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(1917) mense Julio.
Biography and Bibliography. 1–4.—John Henry Barnhart.
THE AMERICAN MIDLAND NATURALIST

Devoted to Natural History, Primarily that of the Prairie States

Published by the University of Notre Dame, Notre Dame, Indiana

J. A. NIEUWLAND, C. S. C., Ph. D., Sc. D., Editor

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Enumerantur Plantae Dakotae Septentrionalis Vasculares.—X.

Enumeravit J. Lunell.

The Vascular Plants of North Dakota.—X.

With Notes by J. Lunell.


Leeds.

Tetraith Dillen. Gen., pone Catal. pl Giss. 103. (1719); Moench, Meth. 394. (1794).

Galeopsis Fuchs. Hist. 108. (1546) = Scrophularia nodosa. It is an impossible name, used for a number of different plants, and being etymologically absurd.


Towner County: Perth (O. A. Stevens).

Cardiaca Fuchs. Hist. 223. (1546) = Leonurus Cardiaca. Linn. has this name in Syst. (1735), as also Tour., antedating L. Cardiaca.

Leonurus Breynius (1678); Linn. Cuba has the form Cordiata, Hort. Sanit. 106. (1485).


Cardiaca vulgaris Moench, Meth. 401. (1794).


Wahpeton (Bergman); Kulm (Brenecke).

Stachys Diosc. 1. 3. c. 110, acc. to Sibthorp. (1813), Graec. pr. n. 1363 = St. palestina Linn. Sp. Pl. ed. II, 1674 (1763).


Leeds, Turtle Mountains.

utroque quorum alter in perquirendo quidquid salutare ex novo orbe proferunt plantae, quidquid sub Rosis et Citris obtulit natura; alter vero perquirendo veterum scripta orbi satisfacere studuit."
—Hort Cliff. p. 12.

A profusely branching woodland plant. Turtle Mountains.

889. **Monarda menthaefolia var. praerea** Lunell, var. nov. Caulis non ramosus. Stem not branched.
This plant grows on the prairie.* Omemee, Thorne.


Leeds, Minot; Kulm (Brenckle).

Medora (Bergman).

**PHYTOSALPINX** Lunell, nom. nov. (Gr. φυτόν a plant, σαλπίγζ a bugle, alluding to the English name bugle-weed.
*Lycopus Fuchs*, Stirp. 223. (1549) = *Leonurus Cardiaca*.
*Lycopus Tour.* Inst. Rei. Herb. 190. (1700), Élém. 159. (1694), in which latter work he says: “Fuchs s'est servi de ce nom pour signifier l'agripaume; mais il devient inutile puisque l'usage a autorisé celui de Cardiaca. On me permettra donc de dépouiller *Lycopus* de son ancienne signification et de m'en servir pour exprimer un genre de plante que porte des fleurs” etc. Linnaeus took the name of Tour. Adanson refers *Lycopus* to Fuchs in Linnaean sense, but is wrong.

892. **Phytosalpinx americana** (Muhl.) Lunell.
Leeds. Butte, Pleasant Lake, Turtle Mountains; Kulm (Brenckle).

893. **Phytosalpinx aspera** (Greene) Lunell.
Leeds, Pleasant Lake, Turtle Mountains.

894. **Phytosalpinx lucida** (Turcz.) Lunell.
Pleasant Lake.

**MENTHA** Plinius XX:13, XIX:36 (*Menta*); Tour.; Wimm.
VASCULAR PLANTS OF NORTH DAKOTA


Leeds, Peninsula of Lake Ibsen, Pleasant Lake.


Leeds, Peninsula of Lake Ibsen, Pleasant Lake.


Kulm (Brenckle).

*PHYSALIS* Diosc. 4: 61 and Ruell. translation 337. (1547). *Alkekengi* Lonicer (1551?) *Vesicaria* Cordus, also *Caesalpinus*, Gesner, Castor Durante; *Dodonaeus*, Gall 302 (1557), and his *Vesicaria vulgaris* is = type *P. Alkekengi*, and he refers *Versicaria* to Plinius, Hist. XXII: 31.


Leeds, Butte, Minnewaukan, Dunsieth.


On dry plains.


901. **Solanum nigrum** Hippocr. Wk. 875; Nicand. Ther. 94. 878; Theophr. Hist. Pl. locis variis; Diosc. 1: 4. 71 = \( \sigma \tau \rho \nu \chi \rho \sigma \) \( \nu \varepsilon \lambda \alpha \varsigma \chi \tau \alpha \iota \sigma \); Linn. Sp. Pl. 186. (1753).

Leeds, Peninsula of Lake Ibsen.


Leeds, Peninsula of Lake Ibsen; Fort Mandan (type locality).

Solanum Linn., in part.


Waste places. 


905. Lycopersicon Galeni Anguillara l. c., also C. Bauhin Pinax 16. (1623). 

Tunntle americanorum Guillandini. 
Leeds. 

Gesn. Camerarius, Chalraas. 

Melospinus Tragus, St. Commun. 866. (1552). 


906. Stramonia foetida (Stramonium foetidum cor.) Arabes (pro certo); Scop. Fl. Carn. 

Datura Stramonium Linn. Sp. Pl. 179. (1753). 
HYOSCYAMUS Diosc. 4:69, Plin. Tourn. 
Kulm (Brenkle).


VERBASCUM Plinius Hist. xxv: 10. φλομής Hippocr.
also Diosc. 4: 102.

Fargo.
LINARIA Brunfels, Herb. 2: 43. (1532).

909. Linaria vulgaris Brunfels l. c.; Tragus Stirp. Hist. 356:
Leeds.
Scrophularia peregrina L. = Galeopsis Diosc. 4: 93.
Scrophularia chrysanthemifolia L. = τερά Σιδέριτς (τριτήγ),
Diosc. l. c.

York, Pleasant Lake, Thorne.

Benson Co., acc., to specimen deposited in the Gray Her-
barium by the writer in 1906.
PENTSTEMON Mitchell 1748 & 1769, see Am. Midl. Nat.,

Dickinson (Cl. Waldron.)

Leeds, Butte, Pleasant Lake.

Leeds, Butte.

915. Pentstemon grandiflorus Nutt. in Fras. Cat. (1913).
Mandan (Bergman.)

916. Pentstemon acuminatus Dougl.; Lindl. Bot. Reg. 15:
pl 1285. (1829).
Medora (Cl. Waldron).

(1814).
Dickinson (Cl. Waldron).


“Fresh water springs, Devils Lake” (type locality); fresh water spring, Pleasant Lake.


Gratiola Matthioli, II Susaride, p. 449. (1552); Dodonaeus, Gall. (1557); Linn. Gen. 333. (1737) & 11. (1754).


Wild Rice (O. A. Stevens).


Plantaginella Bauhin, Pinax 190. (1623).

923. Limosella aquatica Mera ad Clusium (1595); Linn. Sp. Pl. 631. (1753).

Plantaginella palustris Bauhin, Pinax l. c.

Menyanthoides palustris Vail Par. 126. (1787). Ward County: Des. Laes; Leeds (rare).

Veronica Fuchsius Pl. Hist. 60 (1546) and probably in an earlier edition of (1542); Tour. 60. (1700); Linn. Gen. 14. (1737) and 10. (1754).


Willow Creek near Dunsieth; Kulm (Brenckle).
Pleasant Lake.
Veronica peregrina Am. Authors; not Linn.
Leeds.
AGALINIS Rafinesque. N. Fl. 2. 61 (1836).
Gerardia Plumier, Nov. Gen. Pl. 30. (1703); Linn. Gen. 181. (1737), 266. (1754). The type G. is a South American plant. The consensus of N. Am. Bot. (except Harvard Univ.) is that there is no real Gerardia in U. S.
1220. Agalinis aspera (Dougl.) Britton in Ill. Flor. 2nd ed. 211. (1913).
Gerardia aspera Dougl.; Benth. in DC. Prodr. 10: 517. (1846).
Pingree (Stutsman County).
928. Agalinis Greenei Lunell, sp. nov.
Annual, slender, 10–30cm. high, mostly simple, but sometimes branching even below the middle, the branches usually being so short as to give a virgate appearance to the stem, which is glabrate below and rough above, at least on the angles. Leaves linear, with stiff, short, white hairs on the margins. Inflorescence racemously arranged on the stem and branches, with the short-pedicelled flowers opposite (one of them often only rudimentary) in the leaf axils. Calyx teeth triangular-lanceolate, 1–3–1.4 as long as the tube. Buds cream-colored. Corolla about 1.5 cm. long, rose-purple, short-pubescent without. Capsule obconical, about 7mm.
high, 4mm. wide near the top and gradually becoming narrower toward the base, as long as the calyx or even shorter. Seeds black, "silvery" dotted. Leaves and flowers retain their natural colors in drying.

In ditches with the subsurface clay bare; Leeds (extinct in the type locality, but in 1916, August 28, found in another ditch, not far from the original spot).

Its nearest ally, A. aspera, is a larger plant, 30-60mm. high, fastigiately branched, with its lower branches longer than the upper, flowers opposite or alternate in the axils of the leaves, calyx teeth triangular-ovate, about 1-2 as long as the tube, corolla about 2.5 cm. long, deep purple, capsule ellipsoid, about 10mm. high, almost twice as long as the calyx, the herbage blackened in drying, and it is a plant of the dry plains and hills.

On August 19, 1915 Dr. Edw. L. Greene, accompanied by the writer, had a short buggy ride in the country adjoining Leeds. He was too weak to leave his seat, and whenever some plants attracted his attention, I went for them and dug them up. The last plant we made an effort to locate was the one just described. One or two years earlier I had found it in a ditch, but since then some rural nature mender had made a pasture of the plot, and the ditch had ceased to be a refuge for this plant. It was now extinct, and later in the day Dr. Greene was too tired to look for it in my herbarium. He insisted that A. aspera grows only in dry, elevated ground, never in ditches, and that this must be a distinct species.

The foregoing statement I trust will serve as a reasonable explanation why it happened that the plant here described was named in his honor, it being the last one the beloved, immortal master looked for during his last visit to his floral realm.


Leeds (extinct). Jamestown.

CASTILLEIA Mutis; Linn. f. Suppl. 47. (1781).


Leeds, Des Lacs; Kulm (Brenckle).

PEDICULARIA Tragus, St. Hist. 249. (1552)—he has Pedicularia; Tourn. 77. (1700); Linn. Gen. 184. (1737), 726. (1754).

Towner, Pleasant Lake.


Utricularia Linn. Gen. 5. (1737), 11. (1754).

933. Lentibularia vulgaris var. americana (Gray) Nwd. & Ll'.
Utricularia vulgaris var. Americana Gray.
Leeds.

934. Lentibularia intermedia (Vaillant) Nwd. & Lll.
Towner; Walhalla (No. 389, L. R. Waldron).


Fort Mandan (type locality). On Artemisia frigida Leeds, Butte; on Artemisia caudata Pleasant Lake.

Family 113. PHRYMACEAE Schauer in DC. Prodr. II: 520. (1847).

with some other genera. It should have precedence over *Phryma* Linn. Gen. Nov. 1092. (1751), ex Amoen. Acad. also.


Pleasant Lake; Wahpeton (Bergman).

Family 114. **PLANTAGINEAE** Vent. II: 269. (1799).


Butte.


Turtle Mountains, Pleasant Lake.


Leeds, Pleasant Lake.


Bottom of dry coulée, Leeds; dry bottom of Lake Ibsen.

941. *Plantago minor* Plinius l. c.!! also Fuchsius Hist. 14. (1546); not *P. minor* Fries, which is = *P. tenuiflora* W. Kit.

*Plantago lanceolata* Cuba Hort. Sanit. ed. Germ. no. 308. (1485)


Fargo (Cl. Waldron); Kulm (Brenckle).


Leeds.


Towner; Emmons County (Brenckle).


*Plantago patagonica* var. *aristata* Gray. l. c.

Glen Ullin (Bergman).


Dickinson (Cl. Waldron).

"Es ist auch eyn ander krut, plantago genannt, die heyszet zu latin *lanceolata* wan sye wechsel nff mit spitzen bletttern als eyn hantz ysen."


*Houstonia* segregate.


At least the lower leaves are ciliolate. Leeds, Butte (rare).


*Aparine aspera* Thalius, Sylva Herc. 10. (1588).

*Aparine vulgaris* C. Bauhin, Pin. 334. (1623).

Peninsula of Lake Ibsen.


Devils Lake, Turtle Mountains.


Leeds, Butte, Oberon.


Dickinson (Cl. Waldron).


Peninsula of Lake Ibsen, Towner, Turtle Mountains.


Peninsula of Lake Ibsen.


*VIBURNUM* Virgilius. “Quantum lenta solent inter viburna cupressi.”—Ecl. I: 26, ex Fee. Fl. Virg.; Matthioli, Comment. Diosc. 124. (1554); Gesner, Hort. Germ. 185. (1561); Camerarius, De Plant. Epit. 122. (1586); Castor Durante = *V. Lantana* Linn., not *V. Tinus* as Britton would have us believe in Ill. Fl. III: 269. (1913). *Tinus* and *Viburnum* may be considered separate genera [See Spach VIII: 315. (Tinus) and 306. (Viburnum). (1839)].

953. *Viburnum Opulus* var. *americanum*.

Pleasant Lake, Turtle Mountains.
   Turtle Mountains, Pleasant Lake, Devils Lake.

955. **Viburnum Lentago** var. **sphaerocarpum**.
   Minot.

**SYMPHORICARPOS** Juss. Gen. 211. (1789).

956. **Symphoricarpos pauciflorus** (Robbins) Brit. Mem.
   **Symphoricarpos racemosus** var. **pauciflorus** Robbins; A. Gray
   Man. ed. 5: 203. (1867).
   Turtle Mountains.

   (1833).
   Leeds, Peninsula of Lake Ibsen, Devil’s Lake.
   **CAPRIFOLIUM** Cuba Hort. Sanit. 139. (1485) = **Lonicera**
   **Caprifolium**.

958. **Caprifolium glaucescens** (Rydb.) Nwd. & lll.
   **Caprifolium Douglasii** Lindl. (1830).
   Towner, Devils Lake, Turtle Mountains.

959. **Caprifolium tataricum** (Linn.) Nwd. & lll.
   **Lonicera tatarica** Linn. Sp. Pl. 173. (1753).
   Leeds.

Family 117. **CUCURBITACEAE** B. Juss. Hort. Trianon
   (1759).


960. **Micrampelis lobata** (Michx.) Greene, Fittonia 2: 128. (1890).
   Towner, Minot.

   **CAMPANULA** Fuchsins, Fl. 151 b. (1646), Dodonaeus, etc.

   Wien I, III, 43.
   Leeds, Towner.

962. **Campanula intercedens** var. (described and perhaps
   named in some manuals, but I have been unable to find the name.)
Tall and slender, leaves very thin and elongated, often 1 dm. long.

Belfield (O. A. Stevens).


*Rapuntium* Columnna (1649); Morison, Hist, 2466; Hernandez; Tour. Inst. 163. (1700); Boerhave, Plunier, Spec. 5.


*Dortmanna* Rudbeck, Act. (1720) p. 91. t. 2 (as to Dortmanna, if not a separate genus).

964. **Petromarula hirtella** (A. Gray) Nwd. & Lll.
*Lobelia hirtella* (A. Gray) Greene, Pittonia III. 349. (1898).
Leeds, Butte.

965. **Petromarula strictiflora** (Rydb.) Nwd. & Lll.
*Lobelia Kalmii strictiflora* Rydb. Fl. of Montana 378. (1900).
Butte, Towner.


**TRAGOPOGON** Theophr. Hist. Plant. 7:7 = *Tragopogon porrifolius* = *Come* of Plinius, 21: 15, 28: 13; Diosc. 2.: 173; Tour. Élém. 379. (1694); Linn. Gen. 235. (1737).

Leeds.
INTRODUCTION TO A STUDY OF BIRD LIFE.

BY EDWARD WILLIAM AND BROTHER ALPHONSUS, C. S. C.

Very early in the life of every child that is brought into the presence of nature, there springs up in his heart a sympathy and love for the beautiful creatures that a kind Creator has made to fly and to sing. Especially is this true of the more fortunate children who live in the country, and early learn the secrets that nature reveals to them. As the country boy grows up he insensibly finds in everything that meets his eyes, in the beautiful panorama spread out before him, countless charms to quicken his fancy and strengthen his mind. In fact, he enjoys with nature a true companionship, but especially is this so with his feathered friends, the birds.

While enjoying this delightful companionship, our country-bred boy is forming one of the most useful and necessary habits—that of observation. First he sees things, and gradually comes to know much that is suggested by what he observes. Then he develops the power of comparing things, and here he enters a region that proves exceedingly rich in storing his mind with the lore of nature, and is yet more fruitful in exercising and perfecting his mental faculties. And among all that he sees and hears, nothing appeals to him more keenly than the multitudinous bird life by which he is surrounded.

After observing for some time, our country boy has become a youth, and with his mind developed by the best of teachers—nature, he enters high school, where his intellect must meet many others. Already so well equipped in some ways, he eagerly takes part in the discussion of the class-room, and in due time will, if endowed with good talents, easily be among the best of his classmates. Here he shines in the study of natural history, and his teacher is quite certain to trust any of his observations. Familiarity with mammals on bird life will soon make him a competent ornithologist. From the school to the specialists' club is but an easy step for our young naturalist, and his membership is welcome even to the experienced ornithologists whom he there meets.

But let us retrace our way a little, and note more carefully how our young ornithologist learned to identify so many birds.
At first he observed the migration and habits of the more common species, and either gave them names himself, or used those that other farm boys had coined. Often these names would not be correct—that is, they would not be authorized by the standard bird books—and sometimes the same name might be used for different species in different localities. For instance, in some places the Goldfinch is called by the boys the Wild Canary; in other parts of the country this name is given to the Yellow Warbler. Another species with many popular names is known by the uninitiated as the Yellow-hammer, the most familiar names to ornithologists being Flicker, High-hole, or Golden-winged Woodpecker. But at first, names are unimportant, the main thing is to be sure of knowing all the species that are found in one's locality at the various seasons of the year. In this respect, our farm boy is very keen, and will in a surprisingly short time be well acquainted even with the shiest bird that appears in the blackberry bushes in his father's garden.

For a long time our young naturalist has depended entirely upon his quick and keen vision in all his observations; but after becoming a member of the local ornithological club, he finds his associates all use field glasses for their observations. Occasionally, too, when desirious of securing a rare specimen, or one that is rare at a certain season of the year, they resort to using a gun to take the coveted prize. So our aspiring ornithologist easily follows the lead of his older scientific friends, and does a little shooting, and much observing with his field glasses. By these means he succeeds in adding a number of warblers or fly-catchers, which he had not previously identified, to his list of local birds.

The seasons of the year come and go with their wonted regularity, and each one finds our naturalist unabating in his devotion to the delightful study of ornithology. Ten years make many changes in the life around us—in persons no less than in things. At the end of this period our unsophisticated farm boy has become a well set-up and respected citizen in one of the university towns of Indiana. And the reader will not be surprised to learn that one who early gave so much promise of developing into a man of intelligence and integrity, after graduating from his university, is now a member of its faculty, holding the position of assistant instructor in zoology. From this on, we shall let the young professor speak for himself, and give the later story of his career as an ornithologist.
It is with pleasure that I begin to relate to you my experiences in the study of bird life. Having been introduced to you by my esteemed friend and fellow-naturalist, Brother Alphonse, of Notre Dame University, I shall proceed without further allusion to the early part of my career. I soon found that to do efficient work as an ornithologist, I would have to make three divisions of my subject—namely, migration, distribution, and habits of birds. I also found that I could not simultaneously pursue all of the three divisions, for a different method would be required—at least to study the habits of birds. For this purpose the observer must not move much, but must patiently pick up the many interesting things about the life of a bird that are revealed to the careful and peristent student. In fact, ten years would not be too long to devote, either to the study of the habits, or the migration and distribution of our birds. I began with the latter division for a number of reasons, mainly these: in studying the migration and distribution of birds, the observer has better opportunities to add new species to his ever growing list; he also gets needed exercise from the constant walking that is necessitated to find as many migrants as possible.

Incidentally, I may say, the student of bird life receives a great deal of pleasure in his long and solitary rambles—with only nature for his companion. Sounds and sights attract him everywhere, and his power of attention is wonderfully strengthened. He knows too, from experience, where to look for the many different species, which are not all found in the same places. Here again there is introduced the element of variety; some days, too he finds more species than on others.

I think it helpful at the beginning of this paper to give my readers some idea of the character of the land near my university home. The general appearance of the country is part wood and part prairie; in the immediate vicinity of the buildings, there are two small lakes—formerly one. One of these lakes (that nearest the St. Joseph River, into which it has an outlet) is lower than the other, giving the feature of marsh land. The St. Joseph River, one mile west, is a rapid stream, quite wide, and well-wooded, attracting such species as the Cardinal, Towhee, and Red-eyed Vireo. There are no deep woods nearby, which accounts for the absence in summer of the Scarlet Tanager, Tufted Titmouse, Gnatcatcher, and other species loving seclusion. To get around the territory I have described in outline would require about an
hour and a half, making allowance for frequent stops. Often the writer would stay out but an hour, either going directly to the river, or walking around both lakes.

In gathering data for the study of the migration of birds, not only is sufficient time required, but it must be available daily, or better, morning and evening. Few persons are in a position to be able to give their time regularly to this study, or if they have time for it, their place of residence is not favorable for observations of bird life. The writer has been very fortunate in both these respects, living in such a place as he has described above, and having leisure through a large part of the day. For more than eleven years, season after season, he has gone forth to field and grove to renew his acquaintance with his many beautiful and tuneful feathered friends.

The migration of our birds has proved a most interesting, and in some phases, the most mysterious part of a bird's life. The many dates of arrival and departure of the different species have been compared, and in a considerable number of instances there was found marked irregularity for several seasons. How to account for this irregularity is the mysterious feature of migration. Sometimes it may be inclement weather that causes delay in the arrival of certain species; at other times the weather will be fine, but still the birds may not arrive earlier. Why do they not arrive earlier is an unanswerable question to the writer. And this element of mystery adds new interest to the study of ornithology.

The two seasons of migration—spring and autumn—afford unequal facilities for securing dates of migration, the latter season presenting more difficulties. In spring most of the birds are in song when they arrive; the trees are quite bare yet; and there is a tendency for all the species to delay more on their northward journey: but in autumn, the songs have nearly all died away; many species feed quietly in thick shrubbery; and often others quickly pass southward, fearful of mishaps to their young, which follow them in flocks. And I was told by a reliable ornithologist that there is not available any satisfactory data on the autumn migration of our birds. Here, then, is an unworked field for devoted students of bird life.

The migration and distribution of birds have elements of similarity, at least they need not present much difficulty to the student who tries to study them simultaneously. By recording all
the species seen, and by noting casually an approximate number of each species, any observer will soon learn the relative abundance at any season of the year of all the birds that come under his observation. By comparing his records and notes for several seasons, he will have a very adequate idea of the distribution of bird life in his own neighborhood. This totalling up of records for a number of years is, however, no light task; and in the writer's own experience, has proved veritable drudgery.

While studying the migration and distribution of birds, any observer will incidentally obtain a very fair knowledge of their habits—such as, nesting, bathing, feeding, and the call-notes and songs of birds. Perhaps the most interesting of a bird's habits is its nesting—so various are the nests and the ways and means that are taken to feed and protect the young birds. A typical crude nest is that of the Mourning Dove, while the most marvelous of birds' nests is the hang-nest of the Baltimore Oriole. Then there are the eggs, so variously colored that a set of them may be most beautiful. The feeding of the fledglings, their first attempt at flying, the anxiety of the old birds for the safety of their young, and many other interesting features of the nesting season, are inexhaustible subjects for study or pleasurable investigation.

Next to nesting, I think, the bathing habits of birds are most remarkable. Two general methods of bathing are observable—namely, wading into the water and plashing in it, and flying and dipping into the water. Most birds bathe in the first way, which is much the less interesting. To see a bird fly out over the surface of the water, and suddenly plunge into it—is a wholly surprising performance, even to the experienced observer; for there may be some particular circumstance of the action that is unusual—such as, the number of dips taken—at intervals or successively—the height from which the birds descends into the water, or some other curious element.

One of the most astonishing things that meets the eye of the keen observer is the readiness with which the young birds of a given species adopt the ways of their parents. To us who must be taught everything with the utmost pains, and who with long and careful training, only succeed in doing things clumsily, the alertness of birds to do as their parents is really a great wonder. When barely fledged, most birds begin to feed and fly, and bathe as they see the old birds do. The native power of young birds to
achieve approximately the facility of action of old birds of the same species is a notable point of observation in the study of bird life. This aspect is well illustrated in the case of the Nuthatch family, whose young can climb with almost the same cleverness as the old birds.

After the nesting season there follows a period that may not inceptly be called family days, when the young are more or less dependent on the old birds for food. Baltimore and Orchard Orioles, Bluebirds, Phoebes, Crested Fylcatchers, Goldfinches, and many other species are seen in small flocks, which are undoubtedly birds of one or more broods. But the single families speedily grow into larger groups, which often comprise hundreds of the same species. Bronzed Grackles, Cowbirds, Martins, and others fill our fields, or groves, or the air with a multitude of living creatures. One of the most noteworthy sights in autumn is a large flock of Cowbirds flying, the males black and the females brown.

At all times, but especially during the nesting season, birds are exposed to many enemies. Among these are snakes, squirrels, birds of prey, and the domestic cat. Although snakes and squirrels destroy many eggs, it is mostly owls, crows, hawks, and cats that are the greatest destroyers of bird life. My own observations and those of my friends relate mostly to cats that roam at large. When these creatures find a nest, they will watch it persistently, and as the young birds fly weakly out, the cats will pounce upon them. One spring the entire brood of a Catbird was thus killed by a single cat at Notre Dame.

The enemies of birds naturally suggest the problem of their protection. No doubt nature's provision for the safety of all creatures is the most effective. But nature's conditions have been much altered by civilization, and this element has greatly added to the difficulties of conserving bird life and animal life. Artificial arrangements can not be adequately coped with by birds, and so man must step in and meet the adverse situation by special safeguards. More intelligent attention to this subject should be paid by all citizens, but by our State Audubon societies the more efficient protection of our birds should still be more carefully studied.

That birds should be helped to increase and become plentiful, both in town and country, needs no proof at all. The beauty of their bodies, their sweet strains in spring and summer, their use-
fulness in destroying harmful insects to trees and plants, are a few of the reasons why every man and woman should do his or her share in promoting schemes for the protection of our native birds. It seems incredible that there should be so much indifference to one of the most delightful features of the great out-of-doors—the intelligent enjoyment of bird life. But lamentable as this state of things is, let us not be discouraged. If the old are beyond reclamation in the matter of becoming interested in our birds, the young are never so. They but await the helpful word of their teachers or friends, to become life-long lovers of our many beautiful song birds.

Many American birds are strikingly beautiful. Among the most brilliant in plumage we may include the Scarlet Tanager, Rose-breasted Gorbeak, Cardinal, Indigo Bird, Baltimore Oriole, Blackburnian Warbler, Redstart, and Red-headed Woodpecker. If these species were all seen together, they would make a wonderful collection. And any person who had never seen them before would say he had no idea that such beautiful wild birds were in existence. I remember once the surprise of a girl whose attention was called to a Scarlet Tanager. She could not believe that it was a wild bird, but thought it must have been an escaped cage-bird. The presence of these beautiful feathered creatures in our groves during the summer adds a new charm to their attractiveness.

Were our birds noted only for grace and beauty of form, they would be thrice welcome on their return to us each spring. Besides the exquisite colors of their coats, many of them are sweet-voiced, and make our groves and fields ring with their clear, liquid notes. What a chorus, never unappreciated by the bird lover, may be heard any morning in spring and early summer. The Song Sparrow, Warbling Vireo, Baltimore Oriole, Indigo Bird, Meadowlark, Bobolink, Catbird, and Brown Thrasher are songsters whose performances give the purest pleasure to every sympathetic student of nature. In all there are about forty species of song birds that may be heard in our part of the country, each with its own voice, which can be distinctly recognized.

The voice tones of birds may be musical or may lack that quality. A single note may suffice to determine to which class a given species may belong. Compare the utterances of the Wood Pewee and the Phoebe, and you will note the musical quality in the first and its absence in the second. Another difference between
song birds and most of those which have been denied this gift is that the former, although always singing in a minor key, yet modulate their voice sufficiently to make the song varied; while the latter usually have little range to their voice, and repeat the same unmusical note over and over again. It must be admitted, however, that a number of non-musical birds have remarkable power of voice expression. Who that has listened to Crows or Flickers, or certain other species will not say that they can vary their voices almost indefinitely? So in dividing birds into those which sing, and those which do not, the liquid quality of the notes, rather than the gift of variation, must differentiate the two classes.

I shall now attempt to describe, somewhat in detail, the qualities of bird utterance, dividing the subject into call-notes, songs, and unmusical notes. My purpose is to note such differences as will account for the classification of birds as either musical or non-musical. The two elements, as hitherto stated that will enter mostly into the discussion are variation and quality of tones. I shall also essay to outline what may be called the philosophy of bird utterance. This will consist in an analysis of the notes of birds, not only in relation to the quality and variety of their utterance, but also the motive or stimulus that is the source of the sounds to which birds give expression. In treating this aspect of my subject, I realize that my knowledge is too fragmentary to offer more than mere suggestions or conjectures.

Any one who has studied bird life long and carefully must have often wondered why birds have such a great variety of utterances. Broadly, these utterances may be divided into two kinds—songs and call-notes. Usually the latter are not musical, and this is probably the chief reason for distinguishing them from songs. However, in some species there is no melodious quality either in the call-note or the song. On the other hand, a few species have no call-note that is not musical.

Another interesting thing to the lover of birds is the impulse that causes them to utter their notes. Does a bird sing because it feels joyous? All utterance whether rational or otherwise is, I think, the expression of an inward feeling, either of pleasure or pain. If this is true, then the songs of birds must, from their pleasantness, testify to a sensation of pleasure. And when the observer hears a song repeated continuously through a long summer
day, he must feel certain that the warbler is in a state of exuberant joyousness.

But why is there such a variety of notes in the many common birds of our woods and fields? Each species has voice qualities that are distinct from any other, and even individuals of the same species often manifest great powers of variation in their singing. Speaking generally, I think a bird’s song is an inherited gift in this sense, that the elementary powers of utterance are possessed by the bird but depend for development on association with the parent birds.

This development of song power may be noticed in young birds during the period that follows the nesting season, when families of birds wander about for food. Better still in our groves, during July and August, such species as the Bluebird and Baltimore Oriole are common, and here their notes may be heard, especially early in the morning or in the evening. Hearing these notes so frequently, an ear accustomed to distinguish the utterances of birds will readily recognize that efforts of the young birds are characterized by a lack of both sustained execution and of fullness of voice expression.

In some species the most prominent feature of the song is the quality of the notes, which may have but little variety and yet be very pleasing. Such a species is the Bluebird. In others the notes may be clear, but unless the performance is notably fine, the total effect of the song is disappointing. This fact may be easily observed in the Song Sparrow. In judging of a bird’s powers of song the quality of the notes seems to weigh most in the mind of the observer. Very often a note will have scarcely any variation, and yet be indescribably sweet or plaintive.

Two species that are notable for great variety in their singing are the Brown Thrasher and the Catbird. There is also considerable similarity in their songs, the Thrasher’s performance, however, being easily distinguished by its greater strength and more marked pauses. In some respects the Catbird’s song is the more pleasing, for what it lacks in force of expression it makes up in the sweetness of its strain.

The Catbird suggests a faculty that is most remarkable in this species—the power of imitation. Probably this is not an uncommon endowment in many species, and may account for peculiarities of individuals that are noticed in their manner
STUDY OF BIRD LIFE

of singing. No doubt environment plays an important part in the acquisition of new notes in any species, but the degree of assimilation is most dependent on native faculty. In the Catbird this faculty seems more evident than in any other of our northern birds. So accomplished is this species that it can imitate the full song of other species. I remember on one occasion of hearing a Catbird, in full view, singing like a Robin.

Those who spend much time in the country or other places where birds are abundant must have been struck by the frequent occurrence of the same note in many species. Often, too, a single sweet note will be repeated over and over again, a fact that reiterates the truth that repetition is an element of adequate appreciation in other than human expression. Sometimes this repetition of one note reveals more clearly the sweetness of a bird's notes than does its full song. I recall as an example of this the Orchard Oriole.

In some species the notes are very limited in range, but some variety is obtained by a skilful management of the voice. Should the elementary sound be sweet, the bird may succeed in giving it a number of pleasing turns; or the quality of the notes may be so agreeable that the observer will listen eagerly to the oft-repeated, sweet strain. Perhaps no common species is so conspicuous for this habit as the Field Sparrow. Now and again I have heard one whose powers of song, within the limits described above, were remarkably fine.

Our birds may be divided into two general classes—musical and non-musical. Why are all of them not musical? Well, one may as well ask, why are not all birds non-musical? Some have received the gift of song as an endowment, while others have not received this gift. But even those that are not called song birds may have notes that are more or less pleasing. Of course this quality would suffer by comparison with those species whose songs are clearly sweet; but when a bird's notes are judged on their own merits, after frequent and long acquaintance, we will certainly admit that somehow we like them.

There is always in the observer of bird life a subjective feeling that will materially affect his appreciation of the songs of birds. A species that is heard very frequently, like the song sparrow, will—from this very frequency, and not for any intrinsic quality of the song—be regarded with unwonted affection.
And other circumstances connected with this same species—such as, its early arrival, and its long song season—will add to one’s preference for the bird. Again some circumstance not at all connected with a bird’s life may often make the observer regard its singing as joyous or as most plaintive. An example of this subjective attitude would be some great personal sorrow occurring during a time when a bird’s song was heard daily. Still another proof of the power of suggestion will be found in the opposite effect that some bird’s song may have on different persons. I remember once asking my mother whether she thought the notes of the Field Sparrow were plaintive. Her answer was that to her they seemed cheery.

Besides their songs all birds have brief call-notes that may or may not be musical—usually they are not. Although these call-notes are seldom of the same quality as the song, yet they are sometimes very striking. Who that has heard in some deep wood the unique call of the Scarlet Tanager will deny that it is very pleasing? Another species whose call-note I have always liked is the Yellow-throated Vireo. But it must be admitted that many species of birds have call-notes that are harsh and scolding. I recall a good example of this in that charming songster the Warbling Vireo.

There is in call-notes a very striking feature that deserves special study on the part of students of bird-life—this is the remarkable power of expression which many species possess in their call-notes. During the nesting season, or when the young have been lately fledged, the old birds will often utter notes of evident alarm or of wild excitement. I remember—after the report of a gun, and the loud yelping of a dog that was shot—hearing a most piercing cry come from a Spotted Sandpiper, the bird taking flight immediately. Another species whose voice has wonderful flexibility is the Crow. One August afternoon, I remember the cawing of many Crows in different parts of a deep wood and was struck by the remarkable variation of each bird’s utterance.

An example of a bird whose call-notes may be termed musical is the Goldfinch. I know of no other species that has a greater variety of pleasing notes. To me there is one quality in the notes of the Goldfinch that is unequaled by any other species—this is delicacy; and this quality is most evident in one of the bird’s common call-notes. In its more ambitious attempts at singing—
in which its notes somewhat resemble those of the Canary—the Goldfinch often introduces its call-note—not at all to the detriment of the song. When many Goldfinches sing together in the treetops, the effect of the song is most pleasing; and perhaps a feature of the singing that adds rather than detracts, from the total effect of the song is the fact that the birds lack loudness in their utterance.

My rather ambitious attempt to give a philosophy of bird utterance may have led the reader to expect something more satisfying than I have been able to offer. Still I hope I have put down my ideas clearly, and that they are not altogether commonplace. Ten years of daily observation have revealed many interesting facts about the notes of our birds, and if I have not done better in my attempted analysis of their utterance, it is, I think, mainly due to lapses of memory. Unless the observer takes copious notes when out-of-doors, he will surely omit much in any effort to describe in detail the almost endless variation, at different seasons of the year, of the utterance of our birds. Hence the thoughts I have set down are more or less of a tentative character which longer experience, and greater efforts to secure the most complete knowledge attainable, may materially modify.

This paper has already grown to a great length; and lest a bird lover's enthusiasm lead me to trespass further on the patience of my readers, I shall end with a brief summary of my subject. It has been my purpose to outline my method of studying ornithology, and to indicate roughly the results of eleven years of daily observation of bird life. I realize that in my attempt to set down in a general way the various aspects of bird life, I have not maintained a unity of plan that the thoughtful reader would expect to find. I may remind him, however, that in an article that purports merely to introduce the subject, variety rather than unity, will be most in evidence. The longest part of the present article has dealt with the notes of birds, because both the writer and the general reader are probably most interested in the songs of birds. I may be pardoned, I am sure, if I venture, as a bird lover, to hope that what I have written will awaken a little more interest and even some enthusiasm in a branch of natural history that is steadily gaining in importance both in school curricula and in nature lover's clubs. It is certain that the next generation will not be indifferent to the varied and abundant bird life of our woods and fields.
NAIADGEOGRAPHY OF MISSOURI.

BY W. I. UTTERBACK.

The writer would presume to use the term, Naiadgeography, because it is a convenient and comprehensive expression for "the geographic distribution of the Naiades, or Fresh-water mussels." This coined term is employed here to correspond with that one in good accepted usage, that is, Zoögeography. However, the latter term is less specific, having reference to "the geographic distribution of animals generally."

After some years of study of the Naiades of Missouri the writer has been able to work out a key to the mussel faunae which may be used as a summarized account to precede the tabulated list on Naiadgeography.

I.—PRAIRIE DRAINAGE. Naiadgeography:— (Ecology:— Streams sluggish, turbid, mud bottom); (Coincidental Morphology:— Shells mostly large, smooth, inflated).

1.—NORTH MISSOURI FAUNA.—Missouri R. Southern Boundary. Physiography:—Level or rolling plains with lower stream conditions; Coincidental Characters:—Mussels scarce, mostly lacustrine.
   a.—NEW PRAIRIES, OR GLACIAL PLAINS.
      a1.—MISSOURI RIVER FLOOD PLAINS (Depauperated Mussel Fauna).

2.—CENTRAL MISSOURI FAUNA.—Missouri R. Northern Boundary. Physiography:—Intermediate Topography and Hydrography; Coincidental Characters:—Mussels fairly abundant, primitive-modern.

II.—OZARK DRAINAGE. Naiadgeography. (Ecology:—Streams swift, clear, rock bottom); (Coincidental Morphology:—Shells mostly small, rough, compressed).

2.—CENTRAL MISSOURI FAUNA.—Ozark Crest Southern Boundary.
   a.—Ozark Border (Lower Osage).
   b.—Ozark Plateau (Gasconade Basin).
   c.—Ozark Center (Meramec Basin).

3.—SOUTH MISSOURI FAUNA.—Southern Slope of the Ozark Uplift. Physiography:—Dissected Uplift with upper stream conditions; Coincidental Characters:—Mussels abundant, modern mostly fluviatile.
   a.—Ozark Border (S. W. Mo., Neosho Basin).
   b.—Ozark Plateau (White River Basin).
   c.—Ozark Center (Black River Basin).
MISSISSIPPI FLOOD PLAINS AND LOWLANDS (S. E. Mo. Depauperated Mussel Fauna). This region and the similar one above (a) are really separate from both the Ozarks (I) and the Prairies (I) since their ecologic conditions, i. e., the excess of loess and other alluvia in their waters, are the causes of their impoverished to extinct mussel faunae.

The author would adopt the same nomenclature in this paper as the one employed in his illustrated and descriptive catalogue of the Naiades of Missouri. It may be well to repeat here that the radical changes from that of the Simpsonian system are due to the acceptance of the Rafinesque Priority as recently revived by Frierson, Ortmann, Vanatta and other recognized students of Naiades; also to a greater recognition of the nutritive and reproductive structures of the soft parts than to the conchological morphology as bases of classification; however, the writer would not disregard the value of shell characters, yet does not consider their constancy so great for taxonomic purposes. In the following list the progressive form of taxonomy is employed and, in most cases, the Lindahl orthographic modification of Simpson and others is used; however, it is thought that, instead of following the uniform code of not capitalizing names for species in any case, it would be more consistent with Latinic etymology to retain the initial capital in all names of species derived from those of persons when used substantively.

For the sake of clearness the more familiar names, when appearing as synonyms, follow the revised terms as equalities in parentheses, but, in most cases, only the abbreviated name of the author can appear for lack of space. In the accompanying list the geographic distribution (Naiadgeography) of species and subspecies is indicated thus: — = scarce; X = fairly abundant; + = abundant, as occurring individually; G = General Distribution of Species.

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3L. S. Frierson, Nautilus, XXVIII, p. 6, May 1914; Footnote 5, Mid. Nat., IV, p. 519.
4A. E. Ortmann, op cit., as collaborator.
### Summarized Distribution of Missouri Mussels

<table>
<thead>
<tr>
<th>Gen. Mussel Fauna</th>
<th>No. of Mussel Species and Varieties</th>
<th>Total for each Fauna</th>
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<tbody>
<tr>
<td></td>
<td>Primitve (Unioninae)</td>
<td>Intermediate (Anodontinae)</td>
</tr>
<tr>
<td>1.—North Missouri</td>
<td>22</td>
<td>9</td>
</tr>
<tr>
<td>2.—South Missouri</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>3.—Cen. Missouri</td>
<td>19</td>
<td>8</td>
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</table>

In comparing with other lists of *Naiades*, mostly secured by the writer in correspondence with students for the surrounding States, it is found that North Missouri is mostly that of the Mussel fauna of Illinois and Iowa; that South Missouri belongs to the great *South-West*, i.e., Arkansas, Oklahoma, Louisiana and Texas and that *Central Missouri* is really a combined or transitional zone for these two sections of the Mississippi Valley. The Numbers in the second column of the following comparative lists represent those Species of the writer’s list for Missouri that are identical with those of the lists most representative of the Upper Mississippi and the South-West:—

<table>
<thead>
<tr>
<th>Upper Mississippi</th>
<th>North Missouri</th>
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</thead>
<tbody>
<tr>
<td>No. Species in Illinois (W. S. Strode's List)</td>
<td>29</td>
</tr>
<tr>
<td>No. Species in Iowa (T. Surber's List)</td>
<td>42</td>
</tr>
<tr>
<td><strong>South-West</strong></td>
<td></td>
</tr>
<tr>
<td>No. Species in Ark. (H. E. Wheeler's List)</td>
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</tr>
<tr>
<td>No. Species in Miss. &amp; Tex. (L. Frierson's List)</td>
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</tr>
<tr>
<td>No. Species in Ckla. (B. F. Isely's List)</td>
<td>29</td>
</tr>
<tr>
<td>No. Species in La. (Vaughan &amp; Frierson's List)</td>
<td>43</td>
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</tbody>
</table>

Many peculiarities are noted in the *Naiadgeography* of Missouri. It is surely a geologic paradox to note a predominance of *primitive species of Naiades*, in the New Prairies, or Glacial Plains. Another problem to be worked out is that of the reason for the limitation of the distribution of *Elliptio dilatata*, *Nephronaias ligamentina* and *Stribophitus edentulus*,—Species of the widest and most general distribution in other States. While *S. edentulus* is one of the commonest of shells for Central and South Missouri, yet its occurrence is very doubtful for North Missouri, as the author, in his more thorough investigation of this more accessible part of the State,

---

was only able to secure two individuals and these were too immature and small to be assigned to any definite Species although they were so identified as *edentulus* by recognized students. As indicated in the accompanying Key to the Mussel Faunae these eccentricities of distribution are due to the very different faunal and ecologic conditions. Yet Mr. Bryant Walker, that thorough student of *Naiadgeography*, comments:—"There are some very interesting problems connected with the distribution of Missouri *Naiades* that should be worked out. The poverty of the fauna of the Missouri Valley, as compared with that of either the Upper Mississippi, or of the rivers that flow south through the Arkansas, is very curious. . . . I have never had sufficient data to attempt to even guess at the solution of it."

As to the depauperated to extinct faunae of the South-East Lowlands and of the immediate waters of the Loess-Alluvial Flood-Plains for the Missouri and Mississippi Rivers the writer agrees with Dr. Paul Bartsch of the Division of Mollusks, U. S. National Museum, and leader of the party for the U. S. Pearl Mussel Investigation of the Mississippi River during the summer of 1908. Dr. Bartsch writes: "... we found no *Unios* between the mouth of the Missouri River and that of the Ohio in the Mississippi. This, I believe, is altogether due to the enormous amount of mud emptied by the Missouri into the Mississippi, making it impossible for the forms to exist there. . . . I have reported on the Missouri River as 'The Great Faunal Barrier.'"

Concerning the distinctive characteristics of the Ozark Fauna Dr. A. E. Ortmann remarks:—"The Ozark region apparently is a continuation of the Cumberland Plateau in the fauna of its rivers so that there will be geographic and faunistic relations with the Tennessee-Cumberland System." Mr. L. S. Frierson also makes this comment:—"The appearance of *Truncillae, Pleurobemae* and other forms, so intimately resembling those of East Tennessee, in the mountain streams of Missouri and Arkansas is an interesting and remarkable fact illustrating the power of environmental factors."

The writer is in the position to verify the observations of Ortmann, Clark and Wilson and other field investigators, who have

---

2 An unpublished paper, read before a Washington (D. C.) Society of Scientists.


made source-to-mouth surveys of Ohio Valley streams, after having made similar surveys of the most representative streams of the general faunae of this State, especially those of Central and South Missouri, when, during the summers of 1913 and 1916, it was the writer's pleasure and profit to survey the Osage and White Rivers from head-waters to mouth by means of a row-boat. The author is especially able to vouch for the report that many species, notably those of the most primitive Quadrulae, are generally found to be light, rough, compressed from in the head waters and to become heavier, smoother and more inflated further down stream; e.g., a plicated Quadrula may exist as a flat, light (conventional) Quadrula undulata (Barnes) in the swifter, shallower head-waters and as the heavy, inflated (conventional) Q. plicata (Say) in the quiet, deeper water nearer the mouth. Then, too, in some instances, it has been observed, especially in the Osage survey, that the nacre-color of certain species, such as Rotundaria tuberculata (Raf.) and Elliptio dilatata (Raf.), is found to be darker in the upper stream sections and fading out toward the mouth.

CRITICAL NOTES ON NEW AND OLD GENERA OF PLANTS.—IX.

BY J. A. NIEUWLAND.

WINTERIA

Winteria Rehm. is but another way of writing Wintera. The latter name was used by Murray\(^1\) in 1784. Another name should be used for the fungus. There is perhaps some diminutive form available for those who favor such and we refrain from adding a new one even though the available ones be rather undesirable.

MYRIACTIS

Kutzing's\(^2\) plant name was preceded by a Myriactis Lessing,\(^3\) and must receive a new appellation. Gonodia may be suggested, named after Eugene Gonod.

Gonodia Nom. Nov.

Myriactis Kutz, (1843) l. c. not Myriactis Lessing, (1831) l. c.

Gonodia pulvinatum Nov. Comb.

\(^1\) Murray, Syst. ed. XIV 567 (1784)


\(^3\) Lessing, in Linnaca, VI., 127. (1831).
Sub-Family II. ANODONTINAE (Ort.)
Genus XI. SYMPHYNOTA (Lea)
  32.—S. complanata (Bar.)
  33.—S. costata (Raf.)

Genus XII. ARCICENS Simpson
  34.—A. confagosus (Say)

Genus XIII. LASTENA (Raf.)
  35.—L. suborbiculata (Say) (= Anodonta suborbiculata)
  36.—L. ohiensis (Raf.) (= Anodonta imbecillis Say)

Genus XIV. ANODONTA (Lamarck)
  68.—E. (Micromya) irus (Lea) (= Lamp. irus (Lea))
  69.—E. (Micromya) brevicula (Call.) (= Lamp brevicula (Call))
  (18) E. Micromya) brevicula Brittsii (Simp.) (= Lamp. brittsii)

Sub-Genus III. EURYNNIA (sens. strict.)
  70.—E. (Euryinia) subrostrata (Say) (= Lamp. subrostrata)
  71.—E. (Euryinia) recta (Lam.) (= Lamp. recta)

Genus XXIX LAMPSILIS (Raf.)
  72.—L. teres (Raf.) (= Lamp. anodontoides (Lea))
  73.—L. fallaciosa (Smith)
  74.—L. Higginsii (Lea)
  75.—P. Powellii (Lea)
  76.—L. luteola (Lam.)
  77.—L. luteola rosacea (DeKay)
  78.—L. cardia (Faf.) (= Lamp. ventricosa (Barnes))
  (20) L. cardia satura (Lea)

Genus XXX. TRUNCILLA (Raf.)
  79.—T. Curtisii Frierson and Utterback (New Species)
  80.—T. Lefevrei Utterback (New Species)

100.—Total of Species (80) and Sub-Species (20) for Missouri, in
  1 New Genus, 4 New Species, 3 New Sub-Species.

1 Recent studies of the animal characters of Utterbackii has found this s

2 Later studies would group these species under Euryinia, Sub-Genus Mic

3 Both of these LAMPSILINAE were subsequently found to belong to the (
<table>
<thead>
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<th>N.A.</th>
<th>North Missouri</th>
<th>Central Missouri</th>
<th>South Missouri</th>
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### Classified List of Naiades

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<th>Species</th>
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### Notes

1. All species listed are found in both North Missouri and Central Missouri, with a few exceptions for South Missouri.
2. Synonyms indicated for each species are listed for comparison.
3. Additional notes on specific species and their distributions are included in the table.
THE AMERICAN MIDLAND NATURALIST

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The Vascular Plants of North Dakota.—XI.

With Notes by J. Lunell.


Dens Leonis Tour. Elém. 373. (1694.) Leontodon Taraxacum Linn. Syst. Nat. (1735), Linn. Gen. 239. (1737) and 349. (1754), “Taraxacum Dens Leonis T.” Type of Leontodon Linn. in his Leontodon Taraxacum.

967. Taraxacum minus Lon. Krauter Buch 228. (1703), and certainly of the older edition of 1569 & 1582, ex Bauh. Pin. (1623).

Leeds.


969. Taraxacum mexicanum DC. Prodr. 7: 146. (1838).

Turtle Mountains.


Leeds.

Leeds; Kulm, Brenckle).

   Butte, Narrows.


   Kulm (Brenckle.)

974. Lactuca integrata (Gren. & Godr.) A. Nels. in Fl. of Rocky Mts., 596. (1909).
   Leeds, Minot, Devils Lake.

975. Lactuca pulchella (Pursh) DC. Prodr. 7: 134. (1838).
   Leeds, Butte.

976. Lactuca campestris Greene, Pittonia IV: 37. (1899).
   Leeds, Butte.

977. Lactuca ludoviciana (Nutt.) DC. Prodr. 7: 141. (1838).
   "Fort Mandan on the Missouri, open plains."

   Turtle Mountains.

   "Romani sativa lactuca nominant."—Dod. Hist. Pl. 394. (1551); Ang. Simplici 123. (1561); Bauhin, Pin. 122. (1620); Linn. Sp. Pl. ed. 2: 1118. (1763).
   Leeds.

   Sonchus spicatus Lam. Encycl. 3: 401. (1789).
   Leeds, Peninsula of Lake Ibsen, Dunsieith, St. John.


Pleasant Lake.

Lygodesmia D. Don, Edinb. Phil. Journ. 6:311. (1829)

Lygodesmia juncea (Pursh) D. Don., Syn. Fl. I 2:244. (1884).

Pleasant Lake.


Troximon Nutt. Fras. Cat. (1813), not Gaertn. (1791).


“On the banks of the Missouri.”


Leeds.

Agoseris vicinalis Greene, Leaflets II: 122. (1911).

Leeds, Peninsula of Lake Ibsen, York, Turtle Mountains; Dickinson (Cl. Waldron).


Nothocalais cuspidata (Pursh) Greene, l. c. 55.


Butte, Minot.


Leeds, Butte, Peninsula of Lake Ibsen, Pleasant Lake.


Willow City.

Fargo (Cl. Waldron).

**Pilosella** Thalius, Sylv. Hercyn. 5. (1888).

**Hieracium** Tourn.; Linn. Gen. n. 913. Ίεραξίον το μεγα Diosc. 3: 72 is *Arenopogon picroides* Linn. Ίεραξίον το μικρόν Diosc. 3: 73 is *Scorzonera elongata* Linn. Hence all uses of the name *Hieracium* by subsequent authors are antedated by Diosc.

992. **Pilosella umbellata** (Gesner) Nwd. & Lll.

**Hieracium umbellatum** (Gesner) Nwd. & Lll.


Pleasant Lake, Dunsieht, St. John.


**Prenanthes alba** Linn. Sp. Pl. 798 (1753).

Bottineau, Dunsieht, St. John.


**Prenanthes racemosa** (Michx.) Fl. Bor. Am. 2: 83. (1803).

Leeds, Butte.

Family 120. **AMBROSIDAE** Cass. Dict. Sc. Nat. XX. (1821)

**Iva** Linn. (Nova Gen. Pl. 1751) in Am. Acad. 25. (1759).


Leeds, Butte.


**Euphrosyne xanthiifolia** A. Gray, Pl. Wright 2: 85. (1853).

Leeds.

**AMBROSIA** Tournef. Linn. Gen. n. 1057. Diosc. 3: 119 = *A. maritima*, but acc. to Daubeney is 3: 120 = *Artemisia camphorata*.


998. **Ambrosia psilostachya** DC. Prodr. 5: 526. (1836).

Leeds, Butte.


Leeds.


Leeds.

**GAERTNERERIA** Medicus, Act. Pal. 3: 244. (1785).

Pleasant Lake; Denbigh (Bergman).
*Xanthium* Diosc. 4 136 = *X. strumarium*.


Leeds (extinct).


Leeds (extinct), Minot; Maple Creek near Mouangoe.

1004. *Xanthium acerosum* Greene in Pittonia IV: 61. (1899)
Along the Red River of the North at Fargo (type locality);
along the Missouri at Bismarck.

Leeds, Dunsieith

1006. *Xanthium glanduliferum* Greene in Pittonia IV: 63.
(1899).

Minnewaukan.

Family 121. **COMPOSITI** Linn. Bot. 29. (1751); Tour. 

Leeds, Butte.

1008. *Vernonia fasciculata alba* Brenckle.

Flowers white. Kulm (Brenckle).


*Eupatorium* Diosc., Brunfels, Fuchs, Trag., Matth., Cord.,
Gesn. Dod., etc. down to G. Bauhin, Pin. 321, n. 4, is *Agrimonia*
Eupatorium Linn.

1009. *Cunigunda purpurea* (Linn.) Lunell.

Pleasant Lake, Bottineau, Dunsieith, St. John; Fort Ransom
(Brenckle).

1010. *Cunigunda perfoliata* (Linn.) Lunell.

Richland Co. (W. B. Bell).

Analytical Key.

A. Stem leaves petioled, achenes 15-striate. K. Jacobaea
A. Stem leaves sessile.
   a) Achenes 10-striate, shorter than the pappus. K. Hitchcockii
   a) Achenes 20-striate, almost as long as the pappus. K. reticulata

On the Capitol grounds and on the plains of the Missouri
at Bismarck, Burleigh Co.
1012. Kuhnia reticulata A. Nels. l. c. 403.
Minot; Fargo (Cl. Waldron).
1013. Kuhnia Jacobaea Lunell, sp. nov.

Caulis robustus, minutim pulverulentus, de basi ad apicem
versus ramosus. Folia caulina ovata, 4-5 cm. longa, 2-2.5 cm. lata,
acute et inaequaliter serrata, versus basim abrupte contracta,
petiolis alatis 3-5mm. longis; ramorum auguste lanceolata, 2-3
cm. longa, integra, sessilia. Cymi congeste corymbosi, paniculatos
fieri inquit. Involucra cylindrica, 10mm. alta. Achenia 5-5.5
mm. longa, 15-striata. Pappus dense plumosus, albus, 7 mm. altus.
Stem stout, minutely puberulent, branching from the base
up. Stem leaves ovate, 4-5 cm. long, 2-2.5 cm. wide, sharply and
unevenly serrate, abruptly contracted toward the base, with winged
petioles, 3-5 mm. long; those of the branches 2-3 cm. long, narrowly
lanceolate, entire, sessile. Cymes congested corymbose, with a
tendency for becoming paniculate. Involucres cylindrical, 10 mm.
high. Achenes 5-5.5 mm. long, 15 striate. Pappus thickly plumose,
white, 7 mm. high.

Besides through other features, this species is easily distin-
guished from others by its large, petioled stem leaves. The type
specimen was collected by the writer on August 24, 1913, along
James River at Jamestown, Stutsman County.

LACINIARIA Hill, Veg. Syst. 4: 49, pl. 46. (1762). Liatris

Analytical Key.

A. Bracts of the cylindric or oblong involucre ovate to oblong,
acuminate to cuspidate, with straight tips; pappas bristles very
plumose.
B. Heads 3-6-flowered, usually of equal size; spike dense,
strongly leafy-bracted below. L. punctata
B. Heads 15-60-flowered, some enlarged; spike interrupted
below, either not leafy or inconspicuously bracted.
C. Some heads enlarged 2 or 3 times 2. L. fallacior sp. nov.
C. Terminal head enlarged 5-6 times, having the appearance of a cock's comb. 3. *L. fallacior* var. *celosioides* var. nov.

A. Bracts of the cylindric involucre oblong or lanceolate, with recurved spreading, acuminate tips; pappus bristles minutely barbellulate. 4. *L. pychnostachya*

A. Bracts of the hemispheric involucre obtuse; pappus bristles barbellulate. *L. scariosa* C.

Inflorescence containing only one head.

D. Heads 1.5 cm. diametrically. 5. var. *unijora*

D. Heads 2-2.5 cm. diametrically. 6 var. *singularis* var. nov.

C. Inflorescence short, with 2-15 heads.

D. Heads racemose.

E. The lower series of leaves occupying only the lowest part of the stem, close to the tuber. 7. var. *basilaris*

F. The lower series of leaves occupying one-third to one-half of that part of the stem reaching from beneath the inflorescence to the tuber.

F. The lowest leaves of the lower series overtopping the leaves of the same series higher up on the stem. 8. var. *supereminens*

F. The leaves of the lower series passing very abruptly into the leaves of the upper series, but no leaf reaching above any leaf born higher up on the stem. 9. var. *praeceps*

F. The leaves of the lower series not passing very abruptly into the leaves of the upper series.

G. The leaves of the lower series large, long-petioled and very distant.

H. Peduncles 1 cm. long or less. 10 var. *praestans*

H. Peduncles 2-8 cm. long. 11 var. *exuberans* var. nov.

G. The leaves of the lower series middle-sized, shorter petioles, more or less distant.

I. Leaves pubescent. 12. var. *multiplex*

I. Leaves glabrate. 13. var. *perusta*

G. The leaves of the lower series middle-sized, with short, stout petioles, and rather approximate. 14 var. *angustata*

E. The lower series of leaves passing imperceptibly and without intermission into the leaves of the upper series. 15 var. *scalaris*

D. Heads subcorymbbose.

K. Peduncles bearing 1-4 heads. 16. var. *immanis* var. nov.

K. Peduncles bearing only 1 head.

L. Terminal head 3 times larger than the other heads. 17. var. *crista galli* var. nov.

L. Terminal heads not a great deal.
larger than the other heads.
M. Leaves of var. angustata
18. var. insolens var. nov.
M. Leaves of var. supereminens
19. var. composita var. nov.
M. Leaves differing from those of 18 and 19.
N. Inflorescence interrupted, about 12 cm. long.
20. var. corymbulosa
N. Inflorescence dense, about 6 cm. long...........21. var. subcorymbosa
C. Inflorescence very elongated, with 15-90 heads.
O. Involucres erect............22. var. opima
O. Involucres nodding........23. var. annuens var. nov.

Leeds, Butte.

1015. Laciniaria fallacior Lunell, sp. nov.
Stem 4-6 dm. high, from a horizontal tuberiform rootstock, which equals 6 cm. horizontally and 2 cm. transversely. Leaves numerous, rough, more or less hairy, linear, the lower 4-6 mm. wide, the upper narrower. Heads 15-flowered in the smaller size, with twice or thrice as many flowers in the larger ones (i.e., the terminal and generally 1 or 2 lateral), 15-20 mm. long, sessile or short-peduncled, crowded into a dense spike, interrupted and not leafy below. Involucral bracts broadly ovate, acuminate, ciliate on the margins, inbricated in 5 or more series. Achenes pubescent.

The species is closely related to L. puncata, which has a glabrous stem, 1.5-3 dm. high, leaves glabrous, 2-4 cm. wide, heads 3-6-flowered, of equal size, 10-15 cm. long, sessile, crowded into a dense, uninterrupted spike, which is leafy below, and achenes glabrate or minutely pubescent.

Collected by the writer on September 15, 1916 at Leeds.

1016. Laciniaria fallacior var. celosioides Lunell. var. nov.
Terminal head enlarged 5-6 times. It has the appearance of a cock's comb. It was found by the writer on the same place and date as the species.

Liatris pychnostachya Michx. Fl. Bor. Am. 2: 91. (1803). Richland Co.: Wahpeton (W. B. Bell); Ransom Co.; Anselm (Brenkle).


Richland Co.: Wahpeton (W. B. Bell); Ransom Co.; Anselm (Brenkle).

1019. Lacinia scariosa var. singularis Lunell, var. nov.

Stem 3-4 cm. high, with head about 3 cm. in diam. Leaves mostly resembling those of var. praestans. The var. uniflora is a small plant with small head and different leaves.

Collected by the writer at Butte, August 22, 1915.


Towner.


Leeds, Devils Lake.


Leeds.


Butte, Towner.

1024. Lacinia scariosa var. exuberans Lunell, var. nov.

Resembles var. praestans in the large size of the plant, in the large heads and in the leaves of the lower series being ample, long-petioled and very distant, but the racemose inflorescence occupies 1-2 the length of the stem, with more heads—these on long and stout peduncles. With its short peduncles and crowded heads, the inflorescence in var. praestans comes nearer to a spike.

Butte, August 15, 1915. Type there and then collected by the writer.


Leeds.


Turtle Mountains.

So named because the circuit running through the apices of the leaves of the lower series is narrowed, as the leaf blades and petioles are broad and short. Leeds.


Leeds.

1029. *Laciniaria scariosa* var. *immanis* Lunell, var. nov. Has a corymbose inflorescence with very long peduncles, bearing 1-4 heads.

Collected by the writer at Butte, August 15, 1915.

1030. *Laciniaria scariosa* var. *crista galli* Lunell, var. nov. The lower inflorescence of 5 or 6 heads subcorymbosely arranged or peduncles 3-5 cm. long. Above this the stem continued 10-15 cm. and ends with a terminal head 3 times larger than the other heads, 3 cm. high and 4 cm. wide, its appearance suggesting a cock's comb.

Collected by the writer at Butte, July 29, 1906.

1031. *Laciniaria scariosa* var. *insolens* var. nov. Inflorescence subcorymbose and leaves of var. *augustata*.

Collected by the writer at Butte, August 15, 1915.

1032. *Laciniaria scariosa* var. *composita* var. nov. Inflorescence sub corymbose, flowers large, and leaves of var. *supereminens*.

Collected by the writer at Butte, August 15, 1915.


Leeds.


Leeds, Butte.


Leeds, Butte.

1036. *Laciniaria scariosa* var. *annuens* var. nov. Racome 1-sided, pedicles 1-2 cm. long, involucres nodding, leaves lanceolate. The var. *nictitans* of Minnesota differs mainly by its narrowly linear leaves and fewer flowers.

    Leeds, Butte.

    Des Lacs. It received its species name from the light brown caudex. This also serves as one of the differential characters, the caudex of *G. Greenei* being dark brown or black.


1039. **Grindelia squarrosa** (Pursh) Dunal in DC. Prodr. 5: 315. (1836).
    Leeds, Butte.

    Leeds, Butte.

**CHRYSOPSIS** Nutt. Gen. II: 150. (1918); Elliot, Sk. II. 333.

1041. **Chrysopsis Bakeri** Greene, Pittonia 4: 153. (1900).
    Morton County (W. B. Bell).

    Leeds, Butte, Dunsieth, Pleasant Lake.


1043. **Chrysothamnus formosus** Greene in Pittonia 4: 41. (1899).
    Williston (O. A. Stevens).

1044. **Chrysothamnus graveolens** (Nutt.) Greene, Erythea 3: 88. (1894).

    McKenzie County (O. A. Stevens).

1045. **Chrysothamnus plattensis** Greene, Pittonia IV:42. (1899).
    Leeds (extinct).


Eriocarpum grindelioides Nutt. l. c. 321.
Beach (Bergman).

Aploppappus spinulosus DC. Prodr. 5: 347. (1836).  
Leeds, Butte, Pleasant Lake; Kulm (Brenckle).

Bismarck.


Pyrrocoma lanceolata (Hook.) Greene, Erythea 2: 69. (1894).  
Montraill Co.: Stanley (O. A. Stevens); Kenmare (Bergman).  

Butte.

Leeds, Butte.  

Leeds, Butte, Dokken's Pond, Turtle Mountains.  

Doria flexicaulis (Linn.) Lunell.  
Fargo (O. A. Stevens).

Doria glaberrima (Martens) Lunell.  
Pleasant Lake.

Doria glaberrima montana (A. Gray) Lunell.
Leeds, Butte.

1056. Doria inornata Lunell, comb. nov.
Pleasant Lake.

1057. Doria concinna (A. Nels.) Lunell.
Pleasant Lake.

1058. Doria Pitcheri (Nutt.) Lunell.
Peninsula of Lake Ibsen, Butte, Pingree, Dunsieth, Bottineau, Towner, Minot.

1059. Doria canadensis (Linn.) Lunell.
Leeds.

1060. Doria satanica Lunell, comb. nov.
Devils Lake.

1061. Doria altissima procura Lunell.
Solida altissima procura.
Benson Co., acc. to specimen deposited by the writer in the Gray Herbarium anno 1906.

1062. Doria gilvocanescens (Rydb.) Lunell.
Leeds, Butte.

1063. Doria incana (Gray) Lunell.
Solidago incana Gray.
Leeds, Butte, Peninsula of Lake Ibsen.

1064. Doria perornata Lunell, comb. nov.
Dunsieth, St. John.

1065. Doria dumetorum Lunell, comb. nov.
Bottineau, St. John.

1066. Doria pulcherrima (A. Nels.) Lunell.


1067. Doria mollis (Bartl.) Lunell.
Leeds, Butte.

Pleasant Lake; Dickinson and Medora (Cl. Waldron).

BOLTONIA L’Her. Sert. Angl. 27. (1788).

1069. Boltonia asteroides (Linn.) L’Her. 1. c.
Leeds, Butte

ASTER Diosc. = Aster atticus Fuchs, a two-worded generic name which ought be just as valid as f. i. Uva Ursi, preferably and correctly without a hyphen. Inguinalis is a synonym used by Diosc. and applied because of its actual or fancied medicinal value. Amellus Virgil. Georg. 4: 271: Est. etiam flos in pratis cui nomen Amello.

1070. Aster Saundersii Burgess.
St. John, Dunsieth, Pleasant Lake.

Butte.

Butte.

Minot; Emmons & Logan Counties (Brenckle).

Jamestown.

Turtle Mountains.

Leeds, Towner, Dunsieth, Devils Lake; Bismarck (Brenckle).

Leeds, Butte, Minot.


Minot.


Saskatchewan and adjoining N. D. territory.


Butte, Pleasant Lake, Towner.

**Salicifolii. Analytical Key.**

A. Inflorescence a much branched panicle with numerous heads.

B. Leaves distinctly dentate both on the stem and on the branches

C. Disk of the head about 1 cm. high; leaves thick and firm.

D. Heads thyrsoid or racemose—glomerate on ascending branches; bracts with acute or obtusish tips

E. Leaves lanceolate or oblanceolate; rays white

F. Leaves narrowly lanceolate; rays purplish

G. Branches short, convergent, leaves short, usually with partly denticulate margins

H. Branches longer, erect or even divaricate; leaves elongated, usually with entire margins

1081. *Aster chelonicus* Lunell, sp. nov.

Planta rhizomate horizontali perennis. Caulis robustus, ruber, 5-6 dm. altus, internodiis ramorum 1. 5-3 cm. longis. Rami primarii longitudine variabillimi. Partes plantae omnes conspicue confertae. Folia crassa firmaque, acuminata, sessilia, brevia lataque, lanceolata, caulina 6-8 cm. longa, 1.5-2 cm. lata, ramorum 2-4 cm. longa, 0.7-1 cm. lata, et caulis et ramorum conspicue dentata neque apicem versus abrupte reducta, in axillis folia plurima

Perennial with a horizontal rootstock. Stem stout, red, 5-6 mm. high, with the internodes between the branches 1.5-3 cm. high. Primary branches very variable in length, f. i. 16 cm., 5 cm., 15 cm. 6 cm., a. s. f. successively. All the parts of the plant are remarkably crowded. Leaves thick and firm, acuminate, sessile, short and broad, lanceolate, on the stem 6-8 cm. long, 1.5-2 cm. wide, on the branches 2-4 cm. long, 0.7-1 cm. wide, on both stem and branches prominently dentate, not abruptly reduced from below up, with a profusion of leaflets in the axils. Inflorescence racemosely paniculate, very leafy, with short-peduncled heads on secondary branches crowded in the leaf-axils. Disk of the head 1.2 cm. high and wide. Involucre 3 or 4 rows of linear, acute, wide, on the branches 2-4 cm. long, 0.7-1 cm. wide, on both stem 1.2 cm. high and wide. Involucre 3 or 4 rows of linear, acute, ciliate-margined, green-tipped bracts. Rays pale rose-purplish. Pappus white.

Collected by the writer on August 22, 1911 in the outskirts of the Turtle Mountains, near St. John, Rolette County.


ORNITHOLOGICAL NOTES FROM THE CHICAGO AREA.

By C. W. G. Eifrig.

By Chicago Area is meant the territory within a fifty mile radius from the center of that metropolis, thus including a great variety of habitats, among them some of the most interesting localitites from a zoological and botanical standpoint in the country, such as the dune region at the south end of Lake Michigan.
in Indiana; the great swamp and slough region along the "Sag," south of the city; the prairies with their moraine woods and swamps west; as well as the Desplaines and parts of the Fox Rivers; the great Skokie Marsh and the lake shore with its pine barrens north of Chicago. Probably in no spot of similar area can more species of birds be seen and studied under such favorable conditions as in Jackson and Lincoln Parks, where not only the land birds, among them some rare migrants, but the water-birds as well, annually pass in review before the beholder, and it may be added that Woodcock, Prairie Chicken, wild Mongolian Pheasants, etc. may yet be seen within the city limits. These are just a few random notes and observations, and do not pretend to cover the whole region, but are from a few localities within it.

The year 1916 opened in an unusual, if not startling manner, there being peals of thunder heard on January 1st. Flocks of Canada Geese (Branta Canadensis) may in January be seen or heard passing to and fro overhead. During the day they stay near the edge of the ice, out in the lake, and toward evening or at night they resort to the cornfields in the prairie part, west of the city, to return to their icy station in the early morning. When there are east winds with their frequent accompaniment of rain and sleet, numerous Herring and Ring-billed Gulls wing their way over the western suburbs, into the prairie part, which then assumes a more or less lake-like aspect in places. Prairie Horned Larks (Otocorys a. praticola) roam over the weedy fields in small compact flocks, but on January 26th one of a pair was heard singing. The former are no doubt visitants from farther north, while the latter are locally remaining permanent residents of the species. On February 14th I saw two males, at least I took them for such, fighting over a female, standing nearby in an apparently uninterested manner. So early does this species start its mating activities. Nests are occasionally found the first week in March, often surrounded by snow. On February 22nd, Washington’s birthday, temperature 50°, I saw along the Desplaines River the first Bluebirds, two, also three Song Sparrows, a Killdeer and about ten Mongolian or Ring-necked Pheasants (Phasianus torquatus). The presence of the first three species shows again the influence on migration of a mild wave of weather. Normally these three species are seen at River Forest, where the writer lives, between the 10th and 15th of March, but that week of unusually mild
weather in February brought some so much earlier. A surprising condition may be mentioned. At La Grange, just five to six miles south of River Forest, not only winter residents such as Junco Tree Sparrows, Nuthatches, Creepers, etc. are found in much greater abundance throughout winter than here, but species like the Song Sparrow, even the Carolina Wren and Cardinal, with an odd Robin, Meadowlark and Red-winged Blackbird are seen every winter. Why the Carolina Wren should never be seen here, let alone in winter, and the Cardinal rarely, and why the others should find conditions for winter residence so much more congenial these five miles farther south than here, would be hard to say. At any rate, it emphasizes the fact that we are located in the Transition Life Zone, where northerly and southerly species meet and overlap.

The sand dune region is always interesting, ornithologically even in winter. Several pairs of Great Horned Owls and several Ruffed Grouse may be seen any day in winter in a half day’s walk, and the rare northern visitors such as the Crossbills, Evening Grosbeak, Redpolls and Snow Buntings have been seen last winter and also during the present. At the same time such southerly species as the Tufted Tit, Carolina Wren and the Cardinal may be seen. Some winters, as in the present, Red-headed Woodpeckers and a Flicker or two also stay here. Later, end of February and early in March, the Marsh Hawk puts in an appearance. The many long marshes, surrounded by wet swales are ideal conditions for him and consequently the number of these species seen here, is surprising. Later in the year the Short-billed Marsh Wren finds these same areas so much to its liking that at least one such swale near Mineral Springs may be called, a Marsh Wrens’ paradise. Its long-billed relative is abundant nearby, where the cat-tail grows in water. The Marsh Hawk was seen mating on April 1st; nests with five and four eggs were found May 20th and 30th respectively.

To turn to the prairie part of the area under discussion, we find the fields about Addison, 20 miles northwest of Chicago, a veritable paradise for Lapland Longspurs (Calcarius lapponicus). The writer knows of no place where they are so plentiful as here. The higher, wind-swept fields here, seems to be their ideal habitat from fall to the time of their return to their Hudsonian habitat, during the first days of May. In company with a friend I revisited
these fields on April 8th. The temperature was 33-35°; the wind blew a gale. It was extremely unpleasant to be out, to see and make headway. Yet on those bleak, bare fields thousands of Longspurs were found, evidently in high spirits, twittering and tinkling, chasing each other and playing as though these were days to their liking. And no doubt they were; similar weather is perhaps the rule or at least common in their northern tundras. Several that we collected were far advanced in their nuptial plumage, and by the 5th of May, when the last leave for the north, it is practically perfect. The first warblers I saw, were several Myrtle Warblers on April 11th and on the 16th the Palm Warbler arrived. On the 24th at the dunes, Henslows' Sparrow was common uttering his dry *tsray tsray*, and Fox and White-throated Sparrows were plentiful among many others. At this occasion I saw also the Varying Hare (*Lepus americanus virginianus*), showing that these tamarack swamps here are islands of purely Canadian fauna in the transition zone. The last Evening Grosbeak was seen May 4th in Jackson Park, after the Whippoorwill, Baltimore Oriole, Bobolink and many others had arrived from the south. A real rarity was the finding of the Mockingbird on May 18th; Woodruff in his "Birds of the Chicago Area" mentions about six occurrences.

Every observer of birds knows that no two migrations are quite alike, a fact that greatly adds to the interest in the study of bird migration. But also the nesting season usually holds some surprises. Such a feature in last spring's nesting was the low placing of nests of certain species here at River Forest, not found to the same degree in other years. While there are many trees about, I found most nests of Robins in bushes two and three feet up, also several Mourning Doves nests on the ground, in fact all except one were so placed. My theory is, that disagreeable experiences in previous years in this vicinity, caused by the pilfering of nests by Crows and Blue Jays, were perhaps the reason for this low placing.

The lake shore in the dune region is always apt to yield surprises in the late summer and early autumn. August 30th presented beside many Black Terns, some of them yet entirely black, Forsters Terns, Gulls, many Sanderlings, Willets, Turnstows, and Semi-palmated Sandpipers also such rarities as two Black-bellied Plovers, still in their breeding plumage, a Caspian Tern and a Buff-breasted Sandpiper. Later in the season Mr. H. L. Stoddard of the Field
Museum took a fine specimen of the Roseate Tern (*Sterna dougalli*), which seems to be the first clear record for the Great Lakes. He also took a Blue Goose there and a year or two ago a Parasitic Jaeger.

Somewhat later records than usual are the seeing of Chimney Swifts and Nighthawks on Sept. 21st, a Hummingbird Oct. 6th, and a Black-crowned Nightheron Nov. 19th. One of the periodical incursions of great numbers of the fine Goshawk (*Astur artricapillus*) from its Canadian home, took place in the fall. A Chicago taxidermist took in over fifty specimens for mounting. It must have been a rather general movement, as these came from all parts of Illinois as well as Wisconsin and Michigan.

Not many birds are so obliging as two long-eared Owls, probably a pair, that took up their stand in a Norway spruce near the writer's home. For four weeks one could go there at any time during the day and find them in the same tree, in fact on the same branches of it, ready for an interview. To judge from the number of pellets, etc. below and in the tree, they must have been there for several weeks before they were discovered. On Nov. 15th an Italian captured a Saw-whet Owl alive in a spruce bush nearby and promptly wrung its head off, because its calling disturbed his sleep, he said. The tragedy, that we so often meet with in the lives of the wild!

**CRITICAL NOTES ON NEW AND OLD GENERA OF PLANTS.—X.**

**BY J. A. NIEUWLAND.**

**THAMNION**

Because there was an older *Thamnium* Klotsch¹ the moss of that name must receive another. *Thamnobryum* may be suggested.

*Thamnobryum* Nom. Nov.

*Thamnium* Bryol. Eur. fasc. 49-51, Mon. (1852)² not Klotsch


² Klotsch, J. F., Linnea, XII, (1838), 223.

Thamnobryum ellipticum (Kindb.)
Thamnium pumilum (Kindb.)
Thamnobryum latifolium (Kindb.)
Thamnium latefolium (Kindb.)
Thamnobryum Bilgelovii (Sull.)
Thamnium Bilgelovii (Sub.) Kindb.
Thamnobryum angustifolium (Holt)
Thamnium angustifolium Holt
Thamnobryum alleghaniense (C. Miill.)
Thamnobryum Leibergii (E. Britt)
Thamnium Leibergii E. Britt.
Thamnobryum pseudoneckeriodes (Kindb)
Thamnium pseudoneckeriodes Kindb.
Thamnobryum microalopecurum (Kindb)
Thannuna microalopecurum Kindb.

ZONARIA

The Zonaria J. Agardh\(^1\) (1872) was anticipated by the name published by Strudel (1841)\(^2\) True the latter was really a Zornia, and apparently a misprint for that name. The question arises whether an accidentally published name deserves to invalidate the later published one. In any case the name seems to have been used and the more so likely to be a cause of invalidation under the principle, "once a synonym always a synonym," as it appeared under Steudel's list of Walter's "Anonymos." It might be remotely possible at that—that a new generic name were suggested. In any case by strict interpretation of the law, the Agardhian name would seem to be rendered a homonym.

\(\text{Villania}\) may be used for the name of the alga. \(\text{Villan}\)\(^3\) after whom the plant genus is named wrote about algae as early as 1782.

\(\text{Villania}\) Nom. Nov.
\(\text{Zonaria}\) J. Ag. (1872) not Steudel, (1841) l. c.
\(\text{Villania}\) \(\text{flava}\) (Clem).

---

\(^1\) Agarh, J., Til Algernes Systematik, Nya bidrag II. Zonaria (Lund.) Univ; Arsskrift. t. g. (1872).
\(^3\) Observations (Confenae Sp. Byssus lanugmosa) in aguis sulphmeis Croft prope Darlington). London (1782) (8) [See Putzel 2nd ed. p 404]
TAENIDIUM

Taenidium Heer a fossil plant can not keep the name which was earlier applied by Targioni¹ to another plant. Kulmites may be suggested after John A. Kulm who among other works wrote on Fossils.

Kulmites Nom. Nov.
Taenidium Heer, not Targ. (1826) l. c.
Kulmites Fischeri (Heer).
Taenidium Fischeri Heer.

OUR BIRDS IN THE WINTER OF 1915-1916

By Brother Alphonsus, C. S. C.

The species not seen at all this winter were: Hairy Woodpecker, Cardinal, Snowflake, Screech Owl. The Golden-crowned Kinglet had one record, in December. The Goldfinch was found once in December and January, but not in February.

The rare species in December were: Downy Woodpecker, with three records; Bronzed Grackle and Song Sparrow, with seven records; Brown Creeper and Tree Sparrow, with eight records.

The abundant species in December were: Crow, seen daily; Blue Jay, absent only on the 11th; White-breasted Nuthatch, with twenty-one records; Chickadee, not found on the 23rd. The records of this species were unprecedentedly large throughout the winter. In other winters the Chickadee was a very rare species. How shall we account for this difference in distribution? The Snowbird had 16 records this winter, which is a large number for that species; only 7 records were made last winter.

¹ Targioni-Tozzetti O., Cat. Veg. Mar. 8o, t 1 (1826)
The total number of species seen last winter in December was 14, two more than the total for the same month this winter. These two species were the Pine Grosbeak and the Screech Owl.

In January, the rare species were: Goldfinch, Bronzed Grackle, Sparrow Hawk, and Herring Gull, each with one record; Tree Sparrow, with three records; Downy Woodpecker and Song Sparrow, with four records; Brown Creeper, with five.

The more abundant species in this month were: Snowbird, with eight records; White-breasted Nuthatch, with eleven; Chickadee, with fourteen; Crow, with nineteen; Blue Jay, with twenty-five. The Blue Jay, Crow, White-breasted Nuthatch, and Snowbird fell considerably behind their records for January, 1915. The Chickadee gained greatly, having had only four records last January.

Species that were found in January last winter but not in the same month this winter were; Screech Owl, Red-headed Woodpecker, Hairy Woodpecker, and Cardinal. The total for January last winter was no more than for January 1916.

Bird life in February differs somewhat from that of the other winter months. Usually there are warmer days about the middle of the month, which encourage the first Bluebirds and Robins to begin their spring migration. Thus this year the first of these two species appeared on the same day—the 22nd. There was one more record for the Bluebird, and five for the Robin, in February; the Meadowlark, had one record; the Canada Goose, two; The Herring Gull, three. Other rare species were: Song Sparrow, with three records; Brown Creeper, with four; Downy Woodpecker and Tree Sparrow, with five; Bronzed Grackle, with seven.

The abundant species in February were: Crow and Blue Jay, each with 27 records; Chickadee, with eighteen records; White-breasted Nuthatch, with sixteen; Snowbird, with twelve. The Crow and Jay maintained their large February records in 1916. The White-breasted Nuthatch exceeded by ten records those of last February. The Snowbird had nine records in February, 1915, and the Chickadee only one. Two species that were rare this winter in February, and abundant last winter in the same month were: Tree Sparrow, with eleven records and Brown Creeper, with twelve.

The total number of species seen in February, 1915 was 16.
Crow, 1 to 31.
Blue Jay, 1 to 12 to 31.
White-breasted Nuthatch, 1, 3, 4, 6, 7, 9, 10, 11, 14 to 20, 21, 22, 26, 27, 28, 30, 31.
Goldfinch, 2.
Song Sparrow, 4, 6, 9, 10, 12, 15, 18.
Bronzed Grackle, 3, 8, 9, 12, 13, 15, 25.

Total number of species seen, 12.

January

Crow, 1, 2, 7 to 11, 15, 20 to 31.
Blue Jay, 1 to 4, 7 to 12, 15, 16, 19 to 31.
White-breasted Nuthatch, 2, 3, 8, 11, 12, 15, 18, 21, 23, 25, 31.
Goldfinch, 24.
Downy Woodpecker, 3, 8, 11, 24.
Song Sparrow, 3, 4, 15, 31.

Total number of species seen, 13.

February

Crow, 1 to 6, 8 to 23, 25 to 29.
Blue Jay, 1, 2, 3, 5 to 17, 19 to 29.
White-breasted Nuthatch, 2, 6, 7, 8, 9, 12 to 16, 20, 22, 23, 26, 28, 29.
Downy Woodpecker, 3, 6, 15, 19, 23.
Song Sparrow, 16, 22, 28.
Bronzed Grackle, 8, 11, 20, 22, 24, 26, 29.

Total number of species seen, 15.

Total number of species seen during the winter, 18.

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**Philip Dowell, Port Richmond, N. Y.**
The Vascular Plants of North Dakota.—XII.
With Notes by J. Lunell.

    Devils Lake, Dunsieh, Pleasant Lake.

1085. *Aster paniculatus* var. *polychrous* Lunell, var. nov.
    Leaves narrowly lanceolate, rays purplish of many different shades.
    This form grows on low prairie, while the species prefers protected situations. Leeds.

    Leeds.

1087. *Aster laetus* var. *prionoides* Lunell, var. nov.
    Stem leaves serrulate (the species has entire leaves, and in many hundreds of plants examined I have noticed only a few with serrulate margins.) Leaflets of the inflorescence often less numerous and less reduced in size. Leeds.

    Leeds.

1089. *Aster clivorum* Lunell, sp. nov.
    Caulis gracilis, 4-5 dm. altus, simplex. Folia ampla, amplissimorum 12x3.5 cm. mensura, apicum versus sensim diminuta, tenuia, acuminata, sessilia, denticulata. Inflorescentiam capitulum paucorum non vidi, sumo autem negari non posse. Specimen typi capitulum habet solitariurn quod propemodum sessile est, disco 1 cm. alto latoque. Involucrì serierum trium laxi squamae marginibus albis apicibusque viridibus praeditae. Flores radiati caerulei.
Stem slender, 4-5 dm. high, simple, with minute leaves in three of the upper axils indicating future branching if an extension of the season would permit it. Leaves large, the maximum size being 12x3.5 cm., gradually diminished toward the top, thin, acuminate, sessile, denticulate. I accept as undeniable that the inflorescence has a few heads, though I have not seen them. The type specimen has a solitary head, which is almost sessile, with the disk 1 cm. high and wide. Involucre lax, with 3 rows of linear, white-margined, green-tipped bracts. Rays blue.

This species, with its leaves resembling an exuberant form of *A. paniculatus*, and its head in size and color suggestive of *A. salicifolius*, was collected by the writer in the foot-hills of the Turtle Mountains, near Dunsieth, Rolette County, September 3, 1911.

1090. *Aster Jacobaeus* Lunell, sp. nov.

Caulis gracilis, 4-8 dm. altus, simplicior vel apicem versus ramis paucis brevibus convergentibus, 1-8 cm. longis gaudens, striatus, paene glabratus, apice exeto lineis pilosis ferme obliteratoris. Folia tenuia, firmiora, parva, acuminata, sessilia, caulina marginibus subitus integris, superne denticulatis vel integris, 2-7 cm. longa, 7-10 mm. lata, ramorum integra, 18mm. longa, 5 mm. lata. Inflorescentia anguste racemosa, 0.5-3 dm. alta, capitulis infimis solitariis, in axillis foliorum vel sessilibus vel ramis brevibus sustentis, apicem vero versus capitulis 2-6 fere sessilibus vel breviter pedicellatis, unoquoque in axillo folioli sui solitario. Discus capituli 6-8 mm. altus latusque. Involuceri serierum trium laxi squamae acutae, apicibus viridibus praeditae. Flores radiati albi vel pallide rubicundi, vel obscure—pallide violaceo-purpurei.

Stem slender, 4-8 dm. high, quite simple or with a few convergent short branches, 1-8 cm. long, toward the top, striate, almost glabrate, the hairy lines quite obliterated except at the upper end. Leaves thin but firm, rather small, acuminate, sessile, on the stem with the lower margin entire and the upper either denticulate or entire, 2-7 cm. long, 7-10 mm. wide, and on the branches 18 mm. long, 5 mm. wide, entire along the margins. Inflorescence narrowly racemose, 0.5-3 dm. high, with the lowest heads solitary, either sessile or on short branches in the leaf-axils, and toward the top on the branches 2-6 heads almost sessile or on short pedicels, each solitary in the axil of its leaflet. Disk of the head 6-8 mm. high and wide. Involucre lax, with three rows of linear, acute,
green-tipped bracts. Rays white or pale pink, or dark to pale violet purple.

Growing in the muddy soil of low meadows on the border of James River (hence the species name), near Jamestown, Stutsman County, where it was collected by the writer on August 24, 1913. Found in similar surface conditions at Leeds on Sept 3, 1916.

Leeds, Butte, Pleasant Lake.


*Doellingeria ptarmicoides* Nees, Gen. & Sp. Ast. 183. (1832)
Leeds, Butte, Minot.

Leeds, Butte; Kulm (Brenkle).

Leeds.


Leeds, Butte.

Butte.

Leeds, Butte; Fargo (Cl. Waldron).


"Margins of saline springs, near Fort Mandan on the Missouri;" Cherry Creek, Shafer, McKenzie County (O. A. Stevens).


Leeds, Butte.

**MACHAERANTHERA** Nees, Gen. & Sp. Ast. 224. (1832).

1100. **Machaeranthera canescens** (Nutt.) Gray, Pl. Wright I: 89. (1852).
Williston (W. B. Bell.)
TESSENIA Bubani, Nuov. Giorn. Bot. It. V: 318 (1873), also Fl. Pyr. 2: 263. (1900). Name in honor of Tessen, a Chinese emperor who in 1200 A. D. had a splendid botanical garden. If Tessen the botanist deserved to be honored the name is just as good, as it would be bad if dedicated to the imperial Mecenas. Botanical work and research, not material gifts, should inspire a name.

Panicos Adans. Fam. Pl. 2: 124 & 587, (1763), rejected by Bubani, as applied to various heterogeneous types


1101. Tessenia aspera (Nutt.) Lunell.
Kulm (Brenckle). "Plains of the Missouri."

1102. Tessenia aspera var. appressa Lunell, comb. nov.
Dickinson (Cl. Waldron).

1103. Tessenia aspera var. subintegra Lunell, comb. nov.
Kulm (Brenckle); Towner.

1104. Tessenia abruptorum Lunell, comb. nov.
Butte, Towner.

1105. Tessenia multicolor Lunell, comb. nov.
Leeds, Butte.

1106. Tessenia oxyodontata Lunell, nov. comb.
Butte.

1107. Tessenia oligodenta Lunell, nov. comb.
Butte.

1108. Tessenia oligodonta var. acuminata Lunell, nov. comb.
Butte.

1110. *Tessenia procer a* Lunell, nov. comb.

1111. *Tessenia anodonta* Lunell, nov. comb.
Leeds, Butte.

1112. *Tessenia tarda* Lunell, nov. comb.

1113. *Tessenia glabella* (Nutt.) Lunell, nov. comb.
"Plains of the Missouri (around Fort Mandan)." Leeds, Butte.


1115. *Tessenia pumila* (Nutt.) Lunell, nov. comb.
Towner, Minot; Turtle Lake (O. A. Stevens).

1116. *Tessenia philadelphica* (Linn.) Lunell, nov. comb.
Leeds, Peninsula of Lake Ibsen, Turtle Mountains.

1117. *Tessenia philadelphica* var. *acaulescens* Lunell, var. nov.
Plant acaulescent up to the inflorescence, which commences 2-4 inches from the lower end of the stem. Dry bottom of Lake Ibsen.

1118. *Tessenia subcostata* Lunell, nov. comb.
Dickinson (Cl. Waldron).

1119. *Tessenia obscura* Lunell, nov. comb.
Leeds, Devils Lake.

1120. *Tessenia ramosa* (Walt.) Lunell, nov. comb.
*Erigeron ramosus* (Walt.) B. S. P. Prel. Cat. N. Y. 27. (1788)
Kulm (Brenckle).
1121. **Tessenia racemosa** (Nutt.) Lunell, nov. comb.  
Leeds, Devils Lake.

1122. **Tessenia racemosa** var. **simpicissima** Lunell, var. nov.  
Stem at the end of the season 40 cm. long, very slender, simple, bearing 1-4 heads.  
Turtle Mountains: St. John.

1123. **Tessenia racemosa** var. **arcuata** Lunell, var. nov.  
Branching freely from the base; the branches arcuate. Dry bottom of Lake Ibsen.


Leeds, Butte; Kulm (Brenckle).


1125. **Doellingeria umbellata pubens** (A. Gray) Britt. in Britt. & Br. Ill. Fl. 3: 392. (1898).  
Turtle Mountains, Pleasant Lake.

*Antennaria* Gaertn. Fruct. & Sem. 2: 410, pl. 167. (1791);  
R. Br., acc. to Bubani.

**Sexual Key.**

Group I. Both staminate and pistillate flowers found. These grow either promiscue or in separate clumps, but in their own immediate proximity:  
*A angustiarum, A Lunellii, A microphylla.*

Group II. Both staminate and pistillate flowers found, but each kind is growing alone, in localities widely separated from the other:  
*A. chelonica.*

Group III. Only staminate flowers found: *A. microphylla solstitialis.*

Group IV. Only pistillate flowers found: *A. aprica, A. aureola, A. aureola roseata, A. oxyphylla.*

**Analytical Key.**

I. Heads 8–12 mm. high.

A. Mature leaves glabrous above.

1) Fertile plants tall, sterile low. Stolons elongated............. *A. chelonica*

2) Fertile and sterile plant of equal length. Stolons 1-2 as long as the stem.................................................. *A. angustiarum*

B. Leaves small, permanently hoary pubescent above, at least toward the margins.................................................. *A. Lunellii*

C. Leaves permanently tomentose on both sides.

1) Low, with obtuse pistillate bracts........................................ *A. aprica*
2) Middle sized, with acute, white, gold tinted pistillate bracts...A. aureola
3) Middle-sized, with acute, rose-colored pistillate bracts
A. aureola roseata
4) Tall, the outermost series of pistillate bracts broad,
obtuse, the inner narrower, acute..............A. oxyphylla

II. Heads 5–8 mm. high.
Leaves small, finely and appressedly silky tomentose.
1) Heads in an open corymb, pedunculated. Scarcity of staminate plants. Tall..................A. microphylla
2) Heads in glomerate, capitate clusters. Absence of pistillate plants. Low......................A. microphylla var. solstitialis

St. John.

Butte.

Leeds.

Leeds.

Butte, Pleasant Lake, Towner, Dunsieth, Peninsula of Lake Ibsen, Minnewaukan.

1131. Antennaria aureola var. roseata Lunell.
Towner.

Dickinson (Bergman, Cl. Waldron).

Leeds, Peninsula of Lake Ibsen, Devils Lake, Pleasant Lake, Turtle Mountains.

1134. Antennaria microphylla var. solstitialis Lunell.
Leeds.
RESINOCaulon (Gr. ρητίνη resin, ηαυλός stem) Lunell, gen. nov.


1135. Resinocaulon perfoliatum (Linn.) Lunell.


Fargo (O. A. Stevens).


Devils Lake, Turtle Mountains, Leeds.

OBELISCOTHECA Vail. Act. 426. (1720). A name, not very beautiful, almost sesquipedalian!

Rudbeckia Linn. Gen. no. 980, antedated by Houston, Mss. who used it for Conocarpus.

1137. Obeliscotheca flava (Moore) Nwd. & Lll.

Rudbeckia flava Moore, in Greene Pittonia 4: 179. (1900).

Leeds, Butte, Pleasant Lake, Turtle Mountains.

1138. Obeliscotheca flava perbracteata (Lunell) Nwd. & Lll


Leeds, Butte.

1139. Obeliscotheca ampla (A. Nels.) Nwd. & Lll


Turtle Mountains, Pleasant Lake.


1140. Ratibida columnifera (Nutt.) Woot. & Standl. Pl. New Mexico. 706. (1915.)

Rudbeckia columnifera Nutt. Fraser's Cat. 75. (1813).


Leeds.

*Obeliscaria pulcherrima* DC. Prodr. 5: 559. (1836).
Leeds, Butte, Bottineau.


*Echinacea angustifolia* DC. Prodr. 5: 554 (1836).

Narrows, Towner, Leeds.

*HELIANTHUS* Linn. Gen. ii. 979.

**Analytical Key.**


A. Leaves dentate; bracts ovate or obovate, acuminate, hispid-ciliate............................................................................................................ *H. annuus*

A. Leaves entire, or almost so; bracts lanceolate, canescent *H. petiolaris*

II. Perennials.

A. Disk dark brown or purple........................................................................... *H. subrhomboideus*

A. Disk yellow or light brown.

B. Leaves lanceolate, 3–8 times as long as wide, acuminate.

C. Leaves conduplicate.

D. Rays 15–30.................................................................................................... *H. Maximiliana*

D. Besides these, a number of additional ray-like flowers emanates from the disk .... *H. Maximiliana var. iubaris* n. var

C. Leaves flat, subentire or denticulate............................................................. *H. Nuttallii*

B. Leaves ovate, ovate-lanceolate or oblong, acute, short-petioled.

C. Leaves not verticillate.

D. Leaves ovate-lanceolate, 2.5—3 times longer than wide.......................... *H. apricus*

D. Leaves oblong-ovate, quite large, twice as long as wide.

E. Leaves smooth beneath............................................................................. *H. nitidus*

E. Leaves scabrous beneath............................................................................ *H. nitidus var. camporum*

C. Leaves verticillate in threes...... *H. nitidus var. trifoliatus* n. var.

B. Leaves ovate, acuminate, large, long-petioled, serrate, 3.5—4 times longer than wide.

C. Leaves soft-pubescent beneath......................................................*H. tuberosus*

C. Leaves white-canescenent beneath....................................................... *H. tuberosus subcanescens*


Leeds, Bismarck.


Devils Lake, Pleasant Lake; Denbigh (Bergman).
   Leeds, Butte.
   Leeds, Devils Lake, Turtle Mountains.
1147. Helianthus Maximiliani var. iubaris Lunell, var. nov.
   For description see Key. Leeds.
   Willow City, Towner.
   Leeds, Butte, Towner.
   Butte.
   (1911) is herewith retracted.
1152. Helianthus nitidus var. trifoliatus Lunell, var. nov.
   For description see Key. Butte.
   Peninsula of Lake Ibsen, Turtle Mountains.
   Pleasant Lake, Bismarck.
   COREOPSIS Linn. Gen. n. 981; T. & G. Fl. II: 338 (1842).
   Morton County (W. B. Bell).
   BIDENS Caesalpinus, De Plantis Bk. 12, ch. 17. (1583);
   Tour. Inst. 462. (1700); Linn. Gen. n. 932.
1156. Bidens glaucescens Greene, Pittonia 4: 258. (1901)
   Leeds, Butte, Peninsula of Lake Ibsen, Pleasant Lake, Turtle,
   Mountains; Logan Co. (Brenckle).
   Bidens comosa acuta Wiegand.
   Leeds, Towner.
Pleasant Lake; Logan Co.: Beaver Lake (Brenckle).

Leeds, Peninsula of Lake Ibsen.

1160. Bidens vulgaris var. puberula (Wiegand) Greene.
In a swamp, Leeds.

1161. Bidens vulgaris var. schizantha Lunell, var. nov.
Leaves bipinnately 3-7 divided, except the 3 upper leaflets,
which are undivided; petioles widened at base.
In the western part of the state.


Leeds (extinct); Williams Co. Spring Brook (O. A. Stevens).


Fargo (Cl. Waldron).

HYMENOPAPPUS L’Her. Diss. (1788).

(Morton County (W. B. Bell).


(1842).


(1901).

"On denuded sterile hills, near Fort Mandan;" Morton Co.
(W. B. Bell).

TETRANEURIS Greene, Pittonia III: 265. (1898).

Belfield (Bergman).


1167. Hymenoxys pumila (Greene).

Picradenia pumila Greene, Pittonia III: 271. (1898).
Belfield (Bergman).

Dickinson (Cl. Waldron).

Inula Virgilius, Plinius, etc. *Helenium* Dodonaeus Pempt. 344. (1583), Morison, Vaillant, Boerhave, Bauhin, was used for what Caesalpinus calls *Enula = Inula Helenium* Linn., which no doubt is *Helenium vulgare* Dod. This eliminates *Helenium* as a synonym and validates *Heleniastrum*, as not built on a pre-existing genus name.

1169. **Heleniastrum montanum** (Nutt.) Nwd & Lll.  
Leeds.


Leeds, Butte; Kulm (Brenckle).

Leeds, Butte.


1172. **Boebera papposa** Rydb. in Brit. Man. 1012. (1901).


**ACHILLAEA** Diosc. 4: 36 (Ἀχίλλειοι).


In an old garden. Leeds.


Leeds, Butte, Devils Lake, Pingree, Bottineau.


St. John, Peninsula of Lake Ibsen.


St. John.


Leeds, Pleasant Lake, St. John.

PONTIA Bubani, Fl. Pyr. II: 218. (1890).

Chrysanthemum (χρυσάνθεμον) Diosc. 4: 58, for which Dau-
beny accredits Chr. coronarium as the type, now that certain other
Chrysanthema were called by Diosc. and others Buphthalmum, etc.,
would not militate against the fact that Chr. is the name of the
genus, since that is what Diosc. called the type plant. As it is
considered desirable here to segregate the Leucanthemum group,
this latter name is not available, because it was applied by Plini-
us to Anthemis thia.—Pontia Bubani l. c.=Leucanthemum Tour-
nef., not Plinius 22. 21

1178. Pontia vulgaris (Brunfels) Bubani. l. c. 221.


Belfield (O. A. Stevens).

SANTOLINA “Anguillara (vix, quum eam tantummodo
nominaverit.” Bubani). Dod. Hist. Stirp. Pempt. II., Bk. III.,


Matricaria discoidea DC. Prodr. 6: 50. (1837).

Club 5: 341. (1894).

Leeds, Minnewaukan.

CHAMAEMELUM Hippocrates, Morb. Mul. I.: 625. Αρέμις
Diosc. 3: 154. Αρέμιον Theophr. 7, hist. 13, dicitur Χαμωμέλον.
Anthemis Plin. 22. 21.

Matricaria Vaillant; the Chamomilla of Linn. is Chamille
to-day. Theophr. had no Chamille. Officinis Chamomilla is Anthe-


Kulm (Brenchkle).

TANACETUM Brunfels, Herb. Viv. Ic. 250—251. (1531), also

1181. Tanacetum vulgare Trag. Stirp. 158. (1552), also Eyst.;

Turtle Mountains.


Towner.

Stem leaves green, glabrate. Pleasant Lake, Devils Lake; Kulm and Emmons County (Brenckle).

1184. Artemisia Forwoodii var. calvens Lunell.
Willow City, Leeds, Butte; Antler (Bergman).


Pingree, Bottineau, Brinsmade, Peninsula of Lake Ibsen.

Leeds.

Leeds, Turtle Mountains.

Leeds; La Moure County (Brenckle).

Leeds.

Leeds.

Emmons Co.: Fenwick (Brenckle).

Leeds.

Sentinel Butte (Brenckle).

Medora (Bergman).

PETASITES Diosc. 4: 108 (πετασίτης); Bauh. Pin. 197. (1620); Fuchs, Hist. Stirp. 370. (1549); Tourn. Inst. 451. (1700).

VASCULAR PLANTS OF NORTH DAKOTA

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Turtle Mountains, Pleasant Lake.
ARNICA Fehr. Rupp. Jen. 141. (1726). Linn. did not con-
sider it, called it Doronicum.

Dunsieth; Dickinson (Cl. Waldron).
Less.; Tour. Inst. 456. (1700); Linn. Gen. 251. (1737) = Erigeron
of the Greeks.

Butte, Peninsula of Lake Ibsen.
271. (1900).
Minot, Dunsieth, Leeds; Dickinson (Cl. Waldron).
Fl. 580. (1909).
Senecio dispar A. Nels. l. c. 272. (1900).
Dunsieth.

[1201. This number has been used for Cheirinia elata, next
after 518, Vol. IV. 411. (1916).]

(1900).
Butte; Valley City (O. A. Stevens).
1203. Senecio Purshianus var. viridescens Lunell in Am.
Leeds, Butte, Dunsieth, Minot (the last probably distinct).
Leeds, Butte, Thorpe, Towner.
1205. Senecio manitobensis Greenman, in the Ottawa Nat-
uralist, Vol. 25.: 117. (1911).
(hb. Gray.)”
298. (1897).
Leeds, Butte, Minnewaukan.
1207. Senecio suavis Lunell in Am. Mid. Nat. Vol. II:
125. (1911). Very closely related to S. densus Greene, Pittonia
IV: 226. (1900), but Dr. Greene said, when he saw the type in my
herbarium, that this was a species unknown to him. Pleasant Lake.


Leeds, Peninsula of Lake Ibsen, Rolette.


Pleasant Lake, Dunsieuth, Turtle Mountains.

**ARCION** (άρχειον) Diosc. 4. 107, Plin. 25. 9. *Personata*


*Arctium Lappa* Linn. 243. (1737). *Lappa* was among the Romans the general name for plants some part of which was adherent.

1210. **Arcion minus** (Fuchsius) Bubani ex Schk. Handb. 3: 4317. (1803); Tourn. 450. (1700).

*Lappa minor* DC. Fl. Fran. 4: 77. (1803).

Leeds, Devils Lake, Pleasant Lake; Kulm (Brenckle).

**CIRSIUM** (Κίψθων) Dioscorides 4: 119; Tourn. 447. (1700).

*Carduus* Linn. Gen. 244. (1737).


*Carduus lanceolatus* Linn. Sp. Pl. 82. (1753).

Kulm (Brenckle).


*Carduus nebraskensis* Britton, Ill. Fl. III: 487. (1898).

To include var. *discissum* Lunell, in A. Midl. Nat. I. e.

[Not *Carduus Flodmannii* Rydb. Fl. of Montana. 451 (1900), which has a different pappus].

Leeds, Butte, Pleasant Lake, Devils Lake, Turtle Mountains.


Minot.


Pleasant Lake, Steele.

1215. **Cirsium muticum** Michx. Fl. Bor. Am. II: 89. (1803).

Turtle Mountains.

Leeds, and everywhere.


Occasional escape from gardens. Leeds.

1220. *Agalinis aspera* to be found next after No. 927, in Vol. V. 7: (1917).


Fargo (Cl. Waldron).

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**PLANTS OF MANHATTAN AND BLUE RAPIDS, KANSAS, WITH DATES OF FLOWERING.—I.**

**BY O. A. STEVENS.**

Under this title it is intended to bring together the writer's observations made chiefly during the years 1904 to 1909 inclusive. The list is fairly complete, comprising about 600 species, specimens of practically all of which were collected and are now deposited with the Blue Rapids High School. The dates of flowering refer only to the beginning of the flowering period and are the results of a practise of recording each season the first flowers seen, together with a note on the approximate time which it was believed the species had been in flower. Many of these records are of common plants under constant observation and quite accurate. Others are doubtless subject to correction.

In recording the time of flowering it has seemed advisable to divide the month into periods of five days each, using the days 5, 10, etc.; also giving the exact average date where the dates
for three or more years are similar. For frequency, the terms
common, frequent, and occasional have been used. In some cases
where it was not well known no statement is made. Unless other-
wise stated the plants were considered equally common at both
localities. For the convenience of many who may use the list in
connection with a manual it has seemed desirable to follow the
nomenclature of Britton's Manual,¹ and common names have
been included with the idea of making the list useful to as many
people as possible.

The territory covered at Blue Rapids takes as a center the farm
on which the writer lived until leaving college. Most of the col-
lecting was done on this place or on those immediately adjoining,
the greater part within one mile radius, and mostly on the east
side of the river. This place is located about four miles northwest
of Blue Rapids on the Big Blue River, so that the area studied
includes the river bank and woods, the valley, the hillsides and
upland prairie. About every half mile deep ravines extend back
a mile or more from the valley (or smaller ones more frequently).
The wooded lower levels or dry slopes of these are the "dry woods"
referred to, while "woods" refers to those close to the river. The
natural grassland of the valley is designated as "meadow," that
of the upland as "prairie."

The area at Manhattan forty-five miles south of Blue Rapids
was covered quite well to a distance of about four miles in all
directions from the town. A greater variety of conditions occur
and about 150 more plants are reported. The hillsides are higher
and more moist; good springs are frequent (rare at Blue Rapids).
The larger valley of the Kansas River which the Big Blue joins at
this point is quite sandy and furnishes some small areas of drifting
sand. Eastward from the town the glacial ice sheet left its charac-
teristic results which seem to furnish a habitat for a number of
plants not found elsewhere in the vicinity.

Some prairie plants common at Manhattan which were not
seen at Blue Rapids are: Zygadenus Nuttallii, Callirrhoe, and
Hymenopappus corymbosus. Many of the other species not recorded
for Blue Rapids are likely to be found in its vicinity. Professor
A. S. Hitchcock has published² records of about 150 additional

¹ Britton, N. L., Manual of the Flora of the Northern States and
Canada, ed. 2, 1905.
² Flora of Kanass—Distribution by Counties. The Industrialist, 1898.
species for Riley and Pottawatomie counties. The labels on these specimens in the herbarium of the Kansas Agricultural College do not show as a rule the exact locality. It is probable that they fall in three groups which may be of more or less equal size: (1) plants which the present writer did not recognize, (2) rare plants, (3) plants collected outside of the area here covered. The present list includes also about 25 additional species, about half of these being additional for the State.

PTERIDOPHYTA—Ferns and Fern Allies.

Ophioglossaceae. Adder's-tongue Family.

*Botrychium virginianum* (L.) Sw. Rattlesnake Fern.

Woods. Occasional.

Polypodiaceae. Fern Family.

*Pellea atropurpurea* (L.) Link. Cliff-brake.

On rocks in ravines and on hillsides. Frequent.


On rocks on moist banks in ravines. Occasional.

*Camptosorus rhizophyllus* (L.) Link Walking Fern.

Manhattan. Rare. In one ravine southeast of town.

Marsileaceae.

*Marsilea vestita* Hook & Grev.

Manhattan. Once collected in water in roadside ditch.

Equisetaceae. Horsetail Family.

*Equisetum arvense* L. Field Horsetail.

Wet banks. Occasional.

*Equisetum hyemale* L. Scouring Rush.

Wet banks, low fields, etc. Common.

*Equisetum laevigatum* A. Br.

Occasional at Manhattan.

SPERMATOPHYTA. Seed Plants.

Pinaceae. Pine Family.

*Juniperus virginiana* L. Red Cedar.

Rocky banks and hillsides. Frequent. Also planted. Mar.

15. (17).

1 Specific names have been decapitalized according to the rules now most generally followed.
Typhaceae. Cat-tail Family.

*Typha latifolia* L. Broad-leaved Cat-tail.

Sparganiaceae. Bur-reed Family.

Wet places. Occasional at Manhattan.

Naiadaceae. Pondweed Family.

*Zannichellia palustris* L. Horned Pondweed.
Manhattan. In water, especially in old river channel.
Frequent. May 5.

Alismaceae. Water Plantain Family.

*Alisma Plantago-aquatica* L. Water Plantain.
River margins, etc. Frequent.

*Sagittaria latifolia* Willd. Broad-leaved Arrow-head.
River margins, etc. Common. Aug. 5.

*Sagittaria ambigua* J. G. Smith.
Manhattan. Once collected, June 30.

Gramineae. Grass Family.

*Tripsacum dactyloides* L. Gama Grass.

*Andropogon scoparius* Michx. Little Blue-stem.

*Andropogon furcatus* Muhl. Big Blue-stem.

*Sorghastrum avenaceum* (Michx.) Nash. Indian Grass.


*Paspalum ciliatijolium* Michx.
Manhattan. Frequent in sandy soil.

*Eriochloa punctata* (L.) W. Hamilt.
Manhattan. Once collected in street.

*Syntherisma linearis* (Krock.) Nash. Small Crab Grass.

*Syntherisma sanguinalis* (L.) Dulac. Large Crab Grass.

*Echinochloa Crusgalli* (L.) Beauv. Barnyard Grass.
**PLANTS OF MANHATTAN AND BLUE ISLAND**

*Panicum capillare* L.  Witch Grass.

*Panicum cognatum* Schultes.  Fall Witch Grass.
  Manhattan, in sandy soil.  July 15.

*Panicum proliferum* Lam.  Sprouting Crab Grass.
  Fields, especially in low ground.  Common.  Aug. 5.

*Panicum virgatum* L.  Switch Grass.

*Panicum scribnerianum* Nash.

*Panicum scoparium* Lam.
  Manhattan.  Occasional in dry soil.

  Fields, etc.  Common.  June 30 (29).

*Chaetochloa viridis* (L.)  Scribn.  Green Foxtail.
  Fields, etc.  Common.  June 5 (5).

*Chaetochloa italica* (L.)  Scribn.  Italian Millet.
  Occasionally escaped from cultivation.

*Cenchrus tribuloides* L.  Sand-bur.

*Homalocenchrus virginicus* (Willd.)  Britton.  White Grass.

*Homalocenchrus oryzoides* (L.)  Poll.  Rice Cut-grass.

*Phalaris arundinacea* L.  Reed Canary Grass.
  Manhattan.  Occasional in wet places east of town.

*Aristida oligantha* Michx.  Wire Grass.
  Dry soil.  Common.

*Aristida basiramea* Engelm.
  Manhattan.  Occasional in dry soil.

*Stipa spartea* Trin.  Porcupine Grass.

*Muhlenbergia sobolifera* (Muhl.)  Trin.
  Once collected in a ravine southwest of Manhattan.

*Muhlenbergia mexicana* (L.)  Trin.

*Muhlenbergia racemosa* (Michx.)  B. S. P.

*Muhlenbergia sylvatica* Torr.
  Manhattan.  Occasional in woods.
Muhlenbergia diffusa Willd.  
Manhattan. Dry banks and woods. Common.

*Phleum pratense* L. Timothy.  
Occasionally escaped from cultivation.

*Alopecurus geniculatus* L. Marsh Foxtail.  
Moist soil. Frequent. May 15 (13).


Dry roadsides, etc. Common. Flowers late.

*Sporobolus neglectus* Nash. Small Rush-grass.  
Dry roadsides, etc. Common.


*Sporobolus cryptandrus* (Torr.) A. Gray. Dropseed Grass.  

*Sporobolus heterolepsis* A. Gray. Northern Dropseed.  
Prairies. Occasional.

*Cirina arundinacea* L. Wood Reed Grass.  
Woods. Occasional.

*Agrostis alba* L. Redtop.  
Occasionally escaped from cultivation.

*Agrostis perennans* (Walt.) Tuckerm. Thin Grass.  
Woods. Occasional.

*Agrostis hyemalis* (Walt.) B. S. P. Rough Hairgrass.  

*Calamovilfa longifolia* (Hook.) Hack. Long-leaved Reed Grass.  
Manhattan. Sandhills.

*Spartina cynosuroides* (L.) Willd. Slough Grass.  

*Chloris verticillata* Nutt.  
Manhattan. Occasional in dry soil.

*Schedonnardus paniculatus* (Nutt.) Trelease.  
Prairies and dry soil. Frequent. June 20.

*Bouteloua hirsuta* Lag. Small Grama Grass.  

*Bouteloua oligostachya* (Nutt.) Torr. Larger Grama Grass.  
Prairies, especially in the lower places. Aug. 25.
Atheropogon curtipendulus (Michx.) Fourn. Prairie Oast.
Eleusine indica (L.) Gaertn. Yard Grass.
   Dry roadsides, dooryards etc. Manhattan, common;
   Blue Rapids, occasional. June 30 (July 1).
Bulbilis dactyloides (Nutt.) Raf. Buffalo Grass.
   Prairies. Occasional. May 20. Resembles the Grama
   grasses which are commonly confused with it.
Phragmites Phragmites (L.) Kärst. Reed.
   Manhattan. One or two small patches about 6 miles east.
   Wet ground.
Tricuspis sesleroides (Michx.) Torr. Purple-top.
Diplachne fascicularis (Lam.) Beauv.
   Manhattan. Low roadside.
Eragrostis capillaris (L.) Nees.
   Dry, wooded ravines.
Eragrostis Purshii Schrad.
   Dry soil, yards and roadsides. Common. June 15
Eragrostis major Host. Stink Grass.
Eragrostis pectinacea (Michx.) Steud. Tickle Grass.
Eragrostis trichodes (Nutt.) Nash.
   Manhattan. Occasional in sandy soil.
Eragrostis hypnoides (Lam.) B. S. P.
   Mud of river and pond margins. Common.
Eatonia obtusata (Michx.) A. Gray.
Koeleria cristata (L.) Pers.
Melica mutica Walt.
   Woods and wooded banks. Frequent.
Korycarpus diandrus (Michx.) Kuntze.
Uniola latifolia Michx.
Dactylis glomerata L. Orchard Grass.
   Occasionally escaped from cultivation.
Poa pratensis L. Kentucky Bluegrass.
Poa sylvestris A. Gray.
Poa compressa L. Canada Bluegrass.
Panicularia nervata (Willd.) Kuntze. Manna Grass.
  Manhattan. Occasional in wet soil.
Festuca octoflora Walt. Slender Fescue.
Festuca elatior L. Meadow Fescue.
  Cultivated and frequently escaped.
Festuca nutans Willd. Nodding Fescue.
Bromus inermis Leyss. Hungarian Brome Grass.
  Occasional along roadsides.
Bromus ciliatus L. Wood Chess.
Bromus tectorum L. Downy Brome Grass.
  Along railroad; once noted at each place.
  Roadsides and in fields of meadow fescue. Common.
Bromus racemosus L.
  Roadsides. Occasional.
Bromus arvensis L. Field Chess.
  Roadsides. In 1909 only a few spots were known at Blue Rapids. In 1916 this grass had fairly taken possession of the roadsides.
Agropyron Smithii Rydb. Western Wheatgrass.
Agropyron repens (L.) Beavu. Quack Grass.
  Manhattan. Noted in a spot of Bromus inermis along roadside in 1916.
Hordeum pusillum Nutt. Little Barley.
Hordeum jubatum L. Squirrel-tail Grass.
  Roadsides. Frequent. May 30 (30).
Elymus striatus Willd. Slender Wild Rye.
Elymus virgmicus L. Terrel Grass.
Elymus canadensis L. Nodding Wild Rye.
    Dry soil, roadsides, etc. Common. June 15 (14).

**Cyperaceae.** Sedge Family.

*Cyperus diandrus* Torr.
    Manhattan. Common in wet soil.
*Cyperus inflexus* Muhl.
    Blue Rapids. Once collected along the river margin.
*Cyperus Schweinitzii* Torr.
    Manhattan. Occasional in sandy soil.
*Cyperus erythrorhizos* Muhl.
    Manhattan. River bank.
*Cyperus speciosus* Vahl.
    Manhattan. Frequent in wet ground.
*Cyperus strigosus* L.
    Moist ground, fields and river banks. Common.
*Cyperus filiculmis* Vahl.
*Eleocharis palustris* (L.) R. & S. Spike Rush.
    Wet ground. Frequent.
*Eleocharis acuminata* (Muhl.) Nees.
    Wet places.
*Scirpus americanus* Pers. Chair-maker's Rush.
*Scirpus validus* Vahl. Great Bulrush.
    Ponds, ditches, etc. Common. June 10.
*Scirpus atrovirens* Muhl.
    Pond margins etc. Common.
*Scirpus lineatus* Michx.
    Blue Rapids. Once collected in bed of ravine.
*Fuirena simplex* Vahl.
    Manhattan. In wet meadow.
*Carex hystricina* Muhl. Porcupine Sedge.
    Wet places. May 30.
*Carex trichocarpa* Muhl.
    Wet meadows and roadsides. Common.
*Carex lanuginosa* Michx. Wooly Sedge.
    Wet meadows. Common at least at Manhattan.
Carex stricta Lam. Tussock Sedge.
Carex Davisii Schwein. & Torr. Davis' Sedge.
Blue Rapids. Once collected along edge of woods.
Carex oligocarpa Schk.
Manhattan. Dry wooded banks.
Carex tetanica Schk.
Carex laxiflora Lam.
Carex pennsylvanica Lam.
Prairies. Common. Mar. 30 (Apr. 2.).
Carex varia Muhl.
Manhattan. Wooded banks. Apr. 10 (8).
Carex vulpinoidea Michx. Fox Sedge.
Carex sparganoides Muhl. Bur-reed Sedge.
Carex festucacea Willd. Fescue Sedge.

Araceae. Arum Family.

Arisaema Dracontium (L.) Schott. Green Dragon.

Lemnaceae. Duckweed Family.

Spirodela polyrhiza (L.) Schleid. Greater Duckweed.
Manhattan. On water, often among the rushes. Common.
Lemna perpusilla Torr.
Manhattan. Often with the preceeding.

Commelinaceae. Spiderwort Family.

Commelina virginica L. Day Flower.
Fields and waste places. Common. June 30 (July 2).
Tradescantia bracteata Small. Spiderwort.
Tradescantia reflexa Raf.
Especially in sandy soil. Very common at Manhattan; not common in the area covered at Blue Rapids. May 20.
**Pontederiaceae.** Pickerel-weed Family.

_Heteranthera reniformis_ R. & P. Mud Plantain.
Manhattan. Occasional in mud or water.

_Heteranthera limosa_ (Sw.) Willd. Smaller Mud Plantain.
Manhattan. Occasional in mud or water.

**Juncaceae.** Rush Family.

_Juncus tenuis_ Willd. Slender Rush.
Wet places on prairies, meadows, etc. Common.

_Juncus Torreyi_ Coville. Torrey's Rush.
Common at Manhattan on sandbars of old river channel.
Once collected along creek bank at Blue Rapids.

**Melanthaceae.** Bunch-flower Family.

_Zygadenus Nuttallii_ (A. Gray) S. Wats.

**Liliaceae.** Lily Family.

_Allium canadense_ L. Wild Garlic.
Banks; lower parts of hillsides. Frequent. May 25.

_Allium mutabile_ Michx. Wild Onion.

_Nothiscordum bivalve._ (L.) Britton. Yellow False Garlic.

_Erythronium albidum_ Nutt. White Adder’s-tongue or Dog’s-
tooth Violet.
Moist woods. Frequent. Apr. 10 (8).

_Yucca glauca_ Nutt. Bear-grass.
Manhattan. Rocky hillsides and sandhills. Occasional.

June 5.

**Convallariaceae.** Lily-of-the-Valley Family.

_Asparagus officinale_ L. Asparagus.
Occasionally escaped from cultivation.

_Vanguera stellata_ (L.) Morong. Star-flowered Solomon’s Seal.

_Salomonia commutata_ (R. & S.) Britton. Smooth Solomon’s
Seal.

**Smilaceae.** Smilax Family.

_Smilax herbacea_ L. Carrion Flower.
Smilax hispida Muhl. Greenbrier.

Iridaceae. Iris Family.
Sisyrinchium angustifolium Miller. Blue-eyed Grass.

Orchidaceae. Orchid Family.

Salicaceae. Willow Family.
Populus deltoides Marsh. Cottonwood.
Salix amygdaloides Anders. Peach-leaved Willow.
Moist soil; woods and along creeks. Common. Apr. 20 (19).
Salix interior Rowlee. Sandbar Willow.
River banks and other moist places. Common. May 5 (3).

Juglandaceae. Walnut Family.
Juglans nigra L. Black Walnut.

Betulaceae. Birch Family.

Fagaceae. Beech Family.
Quercus velutina Lam. Black Oak.
Manhattan. Common on hills eastward.
Quercus marylandica Moench. Black Jack or Barren Oak.
With the proceeding.
Quercus macrocarpa Michx. Bur Oak.
Quercus acuminata (Michx.) Houda. Chestnut or Yellow Oak.
Hillsides. Common at Manhattan, occasional at Blue Rapids. Apr. 25 (23).
**Ulmaceae.** Elm Family.

*Ulmus americana* L. White Elm.

*Ulmus fulva* Michx. Slippery or Red Elm.

*Celtis occidentalis* L. Hackberry.
Woods. Common. Apr. 10 (9).

**Moraceae.** Mulberry Family.

*Morus rubra* L. Red Mulberry.

*Toxylon pomiferum* Raf. Osage Orange.
Planted and sometimes escaped. Apr. 25.

*Humulus lupulus* L. Hop.

*Cannabis sativa* L. Hemp.

**Urticaceae.** Nettle Family.

*Urtica gracilis* Ait. Slender Nettle.
Roadsides, thickets etc. Common. July 5.

*Urticastrum divaricatum* (L.) Kuntze. Wood Nettle.

*Adicca pumila* (L.) Raf. Clearweed.

*Boehmeria cylindrica* (L.) Willd. False Nettle.
Manhattan, eastward. Also the var. *scabra* Porter.

*Parietaria pensylvanica* Muhl. Pellitory.

**Santalaceae.** Sandalwood Family.

*Commandra pallida* A. DC.
Prairies and hillsides. Frequent. May 10 (10).

**Polygonaceae.** Buckwheat Family.

*Rumex Acetosella* L. Field Sorrel. Sorrel Dock.

*Rumex venosus* Pursh.

*Rumex altissimus* Wood. Tall Dock.
Roadsides, etc. Common. May 5 (4).
Rumex patientia L. Patience Dock.
Manhattan. Noted in two places along the roadside.
May 25.

Rumex crispus L. Curled Dock.
Fields, roadsides etc. Common. May 25 (23).

Rumex obtusifolius L. Broad-leaved Dock.

Rumex persicarioides L. Golden Dock.
Manhattan. Sandy soil, especially along old river channel.

July 15.

Fagopyrum Fagopyrum (L.) Karst. Buckwheat.
Cultivated and occasionally escaped.

Polygonum emersum (Michx.) Britton.

Polygonum lapathifolium L.

Polygonum pennsylvanicum L.
Fields, riverbanks etc. Common. May 30 (June 2).

Polygonum longistylum Small.

Polygonum Persicaria L. Ladies' Thumb.
Low places in fields, roadsides etc. Common. June 5 (5).

Polygonum hydropiperoides Michx.
Manhattan. Once collected in roadside ditch.

Polygonum Hydropiper L. Water Pepper.
Blue Rapids. Once collected along riverbank.

Polygonum punctatum Ell.

The name Smartweed is often applied to any of the eight species preceding, and Knotweed to the five following.

Polygonum virginianum L.

Polygonum aviculare L. Doorweed.
Dooryards, roadsides, or other trodden soil. May 25 (24).

Polygonum littorale Link.
Dry roadsides. Common.

Polygonum ramosissimum Michx. Bushy Knotweed.

Polygonum tenue Michx. Slender Knotweed.
Blue Rapids. Prairie.
Polygonum Convolvulus L. Black Bindweed. Wild Buckwheat.

Polygonum scandens L. Climbing False Buckwheat.

Chenopodiaceae. Goosefoot Family.

Chenopodium album L. Lambsquarters.
Fields, roadsides etc. Common. May 30 (30).

Chenopodium praetericola Rydb. Field Goosefoot.
Fields, roadsides etc. Common. This is C. Berlandieri of Hitchcock's list. The description\(^1\) of this new species, the type of which is from Riley county seemed to clear up a troublesome point; but judging from Standley's recent revision\(^2\) of the group, there may be still other species to report.

Chenopodium leptophyllum (Moq.) Nutt. Narrow-leaved Goosefoot.
Dry soil. Frequent.

Chenopodium boscianum Moq.

Chenopodium hybridum L. Maple-leaved Goosefoot.
Edges of woods and waste ground. Common. July 20 (21)

Chenopodium ambrosioides L. Mexican Tea.
Manhattan. Occasional. Dry roadsides and waste ground.

Chenopodium atriplicifolium (Spreng.) Coul. Tumbleweed.

Monolepis nuttalliana (R. & S.) Greene.
Along the railroad tracks. Frequent. Apr. 5.

Kochia Scoparia (L.) Roth. Burning Bush.
Sometimes escaped from gardens.

Salsola Tragus L. Russian Thistle.

Amaranthaceae. Amaranth Family.

Amaranthus retroflexus L. Rough Pigweed.
Fields, roadsides, etc. Common. July 15.

Amaranthus hybridus L. Slender Pigweed.
Fields, roadsides, etc. Common. Aug. 5.

Amaranthus blitoides S. Wats. Creeping Pigweed.
Roadsides, yards, etc. Common. May 30 (31). This common name is here proposed.

Amaranthus graccizans L. Tumbleweed.
Dry or sandy soil.

Acnida tamariscina (Nutt.) Wood. Western Water-hemp.

Froelichia gracilis Moq.
Manhattan. Once collected along railroad. May.

Phytolaccaceae. Pokeweed Family.

Manhattan. Frequent along woods and roadsides. June 20.

Nyctaginaceae. Four-o’clock Family.

Allionia nyctaginca Michx. Wild Four-o’clock.

Allionia lanceolata Rydb.
Dry roadsides. Occasional.

Allionia hirsuta Pursh.
Hillsides and dry soil. Occasional.

Aizoaceae. Carpet Weed Family.

Mollugo verticillata L. Carpet Weed.
Riverbanks and fields. Common.

Portulacaceae. Purslane Family.

Portulaca oleracea L. Purslane.

Caryophyllaceae. Pink Family.

Agrostemna Githago L. Corn Cockle.
Along railroad. Occasional.

Silene stellata (L.) Ait. Starry Campion.

Silene antirrhina L. Sleepy Catchfly.
The var. divaricata Robinson collected east of Manhattan.

Saponaria officinalis L. Bouncing Bet.
Occasionally escaped from gardens. June 30.

Manhattan. Once collected along the railroad.
Cerastium vulgatum L. Mouse-ear Chickweed.

Anonaceae. Custard-apple Family.

Asimina triloba (L.) Papaw.

Ranunculaceae. Crowfoot Family.

Aquilegia canadensis L. Wild Columbine.
Rocky banks in wooded ravines. Occasional. May 10 (8).
Delphinum albescens Rydb. Prairie Larkspur.
Delphinum tricorne Michx. Dwarf Larkspur.

Anemone caroliniana Walt. Carolina Anemone.
Prairies. Frequent. Apr. 5 (5).
Anemone cylindrica A. Gray. Long-fruited Anemone.
Anemone canadensis L. Canada Anemone.
Manhattan. Meadows; noted in only two places. May 30.
Anemone virginiana L. Tall Anemone.
Wooded ravines and thickets. Occasional.

Clematis virginiana L. Virgin's Bower.
Thickets and edges of woods. Occasional.
Clematis Simsii Sweet. Leather Flower.

Myosurus minimus L. Mousetail.
Manhattan. Occasional on prairies. Apr. 5.
Ranunculus abortivus L. Kidney-leaved Crowfoot.
Ranunculus sceleratus L. Ditch Crowfoot.
Riverbanks and ditches. Frequent. May 5 (5).

Oxygraphis Cymbalaria (Pursh) Prantl. Seaside Crowfoot.
Manhattan. Along old river channel.

Thalictrum purpurascens L. Meadow Rue.

Agricultural College,
North Dakota.
DISTRIBUTION OF OUR BIRDS IN WINTER.

BY BROTHER ALPHONSUS, C. S. C.

The following species were observed in winter from 1913-14 to 1916-17: Blue Jay, Crow, Red-headed Woodpecker, White-breasted Nuthatch, Snowbird, Downy Woodpecker, Tree Sparrow, Chickadee, Brown Creeper, Song Sparrow, Goldfinch, Screech Owl, Bronzed Crackle, Meadowlark, Cardinal, Hairy Woodpecker, Vesper Sparrow, Pine Grosbeak, Robin, Bluebird, Kildeer, Herring Gull, Sparrow Hawk, Golden-crowned Kinglet, Snowflake, Canada Goose, Tufted Titmouse. Three species not seen during this period were Evening Grosbeak, Hell Diver, Northern Shrike.

The Blue Jay had the largest number of records of all the winter species that were found, 288. During the first season, the Jay fell 10 records below those of the second winter, having as a total 73 records. There was a difference of only one record between the second and the third season, 83 being the highest record for the four winters. In the fourth year, the Jay had only 50 records, January of that winter having had but 10 records, which was an unusually small number for that month. Two periods of absence occurred, one from the 10th to the 17th, the other, from the 22nd to the 30th. During the first period there was zero weather, but during the last seven days of absence the weather was mild. From this I infer that cold was not the cause of these two absences of the Jay during that January.

The records of the Crow for the four years under consideration show as the highest 77, and as the lowest 68. In December, 1916, and in January, 1915, there were 19 records for each month; and curiously enough, in some other years, those months had very high records. In 1915, December had 31 records; in 1914, for the same month there were 30 records. In 1913, January had 26, and in 1914, the same month had 29 records. I think a possible explanation of the small records in December, 1916, and January, 1915, may be had from the fact that Crows move about in large flocks in winter to find favorable feeding places, and may not be seen far from their feeding grounds. Such a feeding place was discovered by the writer in the winter of 1916-17—this was a vegetable garden where decaying plants afforded the Crows food to their liking.

The White-breasted Nuthatch had a record remarkable for
the regularity of its appearance. The lowest record was 42, and the highest, 50; and for each of two years there were 48 records. The total for the four seasons was 188. In the winter of 1916-17, December had 13 records; January, 18; and February, 11; with a total of 42. This species is never present in large numbers, and may on that account be missed, even in its habitat in the woods. I think, too, that this Nuthatch is given much to wandering, especially in winter; and as few observers wander as much as the bird, they are unlikely to find it on many days.

The Red-headed Woodpecker had 51 records the first winter, and 45 the second; there were no records of this species for the last two seasons. These were the only winters in which I found the Red-headed Woodpecker. It seems rather inexplicable that the species should have been seen for the two first seasons, and entirely absent during every other winter. That the two winters when the bird was found were exceptional out of a dozen seems impossible, and even though they were successive it does not appear to the writer that they were necessarily identical in conditions favorable for the Red-headed Woodpecker's remaining here during winter.

The records of the Snowbird for two winters show considerable irregularity. There were 22 records as the difference between the higher and lower of these totals. In the second and the third season the species was quite regular, there being but three records more in one than in the other. The total for the four winters was 137 records. The winter of 1916-17 was the severest, and to this fact, I think, is due the small number of records made that year—23.

Like the Snowbird, the Downy Woodpecker was quite irregular for two winters; the first and the third there was a difference of 28 records. The second and the fourth season show records almost equal—25 and 22. The total for four years was 99 records. It would be interesting to know what are the determining factors in the distribution of this species in winter. Can it be that the Downy Woodpecker is a wanderer and, not being abundant, is therefore often absent in many localities?

The records of the Tree Sparrow are as interesting as they are irregular. Beginning with the highest record, 35, in the first season, there is a decrease between each successive year: 7 the second winter; 13 the third; and 9 the fourth. The four seasons totalled 87 records. I think severe weather and deep snows are the cause of the scarcity of this species; and probably in parts of the north
where snow is less abundant than at Notre Dame, Indiana, the Tree Sparrow is fairly plentiful in winter.

The Chickadee, in winter, is certainly an enigma to the writer. The first and the last season there was comparative regularity; but note the second—60 records, and the third—5 records. The total for the four seasons was 107. This species is more common here in winter than in any other season except autumn. But I cannot account for the smallest record, in the second winter. Like the other wood species that get their food from the bark of trees, the Chickadee wanders about from grove to grove; but even this habit would seem to fail to explain the great disparity between the second and the third season.

The Brown Creeper ranks among the most irregular winter species. The records of the first and the third year are not irregular, but 40 for the second season, and 3 for the fourth, equals the disparity just noted in the case of the Chickadee. And to extend the comparison between these two species, the year of the Creeper's highest record was the Chickadee's lowest. And as nearly all the records of the winter species, during the last severe season, were the smallest, it is likely that the Creeper's appearance only on three days was due to cold weather.

The Song Sparrow has, during the four years that we are studying, established itself as a fairly common winter species. Only during the last season was the bird very rare, with five records. The total for the other three winters was 40 records.

The Bronzed Grackle was quite irregular during the four winters. For the first and the fourth season, the species had a total of only 8 records; in the second, none at all; and in the third, there were 15 records. The total for all the seasons was 23 records. But a single individual was observed at any time during the three winters this grackle was found, and, doubtless, this one bird must have remained on account of some peculiar condition.

The species whose total number of records any winter did not exceed ten, I have classed as rare. These are the Goldfinch, Screech Owl, Hairy Woodpecker, Meadowlark, Cardinal, Vesper Sparrow; Pine Grosbeak, Robin, Bluebird, Killdeer, Herring Gull, Sparrow Hawk, Golden-crowned Kinglet, Snowflake, Canada Goose, Tufted Titmouse. The Goldfinch had a total of 28 records for the four seasons; the Robin 17; the Herring Gull, 8; the Screech Owl and Bluebird, 7; the Snowflake, 13; the Cardinal, 6; the
Hairy Woodpecker, 5; the Meadowlark and Sparrow Hawk, 3; the Vesper Sparrow, Pine Grosbeak, Killdeer, Golden-crowned Kinglet, Canada Goose, and Tufted Titmouse, 1.

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<td><strong>Total number of species seen, 17</strong></td>
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| **Total number of species seen, 20.**
### 1915–16

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Total number of species seen, 17.

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Total number of species seen, 20.

Total number of species seen in four winters, 27.
THE AMERICAN MIDLAND NATURALIST

Devoted to Natural History, Primarily that of the Prairie States

Published by the University of Notre Dame, Notre Dame, Indiana

J. A. NIEUWLAND, C. S. C., Ph. D., Sc. D., Editor

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Enumerantur Plantae Dakotae Septentrionalis Vasculares.—XIII,

Enumeravit J. Lunell.

The Vascular Plants of North Dakota.—XIII.
With Notes by J. Lunell.

Appendix.
Insert next after No. 3. Woodsia oregana:
 Angiopteris Mitchell, Diss. 29. (1748 and 1769); Adans. 
Fam. des Pl. 21. (1763).
Vol II: 275. (1912).
 Power's Ranch, Richland Co. (Brenckle).
 Struthiopteris V. Cordus De Plantis II: 170. (1561), 
Weiss, Frevisan = Lomaria Spicant (Linn.) Devaux.
1225. Struthiopteris Cordi Thalius, J., Sylve Hercyn. 119 
(1588).
 Struthiopteris germanica Willd. l. c.
III: 197. (1914).
 Ransom Co: Anselm on Sheyenne River )O. A. Stevens).

Insert next before No. 114, Bouteloua gracilis:


137. Paneion palustre (Linn.) Lunell. Poa palustris Linn.; a better name than Poa triflora Gilib. (No. 137).

Insert next before No. 94, Sporobolus asperifolius:

1228. Sporobolus heterolepis A. Gray, Man. 576. (1848). Dickey Co. (Brenckle); Ransom Co.: Amselm (O. A. Stevens).


Insert next after No. 110, Avena americana:


Insert next after No. 166, Zeia dasystachya:


Insert next after No. 286, Polygonatum commutatum:

1232. Polygonatum commutatum var. lineamentosum Lunell, var. nov. Leaves colored with yellow or black-purple longitudinal stripes.

Collected by the writer Sept. 3, 1914 on Peninsula of Lake Ibsen.

Insert next before No. 324, Betulla papyrifera:


Insert next after No. 359, Persicaria maculata:


Fort Ransom (O. A. Stevens).

Insert next after No. 373, Botrys Fremontii:

Clavis Analytica.

A. Plants light green, strongly mealy. Inflorescence narrow, dense.
   1. Lobes of the perianth entirely covering the utricle .......... B. alba
   2. Utricle not covered by the perianth................................. B. ferulata

B. Plants dark green, faintly mealy. Inflorescence broad, lax.
   3. Lobes of the perianth entirely covering the utricle .......... B. pagana
   4. Utricle not covered by the perianth ................................ B. nudata sp. nov.

Insert next after No. 377, Botrys ferulata:

1235. Botrys nudata Lunell, sp. nov.

Caulis robustus, ½—1 m. altus, de basi crebre ramosus (ramis quidem longissimis, convergentibus), striato-angulatus. Folia obscure viridia, superne paene glabrata, subtus leviter pulverulenta, rhombico-ovata, summa lanceolata, gracilis petiolata, angulato dentata. Flores per totam longitudinem ramorum in racemos vel spicas interrupte dispositi. Lobi perianthi cristati, divergentes, utriculo nudato. Pericarpus opacus, semini atro, levi, nitenti firmissime adhaerens.

Stem ½—1 m. high, freely branching from the base, with convergent, very long branches, striate-angled. Leaves dark green, almost glabrate above, slightly mealy beneath, rhombic-ovate, the uppermost lanceolate, on slender petioles, angulate-toothed. Flowers in racemes or spikes interruptedly arranged along the whole length of the branches. Lobes of the perianth crested, spreading, leaving the utricle naked, especially in age. The dusky pericarp firmly adherent to the seed, which is black, smooth, shining, 1.25 mm. in diam.

Collected by the writer on September 24, 1915, in alkaline soil at Leeds, Benson County.

Insert before No. 433, Silene antirrhina:

1236. Silene latifolia (Miller) Britten & Rendle, List Br.

Seed plant sp. 5. (1907).

Cucubalus latifolius Mill. Gard. Dict. ed. 8, No. 2. (1768), Fl. Deutsch. ed. 9, p. 64. (1869).


Kulm (Brenckle).

Insert next after No. 435, Silene noctiflora:
LYCHNIS Dioscorides III: 114, 115.  
Old garden. Leeds.
Insert next after 430, **Spergula arvensis**:
**TISSA** Adans. Fam. des Plantes 2:507. (1763).
16: 126. (1889).
**Buda marina** (Linn.) Dumort, Fl. Belg. 110. (1827).
**Arenaria rubra** var. **marina** Linn. Sp. Pl. 423. (1753).
Logan Co.: Willow Lake (Brenckle).
Insert next before No. 456, **Ranunculus acer**:
1239. **Ranunculus septentrionalis** Poir. in Lam. Enceyl.
6: 125. (1824).
**Kulhm** (Brenckle).
Insert next before No. 520, **Hesperis hortensis**:
1240. **Berteroa incana** (Linn.) D. C. Syst. 2: 291. (1821).
**Alyssum incanum** Linn. Sp. Pl. 650. (1753).
**Farsetia incana** (Linn.) R. Br.
Emmons County; Hazelton (O. A. Stevens).
Insert next after No 571, **Dasiphora fruticosa**:
1241. **Dasiphora fruticosa tenuifolia** (Willd.) Rydb. Mem.
**Potentilla tenuifolia** Willd; Schlect. Mag. Ges. Naturf, Fr.
Berlin 7:284.
**Potentilla fruticosa tenuifolia** Lehm. Monogr. 31.
Among the species (if separable!) Sentinel Butte (Breuckle).
591. **Rosa polyantha**. Seems to be flowering almost all
summer. Receptacle and peduncle more or less glandular-prickly;
the former when young, green and pomiform, when ripe, red and
pyriform.
595. **Rosa subnuda**. Outer sepals usually pinnatifid. Leaflets
softly pubescent beneath.
596. **Rosa naiadum**. Sepals entire. Leaflets tomentulose or
glabrate beneath.
Insert next before 660, **Meibomia canadensis**:
1242. **Hedysarum** sp. Only the pod collected. Fide Brenckle
& Stevens. Sentinel Butte.
1243. **Meibomia grandiflora** (Walt.) Kuntze, Rev. Gen.
Pl. 196. (1891).
Hedysarum grandiflorum Walt. Fl. Car. 185. (1788).
Hedysarum acuminatum Michx, Fl. Bor. Am. 2:72. (1803).
Desmodium acuminatum (Michx.) DC. Prod. 2: 329. (1825).
Ransom County: Anselm on Sheyenne River (O. A. Stevens).
938. Plantago maior var. luxuriosa. A better name is P. nitrophila var. luxuriosa Lunell.
Insert next after No. 806, Glaucoides maritima:
1244. Glaucoides maritima Rupp., var. obtusifolia (Fernald) Lunell.
The type and the variety seem to grow almost promiscuously without definite geographical limitations.
Insert next after No. 710, Hippocastanum vulgare:
1245. Hippocastanum glabrum (Willd.) Lunell, var. Buckleyi (Sarg.) Lunell.
Aesculus glabra Willd., var. Buckleyi Sargent.
Insert next before No. 18: Pinus scopulorum:
1246. Pinus resinosa Ait.
Leeds.

In conformity with the absolute priority rules applied by Dr. J. A. Nieuwland in his "Notes on our local plants" (Am. Midl. Nat. 1912 and following years), the existing names have been replaced by older ones wherever he found botanical history upholding such a change. If our oldest ancestor Adam has not been quoted, the reason is either that he was not a botanist, or that records are wanting or not obtainable! This, we are confident, not to say certain, is the nomenclature of the future, to be altered only in such instances when subsequent researches perhaps discover names of higher seniority. So far, the ruling is considered revolutionary and has not yet been adopted in this or any other country, barring a few. The names are not forced on anyone, as the commonly accepted nomenclature is inserted additionally throughout the list.

Since, Nuttall and Geyer visited the Dakota Territory in the first half of the last century, a new plant has barely been discovered in this state for the subsequent fifty years or more. Gray's Manual ed. VI was considered "final," and to suggest a new plant name was
censured as new-fangledness and as evidence of the wickedness of the times! That the barriers have broken down of late the number of new species and varieties enumerated in this list is sufficient evidence: Brainerd 1 var., Brenckle 1 var., Greene 14 species, Greenman 1 sp., Lunell 57 sp. and 100 var., Nelson 1 sp. and 2 var. and Nieuwland 1 sp. The types of a plurality of the most remarkable of these new plants are in my herbarium and will not be set free until the State of North Dakota carries out some certain obligations entered into by its politicians, or my herbarium gets a permanent repository in some other state. The originally estimated total species and varieties in this list has been exceeded by about one hundred numbers.

PLANTS OF MANHATTAN AND BLUE RAPIDS, KANSAS, WITH DATES OF FLOWERING.—II.

BY O. A. STEVENS.

Menispermaceae. Moonseed Family.

Menispermum canadense L. Moonseed.

Papaveraceae. Poppy Family.

Manhattan. Frequent along roadsides. June 5 (6).
Bicuculla Cucullaria (L.) Millsp. Dutchmans’ Breeches.
Manhattan. Occasional on wooded banks. Apr. 5 (5).
Capnoides campestre Britton.

Cruciferae. Mustard Family.

Lepidium virginicum L. Peppergrass.
Dooryards, orchards etc. Occasional.
Lepidium apetalum Willd. Peppergrass.
Fields, roadsides etc. Common. Apr. 20 (22).
Thlaspi arvense L. Penny Cress. Frenchweed.
Along railroad, one place at each locality. Apr. 5.
Sisymbrium officinale (L.) Scop. Hedge Mustard.
Sisymbrium altissimum L. Tumbling Mustard.

Sinapis alba L. White Mustard.
   Manhattan. Once collected in flax plot.

   Roadsides. Frequent. May 15.

   Along railroad. Frequent.

Brassica arvensis (L.) B. S. P. Charlock.
   Occasional; especially introduced in oats. May 15.

Eruca sativa L. Roquette.
   Manhattan. Introduced in Turkestan alfalfa; first seen in 1908.

Roripa sinuata (Nutt.) A. S. Hitchcock. Spreading Yellow-cress.
   Low places. Common. Apr. 10 (12).

Roripa palustris (L.) Bess. Marsh Yellow-Cress.
   Low places. Frequent. May 5 (5).

Roripa sessiliflora (Nutt.) A. S. Hitchcock.

   In running water. One place at each locality; introduced.

   Sometimes escaped from gardens. Apr. 25.

Cardamine bulbosa (Schreb.) B. S. P.
   Manhattan. In wet places east of town.

Dentaria laciniata Muhl. Toothwort.
   Manhattan. Woods on Deep Creek. Apr. 25.

Bursa Bursa-pastoris (L.) Britton. Shepherd’s Purse.

Camelina microcarpa Andrz. Small-fruited False Flax.

Draba caroliniana Walt. Whitlow Grass.

Draba cuneifolia Nutt.
   Manhattan. East of town.

Sophia intermedia Rydb. Tansy Mustard.
Arabis dentata T. & G. Toothed Rock-cress.

Arabis hirsuta (L.) Scop. Hairy Rock-cress.
Meadows and roadsides. Frequent.

Arabis canadensis L. Sickle-pod.
Wooded banks of ravines. Frequent. May 15.

Conringia orientalis (L.) Dumort. Hare's-ear Mustard.

Capparidaceae. Caper Family.

Polanisia trachysperma T. & G. Clammy Weed.
Gravelly soil. Rare.

Penthoraceae.

Penthorum sedoides L. Ditch Stonecrop.

Grossulariaceae. Gooseberry Family.

Ribes missouriensis Nutt. Wild Gooseberry.

Ribes aureum Pursh. Golden Currant.

Platanaceae. Planetree Family.


Rosaceae. Rose Family.

Rubus nigrobaccus Bailey. Blackberry.
Occasionally escaped from cultivation. May 20.

May 15.

Fragaria virginiana Duchesne. Wild Strawberry.

Potentilla monspeliensis L. Rough Cinquefoil.
Fields. Common.

Potentilla pentandra Engelm. Five-stamened Cinquefoil.

Potentilla paradoxa Nutt.

Geum canadense Jacq. White Avens.
Agrimonia parvilflora Soland.
Manhattan. Once collected.

Rosa arkansana Porter. Wild Rose.

**Pomaceae.** Apple Family.

*Malus ioensis* (Wood) Britton. Western Crab Apple.
Manhattan. Occasional in wooded ravines.

*Crataegus coccinea* L. Scarlet Thorn. Red Haw.
Manhattan. Frequent on hillsides. Apr. 30.

*Crataegus mollis* (T. & G.) Scheele.
Occasional.

**Drupaceae.** Plum Family.

*Prunus americana* Marsh. Wild Plum.

*Prunus virginiana* L. Choke Cherry.

*Amygdalus persica* L. Peach.
Frequently escaped from cultivation. Mar. 25.

**Mimosaceae.** Mimosa Family.

*Acuan illinoensis* (Michx.) Kuntze. Mimosa.

*Morongia uncinata* (Willd.) Britton. Sensitive Briar.

**Caesalpiniaceae.** Senna Family.

*Cercis canadensis* L. Redbud.
Woods and ravines. Common Apr. 5 (6).

*Cassia Chamaccrista* L. Partridge Pea.
Dry roadsides, especially in clay soil. Common.

July 10 (10).

*Cassia marylandica* L. Wild Senna.

*Gleditsia triacanthos* L. Honey Locust.

Papilionaceae. Pea Family.

*Baptisia australis* (L.) R. Br. Blue Wild Indigo.
Prairies and especially hillsides, Manhattan. common; Blue Rapids, frequent or occasional. May 5 (7).

*Baptisia bracteata* Ell. Large-bracted Wild Indigo.

*Baptisia leucantha* T. & G. White Wild Indigo.

*Crotalaria sagittalis* L. Rattle-box.
Manhattan. One place along railroad. June 25.

*Medicago sativa* L. Alfalfa.

*Medicago lupulina* L. Black Medie. Yellow Trefoil.
Often introduced in white clover seed. May 15.

*Melilotus alba* Desv. White Sweet Clover.

*Melilotus officinalis* (L.) Lam. Yellow Sweet Clover.

*Trifolium pratense* L. Red Clover.
Escaped from cultivation. May 10 (11).

*Trifolium repens* L. White Clover.
Escaped from cultivation. Apr. 25 (26).

*Psoralea lanceolata* Pursh.
Manhattan, on sand hills. May 25.

*Psoralea florbunda* Nutt.
Prairies, meadows and hillsides. Common. May 30 (June 2).

*Psoralea argophylla* Pursh.

*Psoralea esculenta* Pursh. Tipsin.
Prairies and hillsides. Frequent. May 15 (14). This common name, a slight modification of the Indian name in the Dakota language, is suggested by Dr. M. R. Gilmore to replace the inappropriate Indian Turnip or Prairie Apple.

*Amorpha fruticosa* L. False Indigo.
Low places; along creeks and ditches. Frequent. May

25 (24).

*Amorpha canescens* Pursh. Leadplant.

*Parosela enneandra* (Nutt.) Britton.
Parosela Dalea (L.) Britton.
Manhattan. Along old river channel.

Parosela aurea (Nutt.) Britton.
Blue Rapids. Once collected on the prairie eight miles northwest, Aug. 10.


Kuhnistera purpurca (Vent.) MacM. Purple Prairie-clover.

Manhattan. Planted and occasionally escaped. May 15.


Astragalus platensis Nutt.
Prairies. Frequent. Apr. 15.

Astragalus carolinianus L. Carolina Milk Vetch.
Margins of woods, lower hillsides, etc. Common. June 30.

Astragalus lotiflorus Nutt. Low Milk Vetch.

Glycyrrhiza lepidota Pursh. Wild Liquorice.
Dry roadsides and prairies. Frequent. June 5.

Meibomia grandflora (Walt.) Kuntze.
Woods. Frequent. June 25. This and the following four are called Tick-trefoil.

Meibomia canescens (L.) Kuntze.

Meibomia paniculata (L.) Kuntze.

Meibomia illinoensis (A. Gray) Kuntze.

Meibomia canadensis (L.) Kuntze. Showy Tick-trefoil.


Strophostyles paucijorla (Benth.) S. Wats. Manhattan. In dry sandy soil.

Geraniaceae. Geranium Family.


Oxalidaceae. Wood Sorrel Family.


Linaceae. Flax Family.

Linum usitatissimum L. Flax. Occasional along railroad tracks.

Rutaceae. Rue Family.


Simarubiaceae. Ailanthus Family.


Polygalaceae. Milkwort Family.

Polygala verticillata L. Whorled Milkwort. Dry roadsides and hillsides. Frequent.
Euphorbiaceae. Spurge Family.

Croton capitatus Michx. Hogwort.
Manhattan. Occasional on prairies.

Croton monanthogynous Michx.

Acalypha ostryacifolia Ridd. Three-seeded Mercury.

Acalypha virginica L. Three-seeded Mercury.

Hillsides. Frequent. May 25. This common name is here proposed for this insignificant but interesting plant.

Euphorbia petaloidea Engelm. White-flowered Spurge.
Manhattan. Sandy soil.

Euphorbia Nuttallii (Engelm.) Small.

Euphorbia serpens H. B. K. Round-leaved Spurge.

Euphorbia glyptosperma Engelm.
Hillsides and dry soil. Frequent.

Euphorbia maculata L. Spotted Spurge.

Euphorbia stictospora Engelm.

Euphorbia nutans Lag. Upright Spotted Spurge.

Euphorbia hexagona Nutt. Angled Spurge.
Manhattan, occasional in sandy soil. Once collected at Blue Rapids along the railroad track. July 20.

Euphorbia corollata L. Flowering Spurge.
Roadsides and fields. Frequent. July 30 (30).

Euphorbia marginata Pursh. Snow-on-the-Mountain.

Euphorbia dentata Michx. Toothed Spurge.
Fields and roadsides. Common. June 15 (16). Two forms; one with thick, dark-green leaves and somewhat angled seeds; the other with thin, light-green leaves usually with small red spots, and the uppermost often blotched with pinkish at the base, and the seeds more rounded. Flowering at the same time.
Euphorbia heterophylla L. Painted Leaf.

Anacardiaceae. Sumac Family.

Rhus glabra L. Scarlet Sumac.
Rhus aromatica Ait.
Rhus radicans L. Poison Ivy.
Woods, thickets or open roadsides; high climbing, creeping or somewhat upright. Common. May 30.

Celastraceae. Staff Tree Family.

Euonymus atropurpureus Jacq. Wahoo.
Celastrus scandens L. Bittersweet.
Woods, wooded ravines, etc. Common. May 30 (27).

Staphyleaceae. Bladder Nut Family.

Staphylea trifolia L. Bladder Nut.

Aceraceae. Maple Family.

Acer saccharinum L. Soft or Silver Maple.
Acer Negundo L. Box Elder.

Hippocastanaceae. Buckeye Family.

Aesculus arguta Buckl. Western Buckeye.
Manhattan. Frequent in wooded ravines. Not seen in the area covered at Blue Rapids although seen within a few miles. Apr. 20 (22).

Balsaminaceae. Touch-me-not Family.

Impatiens aurca Muhl. Pale Touch-me-not.

Rhamnaceae. Buckthorn Family.

Rhamnus lanceolata Pursh. Lance-leaved Buckthorn.
Hillsides. Frequent. May 5.
Ceanothus ovatus Desf. Red Root.
Vitaceae. Grape Family.

Vitis cinerea Engelm. Downy Grape.

Vitis vulpina L. Riverbank Grape.

Parthenocissus quinquefolia (L.) Planch. Virginia Creeper.
Woods and planted around buildings. Common Aug. 5.

Tiliaceae. Linden Family.

Tilia americana L. Basswood.

Malvaceae. Mallow Family.

Malva rotundifolia L. Mallow.

Callirrhoe alceaoides (Michx.) A. Gray. Pale Poppy Mallow.

Callirrhoe involucrata (T. & G.) A. Gray. Purple Poppy Mallow.

Malvastrum angustum A. Gray. Yellow False Mallow.
Manhattan. Occasional in dry soil.

Sida spinosa L.
Roadsides and fields. Common at Manhattan, only once or twice seen at Blue Rapids. July 10 (12).

Abutilon Abutilon (L.) Rusby. Velvet Leaf.

Hibiscus Trionum L. Flower-of-an-hour.
Gardens and fields. Frequent. May 30 (29).

Violaceae. Violet Family.

Viola sororia Willd. Wooly Blue Violet.
Manhattan, in dry woods.

Viola pedatifida Don. Prairie Violet.

Viola papilionacea Pursh. Blue Violet.

Viola emarginata (Nutt.) LeConte. Triangle-leaved Violet.
Blue Rapids. Twice seen along water course of ravines.

Viola Rafinesquii Greene. Wild or Field Pansy.
Dry woods. Frequent. Apr. 5 (4).
Calceolaria verticillata (Ort.) Kuntze. Green Violet.
Hillsides. Frequent. May 15.

Loasaceae. Loasa Family.
Mentzelia oligosperma Nutt. Stick Leaf.

Cactaceae. Cactus Family.
Cactus missouriensis (Sweet) Kuntze. Ball Cactus.
Opuntia humifusa Raf. Prickly Pear.

Lythraceae. Loosestrife Family.
Annania coccinea Rottb.
River banks, etc. Common. Aug. 10.
Rotala ramosior (L.) Koehne.
Manhattan. Wet places.
Lythrum alatum Pursh. Loosestrife.
Wet places; often below springs. Frequent. July 30.

Onagraceae. Evening Primrose Family.
Isnardia palustris L. Marsh Purslane.
River banks.
Ludwigia alternifolia L. Seedbox.
Blue Rapids. River bank.
Jussiaea diffusa Forskl. Primrose-willow.
Manhattan. On water or mud, common in old river channel
Manhattan. Wet places.
Epilobium adenocaulon Haussk. Northern Willow-herb.
Manhattan. Wet places.
Field and roadsides. Common. July 30 (Aug. 2) O. biennis
of Hitchcock's list.

Oenothera laciniata Hill. Cut-leaved Evening Primrose.
Dry soil. Common. May 15 (13). The var. grandis
Britton once collected at Manhattan.
Hartmannia speciosa (Nutt.) Small. White Evening Primrose.
Roadsides and especially along the water course of ravines.
Common. May 25 (27).

Megapterium missouriense (Sims) Spach. Large Evening
Primrose.
Rocky hillsides. Common. May 25 (25). This common name is here proposed.


*Gaura parviflora* Dougl.


*Gaura coccinea* Pursh.


*Gaura biennis* L.


*Stenosiphon linisfolium* (Nutt.) Britton.


*Circaea lutetiana* L. Enchanter’s Nightshade.

Manhattan. Occasional in woods.

**Umbelliferae.** Carrot Family.

*Sanicula marylandica* L. Blake Snake-root.

Manhattan. Frequent in woods. June 5.

*Sanicula gregaria* Bicknell.

Blue Rapids. Once collected in wooded ravine.

*Sanicula canadensis* L.


*Apiastrum patens* (Nutt.) Coult. & Rose.

Dry roadsides. Frequent. May 25 (26).

*Cicuta maculata* L. Water Hemlock.


*Cicuta occidentalis* Greene. Western Water Hemlock.

Wet places. Occasional.

*Deringia canadensis* (L.) Kuntze.


*Polytaenia Nuttallii* DC. False Parsnip.

Hillsides. Common. May 10. This common name is here proposed.

*Lomatium daucifolium* (Nutt.) C & R. Wild Parsley.


*Daucus Carota* L. Wild Carrot.

Occasional in grass fields.
Cornaceae.  Dogwood Family.

_Cornus Amomum_ Mill. Kinnikinnik.
Along water courses of ravines, etc. Common. June 5.

_Cornus asperifolia_ Michx. Rough-leaved Dogwood.

Primulaceae.  Primrose Family.

_Androsace occidentalis_ Pursh.

Steironema ciliatum (L.) Raf. Fringed Loosestrife.
Along water courses of ravines, etc. Frequent.

_Anagallis arvensis coerula_ (Lam.) Ledeb. Pimpernel.
Manhattan. One station on hillside (Bluemont). June 5.

Oleaceae.  Olive Family.

_Fraxinus lanceolata_ Borck. Green Ash.

Gentianaceae.  Gentian Family.


Apocynaceae.  Dogbane Family.

_Apocynum cannabinum_ L. Indian Hemp.
Fields and roadsides. Common. May 30 (June 1).

_Apocynum hypericifolium_ Ait. Clasping-leaved Dogbane.
Specimens were collected and determined as this species, but the identity was in doubt.

_Apocynum pubescens_ R. Br. Hairy Dogbane.

Asclepiadaceae.  Milkweed Family.

_Aslepias tuberosa_ L. Butterfly Weed.

_Aslepias incarnata_ L. Swamp Milkweed.

_Aslepias Sullivantii_ Engelm.

_Aslepias amplexicaulis_ J. E. Smith.
Manhattan, in dry sandy soil. May 30.

_Aslepias syriaca_ L. Common Milkweed.

_Aslepias verticillata_ L. Whorled Milkweed.
Asclepiodora viridis (Walt.) A. Gray.

Acerates viridiflora (Raf.) Eaton. Green Milkweed.
Also the var. Ivesii Britton.

Acerates angustifolia (Nutt.) Dec. Narrow-leaved Milkweed.

Gonolobus laevis Michx. Climbing Milkweed.
Collected at Blue Rapids along sandy river bank.

Convolvulaceae. Morning Glory Family.

Ipomea lacunosa L. Small-flowered White Morning Glory.


Ipomea purpurea (L.) Roth. Common Morning Glory.
Fields and gardens. Frequent. June 30 (July 1).

Ipomea hederacea Jacq. Ivy-leaved Morning Glory.

Convolvulus sepium L. Great or Hedge Bindweed.

Convolvulus repens L. Trailing Bindweed.

Convolvulus arvensis L. Field Bindweed.
Manhattan. Roadsides on college campus. May 25 (23).
This plant is one of the worst of weeds and has become very troublesome in some parts of the state.

Cuscutaceae. Dodder Family.

Cuscuta Polygonorum Engelm. Smartweed Dodder.

Cuscuta Coryli Engelm. Hazel Dodder.
Manhattan. Once collected on Salix along river.


Cuscuta Gronovii Willd. Gronovius' Dodder.

Cuscuta cuspidata Engelm.
Manhattan. Once collected (on Iva?).

Cuscuta arvensis Beyrich. Field Dodder, is the species most likely to be found on clover and alfalfa. Some plants seen in an alfalfa field at Blue Rapids some years earlier were probably of this species.

Polemoniaceae. Phlox Family.


Hydrophyllaceae. Water-leaf Family.

Macrocalyx Nyctelea (L.) Kuntze. Water Pod. Roadsides and uncultivated places. Common. Apr. 25 (24). This common name was first used by the writer in an earlier publication.*

Boraginaceae. Borage Family.


1 Key to North Dakota Weeds—The Extension. May, 1914 (N. D. Agricultural College).
THE AMERICAN MIDLAND NATURALIST

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**PHILIP DOWELL, PORT RICHMOND, N. Y.**
PLANTS OF MANHATTAN AND BLUE RAPIDS, KANSAS, WITH DATES OF FLOWERING.—III.

BY O. A. STEVENS.

Verbenaceae. Vervain Family.

Verbena urticaefolia L. White Vervain. 
Along woods and roadsides. Common. June 30. A hybrid of this species with V. stricta also collected.
Verbena hastata L. Blue Vervain. 
Along creeks and ditches. Occasional.
Verbena stricta Vent. Hoary Vervain. 
Verbena bracteosa Michx. Large-bracted Vervain. 
Verbena bipinnatifida Nutt. Small-flowered Verbena. 
Lippia lanceolata Michx. Fog-fruit. 
Low places, river banks, etc. July 10 (10).

Labiatae. Mint Family.

Isanthus brachiatus (L.) B. S. P. False Pennyroyal. 
Hillsides. Frequent. Aug. 5.
Scutellaria latcriflora L. Mad-dog Skullcap. 
Scutellaria parvula Michx. Small Skullcap. 
Scutellaria campestris Britton. Prairie Skullcap. 
Marrubium vulgare L. Hoarhound. 
Agastache nepetoides (L.) Kuntze. Giant Hyssop.
Nepeta Cataria L. Catnip.
Prunella vulgaris L. Self Heal.
Leonurus Cardiaca L. Motherwort.
   Manhattan, in woods, June 15.
Stachys tenuifolia Wild. Hedge Nettle.
Stachys palustris L.
   Collected near Cleburne, Kans., (halfway between Manhattan and Blue Rapids).
Salvia lanceolata Willd. Lance-leaved Sage.
Monarda fistulosa L. Wild Bergamot.
   Blue Rapids. One station known along edge of woods. Aug. 5.
Hedeoma hispida Pursh. Rough Pennyroyal.
Koelzia flexuosa (Walt.) Mac M. Mountain Mint.
Lycopus virginicus L. Bugle Weed.
   River bank. Occasional.
Lycopus americanus Muhl. Water Hoarhound.
   Around springs and along water courses of ravines. Common July 20 (18).
Lycopus lucidus Turcz.
   Once collected along creek eight miles northwest of Blue Rapids.
Mentha canadensis L. Wild Mint.

Solanaceae. Nightshade Family.

Physalis missouriensis Mack. & Bush.
   Edges of woods. Frequent. This and the next three species are Ground Cherries.
Physalis longifolia Nutt.
   Fields, etc. Common. May 30 (31).

Physalis virginiana Mill.

Physalis heterophylla Nees.

Solanum nigrum L. Black or Garden Nightshade.

Solanum carolinense L. Horse Nettle.

   Hillsides and waste places; especially around barnyards.
   Common. June 5 (6).

Datura Stramonium L. Jamestown or Jimson Weed.
   Roadsides, etc. Common. June 10 (8).

Datura Tatula L. Purple Jimson Weed.

Scrophulariaceae. Figwort Family

Verbascum Thapsus L. Common Mullein.

Verbascum Blattaria L. Moth Mullein.
   Manhattan. One station known. June 5.

Scrophularia marylandica L. Figwort.

Scrophularia leporella Bicknell.

Penstemon tubiflorus Nutt.
   Manhattan. Once collected.

Penstemon Cobaea Nutt. Beardtongue.

Penstemon grandiflorus Nutt.

Mimulus ringens L. Monkey Flower.

Mimulus Jamesii T. & G.

Conobea multifida (Michx.) Benth.
Monniera rotundifolia Michx.
Manhattan. Once collected along old river channel.

Gratiola virginiana L.
Blue Rapids. Once collected along river bank.

Ilysanthes dubia (L.) Barnhart. False Pimpernel.

Veronica peregrina L. Speedwell.

Veronica arvensis L. Corn Speedwell.
Manhattan. In lawn on college campus. Apr. 25 (26).

Gerardia aspera Dougl. Rough Gerardia.

Riverbanks. Occasional


Martyniaceae. Unicorn Plant Family.

Martynia louisiana Mill. Unicorn Plant.
Manhattan. Once collected.

Acanthaceae. Acanthus Family.

Ruellia strepens L. Smooth Ruellia.

Ruellia ciliosa Pursh. Hairy Ruellia.
Dry ground, commonly under scattering trees. Common.
June 20 (18).

Dianthera americana L. Water Willow.
Manhattan, edge of creek.

Phrymaceae. Lopseed Family.

Phryma Leptostachya L. Lopseed.

Plantaginaceae. Plantain Family.


Plantago lanceolata L. Lance-leaved or English Plantain.
Buckhorn.
Grass fields and roadsides. Apr. 25 (26).
Plantago Purshii  R. & S. Prairie Plantain.
Plantago aristata Michx. Large-bracted Plantain.
   Grass fields. Occasional.
Plantago virginica L. Dwarf Plantain.
   Manhattan. Once collected in sandy soil, May 30 (in fruit.)

**Rubiaceae.** Madder Family.

*Houstonia angustifolia* Michx.
*Cephalanthis occidentalis* L. Button Bush.
*Galium Aparine* L. Cleavers. Bedstraw.
*Galium circaszens* Michx.
   Woods and wooded ravines. Common.
*Galium tincitorium* L.
   Manhattan, in meadow.

**Caprifoliaceae.** Honeysuckle Family.

*Sambucus canadensis* L. Elder Berry.
*Triosteum perfoliatum* L. Horse Gentian.
   Edges of woods. Frequent. May 30 (30).
*Symphoricarpos occidentalis* Hook. Wolfberry.
   Manhattan. One station (Rock Island cut). June 10.
*Symphoricarpos Symphoricarpos* (L.) MacM. Coral Berry Indian Currant.

**Cucurbitaceae.** Gourd Family

*Cucurbita foetidissima* H. B. K. Missouri Gourd.
   Manhattan. Occasional in dry soil.
*Micrampelis lobata* (Michx.) Greene. Wild Balsam Apple.
*Sicyos angulatus* L. One-seeded Bur Cucumber.
Campanulaceae. Bellflower Family

*Campanula americana* L. Tall Bellflower.

*Specularia perfoliata* (L.) A. DC. Venus Looking-glass.

*Specularia leptocarpa* (Nutt.) A. Gray.
Prairies. Occasional.

*Lobelia cardinalis* L. Cardinal Flower.

*Lobelia syphilitica* L. Great Lobelia.
Water courses of ravines. Frequent. Aug. 30 (28).

Cichoriaceae. Chicory Family

*Cichorium Intybus* L. Chicory.
Occasionally escaped from cultivation. June 30.

*Tragopogon porrifolius* L. Salsify. Oyster Plant.
Occasionally escaped from cultivation. May 20 (20).

*Taraxacum Taraxacum* (L.) Karst. Dandelion.
Yards and roadsides. Common chiefly in towns. Apr. 5 (3).

*Taraxacum erythrospermum* Andrz. Red-seeded Dandelion.
Manhattan. With the last species; common. Mar. 25 (26).

*Sonchus asper* (L.) All. Spiny Sow Thistle.
Roadsides. Frequent. June 5 (3).

*Lactuca scariola integrata* Gren. & Godr. Prickly Lettuce.

*Lactuca Indovicana* (Nutt.) DC. Western Lettuce.
Roadsides. Common. July 15. This should perhaps be called *L. campestris* Greene. The flowers are not yellow but are blue or more often something of a pale lilac.

*Lactuca canadensis* L. Wild Lettuce.

*Lactuca pulchella* (Pursh) DC. Blue Lettuce.

*Lactuca floridana* (Lam.) Hitch. Tall Blue Lettuce.

*Lygodesmia juncea* (Pursh) D. Don. Skeleton Weed.
Plants of Manhattan and Blue Rapids

Nothocalais cuspidata (Pursh.) Greene. Prairie Dandelion.

Prairies. Frequent. Apr. 15 (16). This common name is here proposed.

Hieracium longipilum Tarr. Hawkweed.


Nabalus asper (Michx.) T. & G. White Lettuce.


Ambrosiaceae. Ragweed Family.

Iva ciliata Willd. Rough Marsh Elder.

Manhattan, in low ground. Aug. 25.

Iva xanthiiolua (Fresen.) Nutt. False Ragweed. Marsh Elder.


Ambrosia trifida L. Great Ragweed. Kinghead.


Ambrosia artemisiaefolia L. Ragweed.


Ambrosia psilostachya DC. Perennial Ragweed.


Compositae. Thistle Family

Vernonia Baldwinii Torr. Ironweed.


Vernonia fasciculata Michx.

Manhattan. Moist meadows and roadsides.

Eupatorium altissimum L. Tall Thoroughwort.


Eupatorium perfoliatum L. Boneset.


Eupatorium ageratoides L. f. White Snakeroot.


Kuhnia eupatorioides L. False Boneset.


Lacinaria punctata (Hook). Kuntze.


Lacinaria pycnostachya (Michx.) Kuntze.

Lacinaria scariosa (L.) Hill.
Grindelia squarrosa (Pursh) Dunal. Gum Weed.
Heterotheca subaxillaris (Lam.) Britt. & Rusby.
  Manhattan. Once collected along railroad-track.
Solidago petiolaris Ait. Goldenrod.
Solidago rigidiuscula (T. & G.) Porter.
Solidago serotina Ait. Tall Smooth Goldenrod.
  Low places; along woods, thickets, etc. Common. Aug. 5.
This common name is here proposed to replace the inappropriate "Late Goldenrod" of the manual.
Solidago missouriensis Nutt.
Solidago canadensis L. Canada Goldenrod.
  Prairies, roadsides, etc. Common. Aug. 10.
Solidago nemoralis Ait. Gray Goldenrod.
  Dry hillsides and prairies. Common.
Solidago rigida L. Stiff Goldenrod.
Euthamia graminifolia (L.) Nutt. Fragrant Goldenrod.
  Manhattan. Frequent along ditches, etc. Aug. 30.
Boltonia asteroides (L.) L'Her. Boltonia.
  Manhattan. Roadside ditches.
Aster azureus Lindl. Sky-blue Aster.
  Manhattan. Prairies.
Aster Drummondii Lindl. Drummond's Aster.
Aster oblongifolius Nutt. Aromatic Aster.
Aster laevis L. Smooth Aster.
  Manhattan. Prairies.
Aster sericeus Vent. Silky Aster.
Aster paniculatus Lam. Tall White Aster.
Aster missouriensis Britton. Missouri Aster.
Manhattan. Once collected along old river channel.

Aster multiflorus Ait. Dense-flowered Aster.

Erigeron philadelphicus L. Common Fleabane.

Erigeron ramosus (Walt.) B. S. P. Daisy Fleabane.

Leptilon canadense (L.) Britton. Horseweed.

Leptilon divaricatum (Michx.) Raf. Low Horseweed.

Antennaria campestris Rydb. Prairie Cat’s-foot or Everlasting.


Gnaphalium obtusifolium L. Fragrant Everlasting.
Manhattan. Occasional.

Silphium perfoliatum L. Cup Plant.

Roadsides. Common. June 30 (July 1).

Silphium laciniatum L. Compass Plant. Rosin Weed.


Eclipta alba (L.) Hassk.

Rudbeckia hirta L. Black-eyed Susan.

Rudbeckia laciniata L. Tall Coneflower.

Ratibida pinnata (Vent.) Barnhart. Gray-headed Coneflower
Blue Rapids. Occasional along roadsides.

Ratibida columnaris (Sims) D. Don. Long-headed Coneflower.

Brauneria pallida (Nutt.) Britton. Purple Coneflower.
Helianthus annuus L. Common Sunflower.

Helianthus petiolaris Nutt. Prairie Sunflower.

Helianthus scaberrimus Ell. Stiff Sunflower.

Helianthus Maximiliani Schrad.

Helianthus grosseserratus Martens. Saw-toothed Sunflower.

Helianthus hirsutus Raf. Stiff-haired Sunflower.

Helianthus tuberosus L. Jerusalem Artichoke.

Verbesina alternifolia (L.) Britton. Crownbeard.

Coreopsis tinctoria Nutt. Tickseed.
Blue Rapids. Once collected on river bank.

Bidens cernua L. Nodding Bur Marigold.
Wet places. Common at least at Manhattan. Aug. 25

Bidens comosa (A. Gray) Wiegand.
Riverbanks. Common.

Bidens frondosa L. Black Beggar-ticks.

Bidens vulgata Greene. Tall Beggar-ticks.

Bidens involucrata (Nutt.) Britton.
Riverbanks. Occasional.

Hymenopappus corymbosus T. & G.

Dry roadsides and waste places. Common. May 30 (June 2).

Achillea Millefolium L. Milfoil. Yarrow.

Anthemis Cotula L. May-weed. Dog Fennel.

Chrysanthemum Leucanthemum L. Ox-eye Daisy.
Artemisia dracunculoides Pursh. Narrow-leaved Wormwood.
Artemisia biennis Willd.
Artemisia gnaphalodes Nutt. Prairie Cud-weed.
Erechtites hieracifolia (L.) Raf. Fireweed.
   Manhattan. Wet wooded banks.
Mesadenia atriplicifolia (L.) Pale Indian Plantain.
   Woods. Frequent.
Mesadenia tuberosa (Nutt.) Britton. Indian Plantain.
Senecio Balsamitae Muhl. Groundsel.
Arctium minus Schk. Burdock.
   Roadsides or around barnyards. Frequent. July 20.
Carduus lanceolatus L. Common or Bull Thistle.
Carduus altissimus L. Tall Thistle.
Carduus undulatus Nutt. Prairie Thistle.
Centaurea Cyanus L. Corn-Flower.
   Occasionally escaped from cultivation.
Centaurea nigra L. Black Knapweed.
   Once collected in alfalfa field at Blue Rapids.
Of the species in the present list the following are additional to those listed by Hitchcock for the three counties, those new to the State being marked with an asterisk
Marsilea vestita
Sagittaria ambigu a
Sorghum Halpense.
Muhlenbergia sobolifera
*Bromus inermis
*Bromus tectorum
*Bromus racemosus.
*Bromus arvensis
Agropyron repens
Rumex obtusifolius
Polygonum longistylum
Polygonum Hydropiper.
Allionia hirsuta
Cerastium vulgatum
Oxygraphis Cymbalaria
*Sisymbrium altissimum
*Eruc sativa
*Cameelia microcarpa
*Couningia orientalis
A hoanthus glandulosus
*Viola emarginata
*Cicuta occidentalis
Daucus Carota
*Cuscuta Gronovii
*Stachys palustris
Hedeoma pulegioides
Lycopus lucidus
*Gratiola virginiana
Veronica arvensis
Symphoricarpos occidentalis
*Taraxacum erythrospermum
Lactuca pulchella
Heterotheca subaxillaris
Aster missouriensis
*Bidens acuta
*Bidens vulgata
*Gentian nudra.

To make the present catalogue more nearly complete the following list is given of additional species recorded by Hitchcock (see note at end of introduction). Those marked (P) were reported from Pottowatamic County only, those marked (M) from Marshall County only; the rest from Riley or also from one of the other counties. Mr. Robert Schmidt has kindly checked over the herbarium specimens of some of the species which seemed less likely to be found, and the locality data is given in the following list for these species.

Woodsia obtusa (Spreng.) Torr.
Dryopteris Thelypteris (L.) A. Gray. (P).
Notholaena dealbata (Pursh). Kunze.
Potamogeton pectinatus L.
Potamogeton obtusifolius Mert. & Koch.
Echinodorus cordifolius (L.) Griseb.
Lophotocarpus calycinus (Engelm.) J. G. Smith.
Synterisma filiformis (L.) Nash. (P).
Panicum clandestinum L. (P).
Panicum Wilcoxianum Vasey.
Panicum depauperatum Muhl.
Aristida purpurascens Poir.
Aristida oligantha minor Vasey.
Aristida purpurea Nutt.
Sielingia purpurea (L.) Kuntze.
Distichlis spicata (L.) Greeue.
Poa annua L. (P).
Festuca Shortii Kunth.
Bromus hordeaceus L.
Cyperus acuminatus Torr. & Hook.
Cyperus esculentus L.
Cyperus strigosus compositus Britton.
Cyperus strigosus gracilis Britton.
Cyperus Houghtoni Torr. (P).
Eleocharis ovata (Roth.) R. & S. (P).
Eleocharis palustris glaucescens (Willld.) A. Gray.
Stenophyllus capillaris (L.) Britton.
Fimbristylis castanea (Michx.) Vahl.
Fimbristylis autumnalis (L.) R. & S. (P).
Hemicarpa micrantha (Vahl.) Pax. (P).
Carex Meadii Dewey.
Carex stenophylla Vahl.
Carex stipata Muhl.
Carex Muhlenbergii xalapensis (Kunth) Britton.
Carex interior Bailey.
Carex Bicknellii Britton.
Arisaema triphyllum (L.) Torr.
Acornus Calamus L.
Tradescantia pilosa Lehm.
Heteranthera dubia (Jacq.) MaeM.
Juncus marginatus Rostk. (P).
Juncus acuminatus Michx. (P).
Allium stellatum Ker.
Ornithogalum umbellatum L.
Yagnera racemosa (L.) Morong.—Manhattan.
Smilax Pseudo-china L.
Belp hologlottis leucophaca (Nutt.) Rydb.
Gryrostachys praecox (Walt.) Kuntze.
Hicoria ovata (Mill.) Britton.—Manhattan
Salix nigra Marsh.
Salix humilis Marsh. (P)—St. George.
Salix missouriensis Bebb.
Corylus americana Walt. (P, M)—Onaga.
Quercus rubra L.
Commandra umbellata (L.) Nutt. (P).
Erigonum annum Nutt. —Manhattan.
Polygonum hydropiperoides macounii Small.
Polygonum orientale L.—Riley Co.
Polygonum erectum L.
Chenopodium leptophyllum subglabrum S. Wats.
Amaranthus spinosus L. (P).—Wamego.
Cladothrix languinoso Nutt.—Riley Co. (south of Poor Farm).
Froelichia floridana Moq.
Allionia linearis Pursh.
Portulaca pilosa L.
Silene vulgaris (Moench) Gareke.
Arenaria serpyllifolia L.
Isopyrum biternatum (Raf.) T. & G.
Delphinium Consolida L.
Anemone decapetala Ardc.
Ranunculus delphinifolius Torr.
Ranunculus acris L.
Baccharis divaricatum (Schrank) Wimm.
Podophyllum peltatum L. (P).—St. George.
Lepidium campestre (L.) R. Br.
Brassica campestris L.
Raphanus sativus L.
Barbara Barbara (L). MacM.
Camelina sativa (L.) Crantz.
Erysimum asperum DC.—Manhattan.
Clome serrulata Pursh.
Koniga maritima (L.) R. Br.
Rubus canadensis L.
Rubus roribaccus (Bailey) Rydb.
Drymocallis arguta (Pursh) Rydb. (M).
Plants of Manhattan and Blue Rapids

Potentilla canadensis L. (P).
Rosa setigera Michx.
Rosa canina L.
Rosa rubiginosa L.
Prunus Watsoni Sargent.
Prunus serotina Ehrh.
Trifolium hybridum L.
Psoralca tenuiflora Pursh.
Cracca virginiana L.
Aragalhus Lambertii (Pursh). Greene.—Seventeen miles west of Manhattan.

Meibomia sessilifolia (Torr.) Kuntze.
Meibomia longifolia (T. & G.) Vail.
Meibomia bracteosa (Michx.) Kuntze.
Meibomia Dillenii (Darl.) Kuntze.
Lespedeza repens (L.) Bart.
Vicia Cracca L.

Polygola incarnata L. (P).—St. George.
Croton texensis (Klotzsch) Muell. Arg.
Euphorbia Cyparissias L.
Callitriche heterophylla Pursh.

Sapindus Drummondii H. & A.—Manhattan.
Impatiens biflora Walt. (P).
Ceanothus ovatus pubescens T. & G.

Vitis cordifolia Michx.
Ampelopsis cordata Michx.
Parthenocissus quinquefolia laciniata. Planch. (P).
Malvastrum coccineum (Pursh.) A. Gray.
Hypericum maculatum Walt.
Hypericum mutilum L.

Bergia texana (Hook). Seub. (P)—Pottawatomie Co
Helianthemum majus (L.) B. S. P.
Lechea tenuifolia Michx. (P).—St. George.

Viola palmata L.
Ammania auriculata Willd.
Epilobium coloratum Muhl.
Meriolix serrulata spinulosa (T. & G.) Small.
Myriophyllum pinnatum (Walt.) B. S. P.
Eryngium aquaticum L. (P.)
Zizia aurea (L.) Koch.
Berula erecta (Huds.) Coville. (P)—Pottawatomie Co.
Fraxinus pennsylvanica Marsh.
Asclepias pumila (A. Gray) Vail.
Acerates languinosas (Nutt.) Dec.
Evolvulus pilosus Nutt.
Qamoclit coccinea (L.) Moench.
Ipomea pandurata (L.) Meyer. (P).—Cedar Creek.
Hydrophyllum virginianum L. (P).—Eight miles N. E. of college.
Myosotis virginica (L) B. S. P. (P).—St. George.
Verbena canadensis (L.) Britton.
Lippia cuneifolia (Tor.) Steud.
Glechoma hederacea L.
Physostegia virginiana (L.) Benth. (P).—Rocky Ford.
Koellia flexuosa (Walt.) McM.
Physalis pumila Nutt.
Solanum triflorum Nutt.
Lycium vulgare (Ait. f.) Dunal.
Linaria Linaria (L.) Karst.
Mimulus alatus Soland. (P).
Veronica Anagallis—aquatica L.
Azfelia macrophylla (Nutt.) Kuntze. (P).—Alma (Wabunsee Co.).
Castilleja sessiliiflora Pursh.
Utricularia vulgaris L.
Thalesia uniflora (L.) Britton.
Galium pilosum Ait.—St. George.
Galium concinnum Torr. & Gray.
Serinia oppositifolia (Raf.) Kuntze.
Sitilias grandiflora (Nutt.) Greene.
Xanthium strumarium L.
Eupatorium maculatum L. (P).
Amphiachyris dracunculoides (Nutt.) D. C.
Prionopsis ciliata Nutt.—Osage Co.
Aster salicifolius Lam.
Aster vimineus foliosus (Ait.) A. Gray.
Erigeron annuus (L.) Pers.
Helianthus orgyalis DC.
Helianthus mollis Lam. (P).—St. George.
Verbesina enceloides (Cav.) A. Gray.—Blue Valley R. R.
Our Warblers

By Brother Alphonsus, C. S. C.

The observations published in this article were all made at Notre Dame, Indiana. It will doubtless be of interest to other ornithologists to note the different habits of the same species in different localities. The following warblers are described in this contribution: Bay-breasted, Black and White, Blackburnian, Blackpoll, Black-throated Blue, Black-throated Green, Canada, Cape May, Chestnut-sided, Connecticut, Golden-winged, Kentucky, Magnolia, Mourning, Myrtle, Nashville, Palm, Yellow Palm, Northern Parula, Pine, Prairie, Sycamore, Tennessee, Wilson, Yellow, Louisiana Water Thrush, Maryland Yellowthroat, Yellow-breasted Chat, Ovenbird, and Redstart.

Black and White Warbler
Mniotilta varia.

In spring the Black and White Warbler is never so common as many of the other warblers. It appears intermittently, and is never abundant. Of course its habit of creeping in the trees, and usually at some distance up, makes it less conspicuous than most of the other warblers. Its note, too, is seldom heard, and this fact does not attract the attention of an observer to the bird.

Golden-Winged Warbler
Vermivora chrysoptera

I first observed this beautiful warbler in May, 1917. I was first attracted to it by its nasal note, which resembles somewhat that of the Blue Gray Gnatcatcher. In fact, at first I thought it was a gnatcatcher, but on finding the bird high up in an elm tree, I saw I saw at once that it did not act like a gnatcatcher. The bird was too high to be observed satisfactorily, but fortunately it flew into some low trees near by, where I could see its markings plainly. This is the only record I have ever made of the Golden-winged Warbler.
Nashville Warbler.
_Vermivora rubricapilla_

This warbler is never abundant during its migrations. Single individuals may be seen occasionally, often in low situations, where the bird may be easily observed. It is not very active, nor is its note frequently heard. The retiring habits of this warbler make careful observation often necessary to detect its presence.

Tennessee Warbler
_Vermivora peregrina_

Late in May a loud, distinctive note, which might be confounded by the unpractised ear with the Redstart's song, will be heard, at least on several of the finest mornings. This is the song of the Tennessee Warbler. He loves the pleasant places in the tree-tops, where the observer will have some difficulty in seeing him well. Patience, however, will reward one's efforts, and at last a very plain little bird will emerge from the foliage.

Northern Parula Warbler
_Compsothlypis americana_

I first made the acquaintance of this beautiful warbler in May, 1917. Another record of a female was made on June 4, 1917. These are my only records of this species. The male was discovered on a railroad embankment near some shrubbery, and the female was found in an orchard. No notes were heard on either occasion.

Cape May Warbler
_Dendroica tigrina_

In May, 1917 this species was more common than usual. But it is never abundant, and one seldom sees more than one or two individuals in a walk of an hour. To see this warbler occasionally is considered good fortune by the bird student, for it is often a rare species. Its note was not heard in 1917, and constant watchfulness was necessary to locate this warbler. Sometimes, at first sight, the Magnolia Warbler may be taken for the Cape May.

Yellow Warbler
_Dendroica aestiva_

This beautiful bird is our warbler by predilection, for it is the one member of the family that nests in the hedges or shrubbery on our lawns. Year after year it will return to its accustomed place, and there rear its young quite near a pathway, where the nest is
sure to be discovered, and also sometimes destroyed. But the Yellow Warbler is so gentle that it will never show the least sign of anxiety when its nest is being examined. Most of the broods must be successfully reared, for this species is abundant everywhere.

**Black-throated Blue Warbler**
*Dendroica caerulesens*

This is among the rare warblers in our vicinity, some seasons I do not find it at all. I made four records in May, 1917, which is about the most I have ever obtained in one spring. No song was heard on any day in May, 1917.

**Myrtle Warbler**
*Dendroica coronata*

The most conspicuous of all our warblers is the Myrtle. The first to arrive in spring; the last to depart in autumn; with its characteristic call-note, this warbler is heard as often as it is seen. It flies low, and in open places, where it may be easily observed. Its very striking black, white, and yellow markings also make it one of the least difficult to identify. Young birds in undeveloped plumage, however, are often a puzzle to beginners; and not infrequently cause the practised observer some hesitation before he can correctly name the species.

**Magnolia Warbler**
*Dendroica magnolia*

This is certainly a beautiful warbler, by some observers thought to rival the famous Blackburnian. It is also very abundant, flies low, and is easily seen in the shrubbery. Its note is rarely heard, only once out of the 16 days that it was found in the spring of 1917. When the Magnolia Warbler leaves our lawns for its summer home, we feel that they are now less beautiful without the gorgeous colors of this May visitant.

**Chestnut-sided Warbler**
*Dendroica pensylvanica*

An abundant species, beautiful, and songful, are some of the striking features of this warbler. Either male or female may be easily identified by the chestnut color on the sides, although sometimes it is very faint. This species probably sings more than any other member of the family, and its song is distinctive enough to be readily learned. In trees of every description, the Chestnut-sided Warbler may be found.
Bay-breasted Warbler  
*Dendroica castanica*

A large warbler, and conspicuously reddish, the Bay-breasted is also quite abundant. The number of adults is often small, and most of the specimens that appear, even in spring, are immature birds. In May or June, 1917, this species was not heard to sing.

Blackburnian Warbler  
*Dendroica fusca*

All bird lovers are desirious of seeing this warbler, and once they have had the pleasure, they are anxious to have it repeated; for the beauty of the Blackburnian Warbler is justly famous. Usually in high situations, this active little bird seems almost a part of the sunshine that brightens the tree-tops. His song is quite distinctive, but I did not hear it in the spring of 1917.

Black-poll Warbler  
*Dendroica striata*

One of the latest warblers to arrive in spring, the Black-poll is also usually the last to leave for the north. This year it was the most abundant warbler in the woods after May, and its *tick, tick* note is always heard when the bird is here. The female Black-poll is so plainly marked that beginners are often unable to identify it.

Sycamore Warbler  
*Dendroica albilora*

One of our rarest warblers is the Sycamore. It appears irregularly, and may not be seen for many years. This year, 1917, I was fortunate enough to find one on the last day of its stay here, near the St. Joseph River. It was in song, and showed a preference for pine trees. Two other observers told me that this warbler had been seen for three weeks previous to the date on which I found it—June 21. Only one bird was ever seen, and they could not be certain whether the species was breeding here or not.

Black-throated Green Warbler  
*Dendroica virens*

This is one of our commonest warblers. Sometimes it arrives late in April, and may prolong its stay until early June. Its plumage is striking, and much admired by young observers. The note of this species, which is frequently heard and easily remembered, grates upon the ear of the listener.
One of the hardiest of the warblers is the Pine, the first migrant's nearly always arriving soon after the Myrtle. Although the spring of 1917 was very "backward," the Pine Warbler was not abundant at any time. No note was heard that spring, and the quiet manner of the species and its plain plumage make it one of the most difficult to identify.

This species and the Yellow Palm are abundant in spring. Of the two the Palm is with us much longer. It usually arrives late in April, after the Myrtle, but not until about the middle of May does it become abundant. The love of low situations makes this warbler one of the easiest to observe. It is one of the few warblers that "teeter" their tails.

I do not think that I have any spring records of this species, but in some autumns it is not uncommon. It is certainly baffling to try to explain why this species should take a different route of migration in spring. As the warblers do not sing in autumn, I have never heard the note of the Connecticut Warbler.

This very rare warbler I have recorded but twice in twelve years—in May, 1915 and 1917. It keeps low and moves slowly, thus giving the observer plenty of time to see it well. Fortunately both specimens that I saw were males, and easily distinguished from the Connecticut Warbler. I have never heard the song of the Mourning Warbler.

As this warbler breeds with us, and its loud song is frequently heard, there is no difficulty in finding and observing the bird. It is not timid either, and may be easily approached. In fact, if these warblers hear you making any noise, they are likely to come out of cover to see what it all means. The young birds are fledged early in July.
Prairie Warbler
*Dendroica discolor*

Like the Sycamore Warbler the Prairie is often absent for years. In the two last springs, I looked in vain for this species; and even when I find it, the number of records is always small. My own experience is not exceptional, for other observers in our locality have the same story to tell of this warbler.

Kentucky Warbler
*Oporornis formosa*

Only once have I ever had the pleasure of seeing this beautiful warbler. It was on the first of May, after a snow-fall the night before. The bird was on the ground in a lilac hedge, where it could be seen well. Such a record as this makes the ornithologist eager to find so rare a warbler again.

Canadian Warbler
*Wilsonia canadensis*

Arriving late in May, this warbler may be seen many times in a walk. Its markings make it one of the easiest to recognize, and the bird not unfrequently feeds and sings in bushes or low trees. The song is one of the loudest and most elaborate of the warbler performances.

Wilson Warbler
*Wilson pusilla*

Some seasons this species is rare, but late in May 1917 it was very abundant. It fly-catches in low situations, where it may be seen to good advantage. This warbler is a constant singer, and the observer must learn to distinguish its note in spite of himself.

Oven-bird
*Seiurus aurocapillus*

The Oven-bird appears here only in May or at the end of summer. I have often wondered why this species is not found breeding in our locality. Perhaps the woods here do not afford suitable nesting-sites for the Oven-bird. I made half-a-dozen records of the bird in the spring of 1917, but on no day was its song heard.

Louisiana Water Thrush
*Seiurus motacilla*

A single record of this warbler, early in June, was the only time I saw the Louisiana Water Thrush in the spring of 1917.
Its note was not heard, but in wetter seasons the loud song of this thrush delights the bird lover. I have never known this warbler to breed in our locality.

**Yellow-breasted Chat**

* Icteria virens

I have seen the chat but once in all my observations. Other observers in our locality seem to have been more fortunate, and have reported this species at least occasionally. As I have been a very regular and fairly careful observer of bird life for many years, I can not understand why I have missed this warbler so frequently.

**Redstart**

* Setophaga ruticilla

This beautiful warbler is very plentiful at Notre Dame, but does not breed here. Arriving about the middle of May, it sometimes tarries until early in June. Usually it is a constant singer, but in 1917 the song was not heard frequently. In the month of August I have found Redstart families in the deep woods, which would seem to indicate that these warblers may begin to migrate early.

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**JOHN EATTON LE CONTE**

**BY JOHN HENDLEY BARNHART**

The LeConte family has long maintained a conspicuous place in the history of American science. Guillaume LeConte, born at Rouen, France, March 6, 1659, was one of the many Huguenots who fled to America during the years immediately following the revocation of the Edict of Nantes, in 1685. He settled at New Rochelle, New York; afterward went to the island of Martinique, where he married; and spent his last years in New York, where he died in 1710. Guillaume's second son, Dr. Pierre LeConte, married Valeria Eatton, and their second son, Dr. John Eatton LeConte (1739-1822), was the ancestor of all the later scientists who have contributed to the fame of the name LeConte in this country.

Dr. John Eatton LeConte spent his summers in New York or New Jersey, and his winters on his plantation, "Woodmanston," in the southern part of Liberty County, Georgia. He married Jane Sloane, of New York, and they had three sons, two of whom
became well known to their contemporaries as enthusiastic botanists. The elder son, Louis LeConte (1782-1838), who spent most of his life on the Georgia plantation, published nothing, and we are aware of his botanical attainments only through the testimony of his friends. He was the father of Professors John LeConte (1818-1891) and Joseph LeConte (1823-1901) of the University of California, and grandfather of Joseph Nisbet LeConte, now a professor in the same institution. The younger son, Major John Eatton LeConte (1784-1860), the botanist, was the father of Professor John Lawrence LeConte (1825-1883), the distinguished entomologist, and grandfather of Dr. Robert Grier LeConte, of Philadelphia.

John Eatton LeConte, Jr., was born near Shrewsbury, New Jersey, February 22, 1784. He attended Columbia College, receiving the degree of A. B. in 1803, although it is said that the condition of his health prevented him from actually finishing his studies. His interest in the natural sciences, geology, zoology, and especially botany, began, like that of his brother Louis, in early youth. His first botanical paper was published in 1811, and he was one of the group of young men who organized the Lyceum of Natural History of New York in 1817. He entered the United States army as an assistant topographical engineer, with the rank of Captain, in April, 1818; in 1828 he was brevetted Major for ten years’ faithful service in one grade. Ill health compelled him to resign his commission in 1831, and he did not fully recover for many years.

During his service in the army he married Mary A. H. Lawrence, of New York City, who died not many weeks after the birth of their son, and this event cast a permanent shadow over his life. It is said that every year, unless prevented by illness, he made a pilgrimage alone to the grave of his wife, in Virginia. “No one was ever asked to go with him; not her only living child, his son.” After his withdrawal from military service he lived the quiet life of a retired army officer and semi-invalid for many years, devoting much time to his favorite scientific pursuits; his later interests became centered particularly upon entomology, in which his son afterward became so proficient. His water-color work included not only the earlier plant-portraits now reproduced, but thousands of drawings of insects, which were preserved and utilized by his son.

He made his home in New York City until 1852. Following
the example and influenced by the persuasion of his friend (and relative, it is said) James Roosevelt Bayley, afterward Bishop of Newark and Archbishop of Baltimore, he transferred his allegiance from the Protestant Episcopal Church to the Roman Catholic Church, July 4, 1846. The last years of his life were spent in Philadelphia, whither he removed with his son early in the year 1852. His entire herbarium of North American plants (much depleted, it is believed, by the generosity with which he had accommodated his importunate friends) was presented to the Academy of Natural Sciences of Philadelphia in April of that year; and after his death, November 21, 1860, his fresh-water mollusca were added to the collections of the Academy.

The best account of LeConte's life from a botanical standpoint is probably that of Asa Gray in the Botanical Gazette (8:197-199. 1883); this has been reprinted, in an abbreviated form and with characteristic inaccuracy, in Harshberger's "Botanists of Philadelphia" (149-151. 1899). Some very interesting reminiscences of LeConte were secured from a former member of his household and published by Greene in Pittonia (1:303-311. 1889). According to Harshberger, there is a painting of Major LeConte in Philadelphia, in the library of the American Philosophical Society.

The published scientific papers of LeConte were very few, in view of the extent of his observations and studies; of the entire number, only about one third relate to botany. These, as far as known to me, are:


There was an interval of five years between the publication of the first and second pages of this paper.


Nos. 3, 4, 5, and 7 are the ones now reprinted.

The only papers liable to be credited in error to Major LeConte are several on the exudation of ice from the stems of plants, and the resistance of plants to freezing temperatures, published 1850-52; these were by his nephew, Dr. John LeConte, the physicist (1818-1891).

White's "Statistics of the state of Georgia," published in 1849, has a separately paged appendix entitled "Catalogue of the fauna and flora of the state of Georgia." Of the various lists, most of which are distinctly credited to various authors, the last, occupying pages 43-47, is called: Catalogue of the flora in Georgia, arranged according to the Linnaean and natural system. This list is anonymous, but has been attributed to "LeConte." In the preface to the volume, White acknowledges his indebtedness to "Major LeConte, of New York" and to "Dr. LeConte, of Athens" (his nephew); the latter contributed the list of birds to the appendix, and the former is presumably the "John LeConte" who prepared the list of coleopterous insects (a group in which we know he was at that time particularly interested). The plant list, however, seems to have been little more than a compilation of names from Elliott's "Sketch" and contains abundant internal evidence that it was not the work of Major LeConte.
In this study I have chosen only those species that were seen in more than one of the winter months, and at least once in January. Should a species only occur either early in December or late in February, it might rightly be regarded as an autumn or spring migrant. By limiting the number to true winter species, I have been able to include the following: Blue Jay, Crow, White-breasted Nuthatch, Red-headed Woodpecker, Snowbird, Downy Woodpecker, Tree Sparrow, Chickadee, Brown Creeper, Song Sparrow, Snowflake, Goldfinch, Screech Owl, Bronzed Grackle, Meadowlark, Cardinal, Hairy Woodpecker, Sparrow Hawk, Evening Grosbeak. Total, 19 species.

Crow

*Carus brachyrhynchos*

The Crow, like the Blue Jay, does not seem to be notably affected by the weather in winter. If anything the Crow is less influenced by the storms of winter. For eight seasons there was comparative regularity in the Crow's daily appearance, only occasionally one month fell considerably behind the records of the other winter months.

The Crow seems to be as gregarious in winter as at any other time of the year. The necessity of finding food brings them near farm houses, where they feed in the fields or gardens. They seem to be less fearless in winter and may be approached while feeding without being easily frightened.

The Crows choose certain woods as rookeries, where they may often be seen flying above the trees. Their distant cawing on winter days is one of the pleasing sounds in nature at that season of the year. As spring approaches, the Crows are seldom seen, for then they begin to build their nests in tall forest trees.

Blue Jay

* Cyanocitla cristala *

The observations of this species covering eight winters show that the Jay is somewhat irregular in its distribution. The bird may appear infrequently in one or more of the winter months, and sometimes will absent itself for a week or longer. These periods
of absence occur both in mild and severe weather, and from this fact I conclude that the Jay is not notably influenced by weather conditions. It would be interesting to determine the cause of the longer periods of absence. I cannot account for the Jay's non-appearance for a number of consecutive days, except it be due to that inherent element in all things—change.

The habits of the Jay in winter are, like most other species, peculiar to the season. The life of birds in winter seems to be more individual, and there is less demonstration of their instincts. This is shown by the comparative quietness of the Jay during the winter months—its bell-like note is seldom heard, nor is there the uproarious calling of autumn-tide.

Usually the Jay does not fly high, nor does it go far, frequently taking short flights from tree to tree, and displaying its beautiful blue coat. In the bare branches, in winter, the Jay is a strikingly handsome bird. Another peculiarity of its flight is its ascending by jump-like efforts to the top of a tree.

**White-Breasted Nuthatch**

*Sitta carolinensis*

The White-breasted Nuthatch is one of the most regular winter species. February is the month in which this Nuthatch is least abundant, sometimes there is an absence long enough to be regarded as a period of migration. In 1915 the bird was not seen for fifteen days in February. In what respects is this month so different from the other winter months as to cause this Nuthatch to migrate? Not the severity of the weather, or the scarcity of food, or the approach of spring, I think, can be alleged as the reason for the migrating of the White-breasted Nuthatch. I have stated elsewhere that I believe this bird is a wanderer, and to this fact I would ascribe its migratory habit in winter and early spring.

Like other winter species the White-breasted Nuthatch is more reticent, and utters its notes with less variety and loudness in winter than in the other seasons of the year, especially in spring. Long observation of this species will make a student acquainted with a large number of utterances, some rarely heard.

(To be continued.)
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**PHILIP DOWELL,** PORT RICHMOND, N. Y.
PLATE 1. GRIER ON NEW FORMS OF CALAMITES
PLATE II. GRIER ON NEW FORMS OF CALAMITES
NOTES ON MIRANDA AURANTIA.

BY F. WENNINGER.

Miranda Aurantia is the large, yellow garden spider, common in summer and early autumn. The specimens that furnished the matter for the observations recorded in this paper were collected during the summer and early autumn of 1916 and 1917. In August and September, 1916, the species was found in greatest abundance along the shores of the St. Joseph River in the triangle formed by the river, St. Mary's road and the Michigan Central tracks. The ground around the two lakes at Notre Dame was explored with this result; the species was found quite abundant along the north shore of St. Mary's Lake, there were comparatively few spiders of this species along the south shore, and only an occasional specimen along St. Joseph's lake. An hour's collecting along the St. Joseph River in August, 1916, yielded about two hundred and sixty specimens, suitable for laboratory purposes. During the corresponding season of this year, 1917, a marked decrease was noticeable in the number of desirable specimens along the River, though the number of spiders around the lakes near the University appeared to be about normal. This year, what seems to be a new and isolated colony was found on a plot of ground adjoining the University athletic field, a distance of, perhaps, four hundred yards from the nearest lake. Some of the largest spiders had built their webs and nests here, near Agelena nevia and some species of Epeiridae and Therididae. One should expect to find the species distributed rather generally along the fields connecting this outpost with the central colony along the lakes. But the fact did not warrant this expectation.

Miranda Aurantia has been known to science since 1833. The following table, taken from Nathan Banks,\(^1\) gives a fairly

\(^1\)Nathan Banks in U. S. Museum Bulletin, Vol. 72, p. 46.
complete list of the names under which the species has been described:

*Argiope Aurantia*, Lucas, 1833,
*Argiope vestita*, Koch, 1839
*Argiope riparia*, Hentz, 1847
*Argiope riparia*, Emerton, Conn. Acad. 1884.
*Argiope sutrix*, Hentz 1847

The question of priority of nomenclature has not received much attention. Authors that mention the species seem to fix on the name that they consider correct and use it without, in most instances, a reference to other names. The species has been known most commonly under the name, *Epeira riparia*, given to it by Hentz in 1847, and under the name *Epeira cophinaria*, given to it by Walckenaer in 1837. But as early as 1830, Lucas had described and figured the species as *Aurantia*. This name, therefore, has the claim of priority. As to the generic name, this is to be said: *Argiope* is undoubtedly the older name, but, for many reasons, the best of which is to be found in a very desirable rearrangement of all allied genera, F. O. Pickard-Cambridge in the Biologia Central Am., separated the genus *Miranda* from the genus *Argiope*. The best modern scholarship, therefore, seems to indicate that the name *Miranda Aurantia* is to be preferred.

The average adult female of the species has all the general characteristics of the order *Araneida*. The cephalothorax is nearly as wide as long, and is covered with silvery white hairs except around the eyes. The abdomen is oval, a little pointed behind and square in front, with two small humps at the corners. The ground color is black marked with bright yellow or orange spots. On each lateral margin of the abdomen, the yellow spots form an almost continuous band. There is a black band between these two rows of spots, and in this there are from one to three pairs of yellow spots. In most of the specimens examined by the writer, two pairs of spots were found. The color of the ventral side is black, with a yellow stripe on the sternum, and two rather wide yellow stripes on the abdomen with small yellow spots between and at the sides.

The male differs considerably from the female. It is much
smaller, being only about one fourth as long as the female. There is a pair of palpi that attract attention on account of their size. The abdomen has a broad band of brown along the middle of the back, and on each side there is a band of white.

The body of the young spiderlings, is quite slender, and, while still in the egg-sac, shows hardly any differentiation of color. But soon after they emerge they begin to show color characteristics. The ground-color is pale brown or black and the markings are gray instead of the strong yellow and black of the adult. The legs are marked at the ends and in the middle of each joint with dark rings.

The anatomy of the species, both external and internal, is that common to all true spiders. These notes, therefore, will indicate only those structures wherein Aurantia differs from the type.

The term "areas" of the head" is used by some authors. But since there are no sutures to limit spaces, this terminology seems to have only a questionable practical value. The "eye-space"—that area of the head bounded by a line drawn around the eyes—is quite small in this species. In form, it might be described as trapeziform.

The eyes of this spider are all simple. They are eight in number, and there are no facets. They are the so-called diurnal eyes; nocturnal eyes are lacking. In arrangement, they are so separated as to occupy nearly the whole width of the head.

The eyes are not elevated and, hence, the "ocular tubercle" is absent.

The chelicerae are short and stout, and consist of a basal segment and a terminal claw. The lateral condyles seem to be wanting. There is, however, a furrow in the basal segment, armed with a row of teeth.

The next departure from the anatomy of the type occurs in the legs. The usual seven parts are present and are easily distinguishable,—coxa, trochanter, femur, patella, tibia, metatarsus and tarsus. The claws are outgrowths from the terminal portion of the leg, called the pretarsus. They are composed of many hypodermal cells. In M. Aurantia, the pretarsus seems to be a distinct segment. There are three claws on each tarsus. Two of these claws are placed side by side on the upper surface of the pretarsus, while the third is below; the whole arrangement is triangular in form. The upper, or paired claws, have a series of teeth. The third claw
is just perceptibly smaller than the other two, and has also a number of teeth; but these are finer and fewer than in the other claws. In addition to these claws there are also six accessory claws.

The tip of the tarsus is usually armed with terminal tenant hairs. These seem to be entirely wanting in the species for of all the specimens examined by the writer, only one specimen showed structures approximating this even remotely.

The calamistrum is the hackle for the formation of the "hackle band" characteristic of the web of this spider. It is composed of several rows of curved spines on the upper margin of the meta-tarsus of the hind legs.

In the abdominal region, the following peculiarities are to be noted: there is no pedical and no folium in the species. Muscle impressions—small, hardened points indicating the place of attachment of the muscles to the body wall—are present in M. Aurantia. The dorsal surface seems to bear two pairs of muscle impressions, while an unpaired one appears near the base of the abdomen.

There are two kinds of spiracles in M. Aurantia. One kind is the lung-slits; and there is at least one pair of these. The other spiracles are the tracheal spiracles, situated in front of the spinnerets. Of these there is only one.

The epigynum of M. Aurantia is a complicated organ. The chitinous plate is depressed and furrowed longitudinally, and the depressed area is divided by a ridge-like elevation which marks the depression off into two furrows or channels, each leading into an opening of the spermatheca of the corresponding side.

There are four spinnerets having two segments each, and one, the hind spinneret, having four segments. The sides of these organs are firm, but the terminal portion, constituting the spinning field, is membranous. This latter portion is surrounded by two kinds of hairs, simple and barbed. The number of spinning tubes is very great—a hundred on each spinneret would probably be a conservative estimate. Aurantia spins silk of three colors. White silk forms the web, the bands for securing captured prey, and the egg-cocoon; brown silk forms the interior of the egg-sac; yellow silk forms a kind of buffer between the eggs and the outside covering. The glands that secrete this silk are numerous and of several kinds. The most numerous are the aciniform or berry-shaped glands. Comstock has determined by experiment that the function of these glands is the manufacture of the silk for the swathing band. The
pyriform or pear-shaped glands are present in large numbers. Their function is the production of silk for the attachment disks. The ampullae glands produce the silk for the formation of "drag-lines" in the net. These are not numerous. Cylindrical glands are present in small numbers. They produce the silk from which the egg-bag is made. There are two poison glands that discharge their contents through a long slender duct that opens near the tip of the claw of the chelicera. Glands that are lacking in Aurantia are: aggregate, lobed and cribellum glands.

The eggs of M. Aurantia are laid in a mass protected by two layers of silk and enveloped in a waterproof bag. Most of these egg-sacs are attached to thistles or milkweed or golden rod. But many were found attached to such objects as cast-off window screens, pieces of timber projecting from lumber piles, discarded fence-posts, and some were fastened under the eaves of an old barn. The egg-sac is about the size of a hickory nut—the average diameter of observed specimens was about 22 mm. The size was constant in a very large majority of cases. But some egg-sacs measured 30 mm. and a few only 15, or even 12 mm. in diameter. The average egg-sac contains about a thousand eggs. But some have only a little more than five hundred, and a few were found that contained about eight hundred. The reason for this is not clear from observation, and there is none given in the literature of the subject as far as it has come under my notice. A difference of twenty or fifty could easily be traced to individual peculiarities. But a difference ranging from two to five hundred in the same species seems to need a more substantial explanation than individual peculiarity or fertility.

The eggs hatch in a short time—about two weeks for specimens observed in this locality. But the spiderlings remain in the egg-sac until the following spring. While still enclosed in the sac, they develop those canabalistic tendencies that are remarkable in the adult. An egg-sac of this species opened on September 17, 1916, contained 1018 live spiderlings, and about 200 remains of their weaker companions that had succumbed to the canabalism of the stronger spiders.

It is certain that M. Aurantia sheds its outer layer of the cuticula. I have found the molts from time to time, but have been unable to determine thus far, how often this happens. Exact observations on this point do not seem to have been made, or if
made, have not been recorded in the literature on the subject to which I have had access.

The food of *M. Aurantia* consists chiefly of insects. But spiders will eat other spiders, and, after the pairing season, the female usually devours the male. In September, 1917, a male and female were brought to the writer's laboratory. The collector had put them into a pill box. When the box was opened, the male was found tightly wrapped in his shroud, and the female had already begun her meal. The staple article of food of *M. Aurantia* seems to be grasshoppers. These are swathed in a wide band of silk and then rendered palatable by the injection of some venom through a bite with the spider’s chelicerae. Other insects of many species are devoured with avidity, even such large species as dragon flies and butterflies. The following is a list of insect remains found in the webs of this species during the months of August and September, 1916 and 1917: *Libellula basalis, Libellula pulchella, Argia violacea, Anosia plexippus, Helophilus latifrons, Euschistus variolarius, Sympetrum rubicundum, Mesothemis simplicicollis, katydids and weevils*.

The process of swathing a captured insect is interesting. To observe this at close range, one has but to introduce a grasshopper into the web of a mature female. The spider will rush at the grasshopper, pierce it with the chelicerae and then dart off to safety. After a brief wait, the spider will approach the insect and, pulling out a sheet of silk from its spinnerets, with one hind leg, thrust the sheet against the grasshopper. In doing this, the spider uses first one hind leg and then the other, whirling the grasshopper around rapidly. The captive is thus securely wrapped in a tight band of silk composed of many parallel threads, and is immediately devoured or left for a more opportune time.

The task of spinning the web is begun by throwing out a thread which is carried by the air till it strikes some object and adheres to it. This line is now pulled tight and forms a kind of bridge over which the spider may travel. Foundation lines are now thrown out and these are connected by radii. The center where these radii converge is strengthened by a mesh or net-work of lines, called a hub. A characteristic structure of the web of *Aurantia* is the stabilimentum. This is a zig-zag ribbon across the center, or below the hub. It consists of a large number of minute threads
The silk of this spider, as also the structure of its web, can be studied conveniently by taking a large pane of glass and passing it behind the web. By moving the glass forward and snipping off the threads with scissors, the web is transferred to the glass. This makes a suitable mount for the naked eye and microscopic study.

A word should be said about the venom of spiders. All spiders secrete poison, but only very few spiders are dangerous. I have collected hundreds of specimens of spiders, but have never been bitten. In fact, no spider even attempted to inject its venom. It is the opinion of such authorities as Comstock that in the North there is no spider to be feared while in the South there is a single easily recognized species "that is believed by some people to be dangerous." Certainly no one can justify his antipathy to the study of araneology on the ground that spiders are venomous and dangerous.

Department of Zoology,
University of Notre Dame.

NEW FORMS OF CALAMITES

BY N. M. GRIER

The specimens upon which this work is based were collected by Mr. Caspar Reel and myself at Reel's Stone Quarry, East Bellevue, Pa., from the sandstone above the Elk Lick Coal. They were exhibited and discussed before the Academy of Science of St. Louis, Jan. 11, 1915, and are deposited in the collection of the Academy.

EUCALAMITES.

Group of Calamites cruciatus Sternb.

Calamites cruciatus harrisoni, n. sp.

Pl. I., figs. 1. 2.

Internodes 23-28 mm. in length, broader than long. Articulations well marked by nodal swellings. Ribs well defined, 2-3 to 3-4 mm. in breadth, equal, half round, not alternating and generally somewhat inflated at the articulations. Furrows generally 1-3 the width of the ribs. Branch scars at least 7 to the node, 8-9 mm. in diameter, showing
the central insertion point, 15 mm. apart on the nodal line, alternating on the neighboring nodes, with 12-16 ribs converging on each side to them. Leaf scars, if any, indistinct.

The type specimen, consisting of a cast of the medullary cavity, has been subjected to flattening influences, resulting in a splitting of the stem length-wise. It is composed of 3 nodes in a fair state of preservation, the upper two 28 cm. in length while the lower is 23 cm., their circumferences being 13, 12 1-2, and 12 cm. respectively. A portion of it is covered with a thick and somewhat coaly bark of about 4 mm. thickness at some places, and upon which the furrows appear but indistinctly. The combined thickness of the bark and medullary cavity is from 80-83 mm. at the upper (?) end, while the lower (?) end has a diameter of 41 mm.

Following the nomenclature as proposed by Jongmans', this specimen evidently is a member of the cruciatus group. With 7 branch scars it would tend to approximate the Calamites cruciatus septenarius of Sterzel. The following distinguishing features appear. Of the two more clearly distinguished varieties of this latter form, the variety fascialis of Sterzel is excluded by the shortness of its joints, the presence of leaf traces, and the minimum number of ribs converging to form the branch scars.

The rather incompletely described variety Brongniarti of Sternburg is eliminated through the possession of leaf scars, absence of swellings at the nodes, and the want of distinct impressions of the ribs.

In short, the number of estimated branch scars, the number of ribs converging to meet these, their width and distance from one another, considered with the length, diameter and circumference of the joints widely separate this form from any hitherto described as belonging to this group, making it clear that we are dealing with a new species which I have dedicated to Prof. R. G. Harrison of Yale University, an inspiring worker in taxonomic fields.

**Calamites multifoliatus** n. sp.

Pl. II., figs. 1. 2

*Internodes* 36-38 cm. in length, broader than long. Articulations somewhat constricted, increasing in size from the base (?) of the stem. Ribs at least 4 times the width of the furrows, well defined, half-round, pointed at the ends, terminating in leaf scars at the nodes, or converging in group of 2-4 to the nodal line. Apparently two branch scars to the
whorl, opposite in position, to which 8-12 ribs converge. Numerous leaves.

The type specimen, a cast of the medullary cavity consists of one almost perfect node, and well preserved portions of two others. While also subjected to a flattening process, it has not split. The one measurable node has a diameter of 16 1-2 cm. A break in the wall of the cast shows the imprint of the cavity wall on the core-like matrix.

It became clear that of all previous species described, the specimen resembled most closely the Calamites ramosus of Artis. Of the three figures of this species given by Jongmans, those from Artis and Stamm bear hardly a superficial resemblance, while that of Weiss, although approximating, gives indications of somewhat different characters.

The internodes of the older part of the stem are not slender, and are hardly longer than wide. The ribs so far as this particular specimen is concerned, are devoid of tubercles, they are not bluntly pointed as in ramosus, and average 1 1-3 mm. in width, the furrows 1-3 mm. They apparently never alternate, and continue from node to node, a character not to be observed in the figure of Weiss. No trace of any microscopical striation is to be found here, and the average number of ribs to the cm. is only about 1-3 as great. There is no well defined "corona" surrounding the insertion point of the branch scar, and these are much smaller. It will be observed that the stem (?) begins in a fashion never found in ramosus according to Weiss and Zeiller, and resembling that found in Suckowi. Still another distinguishing point is the comparatively small number of ribs taking part in the formation of each branch scar.

Calamites Fettermanni n. sp.

Pl. III., figs. 1, 2.

Stem only moderately slender, articulations well set off by nodal swellings. Joints at least 3 times as long as wide. Ribs pointed, 2 mm. in breadth, not alternating, distinct, flat or rounded, longitudinally striated, when flattened giving the furrows a doubly striated appearance. Furrows 1-3 to 1-2 mm. in breadth. Tubercles present but mostly indistinct. Branch scars alternating probably 6 to the whorl, insertion points 2-3 mm. in width. Leaves apparently absent.

Jongmans W. J., "Anleitung zur Bestimmung der Karbon pflanzen West Europas." Bd. I (1913), from whose descriptions also, the greater part of the comparisons have been made.
The type, a cast of the medullary cavity, has become broken into 3 pieces, which when joined give evidence of this species striking peculiarity the great length of the internodes. The ribs, in greater number run straight into the branch scar, with apparently no great tendency to converge. No trace of a bark is present. This form is respectfully dedicated to J. C. Pettermann, Professor of Biology, University of Pittsburgh.

Pl. I.

Fig. 1. Calamites cruciatus Harrisoni, n. sp. x 1.
Fig. 2. The same, a branch scar x 2 1-2

Pl. II.

Fig. 1. Calamites multifoliatus n. sp. x 1.
Fig. 2. The same, x 2 leaves and ribs slightly magnified to show their arrangement.

Pl. III.

Fig. 1. Calamites Fettermanni n. sp. x 7-11
Fig. 2. The same, a branch scar x 3

Central High School,
St. Louis, Mo.

OUR WINTER BIRDS.

BY BROTHER ALPHONSUS, C. S. C.

(CONCLUSION.)

RED-HEADED WOODPECKER
Melanerpes erythrocephalus

This woodpecker is not a regular winter species, and was found by the writer for two seasons—1913-1914 and 1914-1915—in twelve years of observation. Manuals of ornithology state that the abundance of food suitable for this species will cause it to stay during the winter. But if that be true, why was this food not found but twice in twelve winters, although these were both consecutive seasons? I cannot believe that such was the case, and therefore I do not think that the problem of the birds' presence can be solved by the food question. Of course the species was not present in large numbers, never more than a few individuals were seen; and this fact might point to a solution of the problem. Individuals of other species; such as, the Meadowlark, Robin, Bronzed Grackle, may be seen by careful observers in winter; and if this is so, why
would not the presence of the Red-headed Woodpecker for two winters be due to the same peculiar causes as lead these other species to stay in small numbers?

**Snowbird**

*Junco hyemalis*

A comparison of two sets of years, each containing four years, shows much irregularity for the Snowbird. During the first period the total number of records was 60, and for the four last years there were 137 records. Here is something rather hard to explain. Why should there be such a notable difference in the number of records of a common species in the two sets of years? It cannot be that the four first seasons were more severe and the snow more deep. I am inclined to believe that a number of winter species go farther south than our latitude, perhaps very few individuals remaining with us during the severest part of the winter. And when any species is present only in small numbers, it may not be found over a large area. These facts may account for the scarcity of the snowbird during parts of some winters. However, there may be other causes, more or less inexplicable, but none the less certain, that, if known, would account for the irregularity and scarcity of this and other winter species.

**Downy Woodpecker**

*Dryobates pubescens medianus*

Some interesting figures were obtained for this species in eight winters. The four first show as the total number of records—47, with an average each winter of about 11 records; the four last have a total of 99 records, and an average yearly record of about 24. I could not begin to account for such great disparity in distribution as is disclosed by these figures. Were the weather conditions so different in both sets of years as to cause this notable difference? As already stated in regard to other species, I think not. Neither was it a food question. What then are the possible determining factors in the distribution of the Downy Woodpecker? Well, I have observed that at other seasons of the year this species may often be long absent—why, I cannot say. But this is a fact, and such a thing may occur in winter as well as in spring, let us say. My opinion, then, is that migration is one of the principal factors in the small distribution of this species at certain seasons of the year, winter among them.
The study of this, the commonest of our winter sparrows, has been very interesting to me. In four winters I made but 28 records for the species; in four other winters I made 87 records. These observations suggest a number of interesting questions. First, what was the probable cause of the great difference in distribution between the two sets of years? I think the Tree Sparrow can never be found in abundance during winter, but is always present in a few small flocks. Second, I am disposed to believe that the species shuns places where snow is deep, and will therefore be absent from such localities for long periods of time. I admit, however, that such reasons as these do not fully account for the disparity noted above. To my mind the movements of birds in winter are more or less involved in mystery. How true it is that science may observe and name, but many things it can never explain. But this mysterious element is a lure always beckoning the student to make more ardent efforts to grasp the coveted knowledge.

Chickadee
*Penthestes atricapillus*

A very curious instance of irregularity and scarcity is found in the Chickadee. In four winters, 1909-1910 to 1912-1913, I made but five records for this species; and from 1913-1914 to 1916-1917, there were 107 records in winter. Here is certainly an enigma. Not only was great disparity noted between the two sets of years, but between two seasons of the second set there was the same. Did the Chickadee change its habits towards the end of my observations? Compare five records with 107, and try to explain the disparity on any other supposition. In spring and summer this species is absent almost continuously, returning to the deep woods for nesting. Here it may be found by any observer who goes to such a place. This is clear enough; but to explain the irregularity of the species in the various winters it was under my observation, this I cannot do.

Snowflake
*Plectrophenad nivalis*

The records obtained in eight winters for the Snowflake are interesting. For three winters the species was not found. In 1913-
there were ten records, more than in all the other winters put together. From these figures we may see that the Snowflake is very irregular and unusually very rare. Just why this should be I am at a loss to know, for Notre Dame lies within a snow-belt about forty miles wide. One would expect a snow-loving species to be more regular in its appearance in such a place.

Goldfinch
Astragalinus tristis

As a winter species the Goldfinch is usually rare, if not very rare. Of the eight winters under consideration, there were five whose total number of records for this species was but five. The other three winters totalled 26 records, which shows that the Goldfinch was always rare. The birds travel in small flocks in winter, and unless the observer finds their feeding or drinking places, he may seldom see them.

Brown Creeper
Certhia familiaris americana

Comparing the two sets of years, I find that in the first there were 13 winter records for the Brown Creeper, and in the second 74 records. At first sight it would seem incredible that such disparity in distribution could be shown for a species that is usually rare in winter. But the records obtained are conclusive that the difference was real. To account for a notable increase in at least one season, 1914–15, by the fact that this winter was very mild, seems satisfactory enough. On the other hand, the very small number of records, 13, made in the four first seasons cannot be attributed to the greater severity of those winters; there ought at least to be an average number for each year that would not greatly exceed the average of each of the other four years. Even by eliminating the largest record, 40, in 1914–15, this mean yearly average cannot be shown. From these facts we must conclude that the Brown Creeper is one of the most irregular winter species.

Song Sparrow
Melospiza melodia

The records for the Song Sparrow in eight winters show only two for the four winters, 1909–10 to 1912–13, and 45 records for the four succeeding winters. Of course it were worthless to make any comparison between these figures, and the only obvious thing
to say is, either the writer failed to obtain the actual records for the first set of years, or the Song Sparrow has established itself, in recent years, as a fairly common winter species.

The winter habitat of the Song Sparrow is in the shrubbery along the shores of small lakes, or in low, waste land. Secreted in such places, the birds seldom show themselves, and usually the observer hears them before he sees them. It is difficult under such condition to know how plentiful the species is during winter. From appearances it looks as if a few individuals only remain throughout this season.

**Bronzed Grackle**
*Quiscalus quiscula aeneus*

The Bronzed Grackle had no winter records from 1909 to 1912; and for three other winters there was a total of 23 records, the species not appearing in the winter of 1914-15. The non-appearance of the Bronzed Grackle for four winters, and then its appearance for three winters, presents a curious case of irregularity of distribution. Only one bird was ever seen at any time, and this fact may go far toward explaining the absence of the species for five winters out of eight. Why this individual remained in winter is another curious occurrence that would be difficult to explain.

**Meadowlark**
*Sturnella magna*

In eight winters the Meadowlark had but three records. Usually one and sometimes two individuals were seen. The presence of these birds seemed to indicate that they were wintering somewhere in our vicinity, but must have been little given to leaving their habitat. Another thing that strengthens this belief is that the Meadowlark was seen in every month in winter.

**Sparrow Hawk**
*Falco sparverius*

In eight winters the Sparrow Hawk was found at least once in each month, a fact that shows this is a true winter species. This being so, it is difficult to tell why there have been only four records in eight winters. Of course, like all the other hawks, this species wanders about much more in winter than at other seasons of the year. This habit may in fact account for the scarcity of the Sparrow Hawk. I think also that places that are farther out in the
country are likely to be better feeding grounds for this small hawk.

**Screech Owl**
*Otus asio*

There was a total of 14 records for the Screech Owl in eight winters, and seven records for each division of four years. The probability is that these figures do not show the actual distribution of the species; for the Screech Owl, besides being nocturnal in its activities, does not often utter its note in winter.

**Cardinal**
*Cardinalis virginianus*

The Cardinal was recorded seven times in three winters, and not found in five other winters. Always very locally distributed, this species is more difficult to see in winter than at any other season of the year; for then the bird is seldom heard to whistle, and it does not venture far from its feeding grounds.

**Hairy Woodpecker**
*Dryobates villosus*

The Hairy Woodpecker is one of our rarest winter species—five records in eight years. Out of these eight years, the species did not appear for five winters. The individuals that were seen must have wandered away from their usual habitat, the deep woods. The note of this species, which is louder and sharper than that of the Downy Woodpecker, easily distinguishes it from the smaller species. The whirring sound made by the wings is another way of recognizing this woodpecker.

**Evening Grosbeak**
*Hesperiphona vespertina*

This species was recorded only in one winter, 1910–11. There were two records in December and one in January. A small flock was seen each time, and the birds were feeding on the seeds of boxelder trees. I have not heard of any one observing this Grosbeak since the winter of 1910–11 in our vicinity. If any of my readers should know that records have been made of the Evening Grosbeak in northern Indiana, within the last seven years, I should be grateful to hear about them.
TERATOLOGICAL NOTES.

BY J. A. NIEUWLAND.

TOXICODENDRON

The leaves of *Toxicodendron vulgare* Miller, also *Toxicodendron radicans* (Linn) Kuntze are ordinarily pinnately trifoliate. Leaves with five leaflets are, however, not uncommon. These are of two rather distinct types, and intermediate forms between ternate and quinate in all stages from the simple leaflets to deeply lobed cleft and divided are even more common.

The first kind of quinate leaf is that in which the two basal leaflets of the ternate have each apparently given rise by cleavage to another smaller one. The whole has in this case a more decidedly palmate appearance as the petiolules of the outer smaller leaflets come from the same point on the rachis as the larger ones from which they are supposed to have arisen by division. The other example shows two leaflets apparently cut off from the lateral basal lobes of the terminal leaflet. In this way a rather pinnate aspect results, as the two original basal leaflets are inserted at some distance below that of the other three.

On the supposition, if it can be maintained, that teratological forms may illustrate a reversion of form to an original ancestral common to several present-day types, it may be inferred that the real poison ivy plants show a close relationship to the typically pinnate leaved *Toxicodendron Vernix* (Linn) Kuntze or Poison Sumac, by postulating a common ancestor for both. The abnormal leaves of the poison ivies referred to above resemble somewhat the more simple ones of *T. Vernix* in appearance. Quinate leaves of *T. Vulgare* and *T. radicans* are quite common at Notre Dame. A considerable number of specimens with intermediate forms was collected at Grand Beach, Mich., in the Dune region of Northern Indiana and Southwestern Michigan during the season of 1917.

DATES OF PUBLICATION

PLATE III. GRIER ON NEW FORMS OF CALAMITES
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Devoted to Natural History, Primarily that of the Prairie States

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J. A. NIEUWLAND, C. S. C., Ph. D., Sc. D., Editor

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Write for information.
PLATE 1.—Hanson on Invasion of a Missouri River Alluvial Flood Plain.
The Genus Euthamia in Missouri.

BY BENJAMIN FRANKLIN BUSH.

Having had occasion last January to examine some specimens collected by Mr. Ralph Hoffman about Kansas City in Jackson County, Missouri, my attention was directed to some specimens of EUTHAMIA, which upon a casual inspection might pass for E. GRAMINIFOLIA (L.) Nuttall, a species commonly supposed to occur in this locality, but which upon a closer examination seemed to differ from the description of that species in several important particulars.

No other species of EUTHAMIA being known for this region, and only one other, E. LEPTOCEPHALA (T. & G.) Greene, a low-land species of Arkansas and Louisiana, which extends up the Mississippi Valley to the low, flat, quaternary formation of the southeastern part of the State, it was interesting to note this new accession to the Flora of a region thought to be well covered by a descriptive Manual.

Having in mind always the bare possibility that every strange plant of this region may be an undescribed species, I wrote to Dr. George T. Moore of the Missouri Botanical Garden to kindly loan me volume 5 of Dr. Greene's Pittonia, in which E. GVMNOSPERMOIDES Greene, a species of the high prairies of Kansas and Nebraska, and most probably the species in hand, was described, and my astonishment may be imagined when I saw that Dr. Greene had established the species on plants collected by me in the Indian Territory in 1894, and that I had left my native county where I had collected for many years, to go down to the Indian Territory to collect this most interesting and distinct EUTHAMIA, when it was common on the prairies of the County where I lived.

As none of the writers on EUTHAMIA, Britton in Manual in 1905, Fernald in Rhodora in 1908, Britton in Illustrated Flora in
Small in Flora in 1913, indicate this species for the Indian Territory, the type locality, I had no intimation that it had been collected there, and by myself. Dr. Small does not even mention this species in the first or second edition of his Flora.

Having procured Dr. Greene's fifth volume of Pittonia, which I had not seen before, and also Rhodora, Volume 10, in which Prof. Fernald has revised the species of *Euthamia* for the New Gray's Manual, I began a careful study of the species found or likely to be found in Missouri, and have studied all the material of these species preserved in the Herbarium of the Missouri Botanical Garden, 9 sheets from the United States National Museum Herbarium, about fifty sheets from the Herbarium of the University of Illinois, that in Mr. Mackenzie's private herbarium in New Jersey, and all that in the Herbarium of the University of Notre Dame, Indiana, for which courtesies I am under obligations to Dr. George T. Moore, Dr. William R. Maxon, Prof. William Trelease, Mr. Kenneth K. Mackenzie and Dr. J. A. Nieuwland, to whom thanks are here returned.

The genus *Euthamia* is abundantly distinct in aspect and characters from *Solidago*, as may be seen from the following diagnosis:

**Euthamia Nuttall, Gen. 2: 162. 1818.**

Erect, paniculately branched herbs, perennial by long root-stocks, with linear or linear-lanceolate, entire, or minutely-serrulate, sessile, 1-5 nerved punctate leaves, and very numerous small heads of both tubular and radiate yellow flowers, clustered in the large corymbose, convex or nearly flat-topped inflorescence. Bracts of the involucre obtuse or acutish, or in far western species acute or acuminate, in two sets, the outer 5-14, short, oblong, in about 3 series, the inner 7-14, linear-oblong, in about 3 series, appressed, more or less glutinous or viscid.

Receptacle flattish, fimbrillate, or pilose. Ray-flowers pistillate usually more numerous than the disk-flowers, the rays small, scarcely exceeding the involucre. Disk-flowers perfect. Anthers obtuse at the base. Style-branches with linear-lanceolate appendages. Achenes top-shaped or oblong, villous-pubescent.

Differs from *Solidago* chiefly in the fimbrillate or pilose receptacle and in having the ray-flowers more numerous than the disk-flowers, *Solidago* having an alveolate receptacle with the disk-flowers more numerous than the ray-flowers.
For the Missouri species of Euthamia, I offer the following somewhat detailed key:

1. Stems simple, branched at the top, 9-15 dm. tall, densely short hairy, especially the upper part, the branchlets, pedicels and broad leaves; leaves thinnish, scarcely or obscurely punctate, distinctly 3-ribbed, often with a pair of indistinct lateral nerves; heads sessile or very short pedicelled in capitate clusters in a rather open convex corymb, 18-28-flowered; involucre ovoid-companulate to subcylindric, 4-5 mm. high, its yellowish bracts oblong to oblong-lanceolate, slightly viscid; achenes oblong, villous-pubescent.

1. Euthamia hirtella.

2. Leaves linear-lanceolate, spreading, 4-8 mm. wide, yellowish, not strongly punctate, not viscid, distinctly 1-nerved, or the lower sometimes with a pair of very indistinct lateral nerves; involucre subcylindric or subturbinate, 3.5-6.5 mm. high, its mostly straw-colored bracts oblong or linear-oblong; achenes top-shaped or ovoid, villous-pubescent.

2. Euthamia leptocphalal.

3. Leaves lance-linear, taper-pointed, 2-4 mm wide, or occasionally wider, obscurely punctate on the upper surface, not viscid or but slightly so; involucre 3-4 mm. high, subcylindric; bracts of the involucre unequal, soft, linear, scarcely glutinous; pedicels
subtended by very minute subulate bracts. More northern prairie species.

3. **Euthamia Media**:

3. Leaves linear-attenuate, acuminate, 2-5 mm. wide, strongly punctate on both faces, more or less viscid; involucre 5-6 mm. high, subturbinate; bracts of the involucre oblong-linear or oblong, blunt, firm, very glutinous; pedicels subtended by linear bracts. Western and Southern prairie species.

4. **Euthamia Gymnospermoides**.


If I have interpreted Dr. Greene's species rightly, this is a tall, simple-stemmed plant, branching at the top, 7.5-15 dm. tall, with much the aspect of *Leptilon canadense*; leaves spreading, 7.5-12.5 cm. long, 8-14 mm. wide, 3-5-ribbed, at least the midrib conspicuous, the lateral very faint, sparsely to densely short-hairy on both faces. Appears to be a marsh or swamp species. Those who prefer to use *Solidago* for the name of these species may use *Solidago hirtella* (Greene) Bush, n. comb. The range of this species is from Massachusetts (?) to Wisconsin, south to Kentucky and Tennessee.  

I have concluded with Dr. Greene that *Euthamia graminifolia* (L.) Nuttall, to which were formerly referred all the species of *Euthamia* in North America except *E. occidentalis, tenuifolia* and *leptocepha*la, is a species of the northeastern States and Canada, and I have not seen any specimens from the interior that I could refer to it.

Britton in the Illustrated Flora of *Euthamia graminifolia*, "New Brunswick to Saskatchewan, Alberta, Florida, Nebraska and Wyoming; heads 20-30 flowered." I have not seen any specimens from Saskatchewan, Alberta, Florida, Nebraska or Wyoming that had heads with so many flowers.

Fernald in Gray's New Manual says of *Solidago graminifolia*, "East Quebec to Saskatchewan, New Jersey, Illinois, Missouri and North Carolina; heads 20-30 flowered." I have not seen any specimens from Saskatchewan, Illinois, Missouri, or North Carolina, that had heads with so many flowers.

Small in his Flora says of *Euthamia graminifolia*, "Nova Scotia to the Northwest Territory, Florida and Kansas; ray-flowers 12-30." I have not seen any specimens from the Northwest Territory, Florida or Kansas that had heads with so many ray-flowers.

Gray in the Flora of North America says of *Solidago lanceolata*, "Canada to Georgia, northwest to Montana." I have not seen any specimens from Georgia or Montana that I thought were this species.
Specimens Examined:

Massachusetts:
Without definite locality, ex Chapman Herbarium, date not given, Herb. No. 785331, but possibly an error of labeling, as this is the only specimen seen from so far east.

Connecticut:
New Haven, Eaton, date not given, Herb. No. 75066;
Norfolk, Greenman, September 25, 1910, Herb. No. 737760.

District of Columbia:
Brookland, Nieuwland, 1909, N. D. Herb. No. 2188;
Brookland, Nieuwland, September 3, 1911, N. D. Herb. No. 1654;
Brookland, Nieuwland, September 15, 1912, N. D. Herb. No. 10325;
Brookland, Nieuwland, September 15, 1912, N. D. Herb. No. 10302;

Maryland:
Ammendale, Trelease, September 12, 1880, Herb. No. 75070;
Chevy Chase, Greene, October 5, 1905, N. D. Herb. No. 5462;
Woodside Station, Painter 1064, September 4, 1904, Herb. No. 75108.

New Jersey:
Passaic, Woolson, September, 1871, U. S. Herb.;
Raritan Landing, Kelsey 148, September, 1892, U. S. Herb.

Pennsylvania:
Gettysburg, Glatfelter, September 16, 1892, Herb. No. 75081;
Gettysburg, Redfield, September 12, 1865, Herb. No. 75080;
Harrisburg, Fritchey, September 3, 1889, Herb. No. 75076;
Lancaster County, Eby, October, 1893, Herb. No. 75320;
Lower Cove, collector not given, August, 1824, the plant marked A on this sheet, Herb. No. 75098;
Mountville, *Eby*, August, 1890, Herb. No. 75131;
York County, *Glatfelter*, October, 1892, Herb. No. 75134.

**Ohio:**

Berea, *Watson*, September, 1897, Herb. No. 75109;

**Indiana:**

Chain Lakes, *Nieuwland*, September 26, 1911, N. D.
Herb. No. 2080;
Kosciusco County, *Dean* 1509, August 17, 1906;
Lake Maxinkuckee, *Scoeel and Clark* 1114, August 9, 1900, Herb. No. 75096;
Michigan City, *Nieuwland*, September 22, 1910, N. D.
Herb. No. 702;
Mineral Springs, *Nieuwland*, September 26, 1912, N. D.
Herb. No. 10279;
Notre Dame, *Nieuwland*, August 16, 1908, Herb. No. 742028;
New Albany, *Davis*, September 15, 1909, Herb. No. 75112;
New Albany, *Davis*, September 15, 1909, Herb. No. 75111;
New Albany, *Davis*, September 15, 1909, Herb. No. 75110;
Tamarack, *Nieuwland*, 1910, N. D. Herb. No. 9495;
Herb. Vo. 732;
Wells County, *Dean* 465, August 27, 1905, Herb. No. 75116.

**Michigan:**

Detroit, *Glatfelter*, date not given, the plant marked A on this sheet, Herb. No. 75046;

**Wisconsin:**


**Kentucky:**

Edmonson County, *Price*, September, 1897, Herb. No. 75124;
Edmonson County, *Price*, September, 1897, Herb No. 75093.
Illinois:

Algonquin, Nason, September 4, 1878, U. I. Herb.;
Belleville, Engelmann, August, 1845, Herb. No. 75,117;
Carlinville, Andrews, July 29, 1891, U. I. Herb.;
Evanston, Sherff, September 20, 1910, Herb. No. 75,003;
Graceland, Pammel, August 18, 1887, Herb. No. 75,068;
Lake Forest, Jensen, September, 1896, Herb. No. 75,130;
Lake Villa, Gleason and Shobe 204, August 9, 1906, U. I. Herb.;
Lake Villa, Gleason and Shobe 212, August 9, 1906, U. I. Herb.;
Mascoutah, Welsch, 1862-1871, U. I. Herb.;
Peoria, Brendel, date not given, U. I. Herb.;
Peoria, McDonald, August, 1887, U. I. Herb.;
Princeville, Chase, 754, August 24, 1900, U. I. Herb.;
Taylorville, Andrews, August 20, 1898, U. I. Herb.;
Tracy, Greenman, August 22, 1908, Herb. No. 721,717;
Tracy, Greenman, August 22, 1908, Herb. No. 740,596;
Wady Petra, Chase, September 5, 1896, U. I. Herb.;
Wady Petra, Chase 679, October 28, 1900, U. I. Herb.;
Winnetka, Sherff, September 8, 1912, Herb. No. 75,002;
Winnetka, Sherff 1911, September 8, 1912, U. I. Herb.

Tennessee:

Richland Station, Gattinger, August 27, 1883, Herb. No. 75072;
Sumner County, Eggert, September 17, 1897, Herb. No. 75125.

No specimens of this species have been seen from Missouri, but its range must include Eastern Missouri, and the Belleville, Illinois, collection, shows that this species reaches the Mississippi River bottoms.


Solidago leptoccephala T. & G., Bush in Plants of South-eastern Missouri, No. 176.

Missouri to Louisiana and Texas, according to Britton in Illustrated Manual, which is correct.

East Nebraska to Mississippi and Texas, according to Fernald
in Gray's New Manual, but the East Nebraska reference must be a mistake, as this lowland species does not get up to Nebraska.

West Louisiana and Texas, in a narrow-leaved form from Northwestern Arkansas, \textit{Harvey}, according to Gray in the Flora of North America, but the northwestern Arkansas reference must refer to some other species, most probably \textit{E. gymnospermoides}.

A species of the low alluvial bottoms of the lower Mississippi River valley, north to Southeastern Missouri and Southern Illinois west to Texas.¹

First collected by \textit{Bush}.

\textbf{Specimens Examined:}

\textbf{Missouri:}
- Butler County, \textit{Bush} 3704, October 15, 1905, Herb. No. 75106;
- Butler County, \textit{Bush} 3704, October 15, 1905, U. S. Herb. No. 492092;
- Butler County, \textit{Bush} 3704A, October 15, 1905, Herb. No. 75004;

¹ Allied to \textit{E. leptocephala} and yet abundantly distinct from it, is a plant of the Southeastern States, which may be disposed of as

\textit{Euthamia fastigiata} \textit{Bush}, n. sp.

Stems simple, fastigiately branched at the top, striate, smooth and shining, 6-8 dm. tall; branches, branchlets and pedicles somewhat scabrous; leaves 3-6 cm. long, 3-6 mm. wide, minutely punctate on the upper surface, minutely scabrous on the lower, minutely serrulate on the margins, 1-ribbed, or with a pair of indistinct lateral nerves, or the larger 3-5-nerved; inflorescence a flat-topped corymb; heads more or less loosely pedicelled, about 3.5 mm. high, sub-cylindric, 16-18 flowered; bracts of the involucre in several series, yellow, ovate to ovate-oblong, the inner soft and thin; achenes top-shaped, minutely pubescent.

Apparently a plant of the lowlands, confined to the Southeastern States, allied also to \textit{E. chrysothamnoides} Greene, of Arkansas and Louisiana, but very distinct.

\textbf{Specimens examined:}

\textbf{North Carolina:}
- Biltmore, \textit{Biltmore Herbarium}, 993b, August 23, 1897, Herb. No. 75054, type.

\textbf{Florida:}
- Jacksonville, \textit{Curtiss} 5347, October 1, 1894, Herb. No. 75062;

\textbf{Virginia:}
- White Sulphur Springs, \textit{Mackenzie} 495, September 7, 1903.

For those who prefer the name \textit{Solidago} for these species, I offer \textit{Solidago fastigiata} \textit{Bush}, n. sp., as the name of this plant.
Campbell, Bush, October 26, 1892, Herb. No. 75019;  
Campbell, Bush, October 26, 1892, Herb. No. 75038;  
Campbell, Bush, October 26, 1892, Herb. No. 75017;  
Campbell, Bush 6369, October 7, 1910, Herb. No. 75009;  
Campbell, Bush 6369, October 7, 1910, U. S. Herb. No. 672974;  
Dunklin County, Bush, October 26, 1892; Herb. No. 75039;  
Poplar Bluff, Letterman, date not given, Herb. No. 774234.  

ARKANSAS:  
Arkansas Post, Kellogg, September 23, 1909, Herb. No. 75313;  
Greene County, probably Paragould, Eggert, September 26, 1983, Herb. No. 75016;  
Greene County, probably Paragould, Eggert, September 26, 1893, Herb. No. 75020;  
Greene County, probably Paragould, Eggert, September 26, 1893, Herb. No. 750862;  
Moark, Bush 3664, October 15, 1905, Herb. No. 75107;  
Moark, Bush 3664A, October 15, 1905, Herb. No. 75005;  
Moark, Palmer 4791, October 31, 1913, Herb. No. 717310;  
Paragould, Eggert, October 26, 1917, Herb. No. 720505;  
Peach Orchard, Letterman, date not given, Herb. No. 77433;  
Peach Orchard, Letterman, date not given, Herb. No. 774339;  

MISSISSIPPI:  
Panola, Eggert, September 16, 1896, Herb. 75018;  
Without definite locality, Hilyard, 1858, Herb. No. 75010.  

LOUISIANA:  
Pointe a la Hache, Langlois, November 6, 1885, Herb. 75022;  
Without definite locality, Buckley, September 18, Herb. No. 75068.  

TEXAS:  
Columbia, Bush 320, November 1, 1889, Herb. No 75034;  
Dallas, Reverchon, September, Herb. No. 75035;  
Dallas, Reverchon 1323, N. D. Herb. No. 6314;  
Dallas, Reverchon 446, September, 1880, Herb. No. 75033  
Dallas, Reverchon, September, Herb. No. 75030;
Grand Saline, Reverchon 2050, October 18, 1900, Herb. 75032;  
Houston, Lindheimer, September, 1842, Herb. No. 75014;  
Hutchinson County, Carleton 427, August, 1891, U. I. Herb.;  
Industry, Lindheimer, September, 1844, Herb. No. 75011;  
Industry, Lindheimer, September, 1844, Herb. No. 75036;  
Miller's Ferry, near Dallas, Reverchon, October, 1877, Herb. No. 75021;  
Pierce, Tracy 7327, September 14, 1901, Herb. No. 75031;  
Rosenberg, Palmer 6639, September 25, 1914, Herb. No. 75009;  
Texarkana, Heller 4258, September 15, 1898, Herb. No. 75053;  
Texarkana, Heller 4258, September 15, 1898, U. I. Herb.;  
Texarkana, Letterman, October 19, 1894, Herb. No. 75014;  
White Oak Bayou, Lindheimer, September, 1842, Herb. No. 75012;  
Without definite locality, Lindheimer, 1843, Herb. No. 75037.

Solidago Moseleyi Fernald, Rhodora 10:93. 1908.  
Euthamia Moseleyi Fernald, Rhodora 10:93. 1908.  
Solidago lanceolata L., Bush in Flora of Jackson County Missouri, No. 231, 1882, in great part and including E. gymnospermoides; Tracy in Flora of Missouri, No. 616, 1886; Eggert in Catalogue of Plants of Saint Louis, Missouri, 1891.

Solidago tenuifolia Pursh, Bush in Flora of Jackson County, Missouri, No. 688, 1885, in small part, mostly E. gymnospermoides; Tracy in Flora of Missouri, No. 632, 1886, mainly E. gymnospermoides.

Euthamia graminifolia (L.) Nutt., Mackenzie and Bush in Manual of the Flora of Jackson County, Missouri, 1902, as to description, but including E. gymnospermoides.

Not mentioned by Britton in Illustrated Flora, Fernald in Gray's New Manual, but from the description is Fernald's Solidago Moseleyi.

No species of Euthamia is given by Dr. Daniels in his Flora of Columbia, Missouri.
Illinois and Missouri, southward, according to Greene, l. c. 
First collected by Engelmann.

I have concluded that the prairie plant of Ohio, Indiana, Illinois, Missouri, Iowa and Michigan belongs to Dr. Greene's species, and I have been unable to distinguish Fernald's Solidago Moseleyi from it. If we are to accept Dr. Greene's E. gymnospersmoides which has been generally included in E. graminifolia, E. tenuifolia and E. leptoccephala, as a valid species, E. minor Greene, and E. floribunda Greene (the last having been accepted by Fernald in Gray's New Manual as a species in Solidago, may be known as Solidago floribunda (Greene) Bush, n. comb., if these species are finally placed in Solidago), it seems to me very reasonable to accept this species, and several others of Dr. Greene's, than try to keep it in E. graminifolia, from which it differs in several important characters, notably the fewer-flowered heads.¹

If the species of Euthamia are to be included in Solidago, this species will take the name Solidago media (Greene) Bush, n. comb.²

¹ Euthamia camporum Greene, of the far West and Northwest, seems distinct from E. media in the firm, almost coriaceous leaves, which are strongly punctate on both faces. If this species is to be referred to Solidago, it should bear the name Solidago camporum (Greene) Bush, n. comb. Amongst the many specimens of this species examined, I refer the following:

KANSAS:
Riley County, Norton, 231, September 13, 1895, Herb. No. 75294.

² I have not been able to see many specimens of Euthamia remota Greene, but the few I have seen were sufficient to cause me to believe that this species is very distinct from E. tenuifolia, to which it has been referred by Britton in Illustrated Flora, and perhaps by Fernald in Gray's New Manual, and Small in his Flora. This belongs to the E. tenuifolia group, with upper leaves 1-ribbed, the lower often with a pair of indistinct lateral nerves, but the leaves are much longer and wider, do not droop, and the involucre is cylindrical in shape, and attenuate at the base. In aspect it resembles E. media on the one hand, and on the other E. tenuifolia, but is remote from both of these species. Like E. hirtella, this species is also a lake region species. The thickish, oblong-linear bracts, in several series, with thick green tips, alone separates this species from E. tennifolia.

Of the few sheets of specimens examined, I feel certain of the following:

IILLINOIS:
Chicago, Glatfelter, August 20, 1893, Herb. No. 75312.

INDIANA:
Dune Park, Chase 278, September 19, 1898, U. I. Herb.;
Dune Park, Greenman, 2692, September 11, 1908, Herb. No. 740564;
This seems abundantly distinctive from *Euthamia Nuttallii* Greene (or if accepted as a valid species in *Solidago*, *Solidago Nuttallii* (Greene) Bush, n. comb.), a species of the middle Atlantic slope, although it varies much in the length and width of the leaves.

**Specimens Examined:**

**Indiana:**
- Dune Park, *Chase* 521A, August 27, 1897, Herb. No. 75060;
- Miller's, *Nieuwland*, September 28, 1911, N. D. Herb. No. 9534;
- Noter Dame, *Nieuwland*, 1909, N. D. Herb. No. 2247;
- South Bend, *Nieuwland*, August 27, 1912, Herb. No. 742057;

**Illinois:**
- Berwyn, *Calkins*, September, 1907, N. D. Herb. No. 5463;
- Champaign County, *Clinton*, September, 1895, U. I. Herb.;
- Champaign County, *Hays*, September, U. I. Herb.;
- Champaign County, *Percival*, September 14, 1876, U. I. Herb.;

Dune Park, *Greenman*, September, 1908, Herb. No. 742193;
Indiana Harbor, *Deam* 5286, August 30, 1908, determined by Greene as *Euthamia remotula*;
Lake Maxinkuckee, *Scovell and Clark* 1431, 1900, Herb. No. 75333;
Miller’s, *Greenman*, August 20, 1908, Herb. No. 742191.
Chicago, Engelmann, September, 1840, Herb. No. 75440;
Chicago, McDonald, September, 1893, U. I. Herb.;
Chicago, Sherff, 1765, August 24, 1912, Herb. No. 75316;
Chicago, Sherff 1765, August 24, 1912, U. I. Herb.;
Decatur, Clokey, September, 1898, U. I. Herb.;
Kankakee, Sherff 1765, August 24, 1912, Herb. No. 75315;
Mascoutah, Welsch, 1862-1871, U. I. Herb.;
Myra, Clinton, August 29, 1899, U. I. Herb.;
Oquawka, Patterson, September, 1876, type, Herb. No. 75126;
Peoria, Brendel, date not given, U. I. Herb.;
Wady Petra, Chase, September 21, 1893, Herb. No. 75332;
Waukegan, Gleason and Shobe 361, August 16, 1906, U. I. Herb.;
Without definite locality, Mead, September, 1848, Herb. No. 75300;
Woodford County, Brendel, September, 1858, U. I. Herb.;
Yates City, McDonald, September, 1893, U. I. Herb.

MISSOURI:
Allentown, Letterman, August 25, 1895, Herb. No. 775495;
Dodson, Bush, 362, September 26, 1897;
Dodson, Mackenzie 806, September 18, 1895, Herb. No. 75101;
Eolia, Davis, 1352, August 30, 1915, Herb. No. 794746;
Eolia, Davis 551, August 30, 1915;
Independence, Bush 3, 1882, Herb. No 75120;
Jackson County, Bush, September 3, 1888, Herb No. 75100;
Jackson County, Bush 216, October 8, 1893, Herb. No. 75103;
Jackson County, Bush 216, October 8, 1893, U. S. Herb. No. 49271;
Oakwood, Davis 1325, October 4, 1911, Herb. No. 708957;
Oakwood, Davis 297, October 10, 1911, Herb. No. 762164;
Oakwood, Davis 3297, October 9, 1914, Herb. No. 765854;
Oakwood, Davis 7303, September 11, 1915;
Oakwood, Davis 7307, September 11, 1915;
Oakwood, Davis 6098, September 11, 1915, Herb. No. 797842;
Oakwood, *Davis* 6046, September 24, 1915, Herb. No. 796509;
Oakwood, *Davis* 6046, September 24, 1915, Herb. No. 787342;
South Webster, *Eggert*, October 4, 1877, Herb. No. 75127;
South Webster, *Eggert*, October 4, 1877, Herb. No. 75128;
South Webster, *Eggert*, October 11, 1877, Herb. 75129;
South Webster, *Eggert*, October 11, 1877, Herb. No. 75105;
South Webster, *Eggert* October 11, 1877, Herb. No. 720237;
St. Louis, *Engelmann* 617, September, 1833, Herb. No. 75040;
St. Louis, *Glatfelter*, September 19, 1897, Herb. No. 75133;
Whiteside, *Davis* 661, September 20, 1915;
Whiteside, *Davis* 6004, September 20, 1915, Herb. No. 796490;
Whiteside, *Davis* 6004, September 20, 1915, Herb. No. 787344;
Whiteside, *Davis*, 6056, September 20, 1915, Herb. No. 787345;
Whiteside, *Davis* 6056, September 20, 1915, Herb. No. 796489;
Whiteside, *Davis* 6083, September 20, 1915, Herb. No. 797823;
Whiteside, *Davis* 6083, September 20, 1915, Herb. No. 787343;
Whiteside, *Davis* 8244, September 20, 1915;
Whiteside, *Davis* 1710, September 17, 1916;
Whiteside, *Davis* 1962, September 17, 1916;
Whiteside, *Davis* 1857, September 18, 1916;
Without definite locality, *B. Frank*, 1837, Herb. No. 75098; this sheet bears label which reads "*Bacharis angustifolia* Mx. Unio itiner. 1837. In civitate Missouri. leg. b. Frank," which shows that the collector took this plant to be different from *Solidago lanceolata* L., but was in error in referring it to *Baccharis*, which does not occur anywhere near Missouri.

IOWA:
Ames, Pammel, September 10, 1897, Herb. No. 75049;
Decatur County, Anderson, September 19, 1904, Herb.
No. 75114;
Decatur County, Fitzpatrick 86, September 8, 1898,
Herb. No. 75052;
Muscatine, Mackenzie 275, September 3, 1892;
Muscatine, Pammel and Reppert 1206, September 10,
1912, Herb. No. 75083;
NEBRASKA:
Lincoln, Webber, September, 1887, Herb. No. 75281;
St. Helena, Bruhin, date not given, Herb. No. 75280;
MINNESOTA:
Lake Carlos, Ross, July 1, 1891, Herb. No. 770969;
Lake Chesago, Wislizenus 538, August 14, 1886, Herb.
No. 75048;
Minneapolis, Herrick, July 28, 1878, Herb. No. 774334.
WISCONSIN:
4. Euthamia gymnospermoides Greene, Pittonia 5:75. 1902.
Solidago gymnospermoides (Greene) Fernald, Rhodora 10:
93. 1908.
Euthamia graminifolia (L.) Nutt., Mackenzie and Bush
in Manual of the Flora of Jackson County, Missouri,
in small part, 1902; Palmer in Catalogue of Plants of
Jasper County, Missouri, Nos. 91 and 196, 1913.
Solidago lanceolata L., Bush in Flora of Jackson County,
Missouri, in small part, No. 231, 1882.
Solidago tenuifolia Pursh, Bush in Flora of Jackson County,
Missouri, in large part, No. 688, 1885; Tracy in Flora
of Missouri, No. 632, 1886; Shepard in List of Greene
County Plants.
Euthamia tenuifolia Pursh, of Whipple’s report, accord-
ing to Greene, l. c.
East Kansas to Louisiana and Texas, according to Fernald
in Gray’s New Manual, but the Louisiana part of the range must
belong to some other species.
Nebraska, Kansas, Texas and Louisiana, according to Britton
in Illustrated Flora, but I have not seen any specimens from so
far north as Nebraska, or from Louisiana.
Not mentioned by Small in his Flora, second edition.
Antelope Hills of the Canadian, Bigelow, according to Greene, l.c.
Cherokee Nation, Blankinship, August 15, 1875, according to Greene, l.c.

Very different from E. leptcephala, and in aspect strongly recalling the Mexican genus Gymnosperma, Greene, l. c.

Dr. Greene neglected to fix the type, which was based on my No. 252.

In a narrow-leaved form from northwestern Arkansas, Harvey, according to Gray in Flora of North America, in citing the range of Solidago leptcephala.¹

First collected by Broadhead.

This is a species of the high prairies of Missouri, Kansas, Indian Territory and Texas.²

¹ A plant of the lowlands of Southern Arkansas and Louisiana has been described by Dr. Greene as E. chrysothamnoides. It is a taller plant, more slender, with corymbose inflorescence, longer heads with firm bracts. I have examined the type specimens collected by Letterman, and the species has little affinity with E. gramminifolia, to which it has been referred, but is more nearly related to E. gymnospormoides. If this is a valid species, and is to be placed in Solidago, I propose Solidago chrysothamnoides (Greene) Bush, n. comb. for this species.

Dr. Small does not mention this species in his Flora, second edition.

² An anomalous species of the far West and Northwest, which seems to have no close affinity with any of the known species of Euthamia, I propose as

Euthamia bracteata Bush, n. sp.

Stems 4-6 dm. tall, striate, smooth and glabrous; leaves oblong-lanceolate, thin, deep green, more or less spreading, very wide, the widest of any species known to me, according to their length, 4-6 cm. long, 6-12 mm. wide, smooth on both faces, minutely serrulate on the edges all around, 3-nerved, the midvein conspicuous, the lateral nerves indistinct, neither viscid nor punctate; branches, branchlets and pedicles sharply angular, somewhat scabrous; heads mostly pedicelled or 2-3 in sessile capitate clusters, arranged in a dense contracted, rounded corymb, 16-20 flowered, 5-5.5 mm. high; involucre broadly campanulate, its bracts in several series, broadly ovate, thin, yellow, with scarious edges, very conspicuous, minutely ciliolate, rounded at the tips, not viscid nor glutinous; achenes oblong, appressed-pubescent.

Specimens Examined:
Colorado:
Cañon City, T. S. Brandegee B532, 3072, month not given, 1872, type, Herb. No. 75079. This sheet has penciled on it this, "Porter ssp?"
Specimens Examined:

Missouri:
- Cass County, Broadhead, September 6, 1864, Herb. No. 75306;
- Cass County, Broadhead, September 6, 1864, Herb. No. 75308;
- Golden City, Palmer 4587, October 6, 1913, Herb. No. 717285;
- Jasper County, Trelease, September 18, 1898, Herb. No. 75309;
- Lee's Summit, Mackenzie 328, September 18, 1898;
- Springfield, Standley 9123, August 21, 1912, U. S. Herb. No. 688042;
- Springfield, Standley, September, 1905, U. S. Herb. No. 735548;
- Strafford, Standley 9458, August 27, 1912, U. S. Herb. No. 688374;
- Waldo Park, Hoffman, September 15, 1916;
- Webb City, Palmer, 91, September 30, 1901, Herb. No. 75104;
- Webb City, Palmer 196, September 30, 1901, Herb. No. 762156.

Kansas:
- Manhattan, Norton, September, 1893, Herb. No. 75043.

Oklahoma:
- Alva, Stevens 2807, September 20, 1913, Herb. No. 782062;
- Alva, Stevens 2807, September 20, 1913, U. I. Herb;
- Alva, Stevens 2881, October 5, 1913, U. I. Herb.

S. occidentalis J. & G., but heads not pedicelled nor involucral scales linear-lanceolate or acute. Perhaps a connecting link. Eaton agrees with me that it is S. lanceolata. J. H. R(edfield)." Evidently this specimen has given several persons much trouble trying to put it into some described species.

Alberta:
- Rosedale, Marion E. Moodie 1187, August 10, 1915, Herb. No. 800171.

Wyoming:
- Beaver Creek, Aven 8558, July 21, 1901, Herb. No. 75097.

North Dakota:
- Leeds, Lunell, August 6, 1905.

For those who consider Euthamia as only a subgenus of Solidago, I offer the name Solidago bracteata Bush, n. sp. for this plant.
Cherokee Nation, Blankinship, August 19, 1895, Herb. No. 75088;  
Sapulpa, Bush 250, September 19, 1894, Herb. No. 75024;  
Sapulpa, Bush 251, October 3, 1894, Herb. No. 75026;  
Sapulpa, Bush 252, October 6, 1894, TYPE, Herb. No. 75025;  
Tulsa, Stevens 2986, October 10, 1913, U. I. Herb.;  
Tulsa, Stevens 2986, October 10, 1913, Herb. No. 781160;  
Vinita, Bush 245, September 18, 1894, Herb. No. 75023;  
Without definite locality, but probably Limestone Gap,  
Butler, 1871, Herb. No. 75304;  
Without definite locality, Waugh, date not given, Herb. No. 75029;  
Without definite locality, Waugh, date not given, Herb. No. 75027.

NEW MEXICO:  
Crossing of the Arkansas, Fendler 351, September 3, 1847, Herb. No. 75043.

TEXAS:  
Columbia, Bush 1552, October 17, 1900, Herb. No. 75113;  
Hadley, Reverchon 1475, September, 1878, Herb. No. 75084;  
Houston, Lindheimer 82, October, 1842, Herb. No. 75301;  
No state Given, Trelease, no date given, Herb. No. 75102.¹  

¹ A few remarks on the status and distribution of *Euthamia tenuifolia* may be very appropriate here, inasmuch as this species has been but little understood, and has been assigned a range that is not supported by the material studied by me. I find many collections labeled *Solidago tenuifolia* or *Euthamia tenuifolia* from Missouri, and from many States in the interior, and the specific name is given in many reports and lists of plants. In one lot alone of less than 70 sheets, I found 15 or 16 different species, all bearing the name *Solidago tenuifolia* or *Euthamia tenuifolia*.  

Britton in the Illustrated Flora in 1913, Fernald in Gray's New Manual in 1908, and Small in his Flora in 1913, all agree that this species occurs in the interior, in Illinois, Northern Indiana, Southern Wisconsin and locally in the interior.  

Britton in the Illustrated Flora in 1913, says of this species, "Massachusetts to Illinois, Wisconsin, Florida and Louisiana." The Illinois, Wisconsin, Florida and Louisiana part of the range must belong to other species, as I have not seen any specimens of this species from those States.  

Fernald in Gray's New Manual in 1908, says of *Solidago tenuifolia*, "East Massachusetts to Florida; also in Northern Indiana and Southern Wisconsin." I have not seen any specimens of this species from Indiana,
Wisconsin or Florida, and there are no specimens from Wisconsin in the Gray Herbarium.¹

Small in his Flora, second edition, in 1913, says of Euthamia tenuifolia, "Massachusetts, Florida and Texas, and locally in the interior." Evidently Dr. Small followed Britton and Fernald in assigning this species to the Lake region of the interior, but I have not seen any specimens from the interior, nor from Florida or Texas.

Gray in Flora of North America in 1884, says of Solidago tenuifolia, "New England to Florida and Texas," the range being thus restricted to the sea-coast, but I have not seen any specimens of Euthamia tenuifolia from Florida or Texas. Dr. Gray evidently included specimens of E. minor and E. pulverulenta in Solidago tenuifolia.

From a careful study of a large amount of material of Euthamia tenuifolia and allied species, at my disposal, I have come to the conclusion that Britton, Fernald and Small have based the isolated interior occurrence of this species on specimens of Solidago Moseleyi, Euthamia media and E. remotia. After more than thirty-five years acquaintance with this species, it is relegated to the range given it by Dr. Gray in 1880, which is that of a sea-coast species.

Having studied this species somewhat critically, it is with some confidence that I refer the following specimens to it.

MASSACHUSETTS:
- Cape Cod, Fritchey, August 17, 1889, Herb. No. 75290;
- Cape Cod, Greenman 410, September 4, 1890, Herb. No. 738578;
- Norquit, Sturtevant, August 24, 1888, Herb. No. 75280;
- Sharon, Greenman 345, October 17, 1897, Herb. No. 738543;
- Southwick, Seymore 275, September 16, 1914, Herb. 789740;

LONG ISLAND:
- Eastport, collector not given, September 14, 1914, Herb. No. 75,278;
- Hempstead Plains, Schrenk, September 7, 1893, Herb. No. 75277;

RHODE ISLAND:
- Kingston, Morong, August 21, 1879, Herb. No. 75319;
- Narragansett River, Englemann, August 20, 1879, Herb. No. 75310;

¹ In a letter to the writer dated March 2, 1917, Mr. S. F. Blake says, "Dr. Robinson has handed me your letters regarding Solidago tenuifolia with the request that I look up the matter for you. I find only two sheets of this species from the interior in the Gray Herbarium. These are "'Prairies of Illinois, Dr. Mead" and "'Moist prairie, Roby, Indiana, 20, Sept. 1906. O. E. Lansing, Jr. No. 2648." I do not see that these specimens differ in any essentials from material from Massachusetts and New Jersey. There is no material from Wisconsin in the herbarium.'

I have not seen the specimens collected by Lansing, and therefore can not say what they are, but the probability is very great that they are E. media. I have, however, examined several sheets of Dr. Mead's collection from "Prairies of Illinois," and these are all E. media. There appears no sufficient reason for citing E. tenuifolia from Southern Wisconsin, as no specimens are known from there, and as Illinois is not given in the Manual as part of the range of this species, I maintain that not only this State, but Indiana also be taken from the range of this species.
Connecticut:
Hartford, Smith, August, 1886, Herb. No. 75279;
Southington, Bissell 1548, September 8, 1897, Herb. No. 75311;
Stratford, Eames, September 8, 1892;
Stratford, Eames, September 14, 1892.

New Jersey:
Ateo, Brinton, October 5, 1888, Herb. No. 774343;
Camden, Martindale, September 14, 1873, Herb. No. 75303;
Cape May, Redfield 1489, September 11, 1878, Herb. No. 75299,
the plant marked B on this sheet;
Ocean County, Mackenzie 1028, September 16, 1904;
Pemberton, Redfield 3105, September 5, 1867, Herb. No. 75298;
Somerset County, Perry, date not given, Herb. No. 75299,
Without definite locality, Beyrich, date not given, Herb. No. 75295;
Without definite locality, Beyrich, 1833, Herb. No. 75296.

Delaware:
Ellendale, Norton, September 14, 1902, Herb. No. 75329;
Without definite locality, Nuttall, date not given, Herb. No. 75297;

Pennsylvania:
Northampton County, Rau, 1880, Herb. No. 773853.

Maryland:
Caroline County, Smith, September, 1888, U. I. Herb.;
Snow Hill, Norton, September 13, 1902. Herb. No. 75328.

Virginia:
Fortress Monroe, Vasey, 1879, Herb. No. 773808;
Munden, Mackenzie 1802, September 1-19, 1905;

I have not seen any specimens of Euthamia tenuifolia south of Virginia, all south of there that I have examined belong to other species. As described in the Illustrated Flora and Gray's New Manual, E. Minor, formerly included in E. Tenuifolia, is an aggregate of several distinct species. Of the real E. Minor, I have only seen the following:

North Carolina:
Raleigh, Ashe 4632b, October, 1897, Herb. No. 75288;
Raleigh, Ashe 4632b, October, 1897, Herb. No. 75289;

The tall robust plant that Dr. Greene took to be the Erigeron Carolinianus of Linnaeus, seems to me to be very distinct from E. Tenuifolia, and to it I refer the following.

Virginia:
Norfolk, Jensen, Autumn, 1906, Herb. No. 75322;
Norfolk, Jensen, Autumn, 1906, Herb. No. 75323.

Allied to E. Tenuifolia, but apparently distinct from it in the very small heads and narrow involucres, is a plant that Dr. Greene has described as E. Microcephala (or if a valid species, and to be referred to Solidago, Solidago Microcephala (Greene) Bush, n. comb.), of which I have examined the following.
South Carolina:
Aiken, Ravenel, September 26, 1886, Herb. No. 75305.

Georgia:
Without definite locality, but from the label and writing apparently collected by Chapman, ex N. Richl Herbarium, date not given, Herb. No. 75318.

Related to the last, but differing from it in the scabrous pubescence and the pubescent leaves, is a plant described by Dr. Greene as E. scabra, a species of the interior, rather than the seacoast. If it should prove to be a good species, and is transferred to Solidago, this plant will bear the name Solidago scabra (Greene) Bush, n. comb. I refer here the following:

Florida:
Jacksonville, Curtiss 5314, October 26, 1894, Herb. No. 75330.

South Carolina:
Kutawville, Eggleston, 4998a, Sept. 6-11, 1909, Herb. No. 75327.

A species of the Southwest, E. pulverulenta Greene, apparently extends eastward to Florida, if I am right in referring to it a specimen distributed by Curtiss. Should it be accepted as a valid species, and be placed in Solidago, it will bear the name Solidago pulverulenta (Greene) Bush, n. comb. I refer to it the following:

Florida:
Jacksonville, Curtiss 1345, October, Herb. No. 75299, the plant marked A on this sheet.

Much of what has been referred to E. tenuifolia and E. minor by collectors, apparently belongs to a species that Dr. Greene has described as E. microphylla. It differs from both of those species in being taller, more robust, and in having narrower heads in a large fastigate corymb. This seems so very distinct from E. minor, that I feel confident it will be accepted as a valid species, and should it be placed in Solidago, it will bear the name Solidago microphylla (Greene) Bush, n. comb.

I am referring to it the following:

North Carolina:
Clackton, Biltmore Herbarium 4632, October 7, 1897, Herb. No. 75286.

Florida:
Apalacicola, collector not given, but apparently Chapman, date not given, Herb. No. 790839;
Apalacicola, collector not given, but apparently Chapman, date not given, Herb. No. 75284;
Apalacicola, collector not given, but apparently Chapman, date not given, Herb. No. 75285;
Braidantown, Tracy 7144, November 10, 1900, Herb. No. 75325;
Braidantown, Tracy 7144, November 10, 1900, Herb. No. 75326;
Dunedin, Tracy 7352, November 3, 1901, Herb. No. 75324;
Lake City, Rolfs 314, date not given, Herb. No. 75283;

Mississippi:
Ocean Springs, Tracy 4751, September 13, 1898, Herb. No. 75334.

Alabama:
Mobile, Mohr 1343, October, November, N. D. Herb. No. 5464.
Distribution of Our Birds in the Spring of 1917.

BY BROTHER ALPHONSUS, C. S. C.

In March the crow had 24 records, as many as those of the winter months. But in April there was a decided falling off, there being but 14 records for that month. This decrease was probably due to the habit of the species of usually retiring to outlying woods to breed, and seldom leaving the vicinity of the nesting site. In May there was a slight gain in the number of records—19, for then the young are fledged, and the old birds venture forth more frequently.

The Blue Jay had 23 records for March, which are slightly fewer than the average for the winter months. And the April records—21—almost equalled those of March, a fact that would indicate that the Jay's nesting time does not occur before the end of April. In May the records of this species were comparatively few—only 15 this year. The male is very devoted to the female during the breeding season, and seldom leaves the vicinity of the nest.

The Bronzed Grackle arrived somewhat late this year—on the 11th of March, making the number of records for that month—17—a great deal smaller than those of either of the other two spring months. April had 30 records and May, 29, and as this species is very abundant at Notre Dame, and nests not far from the houses, it may be seen daily during the breeding season.

The Red-winged Blackbird this year first appeared on the 20th of March, and was seen six times in the month after that date. In April there were 5 records, and in May, 12, which shows that this species was not abundant at Notre Dame in the Spring of 1917. In fact the Redwing is very locally distributed here, usually on the shores of St. Mary's Lake, where a few breed, and then leave for more marshy places to feed with their young.

The cowbird also arrived on March 20, and had 8 records in that month. There were 25 in April and 26 in May. This is an abundant species at Notre Dame from March until October. In Spring small flocks are often seen flying, in summer the young birds are mostly in evidence, and in autumn great flocks feed in the alfalfa fields. The Song, Field, and Chipping sparrows seem to be the most imposed upon by the Cowbird in our locality.
A few Song Sparrows stay with us in winter, and if the last days of February are fine, we always hear the first faint notes of this favorite song-bird. In 1917 there were 21 records in March, and 29 in April, and in May. I was absent from Notre Dame on the 10th and 11th of May, which accounts for the missing records of that month. This species is our most abundant sparrow, and wherever the observer may wander on our beautiful grounds, he can hardly ever get out of ear-shot of this sweet songster.

Although the Tree Sparrow is a winter species, yet it is never abundant, and is often absent for long periods. And as early March is sometimes very cold and snowy, this sparrow may not appear until the weather moderates. In the present year the first record in March was made on the 11th; the second, on the 18th, after which the species appeared frequently until the end of the month. Early in April the temperature fell lower than it had been during the last ten days of March, and the Tree Sparrow was not recorded again until the 18th, which was also the last spring record for the year. Strange to say, I did not hear the song of the Tree Sparrow once during the Spring of 1917.

The Field Sparrow often arrives in the latter part of March when the weather is moderating; and it must come in force, for almost daily records are made if the temperature remains high. This sparrow is in song from the date of migration, which makes it easy for the observer to tell how abundant the species is at any time in Spring. There was the same number of records for the Field Sparrow in April and May, 1917—22.

The Spring records of the White-breasted Nuthatch are always interesting to the student of bird life. Migrations of this species may occur for long or short periods, beginning even in winter. In 1917 this Nuthatch remained throughout March, which had 25 records. In April there were 11 records, the species being last seen on the 19th. There were 7 scattered records in May until the 14th, when the birds were seen no more. It is certainly difficult to account for all these periods of migration. Was the species breeding during its absence in April? I do not know, for I have not found a nest of the White-breasted Nuthatch in many years.

In March up to the 20th there were 6 records of the Chickadee. The next record was made on April 16, and another on the 18th. No others were made until May 7 and 11, the only two in that month. No doubt the rare appearance of the Chickadee in Spring
may be explained on the supposition that late in March this species begins to look about for a suitable nesting site, which is usually in some outlying wood, and any individuals that are seen after that time have wandered away from the breeding place. But this is only a supposition, and may not be the true explanation of the scarcity of a species that is most erratic in its movements.

During the first three weeks of March there were no records of the Brown Creeper, due probably to cold weather. The species first appeared on the 25th, and was seen three times after that date. In April the Creeper was abundant, as it usually is, having 20 records for that month. There were 16 records for May, and the species was last seen on the 14th.

In the Downy Woodpecker we have a very rare species in Spring. In March there were four scattered records—the 1st, 10th, 12th, and 28th. In April, three—the 3rd, 17th, and 24th. In May, one record—the 11th. These dates give a very adequate idea of the limited distribution of the Downy Woodpecker in Spring. My studies of this species have shown me that it is always very rare in winter and spring.

The Bluebird was recorded with considerable regularity both in March and May, but, as is usual with this species, it was most abundant in April. March had 19 records, April, 27, and May, 20. Not many Bluebirds breed at Notre Dame, although suitable boxes are plentiful enough.

The Robin usually arrives here in February—this year on the 23rd; but records are irregular for some time, so that it would be remarkable to find the species every day after its arrival. This year it was recorded daily after March 17th. The Robin is our most abundant species, breeding into August.

The records of the Meadowlark are somewhat scattered until about the last week in March. This year the species was seen daily after the 23rd, and the total for the month was 15 records. In April there were 27, and in May, 25. Some fields are more likely to contain Meadowlarks than others—outlying meadows seem to be the best places to find this lark.

The arrival of the Killdeer was a little late this Spring—March 11. After that date there were 13 records. In April this species reached its greatest abundance, there being for that month 21 records. There were 17 records in May, which points to the fact that this plover does not breed much earlier than most of our
other species. Late in June the old birds manifest great anxiety if their young are approached by an intruder upon their breeding grounds.

The records of the Snowbird in March were scattered up to the 19th, when the species was seen daily until the end of the month. In April the Snowbird reaches its maximum in distribution—the records this Spring being 29. Wherever an observer goes toward the middle of April he will be sure to flush flocks of Snowbirds. Even in May, for about a week, he will still find the birds, but not so numerous. This year the last Spring record of the Snowbird was made on May 8th.

In early Spring the Cardinal seems to be almost accidental here, for as typical of its rarity I may cite the few records of March and April 1917—two for each month. In May there were 9 records this year, which are sufficient to establish the fact that the Cardinal does not breed at Notre Dame. It merely flies from no great distance, probably from the banks of the St. Joseph River, or some deep woods, where it is breeding. In such places I hear the note of the Cardinal often.

In the Goldfinch we have a very irregular species in March and April, and even in the early part of May. This year there was a single record for March—the 19th. The species was not seen again until April 18th, when there followed five scattered records. In May no Goldfinches appeared until the 12th, when they must have come in force, for after that date the species was recorded daily.

The Kingfisher arrived March 30, 1917, and was not seen again until April 4. The records of this species are more or less scattered in Spring—April had 18, and May 17, this year. These figures show the relative abundance of the Kingfisher, which rarely breeds at Notre Dame. One nest was found this Spring.

A very remarkable record of the Purple Finch was made this Spring. The species arrived very early—on March 5—and had 8 scattered records for that month. Toward the end of April, Purple Finches became our most abundant species, large flocks feeding in low places on weed seeds. For this month there were 23 records; and 9 for May—one being so late as the 31st. The beauty of the rose-colored plumage and the sweet strain of the Purple Finch are one of the greatest delights of the bird lover.

The Phoebe is our earliest flycatcher—arriving this year on
March 23, and reappearing every day except the 26th. In the other Spring months the records of the species were scattered, as they usually are—19 for April, and 16 for May. This year I found only one pair breeding, in a grotto, where two broods were reared.

The Mourning Dove is one of our most abundant species. The date of migration for the dove this Spring was March 21, and twice again in that month it was seen. The April records totalled 25, and the May, 28. The Dove nests mostly in evergreens, but sometimes in deciduous trees or vines, and is not afraid to build near walks or houses where people frequently pass by. Often, singly or in pairs, the species is seen flying swiftly over fields.

The Vesper Sparrow usually arrives the last week in March or about the first of April. This year the date of migration was March 24, with records also on the 25th and 31st. This sparrow was most abundant in April, when it was found on 22 days. In May the weather was generally cool, and many of the birds became silent for days. The Vesper Sparrow being a species that frequents outlying fields, when its song is not heard the observer may not meet the bird. The records for May were 15.

The Flicker is usually the first of the migrant woodpeckers to arrive in Spring—this year on March 25. There were 5 other records in March, 27 in April, and 23 in May. These figures show the species to be abundant. The Flicker is a very conspicuous bird at Notre Dame, and far exceeds any of the other woodpeckers. For nesting places it prefers trees, poles, and even houses, boring holes in the walls.

The Golden-crowned Kinglet arrived on March 26, and was recorded daily for the rest of the month. It was also seen daily in April until the 6th, the period between these two dates marking the time of greatest abundance. The April records were mostly scattered, and totalled 21. This Kinglet was found in May on the 1st and 9th, and was last seen on the 11th.

My earliest record of the Brown Thrasher was made this year—on March 31. The species was next seen on April 13; then 3 scattered records followed until the 21st, and from this date the thrasher was seen daily. The bird was well distributed in May, there being 25 observations for that month. The song season of the Brown Thrasher lasted from April 13 to June 22.

The Hermit Thrush returned at about its usual time of arriving—this Spring on April 11. There were five scattered records until
the 25th, when daily observations were made up to the 28th. In May there was one long interval of absence between the 3rd and 13th. Two more records were made in this month—on the 14th and the 18th. I have never heard the famous hymn-like note of this thrush.

The White-throated Sparrow arrived late this Spring—April 23; and after the 25th it was seen daily. In May this sparrow was observed irregularly until the 25th, and the total for the month was 15 records. While on a visit to Michigan City, Indiana—May 10-12—I found the White-throated Sparrow the most abundant species in Washington Park near the Lake.

The Yellow-bellied Sapsucker first appeared on April 2, and for most of this month it was very regularly distributed. The five records in May were all scattered, the two last occurring on the 16th and 24th, and the latter being a late date for the species. As compared with last Spring, I think the sapsucker was less abundant this year.

The Towhee was first observed on April 15—which was late—and next on the 17th; after the 24th records were made daily, amounting in all to ten. This species was quite regular in May, totalling 23 records. In Spring the Towhee does not retire to deep woods, as it does in summer.

The Chipping Sparrow was unusually early in its time of arriving this spring. The first record was made on April 4, followed by 5 scattered records up to the 19th. From the 21st to the 30th this sparrow was seen daily. The May records totalled 27, which show that this species is one that is exceptionally abundant during the nesting season. Some friends of mine who are expert ornithologists tell me that the Chipping Sparrow, strangely, is an exceedingly rare species in the Chicago area.

Our most common swallow is the Barn. This year it arrived on April 23, which is a little late, and appeared daily until the 30th. The records for May were all irregular, the species not being seen on any two consecutive days. The total for the month was 14 records. These observations were all made in the vicinity of no barn.

Some springs the Ruby-crowned Kinglet is a rare species, but this year for a while it was abundant. It arrived on April 16, and was recorded on ten days in that month. From April 27 until May 11, this kinglet was seen daily, and this was also the period of its
abundance. After the 11th of May the species was found twice—
on the 16th and 23rd. Males, with ruby crowns, seemed to be rather
uncommon this spring.

This spring the Spotted Sandpiper was first seen on April 21,
which is one of the earliest dates of migration I have obtained
for this species. After its date of arrival, the Spotted Sandpiper
was seen on 8 days in April. The bird was quite regularly observed
in May, and there were 26 records made in that month. Near
lakes and rivers, this sandpiper is found in small numbers, and it
often feeds in adjacent gardens.

The Chimney Swift arrived on April 29, and the next day a
multitude of them were flying low above the damp fields. In May
this species was recorded on 21 days. The Swifts are much in
evidence for a month or more after their return. Especially in the
evening just as it begins to grow dusk, they fly almost frantically
above the many unused chimneys at Notre Dame.

The first appearance of the House Wren this spring was on
April 19, which is an early date of migration. There were three
more records in April, and 25 in May. This wren is very abundant
at Notre Dame, and nests in boxes, in perpendicular pipes, and in
deserted holes of woodpeckers. And as the second brood is not out
till August, the song of the House Wren is heard all day long.

Catbirds seemed to be ususally abundant this year. First
appearing on April 23, the species was seen 5 more times in this
month. The May records, which totalled 25, were a little scattered
until the 12th. There is so much shrubbery at Notre Dame, that
it is no wonder that Catbirds are becoming so abundant. Even
if the many cats here do secure some of the fledglings, there will
be plenty left unharmed.

My latest date of migration for the Red-headed Woodpecker
was obtained this spring—May 13. Some years it arrives in March,
nearly always in April, And it even remained with us for two
winters. Taking all these facts into consideration, it will be hard to
explain the late arrival of the Red-headed Woodpecker in 1917.
The total number of records for May was 16.

The Wood Pewee always arrives after the middle of May.
This spring its silvery note was first heard on May 18, and then
for eight consecutive days. For two days its plaintive song was
missed, but on the 27th again the groves were vibrant with its
reiterated strain. The note of the Wood Pewee is easily the most pleasing of all our flycatcher's utterances.

The Kingbird's latest date of migration in Spring was recorded this year. It arrived on May 16, and was irregular in appearance until the 27th. After this date the kingbird was seen daily. This fly catcher is true to the name by which it is best known to farmers—bee-martin. Recently a gardener of my acquaintance told me that he shot a kingbird and found parts of 25 bees in its stomach. No wonder he carries a shot gun during his leisure time, looking for bee-birds.

The Crested Flycatcher was a little late in arriving this spring—on May 17. Most of the dates on which the species was observed in May were irregular, and the total number of records for the month was seven. The loud note of the crested Flycatcher, which resembles a whistle, is frequently uttered, and thus makes the presence of the bird known in any grove.

The Least Flycatcher arrived on May 18, and was irregular in appearance until the 25th, when the species was found daily for the rest of the month. I found the Least Flycatcher breeding for the first time in the Spring of 1917. In previous years my spring and summer records of the species were very few.

A very late date of migration this spring was obtained for the Baltimore Oriole, which usually arrives in the last week of April. I was in Michigan City on May 10, 11, 12, but I did not find this oriole while there. It was first seen at Notre Dame on the 10th of May, and next on the 12th. After the latter date, the Baltimore Oriole was observed daily until the end of the month. Eight days after the return of the bird, I saw a nest that was almost finished.

The Orchard Oriole arrived the same day as the Baltimore—May 10—but was more irregular throughout the month, the total number of records for this species being 10. It also seeks more secluded places for nesting, usually in orchards, where the nest is hidden from view. Of course the male sings joyously in the vicinity of the nest, and by careful observation of the birds the nesting-site may be discovered.

Besides the Hermit Thrush, which is always the earliest of the thrushes to arrive, records were made of the Olive-backed, Gray-cheeked, and Wood thrushes. The Olive-backed returned on May 17 and was seen daily until the 25th. It was last seen on the 29th. The Gray-cheeked was observed daily from its arrival on the 22nd
of May until its departure on the 30th. One record was made of the Wood Thrush—on May 17. The notes of none of these thrushes were heard.

Five scattered records of the Cedarbird were made after the 11th of May, when the species was first observed this spring. I found these birds in the sand dunes near Michigan City, Indiana, while on a trip with members of the Indiana Audubon Society. The Cedarbirds always feed in small flocks, and their presence may be readily detected by their weak but oft-repeated note. In fact these birds are usually heard overhead in trees before they are seen.

The beautiful Indigo Bird was first seen this spring on May 18, which is a late date for the species to arrive. In other years I have found the bird as early as May 4. This spring the Indigo Bird was in song on the first day it appeared. For a long time the song is not full and sweet, as it is in summer. The female of the species is brown and will puzzle beginners who may not know the sharp call-note. Often the birds are together in pairs, and the blue male will afford a hint as to what the brown bird is. There were 13 records of the Indigo Bird in May, and most of them were regular.

The Myrtle Warbler is our first warbler to appear in spring—arriving this year as early as April 11. For the rest of the month the records were irregular until the 25th, when the species was seen daily. In May there were 22 records, most of them regular up to the 19th, when they again became scattered. The last day the Myrtle Warbler was seen was on June 3, which is my latest spring record for the species.

The writer having previously published an article in the AMERICAN MIDLAND NATURALIST on our warblers, thought it unnecessary to treat again the various species that were seen this spring. The records of their migration and distribution may be found in the table appended to this article. Suffice it to say that some of the warblers did not leave here until early June, and in a later production the dates of their migration will be given. These late warblers were: Myrtle Warbler, Magnolia Warbler, Redstart, Canada Warbler, Wilson Warbler, Chestnut-sided Warbler, Black-poll Warbler, Tennessee Warbler, Northern Parula Warbler, Black-throated Green Warbler, Blackburnian Warbler, Bay-breasted Warbler.
Certain rare species have not been described in the text of the present article, for its chief purport is their distribution. Among these the Henslow’s Sparrow, Northern Parula and Golden-winged warblers were seen by the writer for the first time.

**MARCH**

Crow, 1 to 6, 8 to 12, 13 to 20, 24 to 27, 30.

Blue Jay, 1 to 4, 6 to 12, 17, 19 to 26, 28, 30, 31.

Bronzed Grackle, 11, 12, 15, 17, 19 to 31.

Red-winged Blackbird, 20, 22, 23, 24, 29, 30.

Cowbird, 20, 21, 23, 24, 26, 28, 30, 31.

Song Sparrow, 2, 3, 6, 7, 10, 11, 13, 15, 19, 20 to 31.

Tree Sparrow, 11, 18, 20, 21, 22, 23, 25, 29.

Field Sparrow, 25, 26, 28 to 31

White-breasted Nuthatch, 1 to 5, 10 to 16, 19 to 31

Chickadee, 2, 3, 15, 17, 18, 20

Brown Creeper, 25, 28, 30, 31.

Downy Woodpecker, 1, 10, 12, 28.

Sapsucker, 30.

Bluebird, 2, 6, 9 to 12, 15, 19 to 28, 30, 31.

**Total number of species seen, 32.**

**APRIL**

Crow, 4, 5, 7, 12 to 16, 18, 19, 22, 24, 28, 29.

Blue Jay, 1, 3, 4, 5, 7, 10 to 15, 17, 18, 19, 22 to 27, 29.

Bronzed Grackle, 1 to 30.

Red-winged Blackbird, 1, 9, 17, 27, 29, 30.

Song Sparrow, 1 to 5, 7 to 30.

Cowbird, 1, 3, 4, 5, 8 to 13, 15 to 19, 21 to 30.

Tree Sparrow, 18.

Field Sparrow, 1, 3, 4, 6, 7, 10, 12, 14 to 19, 21 to 30.

Vesper Sparrow, 2, 3, 4, 7, 8, 10, 11, 12, 14 to 19, 21 to 24, 26, 27, 28, 30.
White-throated Sparrow, 23, 25 to 30.
Henslow's Sparrow, 18.
White-breasted Nuthatch, 1 to 4, 6, 7, 11, 12, 14, 18, 19.
Chickadee, 16, 18.
Tufted Titmouse, 18.
Brown Creeper, 1, 3, 7, 9 to 13, 15, 17 to 20, 23 to 29.
Downy Woodpecker, 3, 17, 24.
Hairy Woodpecker, 7.
Flicker, 1 to 12, 14 to 19, 21 to 26, 28, 29, 30.
Bluebird, 2 to 19, 22 to 30.
Robin, 1 to 30.
Meadowlark, 2 to 5, 7, 9, 10 to 30.
Killdeer, 2, 3, 4, 9, 12, 14 to 19, 21 to 30.
Snowbird, 1 to 19, 21 to 30.
Cardinal, 9, 19.
Herring Gull, 16.
Goldfinch, 18, 27, 28, 29, 30.
Hermit Thrush, 11, 12, 13, 17, 23 to 28.
Mourning Dove, 2, 3, 4, 6, 7, 9 to 12, 14 to 19, 21 to 30.
Purple Finch, 1, 3, 7, 9 to 13, 15 to 19, 21 to 30.
Kingfisher, 4, 5, 7, 8, 10, 11, 15, 16, 18 to 21, 24 to 28, 30.
Total number of species seen, 55.

MAY
Crow, 2, 4 to 7, 11 to 14, 16, 17, 19, 21 to 25, 27, 31.
Blue Jay, 3, 5, 7, 11, 12, 14 to 17, 20, 23, 24, 26, 27, 31.

Golden-crowned Kinglet, 1 to 6, 9, 11, 12, 13, 15, 16, 17, 19, 21, 22, 23, 25 to 28.
Phoebe, 1 to 5, 8, 11 to 16, 20, 22, 23, 25, 27, 28, 29.
Brown Thrasher, 13, 16, 18, 19, 21 to 30.
Towhee, 15, 17, 18, 19, 24 to 30.
Chipping Sparrow, 4, 7, 8, 10, 11, 12, 15 to 30.
Barn Swallow, 23 to 30.
Tree Swallow, 13.
Ruby-crowned Kinglet, 16 to 19, 22, 23, 27 to 30.
Spotted Sandpiper, 21 to 25, 27, 29, 30.
Chimney Swift, 29, 30.
Myrtle Warbler, 11, 12, 14, 15, 18, 19, 23, 25 to 30.
Palm Warbler, 24, 26, 27.
Black-throated Green Warbler, 28.
House Wren, 19, 21, 23, 24, 30.
Carolina Wren, 18.
Winter Wren, 26, 27, 28.
Catbird, 23, 25 to 29.
Wilson Snipe, 30.
Blue-winged Teal, 30.
Scaup Duck, 30.
American Golden-eye, 30.
Purple Martin, 30.
Sparrow Hawk, 22.

Bronzed Grackle, 1 to 9, 12 to 31.
Red-winged Blackbird, 1, 11 to 15, 17, 19, 20, 24, 29, 31.
DISTRIBUTION OF OUR BIRDS

Downy Woodpecker, 11.
Snowbird, 1, 2, 3, 6, 7, 8.
Cowbird, 1, 2, 4 to 9, 12 to 17, 19, 20, 22 to 31.
Song Sparrow, 1 to 9, 12 to 31.
Field Sparrow, 1 to 7, 9, 12, 12 to 15, 17 to 22, 24, 29, 31.
Vesper Sparrow, 1, 2, 3, 6, 7, 9, 12 to 15, 17, 19, 20, 24, 31.
White-throated Sparrow, 2, 3, 4, 11 to 17, 20, 22 to 25.
White-crowned Sparrow, 23.
Swamp Sparrow, 15, 16, 17, 24.
Chipping Sparrow, 1 to 9, 11 to 17, 19 to 25, 27, 28, 29, 31.
Grasshopper Sparrow, 31.
White-breasted Nuthatch, 2, 3, 4, 5, 7, 13, 14.
Red-breasted Nuthatch, 11, 16, 19, 31.
Chickadee, 7, 11.
Brown Creeper, 1, 3, to 9, 11, 14.
Sapsucker, 2, 3, 7, 16, 24.
Red-headed Woodpecker, 13, 14, 16 to 27, 29, 31.
Hairy Woodpecker, 18.
Flicker, 1, 2, 3, 6 to 9, 11 to 15, 17, 19, 22 to 27, 29, 30.
Bluebird, 1 to 7, 9, 11, 14 to 18, 21, 24, 25, 28, 29, 30.
Robin, 1 to 31.
Meadowlark, 1 to 9, 11 to 16, 18 to 24, 28, 29, 31.
Killdeer, 1, 3, 5, 6, 8, 12, 13, 15, 16, 17, 19, 20, 21, 23, 24, 26, 31.
Cardinal, 6, 8, 14, 15, 17, 19, 20, 27, 31.
Herring Gull, 4, 11.
Goldfinch, 1, 12 to 31.
Purple Finch, 1, 2, 3, 6 to 9, 16, 31.
Kingfisher, 1, 2, 3, 6, 7, 8, 9, 14, 15, 19 to 22, 25, 27, 30, 31.
Golden-crowned Knight, 1, 9, 11.
Ruby-crowned Knight, 2 to 11, 16, 23.
Brown Thrasher, 1 to 9, 12 to 17, 19, 20, 22 to 25, 27, 28, 29, 31.
Catbird, 2, 3, 4, 7, 9, 12 to 31.
Towhee, 2 to 8, 11 to 15, 17 to 24, 27, 28, 31.
Barn Swallow, 2, 3, 4, 7, 8, 9, 12, 16, 18, 19, 22, 25, 26, 31.
Tree Swallow, 8.
Rough-winged Swallow, 20, 26.
Phoebe, 1 to 9, 11, 13, 15, 17, 20, 28, 29.
Wood Pewee, 18 to 25, 27 to 31.
Kingbird, 16, 17, 19, 21, 22, 24, 25, 27 to 31.
Crested Flycatcher, 17, 18, 22, 25, 26, 28, 31.
Least Flycatcher, 18, 19, 21, 22, 23, 25 to 31.
Alder Flycatcher, 28, 29.
Yellow-bellied Flycatcher, 28, 29, 31.
Spotted Sandpiper, 2 to 9, 13 to 30.
Solitary Sandpiper, 8, 12, 16.
Mourning Dove, 1 to 9, 11 to 28, 31.
Purple Martin, 11, 13, 14, 17, 19, 29, 31.
Lesser Yellowlegs, 9.  
Sparrow Hawk, 4, 5, 24.  
Red-shouldered Hawk, 11.  
Chimney Swift, 6, 7, 8, 12, to 17, 20 to 31.  
Winter Wren, 2, 13.  

House Wren, 3, 7, 8, 9, 11 to 31.  
White-eyed Vireo, 2, 7, 20.  
Warbling Vireo, 13 to 18, 19, 20, 22 to 31.  
Hummingbird, 23, 24, 27, 28.  

May  
Red-eyed Vireo, 17, 19, 23, 24.  
Blue-headed Vireo, 17, 19.  
Yellow-throated Vireo, 19, 21.  
Bobwhite, 1.  
Dickcissel, 20, 21, 24, 28, 29, 31.  
Black-billed Cuckoo, 19.  
Baltimore Oriole, 10, 12 to 31.  
Orchard Oriole, 10, 16, 17, 19, 20, 21, 23, 24, 25, 29, 31.  
Hermit Thrush, 3, 13, 14, 18.  
Olive-backed Thrush, 17 to 25, 29.  
Gray-cheeked Thrush, 22 to 31.  
Wood Thrush, 17.  
Cedarbird, 11, 15, 27, 29, 31.  
Rose-breasted Grosbeak, 11, 23, 25, 27.  
Whip-poor-will, 16.  
Night Hawk, 28, 30.  
Indigo Bird, 18 to 21, 23 to 31.  
Myrtle Warbler, 1 to 7, 9, 11, 14 to 19, 21, 22, 23, 25, 26, 28, 29.  
Yellow Warble, 11, 14 to 18, 20 to 23, 28, 29, 31.  
Pine Warbler, 3, 14, 16.  
Palm Warbler, 12 to 20, 22, 25.  
Black-throated Green Warbler, 13, 16 to 21, 25, 27 to 31.  
Nashville Warbler, 16, 17, 26, 31.  

Total number of species seen this spring, 109.
The Collecting, Drying and Mounting of Plant Specimens.

BY J. LUNELL.

Botanical manuals usually furnish ample and excellent advice how to prepare plants intended for permanent preservation, and my only excuse for what some would consider wasting printer's ink on this topic is that I wish to emphasize a few points which hitherto perhaps have not attracted the widespread attention they no doubt deserve.

The living plant is directly a production of nature, but a herbarium specimen is natural only in a modified form, and partly an art production. It is well to look at this matter from an esthetic point of view. Nature is always beautiful, even in disease, decay and death. An art production of a plant, be it the very plant or an imitation of it in clay or paint, becomes the more valuable the nearer it comes to its natural living model. In order to reach our goal, the end of all our efforts should therefore be to retain unchanged the likeness of the living plant. Botanists with a congenital sense for art as a rule produce acceptable plant specimens. By care and study they will effect approach to perfection. It is worth mentioning on the other hand that a not inconsiderable class of botanists indulges in the cynical habit of amassing material, no matter if it is good or poor, perhaps not even realizing the difference in qualities; we would feel inclined to call this special brand of botanists plant butchers. The large herbaria have an aim to pile up rich and varying material for the furtherance of scientific study, and beauty seems for the most part only to be a secondary matter with them.

Herborizing or Collecting. It is important to select beautiful and well developed plants, neither too large nor too small, and by all means to avoid thick and bulky material. Efforts should be made to secure entire subterranean parts, shoots, etc. Some writers advise the collection of three small plants or of two middlesized to make up a specimen. The correct way is, I think, to collect enough for filling the sheet, but never to crowd it. The number of plants is immaterial. For large herbs, shrubs and trees the same rule holds. From the important parts enough is secured to fill the sheet (or sheets, if necessary). The connection between a parasitical plant and its host should not be severed. Night-blooming
plants, like some *Silene, Anogra*, etc., ought to be collected whenever the flowers are open: have a portfolio with bibulous paper ready, and expand the plants quickly between the sheets, applying the needed pressure immediately. This method ought to be used always when plants are inclined to collapse as soon as they are separated from the ground. Delicate parts can thus be satisfactorily and sufficiently expanded at once, when it would require hours to disentangle them when collapsed, for example *Capnoides, Papilionaceae*, etc., especially their leaves. To make the petals of *Alisma subcordatum* Raf. discernible after drying, one must insert them carefully between the sheets in the portfolio and apply considerable pressure before digging the plant out of the ground. Aquatic plants have to be spread out on paper beneath the surface of the water. To grasses the fibrous root-system is indispensable and ought always to be exhumed, as the separated parts are very undesirable and unseemly. If the collector is a poor swimmer, especially below water, and the water is deep, it is perhaps recommendable to employ a proxy for digging our deep-water plants from the bottom. Dioecious plants ought to be represented by staminate and pistillate aments, and in *Salices* the full-grown leaves, which appear with the winterbuds in the fall, will complete the specimen. Thick plants ought to be thinned with a knife.

The *drying* and *pressing*. Our aim is here to eliminate the third dimension as completely as possible, and the pressure applied merely ought to be short of crushing the parts. The plants already resting in the portfolio ought to be moved with their enveloping sheets into the press, and faulty arrangements, as doubled leaves, petals unsymmetrically disposed, etc., corrected. Plants from the collecting box have to be placed on sheets of paper, and all parts expanded and arranged *lege ariis* in free-standing positions, so that no part is resting on and hiding another. Roots, stems, etc., have to be pared with a knife, in order to equalize the thickness of the specimen through all its parts as much as possible. When the length of the plant exceeds the length of the sheet, the stem has to be bent in an angle not in a curve, this bending to be repeated as many times as needed. In folding, the legs of the angle should come in the same plane, and the legs not allowed to rest one on top of the other at their junction and thus get their thickness doubled. With tall plants commence at a lower corner of the sheet and at the root of the plant, proceed to the upper corner on the same
side, make the bend, and so on. Do not forget to bring in view in the first place parts presenting the differential characters of the species. See that a fastigate branch has its proper direction when leaving the stem, as well as a divergent one. Do not allow a left hand branch to cross the stem and crowd the right hand ones, and vice versa. This would increase the bulk on the usually thickest part of the plant above the ground. As hinted at above, an ideal arrangement will equalize the thickness over all parts of the specimen.

Dispose all parts artfully. The lower side of a leaf ought to be turned up, in order to demonstrate the appearance of this side. When leaves have to be in contact with stem or branches or floral parts, do always place the latter on top of the leaves.

Plants with thick, juicy leaves like most orchids or Crassulaceae ought to receive a hasty immersion in boiling water (for 30–60 seconds or longer), and some common salt added to the water will brighten the green color. The steaming of the parts is perhaps a preferable method. Whichever process is used, the flowering parts ought to be protected from the treatment.

Use paper capable of absorbing an excess of moisture, change it often and dry in the sun or in an oven. In the southern states it is usual to expose the press to the sun and the hot sand, which usually make a perfect work in the course of a day, but in most of the other states such a method would be insufficient and would, completely spoil the specimens, if these were left without further attention in the press until dry. The neglect of changing paper gives to the plants a resemblance of hay repeatedly soaked by rain and turns them black at last. It is good that so many plants contain such a moderate amount of moisture and thus are able "to press themselves," if they only are thrown between two papers and get a weight on them. Such plants are the redeeming feature in many herbaria which else would be considered beyond help in the eyes of the lover of the beautiful.

A good specimen is apt to stay permanently with its first receiver. An ugly one has often a future of extensive travelling not seldom sailing around the world a few times, everywhere creating disgust, dissatisfaction and disappointment. It would be of doubtful benefit even to have fine or jail sentences imposed on its progenitor, in order to check such a criminal tendency. It may cause a sensation of ease and relief to its temporary possessor, when it
has been successfully unloaded on some innocent victim. Incessantly on the tramp, it falls usually at last into the hands of some merciful, true philanthropist, who, out of compassion with suffering humanity, cremates it, hoping that from its ashes shall rise some new lovable form of life.

The mounting. Affix the plant to the herbarium paper by means of narrow strips of surgeon's silk plaster or of japanese glued paper. To apply glue directly to the plant and make it adhere permanently to its supporting sheet is not commendable. Plants ought to be fastened so that they can be easily removed and their places filled with better specimens whenever such occasions offer themselves. Let it always be your aim with the mounting to cover the entire surface of the sheet, no matter how many individual plants are needed. My specimen of Cerastium nutans contains 24 plants, of Centunculus minimus 36. One or two, or even eight or ten plants on a sheet give the impression of loneliness and poverty, when 21 is the right number. Our enemies, the Germans, appreciate filled sheets in their own peculiar expression when they ask for exchange sheets wohl aufgelegt. Empty places, not otherwise fillable, could be occupied advantageously by single flowers, which will often display themselves gorgeously, but this suggestion ought not to be made use of too often, as everything becomes tiresome when overdone.

A trashy heap of disgusting material can often be made over and remarkably improved by steaming, which enables us to unfold the parts, straighten them out and mount them successfully.

Whenever feasible, place the thicker parts near the sheet margins with the widest possible variety of locations: one root in the left upper corner, another one an inch or more lower down on the left margin beneath, etc., in order to give to the piled sheets an equal thickness centrally, peripherally and all through. By this method and by avoidance of bulk in all forms within your power, there results a remarkable saving in space. And space is valuable indeed. At least it ought not to be squandered in order to make plant specimens ill-looking. I sent out once an exchange package of 100 specimens having a thickness in all its parts of 2 inches. The return package, also of 100 specimens, measured 7 inches in the medium line and 2 inches on the margins, and the pile resembled the vault of a gothic dôme.

An all-important matter is also the symmetrical disposition
of the plants on their sheets according to the laws of the beautiful. The writer used for years to exchange with a renowned institution. Its plants were widely above reproach and of the most desirable quality. I made their mounting esthetically correct, and the result was a set of specimens unsurpassed and perhaps unequalled by any other set of its ilk in the whole world. Later it was my good luck to acquire a set mounted at home before it left the institution. The preparation of the plants themselves evidently showed the master's hand, but their arrangement on the sheets was unexpectedly and astonishingly faulty. In a number of instances they had been crowded in the corner of the sheet, many of them were laid in a pile and held in place by a strip of plaster like a bouquet of flowers, and other specimens had their peripheral parts extending outside of the sheet margins, leaving them utterly unprotected against mechanical injuries. The mounting hand had not been governed by a spirit impressed with a sense for the beautiful.

Three decades of building up an herbarium have been fruitful to me with varied experiences. When exchanging I used to suggest to my correspondents three rules: (1) The specimens ought to retain their natural colors as truly as possible; (2) they ought to have all the parts laid out and expanded with a painstaking accuracy; and (3) the sheets ought to be filled. Most responded lavishly, and some even sent me more beautiful specimens than they kept for their own herbaria. A few persisted tenaciously in transmitting poor material, and as a last resort I returned to them specimens prepared according to their own methods. This helped, and at last I had all "trained." All had only acceptable material to offer me.

Poor specimens were kept by me only temporarily, until I had acquired better ones, and I exchanged certain plants dozens of times until I finally had a good specimen of each.

The effects of these procedures on my herbarium are easily understood. There exist numerous herbaria exceeding mine in their numbers of specimens, but none outrivals or equals it in the beauty of the entire collection! In the heat of disputes I have often been called a "crank," but the opposition has always turned in my favor.

I trust that the reader of these lines will pardon me for expressing a deeper interest in aforesaid topics than he perhaps considers them deserving.

Leeds, North Dakota.
The Invasion of a Missouri River Alluvial Flood Plain.

BY HERBERT C. HANSON.

INTRODUCTION

An interesting invasion of an alluvial bank, formed in the spring of 1916 by the Missouri river, near Peru, Nebraska, was studied during August and September, 1916. The vegetation on new land formed by river or lake activity has been the theme of several writers and is summarized by Clements (2). The plants mentioned in this article were named according to the second edition of Britton and Brown's Illustrated Flora. The identification of difficult species was verified by comparison with preserved specimens in the herbarium of the University of Nebraska.

DESCRIPTION OF THE ALLUVIAL BANK

The Missouri river, colored yellow by the enormous load of fine soil carried in suspension, overflows its banks every spring. As the flood recedes great quantities of silt, clay and sand, besides trees, logs, brush and herbaceous plants are deposited on the flood plain. An area, about half a mile long and varying in width from about fifty feet to several hundred feet, forming the bank on the Nebraska side of the river, was denuded of vegetation by the spring flood of 1916. Most of the area was approximately flat, in some places sloping gently to the river's edge, in other places forming a vertical bank of three to five feet.

The soil was very fine, composed of a mixture of fine sand, silt and clay. Frequently, scales formed on the surface and cracks from six inches to thirty inches deep, and up to six inches wide, formed in the more clayey soil.

THE INVASION

1—BRUSH PILES

Logs, brush and other debris were scattered over the bank after the water had receded. Fruits, seeds, roots, rootstocks, stems, and, in places, entire plants were held by the brush, giving rise to clumps of vegetation.

Equisetum was usually restricted to these brush piles, growing from rootstocks. Willows, growing from roots and stems, were also common. Other plants found growing in the brush were
INVASION OF A MISSOURI RIVER ALLUVIAL FLOOD PLAIN

Cyperus erythrorhizos, Persicaria lapathifolia, Bidens frondosa, B. cernua, Xanthium commune, Panicum dichotomiflorum, Chaetochloa glauca, Scirpus validus, Aenida tuberculata, and Echinochloa crus-galli.

2.—WATER LEVEL ZONES

Figure 3 illustrates how sticks and other brush were deposited on the shore just beyond the reach of the waves.

The seeds and fruits caught in the brush were so abundant that they could be gathered by the handful. As the flood water receded new water levels were formed. The duration of the water at a certain level determined, largely, the amount of brush and seeds deposited at that level. The number of seeds deposited determined the width and the density of the vegetative zone formed from the germination and growth of the seeds at the water level. This accounts for the variation in the number of plants in the various zones as shown in figure 4.

The number of vegetative zones on the area varied according to the degree of slope. Where the slope was gradual, as in figure 4, as high as 15 zones were found; but where the slope was vertical no zones were found. The most abundant plant in these zones was Cyperus erythrorhizos. The brown color of this species caused the zones to form a striking contrast with the light gray of the soil. Bidens frondosa and B. cernua were also abundant. The following plants occurred frequently; Radicula palustris, Verbesina alba, Strophostyles helvola, Salix interior, S. cordata, Persicaria pennsylvanicum and Potentilla paradoxa.

3.—LEVEL AREAS.

The vegetation of the level areas varied considerably. In some places seedling willows and poplars were abundant, and various grasses and herbs occurred sparingly among them. In other places willows, grasses and herbs, but no poplar, were found. In other places only herbs and grasses were growing. (Fig. 1.) The absence of willows or poplars on certain areas is due to the fact that these areas were still covered by water when the seeds of these trees were migrating. On the more sandy areas were found usually: Eragrostis hypnoides, E. purshii, and Panicum capillare. Other plants occurring on the levee areas were Cyperus erythrorhizos, Bidens cernua, B. frondosa, Radicula palustris, Panicum dichotomiflorum, Rumex crispus, Persicaria lapathifolia, P. Pennsylvanica,
and *Potentilla paradoxa*. The walls of the large cracks in the more clayey areas were frequently covered with a green lining of *Vaucheria* and various diatoms. A species of *Riccia*, a flat, circular, well-rooted plant, was usually the first to grow on the newly exposed land.

Table 1. Showing the plants found growing on the alluvial bank, their abundance, their location and the kind of propagule.

<table>
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<th>Abundance</th>
<th>Occurrence</th>
<th>Propagule</th>
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<tr>
<td><em>Cyperus erthrorhizos Muhl</em></td>
<td>very abundant</td>
<td>zones brush level areas</td>
<td>achene</td>
</tr>
<tr>
<td><em>Bidens frondosa L.</em></td>
<td>abundant</td>
<td>zones brush level areas</td>
<td>barbed awn achene</td>
</tr>
<tr>
<td><em>Bidens cernua L.</em></td>
<td>very abundant</td>
<td>zones brush level areas</td>
<td>barbed awn achene</td>
</tr>
<tr>
<td><em>Strophostyles helvola (L.) Britton.</em></td>
<td>very rare</td>
<td>zones</td>
<td>pod seed</td>
</tr>
<tr>
<td><em>Scirpus validus Vahl.</em></td>
<td>infrequent</td>
<td>brush</td>
<td>rootstock achene</td>
</tr>
<tr>
<td><em>Eragrostis hypnoides (Lam.) B.S.P.</em></td>
<td>infrequent</td>
<td>sandy areas</td>
<td>grain</td>
</tr>
<tr>
<td><em>Eragrostis purshii Schrad.</em></td>
<td>frequent</td>
<td>level areas</td>
<td>grain</td>
</tr>
<tr>
<td><em>Chatochloa glauca (L.) Scribn.</em></td>
<td>infrequent</td>
<td>brush</td>
<td>grain panicle</td>
</tr>
<tr>
<td><em>Radicula palustris (L.) Moench</em></td>
<td>abundant</td>
<td>zones brush level areas</td>
<td>pod seed</td>
</tr>
<tr>
<td><em>Panicum capillare L.</em></td>
<td>infrequent</td>
<td>level areas</td>
<td>grain panicle</td>
</tr>
<tr>
<td><em>Panicum dichotomoslorum Michx.</em></td>
<td>infrequent</td>
<td>brush level areas</td>
<td>grain</td>
</tr>
<tr>
<td><em>Verbesina alba L.</em></td>
<td>infrequent</td>
<td>zones level areas</td>
<td>achene</td>
</tr>
<tr>
<td><em>Persicaria lapathifolia (L.) S. F. Gray</em></td>
<td>infrequent</td>
<td>brush level areas</td>
<td>achene</td>
</tr>
<tr>
<td><em>Persicaria pensylvanica (L.) Small.</em></td>
<td>frequent</td>
<td>zones level areas</td>
<td>achene</td>
</tr>
<tr>
<td><em>Acnida tuberculata Moq.</em></td>
<td>very rare</td>
<td>brush</td>
<td>utricle seed</td>
</tr>
<tr>
<td><em>Echinochloa crus-galli (L.) Beauv.</em></td>
<td>infrequent</td>
<td>brush</td>
<td>grain</td>
</tr>
</tbody>
</table>
### SUMMARY.

1. The invasion of an alluvial bank formed by the Missouri river, near Peru, Nebraska, was studied during August and September, 1916.

2. The soil of this bank consisted of a mixture of very fine sand, silt and clay.

3. Deep cracks occurred frequently in the clayey part. *Vaucheria* and diatoms often grew on the moist, shaded walls of these cracks.

4. The agents of invasion were water, wind and possibly under certain conditions, birds and other animals.

5. The first plant, usually, to grow on the new land was a *Riccia*.

6. Seeds and fruits, deposited with the brush at the water levels as the flood water receded, formed well-defined zones.

7. As the water receded from the level areas, seeds and fruits were left scattered on the wet soil, giving rise to a very open form of vegetation. This open vegetation was broken in places by piles
of brush. Growing from the seeds, fruits, roots, stems and entire plants, which were held by the brush, were found the largest plants on the bank.

8. Seeds of willow and poplar were carried in by the wind.

9. The order of the succession after the recession of the water was Riccia——řruderal herbs and grasses——řseedling willows and poplars——řzone of young willows and poplars ———řflood plain forest of willows, poplars, and some elm, ash and S: camore.

REFERENCES


DESCRIPTION OF FIGURES.

Fig. 1.—Deep cracks in alluvial clay caused by the evaporation of water. Persicaria Pennsylvanica, Radicula palustris, Rumex crispus, and Bidens cernua are the more common plants. Vaucheria and diatoms form a green lining over the damp walls of numerous cracks.

Fig. 2.—Plants growing from seeds, fruits, stems, roots, or entire plants caught by the brush. Salix cordata in background and S. interior in foreground growing from branches. S. interior in center from a root. The other plants are Panicum dichotomiflorum, Equisetum at extreme right growing from rootstocks, Persicaria lapathifolia, Bidens frondosa, and Xanthium commune.

Fig. 3.—Showing the deposition of brush on the shore just beyond the reach of the waves. Large quantities of seeds and fruits were held in the brush.

Fig. 4.—The seeds, deposited as shown in Fig. 3., have given rise to these water level zones. The most abundant plants are Cyperus erythrorhizos, Bidens cernua, and B. frondosa. Other plants are Salix interior, Populus deltoides, Rumex crispus, Verbesina alba, Radicula palustris and Potentilla paradoxa.
Fig. 5.—Showing the vegetation on a level area of an alluvial bank in Sept., 1916. Willow seedlings are the most abundant plants. The dark-colored plant is *Cyperus erythrorhizos*. The light-colored plant is *Eragrostis purshii*.

The University of Cincinnati, Cincinnati, Ohio.

Plants of Blue Rapids and Manhattan, Kansas.—Corrections and Index to Common Names.

BY O. A. STEVENS.

**Corrections.**

Page 73 to 87, heading, for Blue Island, read Blue Rapids.

" 73 line 18, insert period after Link.

" 74 " 27, for *halepense*, read *Halepense*.

" 75 " 9, " *scribnerianum*, read *Scribnerianum*.

" 75 " 13, " *glauca*, read *glauca*.

" 77 " 1, " Oast, read Oats.

" 77 " 18, " Schrad., read Schrad.

" 79 " 11, Add: June 10.

" 81 " 29, for *officinale*, read *officinalis*.

" 82 " 16, " Places, read places.

" 84 " 31, " *patientia*, read *Patientia*.

" 87 " 30, " Ranunculus, read *Ranunculus*.

" 98 " 6, " Willd., read Wild.

" 100 " 21, " *occidentalis*, read *occidentalis*.

" 101 " 3 from bottom, for 25 (23), read 20 (19).

" 101 " 19, for *Amygdalus*, read *Amygdalus*.

" 102 " 25, " *floribunda*, read *floribunda*.

" 103 " 25, " *grandiflora*, read *grandiflora*.

" 103 " 33, " 25 (23), read 20 (22).

" 104 " 9, " (L. 1), read (L.).

" 115 " 14, " L., read L.

" 115 " 27 and 29, for Pensetamon, read Penstemon.

" 117 " 12, for L., read L.

" 117 " 6 from bottom, for *Cucurbita*, read *Cucurbita*.

" 119 " 13, insert at beginning: Manhattan.

" 120 " 2, for Aug. 16, read Aug. 15.

" 120 " 5, " sometime, read some time.


" 124 line 32, for *Halpense*, read *Halepense*.

" 124 add at bottom of page: *Potamogeton foliosus* Raf.

" 128 line 8 from bottom, for D. C., read DC.
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| Agrimony       | 101 | Bush-clover              | 103 | Cud-weed                     | 121 |
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PLATE II.—Hanson on Invasion of a Missouri River Alluvial Flood Plain.
THE AMERICAN MIDLAND NATURALIST

Devoted to Natural History, Primarily that of the Prairie States

Published by the University of Notre Dame,
Notre Dame, Indiana

J. A. NIEUWLAND, C. S. C., Ph. D., Sc. D., Editor

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Migration of Our Birds in the Spring of 1917.

BY BROTHER ALPHONSUS, C. S. C.

The writer made his highest record for the spring migration of our birds this year. More extended observations, and the assistance of an excellent ornithologist, Mr. John C. Birdsell Jr., may account for the notable increase in the number of species found.

In nine years of observation in spring, the dates of migration for the Robin were almost equally divided between February and March. The species arrived four times in February and five times in March. In 1915, Feb. 13, and in 1916, Feb. 22, were the dates of arrival. This spring the Robin was our earliest migrant, arriving on Feb. 23. The Hairy Woodpecker, which was recorded on the 15th of February, is really a winter species.

The Song Sparrow is a close competitor with the Robin for being the first of our birds to return in Spring. All the dates of arrival for the three last years have been in February. The earliest was Feb. 16, 1916; the latest, Feb. 26, 1917. Although the Song Sparrow may be regarded as a winter species still there was both in 1916 and in 1917 an absence of three or four weeks before the bird first appeared in February. And after this date the species was seen at least irregularly.

Another competitor as the earliest migrant in spring is the Bluebird. And if the records for nine years be used, this species must be given first place, for six years out of nine the Bluebird arrived in February. Like those of the Robin and Song Sparrow, the dates range from the middle of that month until almost the end. In three years the earliest arrival was on Feb. 13, 1915; and the latest, on Feb. 26, 1917.

The Purple Finch was first seen this spring on March 5—the earliest record that I have ever made for the species. The 31st of May was the date on which the Purple Finch was last observed.
This is also my latest spring record for the species. In 1916 the bird was found first on April 10, and last on April 26; in the spring of 1915 no records of the Purple Finch were obtained. These dates indicate that the present year was an unprecedented one for the Purple Finch.

In looking over my records of the Tree Sparrow for three years, I find that the species arrived irregularly in March. Two of the dates are in the first part of the month—Mar. 6, 1915; Mar. 11, 1917. The other date was as late as the 31st of that month. The Tree Sparrow is a winter species that is often absent for long periods, and may thus be regarded as a true migrant. This sparrow usually leaves us about the middle of April. Dates of departure for three years are as follows: Apr. 15, 1915; Apr. 9, 1916; Apr. 19, 1917.

The spring arrival of the Brown Thrasher is very interesting. Previous study of the species has shown that it comes with remarkable regularity between the 10th and 17th of April—the records of eight years being conclusive proof of this statement. But the present year was quite exceptional to all others, for the Brown Thrasher was recorded for the first time in March—on the 31st. Curiously enough the next time the species was observed was on April 13, and for three years this was the date of arrival.

The migratory records of the White-throated Sparrow for four years show usual regularity. Only in one year, 1916, was there a notable difference from the dates of the other years. In that spring the species arrived on April 16 and departed on May 12, both of which dates were the earliest in four years. In the other years the time of arrival was between the 20th and 28th of April; the time of departure, between the 22nd. and 25th of May.

In four years the spring migration of the Spotted Sandpiper was very regular. In 1915 and 1917, the date was identical—April 21. In 1914 this sandpiper arrived on April 25; in 1916, on April 19, which was the earliest record made in six years.

For three years, 1914–1916, the Baltimore Oriole arrived with great regularity. All the dates of migration were between the 24th. and 30th of April. In 1917 this species arrived on May 10, which is the latest migratory record I have ever made for the Baltimore Oriole. During the latter part of April and the first days of May this year, which were unusually cool, there was a notable absence of migrants.

Usually the first, and occasionally the second, week in May is
the time of arrival for the Orchard Oriole. In May the earliest date in six years was the 3rd, in 1913; the latest, the 11th, in 1916. Only one date in April was found among my notes—the 28th, in 1914.

The spring migration of the Yellow Warbler usually occurs in the last week of April. In four years the date of arrival was between the 26th and 30th of April, two years the day being the 30th. In two other years this warbler came on May 3, 1912, and May 11, 1917.

The Cedarbird is a species that shows marked irregularity in its spring migration. Looking over the records of six years, I found only one for April—the 30th, in 1916. All the others are scattered through May—the 2nd, in 1914; the 11th in 1917; the 14th in 1915; the 16th in 1913; the 24th in 1912. Cedarbirds wander about much, and to this habit I ascribe their great irregularity in appearing in Spring.

Normally the spring migration of the Red-headed Woodpecker should occur late in April. Previous to 1914, this species arrived only once in March—on the 18th, in 1911. There was also but one migratory record early in April—the 4th, in 1910. The present year my latest date of the spring migration of the Red-headed Woodpecker was made—May 13. In 1914 and 1915 this woodpecker did not migrate, having remained during the winter.

The height of the warbler migration occurred on the 16th and 17th of May, in 1917—which was a little late. The weather was very cool for the first half of the month, and retarded the movement of the migrants. The normal time for the great influx of the warblers is the second week of May. The lateness of arrival this spring prolonged the stay of quite a number of the warblers into June. I never before made so many warbler records in June.

Another unprecedentedly late migrant this spring was the Yellow-billed Cuckoo—arriving on June 13. The Black-billed Cuckoo was first seen on May 19, and again on June 7.

Certain species that were very locally distributed were probably not recorded on the actual date of migration. Among these are the Grasshopper Sparrow, Prairie Horned Lark, Sycamore Warbler, Acadian Flycatcher.

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**BOOK REVIEW.**


This peaceful work of Sisyphus producing botanical manuals is still going on in the midst of war activities. Dates and facts are amassed, and new matter is added continually, and the old has to be eliminated all the time for the newer and better. On account of these incessant researches and increased knowledge the life of a manual is naturally short. Nelson’s manual was copyrighted in 1909 and its successor is forced through by necessity. Before we proceed to review briefly the part of the interwoven text allotted to the flora of North Dakota, one of the “adjacent plains,” may I make safe of the author’s and the reader’s conception, that no word of mine is to be interpreted as a criticism?

Dr. Rydberg’s number of species described is 5897, and varieties are excluded from consideration, no doubt for important reasons, one of them being the desideratum of saving space. This decision to disregard varieties, perhaps without a corresponding liberality in the admittance of species which only would work then as a boomerang, has its inconvenience, which I may illustrate by this instance. Dr. Aven Nelson retained in his manual Arnica fulgens as a species with A. pedunculata and A. monocephala as synonyms. If Dr. Rydberg acquiesced in this ranking at first, he presumably changed his mind when he discovered that these latter two species of his

* Reported here as far as North Dakota is concerned by J. Lunell.
had a woolly subterranean indument. In his manual the partnership with *A. fulgens* has been dissolved, and the two others have been joined in one species, *A. pedunculata*. Here it might have been quite convenient to acknowledge *A. monocephala* as a variety in place of letting it be swallowed "body and bones" by the species.

His description of *Rosa Woodsii* Lindl. comes very closely to fit in with my *R. desert* a which he places as a synonym. It remains a remarkable peculiarity that the habitat of the former is river banks and copses while the latter has been found only on nude plains with deep gravel and no other grass but bunch grass. A definite description of *R. Woodsii* was much needed, as all the manuals have separate, very divergent views of their own regarding it. The same is the case with *R. Fendleri* Crepin, whose original area (vide Flora of Montana) is the southwestern states, but in the present manual has been extended to South Dakota. My *R. poetica* from North Dakota, though quite different from the descriptions of *R. Fendleri* in Coulter's and Nelson's manuals, agrees with Dr. Rydberg's, though with some exceptions. *R. Lunellii* Greene is deservedly recognized among the roses. They number 30 species.

Another of Dr. Greene's species, *Antennaria Lunellii*, has been reduced to synonymy under *A. campestris* Rydb., which belongs to his group VII Campestres (defined in the key as having "leaves glabrous above." In *A. M. N. Vol. II*, p. 81 (1911) Dr. Greene described *A. Lunellii* thus: "Folia superne sericeo-tomentosa, indumento vix vel tardissime deciduo." In fact, this indument is permanent on the living plant during the entire season (except possibly on a small spot in the center of the leaf). The avalanche of melting snow in the earliest spring during the following season, though, is apt to sweep it away from the dead leaves.—Under *A. microphylla* Dr. Rydberg says: "*A. solstitialis* Lunell is the stamine plant, which is smaller." This is one of the reasons why I made it a var. in *A. M. N. Vol. V*, p. 61 (1917). The sterile *A. microphylla* is a tall and rare plant, not different in appearance or size from the fertile one. These two questions on *Antennaria* occur to me as being my sole disagreements with Dr. Rydberg's views.

The *Lesquerella arenosa* (Richards.) Rydb. we believe should be identical with *L. Lunellii lutea* A. Nels., which this author at first considered to be *L. montana* and whose habitat is "in arenosis."
The type *L. Lunellii* seems to me capable of demanding a place of its own.

The only one of our species derived from the area west of the 102nd mer. is *Ranunculus Waldronii*, a relative of *A. glaberrimus* of the west. Dr. Greene’s *A. ellipticus* was mentioned as synonymous of this, but our plant was not noticed at all, though its much stronger characters than those of Dr. Greene’s species might have secured for it a better fate.

I am gratified noting *Lobelia strictiflora* (Rydb.) Lunell, and the reverse *Anthropogen tonsus* (Lunell) Rydb., also *Solidago dumctorum* Lunell which we did not expect to be found so far “from home.” *Aragallus angustatus* Rydb. of 1907, which Dr. Nelson places as synonymous of *A. Lamberti*, is reinstated in its own right, and has in its turn outflanked our *A. Aven-Nelsonii* of 1908. The case seems to be hopeless as far as our side is concerned.

The modified description of *Euthamia camporum* Greene justifies our variety *tricostata*, though at the same time it tends to its elimination.

*Rudbeckia ampla* A. Nels. is revived again in spite of its author who tried to exterminate his own progeny. Likewise *Eleocharis monticola leviseta* Fernald has been resuscitated and, it is hoped, will enjoy a long life hereafter.

*Physaria brassicoides* Rydb. and all the other “better” names are enthusiastically welcomed.

The manuals have drawn within North Dakota the lines limiting their areas, except Gray’s VII, which is extended west only to the 96th mer. Of the others Gray’s VI is limited to the west and Coulter’s to the east by the 100th mer. Likewise have Britton’s to the west and A. Nelson’s and Rydberg’s to the east their lines of demarkation drawn on the 102nd mer. This condition of being in relation to the manuals a border state, a frontier state, a buffer state, has apparently been the cause why North Dakota has never been favored by the manual writers enough to become spoiled. The direct reference of a plant to N. D. has been quite a rare occurrence, but if its presence has been suggested by ‘Man.—S. D., or Man.—Neb., or Man.—Tex.,’ we have been well satisfied. ‘Minn.—Colo., or Sask.—Ariz., or Mont.—N. Mex.’ have inspired the imagination to work in curved lines, but not everybody is inclined to trace any increased number of plants from such a kind of calculation!
S. D.—Neb. in a great number of instances ought to be read N. D.—Neb. (or Man.—Neb.).

The direct mentioning is indicated by the following figures from the manuals of this century: Britton's Manual (1901) mentions N. D. 13 times, and Dakota (not indicating if N. D. or S. D. is meant) 9 times. Gray's Manual VII (1908), volunteering information outside of its area, mentions N. D. 20 times, the Dakotas 10 times, and Dakota 6 times. A. Nelson's Manual gives N. D. 3 times, the Dakotas 20 times, and Dakota 11 times. Rydberg's Manual (1917) refers to N. D. 81 times.

With an overflowing sense of appreciation for the priceless treasures of knowledge we have gathered from all these manuals and their predecessors, we are reminded of the fact, that we now are living in the era of Britton's Manual of 1901 for the east, and Rydberg's Manual of 1917 for the west. The latter's direct contribution of 81 numbers for the western part of this state, covering two sevenths of its entire area, is expected to be followed within a reasonable time by the corresponding number of 200 for the remaining five sevenths, which belong to the area of Britton's Manual, when a new edition of this comes out of press. I am confident that this estimate will be realized. With such prospective direct data of 281 numbers, and the addition of the indirect data and of the "hints", North Dakota will have a splendidly workable botanical map.

Leeds, North Dakota.
THE AMERICAN MIDLAND NATURALIST

Devoted to Natural History, Primarily that of the Prairie States

Published by the University of Notre Dame, Notre Dame, Indiana

J. A. NIEUWLAND, C. S. C., Ph. D., Sc. D., Editor

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PLATE VI. FENTON ON DEVONIAN BRACHIOPODS
Some New Brachiopods and Gastropods from the Devonian of Iowa.

BY CARROLL LANE FENTON.

I.—Explanation.

For some time I have had in my collection representatives of various species occurring in the Cedar Valley Stage or the Hackberry Stage of the Iowa Devonian. These forms, I have been sure, represented new varieties, and in some cases, probably new species. It is some of these forms that I desire to discuss in this paper.

The following is a list of the species here considered, with locality of original description.

*Strophonella reversa* Hall. *Strophodonta reversa* Hall, Geology of Iowa, Vol. I, part 1, page 494, Plate 3, figure 4, a, b, c, d.


*Spirifer Whitneyi* Hall, Geology of Iowa, Vol. I, part 1, page 502. Plate 4, figure 2, a, b, c e.

*Spirifer cyrtinaeformis* Hall and Whitfield. 23rd Annual, New York State Cabinet, page 238. Plate II, figures 21–34.


All of the forms here noted occur above the Cedar Valley Stage, while one, *Atrypa reticularis alta*, also is represented in this formation. As there is considerable difference of opinion as to the
geologic age and proper terminology for the shaley limestones and clays surmounted by limestones that are here referred to as "Hackberry," I therefore consider the following correlation of terms advisable.

<table>
<thead>
<tr>
<th>Webster</th>
<th>Iowa Geol. Survey</th>
<th>Fenton</th>
<th>U. S. G. S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hackberry Group</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Upper or Owen Horizon</td>
<td>Owen Sub-stage</td>
<td>Hackberry Stage</td>
<td></td>
</tr>
<tr>
<td>Middle Horizon</td>
<td>Hackberry Sub-stage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower Horizon</td>
<td>(blue, argillaceous</td>
<td>Spirifer Zone</td>
<td></td>
</tr>
<tr>
<td>Genesee ?? Stage</td>
<td>shales, unfossiliferous,</td>
<td>Striatula Zone</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hackberry sub-stage</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Zone Division — — — Sub-stage Division — — — Indicates Slight Distinction But No Division.

This same formation has variously been considered as Hamilton, Chemung, and Portage, and the forms described in the 23rd Report of the New York State Cabinet were considered as Chemung. To my mind, however, there can be no doubt that this formation is a distinct stage.¹

II.—Description of Varieties.

Strophonella reversa gravis nov. var.

Shell semielliptical, width about equal to or less than the length, hinge line slightly or not extended beyond the width of the shell. Ventral valve convex near the beak, flattened along the hinge line and deeply concave below; shell abruptly deflected near the margin. Dorsal valve slightly concave near the beak, abruptly bent downwards below the center. Area common, that of the ventral valve being usually the wider. Surface marked by strong and heavy dichotomizing plications, simple near the beak, also frequently bearing heavy lines of growth. Surface of shell punctate.

Interior of ventral valve marked by quite deep muscular impressions; vascular impressions large, flabelliform or double ovate, the

¹ Since sending this to the printer, Webster has endorsed and accepted the zone divisions and names that I note here.—C. L. F.
latter most characteristic, defined on their margins by a thickening of shell, while deep, irregular, linear impressions continue to the margin of the shell. Cardinal process prominent, bilobed, with a deep impression for the "horns" of the dorsal cardinal process.

This variety differs from the Strophonella reversa of Hall in its generally heavier character, greater coarseness of the shell, greater height of the dorsal valve and greater length in proportion to the width. In the interiors of both valves this coarseness and heaviness is very apparent. It also differs from the true Strophonella reversa in that the valves are seldom produced along the margin to any extent, as is frequently the case in the form described by Hall.

Cotypes.—Set 901, collection of C. L. Fenton, Spirifer zone, pits of the Rockford Brick and Tile Company, Rockford, Iowa.

**Douvilleina arcuata maxima** nov. var.

Shell semielliptical; hinge line barely or not equal to the greatest width of the shell. Ventral valve hemispheric very gibbous near middle; beak slightly to quite pronounced. Dorsal valve quite concave, but not so deeply as in the typical species. Area common, with that of the ventral valve the larger, and bearing deep vertical striae. In all specimens examined by me there is no foramen.

Surface of shell marked by strong striae "or which sometimes consist of a few strong ones near the beak, bifurcating below, while the general character of surface marking is that of strong, sharply elevated striae with three, four, or five smaller ones between" (Hall, original description). I have noted this characteristic, and it is shown very well in specimens in a set from Rockford in the collections of the University of Michigan. As a rule, however, the striae on the surface of *maxima* are less pronounced, and more inclined to be simple than in the typical species. The interior of the shell does not differ greatly in general markings from the species *arcuata* of Hall, but is considerably heavier and coarser.

This variety differs from *Douvilleina arcuata* (Hall) in the larger size attained, the greater width in proportion to length, the heavier character of the shell and greater thickness. It is generally a more robust form, and while not differing greatly in a written description differs much in the specimens. A comparison with the figures given and the figures accompanying Hall's description of *Strophodonta arcuata* will serve to bring out more plainly these differences.
This variety is much less common than the typical form, particu-
larly at the exposures in the Rockford district. I have found it more
pronounced at the Hackberry Grove exposure.

Cotypes:—Set 897, collection of C. L. Fenton. Spirifer zone,
Hackberry Grove, Cerro Gordo County, Iowa.

**Atrypa reticularis** alta nov. var.

Young:—Shell depressed, suborbicular in extreme young,
sinus and mesial fold becoming developed earlier, however, than
in other types of the species Atrypa reticularis that I have examined.

Adult:—Shell gibbous. Hinge line rather straight, and almost
equaling the width of the shell. The ventral valve becomes very
gibbous as the age of the shell advances. Sinus deep and abrupt;
mesial fold high but not well defined. The beak of the ventral
valve becomes recurved in aged specimens and finally incurving
over the beak of the dorsal valve. The plications are fine, as are
those of most of the Hackberry forms of *Atrypa reticularis*, though
those of *alta* seem finer than those of the average form. The shell
is marked by frequent lines of growth, usually of fine character.

Holotype:—Number 156, collection of C. L. Fenton. Spirifer
zone, Hackberry Grove, Cerro Gordo County, Iowa.

Paratypes—Set 867, collection of C. L. Fenton. Spirifer zone of
Hackberry, Rockford, Iowa. Set 863, collection of C. L. Fenton,
St. Charles zone of Cedar Valley, Charles City Iowa. (Kelly
Quarry).

This variety is quite distinct, and should not be confounded with
*Atrypa rockfordensis* Webster, which also has a deep sinus but is of
widely alate character. *A. r. alta* has much finer plications than
*A. rockfordensis* and does not develop the wide expansions that are
characteristic of the latter form. In the holotype of *alta* the mesial
fold is well pronounced and bounded by slight folds in the shell.

**Spirifer cyrtinaformis** Helenæ nov. var.

Shell small, sub-trapezoidal, with slightly convex dorsal valve
marked by a practically undefined mesial fold. Cardinal area verti-
cal or strongly inclined forward and occasionally backward, three-
eighths to one half as high as wide in mature specimens, in young
often not more than one-third as high as wide, divided by a large
foramen and bearing vertical striae. Surface of valves bearing from
thirty-five or more rounded plications, with the central plication
of the sinus and the mesial fold dividing as in the typical form of the species. Sinus slightly to well developed but not usually well defined. In the holotype the beak of the ventral valve is slightly curved, but in many specimens, as the figured paratype, there is no trace of a curve.

This variety attains, on an average, a larger size than the typical species. The width of the area as compared with the height is about twice as great, and the sinus and the mesial fold attain greater development than in the species as described by Hall and Whitfield. The frequently inclined character of the area is also a point of considerable difference for the area of S. cyrtinaformis is regularly almost vertical. This variety is much more inclined to develop mucronate points than is the true species, especially in the young forms.

This species is apparently most unevenly distributed and of a very gregarious character, and the variety here described is no exception to the habit of its species. At the pits of the Rockford Brick and Tile Company I find the typical form much the more common of the two; at Hackberry the variety helenae occurs is proportionately larger numbers, particularly at the east portion of the exposure. At hills north and west of Rockford I find it predominating and at the Bird Hill exposure, on the line between the counties of Floyd and Cerro Gordo I find it almost replacing the typical species. In this characteristic it makes an interesting comparison with Spirifer Macbridei Calvin and Gypidula comis (Owen), both forms that are very gregarious in their habits.

Holotype:—Number 865, collection of C. L. Fenton. Spirifer zone, pits of the Rockford Brick and Tile Company, Rockford, Iowa.


Spirifer oreastes Websteri nov. var.

Shell small or medium, considerably wider than long, and usually somewhat gibbous, and considerably extended on the hinge line, both in young and old specimens. Valves marked by strong and often coarse rounded or angular plications, simple on the sides of the shell, but bifurcating and occasionally uniting on the fold and sinus, where there are usually four plications. Mesial fold strongly
elevated in front both on small and large specimens. Ventral area low to moderately high, with the beak strongly incurved; foramen large. Surface marked by fine striæ running roughly parallel to the plications of mesial fold and sinus very strong; lines of growth frequent and strong.

This variety might perhaps be justly designated as a new species, as it is fully as distinct as many of the species of brachiopods that are accepted—for instance some of the Atrypas. In its true form there is no possibility for confusion with the true Spirifer orestes Hall and Whitfield, but the two intergrade to such an extent that for the present I designate the form Websteri as a variety.

The differences from the Spirifer orestes of Hall and Whitfield are in the greater size attained, the greater width in proportion to the length, the greater depth of sinus and correspondingly greater mesial elevation, the more pronounced character of both sinus and mesial fold, and the greater coarseness of the plications and the shell in general. The striæ seem fewer on the surface of the shell in specimens examined, but they do not differ in character from those of the true species.

Figure 26 shows a large and somewhat deformed specimen of this variety. Figure 27 a smaller, finer, and proportionately wider specimen with greater development of sinus and mesial fold. Figure 28 gives a detailed view of a portion of the dorsal and ventral valves of a considerable smaller specimen than the one shown in 26, and shows the coarseness of the shell, and the heavy lines of growth, magnified. Figure 29 is a magnified detail of a portion of the sinus of the same specimen use in figure 28, also magnified. This shows the heavy lines of growth interspaced by smaller, lighter ones. Figure 30 is an enlarged detail of the sinus of the specimen shown in figure 27. It will be noted that two of the plications on the sinus cease at the heavy growth-line or wrinkle. This same feature is shown, but less plainly in the small figure, 27. Hederalla alternata (Hall and Whitfield) is growing on the shell. Figure 31 is an enlarged detail from the dorsal valve of the specimen shown in figure 26. The portion shown is to the left of the sinus and mesial fold (right as shown in the figure) and shows a bifurcation of the plications. The plications on the right of the mesial fold are simple, and none of the other specimens in the cotypes show bifurcation except on the sinus and fold, as stated in the description. I am therefore inclined not to regard this as more than an aberration. Another interesting
aberration is shown in figures 27 and 30, where the sinus loses some of its plications at the heavy growth-wrinkle.

Cotypes:—Set 265, collection of Carroll Lane Fenton. Spirifer zone, pit of the Rockford Brick and Tile Company, Rockford, Iowa.

Spirifer Whitneyi rockfordensis nov. var.

Shell of medium size, valves strongly convex. Ventral valve of holotype with sinus marked by eleven dichotomizing plications, mesial fold by eleven (or twelve?). Sinus concave near beak, but becomes strongly convex toward fore part of the valve; mesial fold very highly elevated. Surface of shell marked by about twenty-five plications on either side of the fold and sinus, plications finer than in the typical S. Whitneyi of the same horizon, but with comparatively wide spaces between. Beak strongly incurved over a low area bearing vertical striae. Plications marked by fine radiating striae. Hinge line and width of shell small. In the holotype the hinge line does not exceed the width of the shell.

This variety differs markedly from the species as described by Hall. The width is much less and the thickness of the shell much greater, the beak is much more strongly incurved, and the area much narrower. The dorsal valve is much more gibbous and much larger in proportion to the ventral than in the typical form. The sinus is very abrupt, and its convex character is very distinctive. The holotype, which is the only specimen in my collection that can be positively referred to this variety is somewhat larger size than the average Spirifer Whitneyi, and is apparently an aged specimen. It is considerably worn and bears borings of a Cliona, apparently C. hackberryensis Thomas. This variety is not to be confused with the mutant S. whitneyi gradatus described below.

Holotype:—Number 236, collection of C. L. Fenton. Spirifer zone, pit of the Rockford Brick and Tile Company, Rockford, Iowa.

Spirifer Whitneyi gradatus nov. mutant.

Shell of medium size, with plications similar to the typical Whitneyi, as to number and arrangement, but considerably coarser and with the spaces between greater. Sinus broad, abrupt and usually deep and sharply defined. The mesial fold is regularly correspondingly high, and well defined. The beak of the ventral valve is sharply curved, the area correspondingly low. The hinge line is about equal to the width of the shell, though there is sometimes a tendency
toward an abrupt mucronate development. The surface of the shell is commonly marked by very heavy lines of growth.

This form quite resembles in shape the form from the Ouray illustrated and described in Bulletin 391 of the United States Geological Survey. It attains a size considerably larger than the typical Whitneyi of the Hackberry, and in fact any except those of the west, so far as I have had opportunity to examine. The general shape of the shell is similar to that of Spirifer Whitneyi rockfordensis, though the dorsal valve does not attain as great a development compared with the ventral, nor does the sinus depart from its regular form. The width of the shell in proportion to the thickness is considerably less than in the typical Spirifer Whitneyi Hall. The area is narrower and more curved, and the general appearance of the shell is heavier than the true species. There is considerable variation, and it almost appeared that some of the specimens of this form are transitional between Spirifer Whitneyi Hall and Spirifer Whitneyi rockfordensis of this paper. It has been inadvisable to select a holotype, due to variance in form. Cotypes, set 868, collection of C. L. Fenton, Spirifer zone, pits of the Rockford Brick and Tile Company, Rockford, Iowa.

The illustrations will show in detail the distinctive features of this form. It seems more prominent at Rockford than Hackberry Grove, though at stations north and west of Rockford it is much less common than at the brick pits. This is, I think, due to the character of the exposure nearly as much as to irregular distribution of the form.

**Spirifer Whitneyi productus** nov. mutant.

In general details of structure, number and arrangement of plications and character of sinus this form would not differ from the typical species in description. The number of plications is occasionally larger on either side of the sinus and mesial fold, and they have coarser character than in typical specimens from the Spirifer beds. The important point of difference, however, rests in the fact that the form assumes a very decidedly mucronate character, with a correspondingly greater width as compared with the length of the shell, and much greater length of area in proportion to its height. This characteristic, while by no means lacking prominence is very unstable in the extent of its development, and it is not uncommon to find one tip produced far more than the other, and it is such a
specimen that I have selected for the type of this mutant. In the holotype the sinus and mesial fold are very prominently developed, the beak of the ventral valve is quite strongly curved, and the specimen somewhat damaged. The real distinguishing point of this form is its mucronate character of growth, which is very characteristic.

Holotype:—Number 451, collection of C. L. Fenton. Spirifer zone, pits of Rockford Brick and Tile Company, Rockford, Iowa.

In this same connection I think it advisable to republish the description of a new genus and species of gasteropod, described by Clement L. Webster on pages 39 and 40 of Volume I of the "Iowa Naturalist" (April, 1905).

**Floydia Nov. Gen.**

"Shell large and thick; spire high, or low with volutions partially enrolled upon themselves; volutions rounded, inflated, or somewhat angular or flattened on the side, especially the body volution; volutions four to six; suture strong and deep. Aprature large, generally subcircular to subovate; umbilicus closed; inner or columella lip much thickened and generally flattened; outer lip usually simple. The upper one-fourth to one-half of the first, and generally the second, volution marked by regular, heavy folds, which arch obliquely back and then forward from the suture. Surface of the volutions usually marked by transversely oblique, more or less strong striae of wrinkles of growth.

"The description of this genus is based upon the species *Floydia concentrca* of this paper

**Floydia concentrca nov. spec.**

"This species has been quite fully described in delineating the genus.

"The shell varies somewhat both in the young and adult form. In the young stage the heavy folds are present only on the upper portion of the body volutions; the upper surface of the body volutions in the low spire variety is sometimes much flattened; the form of the first whorl in the young stage varies somewhat in

---

1 This genus was originally described as "Floyda." This was, however, incorrect, and the spelling "Floydia" is here used with Webster's approval.
different individuals. In every case the specimens of this species are prominently marked, by heavy folds on the upper part of the first volition in older forms. The young specimens all occur in the form of casts.

"This species is related more or less closely to Naticopsis gigantea of Hall and Whitfield, with which it is associated. Certain partially crushed and distorted individuals of Naticopsis gigantea might under certain circumstances be mistaken for this species.

"Position and locality. The forms here described were secured from the Middle Beds of the Hackberry Group of the Iowa Devonian, at Rockford and Hackberry, Iowa; but it doubtless occurs throughout the group at this horizon. Now in the author's collection."

This form was originally described as a variety of Naticopsis gigantea Hall and Whitfield. (See 23d. Annual, N. Y. State Cabinet, pp. 238-9, plate 12.) I am quite fully convinced that this form does not belong to the true Naticopsis. Whether the generic differences are so great as to place Floydia in separate generic rank is not yet fully decided by some. For the present I do so, though it is true that the two forms seem to intergrade.

Mr. Webster wishes to correct the horizon as given for this species. It also occurs in the Owen sub-stage.

In the accompanying plate there are shown four specimens from my own collection. Number one is an individual that has some of the characteristics of both Floydia and Naticopsis; two is a small specimen of Naticopsis gigantea Hall and Whitfield, and three is a moderate-sized specimen of the same species. (888, 889, and 120, collection of C. L. Fenton). Number four (No. 40, C. L. F.) is the type of Floydia concentrica multisinuata of this paper, and number five is a metatype of Floydia concentrica Webster (No. 95, C. L. F.)

In the second specimen the extreme thickness of the shell will be noted together with the three tiny folds near the outer lip. The third specimen shows plainly the lines of growth and the "strong, subregular, transverse folds or wrinkles" of the true Naticopsis gigantea, and comparison with Floydia concentrica shows them to be of very different character from those of the latter species. Figure 5a shows a cross section of the shell of the specimen illustrated in Figure 5. These figures will, I think, make more plain than words the differences between Naticopsis and Floydia.
FLOYDIA CONCENTRICA multisinuata nov. var.

Shell large and fairly thick except on the upper and outer parts of the body volution, spire high, volutions somewhat angular, particularly the body volution; volutions four to six, suture strong but not so deep as in the typical form. Aperture large; columella lip thick and somewhat flattened. Upper two-thirds or more of the body volution, all or nearly all of the second, and apparently much of the third volution marked by regular, deep folds or wrinkles arching abruptly back and then deeply forward from the suture; surface of the volutions marked by rather to very fine lines of growth. Folds of much finer and more pronouncedly delineated character than in the typical species.

This variety is the most distinct of the forms now placed in Webster's Floydia, and is the farthest separated from the genus Naticopsis. It differs from the typical Floydia concentrina in the higher spire, the finer character of the shell. The holotype, as illustrated, shows well the characteristics of the variety.

I have found that Floydia concentrina Webster is more numerous in the Rockford district and particularly at the brick pit than it is at Hackberry Grove. I have found comparatively few at the latter locality, while Naticopsis gigantea Hall and Whitfield seems more prominent.

Holotype:—Number 40, collection of C. L. Fenton. Pit of Rockford Brick and Tile Company, Rockford, Iowa. Spirifer zone.

EXPLANATION OF PLATE VI.

Figs. 1–2.—Atrypa reticularis alta. Lateral and anterior views of holotype.

Figs. 3–4.—Spirifer Whitneyi rockfordensis. Lateral and anterior view of holotype, posed to show fully the sinus development.

Figs. 5–6.—Spirifer Whitneyi productus. Anterior and pedicle views of holotype.

Figs. 7–10.—Spirifer Whitneyi gradatus. 7, 8, 9, lateral, anterior and pedicle views of three cotypes. 10, Posterior view of specimen shown in fig. 9.

Figs. 11–17.—Spirifer cyrtinaformis Helenae. 11, 12, 13, anterior, posterior, and lateral views of holotype. 14, enlarged outline of lateral view, showing beak development. 15, posterior view of a paratype. 16, enlarged lateral view of same, and 17 a tracing of the dorsal valve.

Figs. 18–22.—Strophonella reversa gravis. 18, 19, dorsal and lateral views of a regularly formed cotype. 20, 21, 22, dorsal, lateral, and ventral views of a heavy cotype.
Figs. 23–25.—*Douvillina arcuata maxima*. Pedicle (ventral) and lateral views of a large cotype. 25, posterior view of same posed to show irregularity of shell margin.

Figs. 26–31.—*Spirifer orestes Websteri*.
26.—Anterior view of a coarse and somewhat deformed specimen.
27.—Anterior view of a wide and fine specimen.
28–29.—Detail views of shell and sinus of another cotype.
30.—Enlarged detail of sinus of specimen shown in fig. 27.
31.—Enlarged detail of portion of shell of specimen shown in fig. 26, showing bifurcation of plications.

EXPLANATION OF PLATE VII.
Figs. 1–2a.—Small specimens of *Naticopsis gigantea* Hall and Whitfield.
Fig. 3.—Large and partially restored specimen of *Naticopsis gigantea* Hall and Whitfield.
Fig. 4.—*Floydia concentrica multisinuata*. Holotype.
Fig. 5.—*Floydia concentrica* Webster. 5a, cross section of shell of body volution of specimen shown in fig. 5.
(For further discussion of these figures see under *Floydia concentrica* Webster.)
All figures natural size unless stated otherwise.

Charles City, Iowa.

**Heterothrix (B. L. Robins) Rydb. a Synonym, and Other Notes.**

**BY J. A. NIEUWLAND.**

The name *Heterothrix* Muell., Arg. in Mart. Fl. Bras. VI., 133, t. 40 (1860), antedates the same name used by Rydberg in his "Flora of the Rocky Mountains" for the section *Heterothrix* of Robinson raised to generic standing. To replace the invalidated name may be suggested that of *Pennellia* in honor of Francis W. Pennell.

*Pennellia* Nwd.


*Pennellia micrantha* (A. Gray) Nwd.

*Heterothrix micrantha* (A Gray) Rydb., l. c.

*Thelypodium micranthum* (A. Gray).

In some instances considerable freedom has been used in changing

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SHOOTING BIRDS FOR THE PURPOSE OF IDENTIFICATION

names from their original form by the author of the "Flora of the Rocky Mountains." These may, however, have been typographical errors. Rafinesque has Lepadena (p. 545.) which Rydberg changed to Lepadinia. Leucoma Ehrh. becomes Leucocoma.

The treatment of the amphibious smartweeds which admits of Persicaria coccinea (Muhl.) Greene and P. Muhlenbergii (Meisn.) Small, as separate species is decidedly interesting. The most conservative view of the consideration of these would scarcely admit of them as more than nomenclatorial synonyms, whereas the most analytical segregation of forms would perhaps reveal them as scarcely separately tenable. The treatment is, however, scarcely more that of the ordinary hidebound manual, though in this case it even obscures still more than ever the identity of these plants. Our herbarium shows specimens with various shoots on one plant-stock answering respectively all the descriptions of what is ordinarily described as the different species, P. Hartwrightii, P. Coccinea, P. Muhlenbergii and for that matter what some call P. amphibia, (whatever that is)! How long will the manuals persist in making confusion worse confounded?

Why Nuttall's Androcera (spelled Androsera) was admitted for the much older Nycterium Ventenat (1903) is not evident, unless accidentally overlooked.

In general it maybe said that great care has been used to bring the "Flora of the Rocky Mountains" to a high standard of usefulness and that oversights are in every respect negligibly few.

Shooting Birds for the Purpose of Identification.

BY BROTHER ALPHONSUS, C. S. C.

In his work entitled "Michigan Bird Life," Mr. Walter Bradford Barrows has the following paragraphs in the introduction, pages 13 and 14:

"The scientific bird student must first of all handle actual birds; since, unfortunate as it may seem to many nature lovers, accurate, absolute and full knowledge of birds can be obtained only by studying them alive, by killing and preparing them for preservation, and by studying and comparing specimens so preserved. As Dr. Elliot

1 See Am. Mid. Nat. IV, p. 333.
Cones, one of America's foremost scientists, truly said forty years ago, 'Life, even bird life, is too sacred a thing to be needlessly or thoughtlessly sacrificed.' Yet countless facts of the utmost importance in the scientific study of birds can be obtained only through the sacrifice of bird life, and an ornithologist who aspires to be an authority upon his science must ruthlessly suppress his natural feelings in this respect and must procure and make use of such material as is absolutely necessary without regard to what are often described as the humane sentiments. This does not mean that any untrained boy has the right to take his gun into the field and kill birds indiscriminately or even freely under the impression that his intention to preserve some as specimens and to study such specimens later justify the action. On the contrary the right to collect birds freely for scientific purposes should be carefully restricted to such persons as can give evidence of a serious purpose to use to advantage the specimens so taken. The Michigan law covering this point is clear and strong.

'A moment's thought will convince any one that the student who searches the woods carefully for a bird which he has never seen, who follows up each unknown call or song, watches with care each doubtful and illusive form which suggests the bird desired, and finally, perhaps after hundreds of disappointments, kills a specimen of the much coveted species and measures, preserves and labels it for his own collection, has gained a knowledge of the appearance, habits, notes, size and structure of this species which could be obtained in no other possible way. Not only has he gained all this knowledge with regard to this particular specimen, but in doing so he has exercised, consciously or unconsciously, his powers of observation, comparison and discrimination with regard to scores of other birds, so that his experience has been broadened and his power and judgment very materially strengthened.

'It may seem to some that essentially the same results could be obtained if our student were accompanied to the woods by an instructor who should call his attention to the note of the bird sought, point it out and comment on its peculiarities and after watching the specimen carefully, perhaps through a field glass, record his observations and allow the bird to depart unharmed. Such a method of study unquestionably has its advantages, especially for the bird, but except in the case of a limited number of species, a certain degree of doubt must inevitably attach to such a
method of identification, and perhaps the most unfortunate result of this method of teaching lies in the belief which gradually grows up in the pupil's mind that he can identify birds just as well by eye and ear as the professional with his gun.

"At the present time current literature abounds in more or less accurate and beautiful descriptions of birds and bird life, and much of this material has not only high literary merit but considerable scientific value. Nevertheless the trained ornithologist rarely reads such an article without detecting here and there evidences of ignorance or at least inaccuracy, which though not always glaring are nevertheless much to be regretted. It is perfectly true that an average keen-eyed boy or girl can readily learn to know most of the commoner kinds of birds in the vicinity without the use of the gun provided he have the instruction of a competent teacher and in addition have access to a suitable collection of specimens.

"But it is equally certain that no boy so taught, or for that matter any older person, can ever learn to know all the birds of his vicinity or even all the plumages of the common species, male and female, old and young, spring and autumn, through such a method of teaching.

"Hence careful ornithologists throughout the country have been led more and more to lay down the rule that the "record" of any species for a given locality should rest upon an actual specimen taken in that locality and either preserved for examination of any one interested or at least examined and identified by a competent authority before being destroyed. Our state lists, as well as our local lists, contain too many records of rare birds which do not come up to these requirements. True, there are cases in which the most fleeting glimpse of a bird is sufficient for its identification by a good observer, yet the best of us make mistakes, just as the best marksman has his "off days," and it is a good rule not to accept as a true record the mere observation of even the best ornithologist, unsupported by a specimen, unless at least there is no improbability in the occurrence of the bird at such a time and place."

In these paragraphs the author contends that it is practically impossible for any person to identify all of the birds in his vicinity, even with the assistance of a competent ornithologist, if specimens of certain species are not taken by shooting them. I wish to offer some reflections on this subject to see if this contention is not somewhat beyond the truth. First of all I shall draw on my own
experience, which covers a period of about fourteen years; then I shall state the results that were obtained by young men and boys who did some observing under my direction.

During the years I have been studying birds, I have never made it a practice to do any shooting for the purpose of identifying them. And I think I have successfully identified 156 species, among which are the following: Rusty Blackbird, Acadian Flycatcher, Franklin's Gall, Montana Junco, Bullock's Oriole, King Rail, Solitary Sandpiper, Pine Siskin, Henslow Sparrow, Rough-winged Swallow, Gray-cheeked Thrush, Blue-headed Vireo, Golden winged Warbler, Orange-crowned Warbler, Sycamore Warbler. If these species—some of them very difficult to observe—could be identified without killing, I should like to ask why cannot all other species be identified in the same manner?

Let us look more particularly at some of the species I have mentioned, and see in what way they may be identified without killing. One means is the process of elimination. We will take first the Rusty Blackbird. Now, I will suppose that I already know three species of black-birds—the Red-winged Blackbird, the Cowbird and the Bronzed Grackle. What possible species remain for this locality (northern Indiana)? There are two—the Yellow-headed Blackbird and the Rusty Blackbird. If I should see a specimen of either of these blackbirds, certainly I could readily distinguish them from each other; and I could also as easily separate them from the species I already know. Does it not, then, seem reasonable to say that I can be absolutely sure of my identification of either of these two species of blackbirds?

But let us take a more difficult case—the Acadian Flycatcher. The flycatchers I have already identified (I will suppose) are the Phoebe, Wood Pewee, Crested Flycatcher, Kingbird, Alder Flycatcher and Yellow-billed Flycatcher. Of those that may possibly be found there remain but two species—the Olive-sided Flycatcher and the Acadian Flycatcher. These two species may be less easily distinguished than were the two kinds of blackbirds described above. Still I think that by learning all I can in books about the markings and the habitat of these two flycatchers, I shall not have any doubt as to their identification when I see either of them. As a matter of fact, when I enter a rather deep wood with considerable undergrowth, I am likely to hear an unfamiliar note. Probably the dense growth of the trees and bushes will make it a very
difficult thing to approach near enough to observe the bird's markings accurately. And a further difficulty will be experienced by the constant movements of the bird while flycatching. But by persevering efforts I shall sooner or later obtain a good view of the Acadian Flycatcher, which will fully satisfy me as to its identification.

Another species, so rare that but a single record of it was made in all my observations, will now be taken to decide its identification. This is the Montana Junco, which was seen in a flock of slate-colored Juncos early in autumn. The plumage of this junco was strikingly beautiful compared with the sober coat of the common junco. And with the assistance of Mr. W. B. Barrow's description of the species, I felt satisfied that the specimen I saw was the Montana Junco.

Few pleasures are greater to an ornithologist than when he sees for the first time a new species of bird. The writer had this pleasure on five different occasions in the spring of 1918. The new species I found were the Rusty Blackbird, Franklin's Gall, Fish Hawk, Orange-crowned Warbler and Bullock's Oriole. The last named species was seen on a morning after a very high wind that blew from the west. Fortunately, a friend, who is also an observer of birds, was with me, and he saw the strange oriole first. We approached quite near the apple tree in which the bird was perched and obtained an excellent view of it. We saw at once that it was not a Baltimore Oriole, nor were the markings identical with those of the male Bullock's Oriole. Mature consideration, then, made it clear to us that our bird was a female of this species, which probably had been carried before the storm during the preceding night.

The Orange-crowned Warbler is a species that arrives rather late in May, and is partial to orchards. These two facts were useful to me in identifying this species. On May 27, 1918, I saw a pair of these warblers in an orchard. Now, my identification of this warbler was based on my knowledge of warblers in general, and a comparison of this species with what I knew of it from reading. And I felt satisfied that these birds were Orange-crowned Warblers.

In sending a report of the spring migration of our birds for 1918 to Mr. Amos Butler, author of the Birds of Indiana, he was particularly interested in my record of the Franklin's Gull. He wrote to me requesting the facts connected with my identification of the species, and further stated he thought that the species had not
hitherto been observed in Indiana. I cannot, of course, say anything definite about this last statement; but my opinion is that Franklin's Gull must occasionally be seen in Indiana along Lake Michigan. This gull is small, with a black head and neck; the bill, also, of the specimen I saw was black. The bird is not timid and may be approached within a few rods.

I have now completed the first part of my attempt to prove that birds can be identified without shooting them. So far I have spoken of my own efforts in this direction, and now it remains for me to say what was done by those who accompanied me on my bird trips. A number of the students at Notre Dame have given some attention to the study of bird life, and they have done remarkably well, I think, for the little time they have devoted to the pursuit. Several young men went out with me occasionally in the springs of 1917 and 1918, and two of them made the acquaintance of 90 species of birds. Among these there were about twenty warblers. Now, every student of birds knows that the warbler family is one of the most difficult to learn. Still the students that observed under my direction did not fail to identify all the warblers we found. And to test their knowledge, I would often ask them to name a certain species of warbler we saw, such as, the female Black-poll, and in time they could succeed in doing it.

I have now set down facts enough, I think, to disprove Mr. Barrow's contention that no person without killing birds can identify all the species in his vicinity. Perhaps there is not absolute certainty in every case I have mentioned. But even if this were so, I still hold that most birds, if not all, can be identified by an experienced observer with nothing but a pair of good field glasses.

"Fairy Circles."

BY J. A. NIEUWLAND.

Attention has already been called in these pages to the fact that some species of Myxomycetes, notably Physarum sinuosum, appear in lawns in formations like the so-called "fairy circles" of some of the higher fungi. Such slime-mould "rings" have been seen annually in summer on the Notre Dame University Quadrangle for a long time. Last spring it was, however, noticed for the first time that
the "circles" are also evident early in spring by the peculiar phenomenon of rings of very much more luxuriant growth of grass in the places where the previous season's fungi grew. My attention was called to the fact by a question from one of the professors, as to the reason for more early, more rapid, and more luxuriant growth of grass in certain large ringlike formations on the lawn. Investigation of the subject revealed the fact that the development of grass was more notable in places where these Physarum "rings" of the previous seasons' growth had appeared.

It might seem then that these slime moulds may play not an inconsiderable part in reducing partly decomposed organic material back to a condition in which it may be more easily utilized by ordinary or chlorophyll-bearing plants.

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Teratological Notes.

Specimens of the common Harebell with perfectly white flowers were found at Grand Beach, Michigan, on the Indiana side of the state boundary. They were collected on the lake side of the last dune and immediately facing the usually strong winds of the lake. The plants had the dwarfed appearance of dune specimens with unusual strong root system also characteristic of these sand grown specimens.

At Notre Dame albinoes of Lobelia syphilitica Linn., were rather common along the marl covered shores of the lake where the water had receded only three or four seasons ago. The calyx lobes and cup were not structurally the same as in the type but the differences were mostly due to the matter of size, rather than to shape.

A specimen of Onoclea sensibilis was also found, during the past summer, in which a portion of a vegetative frond was changed to a sporophyll with intermediate gradations of form of pinnae. Similar cases to the two last mentioned had previously been mentioned in Am. Nat. II. p. 657 and 658.

J. A N.
PLATE VII. FENTON ON DEVONIAN GASTROPODS
THE AMERICAN MIDLAND NATURALIST

Devoted to Natural History, Primarily that of the Prairie States

Published by the University of Notre Dame, Notre Dame, Indiana

J. A. NIEUWLAND, C. S. C., Ph. D., Sc. D., Editor

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ENUMERANTUR PLANTAE DAKOTAE SEPTENTRIONALIS VASCULARES.—XIV.

ENUMERAVIT J. LUNELL.

The Vascular Plants of North Dakota.—XIV.
With Notes by J. Lunell.

APPENDIX (continued).

All the following numbers previous to no. 1246 refer to certain plants recorded under the above heading in earlier issues of this journal and ought to be looked up.

Insert next after no. 4. Cystopteris fragilis:

In the sand hills near Anselm, Ransom Co. (O. A. Stevens).
41. Alisma superbum. Rydberg in Fl. R. M. 27. (1917) considers this identical with A. brevipes Greene.

72. Torresia Ruiz y Pavon, Prodr. 125. (1794) has displaced the older genus names Hierochloe and Savastana in the latest botanical nomenclature.


Insert next after no. 103, Koeleria cristata:


111. **Spartina pectinata** Bosc. ex Link, Jahlrb. I. III. 92. (1829.) Older name.

Insert next before no. 123. *Daluca Hallii*:


144. Replaced in Rydb. Fl. R. M. 84. (1917) by *Puccinellia Nuttalliana* (Schultes) Hitchc.


1267. **Saponaria officinalis** Linn. l. c. Leeds. Escape in old gardens.

Insert before 468, **Clematis virginiana**:

1268. **Clematis ligusticifolia** Nutt; T. & G. Fl. N. A. I:9. (1838). West of the 100th mer.


524. T. Drummondii var. brachycarpa (Gray Man. V:69). A. confinis var. brachycarpa Wats. & Coult. in Gray Man. VI:67. This does not grow at Devils Lake, but is reported from other parts of the state. A. dakotica Greene is another relative unknown to us.

Insert after no. 529, Brassica campestris:


Insert after no. 136, Peritoma serrulatum:

1273. Peritoma serrulatum var. clavatum Lunell, var nov. Siliquae crassae, clavatae, turgidae, Petala integra neque 3-dentata.

Pods thick, swelled, clavate, Petals entire, not 3-toothed. York, Aug. 9, and Sept. 2. 1918.

Insert after no. 540. Parnassia palustris:


Some of our plants no doubt belong here, while others exhibit characters of both this species and P. palustris,

Insert next after no. 551, Pentaphyllum concinnum:


Leeds.


Insert next before no. 585, Eupatorium Brittonianum:


Insert next before 598, Amelanchier macrocarpa:

1281. Amelanchier leptodendron Lunell, sp. nov.

**Analytical Key.**

Leaves ovate or obovate, at least in the young leaves acute at both ends; racemes and petals small; a tree.........................*A. leptodendron*

Leaves oblong with rounded apex and rounded or subcordate base; racemes and petals large; a shrub........................................*A. macrocarpa*

Arbor teres, 3-5 m. alta, cortice plano cinereo, ramulis canis vel rubro-fuscis. Folia matura perviridia, utrimque glabra, firma, ovata—obovata, circumferentia basin versus plerumque angustata, magis minusve acuta vel cuneiformis, apice acuto, margine dimidio superiore irregulari-dentato. Florum racemi 2-3 cm. longi, pedicelli 0.5—1cm. longi, sepala triangulares-lanceolata vel latiora, petala spathulata, 5-6 mm. longa. Racemi pomiferi 5cm. longi. Pomum parvum, 5mm. diametro. Gemmae hiemales pubescentes.

A slender tree (scarceyly appearing as a brush, as I have been unable to discover any branching-out from the ground), 3-5m. high, with smooth, ashy gray bark and gray or reddish twigs. Leaves after maturity bright green, glabrous on both sides, firm, ovate—obovate, the proportions varying in centimeters 7:6, 7:5:5, 6:4:5, 6:4, 5:4, 5:3, 4:5:4, 4:5:3, and 4:3, the outline generally becoming narrowed or more or less acute or cuneiform toward the base, with an acute apex at least in young leaves (a rounded or notched apex often caused by some injury to the top), and an irregular dentation of the margin from the middle to the apex. Besides, mature leaves present quite variable outlines. Flowering racemes 2-3 cm. long, pedicals 0:5—1cm. long; sepals triangular-lanceolate or broader; petals spathulate, 5-6mm. long. Fruiting raceme 5cm. long. Pome small, 5mm. in diameter (but only one seen). Winter buds pubescent.

Apt to be found on hillsides covered with a dense wooded vegetation. The type was collected by the writer on May 15 and Sept. 3, 1918 in the Turtle Mountains of Rolette Co.

Insert after no. 599, Oxyacantha chrysocarpa:

Scheele, Linnaea, 21:569. (1848.) Fargo (O. A. Stevens).


607. Amorpha angustifolia (Pursh) Boynton in Biltmore Bot. Studies 1:139. A fruticosa Coult, not L.


Insert before no 602, Nezera sulcata:

**ANALYTICAL KEY.**

Perennial, branched from the base, fruiting pedicels 4-6 mm. long ........................................... N. compacta.

Annual, simple or branched above, fruiting pedicels 2-3 mm. long ........................................... N. sulcata


Insert after no. 707, Celastrus scandens:

1287. Euonymus atropurpureus Jacq. Hort. Vind. 2:5, pl. 120. (1772).

In the sandhills near Anselm, Ransom Co. (O. A. Stevens).

Insert next after 736, Lophion Rydbergii:


Insert next after no. 740, Nuttallia decapetala:


Insert next before no. 762: *Epilobium adenocaulon*:


1292. **Cogswellia macrocarpa** (Nutt.) Jones l. c. 33. Dunsieth. Insert before no. 790, *Ossea instolonea*:


814. **Anthopogon tonsus** (Lunell) Rydb. in Fl. R. M. 659. (1917).

Insert next after no. 817, *Amarella acuta*:

1295. **Amarella scopulorum** Greene. Leaflets I:55. (1904) Under this name no doubt ought to be known the plant from Pleasant Lake referred to under no. 817. Under the latter number I would refer to a species found by me in the Turtle Mountains, as it resembles closely specimens in my herbarium collected by Prof. Fernald in Maine.

MENYANTHES Linn. Sp. Pl. 145. (1753)

1296. **Menyanthes trifoliata** Linn. l. c. In the sandhills of Anselm, Ransom Co. (O. A. Stevens).

Insert next after no. 846, *Fonna Hoodii*:


Specimens with calyx tube 2mm. and its teeth 3mm., corolla tube 8mm. (thus being 3mm longer than the entire calyx), limb of corolla 10-14mm. wide. We place them here with hesitation, as they have not the erect, white stems of *P. andicola*. Leeds.


Dracocephalum Nuttallii Britton.

Mentha glabrior (Hook.) Rydberg.

Scrophularia dakotana Lunell, sp. nov.

**Analytical Key.**

A. Leaf-blades hastately lobed at the base.
   B. Branches of the inflorescence densely glandular-puberulent; upper lip of the corolla much shorter than the tube. 

   - S. occidentalis

A. Leaf-blades not hastately lobed at the base.
   B. Branches of the inflorescence densely glandular-puberulent; upper lip of the corolla only slightly shorter than the tube.

   - S. dakotana

B. Branches of the inflorescence sparingly glandular-puberulent; upper lip of the corolla as long as the tube.

   - S. leporella

Caulis perennis, robustus, quadrangularis, ½–2m. altus, inflorescentia glandulari-puberulenta. Foliaeae lanceolata vel ovata, bis serrata, acuta, basi rotundata vel ordata neque hastate lobata, nervis subtus puberulentis, praeterea glabra, 5-15cm. longa, 7 petiolis 1-2 cm. longis. Calyx 3mm altus, lobis 1-5mm altis. Corolla purpureo-flavo-viridis, 11mm. alta; tubus 6mm. altus, calice duplo longior; labia gemina superiors 5mm. longa, erect, oblonga; labia gemina lateralia erecta, inferius reflexum, 3mm. longa. Stamen sterile glabrum, obscure viride, squama ovata obscure viridi latiore quam longa ornatum. Capsula 3-7mm. longa, basi ovata conica.

Stem perennial, stout, square-angled, ½–2m. high, glandular-puberulent in the inflorescence. Leaves broadly lanceolate or ovate, doubly serrate, acute, the base rounded or, in the larger leaves, cordate, not hastately lobed at the base, puberulent on the nerves beneath, else glabrous, 5-15 cm. long, on petioles 1-2 cm. long. The entire calyx 3mm. high, its lobes 1.5 mm. high. Corolla purplish-yellowish-green, 11mm. high; its tube 6mm. high, twice as long as the calyx; its 2 upper lips 5mm long, erect, oblong, its 2 lateral or lips erect, the lower one reflexed, 3mm. long. Sterile stamen glabrous, dark green with a dark green ovoid scale, which is broader than long, Capsule 3-7mm. long, conical with an ovoid base.

Growing in high ground on prairies. Collected by the writer at Leeds, Benson Co.


Ambrosia elatior Linn. A. artemisiaefolia a. Gray, not Linn.

Vernonia corymbosa Schwein. V. fasciculata Coulter, not Michx.
Terminal head many times larger than the other heads. Leeds, Sept. 2, 1918.

1304. *Laciniaria scariosa* (Linn.) Hill, var. *inconcinna* var. nov. Several lower leaves are shorter than the next upper ones in the series. Leeds, August 27, 1918.

Insert after no. 1041, *Chrysopsis Bakeri*:


Insert after no. 1075, *Aster puniceus*:


1310. *Arnica pedunculata* var. *monocephala* (Rydb.) Lunell, var. nov.


1203. Without having access to the types Dr. Greene referred this plant to *S. Purshianus* for geographical reasons. Later Dr. Greenman compared it with the types of both *S. Purshianus* and *S. canus* and decided in favor of the latter. Vide no. 1311 also.

Birds Found in Northern Indiana and Southern Michigan

BY BROTHER ALPHONSUS, C. S. C.

The species of birds in this list were seen by the writer in the period between March, 1905 and September, 1918. That the number of species is not larger is due to the scarcity of water and shore birds in the places where the writer has done his observing. Other observers in localities where there are marshes can easily find two hundred species of birds. In this list there are omissions of certain species that were published by the writer in previous articles in the American Midland Naturalist. These omissions were made because the records of the species were afterwards found to be erroneous. Any species, then, not included in the present list are not vouched for by the writer as having been reliably recorded.

1. Bittern  
2. Blackbird, Red-winged  
3. Blackbird, Rusty  
4. Bluebird  
5. Bobolink  
6. Bobwhite  
7. Canvasback  
8. Cardinal  
9. Catbird  
10. Cedarbird  
11. Chat, Yellow-breasted  
12. Chickadee  
13. Coot  
14. Cowbird  
15. Creeper, Brown  
16. Crow  
17. Cuckoo, Black-billed  
18. Cuckoo, Yellow-billed  
19. Dickcissel  
20. Dove, Mourning  
21. Duck, Scaup  
22. Finch, Purple  
23. Flicker

Botaurus lentiginosus  
Agelaius phoeniceus  
Scolecoephagus carolinus  
Sialia sialis  
Dolichonyx oryzivorus  
Colinus virginianus  
Aythya vallisneria  
Cardinalis virginianus  
Galeoscoptes carolinensis  
Ampelis cedrorum  
Icteria virens  
Parus atricapillus  
Fulica americana  
Molothrus ater  
Certhia familiaris americana  
Corvus americanus  
Coccyzus erythrophthalimus  
Coccyzus americanus  
Spiza americana  
Columbigallina pesserina terrestris  
Aythya marila nearctica  
Carpodacus purpureus  
Colaptes auratus
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**Abbreviations.**—*n. g.*, New Genus; *n. n.*, New Name; *n. s.*, New Combination; *n. s.*, New Species; *n. v.*, New Variety; *n. m.*, New Mutant.

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LECONTES' UNPUBLISHED WORKS ON PLANTS

As part of E. L. Greene's collection of plants, his library, manuscripts, etc., there was left to the University of Notre Dame a set of unpublished, water-colored original drawings, made by John B. Leconte, evidently intended to illustrate his articles written on Violets, Bladderworts, and a monograph of *Gratiola*. These communications were published by the author in the rare volumes I–IV of the *Annals of the Lyceum of Natural History of New York* (1824–1837). Leconte probably was unable to bear the expense of reproducing these exquisitely colored plants which were life size, and so they were never published. His notes on *Gratiola* are in Vol. I. p. 103, on *Utricularia* in Vol. I, p. 72, and *Viola*, Vol II, p. 135. The most important work of all his Monograph of the Genus *Viola* in Southeastern Atlantic States, is also absolutely indispensable to the student of Iodography. Rare as the work in the Annals is, the original plates unpublished had not even been ever seen by some of Dr. Greene's most intimate friends. When in fact on one occasion one of them asked him to be allowed to reproduce a single critical species, Dr. Greene considered the request almost audacious.¹

Dr. Greene once told us he came into possession of this unique treasure in a second-hand book-shop in Philadelphia. The collection of drawings numbering 42 had previously been in the hands of Isaac C. Martindale who obtained them when Lecontes' effects were auctioned off. Dr. T. Holm, of Washington, informed us that Harvard University has tracings of the illustrations, probably made before Dr. Greene purchased the originals. In several places of Dr. Greene's writings we find references to these plates, and no doubt they helped much to give him such accurate knowledge of our eastern violets, and their identity, a subject in which he was rightly recognized as one of our most careful and exact authorities. He refers to the drawings in *Leaflets* 1, 2. Because of a reference in *Pittonia* V, 84, it might be inferred that as early as 1898 he had these; for he states then that he "possesses LeContes' unpublished plates." Another reference is found in *Mid. Nat. III*. p. 84,² seems to point to the supposition that Dr. Greene acquired these drawings subsequent to May 1898. (Vide. *Pitt. III*, 313 et. seq.)

¹ "... I had quite to my satisfaction identified it (*V. affinis*) by LeConte's description quite anterior to the time when I saw the unpublished figures referred to; and that only confirmed my earlier determination of it."

"Now on arrival in Washington of the LeConte botanical art treasure, as my property, I called Mr. Pollard's attention to these longer and more pointed leaves of this plant, as bringing it nearer than any other of our violets to the poor figure of Hills' *V. obliqua*. I recall that Mr. Pollard more than once came back to study that particular plate and finally to make of me the remarkable request—I do not like to use the less mild term audacious in connection with an old and valued friend—that he be permitted to make a copy of the plate. Doubtless I might have forgotten the whole circumstance of my friend's very special interest in the fine colored plate under which LeConte, now ninety years since had written in pencil: "*V. affinis*" but for his surprising request."

² There is also an article on *Ruellia* Vol. I, p. 140, but there are no drawings in the manuscript of this genus.
These remarkable water-colored drawings made and annotated by Le Conte himself were undoubtedly intended by him to accompany his monographs in the Annals of the Lyceum of New York referred to. Dr. Greene once told us himself that they were very likely left out because of the great expense of reproduction. There are altogether 25 life size plates of Violets, 10 of Bladderworts, and 7 of Gratiolae. Some of the last are unfinished as to coloring, and though we had on various occasions seen this work during Dr. Greene's lifetime, we were ourselves hitherto unaware of this last group of illustrations. There are also penciled notes on the margins of the plates by Dr. Greene himself as to the identity of the plants shown.

Mr. Martindale the former owner of this treasure made the following note on the inside of the front cover of the book: "Purchased at the sale of the Library of Dr. J. LeConte, Phila., 5-1884. They are the original drawings of Major LeConte. Isaac C. Martindale."

It was for some time subsequent to the death of Dr. Greene, Nov. 10, 1915, that these plates had been lost or had disappeared. Diligent search was made for the collection without avail. While cataloguing the periodicals of the Green Library we came upon them quite accidentally hidden in an out-of-the-way place and behind some books on the shelves. Dr. Greene had put them there before leaving on his last trip to Washington; for they were not in the library a week previous to his departure.

After carefully weighing matters from all points of view it has been decided to allow reproductions to be made of the unpublished plates of LeConte. The articles in the Annals of the N. Y. Lyceum will be reprinted and accompanied by actual size photographic copies of the plates 43 in all and one photographic copy of Mr. C. Martindale's note in the original cover. Accompanying the facsimile photographic prints we aim to give a short resume of references to them in Dr. Greene's writings. Owing to the limited number of copies that will appear it will be necessary to request the various institutions, academies and individuals to send in requests beforehand for copies by subscription. If a sufficient number are ordered or asked to be reserved the work will be undertaken. The photographs will be made by the most expert artist that can be had for the work from the most sensitive orthochromatic plates. The prints themselves will be made on highly polished linen-backed paper 7 x 10 inches. Another expert artist has consented to color the prints to the original at an extra cost of 30c. apiece, for those who wish color reproductions. The photographs will be the best that the modern art can obtain, and a sample will be sent to those who wish to examine the nature of the technique, on condition of its immediate return as the cost of making prints is necessarily very expensive. The price is $25. No copies will be given or made out afterwards. Nor will the work be undertaken unless a sufficient number of subscribers apply. Address:

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