

- ? I. On *Amelanchier alnifolia*. (*Ræst. Harknessiana* E. and E.)
 III. On *Junip. occidentalis*. (*Gym. speciosum* Peck.)
 — T. GLOBOSA (*Farl.*) *n. n.* (1880. *Pod. fuscum globosum* Farl. *Gym. of U. S.* : 18.) North America.
 I. On *Malus*, *Cratægus*, *Sorbus* and *Cydonia*. (*Ræst. lacerata* Am. Auct.)
 III. On *Junip. Virginiana*. (*Gym. globosum* Farl.)
 — T. BERMUDIANA (*Farl.*) *n. n.* (1887. *Æcid. Bermudianum* Farl. *Bot. Gaz.* 12 : 206.) North America.
 I. On *Junip. Virginiana*. (*Æcid. Bermudianum* Farl.)
 III. On *Junip. Virginiana*. (*Gym. Bermudianum* Earle.)
 — T. CUNNINGHAMIANA (*Barcl.*) *n. n.* (1889. *Gym. Cunninghamianum* Barcl. *Mem. Med. Off. India* 5 : —.) India.
 I. On *Pyrus*, *Cotoneaster*. (*Æcid. Cunninghamianum* Barcl.)
 III. On *Cupressus*. (*Gym. Cunninghamianum* Barcl.)
 — T. NIDUS-AVIS (*Thax.*) *n. n.* (1891. *Gym. Nidus-avis* Thax. *Bull. Conn. Sta.* No. 107 : 6.) North America.
 I. On *Amelanchier*. (*Ræst. Nidus-avis* Thax.)
 III. On *Junip. Virginiana*. (*Gym. Nidus-avis* Thax.)
 — T. KOREAENSIS (*Henn.*) *n. n.* (*Ræst. koreaensis* Henn. *Monsunia* 1 : —.)
 I. On *Pyrus*, *Malus* and *Cydonia*. (*Ræst. koreaensis* Henn.)
 III. On *Junip. Chinensis*. (*Gym. Japonica* Syd.)

ADDITIONS TO THE FLORA OF INDIANA.

BY STANLEY COULTER.

Since the publication of the "Catalogue of the Flowering Plants and of the Ferns and their Allies Indigenous to Indiana" numerous reports of additions have come to my hands. These reports have been examined with great care, in many cases the specimens themselves being submitted with the report. As a result quite a number of species are to be added to the flora of the State. It is gratifying to note, however, that the majority of these additions are to be found in the grasses and sedges, groups that have been largely neglected by collectors. Another considerable number includes extra-regional plants the occurrence of which within our bounds is to be considered as exceptional, and which, while members

of the flora are only local or occasional. A third class includes escapes from cultivation, the inclusion or exclusion of which is largely a matter of individual judgment. The number of species added is much smaller than I had reason to expect in view of the fact that the original catalogue was based almost wholly upon accessible herbarium specimens, it being felt that in the absence of such verifying material the enumeration would lose much of its value. This rule led to the temporary exclusion of some of the forms which are now definitely reported and verified by accessible material.

SPECIES TO BE ADDED TO CATALOGUE.

Dryopteris spinulosa (Retz.) Kuntze. (*Aspidium spinulosum* Sw.)

Reported from Wells County by C. C. Deam, and from Wabash County by J. N. Jenkins. In fruit June 11.

Panicum sphaerocarpon Ell. Round-fruited Panicum.

Porter County (E. J. Hill).

Panicum flexile (Gattinger) Scribn. Wiry Panicum.

Lake County (E. J. Hill).

Panicum verrucosum Muhl. Warty Panicum.

Porter County (E. J. Hill).

Bromus tectorum L. Downy Brome Grass.

Lake County (E. J. Hill). This seems to be the western limit of this form, which in favorable localities becomes a troublesome weed.

Agropyron repens glaucum (Desf.) Scribn. (*A. glaucum* R. and S.)

Lake County (E. J. Hill).

Cyperus Houghtoni Torr.

Lake and Porter Counties (E. J. Hill).

Eleocharis Robbinsii. Oakes.

Porter County (E. J. Hill).

Psilocarya nitens (Vahl) Wood. Short-beaked Bald-rush.

Porter County (E. J. Hill).

Psilocarya scirpoides Torr. Long-beaked Bald-rush.

Porter County (E. J. Hill). Britton and Brown give the range of this plant "In wet soil, Eastern Massachusetts and Rhode Island." The above citation extends the range of the plant far to the west. I have not seen the plant, but admit it because of the well known discriminative accuracy of Mr. Hill.

Fuirena squarrosa Michx.

Porter County (E. J. Hill).

Rhynchospora corniculata macrostachya (Torr.) Britton. (*R. macrostachya* Torr.)

Porter County (E. J. Hill).

Scleria reticularis Michx.

Porter County (E. J. Hill).

Scleria Torreyana Walp.

Porter County (E. J. Hill).

Scleria pauciflora Muhl.

Porter County (E. J. Hill).

Carex oligosperma Michx. Few-seeded Sedge.

Lake County (E. J. Hill). A species somewhat northern in its mass distribution, seeming to have its southern limit in the station just cited.

Carex limosa L. Mud Sedge.

Wells County (C. C. Deam). "Found on low borders of a small lake in Jackson Township. Scarce."

Carex glaucodea Tuckerm.

Lake County (E. J. Hill).

Carex decomposita Muhl. Large-panicled Sedge.

Wells County (C. C. Deam). "Growing in bunches of moss in bogs made dry by draining."

Xyris Caroliniana Walt. Carolina Yellow-eyed Grass.

Porter County (E. J. Hill). A species found in its mass distribution near the Atlantic coast.

Juncus bufonius L. Toad Rush.

Wabash County (J. N. Jenkins), Kosciusko County (C. C. Deam). "Low, sandy shore of Goose Lake, Kosciusko County."

Juncus articulatus L. Jointed Rush.

Lake County (E. J. Hill). A species decidedly northern in its distribution. Admitted upon the authority of Mr. Hill.

Juncus diffusissimus Buckley.

Crawford County (C. C. Deam). "Valleys about Wyandotte Cave." Britton and Brown give the range of this species, "Southeastern Kansas to Mississippi and Texas." The conditions surrounding Wyandotte Cave are such as to preclude the possibility of the form being introduced along highways or railways. The station given stands as the recorded eastern limit of the species. The determination was made by Mr. M. L. Fernald of the Gray Herbarium, Harvard University.

Stenanthium robustum S. Wats.

Wabash County (J. N. Jenkins). In some of the material examined the pedicels were elongated in fruit, but the form without question is to be referred as indicated above.

Quercus nigra L. Water Oak.

Crawford County, near Wyandotte Cave (C. C. Deam). By error this species was not included in the catalogue. It is fairly well distributed throughout the State, growing near streams and swamps, though sometimes found in upland regions.

Asarum reflexum Bicknell.

Lake County (E. J. Hill). This species was described in Bulletin Torrey Club, Vol. 24, p. 533, pl. 317, 1897. It is distinguished from *A. Canadense* by its smaller flowers, calyx tube white within, lobes of the calyx limb early reflexed, purplish-brown, 4"-5" long, about as long as tube, triangular, with a straight obtuse tip 1"-2" long. (Britton and Brown, Vol. 3, 513.)

Mr. Hill reports that all the *Asarums* he has examined, growing about Chicago, prove to be of this species. None of the sheets in the Purdue herbarium, however, can be so referred. The *Asarums* should be carefully examined by collectors in order that the distribution of this form within our area may be determined.

Cycloloma atriplicifolium (Spreng) Coulter. (*C. platyphyllum* Moquin.)

Kosciusko County (C. C. Deam). "In sand pit near Eagle Lake."

Atriplex hastata L. (*A. patulum hastatum* Gray.)

Wells County (C. C. Deam). "Waste places and cultivated fields."

Allionia hirsuta Pursh. Hairy Umbrella-wort. (*Oxybaphus hirsutus* Sweet.)

Wabash County (J. N. Jenkins). This form has an assigned range to the west and northwest. Abundant material, however, places the reference beyond question.

Brassica campestris L.

Wells County (C. C. Deam). "Waste places."

Cardamine Pennsylvania Muhl.

Wells County (C. C. Deam). "Five miles north of Bluffton, May 25, 1899."

Cleome serrulata Pursh. Pink Cleome. (*C. integrifolia* T. & G.)

Wells County (C. C. Deam). "On prairies south of Bluffton." The species has, perhaps, its eastern limit in Indiana, the assigned range being Illinois and westward.

Fragaria Americana (Porter) Britton. American Wood Strawberry.

Wells County (C. C. Deam). "In woods June 13, 1897."

Agrimonia hirsuta (Muhl) Bicknell.

Wells County (C. C. Deam).

Crataegus cordata (Mill) Ait. Washington Thorn.

Gibson County (J. Schneck, M. D.). An eastern, chiefly mountain form in Gibson County "on the higher hills."

Crataegus macrocarpa Lodd. Long-spined Thorn. (*C. coccinea macrocarpa* Dudley.)

"Along open bottoms in southwestern counties." (J. Schneck, M. D.)

"Banks of Wabash river, Wells County." (C. C. Deam.)

Prunus nigra Ait. Canada Plum, Horse Plum.

"In Woods," Wells County (C. C. Deam). The range of this species is well to the north of Indiana, but the abundance of material shows the above reference to be correct. In flower April 17, 1898.

Trifolium incarnatum L. Crimson, Carnation or Italian Clover.

Wells County (C. C. Deam). Somewhat widely escaped from cultivation within the last few years, but apparently not long persistent.

Oralis cymosa Small. Tall, Yellow Wood-sorrel.

"Hill near Wyandotte cave, Crawford County, July 11, 1899." (C. C. Deam.)

Lechea tenuifolia Michx. Narrow-leaved Pin-weed.

Crawford County (C. C. Deam). "On hill near Wyandotte cave, July 11, 1899."

Vincetoxicum Shortii (A. Gray) Britton. (Gonolobus Shortii A. Gray.)

Crawford County (C. C. Deam). "On hill near Wyandotte cave, July 12, 1899."

Salvia lanceolata Willd. Lance-leaved Sage.

Gibson County (J. Schneck, M. D.). "On a sandy knoll in low river bottoms." An extreme western form having as its assigned range, "on plains, Nebraska and Colorado to Texas, Arizona and Mexico." The specimens submitted undoubtedly belong to this species, being easily separated from related forms by leaf characters and lobing of the connective. This eastern extension of range is extremely difficult of explanation, especially when the character of the station is taken into account.

Loniceera glaucescens Rydb.

Wells County (C. C. Deam). On bank of creek in Jackson Township, May 28, 1899.

Leontodon autumnale L. Fall Dandelion. Lion's Tooth.

Wells County (C. C. Deam). In yards at Bluffton, introduced in grass.

Helianthus petiolaris Nutt. Prairie Sunflower.

Lake County (E. J. Hill). A western prairie form occasionally found in dry, waste places eastward. Probably introduced into Indiana along east and west railway lines leading into Chicago.

Senecio Balsamita Mubl. (*S. aureus* Balsamita T. and G.)

Wabash County (J. N. Jenkins). The range of variation in *S. aureus*, so widely distributed throughout the State, is the only ground for questioning the above citation. The material submitted seems to bear out the description of the species *Balsamita*. It is therefore included in the list.

Centaurea Jacea L. Brown or Rayed Knapweed.

Lake County (E. J. Hill.) A form fugitive from Europe, usually found in waste places north, or in ballast about seaports.

Wolffia Floridana (J. D. Smith). Thompson.

Marshall County, near Culvers (H. Walter Clarke). The abundant material furnished by Mr. Clarke leaves no room for questioning the accuracy of the reference. The range of the species by this citation is sharply extended northward, its assigned limits heretofore being "Georgia and Florida to Missouri, Arkansas and Texas."

Wolffia papulifera Thompson. Pointed Duckweed.

Gibson County (J. Schneck, M. D.). "Two miles east of Mt. Carmel, Ill., in Indiana. This is another decided extension of range, in this case eastward, the recorded range of the species being, "Kennett and Columbia, Mo." (Britton and Brown, Vol. 3, p. 510.)

SPECIES ESCAPED FROM CULTIVATION.

Pinus resinosa Ait. Canadian Pine. Red Pine.

Wabash County (J. N. Jenkins). A northern form which will probably not maintain itself in our area.

Populus balsamifera candicans (Ait.) A. Gray. Balm of Gilead.

Gibson County (J. Schneck, M. D.). Specimens of this form were in the Purdue herbarium at the time of collating the catalogue, but it was not included, being considered as an escape, and there being no record of its persistence.

Broussonetia papyrifera (L.) Vent. Paper Mulberry.

Gibson County (J. Schneck, M. D.). An evident escape from cultivation. The inclusion of the species should depend upon the persistence of the form in the wild state.

Malus Malus (L.) Britton. Apple.

“Along Wabash and White Rivers” (J. Schneck, M. D.). This form was excluded because regarded as an escape. The history of its persistence for many years in several different parts of the State has come into my hands since the publication of the catalogue. It should in all probability be included in the State flora.

Paulownia tomentosa (Thunb.) Baill. (P. imperialis S. and Z.)

Gibson County (J. Schneck, M. D.).

Tragopogon porrifolius L. Oyster Plant. Salsify.

Wells County (C. C. Deam).

Koeleruteria paniculata Laxm.

Gibson County (J. Schneck, M. D.).

These plants have undoubtedly escaped from cultivation in the locations cited. Whether or not they should be included in the State flora is a matter of personal judgment. Evidently fugitive plants which appear but for a single season in a single station can scarcely be regarded as entitled to place. That a plant escaped from cultivation should be listed as a member of the State flora in my judgment should require evidence, first, that it had maintained itself for at least three years; second, that in these years it was more than holding its own, in other words was making gains, however slight, in its new situation. For these reasons, in my opinion, the above plants, with perhaps the exception of the apple, should not be included in the flora. The list, however, is given for the benefit of those whose judgment would add them to the Catalogue list.

A few critical notes may perhaps find a proper discussion in this paper.

Quercus pagodaefolia Elliott.

Reported by Dr. Schneck as belonging to the flora of the southwestern counties. The question turns upon the point as to whether the form is to be regarded as a distinct species or merely as a variety. This form originally appeared as *Q. falcata* Michx., var. *pagodaefolia* Elliott, being separated from the type by “larger leaves, 11-13 nearly opposite and spreading lobes.” Sargent includes it under *Q. falcata* Michx., and Britton and Brown under *Q. digitata* (Marsh) Sudw. In neither of these cases is it given even varietal rank. The form in our area is so well marked that it certainly seems entitled to varietal, if not, indeed, to specific rank. In my judgment, the form should be written *Q. digitata pagodaefolia* Ell., and given a place in the flora.

Quercus Phellos L. Willow Oak.

This form has been recorded as found in Gibson, Posey and Knox Counties.

Concerning the occurrence of this species in this region, Dr. Ridgway says: "This species I give with some doubt, not being quite positive that it occurs. I have seen, however, along the road between Mount Carmel and Olney several trees which, at the time of inspection, I unhesitatingly decided to be *Q. Phellos*, but not having seen it since, while Dr. Schneck has not recorded it, I place the interrogation mark before it."¹ Since the publication of the Catalogue Dr. Schneck writes me that "a very narrow-leaved form of *Q. imbricaria* has probably been mistaken for *Q. Phellos*." If this be true, there exists no definite record of the occurrence of *Q. Phellos* in Indiana. Collectors in the southwestern counties should examine carefully as to the correctness of this view.

Celtis pumila (Muhl.) Pursh.

"Rocky banks of Blue River" (J. Schneck, M. D.). This shrub-like Hackberry, undoubtedly occurs in our area. It is included by Britton and Brown (Vol. 1, p. 526) under *C. occidentalis* L., which is described as a "shrub or a tree." Sargent also includes under *C. occidentalis*, of which he says: "A polymorphous species; the low shrub form of hillsides and sand dunes is the *C. pumila* of Pursh." The reasons for not maintaining *pumila* in at least varietal rank are not clearly apparent. The form, however, is in the Catalogue, by inclusion in *C. occidentalis*.

 SOME MID-SUMMER PLANTS OF SOUTH-EASTERN TENNESSEE.

BY STANLEY COULTER.

The center from which the collections here reported were made was Mt. Nebo in the Chilhowee Mountains. It is about ten miles to the east of Maryville, which gives the nearest railway communication. From the summit of the mountain the eye reaches westward over a beautiful plain, to the Cumberland Mountains, while twenty miles to the east there arise the peaks of the Great Smoky Mountains. The region lying between the Chilhowee and Great Smoky Mountains is practically virgin, only relatively small areas having been taken for agricultural purposes. The

¹Ridgway, Robert.—Notes on the Native Trees of the Lower Wabash and White River Valleys, in Illinois and Indiana. *Proc. U. S. Natl. Mus.*, 1882, p. 83.