation No. 1—Continued.</i>		
186	Bone of saurian	Black Hills, east base.
187	Bone of saurian or cetacian	Do.
188	Dense ferruginous sandstone	Black Hills, west base.
189	Quartzose sandstone, bluish	Do.
190	.....
191	Conglomerate from junction of Cretaceous and Carboniferous rocks.	Platte Valley.
192	Coarse ferruginous sandstone, with pebbles, over 199.	Do.
193	Dark ferruginous sandstone, over 192.....	Do.
194	Dark ferruginous sandstone containing much iron.	Do.
195	.....do	Do.
196	Ferruginous sandstone	Blackbird Hill.
197	Ferruginous sandstone, fine-grained	Mouth of Elk Horn.
198	Dark coarse sandstone, very ferruginous	Do.
199	Red, ferruginous sandstone, with many species of dicotyledonous leaves.	Black Hills.
200	.....do	
201	Light gray quartzose sandstone, with balls of sulphate of iron, over 199.	Black Hills.
202	Light gray quartzose sandstone, with dicotyledonous leaves.	Do.
203	Whitish pulverulent sandstone, over 199.....	Sioux City.
204	Whitish pulverulent sandstone, fine-grained, under 199.	Blackbird Hill.
205	Indurated clay, bluish	Do.
206	Indurated clay, yellow	Decatur.
207	Indurated clay, yellow	Do.
208	Ferruginous sandstone, with striated bivalves and <i>Cytherea arenaria</i> .	Big Sioux.
209	Indurated clay, with dicotyledonous leaves ..	Do.
210	Indurated sand, fine, yellow, with leaves of <i>Salix</i> .	Do.
211	Ferruginous sandstone	Mouth of Iowa Creek.
212	Ferruginous sandstone, fine-grained, with impressions of dicotyledonous leaves.	Mouth of Big Sioux.
213	Ferruginous sandstone, with <i>Solen dacotahensis</i> .	Do.
214	Lignite, under 209	Do.
215	Silicified wood, bored by <i>Teredo</i>	Big Sioux.
216	.....do	Blackbird Hills.
217	.....do	Smoky Hill Fork.
218	.....do	Republican Fork.
219	Coarse ferruginous sandstone, with leaves of <i>Credneria</i> .	Smoky Hill.
220	Sandstone, very ferruginous	Do.
221	Cellular ferruginous rock	Do.
<i>Formation No. 2.</i>		
222	Masses sulphuret iron, with sulphate	Mouth of Vermillion.
223	Crystallized sulphuret iron, with sulphate ...	Do.
224	Crystallized gypsum	Do.
225	.....do	Do.
226	Crystallized gypsum, in plates	Do.
227	Large crystals selenite in black clay.....	Do.
228	.....do	Do.
229	Ferruginous shale, with remains of fishes...	Do.
230	Ferruginous shell limestone	Do.
231	Yellow clay, with gypsum	Do.
232	Conglomerate, with green siliceous pebbles ..	Do.
233	Conglomerate, with sharks' teeth.....	Do.

Minerals and geological specimens—Continued.

CRETACEOUS—Continued.		
<i>Formation No. 2—Continued.</i>		
234	Gray arenaceous limestone, with <i>Cytherea orbiculata</i> .	Mouth of Vermillion.
235	Gray arenaceous limestone, with fish-scales ..	Do.
236	Dark gray indurated clay, with fish-scales ...	Black Hills, east base.
237	Arenaceous limestone, (234,) with <i>Serpula</i>	Dixon's Bluffs.
238	Conglomerate, with fish-teeth	Do.
239	Arenaceous limestone, gray, with <i>Inoceramus problematicus</i> .	Black Hills, west base.
<i>Formation No. 3.</i>		
240	Soft yellow limestone, with <i>Inoceramus problematicus</i> .	Big Sioux.
241	Gray marl, with <i>Ostrea congesta</i> , and fish remains, (base of No. 3.)	Mouth James River.
242	.....do	Do.
243	Scale of <i>Cyclocladus</i> , in 242.....	Do.
244	Fibrous carbonate of lime, with <i>Ostrea congesta</i> attached to surface.	Durion Hills.
245	Yellow marl.....	Do.
246	.....do	Bijoux Hills.
247	Yellow marl, lighter	Do.
248	Crystalline carbonate of lime, seams, in marl.	Do.
249	Crystalline carbonate of lime, greenish, in marl.	Do.
250	Black plastic clay, upper part of No. 3.....	Near Bijoux Hills.
251	Shale, argillaceous, with fish remains, over 250	Do.
252	Shale, argillaceous, with fish remains, calcined by combustion, of 250.	Do.
<i>Formation No. 4.</i>		
253	Blue clay, with <i>Ptychoceras mortoni</i>	Great Bend of Missouri.
254	Yellow clay, with crystals of gypsum	Do.
255	Whitish alum clay, seams, in 253	Bijoux Hills.
256	Hyd. silicate of magnesia, masses, in formation No. 4.	Do.
257	Crystals sulphate baryta	Do.
258	White aluminous earth, in seams.....	Do.
259	Aluminous clay, (255)	Do.
260	Ferruginous concretions, throughout formation No. 4.	Do.
261	Crystalline argillaceous limestone, (cone in cone.)	Shyenne River.
262	Crystals of selenite in clay beds	Fort Pierre.
263	Selenite and fibrous carbonate lime.....	Mouth Shyenne.
264	Yellow clay, with selenite	Twelve miles above Fort Pierre.
265	Dark argillaceous shale, with <i>Inoceramus</i>	Mouth of Cannon Ball River.
266	Blue concretionary limestone, with <i>Rostellaria</i>	Long Lake, Mo.
267	Indurated clay	Do.
268	Decomposed shale, (253)	Fort Pierre.
269	Brown hematite	Big Shyenne.
270	Brown hematite, more earthy	Do.
271	Dog-tooth spar	Mussel Shell River.
272	Gray arenaceous limestone.....	Milk River.
273	Gray arenaceous limestone, with carbonized matter and shells.	Cannon Ball River.
274	Soft argillaceous shale.....	Yellowstone River.
275	Concretions of compact blue limestone, containing great numbers of fossils.	Do.
276	Concretions of compact blue limestone, containing large crustacean, (undescribed.)	Do.

Minerals and geological specimens—Continued.

CRETACEOUS—Continued.		
<i>Formation No. 4—Continued.</i>		
277	Crystallized carbonate of lime, yellow, forming nucleus of concretions.	Forks of Shyenne.
278	Crystals of selenite	Do.
279	Blue indurated clay, with fibrous gypsum	Do.
280	Dove-colored laminated shale	Grand River.
281	Petrified wood bored by <i>Teredo bisinuata</i>	
282	"Cone in cone," (241)	Cannon Ball River.
283	Indurated clay, with shells	Grand River.
284	Soft micaceous sandstone, thin seam, in clay bed.	Fort Pierre.
285	Vertebra of <i>Mososaurus</i>	Do.
286	Wood bored by <i>Zylophaga stimpsoni</i>	Mussell Shell River.
287	White aluminous clay	Fort Lookout.
<i>Formation No. 5.</i>		
288	Yellow arenaceous limestone, with <i>Venus</i>	Head of Little Missouri.
289	Yellow arenaceous limestone, softer	Do.
290	Yellowish calcareous sandstone, with <i>Cyprina</i>	Cannon Ball River.
291	Yellowish calcareous sandstone, decomposed.	Do.
292	Soft fine sandstone, with <i>Rostellaria</i>	Do.
293	Ferruginous sandstone, with <i>Cytherea</i>	Do.
294	Silicified wood, with bark	Long Lake.
295	Silicified wood, bored by <i>Teredo globosa</i>	Do.
TERTIARY.		
<i>A.—Lignite basin.</i>		
296	Yellow arenaceous clay on Cretaceous rocks.	
297	Yellowish indurated clay, with fresh-water shells, over 296.	Long Lake.
298	Gray sand, fine, over 297	Do.
299	Coarse gray calcareous sandstone, with fossils.	Top of Square Butte.
300	Soft argillo-calcareous shale, with fossil shells.	Thunder Butte.
301	Ferruginous shale, with coniferous plants	Do.
302	Dove-colored sandstone, with silicified wood.	Do.
303	Yellow indurated sand, with estuary shell of genus <i>Cyrena</i> .	Cherry Creek.
304	Light-colored indurated clay, base of section.	Fort Clark.
305	Dark carbonaceous clay, over 304	Do.
306	Lignite, over 305	Do.
307	Dark argillaceous shale, over 306	
308	Yellow indurated sand, with <i>Paludina</i> and <i>Melania</i> .	
309	Grayish indurated sand	
310	Dove-colored calcareous shale, with <i>Unios</i> and other fresh-water shells.	Red Spring.
311	Argillaceous limestone, with fossil plants	Fort Berthold.
312	Fine light-colored marl, under lignite bed	Do.
313	Lignite, bright and compact	Do.
314	Drab indurated clay	High Butte, Little Missouri.
315	Light-colored marl, with impressions of dicotyledonous leaves.	Fort Union.
316	Earthy lignite	Do.
317	Lignite	Yellowstone.
318	Lignite, more impure	Do.
319	Concretions sulphuret iron, common throughout Tertiary series.	Do.
320	<i>Septaria</i> , spherical	Fort Union.
321	Carbonaceous indurated clay, charged with vegetable remains, fresh-water and land shells, <i>Bulimus</i> , <i>Physa</i> , <i>Pupa</i> , &c.	Do.

Minerals and geological specimens—Continued.

TERTIARY—Continued.		
A.—Lignite basin—Continued.		
322	Mineralized wood	Fort Union.
323	Carbonized wood, from lignite bed	Do.
324	Light sandy marl	Do.
325	Shell marl, containing fresh-water shells	Do.
326	Impure lignite	Do.
327	Light-colored fine clay, under lignite bed ...	Do.
328	Brown shale, with vegetable impressions	Milk River.
329	Siliceous shale, containing much vegetable matter.	Do.
330	Gray shell limestone, soft	Do.
331	Carbonaceous clay, with <i>Unio</i> , <i>Paludina</i> , &c..	Yellowstone.
332	Coarse gray shell limestone	Elk Horn Prairie.
333	Compact bluish limestone, with fresh-water shells.	Red Spring.
334	Gray calcareous sandstone, with <i>Unio</i> , <i>Paludina</i> , &c.	Yellowstone.
335	Soft argillaceous limestone, with <i>Paludina rockiformis</i> .	Pardu River.
336	Crystallized carbonate of lime in concretions.	Fort Union.
337	Dove-colored argillaceous limestone, with impressions of ferns, over 315.	Do.
338	Brown calcareous shale, with <i>Taxites</i>	Yellowstone.
339	Silicified wood	Do.
340	Silicified wood, partially carbonized	Do.
341	..... do	Do.
342	..... do	Do.
343	..... do	Do.
344	Silicified wood, with cavities lined with drusy quartz.	Fort Union.
345	Dove-colored clay, metamorphosed by burning out of lignite beds.	Mussel Shell River.
346	Brownish shale, metamorphosed by burning out of lignite beds.	Do.
347	Scoria, black, formed by burning out of lignite beds.	Yellowstone.
348	Scoria, yellowish, formed by burning out of lignite beds.	Do.
349	Scoria, black compact, formed by burning out lignite beds.	Do.
350	Scoria, green vitreous	Do.
351	Scoria, green vitreous, formed by burning out of lignite beds.	Do.
352	Scoria, red, very porous	Do.
353	Scoria, brown, very porous, formed by burning out of lignite beds.	Do.
354	Shale, burned, red, with vegetable impressions.	Do.
355	Shale, burned, bright red, with vegetable impressions.	Do.
356	Shale, burned, vermilion, with gypsum.....	Do.
356½	Shale, burned, black ferruginous	Do.
357	Calcareous pumice from burning of limestone.	Do.
B.—White River Basin.		
Bcd A.		
358	Red sandy clay, containing pebbles, base of <i>Titanotherium</i> bed.	On Shyenne River.
359	Teeth of <i>Titanotherium prouti</i>	Old Woman's Fork.
360	Coarse whitish sandstone, above 358.....	Shyenne River.
361	Coarse whitish concretionary sandstone.....	Do.
362	Soft whitish calcareous sandstone, with scales of mica.	Do.

Minerals and geological specimens—Continued.

TERTIARY—Continued.		
B.—White River Basin—Continued.		
363	Greenish plastic clay	Shyenne River.
364	Greenish plastic clay, upper part	Sage Creek.
365	Plates of chalcedony	Bear Creek.
366	do	Do.
367	do	Do.
368	Fibrous carbonate lime	Do.
369	Dark chalcedony	Do.
370	Magnesite	Do.
371	Calcareous concretion, separating <i>Bed A</i> from <i>Bed B</i> .	Do.
<i>Bed B.</i>		
372	Pinkish indurated marl	Do.
373	Whitish indurated marl, from over 372	Do.
374	Pinkish calcareous concretion	Do.
375	Decomposed marl, from 372 and 373	Do.
376	Decomposed marl, from 372 and 373, with <i>Oreodon</i> .	Do.
<i>Bed D.</i>		
377	Cream-colored marl	White River.
378	Siliceous limestone, with fresh-water shells, <i>Planorbis</i> , <i>Limnea</i> , &c.	Do.
379	Tufaceous concretionary limestone	Do.
380	Cream-colored marl, containing <i>Oreodon</i>	Do.
<i>Bed E.</i>		
381	Soft white grit	Do.
382	Conglomerate, above 381	Do.
383	Conglomerate, with granitic pebbles	Do.
384	Soft white sandstone, with <i>Oreodon</i>	Do.
385	Calcareous conglomerate	Fort Laramie.
386	Conglomerate	Bijoux Hills.
387	Calcareous concretions, in marl, under 386	Do.
388	Sulphate baryta, foliated crystals, in 387	Do.
389	Green siliceous concretions, in limestone, con- taining fresh-water shells.	Medicine Hills.
390	do	Do.
391	Coarse whitish sandstone	Bad Land Creek.
392	Conglomerate	Grind Stone Hill.
393	Quartzose conglomerate	Do.
394	White infusorial earth, base of <i>Bed E</i> , local ..	Running Water.
395	do	Loup Fork.
396	.....
397	Indurated marl, white	Warren's Fork.
398	Siliceous tufa	Niobrara River.
399	White marl	Loup Fork.
400	Whitish cherty limestone	Do.
401	White foliated limestone	Niobrara River.
402	.....
403	White tufaceous marl, containing fresh-water shells.	Loup Fork.
404	Silicified wood	Running Water.
405	do	Do.
406	Siliceous sinter	Sage Creek.
407	Carbonate of lime	Bear Peak.
408	Ferruginous conglomerate	Yellowstone River.
409	Micaceous granite	Do.
410	Hornblendic rock	Do.
411	Limestone, with corals	Do.

Minerals and geological specimens—Continued.

TERTIARY—Continued.		
B.—White River Basin—Continued.		
412	Limestone, with <i>Spirifer</i>	Yellowstone River.
413	Limestone, with <i>Orthoceratite</i>	Do.
414	Limestone, with <i>Syringopora</i>	Do.
415	Chalcedony	Do.
416	Silicified wood	Do.
417	Limestone, with red chert	Do.
418	Concretions, from yellow marl	Big Sioux.
419	Siliceous sinter, from springs	Black Hills.
420	Sand, from sand-hills	Do.
421	Very fine gray sand, from sand dune	Powder River.
422	Prismatic iron-ore	Mouth Big Horn.
423	Efflorescence on soil	Cannon Ball River.

Dr. Newberry rendered me valuable assistance in making out the preceding catalogue.

MAMMALS.

The mammals of the collection have already been examined by Professor Baird, and most of the species determined. The collection contains skins, skeletons, and skulls of nearly all the larger mammals of the plains, with a large number of specimens of most of the smaller ones. I will here say a few words in regard to the present distribution of some of the larger animals on the Upper Missouri. Many of them are fast passing away, and in a few years must become extinct. The buffalo, which has been so important an agent in the preservation of the Indians, is now gradually gathering into a smaller area; and although in the valley of the Yellowstone and along the Upper Missouri thousands may yet be seen, they are annually decreasing at a rapid rate. In 1850, buffaloes were seen as low down on the Missouri as the Vermilion River, and in 1854 a few were killed near Fort Pierre, but at the present time none, except now and then a stray bull, are seen on the Missouri River below Fort Clark.* They are, however, quite abundant at this time on the Platte River and along the valley of the Smoky Hill Fork of the Kansas. Probably at this time all the larger animals, as buffalo, elk, deer, antelope, bighorn, and beaver, are more abundant in the valley of the Yellowstone than in any other portion of the Upper Missouri.

Descending the Yellowstone River in the summer of 1854, I saw, for the distance of 350 miles, the prairies on both sides of the river covered with herds of buffalo, and on the sand-bars large numbers of elk, deer, and antelopes. Elk and white-tailed deer (*Cervus leucurus*) are quite abundant even in the northern parts of Iowa, but the black-tailed deer (*Cervus macrotis*) is seldom seen below Fort Pierre. It is found chiefly in the most rugged portions of the country, in the region of the Black Hills, or in the vicinity of the mountains. The interminable ravines of Sage Creek and the Shyenne River are noted places for them. The antelope is seldom observed below Fort Pierre. It is, however, the most abundant animal in the Sioux country, and confined to the open prairies. The bighorn, or mountain sheep, (*Ovis*

* These animals occupy very different localities in different years and different seasons.—Lieutenant Warren.

montana,) is quite abundant in the almost inaccessible regions known as the Mauvaises Terres, or Bad Lands, but are not hunted much by the Indians for food. The beaver are increasing very rapidly, and many of the mountain streams literally swarm with them. Since the days of the trapper are over, and the price of their fur has become so reduced, the inducements to hunt them are not very great, and they are allowed to multiply undisturbed. Their flesh is eaten to some extent by the Indians and traders, and in the absence of other meat is considered quite a delicacy. The raccoon is seldom seen beyond the frontier. A few have been killed in the valley of White River, but they seldom pass up the Missouri above latitude 42°. The following is a list of the mammals contained in the collection and now deposited in the Smithsonian Institution :

1. *Sorex Haydeni*, Baird, (n. s.)—Hayden's Shrew.—Fort Pierre to Fort Union, Nebraska Range on the Missouri River, from latitude 44.20 to 48.00.—This small species of shrew is quite rare in Nebraska. It is seldom seen alive, though sometimes found dead along river banks. A single specimen was caught at Fort Pierre in the autumn of 1856, and a second one at Fort Union near the mouth of the Yellowstone. Three specimens were secured.

2. *Blarina brevicauda*, Gray.—Short-tailed Shrew.—Illinois to Nebraska.—A single specimen of this species was obtained near Fort Berthold, on the Missouri, in latitude , longitude ; very rare.

3. *Scalops argentatus*, Aud. & Bach.—Silvery Mole.—Detroit to Fort Riley, and south to Prairie Mer Rouge? Range in latitude from 42.20 to Louisiana? in longitude 83 to 97.—One specimen of this beautiful species was collected near the mouth of Big Sioux River. I do not think it occurs high up on the Missouri River.

4. *Lynx rufus*, Raf.—Wild Cat.—Atlantic to Pacific. Upper Missouri to the Gila River. Not on the Rio Grande?—The skins of this animal are very often brought to the different trading-posts on the Upper Missouri by the Indians, though seldom seen by the traveler. There is no portion of the country bordering on the Missouri River, or its tributaries, where it does not exist to a greater or less extent. The Canada Lynx (*Lynx canadensis*) has also been observed in several localities by the traders of the country.

5. *Canis occidentalis* var. *griseo-albus*.—White and Gray Wolf.—North America generally?—*Canis occidentalis* var. *nubilus*.—Dusky Wolf.—Missouri River to the Pacific.—This species, with its numerous varieties, is exceedingly abundant throughout the region of the Upper Missouri, above latitude 43°. It is most abundant where the buffalo range, and subsists mostly upon them. Their skins are made an article of trade, being valued at \$1 apiece.

6. *Canis latrans*, Say.—Coyote; Prairie Wolf.—Fort Riley, Kansas, to the Pacific, and Upper Missouri to the Rio Grande of Texas.—This animal is much smaller, and the skins sell for only half the price of the *C. occidentalis*. It is exceedingly abundant throughout the Upper Missouri country, extending down into the settlements, where they often do much mischief to the farmers.

7. *Vulpes macrourus*, Baird.—Prairie Fox.—Upper Missouri to Plains of Columbia, O. T.—This is much the finest animal of the genus in this country. The skins are remarkable for the thickness and beauty of their fur. The different varieties, as Silver, Cross, and Black Fox, are well known among the traders, and are much valued. A skin of the Silver variety is a great prize, often selling for \$100.

8. *Vulpes velox*, Aud. & Bach.—Kit Fox; Swift Fox.—Plains west of

Missouri to the Cascade Mountains of Oregon.—Like the Prairie or Barking Wolf, this animal is fond of wandering down among the settlements and committing his depredations upon the farmers. It is much hunted by the traders; but its skin is not very valuable, averaging only about 25 cents per skin. It is very abundant around prairie-dog villages, and subsists to a great extent upon the inhabitants.

9. *Putorius longicauda*, Rich.—Long-tailed Weasel.—Upper Missouri and Platte, (Carlton House, H. B. T., Rich.)—Not uncommon throughout the Northwest, though seldom seen by the traveler. Its skin is highly prized by the Indians, who use it for making articles of dress, tobacco pouches, and for other ornamental purposes.

10. *Lutra canadensis*, Sab.—American Otter.—Northern parts of the United States to Florida, and west to the Rocky Mountains. Not uncommon in the streams that flow from the north into the Missouri. I cannot ascertain that it has been seen above the mouth of the Niobrara River on the Missouri. The only specimen obtained by our party was taken in a beaver trap in the Niobrara, about eighty miles above its mouth. Otter skins are imported into the country every year by the traders, and are prized very highly by the Indians for ornamental purposes.

11. *Mephitis mephitis*.—Common Skunk.—United States, east of the Missouri plains and north of Texas.—Very common throughout the Upper Missouri country.

12. *Taxidea americana*, Waterh.—Missouri Badger.—Iowa and Wisconsin to the Pacific coast, and from Arkansas to 49° N. lat., (to 58° N. lat., Rich.)—This animal is not rare, though not very abundant on the Missouri. It seems to be of very little economical value, except for food to the starving Indian.

13. *Procyon lotor*, Storr.—Common Raccoon.—Massachusetts to Florida, and west to Fort Kearney. Not in Southern Texas?—Very abundant in the vicinity of Council Bluffs, where the skin is made a considerable article of trade with the Indians. It is not found high up on the Missouri. The highest point that I have observed it was near the mouth of the Niobrara River, though I have been informed that they are sometimes seen in the valley of White River.

14. *Ursus horribilis*, Ord.—Grizzly Bear.—Plains of Upper Missouri to the Rocky Mountains, and along their base, thence to the coast of California, (not of Oregon or Washington?)—This formidable animal is still quite abundant toward the sources of the Missouri. At the present time it is very seldom, if ever, seen below Fort Pierre. But one skin was taken by our party.

15. *Sciurus ludovicianus*, Custis.—Western Fox Squirrel.—Mississippi Valley.—Very abundant about Council Bluffs. Gradually becomes rare, and ceases near the mouth of White River.

16. *Sciurus carolinensis*, Gm.—Gray Squirrel; Black Squirrel.—Eastern United States to the Missouri River.—Two specimens of this squirrel were taken, one near Fort Leavenworth, and the other near the mouth of the Platte. It is seldom, if ever, seen above this point.

17. *Sciurus fremontii*, Towns.—Mountain Gray Squirrel.—A specimen obtained at Laramie Peak is supposed to belong to this point.

18. *Sciurus hudsonius*, Pallas.—Red Squirrel; Chickaree.—Labrador (lat. 56°) to Mississippi; and in the United States from the Atlantic to the Missouri River.—Several specimens supposed to be identical with this species were collected in the Black Hills, and is quite abundant in the oak woods of that region.

19. *Tamias quadrivittatus*, Rich.—Missouri Striped Squirrel.—Upper

Missouri to Rocky Mountains, and west to the Cascade range. Along the Rocky Mountains as far south as Fort Stanton, New Mexico. Lat. 33° 30'.—Very common in the "Bad Lands" and rocky portions of the Upper Missouri. Seldom, perhaps never, seen below Fort Pierre.

20. *Spermophilus franklini*, Rich.—Gray Gopher.—Northern Illinois and Wisconsin, and to Minnesota and Saskatchewan.—One specimen of the above species was taken near the mouth of the Loup Fork of the Platte. Quite rare.

21. *Spermophilus tridecem-lineatus*, Aud. & Bach.—Striped Gopher; Prairie Squirrel.—Eastern Michigan to the plains of the Missouri, and south to Red River, Arkansas, and Fort Thorn, N. M.—Very abundant on all the prairies of the Northwest.

22. *Spermophilus Townsendii*, Bachman.—Townsend's Spermophile.—Rocky Mountains to the north.—Several specimens were collected near Fort Laramie.

23. *Cynomys ludovicianus*.—Prairie Dog.—Milk River and Upper Missouri; west toward the Rocky Mountains; south to Red River; southwest to the Upper Rio Grande, and a short distance into Sonora?—Very abundant from the mouth of the Niobrara to the mountains; found in great numbers in the valley of the Yellowstone and along the Missouri above Fort Union.

24. *Arctomys flaviventer*, Bachman.—Yellow-footed Marmot.—Black Hills, Nebraska.—This animal is very rare, but one specimen having been secured on the Upper Missouri. The skins of only two individuals are in the museum of the Smithsonian Institution.

25. *Castor canadensis*, Kuhl.—American Beaver.—Throughout the entire area of North America.—The history of this animal is more interesting than that of any other on the Upper Missouri. In the palmy days of the trapper, the beaver became very scarce in the West; but since the price of their fur has become so low as to render the business of trapping them an unprofitable pursuit, they have multiplied to an enormous extent, so that all the little streams flowing from the mountains literally swarm with them. Their skins, however, are still a considerable article of trade.

26. *Geomys bursarius*, Rich.—Pouched or Pocket Gopher.—Missouri to Minnesota and Nebraska.—Very abundant on the rich bottoms around Council Bluffs and Big Sioux, where they do much mischief in the gardens. One specimen was taken near the mouth of Big Sioux, and a second on the Niobrara.

27. *Thomomys rufescens*, Maxim.—Fort Union Gopher.—Fort Pierre to Fort Union on the Missouri.—This gopher seems to take the place of the *Geomys bursarius* from Fort Pierre to the mountains. Two specimens were collected at Fort Union and one at Fort Randall on the Missouri.

28. *Jaeculus hudsonius*.—Jumping Mouse.—Nova Scotia, (Labrador, Pennant,) to Southern Pennsylvania, and west to the Pacific Ocean.—Very rare. Only two specimens were obtained near Fort Union.

29. *Perognathus flavus*, Baird.—Upper Missouri, along eastern slopes of Rocky Mountains to Sonora and Chihuahua; and along the Rio Grande to Matamoras.—Collected on the Loup Fork during the summer of 1857.

30. *Dipodomys ordii*, Woodhouse.—Kangaroo Rat.—Platte River, along the eastern slope of the Rocky Mountains, into Durango and Coahuila, Mexico.—A single specimen was taken on the Niobrara River.

31. *Mus musculus*, Linn.—Common Mouse.—North America generally.

(Introduced.)—Abundant at all the fur-trading posts on the Missouri. *Mus rattus*, or Common Rat, is also introduced.

32. *Hesperomys sonoriensis*, LeConte.—Sonorian Mouse.—Upper Missouri and Rocky Mountains to El Paso and Sonora.—Very abundant near Fort Union and along the Yellowstone. Twenty-five specimens collected.

33. *Hesperomys leucogaster*.—Missouri Mouse.—Plains along the Upper Missouri.—Very rare; but two specimens secured; one near Bijoux Hills, the other on Vermillion prairie, and are the only specimens in the museum of the Smithsonian Institution.

34. *Neotoma cinerea*.—Rocky Mountain Rat.—Eastern slope of Northern Rocky Mountains and Upper Missouri.—Not rare, but seldom captured; usually found among the dry trees on the river-bottoms. The only specimen secured was taken at Fort Sarpy, near the mouth of the Big Horn River, on the Yellowstone.

35. *Arvicola Haydeni*, Baird, (n. s.)—Fort Pierre, Nebraska.—But one specimen of this species has ever been detected.

36. *Lepus campestris*, Bach.—Prairie Hare.—Upper Missouri and Saskatchewan plains to the Cascade range of Oregon.—This hare, though not extremely abundant, is not uncommon in the Northwest, from the mouth of Niobrara River to the mountains. Four specimens were collected on the Yellowstone.

37. *Lepus sylvaticus*, Bach.—Gray Rabbit.—From Massachusetts throughout the United States as far as Indianola, Texas? and west to the Missouri as far as Fort Union, Nebraska.—Found all along the Missouri River to the mountains, but mostly confined to the wooded bottoms of the rivers and streams. Eight specimens are in the collection of the expedition.

38. *Lepus artemisia*, Bach.—Sage Hare.—Regions west of the Missouri to the Rocky Mountains, and to the Cascade Mountains of Oregon along the Columbia on the north, and to the city of Chihuahua on the south.—Abundant in the Bad Lands and on the sage plains of the Upper Missouri River. Five specimens were obtained by the expedition.

39. *Cervus canadensis*, Erxl.—American Elk.—Northern portions of United States to Upper Missouri, and west to the Pacific. Found in the Alleghenies of Pennsylvania and Virginia. (North to 57°, Rich.)—Most abundant in the valley of the Yellowstone and along the Missouri River above Fort Union. Not rare, though less abundant as low down the Missouri as Council Bluffs. The collection contains two pairs of skins, two of skeletons, with numerous separate skulls, and about twenty pairs of antlers.

40. *Cervus leucurus*, Douglass.—White-tailed Deer.—Upper Missouri and Platte to the Columbia River and Washington Territory. Western Texas and New Mexico?—Very abundant along the river-bottoms; most common from Council Bluffs to Fort Pierre. Four skins, with numerous separate skins and antlers, were obtained.

41. *Cervus macrotis*, Say.—Mule Deer.—Upper Missouri and Platte to the Cascade range, (head of Des Chutes River.) Oregon Territory. Not extending to the Pacific. Headwaters of Arkansas.—Much more abundant on the Upper Missouri than the *Cervus leucurus*. Four skins, two skeletons, and about thirty separate skulls and horns were collected.

42. *Antilocapra americana*, Ord.—Prong-horn Antelope; Cabree.—Plains west of Missouri, from the Lower Rio Grande to the Saskatchewan, and west to the Cascade and Coast range of the Pacific slope.—This beautiful and fleet animal is found everywhere on the open grassy plains,

from the mouth of the Niobrara River to the mountains. Our collection contains eight skins entire, one skeleton, and a large number of skulls.

43. *Ovis montana*, Cuvier.—Bighorn; Mountain Sheep.—Broken ground on the Upper Missouri and Platte. Rocky Mountains generally. As far west, at least, as Coast and Cascade Mountains of the Pacific slope.—Very abundant in the rugged and inaccessible portions of the Upper Missouri, especially the "Bad Lands."

44. *Bos americanus*, Gmelin.—American Buffalo.—Formerly found throughout nearly the whole of North America, east of the Rocky Mountains. Now confined to the plains west of the Missouri and along the slopes of the Rocky Mountains.

45. *Vespertilio pruinosus*, Say.—All over the United States east of the Rocky Mountains.

46. *Vespertilio noctivagans*, LeConte.—Common throughout the country east of the Rocky Mountains.

47. *Vespertilio novaboracensis*, Gmelin.

BIRDS.

	No. of specimens.
1.— <i>Cathartes aura</i> , (Linn.) Illig. Turkey Buzzard. All of North America, except the arctic regions	1
2.— <i>Falco (Falco) anatum</i> , Bonaparte. Duck Hawk. North America, east of the Rocky Mountains	1
3.— <i>Falco (Hypotriorchis) columbarius</i> , Linn. Pigeon Hawk. Temperate North America, Mexico, Central America, Northern South America	2
4.— <i>Falco (Gennaia) polyagrus</i> , Cassin. Prairie Falcon. Western North America	3
5.— <i>Falco (Tinnunculus) sparverius</i> , Linn. Sparrow Hawk. Entire continent of America	5
6.— <i>Accipiter mexicanus</i> , Swains. Western North America	3
7.— <i>Buteo swainsoni</i> , Bonap. Swainson's Buzzard. Northern and Western North America	4
8.— <i>Buteo bairdii</i> , Hoy. Baird's Buzzard. Northern and Western North America	3
9.— <i>Buteo (Poecilopternis) borealis</i> , (Gmelin,) Vieill. Red-tailed Hawk. Eastern North America; fur countries; Cuba; Jamaica	3
10.— <i>Archibuteo ferrugineus</i> , (Licht.,) Gray. California Squirrel Hawk. Western North America	1
11.— <i>Circus hudsonius</i> , (Linn.,) Vieillot. Marsh Hawk. All of North America and Cuba	4
12.— <i>Bubo virginianus</i> , (Gmelin,) Bon. Great Horned Owl. The whole of North America. Runs into varieties, <i>atlanticus</i> , <i>pacificus</i> , <i>arcticus</i> , <i>magellanicus</i>	1
13.— <i>Otus wilsonianus</i> , Lesson. Long-eared Owl. The whole of Temperate North America	3
14.— <i>Brachyotus cassinii</i> , Brewer. Short-eared Owl. The whole of Temperate North America; Greenland; Cuba	2
15.— <i>Syrnium nebulosum</i> , (Forster,) Gray. Barred Owl. Eastern North America; Fort Tejon, Cal	1
16.— <i>Athene hypugæa</i> , Bonap. Burrowing Owl. From Mississippi River to the Rocky Mountains	7
17.— <i>Conurus carolinensis</i> , (Linn.,) Kuhl. Parakeet. Southern and Southwestern States, as far west as the Missouri	12

	No. of specimens.
18.— <i>Coccygus americanus</i> , (Linn.,) Bonap. Yellow-billed Cuckoo. Eastern United States to the Missouri plains.....	6
19.— <i>Coccygus erythrophthalmus</i> , (Wils.,) Bon. Black-billed Cuckoo. United States to the Missouri plains.....	6
20.— <i>Picus (Trichopicus) villosus</i> , Linn. Hairy Woodpecker. Northern and western regions; var. <i>major</i> , <i>medius</i> , <i>minor</i>	6
21.— <i>Picus (Trichopicus) pubescens</i> , Linn. Downy Woodpecker. Eastern United States, toward the eastern slope of the Rocky Mountains.....	3
22.— <i>Picoides dorsalis</i> , Baird. Striped Three-toed Woodpecker. Laramie Peak, Rocky Mountains.....	1
23.— <i>Sphyrapicus varius</i> , (Linn.,) Baird. Yellow-bellied Wood- pecker. Atlantic Ocean to the eastern slopes of Rocky Mountains; Greenland.....	8
24.— <i>Sphyrapicus thyroideus</i> , (Cass.,) Baird. Brown-headed Woodpecker. Cascade and Coast range of California and Oregon.....	1
25.— <i>Centurus carolinus</i> , (Linn.,) Bon. Red-bellied Woodpecker. North America, from Atlantic coast to the eastern slope of the Rocky Mountains.....	3
26.— <i>Melanerpes erythrocephalus</i> , (Linn.,) Sw. Red-headed Wood- pecker. North America, from the Atlantic to the east- ern slope of the Rocky Mountains.....	9
27.— <i>Melanerpes torquatus</i> , (Wils.,) Bonap. Lewis' Woodpecker. Western America, from Black Hills to Pacific.....	6
28.— <i>Colaptes auratus</i> , (Linn.,) Sw. Flicker. Eastern North America to the eastern slopes of the Rocky Mountains; Greenland.....	8
29.— <i>Colaptes mexicanus</i> , Swain. Red-shafted Flicker. West- ern North America, from the Black Hills to Pacific....	21
29 ^a .— <i>Colaptes hybridus</i> , Baird. Cross between two preceding. Upper Missouri.....	
30.— <i>Cheatura pelagica</i> , Stephens. Chimney Swallow. Eastern United States to the slopes of the Rocky Mountains; Bijoux Hills, O. T.....	1
31.— <i>Antrostomus nuttalli</i> , (Aud.,) Cassin. Nuttall's Whip-poor- will. High central plains to the Pacific coast.....	2
32.— <i>Chordeiles popetue</i> , (Vieill.,) Baird. Night Hawk. North America generally.....	5
33.— <i>Ceryle (Megaceryle) alcyon</i> , (Linn.,) Boie. Belted King- fisher. Entire continent of North America.....	2
34.— <i>Tyrannus carolinensis</i> , (Linn.,) Baird. Kingbird. East- ern North America to Rocky Mountains.....	9
35.— <i>Tyrannus verticalis</i> , Say. Arkansas Flycatcher. Western North America, from the high central plains to the Pacific.....	19
36.— <i>Sayornis fuscus</i> , (Gm.,) Baird. Pewee. Eastern North America.....	1
37.— <i>Sayornis sayus</i> , (Bon.,) Baird. Say's Flycatcher. Upper Missouri River and central high plains westward to the Pacific and south to Mexico.....	5
38.— <i>Contopus richardsonii</i> , (Sw.,) Baird. Short-legged Pewee. high central dry plains to the Pacific; Rio Grande val- ley southward to Mexico; Labrador.....	2

	No. of specimens.
39.— <i>Empidonax minimus</i> , Baird. Least Flycatcher. Eastern United States to Fort Bridger	6
40.— <i>Turdus (Turdus) mustelinus</i> , Gm. Wood Thrush. Eastern United States to Missouri	1
41.— <i>Turdus (Turdus) fuscescens</i> , Stephens. Wilson's Thrush. Eastern North America to the Missouri; north to fur countries	1
42.— <i>Turdus (Turdus) swainsonii</i> , Cab. Olive-backed Thrush. Eastern North America to Fort Bridger; south to Mexico and Peru; north to Greenland; accidental in Europe and Siberia	3
43.— <i>Turdus (Turdus) alicia</i> , Baird. Gray-checked Thrush. Mississippi region to the Missouri	4
44.— <i>Turdus (Planesticus) migratorius</i> , Linn. Robin. Continent of North America to Mexico	3
45.— <i>Sialia sialis</i> , (Linn.,) Baird. Bluebird. Eastern North America to west of Missouri; Fort Laramie	9
46.— <i>Sialia arctica</i> , Sw. Rocky Mountain Bluebird. Upper Missouri to Rocky Mountain range, and south to Mexico; rare on the coast of California	9
47.— <i>Regulus calendula</i> , (Linn.,) Licht. Ruby-crowned Wren. United States, from Atlantic to Pacific	4
48.— <i>Anthus ludovicianus</i> , (Gm.,) Licht. Titlark. North America generally; Greenland; accidental in Europe	1
49.— <i>Mniotilta varia</i> , (Linn.,) Vieill. Black and White Creeper. Eastern North America to Missouri River; south to Guatemala. Var. <i>longirostris</i> , Baird. Florida	6
50.— <i>Parula americana</i> , (Linn.,) Bonap. Blue Yellow-backed Warbler. Eastern North America to Missouri River; south to Guatemala	1
51.— <i>Geothlypis trichas</i> , (Linn.,) Cab. Maryland Yellow throat. North America, from Atlantic to Pacific	7
52.— <i>Icteria longicauda</i> , (Lawr.) Long-tailed Chat. High central plains of United States to the Pacific; south into Mexico	12
53.— <i>Helminthophaga celata</i> , (Say,) Baird. Orange-crowned Warbler. Mississippi River to the Pacific; south to Northern Mexico	2
54.— <i>Seiurus aurocapillus</i> , (Linn.,) Sw. Golden-crowned Thrush. Eastern North America to the Missouri	8
55.— <i>Seiurus noveboracensis</i> , (Gm.,) Nutt. Water Thrush. Eastern United States to the Missouri, and south to Guatemala, perhaps to Brazil	2
56.— <i>Dendroica coronata</i> , (Linn.,) Gray. Yellow Rump. Eastern North America to the Missouri plains; stragglers seen on Puget's Sound	5
57.— <i>Dendroica audubonii</i> , (Townsend,) Baird. Audubon's Warbler. Pacific coast of United States to Rocky Mountains; south to Mexico	1
58.— <i>Dendroica pennsylvanica</i> , (Linn.,) Baird. Chestnut-sided Warbler. Eastern United States to the Missouri	1
59.— <i>Dendroica striata</i> , (Forster,) Baird. Black Poll Warbler. Eastern North America to the Missouri high plains; Cuba; Greenland	7

	No. of specimens.
60.— <i>Dendroica aestiva</i> , (Gm.) Baird. Yellow Warbler. United States, from Atlantic to Pacific; south to Guatemala and West Indies.....	15
61.— <i>Dendroica maculosa</i> , (Gm.) Baird. Black and Yellow Warbler. Eastern United States to the Missouri; south to Guatemala.....	1
62.— <i>Setophaga ruticilla</i> , (Linn.) Sw. Redstart. Eastern United States to Fort Bridger; West Indies in winter.....	7
63.— <i>Pyrranga ludoviciana</i> , (Wils.) Bon. Louisiana Tanager. From the Black Hills to the Pacific; south to Mexico..	2
64.— <i>Hirundo horreorum</i> , Barton. Barn Swallow. North America, from Atlantic to Pacific.....	3
65.— <i>Hirundo lunifrons</i> , Say. Cliff Swallow. North America, from Atlantic to Pacific.....	4
66.— <i>Cotyle riparia</i> , (Linn.) Boie. Bank Swallow. North America generally.....	2
67.— <i>Progne purpurea</i> , (Linn.) Boie. Purple Martin. North America generally.....	13
68.— <i>Ampelis cedrorum</i> , (Vieill.) Baird. Cedar Bird. North America generally; south to Guatemala.....	2
69.— <i>Myiadestes townsendii</i> , (Aud.) Cab. Townsend's Flycatcher. United States, from Rocky Mountains and Black Hills to the Pacific; south to the borders of Mexico.....	1
70.— <i>Collyrio borealis</i> , (Bon.) Baird. Great Northern Shrike. Northern regions, from Atlantic to Pacific; in winter south, through most of the United States.....	1
71.— <i>Collyrio excubitoroides</i> , (Sw.) Baird. White-rumped Shrike. Missouri plains and fur countries to Pacific coast; eastward into Wisconsin, Illinois, and Michigan (?).....	6
72.— <i>Vireo gilvus</i> , (Vieill.) Bon. Warbling Flycatcher. Atlantic to Pacific coast of the United States; var. <i>swainsonii</i> , Columbia River.....	6
73.— <i>Vireo (Lanivireo) solitarius</i> , (Wils.) Vieill. Blue-headed Flycatcher. United States, from Atlantic to the Pacific	2
74.— <i>Mimus carolinensis</i> , (Linn.) Gray. Catbird. Eastern United States to Fort Bridger.....	3
75.— <i>Oreoscoptes montanus</i> , (Townsend) Baird. Mountain Mockingbird. Rocky Mountains, from Fort Bridger south to Mexico; along valley of Gila and Colorado; San Diego, California.....	1
76.— <i>Harpophynchus rufus</i> , (Linn.) Cab. Brown Thrush. Eastern North America to Missouri River, and perhaps to high central plains, unless replaced by a long-tailed variety, (<i>H. longicauda</i>).....	6
77.— <i>Salpinctes obsoletus</i> , (Say) Cab. Rock Wren. High central plains, through the Rocky Mountains to the Cascade range, (but not on the Pacific coast?) Fort Tejon.	6
78.— <i>Cistothorus (Telmatodytes) palustris</i> , (Wils.) Cab. Long-billed Marsh Wren. North America, from Atlantic to Pacific; north to Greenland.....	2
79.— <i>Cistothorus (Cistothorus) stellaris</i> , (Licht.) Cab. Short-billed Marsh Wren. Eastern United States to the Loup Fork of Platte.....	1
80.— <i>Troglodytes ædon</i> , Vieill. House Wren. Eastern United States to the Missouri, or to the high central plains.....	1

81.— <i>Troglodytes parkmanni</i> , Aud. Parkman's Wren. Western America, from the high central plains and Upper Missouri to the Pacific	13
82.— <i>Sitta canadensis</i> , Linn. Red-bellied Nuthatch. North America to the Rocky Mountains, probably also to the Pacific	3
83.— <i>Polioptila carulea</i> , (Linn.,) Sclat. Blue-gray Flycatcher. United States, from Atlantic to Missouri, and on the southern border from the Gulf of Mexico to the Coast mountains of California, south to Guatemala	1
84.— <i>Lophophanes bicolor</i> , (Linn.,) Bon. Tufted Titmouse. Eastern North America to the Missouri River, or else replaced there by a <i>L. missouriensis</i>	1
85.— <i>Parus septentrionalis</i> , Harris. Long-tailed Chickadee. Missouri River to the Rocky Mountains, or else replaced there by <i>P. albescens</i>	4
86.— <i>Eremophila cornuta</i> , (Wils.,) Boie. Sky Lark. Everywhere on the prairies and desert plains of North America; Atlantic States in winter. A smaller variety on the western plains	12
87.— <i>Carpodacus purpureus</i> , (Gm.,) Gray. Purple Finch. North America, from Atlantic to the high central plains	1
88.— <i>Chrysomitris tristis</i> , (Linn.,) Bon. Yellow Bird. North America generally	5
89.— <i>Chrysomitris pinus</i> , (Wils.,) Bon. Pine Finch. North America, from Atlantic to Pacific	2
90.— <i>Curvirostra americana</i> , (Wils.) Red Crossbill. North America generally, coming southward in winter. Resident in the mountains of Pennsylvania. Perhaps var. <i>mexicana</i> in Rocky Mountains	2
91.— <i>Curvirostra leucoptera</i> , (Gm.,) Wils. White-winged Crossbill. Northern parts of North America generally	2
92.— <i>Plectrophanes (Centrophanes) ornatius</i> , Towns. Chestnut-collared Bunting. Plains of the Upper Missouri	5
93.— <i>Plectrophanes (Centrophanes) melanomus</i> , Baird. Eastern slope of the Rocky Mountains; Mexico, on the tablelands	3
94.— <i>Plectrophanes (Rhynchophanes) macconnii</i> , Lawr. Eastern slopes of Rocky Mountains; from Fort Thorn, N. M., as far east as the Black Hills, north of the Platte	3
95.— <i>Passerculus savanna</i> , (Wils.,) Bon. Savannah Sparrow. Eastern North America to the Missouri plains	5
96.— <i>Poocetes gramineus</i> , (Gm.,) Baird. Grass Finch. United States, from the Atlantic to the Pacific; or else one species to the high central plains, and another from this to the Pacific	10
97.— <i>Coturniculus passerinus</i> , (Wils.,) Bon. Yellow-winged Sparrow. Eastern United States to the high central plains, (Loup Fork;) also along the valley of Gila and Colorado	12
98.— <i>Coturniculus henslowi</i> , (Aud.,) Bon. Henslow's Bunting. Eastern United States as far north as Washington; westward to the Loup Fork of Platte	1
99.— <i>Chondestes grammaca</i> , (Say,) Bon. Lark Finch. From Wisconsin and the prairies of Michigan to Pacific coast; south to Texas and Mexico on the plains	19

	No. of specimens.
100.— <i>Zonotrichia leucophrys</i> , (Forster,) Sw. White-crowned Sparrow. United States, from Atlantic to the Rocky Mountains, where they become mixed up with <i>Z. gambelii</i> ; Greenland	3
101.— <i>Zonotrichia gambelii</i> , (Nutt.,) Gambel. Rocky Mountains to the Pacific coast; Fort Bridger	2
102.— <i>Zonotrichia querula</i> , (Nutt.,) Gamb. Harris' Finch. Missouri River, above Fort Leavenworth	2
103.— <i>Zonotrichia albicollis</i> , (Gm.,) Bon. White-throated Sparrow. Eastern United States to the Missouri	13
104.— <i>Junco oregonus</i> , (Townsend,) Sclat. Oregon Snowbird. Pacific coast of the United States to the eastern side of the Rocky Mountains; stragglers as far east as Fort Leavenworth in winter, and Great Bend of Missouri	2
105.— <i>Junco caniceps</i> , (Woodh.,) Baird. Rocky Mountains, from Black Hills to Fort Bridger and San Francisco; mountains of New Mexico	2
106.— <i>Junco hyemalis</i> , (Linn.,) Sclat. Snowbird. Eastern United States to the Missouri, and as far west as Black Hills ..	3
107.— <i>Spizella monticola</i> , (Gm.,) Baird. Tree Sparrow. Eastern North America to the Missouri; also on Pole Creek and Little Colorado River, New Mexico	2
108.— <i>Spizella pusilla</i> , (Wils.,) Bon. Field Sparrow. Eastern North America to the Missouri River	5
109.— <i>Spizella socialis</i> , (Wils.,) Bon. Chipping Sparrow. North America, from Atlantic to Pacific	2
110.— <i>Spizella pallida</i> , (Sw.,) Bon. Clay-colored Bunting. Upper Missouri River and high central plains to the Saskatchewan country	5
111.— <i>Melospiza (Melospiza) melodia</i> , (Wils.,) Baird. Song Sparrow. Eastern United States to the high central plains ..	2
112.— <i>Melospiza (Helospiza) lincolni</i> , (Aud.,) Baird. Lincoln's Finch. United States, from Atlantic to Pacific, and south through Mexico to Guatemala	
113.— <i>Melospiza (Helospiza) palustris</i> , (Wils.,) Baird. Swamp Sparrow. Eastern United States, from the Atlantic to the Missouri	1
114.— <i>Calamospiza bicolor</i> , (Townsend,) Bon. Lark Bunting. High Central Plains to the Rocky Mountains; southwesterly to valley of Mimbres and Sonora	5
115.— <i>Euspiza americana</i> , (Gm.,) Bon. Black-throated Bunting. United States, from the Atlantic to the border of the high central plains	17
116.— <i>Guiraca (Goniaphea) ludoviciana</i> , (Linn.,) Sw. Rose-breasted Grosbeak. Eastern United States to the Missouri plains; south to Guatemala	4
117.— <i>Guiraca (Goniaphea) melanocephala</i> , Sw. Black-headed Grosbeak. High central plains, from Yellowstone to the Pacific; table lands of Mexico	5
118.— <i>Guiraca carulea</i> , (Linn.,) Sw. Blue Grosbeak. More Southern United States, from Atlantic to Pacific; south to Mexico	3
119.— <i>Cyanospiza amaena</i> , (Say,) Baird. Lazuli Finch. High central plains, to the Pacific	6

	No. of specimens.
120.— <i>Cardinalis virginianus</i> , Bonaparte. Red Bird. More southern portions of the United States to the Missouri; probably along valley of Rio Grande to Rocky Mountains..	1
121.— <i>Pipilo erythrophthalmus</i> , (Linn.,) Vieill. Ground Robin. Eastern United States to the Missouri River.....	9
122.— <i>Pipilo arcticus</i> , Sw. High central plains of Upper Missouri, Yellowstone, and Platte; Fort Bridger.....	15
123.— <i>Pipilo chlorurus</i> , (Townsend,) Baird. Blanding's Finch. Valley of Rio Grande and Gila. Rocky Mountains north to the South Pass; south of Mexico.....	3
124.— <i>Dolichonyx oryzivorus</i> , (Linn.,) Sw. Boblink. Eastern United States to Fort Bridger, Utah.....	3
125.— <i>Molothrus pecoris</i> , (Gm.,) Sw. Cow Bird. United States, from the Atlantic to California; Fort Bridger.....	7
126.— <i>Agelaius phoeniceus</i> , (Linn.,) Vieill. Swamp Blackbird. United States, from Atlantic to Pacific.....	9
127.— <i>Xanthocephalus icterocephalus</i> , (Bon.,) Baird. Yellow-headed Blackbird. Western America, from Texas, Illinois, Wisconsin, and North Red River to California; south into Mexico; Greenland.....	2
128.— <i>Sturnella magna</i> , (Linn.,) Sw. Meadow Lark. Eastern United States to the high central plains; south to Mexico; Cuba?	3
129.— <i>Sturnella neglecta</i> , Aud. Western Lark. Western America, from high central plains to the Pacific; east to Pembina, and perhaps to Wisconsin	22
130.— <i>Icterus spurius</i> , (Linn.,) Bon. Orchard Oriole. United States, from the Atlantic to the high central plains; probably throughout Texas; south to Guatemala....	12
131.— <i>Icterus Baltimore</i> , (Linn.,) Daudin. Baltimore Oriole. From Atlantic coast to the high central plains, and in their borders; south to Guatemala	9
132.— <i>Icterus Bullockii</i> , (Sw.,) Bon. Bullock's Oriole. High central plains to the Pacific; rare on Upper Missouri; south into Mexico	1
133.— <i>Scotocophagus ferrugineus</i> , (Gm.,) Sw. Rusty Blackbird. From Atlantic coast to the Missouri.....	1
134.— <i>Scotocophagus cyanocephalus</i> , (Wagl.,) Cab. Brewer's Blackbird. High central plains to the Pacific; south to Mexico; Pembina; Minnesota.....	5
135.— <i>Quiscalus versicolor</i> , (Linn.,) Vieill. Crow Blackbird. Atlantic to high central plains; Fort Bridger.....	7
136.— <i>Corvus carnivorus</i> , Bartram. American Raven. Entire continent of North America; rare east of the Mississippi	4
137.— <i>Corvus americanus</i> , Aud. Common Crow. North America to the Missouri region; also on the coast of California? (Not found on the high central plains?)	5
138.— <i>Picicorvus columbianus</i> , (Wils.,) Bon. Clark's Crow. From Rocky Mountains to Pacific; east to Fort Kearney....	6
139.— <i>Pica hudsonica</i> , (Sabine,) Bon. Magpie. Arctic regions of North America; the United States, from the high central plains to the Pacific, north of California	15
140.— <i>Cyanura macrolophus</i> , Baird. Long-crested Jay. Central line of Rocky Mountains to the table-lands of Mexico..	2

	No. of specimens.
141.— <i>Perisoreus canadensis</i> , (Linn.,) Bon. Canada Jay. Northern America into the northern parts of the United States, from Atlantic to Pacific; farther south in Rocky Mountains	9
142.— <i>Ectopistes migratoria</i> , (Linn.,) Sw. Wild Pigeon. North America to high central plains	3
143.— <i>Zenaidura carolinensis</i> , (Linn.,) Bon. Common Dove. Throughout United States, from Atlantic to Pacific; Cuba	1
144.— <i>Tetrao obscurus</i> , Say. Dusky Grouse. Black Hills of Nebraska to Cascade Mountains of Oregon and Washington	6
145.— <i>Centrocercus urophasianus</i> , (Bon.,) Sw. Cock of the Plains. Sage plains of the Northwest	4
146.— <i>Pediocetes phasianellus</i> , (Linn.,) Baird. Sharp-tailed Grouse. Northern prairies and plains, from Wisconsin to Cascades of Oregon and Washington	5
147.— <i>Cupidonia cupido</i> , (Linn.,) Baird. Prairie Hen. Western prairies and plains, within the limits of the United States, east of the Rocky Mountains; southeast to Calcasieu, Louisiana; east to Pocono Mountains; Pennsylvania, Long Island, and eastern coast	3
148.— <i>Ortyx virginianus</i> , (Linn.,) Bon. Partridge; Quail. Eastern United States to the high central plains	1
149.— <i>Grus americanus</i> , (Linn.,) Ord. Whooping Crane. Florida and Texas; stragglers in Mississippi valley	1
150.— <i>Ardea herodias</i> , Linn. Great Blue Heron. Throughout the entire territory of the United States; West Indies ..	1
151.— <i>Botaurus lentiginosus</i> , Steph. Bittern. Entire continent of North America	2
152.— <i>Chanadrius vociferus</i> , (Linn.,) Cassin. Killdeer. North America to the arctic regions; Mexico; South America ..	5
153.— <i>Egialitis (Oxychus) vociferus</i> , (Linn.,) Cassin. Killdeer. North America to the arctic regions; Mexico; South America ..	4
154.— <i>Egialitis (Oryechus) montanus</i> , (Townsend,) Cassin. Mountain Plover. Western North America; Fort Bridger and Fort Tejon	5
155.— <i>Egialitis (Egialeus) melodus</i> , (Ord.,) Cab. Piping Plover. Eastern coast of North America; Nebraska; Louisiana ..	5
156.— <i>Recurvirostra americana</i> , Gm. American Avocet. All of Temperate North America; Florida	2
157.— <i>Phalaropus wilsonii</i> , Sab. Wilson's Phalarope. Entire Temperate regions of North America; New Mexico ..	7
158.— <i>Philohela minor</i> , (Gm.,) Gray. American Woodcock. Eastern North America	1
159.— <i>Gallinago wilsonii</i> , (Temm.,) Bon. English Snipe. Entire temperate regions of North America; California	4
160.— <i>Tringa (Actodromas) wilsonii</i> , Nuttall. Least Sandpiper. Entire Temperate North America ..	1
161.— <i>Tringa (Actodromas) bonapartii</i> , Schlegel. North America, east of the Rocky Mountains	2
162.— <i>Ereunetes petrifecatus</i> , Ill. Semi-palmated Sandpiper. Entire temperate regions of North America; South America; varying much in size	4

No. of
specimens.

163.— <i>Gambetta melanoleuca</i> , (Gm.,) Bon. Tell-tale; Stone Snipe. Entire temperate regions of North America. Mexico	2
164.— <i>Rhyacophilus solitarius</i> , (Wils.,) Bon. Solitary Sandpiper. Entire temperate regions of North America. Mexico..	6
165.— <i>Tringoides macularius</i> , (Linn.,) Gray. Spotted Sandpiper. Entire Temperate North America; Oregon. Accidental in Europe.....	3
166.— <i>Actiturus bartramius</i> , (Wils.,) Bon. Field Plover. Eastern North America; South America. Europe.....	8
167.— <i>Limosa fedoa</i> , (Linn.,) Ord. Entire temperate regions of North America. South America.....	2
168.— <i>Numenius (Phacopus) borealis</i> , (Forst.,) Latham. Esquimaux Curlew. Eastern and Northern North America.....	3
169.— <i>Porzana (Porzana) carolina</i> , Vieill. Common Rail. Entire temperate regions of North America.....	1
170.— <i>Fulica americana</i> , Gmelin. Coot. Entire temperate regions of North America.....	2
171.— <i>Cygnus buccinator</i> , Rich. Trumpeter Swan. Western America, from the Mississippi Valley to the Pacific....	1
172.— <i>Bernicla (Leucoblepharon) canadensis</i> , (Linn.,) Boie. Canada Goose. Whole of North America. Accidental in Europe.....	1
173.— <i>Anas boschas</i> , (Linn.,) Mallard. Entire continent of North America and greater part of Old World.....	1
174.— <i>Dafila acuta</i> , (Linn.,) Jenyns. Sprig-tail; Pin-tail. Whole of North America and Europe.....	1
175.— <i>Nettion crecca</i> , (Linn.,) Kaup. English Teal. Europe; accidental on the eastern coast of the United States....	2
176.— <i>Querquedula discors</i> , (Linn.,) Steph. Blue-winged Teel. Eastern North America to Rocky Mountains. Not yet found on the Pacific coast nor in Europe.....	3
177.— <i>Apatula clypeata</i> , (Linn.,) Boie. Shoveler. Continent of North America; abundant in Europe.....	1
178.— <i>Mareca americana</i> , (Gm.,) Stephens. Baldpate; American Widgeon. Continent of North America; accidental in Europe.....	
179.— <i>Aix sponsa</i> , (Linn.,) Boie. Summer Duck. Continent of North America.....	5
180.— <i>Erismatura rubida</i> , (Wils.,) Bon. Ruddy Duck. Whole of North America; abundant throughout the interior....	2
181.— <i>Mergus americanus</i> , Cass. Sheldrake. Whole of North America.....	1
182.— <i>Lophodytes cucullatus</i> , (Linn.,) Reich. Hooded Merganser. Whole of North America.....	1
183.— <i>Larus delawarensis</i> , Ord. The Ring-billed Gull. Arctic America, Texas to Labrador, western rivers, north-west coast.....	1
184.— <i>Sterna frenata</i> , Gambel. The Least Tern. Texas to Labrador; western rivers.....	3
185.— <i>Hydrochelidon plumbea</i> , (Wils.) The Short-tailed Tern. Texas to the New England States; Mississippi River and tributaries; fur countries.....	1
186.— <i>Podiceps californicus</i> , Heermann. California Grebe. Western North America.....	2

FISHES.

A series of the principal fishes inhabiting the Missouri and its tributaries were collected and preserved in alcohol, and are now deposited in the museum of the Smithsonian Institution. A portion are still undescribed, and of those already determined, Dr. Girard has very kindly furnished me the following list:

1. *Stizostedion boreus*, Grd. Fort Union, Mo.
2. *Gasterosteus inconstans*, Kirtl. Yellowstone River.
3. *Ambloclon grannicus*, Rafin. Milk River.
4. *Pimelodus olivaceus*, Grd. Yellowstone River.
5. *Noturus flaxus*, Rafin. Yellowstone River.
6. *Carpionides damalis*, Grd. Fort Pierre.
7. *Ptychostomus Haydeni*, Grd. Yellowstone River.
8. *Acomus griseus*, Grd. Platte River.
9. *Acomus lactarius*, Grd. Milk River.
10. *Catostomus Sucklii*, Grd. Milk River.
11. *Pimephales fasciatus*, Grd. Milk River.
12. *Hybognathus argyritis*, Grd. Milk River.
13. *Hybognathus Evansi*, Grd. Fort Pierre.
14. *Argyrops dulcis*, Grd. Sweetwater.
15. *Pogonichthys communis*, Grd. Milk River.
16. *Gobio gelidus*, Grd. Milk River.
17. *Leucosomus dissimilis*, Grd. Milk River.
18. *Leucosomus macrocephalus*, Grd. Fort Pierre.
19. *Nocomis nebrascensis*, Grd. Sweetwater.
20. *Semotilus speciosus*, Grd. Platte River.
21. *Platygyrus bowmani*, Grd. Sweetwater.
22. *Hyodon tergisis*, Lesa. Fort Sarpy, Yellowstone.
23. *Scaphirhynchus platyrhynchus*, Baird. Upper Missouri.
24. *Polyodon folium*, Lacep. Fort Pierre.

REPTILES.

A large collection of reptiles was made from all parts of the Upper Missouri, and it is probable that the following list represents quite fully that portion of the Nebraska fauna. The species have been identified by Professor Baird and Mr. R. Kennicott, and the specimens are deposited in the museum of the Smithsonian Institution.

1. *Trionyx*. Yellowstone River.
2. *Emys elegans*. Yellowstone River.
3. *Emys*. Mouth Powder River.
4. *Cistudo*. Mouth Powder River.
5. *Crotalus confluentus*, Say. Yellowstone River.
6. *Crotalophorus tergeminus*, Holb. Yellowstone River.
7. *Entainia sirtalis* var. *parietalis*, B. & G. Loup Fork.
8. *Entainia*. Sand hills.
9. *Nerodia sipedon*, B. & G. Yellowstone River.
10. *Heterodon nasicus*, B. & G. Sand hills of Loup Fork.
11. *Pituophis sayi*, B. & G. Sand hills of Loup Fork.
12. *Amphibolus sayi*. Fort Benton on Missouri River.
13. *Bascanon flaviventris*. Head of Loup Fork.

14. *Chlorosoma vernalis*. Yellowstone River.
15. *Sceloporus consobrinus*.
16. *Sceloporus graciosus*.
17. *Holbrookia maculata*.
18. *Holbrookia douglassi*.
19. *Cnemidophorus scolineatus*.
20. *Plestiodon leptogrammus*.
21. *Plestiodon multivirgatum*.
22. *Plestiodon inornatum*.
23. *Plestiodon septentrionalis*.
24. *Rana halerina*.
25. *Bufo americanus*.
26. *Bufo cognatus*.
27. *Bufo woodhousi*.
28. *Siredon*.

RECENT MOLLUSCA.

An interesting series of recent fluviatile and land *Mollusca* were secured during the several expeditions from various portions of the Upper Missouri. The fresh-water shells were very kindly examined by Mr. Isaac Lea, the celebrated conchologist, of Philadelphia. In some remarks before the Philadelphia Academy in regard to the above collection, and one obtained by Mr. Kennicott from the Red River of the North, Mr. Lea says:

"It is not to be understood that either of these collections, made under adverse circumstances and at times of great personal danger, should be full representatives of this branch of the fauna of these countries. But they are sufficient to prove that zoological life, so far as represented by molluscs, is nearly, if not quite, the same, as that of the Ohio River basin, as well as that of the Missouri River and a part of the Lower Mississippi and Red River of the South. The knowledge of a part of the species from these remote districts proves to us the wide-spread distribution of the same species, as we find every one of them in the Ohio River at Cincinnati, Marietta, and Pittsburg, and this is the more remarkable, as the waters of the Red River of the North are embraced in a different system of drainage, flowing as they do into Hudson's Bay at about 52 degrees north latitude. Here is seen an immense area of country producing in its waters nearly the same life as regards the molluscs, a fact highly interesting to the zoologist."

To Mr. W. G. Binney were transmitted the land shells, which were examined by him with great care. I quote the following remarks from his letter:

"These shells are all of value, as they form the first contribution to our knowledge of the species found in those regions. They are, however, for the most part alluvial. *Succinea Haydeni* is the only perfectly fresh species, the animal being preserved in alcohol."

"*Helix costata* was found in myriads, probably the contribution of many small streams above. Of the previously known species it is the most interesting, having been noticed previously in few localities and small numbers. If any argument were needed to establish the point of *H. minuta* (Say) being identical with the European *H. pulchella* (Mull.) it might be found in the fact of the ribbed variety being also found in this country."

The following catalogue comprises all the fresh-water and land shells known to us on the Upper Missouri:

FLUVIATILE SHELLS.

1. *Unio alatus*, Say. Big Sioux River.
2. *Unio levississimus*, Lea. Big Sioux River.
3. *Unio luteolus*, Lam. Big Sioux River.
4. *Unio asperimus*, Lea. Big Sioux River.
5. *Unio rectus*, Lea. Big Sioux River.
6. *Unio elegans*, Lea. James River.
7. *Unio zizzag*, Lea. White Earth River.
8. *Unio anadontoides*, Lea. James River.
9. *Magaritana complanata*, Lea. Fort Clark in Missouri.
10. *Anadonta Ferussaciana*, Lea. White River, Nebraska.
11. *Lymnea elodes*, Say. Mouth Big Sioux River.
12. *Lymnea nuttalliana*, Lea. Mouth Big Sioux River.
13. *Lymnea humilis*, Say. Mouth Big Sioux River.
14. *Lymnea Haydeni*, Lea. Mouth Big Sioux River.
15. *Lymnea Kirtlandiana*, Lea. Mouth Big Sioux River.
16. *Lymnea umbrosa*, Say. Grindstone Creek, Nebraska Territory.
17. *Lymnea lubricoides*, Lea. Grindstone Creek, Nebraska Territory.
18. *Lymnea Philadelphica*, Lea. Grindstone Creek, Nebraska Territory.
19. *Planorbis bicarinatus*, Say. Mouth Big Sioux River.
20. *Planorbis trivolvis*, Say. Mouth Big Sioux River.
21. *Planorbis lentus*, Say. Mouth Big Sioux River.
22. *Planorbis parvus*, Say. Mouth Big Sioux River.
23. *Planorbis campanulatus*, Say. Mouth Big Sioux River.
24. *Physa heterostropha*. Mouth Big Sioux River.
25. *Physa integra*?, Hald. Mouth Big Sioux River.
26. *Physa elongata*, Say. Mouth Big Sioux River.
27. *Physa ampularia*, Say. Mouth Big Sioux River.
28. *Psidium* —? Grindstone Creek.
29. *Cyclas* —? Grindstone Creek.
30. *Daphnia* —? Grindstone Creek.
31. *Amnicola porata*, Say. Fort Berthold.
32. *Amnicola lapidaria*, Say. Fort Berthold.

LAND SHELLS.

33. *Helix minuscula*, Binney. Council Bluffs, Nebraska Territory.
34. *Helix lineata*, Say. Council Bluffs, Nebraska Territory.
35. *Helix striatella*, Anthony. Council Bluffs, Nebraska Territory.
36. *Helix inflecta*, Say. Council Bluffs, Nebraska Territory.
37. *Helix hirsuta*, Say. Council Bluffs, Nebraska Territory.
38. *Helix solitaria*, Say. Council Bluffs, Nebraska Territory.
39. *Helix alternata*, Say. Council Bluffs, Nebraska Territory.
40. *Helix elevata*, Say. Council Bluffs, Nebraska Territory.
41. *Helix fallax*, Say. Council Bluffs, Nebraska Territory.
42. *Helix concava*, Say. Council Bluffs, Nebraska Territory.
43. *Helix ligera*, Say. Council Bluffs, Nebraska Territory.
44. *Helix profunda*, Say. Near Fort Leavenworth, Kansas Territory.
45. *Helix multilincata*, Say. Near Fort Leavenworth, Kansas Territory.
46. *Helix monodon*, Rackett. Near Fort Leavenworth, Kansas Territory.
47. *Helix pulchella*, Mull. Near Fort Leavenworth, Kansas Territory.
48. *Helix costata*, Mull. Near Fort Leavenworth, Kansas Territory.
49. *Helix arborea*, Say. Drift on the Missouri, near Fort Berthold.
50. *Helix cheresina*, Say. Drift on the Missouri, near Fort Berthold.
51. *Helix electrina*, Gould. Drift on the Missouri, near Fort Berthold.

52. *Helix cooperi*, (new spec.,) Binney. Black Hills, Nebraska Territory.
53. *Pupa nebraskana*, (new spec.,) W. G. Binney. Fort Berthold, Nebraska Territory.
54. *Pupa blandi*, (new spec.,) W. G. Binney. Fort Berthold.
55. *Pupa armigera*, Say. Fort Berthold.
56. *Pupa pentodon*, Say. Council Bluffs, Nebraska Territory.
57. *Pupa modesta*, Say. Council Bluffs, Nebraska Territory.
58. *Pupa badia*, Adams. Council Bluffs, Nebraska Territory.
59. *Bulinus lubricus*, Mull. Fort Berthold, on Missouri.
60. *Succinea venusta*, Say. Yellowstone.
61. *Succinea retusa*, Lea. Yellowstone.
62. *Succinea haydeni*, (new spec.,) W. G. Binney. Yellowstone.
63. *Succinea lineata*, (new spec.,) W. G. Binney. Fort Union and Yellowstone.
64. *Succinea nuttalliana*, Lea. Fort Union.
65. *Succinea obliqua*, Say. Fort Berthold, Nebraska Territory.

BOTANY.

The collection of recent plants from the Upper Missouri is very large and numerous in species. Comparatively few of them have been determined and their names presented in this list. The complete catalogue, with the necessary remarks and descriptions of new species, will appear in the final report.

The vegetation of Kansas and the southern and southeastern portions of Nebraska is luxuriant in the highest degree. The broad bottom prairies of the Missouri, from Council Bluffs to the mouth of the Niobrara, are of inexhaustible fertility, sustaining a vegetation variable in its character and of enormous growth. The upland prairies possess a soil composed of yellow marl, well adapted to agriculture and grazing. All that portion of Nebraska which borders upon the Missouri, for one hundred to one hundred and fifty miles into the interior, is already settled to a great extent, and the traveler sees in prospective many of the finest farms in the West. The beautiful valley of the Platte cannot be surpassed for fertility of soil and the variety and luxuriance of its vegetation. Scarcely a section of land can be seen at the present time that is not already occupied by the courageous and persevering pioneer, and made to yield most abundant crops. Sufficient timber occurs along the banks of ravines and streams for all economical purposes. After passing above latitude 43°, the soil becomes less fertile, climate much drier, and vegetation less luxuriant. The whole country, though well adapted for the purposes of pasturage, is not well suited for agriculture, except in comparatively few localities. There is very little timber but that which skirts the streams, and consists for the most part of cottonwood, elm, ash, and boxwood. Reaching the mountains, as the Bear's Paw, Snowy, Girdle, Black Hills, or Laramie Hills, an inexhaustible supply of pine timber is found, with many other varieties of trees common to the northern regions. The numerous broad valleys in the Black Hills possess a very fertile soil and abound in springs of pure water, and the time cannot be far distant when this region as well as the country around Fort Laramie will be settled by a thriving population, and the vast forests of pine rendered serviceable to the wants of man.

That there is a marked improvement in the character of the country as we approach the mountains has already been noticed in published reports. The valley of the Yellowstone River, after passing the mouth

of the Big Horn, is spoken of by both traders and Indians as quite fertile, abounding with excellent timber, fine clear springs of water, and a luxuriant vegetation. The Crows, who now possess this region, regard it as the finest country in the world. The immense beds of gypsum, of the Jurassic formation, along the eastern slope of the Rocky Mountains, some of which are twenty feet in thickness, would furnish an inexhaustible supply of that excellent fertilizer.

Much might be said in regard to the influence of soil, climate, geological structure, &c., upon the vegetation of the Upper Missouri, as well as the geographical distribution of species; but time will not permit, though many facts have been gathered bearing upon these points. These will appear with the more complete catalogue when the final report is published.

The following meteorological notes were taken at Fort Pierre and vicinity in the spring of 1855, and though very brief may prove of some interest:

March 7.—Weather fair; grass starting up fresh and green near Black Hills. Grasshoppers and ants quite active. Antelope returning to the open prairies from their winter home in the north.

March 8.—Weather very fine and warm. Saw common striped snake, (*Eutainia parietalis*.)

March 9.—Saw red-headed woodpecker, (*Melanerpes erythrocephalus*,) and in company with it a beautiful black glossy woodpecker about the same size, (*Melanerpes torquatus*.)

March 10.—Saw two fine plants on the south side of Bear Peak, six hundred feet above the level prairie around it. One of them, *Anemone patens*, was in blossom; the other was just coming into bloom.

The ice broke up in the Missouri River March 6, as far as Fort Clark, latitude 47°. Then came several days of stormy weather, during which the river was frozen over a second time so firm as to sustain heavily loaded teams. The ice again broke up on the 22d for about the same distance up the Missouri. At Fort Union the ice did not yield until the 3d of April.

April 9.—Four species of umbelliferous plants in bloom; heavy frost during the night, so that ice formed upon the little pools an inch in thickness; grasshoppers quite active and abundant.

April 10.—Cold; some snow.

April 11.—Fair weather; a strong breeze blowing though quite warm. A small species of *Carex* in blossom. Saw yellow-shafted flicker, (*Colaptes auratus*,) and meadow lark, (*Sturnella neglecta*.) At night the frogs commenced a gentle croaking, for the first time this spring.

April 12.—Various kinds of insects quite abundant; common garter snake, (*E. parietalis*,) killdeer, (*Charadrius vociferus*,) geese, and ducks abundant; American elm (*Ulmus americana*) in full bloom.

April 13.—Saw a large flock of swans, (*Cygnus buccinator*;) a beautiful *Ranunculus* in bloom, (*R. glaberrimus*.) The long-billed curlew (*Numenius longirostris*) quite abundant running on the upland prairie.

April 16.—The 13-lined squirrel (*Spermophilus tridecemlineatus*) quite abundant on the high prairie.

April 20.—Saw to-day birds: wild geese, (*Anser erythropus*,) king-bird, (*Tyrannus crinitus*,) robin redbreast, (*Turdus migratorius*,) (a few robins were seen near Fort Pierre, April 1,) the meadow lark, flicker, killdeer, turkey buzzard, (*Cathartes aura*,) mourning dove, (*Ectopistes carolinensis*,) common cowbird, (*Molothrus pecoris*,) very abundant; also a gull (*Larus franklinii*) was seen on the river. The following plants

were in bloom: *Astragalus caryocarpus*, *Shepherdia argentea*, a species of *Salix*, *Populus angulata*, and a fine bluebell, (*Mertensia virginica*.)

April 23.—Red-winged blackbird (*Agelaius phoeniceus*) abundant. *Prunus americana* in bloom; *Symphoricarpus occidentalis* and *Artemisia* in full foliage.

May 6.—Saw blue heron, (*Ardea herodias*;) *Cornus stoloniferus* in bloom.

May 7.—Kingfisher (*Ceryle alcyon*) seen on the Teton River.

May 8.—Saw cliff swallow, (*Cotyle riparia*;) also a large rattlesnake, (*Crotalus confluentus*;) *Castilleja sessiliflora* in full bloom.

May 9.—*Senecio aureus*, a species of *Salix*, and a *Juncus* in full bloom.

May 10.—In the valley of White River the trees are in full foliage, and the bottom and upland prairies are covered with a rich green carpet of grass, and multitudes of plants are now in blossom. *Malvastrum coccineum* just coming into bloom. *Mammalaris nuttalli* and *Allium stellatum* are in full bloom.

May 12.—*Ranunculus aquatilis* in bloom. At this time, so many birds and flowers, strange to me, have made their appearance that I cannot indicate them. Spring has fairly arrived, and summer is approaching. During the month of May considerable rain fell, so that the streams were much swollen. But for six or eight months past we have had very little rain, not more than one or two inches. All the vegetation was parched with drought.

The "June rise" is said by the mountaineers to commence invariably at the time when the roses are in bloom. This year the roses were in blossom June 1, though I saw some in flower May 14 in the White River Valley. The rise in the waters of the Missouri commenced at Fort Pierre, June 11, 4 inches the first day, 5 inches the second, 18 inches the third, 4 to 8 inches the fourth, and afterward falling gradually. This is usually called by the mountaineers the "big rise," and is due to the melting of the snows, which accumulate during the winter in the ravines and valleys of the mountains near the sources of the Missouri. There was comparatively little snow in the mountains last winter, and there has been very little rain during the spring, consequently the rise this year is quite small.

June 1.—*Yucca angustifolia*, *Polygala alba*, *Opuntia missouriensis*, are in full bloom. The cacti bear the most beautiful blossoms of any of the plants of the prairie.

The principal part of the plants enumerated in the following catalogue were identified by the distinguished botanist, Dr. George Engelmann, of Saint Louis, Missouri. A few were determined by Dr. Torrey, and the remainder by the writer. A good collection of mosses, lichens, and fungi was obtained, but the species have not yet been studied, though they will be ready for the final report. It will be seen, therefore, that no department of the geology and natural history of the Upper Missouri has been neglected in our explorations.

1. *Clematis Virginiana*, Linn. Very abundant from the mouth of the Missouri to Council Bluffs.
2. *Clematis ligusticifolia*, Nutt. Fort Pierre to the mountains. Very abundant about Fort Union; also at Fort Laramie, head of the Platte.
3. *Pulsatilla patens*, D. C. This plant is called by the Indians the harbinger of spring. I saw it on the south side of Bear Peak, March 9, 1855, just coming into bloom. It is found quite abundantly in the White River Valley; also in the sand hills of Loup Fork.

4. *Anemone Pennsylvanica*, Lynn. Abundant from the mouth of the Missouri to the mountains, though most common below latitude 43°.
5. *Anemone Caroliniana*, Walt. Quite common around Council Bluffs to Niobrara River.
6. *Anemone cylindrica*, Gray. This plant is quite rare; only a few individuals were seen near the mouth of the Big Sioux River, and on Loup Fork.
7. *Ranunculus repens*, var. *Marylandicus*, Torr. and Gray. Low, wet places on the Upper Missouri.
8. *Ranunculus Pennsylvanicus*, Linn. Council Bluffs, Niobrara, Platte Valley.
9. *Ranunculus recurvatus*, Poir. Mouth of the Missouri to Niobrara River; also, sparingly, in White River Valley.
10. *Ranunculus abortivus*, Linn. Wet and sandy places to Niobrara; sparingly to the mountains.
11. *Ranunculus sceleratus*, Linn. Not rare throughout the Upper Missouri country.
12. *Ranunculus glaberrimus*, Hook. The only locality in which I ever saw this plant was at Grindstone Hills, near Bad Lands, where it was in bloom on the 9th of April.
13. *Ranunculus cymbalaria*, Pursh. Seen on the Yellowstone and Missouri.
14. *Ranunculus aquatilis*, Linn. Very abundant in the White River Valley, in the streams and little lakes.
15. *Myosurus minimus*, Linn. Missouri bottoms, opposite Saint Joseph's; also on the upland prairie, near Fort Pierre.
16. *Aquilegia Canadensis*, Linn. Does not extend above Council Bluffs or the Big Sioux.
17. *Isopyrum biternatum*, Torr. and Gray. Seen sparingly as far up the Missouri as the mouth of the Platte.
18. *Delphinium tricornis*, Mich. Extends to the mouth of the Big Sioux; range to Niobrara, in latitude 43°.
19. *Delphinium azureum*, Mich. Abundant on the open prairies to the mountains.
20. *Delphinium viriscens*, Nutt. Fort Pierre.
21. *Thalictrum cornuti*, Linn. Not rare to mountains.
22. *Thalictrum dioicum*, Linn. Abundant to Niobrara River.
23. *Hydrastis Canadensis*, Linn. Found only in the Carboniferous limestone region to Council Bluffs; perhaps rarely to Big Sioux River.
24. *Actea rubra*, Bigelow. Council Bluffs.
25. *Asimina triloba*, Dunal. Common Papaw. Extends up the Missouri to the mouth of the Big Sioux River.
26. *Menispermum Canadensis*, Linn. Most abundant in the limestone regions to Council Bluffs; seen rarely on wooded banks to the Yellowstone.
27. *Berberis aquifolium*, Pursh. A very abundant shrub in the Laramie range of hills and Black Hills.
28. *Podophyllum peltatum*, Linn. Abundant along the lower part of the Missouri River, gradually ceasing at the mouth of the Platte.
29. *Nelumbium luteum*, Willd. Lower portion of the valley of the Platte, and on the broad, wet bottoms about Omaha City. It is now quite rare, on account of the great use of both roots and seeds for food by the Omaha, Otoe, and Pawnee Indians.
30. *Nymphaea odorata*, Sit. Found by Dr. Cooper in Kansas.
31. *Argemone Mexicana*, Linn. Found only at Bellevue, Nebraska Territory: fine yellow flowers.

32. *Argemone hispida*, Gray. Bad Lands, White River, Loup Fork, Fort Laramie.
33. *Sanguinaria Canadensis*, Linn. Rich woods about Council Bluffs.
34. *Corydalis aurea*, Willd. Not seen on the bottoms to mountains.
35. *Dicentra cuccullaria*, D. C. In shady woods to mouth Big Sioux.
36. *Nasturtium palustre*, D. C. Not uncommon to mountains.
37. *Nasturtium obtusum*, Nutt. On the Upper Missouri and Yellowstone.
38. *Nasturtium sinuatum*, Nutt. Fort Clark, Upper Missouri.
39. *Nasturtium sessiliflorum*, Nutt. Along Missouri.
40. *Nasturtium limosum*, Nutt. Along low bottoms near to Council Bluffs.
41. *Dentaria laciniata*, Muhl. Shady woods around Council Bluffs.
42. *Nasturtium calycinum*, Engelman, nov. sp. Annum erectum seu diffusum, hirsutululum; folis caulinis anguste oblongis sinuatis seu subpinnatifidis bassi auriculata arcte sessilibus vel semi amplexicaulibus; racemis confertifloris demum elongatis; pedicellis flore flavido et silicula ovoidea acuta parva hispidula cum stylo gracilis vix longioribus; calyce persistente. Sandy bottoms of the Yellowstone River, Fort Sarpy to Fort Union. In aspect as well as in the style, (fully a line long on a silicle $1\frac{1}{2}$ line in length,) this species resembles some *Vesicariæ*, but the numerous seeds are those of a *Nasturtium*. The stem is about a foot high, often much branched and diffuse. The ovate lanceolate acutish sepals commonly persist until the valves of the pod had fallen. The pubescence of the pod consists of very short and pointed thick-based simple hairs. (A. Gray.)
43. *Arabis Canadensis*, Linn. Common along Missouri to Fort Union.
44. *Arabis hirsuta*, Scop. Fort Union and Bad Lands.
45. *Arabis lævigata*, D. C. Shady woods to mouth of Platte.
46. *Arabis dentata*, Torr. and Gray. Council Bluffs.
47. *Sisymbrium canescens*, Nutt. Fort Pierre and Yellowstone.
48. *Erysimum asperum*, D. C. Abundant on the high prairies to Fort Pierre and Fort Union.
49. *Erysimum cheiranthoides*, Linn. Yellowstone and Bad Lands.
50. *Stanleya pinnatifida*, Nutt. Abundant on the marl banks near Niobrara River, Fort Pierre; rarely on the Yellowstone.
51. *Stanleya integrifolia*, James. Dr. Gray thinks it is a different form of last species.
52. *Vesicaria ludoviciana*, D. C. Sterile hills, Fort Pierre, and Yellowstone.
53. *Vesicaria alpina*, Nutt. Same as preceding.
54. *Vesicaria didymocarpa*, Hook. Bad Lands.
55. *Sinapis nigra*, Linn. About old houses and cultivated fields, Council Bluffs and Fort Pierre.
56. *Capsella bursa-pastoris*, Linn. Same as preceding.
57. *Draba micrantha*, Nutt. Bad Lands.
58. *Draba Caroliniana*, Walt. Council Bluffs.
59. *Draba brachycarpa*, Nutt. Lower Missouri.
60. *Lepidium ruderales*, Linn. Along Missouri to mountains.
61. *Lepidium Virginicum*, Linn. Fort Pierre and Yellowstone.
62. *Cleome integrifolia*, Torr. and Gray. Bad Lands, Fort Union, Yellowstone, Bad Lands of Judith, Platte Valley, Fort Laramie, and not a generally diffused plant, but growing abundantly in localities.
63. *Polanisia uniglandulosa*, Gray. First seen on gravelly hills about Fort Pierre; also on Loup Fork.
64. *Viola palmata*, Linn. Fort Pierre.

65. *Viola cucullata*, Sit. Fort Pierre.
66. *Viola Nuttallii*, Pursh. Bad Lands.
67. *Viola Canadensis*, Linn. Fort Pierre.
68. *Viola tricolor*, Linn. Council Bluffs.
69. *Viola delphinifolia*, Nutt. Prairies around Council Bluffs.
70. *Silene antirrhina*, Linn. Council Bluffs.
71. *Silene stellata*, Ait. Dixon's Bluffs.
72. *Alsine Michauxi*, Fenzl. Mouth Big Sioux.
73. *Cerastium nutans*, Raf. White River, Bad Lands.
74. *Cerastium arvense*, Linn. Council Bluffs.
75. *Moehringia lateriflora*, Linn. Along Missouri to Council Bluffs.
76. *Paronychia sessiliflora*, Nutt. Fort Union, Laramie Peak, Black Hills.
77. *Stellaria longipes*, Goldie. Council Bluffs.
78. *Portulaca oleracea*, Linn. On saline clay soil, Teton River, near Fort Pierre; also near base of Black Hills, (indigenous.)
79. *Claytonia Virginica*, Linn. Rocky woods, as high up the Missouri as Council Bluffs.
80. *Abutilon avicennae*, Gaertn. Naturalized near Council Bluffs.
81. *Malvastrum coccineum*, Gray. Makes its appearance on the Missouri about latitude 43°, and continues to the mountains.
82. *Tilia Americana*, Linn. Abundant to Big Sioux; seen sparingly to mouth of Niobrara, where it ceases.
83. *Linum rigidum*, Pursh. Throughout the prairie portion of the Upper Missouri.
84. *Linum perenne*, Linn. Fort Pierre and Fort Union.
85. *Linum boottii*, Planchou. Found by Dr. Cooper in Kansas.
86. *Oxalis stricta*, Linn. Generally diffused.
87. *Oxalis violacea*, Linn. Rich prairies and cultivated fields around Council Bluffs; seen nearly as high as Niobrara, in full bloom June 20, 1857.
88. *Oxalis corniculata*, Linn. Upper Missouri.
89. *Geranium maculatum*, Linn. Common to Niobrara.
90. *Geranium carolinianum*, Linn. Mouth of Big Sioux.
91. *Impatiens pallida*, Nutt. Shady woods to mountains.
92. *Impatiens fulva*, Nutt. Council Bluffs and Big Sioux.
93. *Xanthoxylum Americanum*, Mill. Woody bottoms, and islands of the Missouri, to Fort Pierre.
94. *Ptelia trifoliata*, Linn. Around Council Bluffs.
95. *Rhus glabra*, Linn. Council Bluffs, White River Valley.
96. *Rhus copallina*, Linn. Abundant in Missouri and Kansas.
97. *Rhus toxicodendron*, Linn. Abundant in woody places to the mountains.
98. *Rhus aromatica*, Ait. Along Missouri.
99. *Rhus trilobata*, Nutt. First makes its appearance about latitude 43°, and occurs abundantly on sterile hills to the mountains.
100. *Vitis riparia*, Michx. Banks of Missouri, Bellevue, N. T.
101. *Vitis indivisa*, Willd. Big Sioux River.
102. *Ampelopsis quinquefolia*, Michx. Very common in woody bottoms throughout the country, but grows most luxuriant in the rich woods from mouth of Missouri to Big Sioux, where it often so clothes old dry trees that they seem still alive.
103. *Rhamnus lanceolatus*, Pursh. Council Bluffs.
104. *Ceanothus sanguineus*, Pursh. Mouth of White River.
105. *Ceanothus ovalis*, Bigelow, var. *pubescens*. Common on the Cretaceous hills below Fort Pierre; also in the sand hills of Loup Fork on the Niobrara River.

106. *Celastrus scandens*, Linn. Along Missouri to Fort Union.
107. *Euonymus atropurpureus*, Jacq. Woody bottoms to Fort Union.
108. *Euonymus Americanus*, Linn. Mouth of Platte.
109. *Staphylea trifolia*, Linn. Council Bluffs.
110. *Æsculus glabra*, Willd. Missouri bottoms to Big Sioux River.
111. *Acer dasycarpum*, Ehshart. Bellevue, Nebraska.
112. *Acer rubrum*, Linn. Highest limit on Missouri, latitude 42°.
113. *Acer saccharinum*, Wang. Limestone regions of Kansas and southern portion of Nebraska.
114. *Negundo aceroides*, Moench. One of the few trees which extends to the mountains.
115. *Polygala alba*, Nutt. On sterile hills to Fort Union.
116. *Polygala verticillata*, Linn. Moist places on prairies; Fort Pierre; Bad Lands.
117. *Polygala senega*, Linn. Council Bluffs.
118. *Vicia Americana*, Muhl. Upper Missouri generally.
119. *Lathyrus linearis*, Nutt. Upper Missouri generally.
120. *Lathyrus polymorphus*, Nutt. White River Valley.
121. *Lathyrus venosus*, Muhl. Rich bottoms, Big Sioux.
122. *Phaseolus pauciflorus*, Benth. Bad Lands.
123. *Amphicarpea monoica*, Nutt. White River valley. Fort Clark.
124. *Apios tuberosa*, Moench. Along sandy woody bottoms of Missouri. A species of mouse gathers large numbers of the tubers of this plant for his winter store. These "cachés" (as they are called) are eagerly sought by the squaws, and the tubers taken and used as food. I have seen several bushels of the roots in a single lodge. Cooked with buffalo-meat, they make a very palatable dish.
125. *Glycyrrhiza lepidota*, Nutt. Diffused generally.
126. *Psoralea lanceolata*, Pursh. From Bellevue to Yellowstone.
127. *Psoralea floribunda*, Nutt. Big Sioux River to Bad Lands.
128. *Psoralea campestris*, Nutt. Bad Lands.
129. *Psoralea argophylla*, Pursh. A most beautiful plant, covering the plain as with silvery velvet. Big Sioux to mountains.
130. *Psoralea cuspidata*, Pursh. Fort Pierre to Bad Lands.
131. *Psoralea esculenta*, Pursh. Affords the Indians a very nourishing farinaceous root upon which they subsist almost entirely in the spring and early summer months, when game is scarce. It is also a great favorite of the grizzly bear.
132. *Amorpha fruticosa*, Linn. A common shrub, above Missouri to mountains.
133. *Amorpha canescens*, Nutt. Very abundant on the upland prairies, Loup Fork, and Niobrara River.
134. *Amorpha nana*, Nutt. Fort Laramie and high up the Missouri.
135. *Dalea aurea*, Nutt. Bad Lands.
136. *Dalea alopecuroides*, Willd. Big Sioux River.
137. *Dalea laxiflora*, Pursh. Fort Pierre to Yellowstone.
138. *Petalostemum candidum*, Mich. Big Sioux River.
139. *Petalostemum multiflorum*, Nutt. Fort Pierre to Bad Lands.
140. *Petalostemum violaceum*, Mich. Upper Missouri to Bad Lands.
141. *Petalostemum villosum*, Nutt. Bad Lands.
142. *Trifolium stoloniferum*, Muhl. Bad Lands.
143. *Trifolium pratense*, Linn. Lower Missouri.
144. *Trifolium repens*, Linn. Lower Missouri.
145. *Hosackia Purshiana*, Benth. Sandy bottoms of Missouri.
146. *Astragalus hypoglottis*, Linn. White River to Bad Lands.

147. *Astragalus gracilis*, Nutt. Bad Lands to the Yellowstone.
148. *Astragalus striatus*, Nutt. Fort Pierre to Bad Lands, covering prairies like clover-fields.
149. *Astragalus Missouriensis*, Nutt. Fort Pierre to Fort Union.
150. *Astragalus caryocarpus*, Ker. Fort Pierre to Bad Lands.
151. *Astragalus Plattensis*, Nutt. Fort Pierre.
152. *Astragalus Canadensis*, Linn. Fort Pierre to Bad Lands.
153. *Astragalus racemosus*, Pursh. Abundant in the sandy bottoms of Missouri; Cedar Island.
154. *Astragalus Drummondi*, Douglass. Sterile hills around Fort Union.
155. *Astragalus adsurgens*, Pall. James River.
156. *Phaca cæspitosa*, Nutt. Bad Lands.
157. *Phaca longifolia*, Nutt. Bad Lands.
158. *Phaca pectinata*, Hook. Upland prairies on the Yellowstone River, abundant.
159. *Phaca elongata*, Hook. Fort Pierre to Fort Union.
160. *Oxytropis Lamberti*, Pursh. Very abundant on prairies around Big Sioux and Niobrara Rivers.
161. *Oxytropis splendens*, Douglass. James River.
162. *Homalobus multiflorus*, Nutt. Big Sioux to Bad Lands.
163. *Kentrophyta montana*, Nutt. Abundant in sandy river-bottoms on the Yellowstone.
164. *Hedysarum boreale*, Nutt. Abundant, mouth of Yellowstone.
165. *Desmodium Canadense*, D. C. Fort Clark.
166. *Desmodium Dillenii*, Darl. Big Sioux River.
167. *Desmodium paniculatum*, D. C. Bellevue, W. T.
168. *Desmodium nudiflorum*, D. C. Bellevue, W. T.
169. *Lepidoptera capitata*, Michx. Abundant on the rich bottoms about Council Bluffs, Big Sioux.
170. *Lepidoptera hirta*, Ell. On Missouri.
171. *Crotalaria sagittalis*, Michx. Big Sioux River.
172. *Lupinus pusillus*, Pursh. Common on the Yellowstone.
173. *Lupinus perennius*, Linn. Platte Valley.
174. *Thermopsis rhombifolia*, Nutt. From Council Bluffs to Fort Pierre; Bad Lands, &c.
175. *Sophora sericea*, Nutt. White River Valley; Fort Pierre.
176. *Gleditschia tricanthos*, Linn. Occurs as high on the Missouri as Big Sioux.
177. *Cercis Canadensis*, Linn. Same as preceding.
178. *Cassia Chæmacrista*, Linn. Sandy bottoms of Missouri, from Council Bluffs to White River.
179. *Desmanthus brachylobus*, Benth. Council Bluffs and Platte Valley; rich bottoms.
180. *Schrankia uncinata*, Willd. Gravelly hills on the Upper Missouri generally.
181. *Gymnocladus Canadensis*, Lam. Abundant in woody bottoms to Big Sioux.
182. *Baptisia leucophea*, Nutt. Platte Valley.
183. *Prunus Americana*, Marsh. Fort Pierre.
184. *Prunus pumila*, Linn. Abundant in the sand-hills of Loup Fork; along Missouri River near Little Soldier's Camp.
185. *Prunus serotina*, Ehrh. Council Bluffs.
186. *Prunus Virginiana*, Linn. Generally diffused.
187. *Gillenia stipulacea*, Nutt. Mouth of Big Sioux.
188. *Gillenia trifoliata*, Moench. Mouth of Big Sioux.
189. *Agrimonia eupatoria*, Linn. Bellevue, N. T.

190. *Agrimonia parviflora*, Ait. Around Fort Union.
191. *Chamorrhodas erecta*, var. *Nuttallii*. Torr. and Gray. Big Bend and Yellowstone.
192. *Geum strictum*, Ait. White River to Yellowstone.
193. *Geum album*, Gmel. Fort Pierre and Mandan village.
194. *Geum triflorum*, Pursh. Fort Union.
195. *Potentilla Norvegica*, Linn. Council Bluffs to Yellowstone.
196. *Potentilla paradoxa*, Nutt. Along banks of Missouri.
197. *Potentilla effusa*, Dougl.? Prairies near Fort Clark.
198. *Potentilla Pennsylvanica*, Linn., var. *strigosa*. Bad Lands.
199. *Potentilla diversifolia*, Lehm. Bad Lands.
200. *Potentilla rigida*, Nutt. Yellowstone.
201. *Potentilla Canadensis*, Linn. Big Sioux River.
202. *Potentilla anserina*, Linn. Niobrara run to Fort Pierre.
203. *Potentilla fructicosa*, Linn. On the Yellowstone.
204. *Potentilla arguta*, Pursh. Fort Clark and Fort Union.
205. *Fragaria vesca*, Linn. Along Missouri to Yellowstone.
206. *Fragaria Virginica*, Ehsh. Fort Union.
207. *Sanguisorba annua*, Nutt. Fort Union.
208. *Rubus occidentalis*, Linn. Council Bluffs.
209. *Rubus strigosus*, Mich. Sparingly on Yellowstone.
210. *Rubus villosus*, Ait. Council Bluffs.
211. *Rosa blanda*, Ait. On prairies generally.
212. *Rosa lucida*, Ehrh. White River; Fort Pierre.
213. *Crataegus punctata*, Jacq. White River; Big Bend, &c.
214. *Crataegus tomentosa*, var. *mollis*, Gray. Mouth of Big Sioux.
215. *Amelanchier Canadensis*, Torr. and Gray. Common throughout the Upper Missouri country; bears a delicious fruit, which ripens in June.
216. *Epilobium angustifolium*, Linn. Not uncommon in Kansas, also near Council Bluffs.
217. *Oenothera biennis*, Linn. Common along the valley of Missouri to the mountains.
218. *Oenothera albicaulis*, Nutt. White River Valley and Yellowstone; rare.
219. *Oenothera cespitosa*, Nutt. Arid hills of Upper Missouri.
220. *Oenothera serrulata*, Nutt. Council Bluffs to Fort Pierre.
221. *Oenothera pinnatifida*, Nutt. Bad Lands.
222. *Gaura biennis*, Linn. Along Missouri to Council Bluffs.
223. *Gaura coccinea*, Nutt. Common on high prairies and hills from Council Bluffs to the mountains.
224. *Ludwigia palustris*, Ell. Wet places in Platte Valley, near Loup Fork.
225. *Circea lutetiana*, Linn. Fertile woody places along Missouri to Niobrara.
226. *Myriophyllum spicatum*, Linn. Common in ponds throughout upper Missouri.
227. *Hepparis vulgaris*, Linn. In standing pools, Upper Missouri.
228. *Mentzelia ornata*, Torr. and Gray. Arid argillaceous hills from latitude 43° to the mountains.
229. *Mentzelia nuda*, Torr. and Gray. Same as preceding.
230. *Opuntia Missouriensis*, D. C. Common throughout the Upper Missouri region.
231. *Opuntia fragilis*, Nutt. Peculiar to arid plains, Upper Missouri.
232. *Opuntia*.
233. *Mammalaris vivipara*. Seen on the rich bottoms between Niobrara and Fort Pierre; bears beautiful purple blossoms.

234. *Hammularis Nuttalli*. Common throughout the Upper Missouri country above Fort Pierre; most abundant in White River Valley.
235. *Ribes Missouriensis*, Nutt. Woody limestone banks around Council Bluffs.
236. *Ribes floridum*, Linn. Common on the Upper Missouri and valley of Yellowstone.
237. *Ribes aureum*, Pursh. Banks and ravines along Missouri and Yellowstone.
238. *Echinocystis lobata*, Torr. and Gray. Durions' Hills on Missouri.
239. *Penthorum sedoides*, Linn. In wet places, Platte Valley; mouth of Loup Fork.
240. *Heuchera Americana*, Linn. Not rare in woody places along Missouri.
241. *Hamamelis Virginica*, Linn. Abundant in limestone woods along Missouri to mouth of the Platte River.
242. *Zizia aurea*, Koch. Prairies along Missouri to Big Sioux and Niobrara.
243. *Polytania Nuttallii*, D. C. Dry argillaceous hills and upland prairies around Fort Pierre; also on the Yellowstone.
244. *Sium lineare*, Michx. Moist places from mouth of Missouri to mountains.
245. *Thaspium barbinode*, Nutt. Rich woody places along Missouri.
246. *Thaspium aureum*, Nutt. Near Council Bluffs.
247. *Peucedanum faniculaceum*, Nutt. Common on high prairies around Council Bluffs.
248. *Osmorrhiza longistylis*, D. C. Moist fertile woods to Fort Pierre.
249. *Osmorrhiza brevistylis*, D. C. With the preceding.
250. *Cicuta maculata*, Linn. Wet places, Platte Valley.
251. *Aralia nudicaulis*, Linn. Limestone woods to Big Sioux River.
252. *Cornus florida*, Linn. Along the rich wooded bottoms as high as Fort Leavenworth.
253. *Cornus stolonifera*, Michx. Wooded bottoms of Missouri from mouth to source.
254. *Cornus sericea*, Linn. Abundant along Missouri bottoms. The inner bark is much used by the Sioux Indians with their tobacco in proportions of three to one; called by the traders—"red osier."
255. *Symphoricarpos occidentalis*, R. Br. The most abundant shrub along the rivers and streams from the mouth of the Missouri to the mountains; often called "blue wood," much used for making brooms; sometimes covers the river bottoms almost exclusively.
256. *Lonicera ciliata*, Muhl. Woody ravines, near Council Bluffs, N. T.
257. *Triosteum perfoliatum*, Linn. Not rare as high up the Missouri as mouth of Big Sioux.
258. *Sambucus Canadensis*, Linn. Common along Missouri; seen in the valley of Yellowstone.
259. *Galium aparine*, Linn. Woody places along Missouri.
260. *Galium trifidum*, Linn. Moist low spots on Missouri.
261. *Galium boreale*, Linn. Same as preceding.
262. *Galium triflorum*, Michx. Same as preceding.
263. *Cephalanthus occidentalis*, Michx. Platte Valley near Loup Fork.
264. *Oldenlandia angustifolia*, Gray. Along Missouri to Council Bluffs.
265. *Vernonia fasciculata*, Michx. Quite common on prairies, valley of Missouri.
266. *Kuhnia eupatorioides*, Linn. Council Bluffs to Niobrara.
267. *Eupatorium perfoliatum*, Linn. On rich bottom prairies near mouth of Big Sioux.

268. *Eupatorium purpureum*, Linn. Council Bluffs to James River.
269. *Eupatorium ageratooides*, Linn. Woody bottoms, Council Bluffs to Fort Pierre.
270. *Liatris spicata*, Willd. Rich bottoms, Big Sioux.
271. *Aster cordifolius*, Linn. Not uncommon, Big Sioux and Niobrara.
272. *Aster saggitifolius*, Willd. Big Sioux and Niobrara.
273. *Aster azureus*, Lindl. Council Bluffs.
274. *Aster multiflorus*, Ait. Council Bluffs.
275. *Aster sericeus*, Vent. Fort Pierre.
276. *Aster Nova-Angliae*, Ait. Low places on Missouri.
277. *Aster laevis*, Linn. Upper Missouri.
278. *Erigeron pumilum*, Nutt. High hills around Fort Pierre.
279. *Erigeron strigosum*, Muhl. Low places, Vermillion Prairie.
280. *Erigeron Philadelphicum*, Linn. Alluvial bottoms of Missouri.
281. *Erigeron Canadense*, Linn. Common all over Missouri country.
282. *Aplopappus spinulosus*, D. C. High prairies of Upper Missouri.
283. *Solidago rigida*, Linn.
284. *Solidago incana*, Torr. & Gray.
285. *Solidago nemoralis*, Ait.
286. *Solidago gigantea*, Ait.
287. *Solidago Missouriensis*, Nutt.
288. *Grindelia squarrosa*, Dunal. Common on high prairies from latitude 43° to the mountains; medicinal among Indians.
289. *Chrysopsis villosa*, Nutt. Common on dry hills, Fort Pierre.
290. *Silphium laciniatum*, Linn. Called by the inhabitants of the country "compass plant;" reaches its healthiest growth on the rich fertile bottoms of Missouri, but often found in great abundance on the high prairies. The highest point on the Missouri River that I have observed this plant is near latitude 44°, mouth White River; most abundant in the Platte Valley and on the broad rich bottoms between Council Bluffs and Niobrara River, where it sometimes occupies large areas to the exclusion of other vegetation. That the leaves of this plant set their faces north and south may be proved by a pocket compass. Forty-nine plants out of fifty exhibit this peculiarity. It thus becomes an excellent guide to the traveler across the pathless prairies.
291. *Silphium perfoliatum*, Linn. Seldom seen above Niobrara.
292. *Iva axillaris*, Pursh. Dry argillaceous hills. Fort Pierre and Fort Union.
293. *Ambrosia trifida*, Linn. Along streams and borders of woods from mouth of the Missouri to mountains. Quite abundant.
294. *Ambrosia coronopifolia*, Torr. and Gray. Fort Pierre.
295. *Xanthium strumarium*, Linn. Sandy bottoms of Yellowstone.
296. *Echinacea purpurea*, Moench. Purple cone flower; called rattlesnake weed in the West, and is found abundantly throughout the country. Root very pungent. Used very effectively by the traders and Indians for the cure of the bite of the rattlesnake.
297. *Lepachys columnaris*, Torr. and Gray. Common throughout the Missouri country, but most abundant from Council Bluffs to Niobrara River, on the rich broad bottom prairies. In flower July 8. Rays usually yellow, sometimes of a deep purple velvet.
298. *Lepachys pinnata*, Torr. and Gray. Vermillion Prairie. Rare.
299. *Rudbeckia hirta*, Linn. Council Bluffs.
300. *Heliopsis leavis*, Pers. Along streams in Kansas and Southern Nebraska.
301. *Helianthus giganteus*, Linn. Common on Upper Missouri.

302. *Helianthus gross-serratus*, Martens. Common on prairies.
303. *Coreopsis tripteris*, Linn. Council Bluffs.
304. *Coreopsis tinctoria*, Nutt. James River, Big Sioux, &c.
305. *Actinomeris squarrosa*, Nutt. Common in thickets and along streams in Kansas and Nebraska.
306. *Bidens connata*, Muhl. Missouri, and White River Valley.
307. *Bidens Beckii*, Torr. Council Bluffs.
308. *Dysodia chrysanthemoides*, Lag. Very abundant in prairie-dog villages on the Upper Missouri.
309. *Helenium autumnale*, Linn. Kansas and Southern Nebraska.
310. *Anthemis arvensis*, Linn. Naturalized to Fort Leavenworth.
311. *Achillea millefolium*, Linn. Found all over the prairie country of the West; must be indigenous west of the Mississippi.
312. *Antennaria plantaginea*, R. Br. Upper Missouri and Black Hills.
313. *Antennaria dioica*, R. Br. Same as last.
314. *Artemisia filifolia*, Torr. Gravelly hills along Platte; "Bad Lands."
315. *Artemisia cana*, Pursh. In the valley of Missouri and Platte.
316. *Artemisia frigida*, Willd. From latitude 43° to mountains.
317. *Artemisia dracunculoides*. Fort Pierre to Bad Lands.
318. *Artemisia tridentata*, Nutt. Common in Bad Lands.
319. *Artemisia biennis*, Willd. In Platte Valley.
320. *Artemisia Canadensis*, Michx. Near Fort Laramie.
321. *Artemisia ludoviciana*, Nutt. Shyenne River.
322. *Gnaphalium uliginosum*, Linn. Council Bluffs.
323. *Senecio aureus*, Linn. Council Bluffs and Big Sioux.
324. *Senecio integerrimus*, Nutt. About Council Bluffs to mountains.
325. *Linosyris graveolens*, Torr. and Gray. A very common shrub from latitude 44° to mountains; sometimes associated with *Sarcobatus vermicularis*, and sometimes taking its place.
326. *Cacalia tuberosa*, Nutt. Not uncommon on the rich bottoms of the Missouri and Platte.
327. *Lygodesmia juncea*, Don. A very abundant plant all over the sterile hills of the Upper Missouri and its tributaries; grows most luxuriantly on the second upland prairie. It makes its first appearance near Council Bluffs, and extends to the mountains.
328. *Cirsium altissimum*, Spreng. Platte Valley.
329. *Brickellia oblongifolia*. Along Missouri River.
330. *Franseria ambrosioides*, Cab. Sandy bottoms of the Yellowstone.
331. *Sonchus asper*, Vill. Council Bluffs.
332. *Mulgedium pulchellum*, Nutt. Big Sioux River.
333. *Troximon cuspidatum*, Pursh. Council Bluffs and Big Sioux.
334. *Lobelia cardinalis*, Linn. Moist places along the Missouri to the Big Sioux; in Kansas, on Big Cottonwood Creek.
335. *Lobelia spicata*, Lam. Mouth of the Platte.
336. *Lobelia inflata*, Linn. Yellowstone Valley, where it is cultivated by the Crow Indians, and used in their religious ceremonies.
337. *Campanula rotundifolia*, Linn. Common to Fort Clark.
338. *Specularia perfoliata*, D. C. Throughout the Upper Missouri country.
339. *Arctostaphylos uva-ursa*, Spreng. Very abundant on the high rocky hills about Fort Clark; also abundant in the mountains. It is the real "kininkinnick" of the Indians, and used by them to mix with their tobacco in preference to any other plant. The bark of *Cornus sericea* is used as a substitute only in the absence of the *A. uva-ursi*.

340. *Chimaphila umbellata*, Nutt. Black Hills.
341. *Diospyros Virginiana*, Linn. Is found in Kansas.
342. *Plantago major*, Linn. On river bottom near Fort Clark.
343. *Plantago patagonica*, var. *gnaphaloides*. Very abundant in sand soil and gravelly places on the Upper Missouri.
344. *Plantago pusilla*, Nutt. On prairies near Fort Pierre; also on the river opposite St. Joseph, in Kansas.
345. *Lysamachia stricta*, Ait. Platte Valley, upon Missouri.
346. *Utricularia inflata*, Walt. In ponds, Council Bluffs, White River Valley.
347. *Phelipæa ludoviciana*, Don. Sandy prairies, Yellowstone.
348. *Aphyllon fasciculatum*, Torr. and Gray. Great Bend of Missouri.
349. *Aphyllon uniflorum*, Torr. and Gray. Council Bluffs.
350. *Scrophularia nodosa*, Linn. Abundant along thickets and streams, Kansas and Nebraska.
351. *Chelone glabra*, Linn. Along valley of Missouri to latitude 43°.
352. *Penstemon grandiflorus*, Fraser. A beautiful plant, found along the bluffs of the Platte, banks and sandy bottoms of Missouri to mountains.
353. *Penstemon cæruleum*, Nutt. Eagle Nest Hill, White River Valley.
354. *Penstemon erianthum*, Nutt. Hills around Fort Pierre.
355. *Penstemon albidum*, Nutt. Low, with glabrous calyx. Hills around Fort Pierre.
356. *Penstemon cristatum*, Nutt. On high prairies; Upper Missouri.
357. *Penstemon gracile*, Nutt. Prairie bottoms, near Fort Pierre.
358. *Penstemon pubescens*, Solander. Fort Pierre; June.
359. *Penstemon levigata*, Solander. Fort Leavenworth; May.
360. *Mimulus virgeus*, Linn. Council Bluffs and Big Sioux.
361. *Mimulus Jamesii*, Torr. On the Platte. Dr. Cooper.
362. *Gratiola Virginica*, Linn. Quite common along the Missouri.
363. *Veronica anagallis*, Linn. Common; Council Bluffs.
364. *Veronica scutellata*, Linn. With the preceding.
365. *Veronica peregrina*, Linn. Fort Pierre.
366. *Gerardia purpurea*, Linn. Council Bluffs.
367. *Castilleia sessiliflora*, Pursh. Common about Council Bluffs.
368. *Castilleia septentrionalis*, Lindl. Black Hills.
369. *Melampyrum americanum*, Michx. Extends up the Missouri as far as the mouth of the Platte.
370. *Dianthera americana*, Linn. Platte Valley.
371. *Verbena bracteosa*, Michx. A very common plant about prairie-dog villages on the Upper Missouri.
372. *Verbena hastata*, Linn. Platte Valley.
373. *Verbena stricta*, Vent. Platte Valley; July.
374. *Verbena aubletia*, Linn. Along the Missouri in Kansas.
375. *Lippia lanceolata*, Michx. Fort Leavenworth, Kansas Territory.
376. *Phryma leptostachya*, Linn. Not rare along the Missouri to latitude 43°.
377. *Mentha Canadensis*, Linn. Common in wet places, valley of the Missouri and Platte.
378. *Lycopus sinuatus*, Ell. Same as preceding.
379. *Monarda fistulosa*, Linn. Common along streams to mountains.
380. *Hedeoma hirta*, Nutt. Abundant in the prairie-dog villages, Upper Missouri.
381. *Blephilia ciliata*, Raf. Fort Pierre to Bad Lands.
382. *Lophanthus anisatus*, Benth. James River; on Missouri.

383. *Scutellaria parvula*, Michx. Council Bluffs.
384. *Tencrium Canadense*, Linn. Council Bluffs.
385. *Lithospermum canescens*, Lehm. High prairies, Council Bluffs.
386. *Lithospermum latifolium*, Michx. Fort Pierre.
387. *Myosotis glomerata*, Nutt. On dry sterile hills, Fort Pierre, and Bad Lands.
388. *Onosmodium hispidum*, Michx. Prairies about Teton River; Fort Pierre.
389. *Mertensia Virginica*, D. C. Fort Pierre; in bloom April 20, 1855.
390. *Echinosperrum patulum*, Lehm. Prairies about Fort Pierre.
391. *Echinosperrum lappulum*, Lehm. Prairies about Fort Pierre.
392. *Hydrophyllum Virginicum*, Linn. Shady woods as high up the Missouri as mouth of White River, and in White River Valley. Most abundant in the Carboniferous limestone regions of Council Bluffs; April.
393. *Hydrophyllum macrophyllum*, Nutt. With preceding.
394. *Ellisia nyctelea*, Linn. About old houses and gardens to Big Sioux, and along old roads in prairie-dog villages on the Upper Missouri.
395. *Phacelia circinata*, Jacq. In Kansas; Dr. Cooper.
396. *Phlox divaricata*, Linn. Council Bluffs and Platte Valley.
397. *Collomia linearis*, Nutt. Common about Fort Pierre; Fort Union.
398. *Gilia longiflora*, Torr. In sand hills of Niobrara River.
399. *Ipomea leptophylla*, Torr. I have seen this plant in but one locality along the Missouri—Bear Creek, near "Bad Lands." But in the sand hills on Loup Fork, along the Niobrara, and around Fort Laramie, it is very abundant.
400. *Cuscuta glomerata*, Choisy. Abundant on sandy bottoms of Missouri.
401. *Solanum nigrum*, Michx. Not rare on the sandy bottoms of Missouri.
402. *Solanum triflorum*, Nutt. Very abundant in prairie-dog villages on Upper Missouri.
403. *Solanum Carolinense*, Linn. Along Missouri to Council Bluffs.
404. *Physalis lanceolata*, Michx. Sandy bottoms of Missouri to Fort Pierre.
405. *Physalis viscosa*, Linn. Sandy bottoms of Missouri to mountains.
406. *Androcera lobata*, Nutt. Very abundant about old trading-houses, along old roads, and in prairie-dog villages on Upper Missouri.
407. *Apocynum cannabinum*, Linn. Abundant on low bottoms of Missouri to mountains.
408. *Asclepias macranthera*, Torr. Not rare on the moist prairies of Upper Missouri, Loup Fork, Platte Valley; July 16.
409. *Asclepias incarnata*, Linn. Moist places, Loup Fork, Platte.
410. *Asclepias tuberosa*, Linn. Mouth Big Sioux and in Platte Valley.
411. *Asclepias verticellata*, Linn. Abundant on prairies; Fort Pierre.
412. *Anantherix viridis*, Nutt. Platte Valley; Loup Fork; July 16.
413. *Acerates longifolia*, Nutt. Common around Fort Pierre.
414. *Acerates angustifolia*, Nutt. With preceding.
415. *Fraxinus Americana*, Linn. Generally diffused.
416. *Asarum Canadense*, Linn. Near Council Bluffs.
417. *Oxybaphus angustifolius*, Torr. Dry hills around Fort Pierre.
418. *Chenopodium album*, Linn. Platte Valley; Fort Pierre.
419. *Obione canescens*, Moq. "Bad Lands;" common.
420. *Salicornia herbacea*, Linn. Saline places; Fort Union.

421. *Sarcobatus vermicularis*, Nees. This is one of the most abundant shrubs on the Upper Missouri. It makes its first appearance near latitude 44°, and seems to thrive best in the saline clays of the Cretaceous and Tertiary formations. It is sometimes called "greasewood" by the traders, and is often used for fuel by them on the Yellowstone River, where it grows to the height of ten or twelve feet, with trunks two to three inches in diameter. On the Yellowstone and along the Missouri it sometimes covers many square miles to the exclusion of other plants.
422. *Amaranthus albus*, Linn. Sandy bottoms and shores of Missouri.
423. *Rumex persicarioides*, Linn. Sandy bottoms of Missouri.
424. *Rumex venosus*, Pursh. Old Ponca village; Loup Fork.
425. *Polygonum amphibium*, Linn. Low wet places along Missouri.
426. *Polygonum aviculare*, Linn. Council Bluffs along Missouri.
427. *Polygonum tenue*, Michx. Council Bluffs to mountains.
428. *Benzoin odoriferum*, Nees. Woody bottoms along Missouri, below Niobrara.
429. *Shepherdia argentea*, Nutt. Very abundant from mouth of Big Sioux River to the mountains. It bears a profusion of red acid fruit, called buffalo berries.
430. *Eleagnus argentea*, Pursh. I have seen this shrub in but one locality in Missouri, near Fort Clark, on the high Tertiary hills.
431. *Comandra umbellata*, Nutt. Fort Pierre and on the Yellowstone.
432. *Euphorbia corallata*, Linn. Quite common on Missouri to latitude 45°.
433. *Euphorbia marginata*, Pursh. Very abundant to mountains.
434. *Euphorbia maculata*, Linn. Same as last.
435. *Euphorbia polygonifolia*, Linn. Along old roads, Upper Missouri.
436. *Ulmus fulva*, Michx. Abundant on the rich bottoms of Missouri to Big Sioux, and ceases to appear at the mouth of Niobrara River.
437. *Ulmus Americanus*, Linn. Along rivers and streams to mountains.
438. *Celtis occidentalis*, Linn. Abundant near to Niobrara River.
439. *Morus rubra*, Linn. Very abundant to mouth of Big Sioux; seen sparingly and of small growth to the mountains.
440. *Urtica gracilis*, Ait. Thickets and streams to Niobrara.
441. *Urtica Canadensis*, Linn. Same as preceding.
442. *Parietaria Pennsylvanica*, Muhl. Missouri and Yellowstone.
443. *Humulus lupulus*, Linn. Most abundant in the Upper Missouri country.
444. *Platanus occidentalis*, Linn. Abundant on the rich bottoms of Missouri and Kansas; but ceases to appear about one hundred miles above Council Bluffs.
445. *Juglans cinerea*, Linn. Big Sioux.
446. *Juglans nigra*, Linn. Does not extend above latitude 43°.
447. *Quercus tinctoria*, Bartram. Council Bluffs and Big Sioux.
448. *Quercus rubra*, Linn. With preceding.
449. *Quercus macrocarpa*, Michx. Extends to mountains.
450. *Corylus Americana*, Walt. Abundant around Council Bluffs.
451. *Betula*. Black Hills.
452. *Alnus*. Black Hills.
453. *Populus tremuloides*, Michx. Black Hills.
454. *Populus angustifolia*, Torr.
455. *Populus monilifera*, Ait. A large tree, constituting by far the greater portion of the timber along the valley of Missouri.
456. *Salix*. Several species.
457. *Pinus ponderosa*, Douglass. Black Hills.

458. *Abies Douglassi*. Bad Lands of the Judith.
 459. *Juniperus Virginiana*, Linn. Along Missouri to mountains.
 460. *Arum triphyllum*, Torr. Low ponds to Big Sioux.
 461. *Arum Dracontium*, Schott. Found by Dr. Cooper in Kansas.
 462. *Typha latifolia*, Linn. Mouth of Platte.
 463. *Sparganium ramosum*, Hudson. Low places to Fort Pierre.
 464. *Lemna*. Common in ponds on Upper Missouri.
 465. *Potamogeton natans*, Linn. White River Valley.
 466. *Potamogeton pectinatus*, Linn. In ponds. Bad Lands.
 467. *Alisma plantago*, Linn. Common in ponds, Upper Missouri.
 468. *Sagittaria variabilis*, Engelmann. With preceding.
 469. *Platanthera leucophea*, Nutt. Lower Platte.
 470. *Spiranthes cernua*, Rich. Rich bottom prairies of Vermillion.
 471. *Cypripedium pubescens*, Willd. Rocky banks to Big Sioux River.
 472. *Cypripedium acaule*, Ait. With the preceding.
 473. *Iris versicolor*, Linn. Lower Platte.
 474. *Sisyrinchium anceps*, Linn. Bottom prairies to Fort Pierre.
 475. *Hypoxis erecta*, Linn. Council Bluffs.
 476. *Trillium sessile*, Willd. Extends to Big Sioux.
 477. *Smilax herbacea*, Linn. Common. Mouth of Platte.
 478. *Smilax rotundifolia*, Linn. Along Missouri to mouth of Platte.
 479. *Smilacina stellata*, Desf. Very abundant to Niobrara, and occasionally seen to the mountains.
 480. *Smilacina racemosa*, Desf. Council Bluffs.
 481. *Polygonatum giganteum*, Dietrich. Council Bluffs.
 482. *Allium Canadense*, Linn. Big Sioux.
 483. *Allium reticulatum*, Nutt. Abundant about Fort Pierre.
 484. *Allium stellatum*, Nutt. Platte and Loup Fork.
 485. *Lillium canadense*, Linn. Big Sioux to Fort Pierre.
 486. *Erythronium americanum*, Smith. Council Bluffs.
 487. *Erythronium albidum*, Nutt. Council Bluffs.
 488. *Yucca angustifolia*, Sims. From the mouth of Niobrara River to mountains; on sterile hills.
 489. *Streptopus amplexifolius*, D. C. Council Bluffs.
 490. *Melanthium Virginicum*, Linn. Big Sioux.
 491. *Juncus tenuis*, Willd. Abundant on bottoms of Missouri.
 492. *Juncus polycephalus*, Michx. Bad Lands, &c.
 493. *Tradescantia Virginica*, Linn. Sandy bottoms of Missouri and its tributaries; generally diffused.
 494. *Scirpus*. Many species.

The Carices of the botanical collection were submitted to the distinguished botanist, Professor Chester Dewey, of the University of Rochester, New York, who is unquestionably the best living Caricographer in our country. Even now, at the advanced age of seventy-four years, his enthusiasm in his favorite departments of natural history continues unabated; and that his useful life may still be spared to us many years to come is the earnest desire of more than one young student of science who have been encouraged by his kind words and unselfish aid to seek a recognition in the scientific world. After a careful examination, the following catalogue and notes were received from Professor Dewey:

MY DEAR SIR: I inclose the list of all the Carices from Nebraska Territory that you placed in my hands for examination. The whole is a very interesting collection. I only wonder that, with your other

objects of special attention, you were able to seize upon so many of these sedges; and yet I know they are only a small portion of the plants you have thus preserved.

Wishing you all prosperity, and rejoicing in your perseverance and success, I am truly yours,

C. DEWEY.

Dr. F. V. HAYDEN.

LIST OF NEBRASKA CARICES.

495. *Carex straminea*, Willd. Above Fort Pierre.
var. *Minor*, Dew. Fort Pierre.
496. *Carex cristata*, Schm. Little Sioux River.
497. *Carex stipata*, Muhl. Little Sioux River.
498. *Carex vulpinoida*, Muhl. Common.
499. *Carex mirabilis*, Dew. Common.
500. *Carex cephaloidea*, Muhl. Near Fort Leavenworth.
501. *Carex scirpoides*, Schk. Near Fort Leavenworth.
502. *Carex festucacea*, Schk. Missouri, below Fort Pierre.
503. *Carex Muhlenburghii*, Schk. Missouri, below Fort Pierre.
- 504.* *Carex vulpina*, Linn. Large and fine. Missouri, below Fort Pierre.
505. *Carex tenera*, Dew. Missouri, below Fort Pierre.
506. *Carex hookeriana*, Dew. Missouri, below Fort Pierre.
507. *Carex rosea*, Schk. Southern Nebraska.
var. *radiata*, Dew. Southern Nebraska.
508. *Carex setacea*, Dew. Southern Nebraska.
509. *Carex teretiuscula*, Good. Southern Nebraska.
510. *Carex scoparia*, Schk. Common.
- 511.† *Carex petasata*, Dew. Upper Missouri.
- 512.‡ *Carex stenophylla*, Wahl. Upper Missouri.
513. *Carex festiva*?, Dew. (Too old to decide.) Near Fort Leavenworth.
- 514.§ *Carex Douglasii*, Boott. Before credited to arctic regions.
515. *Carex leporina*, Linn. Before credited to arctic regions.
516. *Carex obtusata*, Lily. Upper Missouri.
517. *Carex blanda*, Dew. Near Fort Clark.
518. *Carex anceps*, Schk. Near Fort Clark.
519. *Carex hystericina*, Wild. Eagle-nest Creek.
520. *Carex grisea*, Wahl. Near Fort Leavenworth.
521. *Carex marginata*, Muhl. Missouri, near Fort Pierre.
522. *Carex arctata*, Boott. Missouri, near Fort Pierre.
523. *Carex crauei*, Dew. Missouri River.
524. *Carex steudelli*, Kth. Missouri River.
525. *Carex moodii*, Dew. Missouri River.
526. *Carex eburnea*, Boott. Missouri River.
527. *Carex lanuginosa*, Michx. Yellowstone, &c.

NOTES BY PROF. DEWEY.

* *C. vulpina*, Linn. First found in our country in Ohio, several years since, and cannot be confounded with *C. stipata*, Muhl. It seems to abound in Nebraska, large and fine.

† *C. petasata*, Dew. Collected first in Arctic America, and is abundant in Nebraska.

‡ *C. stenophylla*, Wahl. A northern carex in Europe, and first published by Dr. Boott among the "Carices of British North America" as common there, and is abundant in Nebraska.

§ *C. Douglassi*, Boott. First described in Dr. Boott's work, just mentioned, but now found in Nebraska, which seems to have strayed, like *C. Richardsoni*, into our latitude.

528. *Carex aristata*, K. Br. "Bad Lands."
var. *longo-lanceolata*, Dew. "Bad Lands."
529. *Carex riparia*, Good. Along Missouri.
530. *Carex trichocarpa*, Muhl. Along Missouri.
531. *Carex vesicaria*, Linn. Along Missouri.
532. *Carex longirostris*, Torr. Along Missouri.
533. *Carex filiformis*, Good. Eagle-nest Creek.
534. *Carex acuta*, Linn. Eagle-nest Creek.
535. *Carex vulgaris*, Fries. Eagle-nest Creek.
536. *Carex stricta*, Lam. Eagle-nest Creek.
537. *Carex strictior*, Dew. Eagle-nest Creek.
538. *Carex recta*, Boott. Near Fort Pierre.
539. *Carex davisii*, Torr. Yellowstone River.
540. *Carex shortiana*, Dew. Along Missouri.
541. *Carex ampullacea*, Good. Along Missouri.
542. *Carex monile*, Tuckerman. Along Missouri.
543. *Carex curta*, Good. Yellowstone River.
544. *Carex lacustris*, Willd.

The following species seem to be new :

545. *Carex Nebrascensis*, Dew. Missouri River, near Fort Pierre.
546. *Carex Haydeni*, Dew. Missouri River, near Fort Pierre.
547. *Carex Meekii*, Dew. Yellowstone River.
548. *Carex leavi-conica*, Dew. Yellowstone River.
549. *Zizania aquatica*, Linn. Along Missouri, wet ponds near Council Bluffs.
550. *Alopecurus geniculatus*, Linn. Near low wet spots on Missouri, near Big Sioux and mouth of Loup Fork.
551. *Vilfa cuspidata*, Torr. Along Missouri River; also on high hills along White River.
552. *Sporobolus heterolepis*, Gray. Along Shyenne River in Missouri.
553. *Agrostis michauxiana*, Torr. Bottoms of Kansas, also on James and Shyenne Rivers, Upper Missouri.
554. *Agrostis cryptandra*, Torr. Banks of Little Sioux River.
555. *Muhlenbergia glomerata*, Linn. Abundant on prairies of Upper Missouri; wood-lands, &c.
556. *Calamagrostis Canadensis*, Beauv. Lower Missouri.
557. *Calamagrostis longifolia*, Henk. Sandy bottoms.
558. *Calamagrostis stricta*, Nutt. Along Missouri; moist places.
559. *Stipa spartea*, Linn. Prairies of Upper Missouri.
560. *Stipa capillata*, Linn.
561. *Stipa membranacea*, Pursh. Sandy banks of Shyenne River.
562. *Aristida pallens*, Nutt. Sterile hills along Missouri; also on the Platte.
563. *Spartina cynosuroides*, Willd. Low situations on Missouri.
564. *Bouteloua oligostachya*, Torr. Upland prairies of Missouri.
565. *Sesleria dactyloides*, Nutt. This is one of the most abundant as well as useful grasses on the Upper Missouri. It grows in low matted tufts, covering the prairies oftentimes for many miles, and furnishing a most nutritious and palatable food for the buffalo, deer, and other game; also for the horses of the Indian and voyageur.
566. *Festuca tenella*, Willd. Valley of the Missouri.
567. *Festuca nutans*, Willd. Along bottoms of Kansas.
568. *Kaleria cristata*, Linn.

569. *Eatonica Pennsylvanica*.
570. *Poa pratensis*, Linn.
571. *Poa annua*, Linn. Sandy bottoms along Missouri.
572. *Poa nervata*, Willd. On the Kansas.
573. *Poa nemoralis*, Linn. Shady woods and ravines on Missouri.
574. *Arundo phragmites*. Abundant in moist places around Council Bluffs.
575. *Elymus Canadensis*, Linn. Wooded banks to mountains.
576. *Bruchmannia cruciformis*, Jacq. A beautiful grass, growing in low moist places. I have not seen it above Fort Pierre.
577. *Uniola stricta*, Torr. Hills of the Upper Missouri.
578. *Uniola paniculata*, Linn. Near Fort Leavenworth, K. T.
579. *Triticum repens*, Linn. Abundant along Missouri River.
580. *Hordeum pratense*. Above Missouri River.
581. *Hordeum pusillum*, Nutt. Above Missouri River.
582. *Hordeum jubatum*, Ait. Above Missouri River.
583. *Aira latifolia*. Above Missouri River.
584. *Aira elongata*. Above Missouri River.
585. *Ceratochloa grandiflora*.
586. *Cenchrus tribuloides*, Linn. Very common in Kansas, and seen on sand bottoms in the valley of Yellowstone.
587. *Andropogon scoparius*, Michx. Sandy bottoms of Missouri.
588. *Eragrostis poaeoides*, Beauv. Along sandy bottoms, Lower Missouri.
589. *Monroa squarrosa*, Torr. in Whipple's Report. Great Bend of the Upper Missouri.
590. *Equisetum arvense*, Linn. Sandy bottoms along Missouri.
591. *Equisetum hyemale*, Linn. Covers large areas on sandy bottoms of Missouri and tributaries.
592. *Adiantum pedatum*, Linn. Council Bluffs.
593. *Botrychium Virginicum*, Swartz. Mouth of the Platte.