

## NOTES ON SOME PHANEROGAMS NEW OR RARE TO THE STATE. BY W. S. BLATCHLEY.

At the winter meeting of this Academy in 1889, I presented a paper entitled "Some Plants New to the State List," in which seven species were mentioned from Monroe County, and fourteen from Vigo County, as not having been previously recorded in any published list of Indiana plants. The paper was severely criticised at the time by one or two members of the Society, the species being said to be wrongly determined or to have been previously mentioned. My ardor for writing botanical papers was somewhat quenched by this criticism, but time has since proved that all identifications, with but a single exception, were correct, and no previous Indiana record for any one of the remaining twenty species has been or can be pointed out.

The paper in question was never published, and but four of the plants therein mentioned have been recorded from other portions of the State. This fact, together with the additional one that I have in my note books numerous records of plants taken within the past five years at various localities in the State, which, if published, would greatly extend the known range of such species, has led to the preparation of the present paper.

In it the stations and habitat of ninety-three species of Indiana plants are recorded, and brief notes are in many instances given regarding their abundance, variations, etc. Of these, thirty-three species, including thirteen of those mentioned in my 1889 paper, have not heretofore been recorded in print as occurring in the State; while thirty-seven have been recorded from but one other station in the State, and that in almost every instance distant from the one in which it has been collected by myself. The remaining twenty-three species have not been recorded from more than two stations in the State and they in localities widely different, as "Jefferson and Lake counties," or "Gibson and Noble counties."

Specimens of all the plants mentioned are in my private herbarium or in that of DePauw University, which, in 1893, came into possession of about 600 species of plants collected by me. Those species represented in the DePauw herbarium are marked with an asterisk in the list which follows. The date given is that upon which the species was collected, or, where collected more than once, the earliest at which it has been noticed in bloom. The nomenclature and arrangement are those of the new "Catalogue of the Pteridophyta and Spermatophyta of Northeastern North America," published in 1894 as a memoir of the Torrey Botanical Club. Where the name in the catalogue mentioned differs from that

in Gray's Manual, 6th Ed., the name used in the latter work is given in parenthesis as a synonym.

1. *Botrychium ternatum obliquum* Milde. Grape Fern.

Found in a few localities in Vigo county. Distinguished from the other forms of the species by its height, 10 to 14 inches, its more compound fruiting portion, and the oblong divisions of the sterile segment, which are very oblique at the base.

Recorded in the State Catalogue from Jefferson county.

- \*2. *Equisetum fluviatile* L. Swamp Horse-tail.

(*E. limosum* L.)

Found abundantly in the shallow water around the margins of the Goose Pond in Vigo county. Not given in the State Catalogue, nor in any of the published lists, but recorded in Botanical Gazette from Lake County.

May 3.

- \*3. *Potamogeton diversifolius* Raf. Pond-weed.

(*P. hybridus* Michx.)

Frequent in a pond south of Fair Ground, Vigo county. Oct. 3, 1889.  
The first Indiana record.

- \*4. *Potamogeton spirillus* Tuckerm.

Occurs sparingly in the Five-Mile Pond, Vigo county. July 19.  
The first record.

5. *Zannichellia palustris* L. Horned Pond-weed.

This species grew in abundance in the pond south of the blast furnace at Terre Haute in the years 1889-93. The surface of this pond seldom froze in winter on account of the warm stream of water from the furnace flowing into it. Since the furnace shut down the pond has dried up and the plant has disappeared.

The first record for the State.

- \*6. *Echinolorus cordifolius* (L.) Griseb. Upright Bur-head.

(*E. rostratus* Engelm.)

Several acres of this plant grew in 1890 on the site of Conover's Pond, Vigo county, which had been drained the previous year.

The first record, its range being given in Gray's Manual, sixth edition, as "Illinois to Florida, Missouri and Texas."

7. *Panicum autumnale* Bosc. Diffuse Panicum.

Frequent in Vigo county, on sandy hillsides and banks along railways.

Recorded before by Higley and Raddin from the "sand ridges south of Whiting, Ind."

The flowers of this grass are, when in their prime, a grayish-purple in color, and, when wet with dew, reflect the morning sunlight in a peculiar and pleasing manner.

8. *Panicum minus* Muhl. Wood Panicum.

A specimen, so named by Mr. Nash, of Columbia University, N. Y., was taken from a dry hillside in Hipple's coal mine woods, Vigo county, where it is frequent.

The first record.

9. *Panicum pubescens* Lam. Hairy Panicum.

Another species named for me by Mr. Nash. It is frequent along the T. H. & L. Railway in Vigo county.

The first record.

10. *Homalocenchrus lenticularis* (Michx.) Scribn. Catch-fly Grass.

(*Leersia lenticularis* Michx.)

Taken but once, October 6, 1893, from the margin of Five-Mile Pond, Vigo county.

The first record.

- \*11. *Sporobolus asper* (Michx.) Kunth. Drop-seed grass.

Occurs sparingly along sandy banks and hillsides in Vigo county. August 30.

The first record.

12. *Cyperus speciosus* Vahl.

Recorded before only from Jefferson county. Taken in low, sandy soil in Vigo county, where it is scarce.

Varies much in size. A specimen taken at Heckland, October 14, 1896, had six umbels, the stalk of each apparently springing from the surface of the ground, and the whole plant but 2½ inches in height.

13. *Eleocharis capitata* (L.) R. Br. Spike Rush.

Grows along the mucky margins of the Five-Mile Pond, Vigo county. Identification verified by N. L. Britton. Recorded before in "Botanical Gazette," VII, 3, 1882, by E. J. Hill, from a slough south of Whiting, Ind., and described by him as new under the name of *E. dispar*. It is a plant of southern range, and, up to the time of Hill's record, it had not been found north of Florida and Texas, except west of the Rocky Mountains. It probably occurs in suitable localities throughout the western half of Indiana.

14. *Stenophyllus capillaris* (L.) Britton.

(*Fimbristylis capillaris* Gray.)

Occurs sparingly in Vigo county, along sandy banks and borders of fields. Recorded before from Lake county.

Grows in dense, circular tufts; the hair-like stems rarely a foot in high.

15. *Wolffia columbiana* Karst.

Found in abundance in the Goose Pond, Vigo county, in 1890.

"Stagnant waters in the northern counties."—*State Catalogue*.

- \*16. *Medeola virginiana* L. Indian Cucumber Root.

Occurs on high, dry, wooded hills in Monroe county, in company with *Microstylis ophioglossoides* Nutt. and *Lycopodium complanatum* L.; scarce.

Recorded in B. & C. Flora from Jefferson and Lake counties.

17. *Habenaria flava* (L.) A. Gray. Greenish Orchis.

(*H. virescens* Spreng.)

Taken in some dense, damp woods near Heckland, Vigo county, June 10, 1891.

Recorded before from Noble county.

18. *Achroanthes unifolia* (Michx.) Raf. Adder's Tongue Orchis.

(*Microstylis ophioglossoides* Nutt.)

A single specimen was taken at Coal Creek, Vigo county, Sept. 28, 1893. In Monroe county a number of specimens were secured from high hills, where they were found in company with *Medeola virginiana* L., *Pogonia verticillata* Nutt., and in the midst of clumps of the moss *Polytrichum commune* L. Specimens taken by the writer in Arkansas were also found on high hills, though the habitat given in Gray's Manual is "low, moist ground."

19. *Leptorchis liliifolia* (L.) Kuntze. Twayblade.

(*Liparis liliifolia* Richard.)

Rare in rich woods in both Monroe and Vigo counties. June 11.

20. *Leptorchis loeselii* (L.) MacM. Twayblade.

(*Liparis loeselii* L.)

A number of specimens were taken in a tamarack swamp in Fulton county, July 14, 1894.

21. *Hexalectris aphyllus* (Nutt.) A. Gray.

Taken by the writer on a high wooded hill two miles south of Wyandotte Cave, Crawford county, July 25, 1896.

The first Indiana record, the range in both the Manual and Illustrated Flora being given as "Kentucky and Missouri to Florida and Mexico."

- \*22. *Polygonum arifolium* L. Halberd-leaved Tear-thumb.

Scarce in Vigo county; in ravines and along borders of small streams. Mentioned in my paper "On Plants New to the State List," read before the Academy in 1889. Since recorded from Steuben and Noble counties.

23. *Polygonum emersum* (Michx.) Britton.

(*P. muhlenbergii* Watson.)

Frequent in Vigo county along sandy margins of ponds. Noted before in Steuben and Lake counties.

- \*24. *Polygonum ramosissimum* Michx.

Found in low, sandy ground near a marsh south of the Fair Ground, Vigo county; scarce.

The first record.

25. *Chenopodium boscianum* Moq.

Taken in Vigo county, October 17, 1896, in open, sandy woods, two miles east of Terre Haute.

The first Indiana record.

The flowers much smaller than in allied species; on slender recurved branches; the black seeds easily separated from the enclosing pericarp.

- \*26. *Arenaria serpyllifolia* L. Thyme-leaved Sandwort.

Occurs sparingly in Vigo county in low, sandy soil about the margins of several of the larger ponds. Noted in the list of Higley & Raddin as being found in Lake county and by Hessler (Proc. Ind. Acad., 1893, 259) as occurring in Fayette county.

27. *Anemone caroliniana* Walt. Carolina Anemone.

Found in Vigo county in one locality on a wooded hillside,  $5\frac{1}{2}$  miles north of Terre Haute. First brought to my notice in 1894 by Miss Nora Arnold, a pupil in the high school. She stated that they had occurred abundantly in the one locality for 12 or thirteen years to her knowledge, and how much longer she did not know.

The first record, the Manual range being "Illinois to Nebraska and Southward."

28. *Ranunculus obtusiusculus* Raf. Water Plantain Spearwort.

Noted in one locality, the border of a marsh near the Goose Pond, Vigo county, June 22, 1890.

Recorded from Noble county by Van Gorder under the name of *R. alismaefolius* Geyer.

29. *Ranunculus purshii* Richards.

(*R. multifidus terrestris* Gray.)

Occurs sparingly about the borders of the Five-Mile Pond, Vigo County. June 1.

The first record.

- \*30. *Dentaria heterophylla* Nutt. Diverse-leaved Toothwort.

Occurs sparingly in Monroe county in thickets and rich, moist woods. Recognized as a distinct species in the new Check List. Noted as such in my paper read before the Academy in 1889, though Dr. Coulter in his list of Jefferson County plants stated that it was, in his opinion, a variety of *D. laciniata* Muhl.

In Monroe county it blooms at least two weeks later, and no connecting forms were noted. Of a specimen submitted to Dr. Coulter, he wrote: "It looks very much like typical *D. heterophylla* Nutt., and is as near it as anything I have seen from the State."

The first Indiana record.

- \*31. *Draba caroliniana* Walt. Carolina Whitlow Grass.

Frequent in Vigo county along the banks of the old canal and on sandy hillsides near it.

One of a MSS. list of additions to State Catalogue furnished me by Dr. J. M. Coulter. Locality not given.

- \*32. *Descurainia pinnata* (Walt.). Britton. Tansy Mustard.

(*Disymbrium canescens* Nutt.)

Frequent in Vigo county along the gravelly banks of railways and canal. Recorded only from Tippecanoe county. April 20.

- \*33. *Arabis dentata* T. and G. Toothed Rock-Cress.

Rare in Vigo and Monroe counties, along gravelly banks or rocky hillsides. Recorded before from Gibson county. May 3, 1891.

34. *Arabis hirsuta* (L.) Scop. Hairy Rock Cress.

Found by the writer in Monroe, Montgomery and Vigo counties. Grows along rocky hillsides.

Recorded by Van Gorder as being scarce in Noble county.

35. *Sedum telephioides* Michx.

Collected along the hillsides at Coal Creek, Vigo county, by Dr. B. W. Evermann in 1889. April 30. The State Catalogue record is "Knobs," Clark county.

- \*36. *Parnassia caroliniana* Michx. Grass of Parnassus.

This species was recorded by Stanley Coulter, Proc. Ind. Acad. Sci., 1894, 105, as being found in Noble and Kosciusko counties, the latter record being based on a specimen collected by the writer, now in DePauw herbarium. It has since been noted by myself at Lake Maxinkuckee, Marshall county, and in a marsh on the banks of White River one mile south of Broad Ripple, Marion county.

37. *Opulaster opulifolius* (L.) Kuntze. Nine-Bark.

(*Physocarpa opulifolia* Raf.)

Recorded in the State list from Gibson, Jefferson and Monroe counties.

This handsome flowering shrub has been noted by the writer as growing plentifully on the banks of White River below Broad Ripple, Marion county, and on the banks of the Wabash just south of the city of Wabash, Wabash county. It has also been recorded from Wayne and Lake counties, so that its range undoubtedly includes the whole State.

- \*38. *Geum macrophyllum* Willd.

Taken in the borders of rich open woods two miles east of Terre Haute, Vigo county, June 26, 1892.

The first Indiana record.

- \*39. *Sanguisorba canadensis* L. Canadian Burnet.

(*Poterium canadense* Benth. and Hook.)

Occurs along the borders of ditches and damp virgin prairies near Heckland, Vigo county. In flower from August 10 to October 20.

The first Indiana record, the range of Mannal being "Newf. to mountains of Georgia, west to Michigan."

40. *Trifolium reflexum* L. Buffalo Clover.

Rare in Vigo county, along open sandy hillsides and borders of prairies. Heretofore noted from Marion county. May 28.

41. *Amorpha fruticosa* L. False Indigo. River Loenst.

Frequent along the bed and sides of the old canal both north and south of Terre Haute, and as far north as Montezuma, Parke county.

Recorded from Gibson.

42. *Falcata pitcheni* (T. & G.) Kuntze. Large-leaved Hog Peanut.

(*Amphicarpea pitcheni* T. & G.)

Found sparingly along damp hillside thickets in Vigo county.

The first Indiana record.

Leaflets much larger than in *F. comosa* L., the blade often more than 3 inches long; pods—ten or more—1½ inches long, borne on a long, hairy rachis; seeds, 5 mm. in length.

- \*43. *Polygala polygama* Walt. Pink Polygala.  
 Vigo county, in small numbers, along the Vandalia Railway, one mile east of Terre Haute.  
 Recorded before from Lake and St. Joseph counties.
44. *Euphorbia heterophylla* L.  
 Occurs in Vigo county, along the banks of old canal near Five-Mile Pond.  
 The first Indiana record.  
 The pods of this and allied species, when dry, burst open with a snapping or crackling noise, and project the seeds to a distance of several feet.
45. *Callitriche heterophylla* Pursh. Water Starwort.  
 Vigo county, in ponds; frequent. April 30.  
 Recorded from Gibson county.
46. *Rhus aromatica* Ait. Fragrant Sumach.  
 (*Rhus canadensis* Marsh.)  
 Recorded in the State list from Jefferson and Lake, the two extremes of the State. Taken by the writer in Monroe and Crawford counties.  
 Grows on rocky hillsides along streams.
47. *Rhamnus caroliniana* Walt. Carolina Buckthorn.  
 A shrub or small tree of southern range which occurs as far north as Crawford and Harrison counties, Indiana, where it was first noted by the writer November 5, 1896. Straggling in habit; 10 to 20 feet high, with peach-like leaves, glossy green above; bark smooth and light colored; the wood bright yellow; fruit, a black drupe resembling a cherry. Hillsides along Blue River near Wyandotte cave, and roadsides between there and Corydon; scarce. The first Indiana record, the Manual range being "N. J., Va. to Ky. and southwest."
48. *Hibiscus lasiocarpus* Cav.  
 Grows in prairie swamp near Heckland, Vigo county.  
 Recorded before from Gibson.
- \*49. *Hibiscus militaris* Cav. Halberd-leaved Rose Mallow.  
 Frequent along the sandy banks of old canal between Ft. Harrison, Vigo county, and Montezuma, Parke county. "Knobs," and Jefferson county are the two previous records. July 10.
- \*50. *Hypericum ascyron* L. Great St. Johnswort.  
 Banks of larger streams in Monroe and Putnam counties; scarce. Mentioned in my 1889 paper. Since recorded from Noble county by Van Gorder.

51. *Hypericum densiflorum* Pursh.

Found on edge of river bank in woods just below Ft. Harrison, Vigo county, Oct. 12, 1896.

The first record for Indiana; the Manual range being "Pine barrens of N. J. to glades of Ky., Ark. and southward."

52. *Helianthemum canadense* (L.) Michx. Frost-weed; Rock-rose.

Vigo county, on a sandy hillside near Five-Mile Pond; frequent locally. May 28.

Recorded from the sand hills of Lake county; also from Noble.

\*53. *Viola lanceolata* L. Lance-leaved Violet.

Margins of Goose Pond and moist prairies at Heckland, Vigo county. April 16.

The previous records are Lake and Jefferson counties.

\*54. *Rotala ramosior* (L.) Kœhne.

Vigo county, in ditches and along margins of ponds; scarce.

Jefferson and Clark counties are its previous records.

\*55. *Ammannia coccinea* Rottb. Ammannia.

(*Ammannia latifolia* L. Gray's Manual, 5th ed.)

Noted in both Vigo and Monroe counties; scarce in the latter. Aug. 10 to Oct. 20.

Recorded from Gibson.

56. *Decodon verticillatus* (L.) Ell. Swamp Loosestrife.

(*Nesoa verticillata* HBK.)

Occurs rarely in Monroe, Vigo and Marshall counties.

Recorded in State Catalogue from "Gibson and Posey. Rare." Recorded since from Noble and Steuben. It therefore probably occurs in suitable localities throughout the State.

57. *Oenothera sinuata* L.

Vigo county, about the borders of a sandy cultivated field near Ft. Harrison; scarce. May 14, 1891.

Probably a railroad migrant from the South, the Manual range being "N. J. to Fla., west to E. Kansas and Texas."

The first Indiana record.

58. *Myriophyllum verticillatum* L. Water Milfoil.

Ponds of Vigo County; scarce. May 2.

Mentioned without note in the Steuben County Flora.

59. *Eulophus americanus* Nutt.  
 Borders of damp prairie, near Heckland, Vigo County; scarce. October 5, 1889.  
 Recorded from Gibson County.
- \*60. *Cornus circinata* L'Her. Round-leaved Dogwood.  
 Borders of open, moist woods four miles southeast of Terre Haute; scarce. May 8.  
 Recorded from Lake County.
61. *Hypopitys hypopitys* (L.) Small. Pine-sap. False Beech-Drops.  
 Found on high, dry wooded hillsides in both Monroe and Vigo counties; rare. A specimen taken in Monroe, June 30, 1886, had the raceme 21 flowered.  
 Recorded from Jefferson and Noble counties.
- \*62. *Gentiana andrewsii albiflora* Britton. White Gentian.  
 (*Gentiana alba* Muhl.)  
 Grows in one locality in Vigo county, a wooded hillside north of Terre Haute near the Five-Mile Pond; scarce. September 23, 1888.  
 Tippecanoe and Noble counties are its other State records.
- \*63. *Gentiana saponaria* L. Soapwort Gentian.  
 Vigo county along the borders of prairies; scarce. September 15.  
 Its previous State record is Lake county.
- \*64. *Obolaria virginica* L.  
 Collected on several occasions in both Monroe and Vigo counties, but rare in each. Three plants, taken in doors by Prof. Evermann on January 26, bloomed on February 11.  
 Its other State record is Clifty Falls, Jefferson county.
- \*65. *Phlox bijda* Beck. Dwarf Phlox.  
 In the State Catalogue this species is said to be "common in Tippecanoe." It has been taken by me in both Vigo and Monroe counties; in the former being very common on the sandy hillsides north of Terre Haute. April 7.
66. *Hydrophyllum canadense* L. Canada Waterleaf.  
 Noted heretofore from Jefferson and Laporte counties. It occurs also sparingly on the sides of deep wooded ravines in both Monroe and Vigo counties.
- \*67. *Macrocalyx nyctelea* (L.) Kuntze. Ellisia.  
 (*Ellisia nyctelea* L.)  
 Rare in Vigo county, having been taken but once from a damp spot in sandy open woods, two miles east of Terre Haute. May 25.  
 The first Indiana record.

68. *Cunila organoides* (L.) Britton. Common Dittany.

(*Cunila mariana* L.)

Occurs frequently on the summits of dry rocky hills in Monroe county.  
June 20.

Recorded in the State Catalogue from the "Knobs."

69. *Synandra hispidula* (Michx.) Britton. Large-flowered Mint.

(*Synandra grandiflora* Nutt.)

Taken by the writer in Monroe, Putnam, Vigo and as far north as Wabash county, though its range is given in the Barnes & Coulter Flora as "Banks of the Ohio and its tributaries." May 25.

- \*70. *Stachys cordata* Riddell. Heart-leaved Hedge Nettle.

Borders of damp upland thickets in Vigo county; scarce.

"Jefferson and Gibson" are its previous records.

71. *Trichostema dichotomum* L. Blue Curls. Bastard Pennyroyal.

Discovered by Professor Evermann, September 1, 1889, in sandy soil on the banks of the Wabash River south of Terre Haute, Vigo county.

A species of southern range, probably introduced in the past by the commerce of the river.

Its first Indiana record.

72. *Gratiola spharocarpa* Ell. Hedge Hyssop.

Taken in both Monroe and Vigo counties; scarce. April 30.

In the State Catalogue recorded from "Barrens of Southern Indiana."

- \*73. *Wulfenia houghtoniana* (Benth.) Greene.

(*Synthyris houghtoniana* Benth.)

Found in one locality on sandy hillside one-half mile southeast of Five-Mile Pond, Vigo county, where it was uncommon.

"Tippecanoe and northward" is the only previous record.

74. *Azelia macrophylla* (Nutt.) Kuntze. Mullein Foxglove.

(*Seymeria macrophylla* Nutt.)

On dry hillsides in Montgomery, Putnam and Vigo.

"Near the Ohio and Wabash" was recorded in the Barnes and Coulter Flora.

75. *Orobanche ludoviciana* Nutt. Broom-rape.

(*Aphyllon ludovicianum* Gray.)

Banks of Wabash River near brick yards above Terre Haute, Vigo county; frequent locally. Parasitic on the roots of the Great Horse-weed, *Ambrosia trifida* L. Discovered by Prof. Evermann October 2, 1889.

The first Indiana record, its Manual range being "Minnesota to Illinois and Texas."

76. *Plantago aristata* Michx.

(*Plantago patagonica aristata* Gray.)

Evansville & Terre Haute Railway and canal banks south of Terre Haute, Vigo county; scarce. June 24, 1888.

The first record for the State.

77. *Viburnum molle* Michx.

Found along the fence-rows and margins of dry upland prairies below Youngstown, Vigo county; scarce.

The leaves larger, more rounded, thicker and more soft and downy than those of *V. dentatum* L.

Recorded from Jefferson county.

- 77a. *Willoughbya scandens* (L.) Kuntze. Climbing Hemp-weed.

(*Mikania scandens* L.)

A handsome twining member of the Compositae.

Found in abundance covering the shrubs growing south of the wagon bridge across Sandy Hook creek, five miles east of Hebron, Porter county, September 21, 1897.

Recorded before from Gibson county by Dr. Schneck. Manual range, "E. New Eng. to Ky. and southward."

78. *Lacinaria spicata* (L.) Kuntze.

(*Liatris spicata* Willd.)

Virgin prairies near Heckland, Vigo county; scarce. Aug. 17.

Recorded from Jefferson and Lake.

- \*79. *Chrysopsis villosa* (Pursh) Nutt. Golden Aster.

Along the sandy banks of the old canal between Ft. Harrison and Five-Mile Pond, Vigo county.

The first record for the State, its range being given as "Wisconsin to Kentucky and westward."

80. *Solidago odora* Ait. Sweet Golden-rod.

Near Heckland, Vigo county, from borders of prairies; rare. Sept. 15.

Recorded before only from Gibson county, by Dr. Schneck, who, according to State Catalogue, "was inclined to doubt this species." Dr. J. M. Coulter, to whom my specimen was sent for verification, noted it as "a good find," so that it must be rare in the State. It is regarded as a valid species by the authors of the Catalogue of the Flora of Northeastern North America.

- \*81. *Solidago rigidiuscula* (T. & G.) Porter.

(*Solidago speciosa angustata* T. & G.)

Clearings and borders of prairie at Heckland, Vigo county. Sept. 5.

The first Indiana record.

- \*82. *Solidago serotina* Ait.  
 In woods along the borders of the Wabash River below Ft. Harrison, Vigo county; frequent locally.  
 Recorded from Jefferson county. Sept. 8.
- \*83. *Solidago speciosa* Nutt.  
 One of the most handsome of the Golden-rods. Grows plentifully in the prairie at Heckland, Vigo county. Aug. 25.  
 The first Indiana record.
84. *Euthamia caroliniana* (L.) Greene. Slender-leaved Golden-rod.  
 (*Solidago tenuifolia* Pursh.)  
 Frequent in Vigo and Monroe counties; along shaded banks, usually in sandy soil. Aug. 21.  
 Noted before from Jasper county.
85. *Sericocarpus linifolius* (L.) B. S. P.  
 (*Sericocarpus solidagineus* Nees.)  
 Borders of prairies at Heckland, Vigo county, where it is scarce.  
 Recorded from Floyd county in B. & C. Flora.
- \*86. *Aster drummondii* Lindl. Drummond's Aster.  
 Low open pastures and prairies; frequent in Vigo county. The first record for the State, its range being given by Gray as "Illinois to Minnesota and Kansas."
- \*87. *Aster ericoides* L. Heath-like Aster.  
 Fence rows and old fields, in open, dry soil. Common in Monroe, scarce in Vigo county.  
 Recorded in B. & C. Flora only from Jefferson.
88. *Aster linariifolius* L. Double Bristled Aster.  
 On dry, sandy hillside near Five-Mile Pond, Vigo county; scarce. Also near Miller's, Lake county.  
 Recorded in the State Catalogue from the "Knobs" under the name of *Diplopappus linariifolius* Hook.  
 Readily known by the shortness of the stems, which grow in clumps, and by the rigid linear leaves. Heads large and showy.
89. *Ambrosia bidentata* Michx. Two-toothed Ragweed.  
 Roadsides and borders of cultivated fields between Glen, Vigo county, and Staunton, Clay county; common locally. First noted August 23, 1895. The first record for the State, its Manual range being "Prairies of Illinois, Missouri and Southward."

90. *Bidens trichosperma* (Michx.) Britton. Tickseed Sunflower.

(*Coreopsis trichosperma* Michx.)

Occurs sparingly in Monroe county in swamps along the bottom lands of Bean Blossom Creek. August 10, 1886.

Recorded in B. & C. Flora from Jefferson county.

91. *Hymenopappus caroliniensis* (Lam.) Porter.

(*H. scabiosceus* L'Her.)

Found sparingly on the side of a sandy ridge northeast of Seventh Street Bridge across Lost Creek, Vigo county. May 31, 1890.

The first record for the State, its range being given in the Manual as "Illinois and Southward."

92. *Senecio lobatus* Pers. Butterweed.

Taken on several occasions in 1891 and 1892 from low, damp places about ponds and ditches in Vigo county. The first Indiana record, its Manual range being "North Carolina to Southern Illinois, Missouri and Southward."

93. *Lactuca hirsuta* Muhl. Hairy Wild Lettuce.

(*Lactuca sanguinea* T. & G.)

Borders of prairies and dry, sandy fields in Vigo county; scarce. Recorded from Gibson county by Dr. Schneck.

#### PERIODICITY OF ROOT PRESSURE. BY M. B. THOMAS.

The fact that the roots of plants absorb water and force it up through the stem, producing bleeding whenever the stem is injured, was discovered by Hales in 1721, and since that time numerous investigators have examined this phenomenon of root absorption in a more or less exhaustive way until we have to concern ourselves only with an inquiry into its daily variations and see if there is not some law governing the changing phenomenon that will give us a more complete insight into this important physiological problem in plant growth.

The general matter of the periodicity of root pressure in forcing water through stems in opposition to gravity was studied by Sachs, and his observations form a basis for our present work. He made experiments regarding the time of maximum and minimum pressure with a few common plants, and his results are too well known to need extended description. The conclusions of his experiments have been to fix the time of maximum pressure at 9-11 A. M., with a decrease