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TRANSACTIONS
OF THE
WISCONSIN ACADEMY
OF
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VOL. XVI, PART II, NO. 1

MADISON, WISCONSIN

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FOURTH SUPPLEMENTARY LIST OF PARASITIC FUNGI OF WISCONSIN.

J. J. DAVIS.

In 1884 Doctor William Trelease, at that time holding the professorship of botany in the University of Wisconsin, prepared a Preliminary List of the Parasitic Fungi of Wisconsin, which was published in the Transactions of the Wisconsin Academy of Sciences, Arts, and Letters, vol. VI (1884). Supplementary lists, prepared by the writer, were issued through the same publication, in vols. IX (1893), XI (1897), and XIV (1903.) Of these this list is a continuation. Like them it consists of a list of additional hosts, a list of additional species and an index to the hosts mentioned. The numbers attached to the entries in the first are those under which the species were first reported in these lists while those of the second are serial and consecutive to those of the preceding lists. Unless otherwise indicated it is to be understood that the specimens upon which the entries are based are in my herbarium and that when the name of the collector is not given (in parenthesis) that the compiler is also the collector.

I wish to tender my thanks to those who have assisted in the preparation of the list and especially to Prof. Robert A. Harper and the botanical staff of the University of Wisconsin for services and material kindly given, Dr. J. C. Arthur and Mr. F. D. Kern of Purdue University for determination of the *Uredinales*, and Dr. G. P. Clinton of the Connecticut Agricultural Experiment Station for similar service in the *Ustilaginales*.

The names proposed by Dr. Arthur, pycnia (O) aecia (I) uredinia (II) and telia (III) have been used for the forms of the *Uredineae*.

It hardly needs saying that much work is yet to be done before the parasitic fungus flora of Wisconsin can be set forth with any approach to completeness.

Racine, Wisconsin,
November, 1907.

Revised and augmented April, 1909. No attempt, however, has been made to revise the nomenclature of the hosts which corresponds therefore, for the most part, with that of the preceding lists.

CORRECTION SLIP FOR No. 26.

This should not be referred to *Peronospora lophanthi* Farl. It differs in the larger and more loosely branched conidiophores and the oval conidia 30—36×20 microns.

ADDITIONAL HOSTS

A list of Fungi that have been recorded in previous Wisconsin lists but not as growing on the hosts here given.

4. ALBUGO CANDIDUS (Pers.) O. Kuntze.
Oospores in leaves of *Lepidium Virginicum* L. Eau Claire.
5. ALBUGO TRAGOPOGONIS (Pers.) S. F. Gray.
On *Senecio aureus* L. Radisson.
10. PLASMOPARA HALSTEDII (Farl.) Berl. & DeToni.
On *Bidens cernua* L. Dousman.
On *Erigeron annuus* Pers. Racine.
13. PLASMOPARA ENTOSPORA (Roze & Cornu) Schroet.
On *Aster puniceus* L. and *Solidago rigida* L. Racine.
14. PLASMOPARA PYGMAEA (Ung.) Schroet.
On *Axemone Pennsylvanica* L. Kenosha county.
22. PERONOSPORA CALOTHECA D. By.
On *Galium Aparine* L. Racine and Kenosha county.
26. PERONOSPORA LOPHANTHI Farl.
On *Dracocephalum parviflorum* Nutt. Gordon.
34. UNCINULA CIRCINATA C. & P.
On *Acer dasycarpum* Ehrh. Racine.
37. MICROSPHAERA DIFFUSA C. & P.
On *Desmodium paniculatum* DC. Kenosha county.
281. SPHAEROTHECA HUMULI (DC.) Burr.
On *Mitella diphylla* L. Racine. Collected but once and in small quantity on this host. On *Rhus glabra* L. Waupaca.
45. — var. FULIGINEA (Schlect) Salm.
On *Plantago major* L. Racine.
48. ERYSHIPHE CICHORACEARUM DC.
On *Plantago major* L. and *P. Rugelii* Desne. Racine.
On *Parietaria Pennsylvanica* Muhl. Sullivan;
Heliopsis scabra Dunal, Kenosha; *Dahlia* (Cult.)
Racine. Kelsey reports this species on *Dahlia*

- while Tracy reports *E. communis*. (Wallr.) Schlect.
49. ERYSHIPHE POLYGONI DC.
On *Caltha palustris* L. Sullivan and Dousman;
Polygonum aviculare L. Racine.
64. EPICHLÖE TYPHINA (Pers.) Tul.
On *Asprella Hystrix* Willd. Racine.
65. SCLEROTIUM CLAVUS DC.
On *Secale cereale* L. Dousman.
67. CLAVICEPS *sp. indet.*
Sclerotia on *Oryzopsis melanocarpa* Muhl. Somers.
78. DIDYMARIA DIDYMA (Ung.) Pound.
On *Ranunculus Pennsylvanicus* L. Barron.
80. RAMULARIA PLANTAGINIS E. & M.
On *Plantago cordata* Lam. Kenosha county. Spots
larger; conidia sometimes 50 x 5 microns and
triseptate.
91. CERCOSPORELLA CANA (Pass.) Sacc.
On *Erigeron Philadelphicus* L. Racine.
96. CERCOSPORA RACEMOSA E. & M.
On *Ambrosia trifida* L. Madison. As stated by
Ellis & Everhart (Journal of Mycology 1, 55)
this is doubtfully distinct from *Cercospora fer-*
ruginea Fekl. to which specimens on *Compositae*
have been referred.
124. CYLINDROSPORIUM PADI Karst.
On *Prunus Virginiana* L. and *Prunus Cerasus* L.
(Cult.) Racine. On *Prunus Pennsylvanica*
L. f. State Line.
128. SEPTORIA RIBIS Desm.
On *Ribes triste* Pall. Radisson.
130. SEPTORIA ERIGERONTIS B. & C.
On *Erigeron annuus* Pers. and *E. Philadelphicus* L.
Racine. On *Erigeron strigosus* Muhl. Gordon.
136. SEPTORIA ASTRAGALI Desm.
On *Lathyrus ochroleucus* Hook. Adams county.

140. SEPTORIA GRAMINUM Desm.
On *Panicum depauperatum* Muhl. Madison. (Com. Harper.)
141. SEPTORIA RUBI West.
On *Rubus parviflorus* Nutt. Mellen and Ashland.
152. UROMYCES TRIFOLII (A. & S.)
Uredinia on *Trifolium hybridum* L. Racine.
178. PUCCINIA POLYGONI-AMPHIBII Pers.
Uredinia and telia on *Polygonum Virginianum* L. Racine. I have found the rust on this host at but one station but it was abundant there.
190. PUCCINIA PUNCTATA Lk. (*Puccinia galii* Pers.)
Aecia on *Galium asprellum* Michx. Douglas County; Uredinia on the same host. Radisson. I have collected the aecia on *Galium Aparine* L. in small quantity in a moist thicket near Racine but the specimens have failed to reach the herbarium.
200. PUCCINIA GRAMINIS Pers.
Uredinia and telia on *Agropyrum caninum* R. & S., Waupaca and on *A. repens* L. Kenosha county. Uredinia on *Secale cereale* L. (cult.) Dousman. Telia on *Elymus Canadensis* L. and *E. striatus* Willd. Racine.
203. In a paper on North American Rose Rusts published in *Torreyia* 9, 2, Feb. 1909, Prof. J. C. Arthur includes southern Wisconsin in the range of *Phragmidium rasae-setigeræ* Diet. and *Phragmidium rosae-arkansanæ* Diet. which are segregates from the *Phragmidium subcorticium* (Schrank) of the Preliminary List. Two other species presumably occur in Wisconsin on cultivated roses.
209. MELAMPSORA BIGELOWII Thuem.
(*M. salicis-capreae* Prelim. List; *M. farinosa* 2nd Suppl. List.)
Aecia on *Larix americana* Michx. Wind Lake (Kern & Davis.)
215. PUCCINIASTRUM PYROLAE (Pers.) Diet.
Uredinia on *Pyrola rotundifolia* L. Gordon.

217. *HYALOPSORA POLYPODII* (DC.) Magn.
(*Uredo polypodii* (P.) Preliminary List.) On *Cystopteris bulbifera* Bernh. Wisconsin *vide* North American Flora 7, 2, 113.
219. *Puccinia pustulata* (M. A. Curtis.) Arth.
Dr. Arthur has shown by cultures that *Aecidium pustulatum* M. A. Curtis is the aecial stage of a rust to which he gives the above name and which develops its further stages on *Andropogon*. As this *Aecidium* is abundant about Racine while I have not seen the one on *Pentstemon* I infer that the uredinia and telia that I have collected in this vicinity on *Andropogon furcatus* Muhl. and *A. scoparius* Michx. belong to this species.
229. *Puccinia impatientis* (Schw.) Arth.
Uredinia and telia on *Elymus Virginicus* L. referred to *Puccinia rubigo vera* (DC.) Wint. in the supplementary list is to be placed here, Dr. Arthur having shown that it is genetically connected with *Aecidium impatientis* Schw.
245. *Gymnosporangium davisii* Kern.
Telia on *Juniperus communis* L. var. *depressa* Pursh. Wind Lake. In the Preliminary List under this number spermogonia collected at La Crosse on *Pyrus arbutifolia* L. by Pammel were doubtfully referred to *Roestelia transformans* Ell. I have collected the pycnia on *Pyrus melanocarpa* (Michx.) Willd. at Sullivan and Waupaca as well as at Wind Lake. The aecia are of slow growth and seem not to have been collected in Wisconsin as yet. The demonstration of the connection of the stages on the juniper and the choke berry was made by Mr. F. D. Kern of Purdue university using Wisconsin material for inoculation.
251. *Ustilago spermophora* B. & C.
On *Eragrostis reptans* Nees. Racine.

260. *ENTYLOMA AUSTRALE* Speg.
On *Physalis pubescens* L. Racine.
263. *ENTYLOMA THALICTRI* Schroet.
On *Thalictrum revolutum* DC. Racine.
269. *SYNCHYTRIUM AUREUM* Schroet.
On leaves and petioles of *Pedicularis Canadensis* L. Racine; on *Prenanthes alba* L. Kenosha county. Only three small leaves of the former and one leaf of the latter were found bearing this fungus. The affected portions of the leaves of *Pedicularis* are curled and tinged with purple. The *Prenanthes* leaf is not distorted or stained but the galls are more prominent, especially on the midrib. On both the spots are yellow, the resting spores almost black, globose and lying rather loosely in the galls. My measurements on the former were 160–175, on the latter 110–155 microns.
270. *UROPHLYCTIS PLURIANNULATA* (B. & C.) Farl.
(*Synchytrium pluriannulatum* (B. & C.) Farl. Suppl. List.)
On leaves and petioles of *Zizia aurea* Koch. Kenosha county.
276. *ERYSIPHE GALEOPSISIDIS* DC.
On *Chelone glabra* L. Kenosha county.
279. *MICROSPHAERA ALNI* (DC.) Wint. var. *VACCINII* Salm.
On *Vaccinium Canadense* Kalm. State Line. Here also should perhaps be placed specimens on *Kalmia glauca* Ait. collected at State Line. Although taken in October and the asci and spores are well developed there are no branching tips to the appendages.
293. *ASCOCHYTA PISI* Lib.
On leaves of *Vicia americana* Muhl. Clinton Junction and Racine.
4-celled sporules are not uncommon in these specimens the lateral septa being formed later than the median one.

303. CERCOSPORA MICROSORA Sacc.

ON *TILIA EUROPAEA* L. (cult.) Madison.

304. CERCOSPORA MONTANA Speg.

ON *Epilobium angustifolium* L. Eagle River.

In *Annales Mycologici* 6, 3, 214, Otto Jaap gives the synonymy of this species giving preference to the name *Ramularia punctiformis* (Schlecht.) v. Hoehn. and considering *Ramularia chamaenerii* Rostrup on *Epilobium* (*Chamaenerion*) *latifolium* distinct. I have not access to specimens or to a description of Rostrup's species and have not observed that American specimens on *Epilobium* (*Chamaenerion*) *angustifolium* are distinct.

312. In the Supplementary List the name *Cercospora punctoidea* Ell. & Holway was used for a fungus collected at Racine on *Galium trifidum* Ait. but a description apparently was never published. It is perhaps better to include this in *Cercospora galii* Ell. & Holway from which it differs in the longer and more slender conidia ($40-75 \times 2\frac{1}{2}-3$ microns).

315. CERCOSPORA SEQUOIAE E. & E.

ON *Juniperus communis* L. var. *alpina* Gaud. Wind Lake in early spring. Intermediate between the type on *Sequoia* as described and the var. *juniperi* E. & E. on *Juniperus Virginiana* L. which was the form recorded under this number. In these specimens the hyphae are $40-80 \times 3-4$ microns and the conidia $25-45 \times 3-4$.

337. GLAEOSPORIUM CANADENSE E. & E.

ON *Quercus rubra* L. South Milwaukee. Edgerton (Bot. Gaz. 45, 6, 378 *et seq.*) considers this identical with the sycamore anthracnose *Gloeosporium nervisequum* (Fckl.) Sacc. of which *Gnomonia veneta* (Sacc. & Speg.) Kleb. is the ascigerous form.

344. GLOEOSPORIUM RIBIS (Lib.) Desm. & Mont.

On *Ribes triste* Pall. La Pointe.

On *Ribes vulgare* Lam. (cult.) Kenosha.

On *Ribes prostratum* L'Her. Mellen. On the latter host the conidia are but little curved and mostly 20—24 microns long; probably the forma *ribis nigri americana* of Saccardo. This is said to be the conidial form of *Drepanopeziza ribis* Kleb.

359. Under the name *Phyllosticta cruenta* Fr. (properly (Fr.) Kickx) specimens were reported on *Uvularia grandiflora* Smith and *Smilacina*. The American form on *Smilacina* with globose sporules has been separated by Peck (Report of the State Botanist, 1905, p. 26) under the name *Phyllosticta pallidior*. This has also been collected at Waupaca on *Smilacina racemosa* Desf. with the deeply colored border 1—1½ mm wide. In specimens from Adams county on *Smilacina stellata* Desf. the colored border is less than 1 mm. wide and the color is often reduced or even lacking from a portion or sometimes all of the periphery of the spot. The sporules are spherical, 10 microns in diameter. The specimen on *Uvularia* seems different from this forming elliptical to oblong spots 1—3 cm long, pale brown above pale gray beneath and without a colored border. The pycnidia are amphigenous, globose, black, 70—100 microns in diameter and the sporules are elliptical 5—7 × 3—4 microns with a single vacuole. In Farlow's *Host Index Phyllosticta uvulariæ* Galloway is given under *Uvularia grandiflora* Smith. Not being able to find a description of this species I appealed to Dr. Galloway who referred the matter to Mrs. Flora W. Patterson, Mycologist of the Bureau of Plant Industry. From her report I quote as follows: "It is safe to write to Dr. Davis that the description of his fungus does not fit *Phyllosticta uvulariæ* as represented in our col-

lection. There is one small portion of a leaf that was issued in Ell. & Ev. *N. A. Fungi*, 2153, but I can find no description of the species. This seemed strange to me until I have now carefully examined the specimen and as I should hesitate to call this a *Phyllosticta* it may be that Prof. Ellis had been doubtful about it before publishing the descriptions of all species of *Phyllosticta* issued up to August, 1900. The spores of this material look to me like those of an immature *Sphaeropsis*. The following is a fair description of this specimen: Spots irregular, 2—7 mm, alutaceous, margin darker and reddish brown; pycnidia black, amphigenous, 30—35 microns; spores $5\frac{1}{2}$ —6 × 7 microns, irregular in outline and in masses having a yellowish tinge.”

I have labeled my specimen on *Uvularia* PHYLLOSTICTA DISCINCTA n. sp. but the material is meager to stand as the type of a new species.

385. RAMULARIA ROSEA Fekl.

The host of the Wisconsin fungus that has been referred to this species appears to be *Salix discolor* Muhl. rather than *Salix rostrata* Richards. In a recent collection the conidia are 4—5 microns in diameter.

387. RAMULARIA RUFOMACULANS Pk.

On *Polygonum cilinode* Michx. with *Septoria polygonorum* Desm. Radisson.

On *Polygonum Hartwrightii* Gray. Racine.

406. SEPTORIA CERASTII Rob. & Desm.

On *Cerastium viscosum* L. Racine.

407. SEPTORIA CIRSIII Niessl.

On *Cnicus lanceolatus* Hoffm. Dousman.

408. SEPTORIA CONSPICUA E. & M.

On *Steironema lanceolatum* Gray. Adams county. Pycnidia and sporules smaller than in the typical form on *S. ciliatum* Raf.

450. SEPTORIA SOLIDAGINICOLA Pk.

On *Solidago arguta* Ait. Racine. In this specimen the sporules are $24-36 \times 1\frac{1}{2}$ microns. *Septoria intermedia* E. & E. on the same or a similar host is probably not distinct from this.

480. CHRYSOMYXA CASSANDRAE (Pk. & Cl.) Tranz.

(*Uredo cassandrae* Pk. & Cl. suppl. List. *Melamp-soropsis cassandrae* Arth.) Aecia (*Peridermium consimile* Arth. & Kern) on *Picea Mariana* Mill. Oneida (Cheney) and Vilas counties, Waupaca and Gordon. The two first mentioned collections were reported as *Peridermium decolorans* Pk. in the 3d suppl. List which species, however, has also been collected in Vilas county.

490. Under this number in the supplementary list was reported the collection in small quantity of *Protomyces macrosporus* Ung. on *Cicuta maculata* L. and reference was made to the fact that considerable search had been made to find more of it but without success. Reexamination of the specimen leads me to the conclusion that it is really *Cladochytrium maculare* (Wallr.) on a scape of *Alisma Plantago* L.

491. TUBERCINIA CLINTONIAE K m.

Collected in small quantity in Douglas County on *Streptopus roseus* Michx. This fungus was included in the supplementary list under the name *Tubercinia trientalis* B. & Br. the host being given as *Smilacina*. On re xamination however I am constrained to believe that *Streptopus roseus* is the host of that collection also. It is somewhat curious that these two collections, with a time interval of 21 years, were made in the south eastern and north western corners of the state.

492. TUBERCULINA PERSICINA (Ditm.) Sacc.

On *Lupinus perennis* L. Adams county. This is the only evidence that I have seen of the occurrence of a rust on *Lupinus* in Wisconsin.

503. *PHYSALOSPORA AMBROSIAE* E. & E.

On *Ambrosia artemisiaefolia* L. South Milwaukee.

527. *MONILIA LINHARTIANA* Sacc.

On young leaves of *Crataegus*, of *Prunus serotina* Ehrh. and *P. Virginiana* L. Racine and Kenosha county. In *Annales Mycologici*, 6, 109 et seq. 1908, Mr. J. M. Reade gives some results of his investigation of North American species of *Sclerotinia*, the conidia of which are referred to the form genus *Monilia*. The name used in the 2nd Suppl. List and given above was first applied to conidia on *Prunus Padus* in Europe. Mr. Reade considers the American forms distinct from this and that the forms on *Prunus serotina* Ehrh. and *Prunus Virginiana* L. are distinct from each other referring them to *Sclerotinia seaveri* Rehm and *Sclerotinia angustior* Reade respectively. The forms on *Crataegus* are referred to *Sclerotinia johnsonii* (E. & E.) Rehm. Mr. Reade has kindly examined Wisconsin specimens.

531. *PHYLLUSTICTA DECIDUA* E. & K.

On *Monarda punctata* L. Adams county.

On *Eupatorium perfoliatum* L. Dousman.

On *Echinosperrum Virginicum* Lehm. Racine.

On the latter host the spots have a black-brown border; the pycnidia are about 80 microns in diameter and the sporules mostly $4-6 \times 3-4$.

On *Aralia racemosa* L. Mellen.

537. *SEPTORIA BACILLIGERA* Wint.

On *Ambrosia trifida* L. Specimens collected in Kenosha county in September have sporules $30-50 \times 2$ microns, apparently continuous. Possibly distinct.

542. *SEPTORIA RUMICIS* Ellis.

On *Rumex altissimus* Wood. Beloit. In this specimen the spots are round to oval, light brown, concentrically zoned about a lighter colored center

which is surrounded by a reddish brown border, 5—13 mm in diameter; pycnidia dark brown or black, 70—100 microns; sporules $20-33 \times 1\frac{1}{2}-3\frac{1}{2}$ microns. Perhaps distinct but it is more likely that the differences are due to the thicker leaves of this host.

549. PUCCINIA DAYI Clint.

On the upper leaves of *Steironema lanceolatum* Gray. Adams county. Locally abundant. Spores quite variable.

558. CINTRACTIA CARICIS (Pers.) Magn.

On *Carex aurea* Nutt. Racine.

On *Carex Pennsylvanica* Lam. State Line and Gordon. On *Carex umbellata* Schkuhr. Gordon.

573. PLASMOPARA RIBICOLA Schroet.

On *Ribes Cynosbati* L. Mellen. This mildew has also been observed at two stations on Madeleine island in lake Superior on *Ribes triste* Pall. and one of the gooseberries. The fungus appears to have a more restricted southward range than have some of its hosts.

586. CERCOSPORA CARICINA Ell. & Dearn.

On *Carex gracillima* Schw. Radisson.

On *Carex cephaloidea* Dewey. Kenosha County. Pending the collection of more and better material I refer here a specimen on *Cyperus Houghtoni* Torr. collected at Gordon.

595. CERCOSPORA MAIANTHEMI Fekl.

The specimens referred to this species in the 3rd suppl. list I now refer to *Cercospora subsanguinea* E. & E. A specimen, somewhat over mature, collected in Adams county in July, 1908, however is quite different and I have referred it to Fuckel's species although the mature hyphae are frequently shorter (50 microns) and the conidia longer (80—100 microns) than indicated in the description in the *Sylloge Fungorum*.

596a. Under this no. in the 3d Suppl. List a specimen was referred to *Cercospora pustula* Cke. This was an error as the fungus is the same as that given in the Suppl. List under the name *Gloeosporium ampelopsidis* E. & E. it having been referred by the authors to *Septogloeum* as a section (Journal of Mycology 5, 155) and is not distinct from *Septoria ampelopsidis* Ellis, the perithecia being frequently imperfect.

618. RAMULARIA VIRGAUREAE Thum.

On *Solidago ulmifolia* Muhl. Kenosha County.

647. PUCCINIASTRUM ARCTICUM (Lagerh.) Tranz. var. AMERICANUM Farl.

Under this number in the 3d supplementary list and under the name *Chrysomyxa albida* Kuhn record was made of a specimen from Vilas county on *Rubus strigosus* Michx. On examination this proves to be the Uredo stage of the *Pucciniastrum*. Reference was also made to the report of *Chrysomyxa albida* Kuehn on *Rubus occidentalis* L. in Wisconsin by Tracy & Galloway in the *Journal of Mycology* (4, 7, 62). The report was based on specimens collected at Platteville and now in the herbarium of the Bureau of Plant Industry in Washington. The Curator of the herbarium, Mrs. Flora W. Patterson, informs me that the specimens were recently examined by Mr. F. D. Kern and identified as above. I have also collected the uredinia on *Rubus strigosus* Michx. in Adams county and Burlington and both uredinia and telia on the same host at Racine and uredinia on *Rubus triflorus* Richards. at Sullivan. In his publication of this variety Dr. Farlow refers to a specimen collected at Madison by W. Trelease. This appears to be a common rust on the raspberries in Wisconsin but the uredinia have been passed in the field as those of *Phragmidium* and

the inconspicuous telia escaped observation. I know of no authentic Wisconsin specimens of *Chrysomyxa* (*Kuehneola*) *albida*.

634. PANAEOLUS EPIMYCES Pk.

On *Coprinus comatus* Fr. *fide* Helen Sherman in Journal of Mycology **11**, 78, 168.

ADDITIONAL SPECIES.

An enumeration of species not recorded in previous Wisconsin lists.

662. FRANKIA ALNI (Wor.)

Forming tubercles on the roots of *Alnus incana* Willd. Madison. (Prof. R. A. Harper.)

663. FRANKIA CEANOETHI Atk.

On roots of *Ceanothus Americanus* L. Madison. (Mr. E. G. Artzberger.)

664. SYNCHYTRIUM SCIRPI Davis.

On *Scirpus atrovirens* Muhl. Kenosha county and Racine. Three stations are known to me where this fungus occurs and sometimes rather abundantly.

665. PROTOMYCES GRAVIDUS Davis.

On *Bidens cernua* L. and *Bidens connata* Muhl., Dousman; on the same species and sparingly on *Bidens frondosa* L., Racine; on *Bidens cernua* L., Berryville and Burlington; on *Ambrosia trifida* L. and *Ambrosia artemisiaefolia* L., Racine.

Before the description of this species was published but too late for the addition of a foot note I found it at Racine on *Ambrosia trifida* L. and soon after on *A. artemisiaefolia* L. On the former host it was abundant but confined to one station; on the latter scarce but more widely distributed. In the description, which was based on specimens occurring on *Bidens*, the spores were stated to be 30—55 microns long. In my specimens on *Ambrosia trifida* L. they average about 60 microns

in the greater diameter. Peck stated that in his collection on *Ambrosia trifida* L. they were 35—60 microns long. (35th Report, p. 138.) In my first specimens on *Ambrosia artemisiaefolia* L. the spores were 55—80 microns long but a later collection on this host showed spores of about the size of those on *Bidens*. This collection consisted of a single gall on a plant growing in a roadside ditch with infected *Bidens*. This was the only instance in which I have seen the fungus on both host genera at one station. Altogether the range of spore length is from 30—80 microns which is just the range given for the spores of *Protomyces macrosporus* Ung. of Europe which however appears to be confined to *Umbelliferae* and to be unknown in America, the citation of that species in my first supplementary list having been based upon error as to both fungus and host. Specimens on *Bidens cernua* L. growing in very loose peaty soil have galls upon the roots also. Recent authors place *Protomyces* in HEMIASCINEAE.

Prof. E. W. Olive has kindly furnished the following list of species of *Empusa* collected by him in the vicinity of Madison and specimens of which are in his collection.

666. *EMPUSA AMERICANA* Thaxt.
On a blue bottle fly. Madison. (Olive.)
667. *EMPUSA APHIDIS* Hoffman.
On various aphides. Madison. (Olive.)
668. *EMPUSA CULICIS* A. Braun.
On *Chironomus sp. indet.* Madison. (Olive.)
669. *EMPUSA MUSCAE* Cohn.
On house flies. Madison. (Olive.)
670. *EMPUSA RHIZOPHORA* Thaxt.
On caddis flies. Madison. (Olive.)
671. *EMPUSA SCIARAE* Olive.
On *Sciara sp. indet.* Madison. (Olive.)

672. PHYTOPHTHORA THALICRI Wilson & Davis.

On *Thalictrum revolutum* DC. Kenosha county and Racine. This occurred through the summer and fall. The conidia were germinating in specimens collected in October, the globose hyaline zoöspores escaping through the apex of the conidium. Apparently with zoöspore formation the conidium changes in shape from elliptical to ovate by reason of the distal portion becoming conical. This has also been collected on *Thalictrum dasycarpum* F. & L. at Mellen which is about 25 miles from Lake Superior and 300 miles from the other stations. I have found this only in moist thickets.

673. PERONOSPORA FLOERKEAE Kellerm.

On *Floerkea proserpinacoides* Willd. Collected by Prof. E. W. D. Holway at St. Croix Falls at about the same time that the type material was collected in Ohio by Dr. Kellerman. That is the only Wisconsin collection of which I have knowledge.

674. TAPHRIA DEFORMANS (Berk.) Tul.

On *Prunus Persica* Sieb. & Zucc. (cult.) Racine. This name was used in the supplementary list (No. 274) for what is now considered to be a distinct species.

674a. TAPHRIA POTENTILLAE (Farl.) Johans.

On *Potentilla arguta* Ph. Kenosha. A recent collection not yet carefully examined.

675. LABOULBENIA GYRINIDEARUM Thaxt.

On *Gyrinus* sp. (?) Madison. (Prof. R. A. Harper.)

676. HYPOMYCES LATERITIUS (Fr.) Tul.

On *Lactarius* sp? Eagle Heights. (R. A. Harper.)

677. HYPOMYCES VIRIDIS (A. & S.) Sacc.

On (?) Eagle Heights (R. A. Harper); Brule, (J. B. Overton).

678. *CORDYCEPS HERCULEA* (Schw.) E. & E.
On larvae of *Lachnosterna* (?) Madison. (R. A. Harper.) Prof. Harper informs me that this is sometimes abundant at Madison. The determination was made by Prof. Harper with the fresh specimens.
- 678a. *KEITHIA THUJINA* E. J. Durand *ined.*
On living leaves of *Thuja occidentalis* L. Mellen.
Abundant in Oconto county.
679. *SCLEROTINIA TUBEROSA* Fekl.
Growing from sclerotia attached to the rhizomes of *Anemone nemorosa* L. Milwaukee (F. E. Brown; com. R. A. Harper).
680. *PSEUDOPEZIZA MEDICAGINIS* (Lib.) Sacc.
On *Medicago sativa* L. (cult.) Kenosha county.
681. *LOPHODERMIVM PINASTRI* (Schrad.) Chev.
On *Pinus Strobus* L. Three Lakes.
On *Pinus Banksiana* Lambert. Gordon.
682. *PHYLLACHORA JUNCI* Fekl.
On *Juncus tenuis* Willd. Racine.
Only immature material in which asci have not developed has been collected.
683. *ASCOCHYTA CLEMATIDINA* Thum.
On *Clematis Virginiana* L. Kenosha county. I have used the above name because there is in the Ellis herbarium a specimen of what appears to be the same fungus which is so labeled. I append my notes on the Wisconsin specimens: Spots suborbicular to irregular, brown, becoming cinereous with a blackish brown border; pycnidia epiphyllous, prominent, hemispherical to globose, amber colored to light brown or ochraceous, 100—125 microns in diameter; sporules oblong, hyaline, continuous, 2—4 nucleate, 10—15 × 3 microns in germination becoming a third longer and twice as thick and 1—3 septate. Wrinkling of the cuticle sometimes gives the spots the appearance of bearing radiating whitish fibrils.

683a — var. THALICTRI n. var.

On *Thalictrum dioicum* L. Radisson.

Pycnidia smaller; sporules $8-10 \times 2-3$ microns.

683b. ASCOCHYTA (?) INFUSCANS E. & E.

On *Ranunculus abortivus* L. Racine. This was doubtfully referred to *Ascochyta* by the authors because the sporules in the type material were binucleate and it was thought probable that they became uniseptate. The sporules of the Racine specimens are 2—4 nucleate and when treated with dilute iodine or methyl green-acetic acid solutions the cytoplasm is seen to be 1—3 divided but there are no true septa. In germination the sporules swell and become torose with one to three constrictions and at these points constrictive division begins. When germinating actively however germ tubes are given off, usually at one or both extremities, and the nuclei and cytoplasm pass out of the sporules before the divisions are completed. Some of the sporules, however, do not form germ tubes but divide into 2—4 cells which separate and some at least of these secondary sporules, if the term is allowed, become uniseptate without constriction. The effects of this parasite upon the host are serious, causing speedy death of as much of the plant as is distal to the point of attack and in moist weather such dying portions are usually covered by a growth (*Botrytis* as I have seen it) that seems to inhibit the development of the pycnidia, so that it is only in comparatively dry weather that I have been able to get satisfactory specimens. Stems, branches and petioles are attacked as well as leaves. In June, 1908, I secured fresh mature material the sporules having oozed out in cirri. These sporules were quadrinucleate and germinated speedily in slide cultures producing both terminal and lateral germ tubes without the torose swelling.

- 683c. ASCOCHYTA LEONURI Ell. & Dearn.
On *Lycopus sinuatus* Ell. Kenosha county.
684. CERCOSPORA AVICULARIS Wint.
On *Polygonum aviculare* L. Racine.
On *Polygonum erectum* L. Adams county.
685. CERCOSPORA CEANOTHI Kell. & Swingle.
On *Ceanothus ovatus* Desf. Adams county.
686. CERCOSPORA CIRCUMSCISSA Sacc.
On *Prunus serotina* Ehrh. Wind Lake.
687. CERCOSPORA CYPRIPEDEII Ell. & Dearn.
On *Cypripedium pubescens* Willd. (?) Waupaca. On
Cypripedium acaule Ait. Adams county.
688. CERCOSPORA EPIGAEINA sp. nov.
On red brown areas occupying the greater part of the leaf; hyphal tufts hypophyllous, thickly and uniformly effused over the affected areas; hyphae densely tufted from a tubercular base, brownish black, straight or the outer ones curved toward the center of the fascicle, continuous, $20-30 \times 3-4$ microns; conidia hyaline straight or somewhat curved, tapering, pluriseptate, $60-100 \times 3$ microns.
On *Epigaea repens* L. Adams county, July 18, 1908.
689. CERCOSPORA MEGALOPOTAMICA Speg.
On *Bidens cernua* L. Dousman. The specimens which I have referred to this South American species have the following characters: Spots definite, suborbicular, dark brown becoming arid and whitish in the center, concentrically wrinkled, paler and less definite beneath, 5—8 mm in diameter; hyphae amphigenous in small tufts, deep brown, septate, straight or somewhat flexuose and toothed $35-45 \times 3-4$ microns; conidia hyaline, often somewhat curved, tapering upward, pluriseptate, containing numerous conspicuous nuclei or globose granules, $80-165 \times 5$ microns.
690. CERCOSPORA MENISPERMI Ell. & Hol.
On *Menispermum Canadense* L. Racine.

691. *CERCOSPORA MISSISSIPPIENSIS* Tracy & Earle.
 On *Smilax hispida* Muhl. Racine. In these specimens the spots lack the pallid outer margin.
692. *CERCOSPORA SUBSANGUINEA* E. & E.
 On *Maianthemum canadense* Desf. Vilas county, Pelican Lake and La Pointe. The two former specimens were erroneously recorded as *Cercospora maiianthemii* (Fekl.) Sacc. See No. 595 in this list.
693. *CERCOSPORA VITICOLA* Sacc.
 On *Vitis riparia* Michx. Racine.
694. *CYLINDROSPORIUM BETULAE* n. sp.
 Spots subcircular, immarginate, cinnamon brown beneath darker above, peripheral portion often green, 3—8 mm in diameter; acervuli hypophyllous, pale brown; conidia bacillary, straight or somewhat curved, obtuse, $25-40 \times 1\frac{1}{2}-2$ microns. On leaves of *Betula pumila* L. Sullivan. July, 1906. Possibly a form of *Septoria betulae* (Lib.) West. but the sporogenous layer is disciform.
695. *CYLINDROSPORIUM CIRCINANS* Wint.
 On *Sanguinaria canadensis* L. Adams county.
696. *CYLINDROSPORIUM CLEMATIDIS* E. & E.
 On *Clematis Virginiana* L. Somers. Locally abundant. Exuded conidia forming a white powder on the surface of the leaf or in cirri.
697. *CYLINDROSPORIUM RIBIS* sp. nov.
 Spots subcircular, lurid or tawny with a narrow dark border, 2—6 mm in diameter; acervuli 30—50 microns in diameter; sporules discharged on the upper surface of the leaf, curved, often attenuate upwards, $50-80 \times 1\frac{1}{2}$ microns. On leaves of *Ribes triste* Pall. and *Ribes prostratum* L'Her. La Pointe. On *Ribes* sp. *indet.* (gooseberry). Racine. July and August. This may prove to be *Septoria sibirica* Thum. with undeveloped pycnidial wall.

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698. *CYLINDROSPORIUM TRADESCANTIAE* Ell. & Kellerm.

On *Tradescantia Virginica* L. Racine. In these specimens the areas affected by the fungus were not purplish but yellow becoming brown. Some of the conidia are 100 microns long.

699. *DILOPHOSPORA ALOPECURI* (Fr.) Fr.

On *Calamagrostis Canadensis* Beauv. Fide Dr. Ernst A. Bessey in *Journal of Mycology* 12, 57. Kenosha county and Wind Lake.

700. *FUSARIUM HETEROSPORUM* Nees.

On ovaries and glumes of *Glyceria fluitans* R. Br. accompanying sclerotia of *Claviceps*. Racine.

701. *GLOEOSPORIUM BETULARUM* E. & M.

On *Betula nigra* L. La Crosse. (Jolivette.) To this species I also refer a specimen on *Betula papyrifera* Marsh. from Ashland. The smaller acervuli are on spots or irregular brown areas, .5—2 cm in diameter but the sporules are similar although sometimes attaining a length of 16 microns.

702. *GLOEOSPORIUM THALICTRI* sp. nov.

Spots circular to oblong, brown, with a narrow dark border, 5—10 mm in diameter; acervuli hypophyllous, scattered, dark brown; sporules elliptical oblong, hyaline, 4—6 × 2—3 microns. Mellen, July 14, 1908.

On *Thalictrum dasycarpum* Fisch. & Lall.

703. *GRAPHIUM GRACILE* Pk.

On *Rubus strigosus* Michx. Adams county.

704. *MARSSONINA NECANS* (E. & E.) Magn.

On *Pteris aquilina* L. Radisson. Magnus has proposed this generic name to replace *Marsonia* or *Marssonina* preoccupied by reason of being attached to a genus of spermatophytes.

705. *MARSSONINA VIOLAE* (Pass.) Sacc.

On *Viola* sp. *indet.* La Pointe.

In the specimens which I have referred to this species the sporules are usually curved or falcate and the

walls of the smaller extremity are thickened and the rostrum becomes solid reminding one of the apical portion of some *Uromyces* spores. This gives somewhat the appearance of a septum at the junction of the thickened portion with the body of the sporule which is perhaps what Passerini called an obscure extra median septum in his description and which led Saccardo to transfer the fungus from *Gloeosporium* to *Marsonia*. As the sporules are often 2—4 nucleate however it is probable that they do become septate before germination.

706. *PHYLLOSTICTA APICALIS* n. sp.

Causing brown areas which occupy $\frac{1}{4}$ to $\frac{3}{4}$ of the distal portion of the leaf extending further along the midrib than the margins therefore somewhat wedge shaped at base, immarginate; pycnidia numerous, amphigenous, dark brown or black, opening by a wide aperture; sporules oblong to oval, hyaline, continuous, $4-7 \times 1-3$ microns.

On *Salix lucida* Muhl. Dousman; July, 1906.

707. *PHYLLOSTICTA DIERVILLAE* n. sp.

Spots irregular, frequently apical, brown with an indefinite yellow border, 1—4 cm in diameter; pycnidia amphigenous, scattered, globose, rather light brown, 80—110 microns; sporules hyaline, oblong $3-5 \times 1\frac{1}{2}-2$ microns. On leaves of *Diervilla trifida* Moench. Gordon. July, 1907.

708. *PHYLLOSTICTA IRIDIS* E. & M.

On *Iris versicolor* L. Kenosha county and Racine. Sporules $12-16 \times 2\frac{1}{2}-3\frac{1}{2}$ microns.

709. *PHYLLOSTICTA MULGEDII* n. sp.

Spots irregular, dark brown, immarginate, 1—3 cm in diameter; pycnidia epiphyllous, inconspicuous, scattered, brown, globose, 75—100 microns; sporules hyaline, elliptical to oblong and globose, $3-7 \times 3$ microns. The sporules are mostly bi-guttulate and probably become septate before

germination. On leaves of *Lactuca leucophaea* Gray. Racine. Sept. 1907.

710. PHYLLOSTICTA RENOIANA Sacc. & Roum.

On *Typha latifolia* L. Sullivan.

I have not seen an authentic specimen of this species. The exuded sporules often resemble small droplets of water adhering to the leaf.

711. PHYLLOSTICTA SYRINGÆ West.

I have referred to this species a fungus observed on the leaves of two shrubs of *Syringa vulgaris* L. in a door yard in Racine. The attack is made at the apex of the leaf and spreads more rapidly along the margins than the midrib. The pycnidia are about 100 microns in diameter and the sporules fusoid-oblong, biguttulate, $6-8 \times 2\frac{1}{2}-3$ microns.

712. PHYLLOSTICTA TRILLII E. & E.

On leaves and calyces of *Trillium cernuum* L. Radisson. As this differs somewhat from the type from the state of Washington, as described, I append my notes: Spots subcircular, brown becoming paler in the center, .5—1 cm in diameter; pycnidia epiphyllous, prominent, hemispherical, black, 75—120 microns; sporules hyaline, fusoid, straight or curved, often plurinucleate, cytoplasm sometimes once divided, $12-20 \times 3$ microns July.

713. PHYLLOSTICTA VIOLÆ Desm.

On looking over some old specimens of CERCOSPORA GRANULIFORMIS Ell. & Hal. on *Viola palmata* L. var. *cucullata* Gray, collected at Racine a few of the leaves were found to bear the *Phyllosticta* also.

714. RAMULARIA ACTEÆ E. & H.

On *Actaea rubra* Willd. La Pointe.

715. RAMULARIA PAULULA n. sp.

Spots definite, suborbicular, brown with a darker margin 1—4 mm in diameter, often accompanied by indeterminate yellow areas of the leaf; hyphae

amphigenous, scattered, hyaline, nearly straight, sometimes shouldered by development of conidia laterally, $20-40 \times 3-5$ microns; conidia hyaline, catenulate, cylindrical, straight, nucleolate, rarely uniseptate, $20-30 \times 4-5$ microns. On leaves of *Elodes Virginica* Nutt. (*Hypericum virginicum* L.) Racine. Sept. 1907.

716. RAMULARIA PRATENSIS Sacc.

On *Rumex verticillatus* L. Racine. In these specimens the conidia are mostly $10-20 \times 3$ microns.

717. RAMULARIA SEROTINA E. & E.

On *Solidago serotina* Ait. Radisson.

718. RAMULARIA STOLONIFERA E. & E.

On *Cornus sp. indet.* Waupaca. On *Cornus stolonifera* Michx. Racine. In these specimens the spots are abundant on the leaves but the conidia are few. Conidia $8-12 \times 1\frac{1}{2}$ microns connect with *Ramularia angustissima* Sacc.

719. SEPTORIA ATRIPLICIS (West.) Fckl.

On *Chenopodium album* L. Waukesha.

720. SEPTORIA BIDENTIS Sacc.

I have referred to this species a somewhat immature fungus collected on *Bidens frondosa* L. at Beloit in May attacking the lower pair or pairs of leaves with destructive effect.

721. SEPTORIA BROMI Sacc.

On *Calamagrostis Canadensis* Beauv. Kenosha county.

722. SEPTORIA CALAMAGROSTIDIS E. & E.

On *Calamagrostis Canadensis* Beauv. Pelican Lake.

723. SEPTORIA DRACOCEPHALI Thum.

A *Septoria* collected at Gordon on *Dracocephalum paviflorum* Nutt. I have referred to this Siberian species although the pycnidia (65—100 microns) are hypophyllous and the sporules $33-56 \times 1\frac{1}{2}-3$ microns.

724. SEPTORIA GALEOPSISIDIS West.

On *Galeopsis Tetrahit* L. State Line. Sporules
35—65 \times 1½ microns.

725. SEPTORIA GRATIOLAE Sacc. & Speg.

On *Gratiola Virginiana* L. Radisson. This corresponds with the description of *S. gratiolae* E. & M. which I assume is not distinct. This seems hardly distinct from the fungus on *Veronica arvensis* L. referred to *Septoria veronicae* Desm. in the supplementary list (No. 458) although there is a slight difference in the size of the pycnidia which are 65 microns in diameter on *Gratiola* and 70—75 on *Veronica*.

726. SEPTORIA HYALINA E. & E.

On *Viola blanda* Willd. Genoa Junction, Dousman, Sullivan and Vilas county.

On *Viola pubescens* Ait. Racine.

727. SEPTORIA LACTUCICOLA E. & M.

On *Lactuca Canadensis* L. Raymond and Berryville.

728. SEPTORIA LYCOPERSICI Speg.

On *Lycopersicum esculentum* Mill. (cult.) Racine. Some tomato growers consider the presence of this fungus desirable because it hastens the ripening of the fruit.

729. SEPTORIA LYTHRINA Pk.

On *Lythrum alatum* Pursh. Union Grove. In this collection the pycnidia are hypophyllous and the sporules continuous but sometimes plurinucleate.

730. SEPTORIA NABALI B. & C.

On *Prenanthes alba* L. Racine.

731. SEPTORIA PARIETARIAE n. sp.

Spots suborbicular to irregular, immarginate, fuliginous; pycnidia epiphyllous but showing through beneath, scattered, dark brown or black, globose, opening by a round pore, 70—100 microns in diameter; sporules hyaline, bacillarv, straight or slightly curved, 30—36 \times 1—1½ microns.

On leaves of *Parietaria Pennsylvanica* Muhl. Sullivan. July 1906. This looks so different from any specimen on *Urticaceae* that I have seen that I have thought it best to keep it separate. It is not unlikely that specimens collected later in the season would show paler spots.

732. SEPTORIA SPHAERELLOIDES E. & K.

On *Hypericum punctatum* Lam. Adams county. The specimens which I have referred to this species because of the correspondence of the sporules bear pycnidia only 50—70 microns in diameter on oblong to angular spots which are testaceous to fulvous in color and 5—15 × 3—5 mm in size.

733. SEPTORIA XANTHII Desm.

On *Xanthium Canadense* Mill. Racine and Somers. Pycnidia sometimes 120 microns in diameter.

734. TUBERCULINA DAVISIANA Sacc. & Trav.

On *Salix cordata* Muhl. Racine. In the summer of 1906 what appeared to be a *Rhytisma* came abundantly on the leaves of *Salix cordata* Muhl. in a ravine near Racine and in every specimen examined a hyphomycetous fungus occurred on the lower surface of the leaves confined to the areas bearing the ascomata. Specimens were sent to Prof. Saccardo for determination and were described under the name given above. Prof. Peck informs me that on looking over the specimens of *Rhytisma salicinum* (Pers.) Fr. in the herbarium of the State Museum at Albany N. Y. he found the same fungus on the leaves of *Salix cordata* Muhl. and suggests the possibility of the *Rhytisma* being different from that ordinarily found on willow leaves. Material was wintered out doors but failed to mature and the following season I was unable to find either *Rhytisma* or *Tuberculina* where they were so abundant the year before.

735. UROMYCES ELEOCHARIDIS Arth.

On *Eleocharis palustris* R. Br. Racine. This was reluctantly referred to *Uromyces junci* (Desm.) Tul. in the third supplementary list.

737. UROMYCES SPARGANII C. & P.

On *Sparganium eurycarpum* Engelm. Madison. (Harper, Olive & Davis.)

738. PUCCINIA APOCRYPTA Ell. & Tracy.

On *Asprella Hystrix* Willd. Racine. This was referred to *Puccinia rubigo-vera* (DC.) Wint. in the supplementary list. I have made but the single collection.

739. PUCCINIA CRYPTOTAENIAE Pk.

On *Cryptotaenia Canadensis* DC. Racine. This was abundant over a small area in the middle of a dense thicket in 1905 but I have not seen it since.

740. PUCCINIA DULICHII Syd.

Telia on leaves and sheaths of *Dulichium arundinaceum* Britton. Burlington.

741. PUCCINIA EATONIAE Arth.

Uredinia and telia on *Eatonia Pennsylvanica* Gray. Bayfield (Cheney) Racine. Referred to *Puccinia rubigo-vera* (DC.) Wint. in the supplementary list. Dr. Arthur has shown that *Aecidium ranunculi* Schw. (Preliminary List No. 236) is the aecial stage of this rust.

742. PUCCINIA MALVACEARUM Mont.

On *Malva rotundifolia* L. and *Althaea rosea* Cav. (cult.) Racine. I first found this at Racine in 1904.

743. PUCCINIA MILII Erikss.

Uredinia on *Milium effusum* L. Racine. Rare. Uredinia and telia on *Oryzopsis asperifolia* Michx. Vilas county. Apparently not common but usually attacking all the leaves of a tuft when present.

744. PUCCINIA OBSCURA Schroet.
Uredinia, telia and mesospores on *Luzula campestris*
DC. Gordon.
745. PUCCINIA ORBICULA Pk.
Uredinia and telia collected in small quantity on
Prenanthes alba L. at La Pointe.
746. PUCCINIA ORNATA Arth. & Hol.
On *Rumex sp. indet.* Radisson.
747. PUCCINIA PHRYMAE (Hals.) Arth.
Aecia (*Aecidium phrymae* Hals.) on *Phryma Leptostachya* L. Madison (Harper); Uredinia and telia
on *Carex longirostris* Torr. Madison (*vide*
Olive.) The genetic connection was demon-
strated by Dr. Arthur at the suggestion of Dr.
Olive using Wisconsin material for inoculation.
(*Journal of Mycology* 14, 93, 22.) I first ob-
served the aecia in 1893 on the University campus
at Madison but too late in the season to secure
satisfactory specimens.
748. PUCCINIA RECEDENS Syd.
On *Senecio aureus* L. Radisson.
749. PUCCINIA STIPAE Arth.
Uredinia and telia on *Stipa spartea* Trin. Racine.
Scarce.
750. CHRYSOMYXA PYROLAE (DC.) Rostr.
Uredinia on *Pyrola secunda* L. Gordon.
751. CRONARTIUM COMPTONIAE Arth.
Uredinia on *Myrica asplenifolia* Endl. Gordon.
Collected several times but always in small quan-
tity.
752. CRONARTIUM QUERCUS (Brondeau) Schroet.
Uredinia on *Quercus alba* L. Madison in October
(Denniston). Telia on *Quercus velutina* Lam.
or related species. Adams county. Abundant in
July. Globose galls on branches of *Pinus*
Banksiana Lambert in the same locality are
probably due to *Peridermium cerebrum* Pk. the

aecial stage of this rust but the season was too far advanced at the time of my visit to secure specimens.

754. GYMNOSPORANGIUM CLAVIPES C. & P.
(*G. germinale* (Schw.) Kern.) Aecia (*Roestelia aurantiaca* Pk.) on *Amelanchier sp. indet.* Big Bay (Cheney) Long Island (Cheney) La Pointe.
755. MELAMPSORIDIUM BETULAE (Schum.) Arth.
Uredinia on *Betula pumila* L. Madison (Prof. R. A. Harper & H. A. Pauly) and Burlington.
Aecia on *Larix Americana* Michx. Douglas county.
756. PHRAGMIDIUM OCCIDENTALE Arth.
Aecia on *Rubus parviflorus* Nutt. La Pointe.
757. PUCCINIASTRUM POTENTILLAE Kom.
Uredinia on *Potentilla tridentata* Ait. Gordon, La Pointe and Adams county.
758. UREDINOPSIS ATKINSONII Magn.
On *Aspidium Thelypteris* Swartz. Racine, Wind Lake and Kenosha county. This was given as *Gloeosporium phegopteridis* Frank in the supplementary list and as *Melampsora scolopendrii* (Fekl.) Farl. in the second supplementary list together with related forms now considered specifically distinct.
759. UREDINOPSIS OSMUNDAE Magn.
On *Osmunda cinnamomea* L. *O. Claytoniana* L. and *O. regalis* L. Vilas county. This was referred to *Uredinopsis scolopendrii* (Fekl.) Diet. in the third supplementary list.
760. UREDINOPSIS PHEGOPTERIDIS Arth.
On *Phegopteris Dryopteris* Fee. Vilas county. This was placed with the preceding in the third supplementary list.
761. AECIDIUM CEANOETHI E. & K.
On *Ceanothus ovatus* Desf. Gordon.
762. CAEOMA ABIETIS—CANADENSIS Farl.
On *Tsuga canadensis* Carr. Mellen.

763. *PERIDERMIMUM BALSAMEUM* Pk.
On *Abies balsamea* Mill. This appears not to have been noted in any of the Wisconsin lists. It probably occurs throughout the range of the host in the state.
764. *PERIDERMIMUM COLORADENSE* (Diet.) Arth. & Kern.
On *Picea nigra* Lk. Gordon.
765. *PERIDERMIMUM GLOBOSUM* Arth.
The type specimen was collected on *Pinus Strobus* L. at Lone Rock by the late Prof. E. S. Goff and is in the herbarium of Dr. J. C. Arthur.
766. *PERIDERMIMUM PECKII* Thum.
On *Tsuga canadensis* Carr. Mellen and Adams county. This was found in abundance on the edges of the bluffs at "the dells."
767. *CINTRACTIA SUBINCLUSA* (Korn.) Magn.
On *Carex filiformis* L. var. *latifolia* Boeckl., *Carex lupulina* Muhl. and *Carex utriculata* Boott. Kenosha county. A single station.
768. *ENTYLOMA CRASTOPHILUM* Sacc.
On *Agrostis alba* L. and *Phleum pratense* L. Racine.
769. *UROCYSTIS OCCULTA* (Wallr.) Rabb.
On *Secale cereale* L. (cult.) Racine. I have seen this but twice and was barely able to find enough for an herbarium specimen.
770. *USTILAGO LORENTZIANA* Thum.
On *Hordeum jubatum* L. Madison. (Miss Jolivette.)
771. *USTILAGO VIOLACEA* (Pers.) Fekl.
In anthers of *Arenaria lateriflora* L. Racine and Kenosha county.

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Anemone nemorosa, 679.
Anemone Pennsylvanica, 14.
Aphides, 667.
Aralia racemosa, 531.
Arenaria lateriflora, 771.
Aspidium Thelypteris, 758.
Asprella Hystrix, 64, 738.
Aster puniceus, 13.

Betula nigra, 701.
Betula papyrifera, 701.
Betula pumila, 694, 755.
Bidens cernua, 10, 665, 689.
Bidens connata, 665.
Bidens frondosa, 665, 720.
Bluebottle fly, 666.

Caddis flies, 670.
Calamagrostis Canadensis, 699, 721, 722.
Caltha palustris, 49.
Carex aurea, 558.
Carex cephaloidea, 586.
Carex filiformis latifolia, 767.
Carex gracillima, 586.
Carex longirostris, 747.
Carex lupulina, 767.
Carex Pennsylvanica, 558.
Carex umbellata, 558.
Carex utriculata, 767.
Ceanothus Americanus, 663.
Ceanothus ovatus, 685, 761.
Cerastium viscosum, 406.
Chelone glabra, 276.
Chenopodium album, 719.

Chironomus, 668.
Clematis Virginiana, 683, 696.
Cnicus lanceolatus, 407.
Comandra umbellata, 751.
Coprinus comatus, 634.
Cornus stolonifera, 718.
Crataegus, 527.
Cryptotaenia Canadensis, 739.
Cyperus Houghtoni, 586.
Cypripedium acaule, 687.
Cypripedium pubescens, 687.
Cystopteris bulbifera, 217.

Dahlia, 48.
Desmodium paniculatum, 37.
Diervilla trifida, 707.
Dracocephalum parviflorum, 26, 723.
Dulichium arundinaceum, 740.

Eatonia Pennsylvanica, 741.
Echinosperrum Virginicum, 531.
Eleocharis palustris, 735.
Elodes Virginica, 715.
Elymus Canadensis, 200.
Elymus striatus, 200, 229.
Elymus Virginicus, 229.
Epigaea repens, 688.
Epilobium angustifolium, 304.
Eragrostis reptans, 251.
Erigeron annuus, 10, 130.
Erigeron Philadelphicus, 91, 130.
Erigeron strigosus, 130.
Eupatorium perfoliatum, 531.

Floerkea proserpinacoides, 673.

Galeopsis Tetrahit, 724.
Galium Aparine, 22.
Galium asprellum, 190.
Galium trifidum, 312.
Glyceria fluitans, 700.
Gratiola Virginiana, 725.
Gyrinus, 675.

Heliopsis scabra, 48.
Hordeum jubatum, 770.
House flies, 669.
Hypericum punctatum, 732.
Hypericum virginicum, 715.

- Iris versicolor*, 708.
Juncus teinus, 682.
Juniperus communis alpina, 245, 315.
Juniperus Virginiana, 315.
Kalmia glauca, 279.

Lachnosterna, 678.
Lactarius, 676.
Lactuca Canadensis, 727.
Lactuca leucophaea, 709.
Larix Americana, 209, 755.
Lathyrus oehroleucus, 136.
Lepidium Virginicum, 4.
Lupinus perennis, 492.
Luzula campestris, 744.
Lycopersicum esculentum, 728.
Lycopus sinuatus, 683c.
Lythrum alatum, 729.

Maianthemum canadense, 595, 692.
Malva rotundifolia, 742.
Medicago sativa, 680.
Menispermum Canadense, 690.
Milium effusum, 743.
Mitella diphylla, 281.
Monarda punctata, 531.
Myrica asplenifolia, 751.

Oryzopsis asperifolia, 743.
Oryzopsis melanocarpa, 67.
Osmunda cinnamomea, 759.
Osmunda Claytoniana, 759.
Osmunda regalis, 759.

Panicum depauperatum, 140.
Parietaria Pennsylvanica, 48, 731.
Pedicularis Canadensis, 269.
Phegopteris Dryopteris, 760.
Phleum pratense, 768.
Phryma Leptostachya, 747.
Physalis pubescens, 260.
Picea nigra, 480, 764.
Pinus Banksiana, 681, 752.
Pinus Strobus, 681, 765.
Plantago cordata, 80.
Plantago major, 45, 48.
Plantago Rugelii, 48.
Polygonum aviculare, 49, 684.
Polygonum cilinode, 387.
Polygonum erectum, 684.
Polygonum Hartwrightii, 387.
Polygonum Virginianum, 178.
Potentilla arguta, 674a.
Potentilla tridentata, 757.
Prenanthes alba, 269, 730, 745.
Prunus Cerasus, 124.
Prunus Pennsylvanica, 124.

Prunus Persica, 674.
Prunus serotina, 527, 686.
Prunus Virginiana, 124, 527.
Pteris aquilina, 704.
Pyrola rotundifolia, 215.
Pyrola secunda, 750.
Pyrus arbutifolia melanocarpa, 245.

Quercus alba, 752.
Quercus rubra, 337.
Quercus velutina, 752.

Ranunculus abortivus, 683b.
Ranunculus Pennsylvanicus, 78.
Rhus glabra, 281.
Ribes Cynosbati, 573.
Ribes prostratum, 344, 697.
Ribes triste, 128, 344, 697.
Ribes vulgare, 344.
Rosa, 203.
Rubus accidentalis, 647.
Rubus parviflorus, 141, 756.
Rubus strigosus, 647, 703.
Rubus triflorus, 647.
Rumex altissimus, 542.
Rumex verticillatus, 716.
Rumex, 746.

Salix cordata, 734.
Salix discolor, 385.
Salix lucida, 706.
Sanguinaria canadensis, 695.
Sciara, 671.
Scirpus atrovirens, 664.
Secale cereale, 65, 200, 769.
Senecio aureus, 5 748.
Smilacina racemosa, 359.
Smilacina stellata, 359.
Smilacina, 359, 491.
Smilax hispida, 691.
Solidago arguta, 450.
Solidago rigida, 13.
Solidago serotina, 717.
Solidago ulmifolia, 618.
Sparganium eurycarpum, 737.
Steironema lanceolatum, 408, 549.
Stipa spartea, 749.
Streptopus roseus, 491.
Syringa vulgaris, 711.

Thalictrum dioicum, 683a.
Thalictrum dasycarpum, 672, 702.
Thalictrum revolutum, 263, 672.
Thuja occidentalis, 678a.
Tilia Europaea, 303.
Tradescantia Virginica, 698.
Trifolium hybridum, 152.
Trillium cernuum, 712.

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Tsuga canadensis, 762, 766.
Typha latifolia, 710.

Uvularia grandiflora, 359.

Vaccinium Canadense, 279.

Veronica arvensis, 725.

Vicia Americana, 293.

Viola blanda, 726.

Viola palmata cucullata, 713.

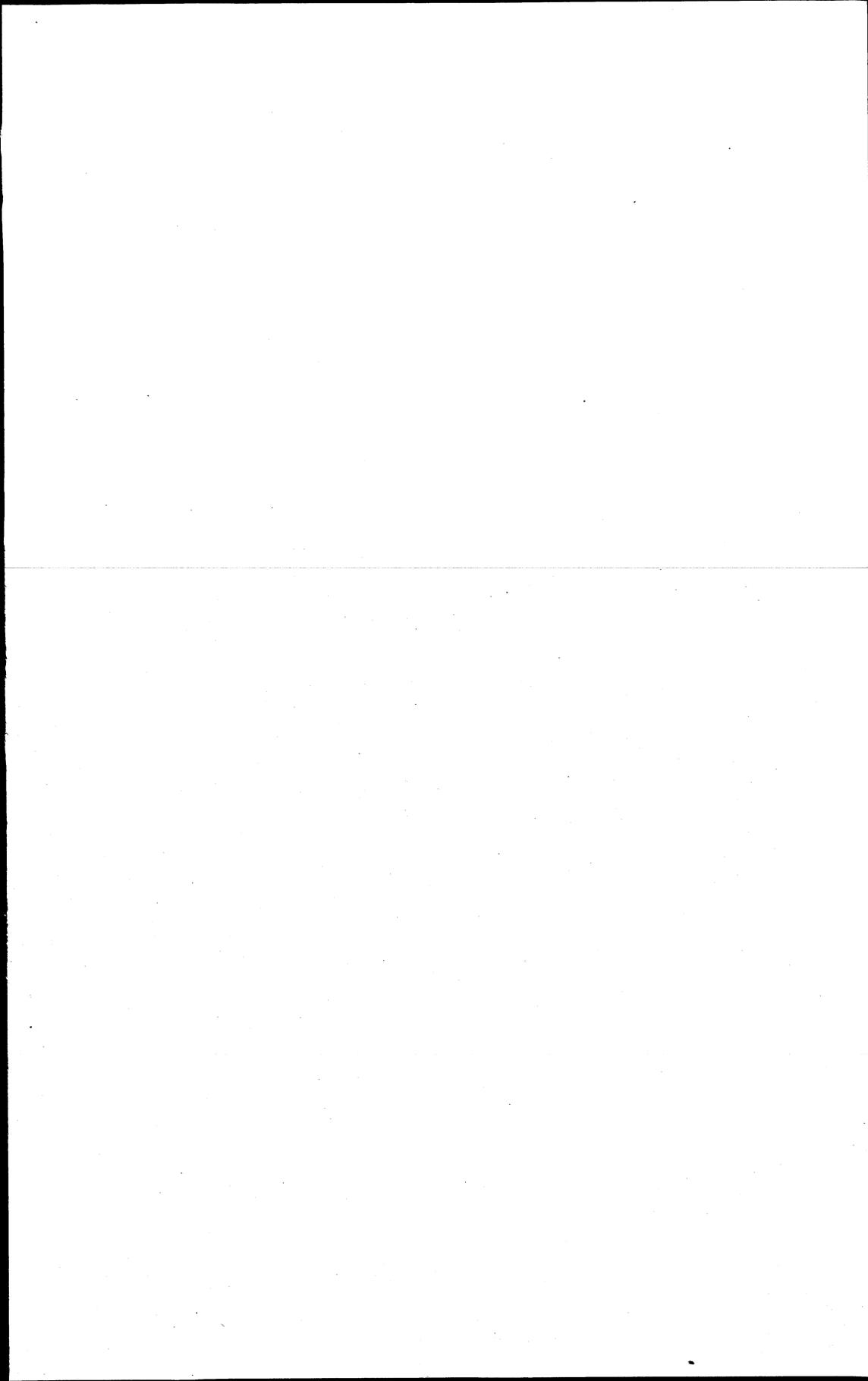
Viola pubescens, 726.

Viola, 705.

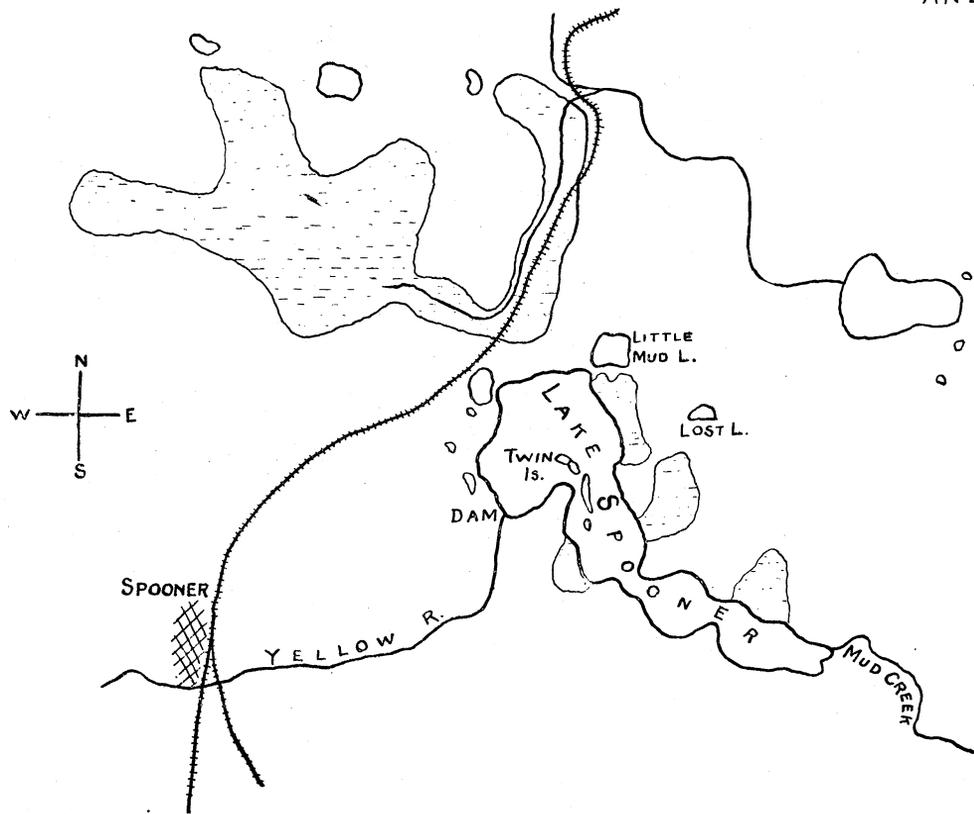
Vitis riparia, 693.

Xanthium Canadense, 733.

Zizia aurea, 270.



LAKE SPOONER,
AND VICINITY



THE VEGETATION OF TWIN ISLAND.

RUTH MARSHALL.

This paper is an attempt to add a small contribution to the floristic survey of northwestern Wisconsin with a superficial study of zonation. The region studied was a small island in Lake Spooner, Washburn County, two and one-half miles from the village of Spooner. Field work was carried on during the months of July and August, 1906. This work consisted in the collection of specimens of all the seed plants and fern-worts growing upon the island, the determination of their distribution in formations, with quadrat and transect studies, and the keeping of some general records of physical conditions. The final identification of the species and the arrangement of the field notes was completed during the following college year at the University of Nebraska.

Lake Spooner is a narrow, irregularly shaped lake, about three miles long, extending diagonally from south-east to north-west, with a maximum width of over one mile; it is considerably narrowed in three places. It is fed by Mud Creek, at the south-east end, where the water is filled with vegetation. Yellow River, the outlet, starts from one side of the enlarged northwestern end where there is an old mill-dam. The dam is defective; this fact and the scarcity of rain in the middle of the summer caused a fall of about eighteen inches in the surface of the lake during the time that it was under observation. Lake Spooner finally drains into the St. Croix River. The greatest depth of the lake is about thirty feet. It is of glacial origin and its islands are drift.

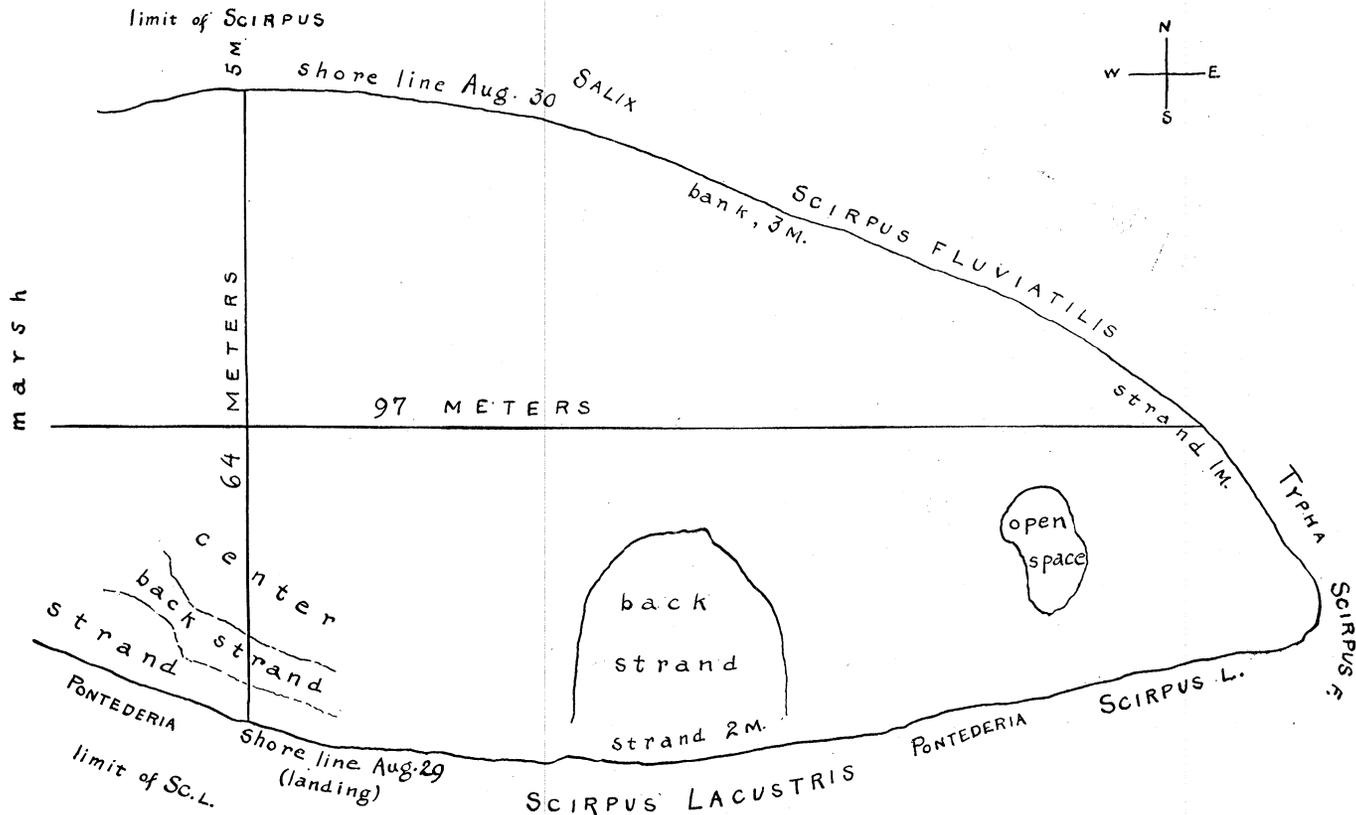
The country about the lake was once covered with extensive forests of white pine, now nearly all cut down. Here and

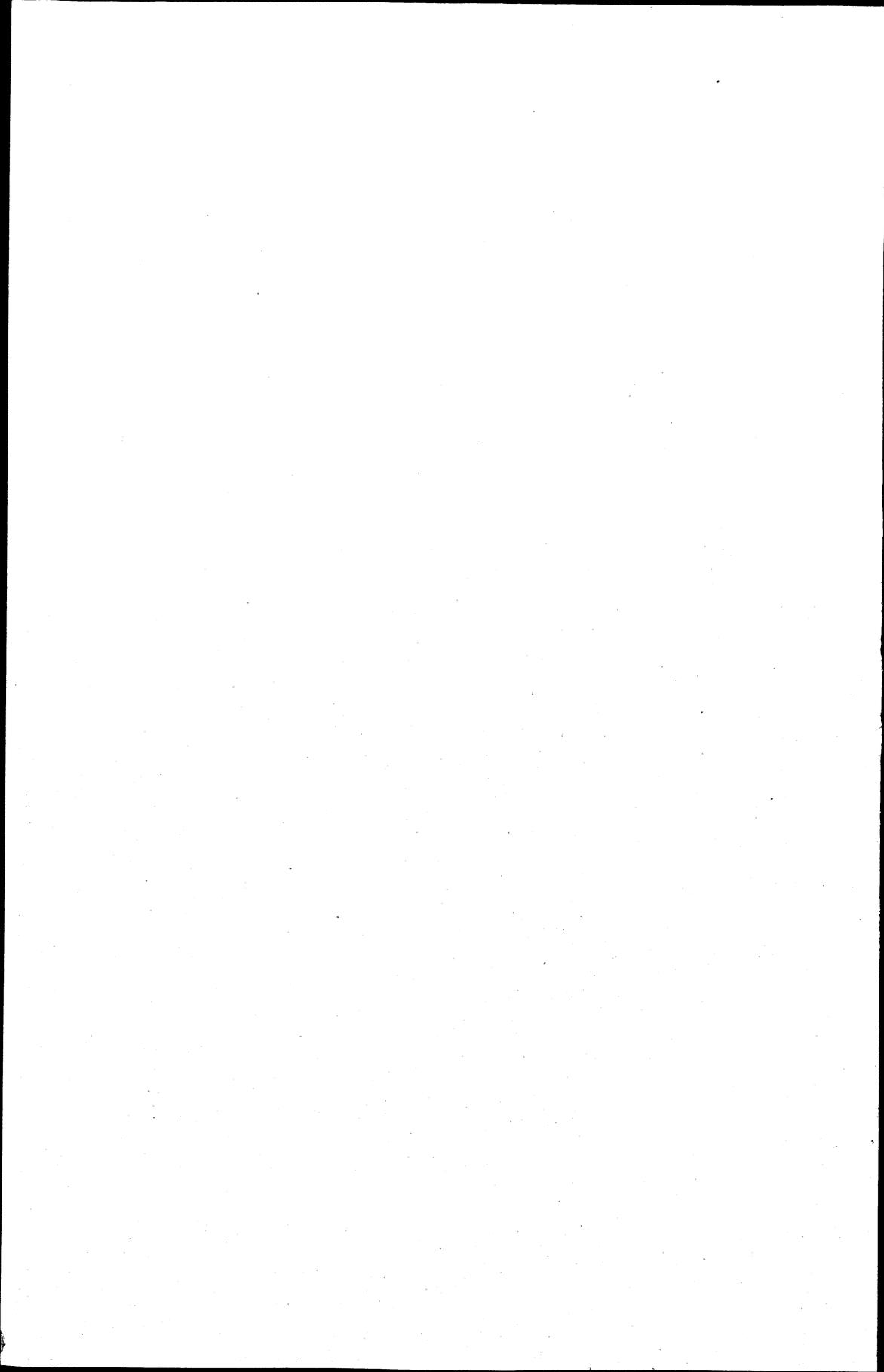
there a few have been left, and some of the young or defective trees still stand. There is a good showing of oak, maple, ash and birch. Where clearings are made, the poplars are taking possession. The land is rapidly being brought under cultivation as the farmer supersedes the lumberman. The surface of the country is slightly rolling; the characteristic feature of the topography is the great number of small lakes and pools. A considerable portion of the land is swamp; in such places are dense growths of tamarack. Lake Spooner has large swamp areas leading from its northern and eastern shores. In these marshes are found the cranberry, pitcher-plants, and several orchids. In only two places are the shores moderately high, rising some thirty feet from the water.

In the lower end of the lake are four islands. The first, Porter's Island, is high and has a fine group of white pines; the next, Harper's Island, the largest, is thickly covered with underbrush and has several kinds of trees other than pine, while part of the surface is low and swampy. Twin Islands lie in the enlarged lower end, about half a mile from the outlet. The two islands comprise an area of about seven and one-half acres according to the government survey. This area is about equally divided between the two islands and the connecting marsh. The upper island was chosen for the study as it has been less disturbed. So far as is known, it has not been occupied except for a period of six weeks in the summer of 1903, when over-flow tents from the camp on the other island were placed there. The owners, Mr. and Mrs. W. H. Lighty of Madison, Wisconsin, have allowed the island to remain as far as possible in the natural state. The undergrowth has been much injured, however, in the last two years by rabbits, which becoming abundant on the mainland, have crossed to the islands on the ice in winter, and fed on the buds and bark.

The southeastern end of the island lies in a narrowed part of the lake, about thirty meters from the nearest shore on one side, the east, and half that distance from the other, to the south. The island is oblong in form, about a hundred meters in its greatest length, from east to west, and about thirty-five meters in greatest width. On the south-east it runs to a

EAST TWIN ISLAND





point, while the west end joins the marsh. The northeastern portion is the highest, rising in one place rather abruptly about three meters. From the center the land gradually rises toward the north and east.

Three well defined plant formations occur; they are designated as center, back strand, and strand. The center comprises the greater part of the island; it supports trees, shrubs, and shade-loving herbaceous plants. The strand is a narrow belt of varying width with an average width of perhaps one meter, extending from the water's edge to high-water mark, the latter point easily determined by a careful examination of the shore-line. Owing to the fall of the surface of the water already noted, the strand belt became gradually wider and the new region was taken possession of in favorable places by seedlings. Here, then, was plenty of light and moisture and the number of plant individuals was very great. Between the center and the strand a narrow intermediate belt was found which constituted the back strand; the outer limit, the high-water mark, was clear, but it passed on the other side rather imperceptibly into the center. Hence many plants of the center and strand occurred here also. Outside of the strand in the shallow water there is a zone of variable width where a few strictly aquatic plants grow. Besides these general regions, there were two others of special interest. One of these is a large semicircular area of back strand, a sort of bay, on the south shore, about fifteen meters deep; the other is a much smaller oblong area near the elevated eastern point where the surface is devoid of trees and shrubs, and hence well exposed to the light.

TEMPERATURE RECORDS.

Temperature records were taken with a Fahrenheit thermometer each day (except Sunday) between the hours of 10 and 11 o'clock a. m., of water, soil and air. The temperature of the surface of the water was taken just outside of the zone of water plants, and again inside of this zone. At certain stations the temperature of the soil of the south strand

was taken at a depth of six inches; of the soil of the south back strand at a depth of one foot. The same holes were used each time; they were covered carefully after each observation. The temperature of the air was taken one meter from the ground near the spot where the soil temperature of the back strand was taken; and the temperature of the air one meter from the surface at the same station in the center. Other records were kept for shorter periods at other points for comparisons. General observations on the weather were also added each day.

Water Temperatures. From June 30 to July 7 the open water outside of the zone of vegetation varied from 67° to 70° ; for the next five days (July 9 to 14) it remained between 70° and 72° ; from July 15 to August 9, over three weeks, it kept below 70° , the lowest record being 63° . From August 10 to 22 there came a rise again to a maximum of $78\frac{1}{2}^{\circ}$ (except for one day which registered $81\frac{1}{2}^{\circ}$), and a minimum of 73° . From August 23 to September 1 the temperature did not rise again to 70° , nor did it fall below 63° . There was, then, a gradual rise the first part of July, followed by a fall, then a rise again to the maximum on August 20, and another fall in the latter part of the month to a point below the early July record.

The water inside of the zone of vegetation was usually from one to two degrees warmer than the water outside; occasionally the two records were the same.

The acidity of the water was tested with litmus paper when temperature records were made. The first test, July 4, showed that the water inside of the zone of water plants was slightly alkaline, the water outside very faintly acid. From then on, the open water gave no reaction except a rare trace of alkali, while the inner water was occasionally so; but from the last of July to the end of the season both waters gave evidences of alkalinity every day.

Soil Temperatures. The wet soil of the strand maintained a lower temperature than the water just outside of it and it responded more slowly to changes in the air. For the first week in July it ranged from 56° to 59° Fahrenheit; it then

rose above 60° for a week, the maximum being 63° . During the first half of July, then, it was about 11° below the water. During the latter half of July when the temperature of the water remained at 71° , the back strand was below 62° , that is, the difference between land and water was relatively less. For the first part of August the temperature ranged between 58° and 60° , and the difference between land and water was still less. When the water reached the maximum, in the second week of August, the land likewise rose in temperature, registering between 67° and 72° , although not as rapidly as the water. Then when the temperature of the water fell and remained below 72° for the rest of August, the land did not fall below 60° . The land had a temperature a few degrees higher at the end of August than at the beginning of July. The lowest temperature recorded was 55° , the highest 72° . Observations taken from the middle of July to September 1 at another station a few feet away but about one meter nearer the now receding water, showed a temperature almost uniformly one degree higher.

The temperature of the soil of the back strand remained always below that of the strand, except for one day; however, the records were made for a greater depth, one foot. The temperature showed a slight rise during July; it reached a maximum of 56° at the time when the water reached its maximum for the month. The temperature then remained close to 56° until the second week of August when it reached a maximum of 66° , when all other temperatures were highest, and did not fall below 61° until the last two days of August. For the last week it remained only about one degree below the soil of the strand.

The temperature of the soil at the station in the center of the island among trees and shrubs taken at the same depth as the back strand temperatures, one foot, did not vary more than four degrees from the latter. For a few days the soil of the center reached this upper limit. In the first half of the summer, the temperature remained much nearer that of the back strand soil; occasionally it registered one to three degrees below it. When the general rise occurred in the second week of July, the

temperature of the soil of the center reached 59° ; when the maximum for the summer was reached in August, it rose to 69° one day. From then on it did not fall below 58° , but still remained from one to four degrees below the back strand temperature.

Air Temperatures. The temperature of the air of the back strand one meter from the surface, showed many fluctuations. It varied from 55° to 74° for the first half of July, reaching its maximum with the soil and water, and almost reaching the record of the latter, to fall suddenly two days later to 54° . From then it ranged from 53° to 70° . When the summer maximum was reached in mid-August it reached 81° , remaining one week above 70° . From then on the temperature was not far from 65° . The temperature of the air at the center station was, with few exceptions, a little higher than that of the back strand, never more than two degrees below. Through July it ranged from 54° to 73° , reaching a July maximum with the other station. From August 2 to August 30 it did not fall below 62° except for one day of showers when it fell to 59° . It reached the maximum of 85° on August 20 when the water close to the island reached its maximum of 84° . The air on the main land at the same time was reported as being several degrees higher.

A few other records were taken at other points on the island, for comparisons, at the same time that quadrat studies were being carried on. At one point about ten meters from the south shore the temperature of the air one meter from the surface was recorded for one week (July 27 to August 4) at intervals of one hour during the morning. At mid-day there was a range from 59° to 74° , from one to four degrees higher than the readings at the main station earlier in the morning. The lowest record was 55° , at nine o'clock; this was for one day, all other days showing more than 60° . Also, the temperature of the surface of the soil was taken near the same point for several days during the last three weeks of August at intervals throughout the morning. The range was from 57° to 65° at nine o'clock; and from 65° to 92° at one o'clock. The afternoon record showed 91° at 3:45. The temperature of the soil at the

surface in the large semicircular area of back strand on the south side at the foot of a small poplar was registered for a week in mid-August. These records were not kept regularly; but on August 20, the day preceding the hottest day of the summer for the region, the mercury at 10:00 stood at $91\frac{1}{2}^{\circ}$. Other records for the first week of August show that the soil surface temperature on the southwest back strand ranged from 58° at 9:00 to 92° at 1:00 o'clock. These shorter records therefore go to show that the range of temperature would be considerably greatest if records throughout the day were kept.

It will be noticed that the highest temperature was reached in mid-August. Upon the south strand other conditions were especially favorable for vegetation; the zone is here wide, and the retreating water added nearly two meters to it during the summer. Water is abundant and the exposure favorable for light. The characteristic plants here were marigolds (*Bidens*) which flower in late summer.

A low soil temperature is a striking fact brought out by these records, a temperature lower than that of the water. This may be accounted for in part by the fact that the south channel is shallow water and hence heats rapidly; but a more important factor is the low temperature of the air. The last two weeks of June, before records were taken, had been very cool days with heavy rains. From then on the rainfall for two months was slight, an almost unbroken record of clear days. On the night of July 14, however, a heavy rain storm occurred and all temperature records on the following day showed a decided drop. Cloudy days and light rains came in late August; the next heavy rain was not until September 1.

VEGETATION OF THE CENTER.

The center, the largest formation, presented the greatest diversity of conditions and the largest number of species. The area of the center comprises all of the island except the two bordering narrow zones of back strand and strand. Its characteristic plants are trees and shrubs, the latter increasing in number toward the outside and forming a fringe which runs into the back strand zone. Toward the western end the surface

is lowest; here were found the American aspen (*Populus tremuloides* Michx.) and the speckled alder (*Alnus incans* (L.) Willd.) extending into the bordering zones; and a few American linden (*Tilia americana* L.). Then came several groups of red maple (*Acer rubrum* L.) with a few bur oaks (*Quercus macrocarpa* Michx.), elms (*Ulmus americana* L. and *U. fulva* Michx.), a few birches (*Betula papyrifera* Marsh. and *B. lutea* Michx.), the choke, black, and pin cherries (*Prunus virginiana* L., *P. serotina* Ehrb., *P. pennsylvanica* L.) and a few shrubs of ash (*Fraxinus* sp.). On the gently rising eastern side the dominant trees were black oak (*Quercus velutina* Lam.), the largest one about two feet in diameter a few inches from the ground. A few large toothed aspens (*Populus grandidentata* Michx.) occurred, and one small stunted white pine (*Pinus strobus* L.).

Of the underbrush, the hazels (*Corylus americana* Walt. and *C. rostrata* Ait.) were perhaps most characteristic; on the lower ground was hackberry (*Celtis crassifolia* Lam.). The cornels were well represented by two species, *Cornus caudidissima* Marsh. and *C. alternifolia* L., the latter growing to the height of small trees. The hawthorns showed three species (*Crataegus punctata* Jacq., *C. hiemalis* Lang., and *C. coccinea* L.; and there was June-berry (*Amelanchier rotundifolia* (Michx.) Roem.) and one kind of willow (*Salix* sp.), all abundant. These shrubs, however, had suffered much from the rabbits, as already noted. Upon the extreme east flourished a few stag-horn sumac (*Rhus hirta* (L.) Sudw.). To the south-west grew many plants of the low blue-berry (*Vaccinium pennsylvanicum* Lam.) but no fruit was ever found.

With the larger shrubs grew several woody climbers, Virginia creeper (*Parthenocissus quinquefolia* (L.) Planch.) and frost grape (*Vitis cordifolia* Michx.), reaching their greatest size toward the east. Bitter-sweet (*Celastrus scandens* L.) was rather common, but the plants were small and there was no evidence of flower or fruit. The bush honeysuckle (*Diervilla diervilla* (L.) Mac M.) was rather abundant and flowered freely on the eastern side. There was hispid greenbrier (*Smilax hispida* Muhl.) but it was not in fruit. On the eastern point there

were great festoons of ground-nut (*Apios apios* (L.) Mac M.); it extended, too, over the back strand and strand at this place and was in full flower in August. A few small blackberries (*Rubus baileyanus* Britton) were found on the west side but not in flower or fruit. Here and on the south were two kinds of roses (*Rosa humilis* Marsh. and *R. sayi* Schwein); only one bloom was found. And lastly, to the south and west grew a thick and well defined border of poison ivy (*Rhus radicans* L.); it never became large or vine-like, and only one cluster of berries was found.

One small region deserves special mention. As has been already stated, the north bank rises rather abruptly from the strand to a height of nearly three meters, and here the back strand and strand run together. The slope, the shade, and the abundance of water give the bank the appearance of the side of a miniature dell. On the top grew a single example of the red-berried elder (*Sambucus pubens* Michx.) and the bristly gooseberry (*Ribes setosum* Lindl.), the latter rare elsewhere. This was the only place where yarrow (*Achillea millefolium* L.) was found in flower, and here was the only specimen of mullen (*Verbascum thapsus* L.), a small plant. On the rocks grew wild columbine (*Aquilegia canadensis* L.) in full fruit. One tiny plant of maiden hair fern (*Adiantum pedatum*) was found here. And here also were a few small plants of the great water dock (*Rumex britannica* L.) which had apparently wandered in from the marsh where it grew luxuriously.

Vernal plants were not abundant in the center; this would seem to be the result of the late season, made still later by the fact that the lake surrounding this small island freezes to a considerable depth in winter and keeps the spring temperature low. The more open low western end gave more species of early blooming plants; of these there were the wild spiknard (*Vagnera racemosa* (L.) Morong), the hairy Solomon's seal (*Solomonias biflora* (Walt.) Britton), the sessile leaved bellwort (*Uvularia sessilifolia* L.), a few plants of the false lily-of-the valley (*Unifolium canadense* (Desf.) Greene), all in fruit, one kind of violet (*Viola renifolia* A. Gray (?)), one species of

anemone (*Anemone quinquefolia* L. (?)) and one small trillium.

Another shade plant, although blooming in summer, was the wild sarsaparilla (*Aralia nudicaulis* L.) which was abundant. There may also be mentioned here a few plants of the round-leaved wintergreen (*Pyrola rotundifolia* L.); the last two plants were abundant on the main land to the south. Ferns were not well represented; the most abundant was the common brake (*Pteridium aquilina* L.) whose leaves sometimes measured two feet across. A few plants of the interrupted fern (*Osmunda claytoniana* L.) occurred, but the fruiting leaves had not been produced.

The southeast open space. This small area in the center formation presented so distinct a character as to deserve some individual description. It is an oblong area, some ten meters long and half as wide, on the high land near the south-east point of the island, which for some reason was devoid of trees and almost free from shrubs. Hence the soil was dry and open to the sun. The place had been taken possession of by dry soil composites, mints, and grasses, which were in flower in late August. It is interesting to notice that several of these plants as the snake-root (*Nabalus albus* (L.) Hook.), were found in other parts of the center but were there unable to produce flowers. On the northeast side of the island there had been found several very small open spaces occupied by ant hills; upon them grew grasses but they were usually small plants not in flower. On this large south-east open space, however, these same grasses grew large and flowered abundantly, as the red-top (*Agrostis alba* L.). In all, five species of grasses were found on this small area. One rush (*Juncus dichotomus* Ell.), the only one on the island, grew here in several examples. Golden rod (*Solidago canadensis* L.) and sun flower (*Helianthus hirsutus* Raf.) were conspicuous, and were found also in other places on the east side. Very characteristic mints were *Koellia verticellata* (Michx.) Kuntze and bergamot (*Monarda fistulosa* L.), the latter found no where else. Here grew also a few plants of evening primrose (*Onagra biennis* (L.) Scop.)

PLANTS OF THE CENTER.

- Asplenium felix-fœmina (L.) Bernh.
- Dryopteris thelypteris (L.) A. Gray
- Adiantum pedatum L.
- Pteridium aquilina L.
- Osmunda claytoniana L.
- Equisetum arvense L.
- Pinus strobus L.
- Smilax hispida Muhl.
- Dioscorea villosa L.
- Uvularia sessilifolia L.
- Vagnera racemosa (L.) Morong
- Unifolium canadense (Desf.) Greene
- Salomonina biflora (Walt.) Britton
- Trillium cernuum L. (?)
- Juncus dichotomus Ell.
- Bromus ciliatus L.
- Festuca ovina L.
- Agropyron tenerum Hook.
- Agrostis alba L.
- Muhlenbergia racemosa (Michx.) B. S. P.
- Panicum filiculme Ashe.
- Iris sp.
- Aquilegia canadensis L.
- Anemone quinquefolia L. (?)
- Thalictrum polygamum Muhl.
- Viola renifolia A. Gray (?)
- Populus grandidentata Michx.
- Populus tremuloides Michx.
- Salix sp.
- Polygonum dumetorum L.
- Rumex brittannica L.
- Ulmus americana L.
- Ulmus fulva Michx.
- Celtis crassifolia Lam.
- Tilia americana L.
- Apocynum androsaemifolium L.

Fraxinus americana L. (?)
Vaccinium pennsylvanicum Lam.
Pyrola rotundifolia L.
Verbascum thapsus L.
Monarda fistulosa L.
Koellia verticellata (Michx.) Kuntze
Lycopus americanus Muhl.
Lycopus communis Bicknell
Fragaria canadensis Michx.
Agrimonia mollis (T. and G.) Britton
Rosa humilis Marsh.
Rosa sayi Schwein.
Prunus virginiana L.
Prunus serotina Ehrh.
Prunus pennsylvanica L.
Amelanchier rotundifolia (Michx.) Roem.
Crataegus punctata Jacq.
Crataegus hiemalis Lang.
Crataegus coccinea L.
Rubus baileyanus Britton
Rubus strigosus Michx.
Ribes setosum Lindl.
Apios apios (L.) MacM.
Trifolium hybridum L.
Epilobium adencaulon Haussk.
Onagra biennis (L.) Scop.
Celastrus scandens L.
Vitis cordifolia Michx.
Parthenocissus quinquefolia (L.) Planch.
Acer rubrum L.
Rhus hirta (L.) Sudw.
Rhus radicans L.
Quercus velutina Lam.
Quercus macrocarpa Michx.
Corylus americana Walt.
Corylus rostrata Ait.
Alnus incana (L.) Willd.
Betula papyrifera Marsh.

Betula lutea Michx.
Aralia nudicaulis L.
Sanicula marylandica L.
Taenidia integerrima (L.) Drude
Cornus candidissima Marsh.
Cornus alternifolia L.
Galium borale L.
Galium triflorum Michx.
Diervilla diervilla (L.) MacM.
Sambucus pubens Michx.
Helianthus hirsutus Raf.
Solidago canadensis L.
Aster exiguus (Fernald.) Rydb.
Aster macrophyllus L.
Achillea millefolium L.
Nabalus albus (L.) Hook.

VEGETATION OF THE STRAND.

In contrast with the center formation, the strand presented less than half the number of species, but a much greater number of individuals for a unit area. The smaller number of species is partly accounted for by the much smaller area; but in part by the fact that, as this zone is subject to inundations of water in the early part of the season, the number of woody plants will be small and the number of herbaceous plants limited to those species that can grow rapidly and mature in late summer and fall. At this season conditions are most favorable for them, as has been pointed out. On the south-west side of the island where the strand is widest and runs into the marsh, this fact was well illustrated by the great luxuriance in late August; plants nearest the center grew rank and flowered, while the retreating water was followed up by a dense growth of seedlings. It was interesting to notice the very early stage at which many of these tiny plants, marigolds and mints, began to bloom. Among the larger herbaceous plants were found Joe-pye weed (*Eupatorium purpureum* L.), marsh St. John's-wort (*Triadenum virginicum* (L.) Raf.), two knot-weeds (*Polygonum amphibium* L. and *P. lapathifolium* L.), two loosestrifes

(*Lysimachia terrestris* (L.) B. S. P., *L. thysiflora* L.), and water hemlock (*Cicuta bulbifera* L.). Next to the water the broad-leaved arrow head (*Sagittaria latifolia* Willd.) was abundant. Sedges and grasses were well represented in species and individuals; the most conspicuous of the former were the bulrush (*Scirpus lacustris* L.) and tall cotton grass (*Eriophorum polystrachyon* L.), both very common toward the head of the lake. The tall marsh grass (*Spartina cynosuroides* (L.) Willd.) grew to great height; and there were a few plants of the wild rice (*Homalocenchrus lenticularis* Michx.), also abundant in the upper lake regions. Trees were represented only by the speckled alder (*Alnus incana* (L.) Willd.) and American aspen (*Populus tremuloides* Michx.); these and two species of willows grew where the strand zone was narrow and the soil coarser. As one passes around the island to the south-east point the strand zone becomes narrower and the soil sandy and the plants of course are not as rich in numbers or in species. On the north side the sandy wash produced three species in very small numbers not found elsewhere on strand: the black night shade (*Solanum nigrum* L.), the great water-dock (*Rumex brittanica* L.), and the field horsetail (*Equisetum arvense* L.)

PLANTS OF THE STRAND.

- Equisetum arvense* L.
- Sagittaria latifolia* Willd.
- Typha latifolia* L.
- Scirpus lacustris* L.
- Eriophorum polystrachyon* L.
- Cyperus strigosus* L.
- Carex hystericina* Muhl.
- Carex alata* Ton.
- Carex scoparia* Schk.
- Spartina cynosuroides* (L.) Willd.
- Calamagrostis canadensis* (Michx.) Beauv.
- Muhlenbergia tenuiflora* (Willd.) B. S. P.
- Homalocenchrus lenticularis* Michx.
- Panicum capillare* L.
- Panicum crus-galli* L.

Roripa obtusa (Nutt.) Britton
Triadenum virginicum (L.) Raf.
Stellaria longifolia (Muhl.) Britton
Populus tremuloides Michx.
Salix linearifolia Rydb.
Salix sp.
Polygonum amphibium L.
Polygonum lapathifolium L.
Rumex brittannica L.
Lysimachia terrestris (L.) B. S. P.
Solanum nigrum L.
Asclepias incarnata L.
Mimulus ringens L.
Scutellaria galericulata L.
Scutellaria lateriflora L.
Lycopus americanus Muhl.
Lycopus communis Bicknell
Mentha canadensis L.
Fragaria canadensis Michx.
Apios apios (L.) MacM.
Alnus incana (L.) Willd.
Cicuta bulbifera L.
Galium trifidum L.
Campanula aparinoides Pursh.
Bidens cernua L.
Eupatorium purpureum L.
Erechtites hieracifolia (L.) Raf.
Taraxacum taraxacum (L.) Rarst. (?)

VEGETATION OF THE BACK STRAND.

This intermediate zone is transitional, as might be expected; of some sixty species found upon it two-thirds occur also on strand or center, about an equal number for each. Plants which need some shade and abundant moisture, but not a wet soil, predominated. Of such, are the sensitive fern (*Onoclea sensibilis* L.) and the spotted touch-me-not (*Impatiens biflora* Walt.). Several species like the tall marsh grass (*Spartina*

cynosuroides (L.) Willd.), knotweed (*Polygonum lapathifolium* L.), American wild mint (*Mentha canadensis* L.) established themselves here as well as on the strand; others, as the tall meadow-rue (*Thalictrum polygamum* Muhl.), hedge buckwheat (*Polygonum dumetorum* L.) and aster (*Aster exiguus* (Fernald.) Rydb.) were found on the center as well as the back strand. A smaller number, six in all, had succeeded in maintaining themselves in all three formations; these were the aspen (*Populus tremuloides* Michx.), the speckled alder (*Alnus incana* (L.) Willd.), the marsh skull-cap (*Scutellaria galericulata* L.), the cut-leaved water hoarhound (*Lycopus americanus* Muhl.), the common bugle-weed (*L. communis* Bicknell) and the ground-nut (*Apios apios* (L.) MacM.). Woody plants were more abundant than on the strand. A few small red raspberries (*Rubus strigosus* Michx.) were found here but there was no sign of fruiting. There were a few clover plants (*Trifolium repens* L. and *T. pretense* L.), but they were not in bloom; these like *T. hybridum* L. found on the southeast open space of the center formation, may have come recently from the south shore of the mainland and not yet fully established themselves. We may perhaps account in the same way for the presence of a few very small thistles (*Carduus lanceolatus* L. (?)) and for the fire-weed (*Erechtites hieracifolia* (L.) Raf.) of which there was a small but thrifty patch on the south back strand. In this connection may be noted the presence of a few tiny dandelion plants (*Taraxacum taraxacum* (L.) Rarst.) on the south strand. The three last named composites having a well developed pappus, may have succeeded recently in crossing the narrow channel between the mainland and the island and gained a foothold on the south side. *Bidens* had a rank growth on the southwest back strand, where *B. cernua* L. of the strand gave way to *B. comosa* (A. Gray) Wiegand and *B. frondosa* L.

This back strand zone, usually from one to two meters in width, broadened out abruptly at the middle of the south shore to form a semicircular area fifteen meters deep, distinctly marked off from the higher ground surrounding it. It supported rank growths of *Muhlenbergia tenuiflora* Willd.) B. S.

P. and *Carex goodenovii* J. Gay, though very few fruiting plants were seen. In among the grasses and sedges the marsh bellflower (*Campanula aparinoides* (Pursh.) grew plentifully, and here and there the wild mint (*Mentha canadensis* L.). Great numbers of violets (*Viola alsophila* Greene (?)) grew beneath the latter plants. And there was found a patch of adder's tongue (*Ophioglossum vulgatum* L.), the only one on the island, all within a radius of perhaps two feet. A few asters (*Aster puniceus* L.) were blooming abundantly, and *Spiraea salicifolia* L. mingled with the border plants.

PLANTS OF THE BACK STRAND.

- Ophioglossum vulgatum* L.
- Asplenium felix-foemina* (L.) Bernh.
- Onoclea sensibilis* L.
- Dryopteris thelypteris* (L.) A. Gray
- Typha latifolia* L.
- Carex tuckermanni* Dewey
- Carex goodenovii* J. Gay.
- Carex alata* Ton.
- Carex leporina* L.
- Spartina cynosuroides* (L.) Willd.
- Calamagrostis canadensis* (Michx.) Beauv.
- Agrostis alba* L.
- Phleum pratense* L.
- Muhlenbergia tenuiflora* (Willd.) B. S. P.
- Thalictrum polygamum* Muhl.
- Viola alsophila* Greene (?)
- Stellaria* (Alsine) *longifolia* (Muhl.) Britton
- Populus tremuloides* Michx.
- Salix linearifolia* Rydb.
- Polygonum lapathifolium* L.
- Polygonum dumetorum* L.
- Polygonum sagittatum* L.
- Celtis crassifolia* Lam.
- Lysimachia terrestris* (L.) B. S. P.
- Lysimachia thyrsiflora* L.

- Asclepias incarnata* L.
Impatiens biflora Walt.
Verbena stricta Vent.
Scutellaria galericulata L.
Scutellaria lateriflora L.
Lycopus americanus Muhl.
Lycopus communis Bicknell
Mentha canadensis L.
Potentilla monspeliensis L.
Geum strictum Ait.
Spiraea salicifolia L.
Rosa sayi Schwein.
Rubus strigosus Michx.
Apios apios (L.) MacM.
Trifolium repens L.
Trifolium pretense L.
Epilobium coloratum Muhl.
Epilobium hirsutum L.
Onagra biennis (L.) Scop.
Vitis cordifolia Michx.
Rhus radicans L.
Alnus incana (L.) Willd.
Cicuta bulbifera L.
Cornus candidissima Marsh.
Galium triflorum Michx.
Galium trifidum L.
Galium asprellum Michx.
Campanula aparinoides Pursh.
Helianthus hirsutus Raf.
Bidens comosa (A. Gray) Wiegand
Bidens frondosa L.
Solidago nemoralis Ait.
Aster exiguus (Fernald.) Rydb.
Aster puniceus L.
Eupatorium purpureum L.
Erechtites hieracifolia (L.) Raf.
Carduus lanceolatus L. (?)

Taraxacum taraxacum (L.) Rarst (?)

Anaphalis margaritaceae (L.) Benth. & Hook.

THE WATER ZONE.

Except upon the west end where the marsh joins it, the island is surrounded by shallow water which supported a fringe of aquatic plants. The most common was *Scirpus fluviatilis* (Torr.) Gray, which on the north side extended out five meters from the shore; *S. lacustris* grew around the eastern point and north, but was not as common as upon the borders of the other island. At this point, in fact, was the widest and densest fringe. Here was found the cat-tail (*Typha latifolia* L.), common on the marsh and on the border of Harper's Island near by, but in flower in only one or two cases here. Near an old landing were several plants of the yellow water-lily (*Nymphaea advena* Soland.); this, too, is common at Harper's Island whence it may have come. One very small plant was found on the south side; this probably came from the marsh west of it; none of these plants had flowered. *Sagittaria latifolia* Willd. invaded the water from the strand. On the north side among sedges grew the bur-reed (*Sparganium androcladum* (Engelm.) Morong.), and on a pebbly beach two large clumps of willow (*Salix linearifolia* Rydb.) Lastly, there were two large patches of pickerel weed (*Pontederia cordata* L.) on the south shore. Here and there near shore, especially on the southwest, there were dense growths of several small submerged plants, as *Philotria canadensis* (Michx.) Britton. In early July the water was fairly thick with the alga, *Rivularia echinulata*.

PLANTS OF THE WATER.

Philotria canadensis (Michx.) Britton

Sagittaria latifolia Willd.

Spirodela polyrhiza (L.) Schleid.

Sparganium androcladum (Engelm.) Morong.

Typha latifolia L.

Pontederia cordata L.

Scirpus fluviatilis (Torr.) Gray
 Scirpus lacustris L.
 Nymphaea advena Soland.
 Salix linearifolia Rydb.

COMPLETE LIST OF PLANTS.

(Identifications are based upon Britton's Manual, the sequence of orders being that of Dr. C. E. Bessey. c, center; s, strand; b. s., back strand; w, water.)

Filicales

Ophioglossum vulgatum L., Adder's tongue, b. s.
 Asplenium felix-foemina (L.) Bernh., Lady fern, c; b. s.
 Onoclea sensibilis L., Sensitive fern, b. s.
 Dryopteris thelypteris (L.) A. Gray, Marsh fern, c; b. s.
 Adiantum pedatum L., Maidenhair fern, c.
 Pteridium aquilina L., Common brake, c.
 Osmunda claytoniana L., Clayton's fern, c.

Equisetales

Equisetum arvense L., Field horsetail, c; s.

Pinales

Pinus strobus L., White pine, c.

Apocarpales

Philotria canadensis (Michx.) Britton, Water weed, w.
 Sagittaria latifolia Willd., Broad-leaved arrow-head, s; w.

Nudiflorales

Spirodela polyrhiza (L.) Schleid., Greater duckweed, w.
 Sparganium androcladum (Engelm.) Morong., Branching
 bur-reed, w.
 Typha latifolia L., Broad-leaved cat-tail, b. s.; s; w.

Coronales

Smilax hispida Muhl., Hispid greenbrier, c.
 Dioscorea villosa L., Wild yam-root, c.
 Uvularia sessilifolia L., Sessile-leaved bellwort, c.
 Vagnera racemosa (L.) Morong, Wild spiknard, c.
 Unifolium canadense (Desf.) Greene, False lily-of-the-val-
 ley, c.
 Salomonium biflora (Walt.) Britton, Hairy Solomon's seal, c.

Trillium cernuum L., Nodding wake-robin (?),	c.
Pontederia cordata L., Pickerel-weed,	w.
<i>Calycinales</i>	
Juncus dichotomus Ell., Forked rush,	c.
<i>Glumales</i>	
Scirpus fluviatilis (Torr.) A. Gray, River bulrush,	w.
Scirpus lacustris L., Great bulrush,	s; w.
Eriophorum polystachyon L., Tall cotton-grass,	s.
Cyperus strigosus L., Straw-colored cyperus,	s.
Carex hystericina Muhl., Porcupine sedge,	s.
Carex tuckermanni Dewey, Tuckerman's sedge,	b. s.
Carex goodenovii J. Gay, Goodenough's sedge,	b. s.
Carex alata Ton., Rough-winged sedge,	s; b. s.
Carex leporina L., Hare's-foot sedge,	b. s.
Carex scoparia Schk., Pointed broom sedge,	s.
Bromus ciliatus L., Fringed brome-grass,	c.
Festuca ovina L., Sheep's fescus-grass,	c.
Agropyron tenerum Hook., Slender wheat-grass,	c.
Spartina cynosuroides (L.) Willd., Tall marsh-grass,	b. s; s.
Calamagrostis canadensis (Michx.) Beauv., Blue joint-grass,	b. s; s.
Agrostis alba L., Red top,	c; b. s.
Phleum pratense L., Timothy,	b. s.
Muhlenbergia tenuiflora (Willd.) B. S. P., Slender muhlenbergia,	b. s; s.
Muhlenbergia racemosa (Michx.) B. S. P., Marsh muhlenbergia,	c.
Homalocenchrus lenticularis Michx., Catch-fly grass,	s.
Panicum capillare, Witch-grass,	s.
Panicum filiculme Ashe,	c.
Panicum crus-galli L.,	s.
<i>Iridales</i>	
Iris sp.	c.
<i>Ranales</i>	
Nymphaea advena Soland., Large yellow pond lily,	w.
Aquilegia canadensis L., Wild Columbine,	c.
Anemone quinquefolia L., Wind-flower (?),	c.
Thalictrum polygamum Muhl., Tall meadow-rue,	b. s; c.

Parietales

- Roripa obtusa (Nutt.) Britton, Blunt-leaved water cress, s.
 Triadenum virginicum (L.) Raf., Marsh St. John's wort, s.
 Viola alsophila Greene, Woodland white violet (?), b. s.
 Viola renifolia A. Gray, Kidney-leaved violet (?), c.

Caryophyllales

- Stellaria (Alsine) longifolia (Muhl.) Britton, Long-leaved
 stitchwort, b. s.; s.
 Populus grandidentata Michx., Large-toothed aspen, c.
 Populus tremuloides Michx., American aspen, c; b. s.; s.
 Salix linearifolia Rydb., Linear-leaved willow, b. s.; s; w.
 Salix sp. s; e.
 Polygonum amphibium L., Water persicaria, s.
 Polygonum lapathifolium L., Dock-leaved persicaria (knot-
 weed), b. s.; s.
 Polygonum dumetorum L., Hedge buckwheat, c; b. s.
 Polygonum sagittatum L., Arrow-leaved tear-thumb, b. s.
 Rumex brittannica L., Great water-dock, c; s.

Malvales

- Ulmus americana L., White elm, c.
 Ulmus fulva Michx., Slippery red elm, c.
 Celtis crassifolia Lam., Hackberry, c; b. s.
 Tilia americana L., Bass-wood, linden, c.

Primulales

- Lysimachia terrestris (L.) B. S. P., Bulb-bearing loose-
 strife, b. s.; s.
 Lysimachia thyrsoiflora L., Spotted loosestrife, b. s.
 Solanum nigrum L., Garden night-shade, s.

Gentianales

- Asclepias incarnata L., Swamp milkweed, b. s.; s.
 Apocynum androsaemifolium L., Spreading dogbane, c.
 Fraxinus americana L., White ash (?), c.
 Impatiens biflora Walt., Spotted touch-me-not, b. s.

Ericales

- Vaccinium pennsylvanicum Lam., Dwarf low bush blue-
 berry, c.
 Pyrola rotundifolia L., Round-leaved wintergreen, c.

Personales

- Verbascum thapsus* L., Great mullein, c.
Minulus ringens L., Square-stemmed Monkey-flower, s.

Laminales

- Verbena stricta* Vent., Hoary vervain, b. s.
Scutellaria galericulata L., Marsh skull-cap, b. s.; s.
Scutellaria lateriflora L., Mad dog skull-cap, b. s.; s.
Monarda fistulosa L., Wild bergamot, c.
Koellia verticellata (Michx.) Kuntze, Torrey's Mountain
 mint, c.
Lycopus americanus Muhl., Cut leaved water hoar-
 hound, c; b. s; s.
Lycopus communis Bicknell, Common bugle-weed, c; b. s; s.
Mentha canadensis L., American wild mint, b. s.; s.

Rosales

- Fragaria canadensis* Michx., Northern wild strawberry, c; s.
Geum strictum Ait., Yellow avens, b. s.
Potentilla monspeliensis L., Rough cinquefoil, b. s.
Agrimonia mollis (T. & G.) Britton, Soft agrimony, c.
Spiraea salicifolia L., Willow-leaved meadow-sweet, b. s.
Rosa humilis, Marsh., Low, pasture rose, c.
Rosa sayi Schwein., Prickly, pasture rose, c; b. s.
Prunus virginiana L., Choke-cherry, c.
Prunus serotina Ehrb., Wild black cherry, c.
Prunus pennsylvanica L., Wild red, pin cherry, c.
Amelanchier rotundifolia (Michx.) Roem., Round-leaved
 June berry, c.
Crataegus punctata Jacq., Large fruited thorn, c.
Crataegus hiemalis Lang., c.
Crataegus coccinea L., Red-haw, c.
Rubus baileyanus Britton, Bailey's blackberry, c.
Rubus strigosus Michx., Wild red raspberry, b. s.
Ribes setosum Lindl., Bristly gooseberry, c.
Apios apios (L.) MacM., Ground-nut, c; b. s; s.
Trifolium hybridum L., Alsike, c.
Trifolium repens L., White clover, b. s.
Trifolium pretense L., Red clover, b. s.

Myrtales

- Epilobium adencaulon* Haussk., Northern willow-herb, c.
Epilobium coloratum Muhl., Purple-leaved willow-herb, b. s.
Epilobium hirsutum L., Great hairy willow herb, b. s.
Onagra biennis (L.) Scop., Evening primrose, c; b. s.

Celastrales

- Celastrus scandens* L., Bittersweet, c.
Vitis cordifolia Michx., Frost grape, c; b. s.
Parthenocissus quinquefolia (L.) Planch., Virginia creeper,
er, c.

Sapindales

- Acer rubrum* L., Red maple, c.
Rhus hirta (L.) Sudw., Staghorn sumac, c.
Rhus radicans L., Poison ivy, c; b. s.
Quercus velutina Lam., Black oak, c.
Quercus macrocarpa Michx., Bur oak, c.
Corylus americana Walt., Hazel nut, c.
Corylus rostrata Ait., Beaked hazel nut, c.
Alnus incana (L.) Willd., Speckled alder, c; b. s; s.
Betula papyrifera Marsh., Paper, canoe birch, c.
Betula lutea Michx., Yellow birch, c.

Umbellales

- Aralia nudicaulis* L., Wild sarsaparilla, c.
Sanicula marylandica L., Black snake-root, c.
Taenidia integerrima (L.) Drude, Yellow pimpernel, c.
Cicuta bulbifera L., Bulb-bearing water hemlock, b. s; s.
Cornus candidissima Marsh., Panicle cornel, c; b. s.
Cornus alternifolia L., Alternate-leaved cornel, c.

Rubiales

- Galium borale* L., Northern bedstraw, c.
Galium triflorum Michx., Sweet-scented bedstraw, c; b. s.
Galium trifidum L., Cleavers, b. s; s.
Galium asprellum Michx., Rough bedstraw, b. s.
Diervilla diervilla (L.) MacM., Bush honey-suckle, c.
Sambucus pubens Michx., Red-berried elder, c.

Campanulales

- Campanula aparinoides* Pursh., Marsh bellflower, b. s; s.

Asterales

<i>Helianthus hirsutus</i> Raf., Stiff-haired sunflower,	c; b. s.
<i>Bidens cernua</i> L., Smaller bur-marigold,	s.
<i>Bidens comosa</i> (A. Gray) Wiegand, Leafy-bracted tick-seed,	b. s.
<i>Bidens frondosa</i> L., Black beggars-ticks,	b. s.
<i>Solidago canadensis</i> L., Canada goldenrod,	c.
<i>Solidago nemoralis</i> Ait., Field goldenrod,	b. s.
<i>Aster exiguus</i> (Fernald.) Rydb., Ciliated-leaved aster,	c; b. s.
<i>Aster puniceus</i> L., Red-stalked aster,	b. s.
<i>Aster macrophyllus</i> L., Large-leaved aster,	c.
<i>Achillea millefolium</i> L., Yarrow,	c.
<i>Nabalus albus</i> (L.) Hook., Rattlesnake-root,	c.
<i>Eupatorium purpureum</i> L., Joe-pye weed,	b. s.; s.
<i>Erechtites hieracifolia</i> (L.) Raf., fire weed,	b. s; s.
<i>Carduus lanceolatus</i> L., Common bur thistle (?),	b. s.
<i>Taraxacum taraxacum</i> (L.) Rarst., Dandelion, (?),	b. s; s.
<i>Anaphalis margaritaceae</i> (L.) Benth. & Hook., Pearly everlasting,	b. s.

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The University of Nebraska,
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FLORA OF RACINE AND KENOSHA COUNTIES, WIS-
CONSIN: A LIST OF THE FERN AND SEED PLANTS
GROWING WITHOUT CULTIVATION.

SAMUEL C. WADMOND.

PREFACE.

So far as the writer is aware, there are but three lists of local Wisconsin Flora extant, one of Milwaukee County, a second of Madison and vicinity, and a third of a part of Sauk County. This list is submitted as a slight further contribution to the data for a study of Wisconsin phytogeography.

It is to be hoped that these lists of local floras may ultimately develop into a catalogue of the Wisconsin Flora, superseding that of Swezey (1883) which is badly in need of revision and gives localities for but a few species.

Both counties are included in the list because collections were as often made in one of them as the other, and both are similar in topography and flora.

The two counties combine to form nearly a square in the extreme southeast corner of the State, each side of the square representing twenty-four miles; the eastern side of the square is irregular, representing the Lake Michigan boundary.

The altitude of the land above the level of Lake Michigan varies somewhat. Along the Lake it ranges from a few feet to forty feet, the level of Racine and Kenosha. In the western part it ranges from 190 feet at Wind Lake to 260 feet at Powers Lake, the latter point being 838 feet above sea level.

The drainage of the eastern half of Racine County is tributary to Lake Michigan through Root River; of the western to

the Mississippi, through the Fox River, which crosses the area from north to south near the western boundary, and empties into the Illinois River. Except in the extreme eastern part, the drainage of Kenosha County is almost entirely tributary to the Mississippi through the Fox and Des Plaines Rivers, Pike Creek being the only Lake Michigan tributary of any importance and that confined to the northeast corner of the county. At some points the elevation constituting the watershed is so slight as to be scarcely perceptible; a notable example of this is to be found in the headwaters of the Des Plaines River, a tributary of the Illinois, and those of the Root River, which flows into Lake Michigan. Both have their rise in an extended marshy valley, so nearly level that it is oftentimes difficult to determine which way the water flows.

Case (*Wisconsin Geology and Physical Geography*) calls attention to the fact that the rivers of the eastern half of the area are peculiar in their tendency to run for considerable distances parallel to the shore of Lake Michigan before finally entering it, their courses being determined by a system of low moraines of retrocession, lying between the great terminal moraine and the Lake. Indeed, the Des Plaines River never breaks through its bordering moraine, but continues southward into the Illinois.

The U. S. Dept. of Agriculture Soil Survey of Racine County, Wisconsin, issued October 28, 1907, is freely quoted from in the following paragraphs on topography and soil formation. Much the same conditions obtain for Kenosha as for Racine County.

The western part of both counties presents the appearance typical of a glaciated region. The terminal moraine of the Michigan glacier entered Wisconsin from Illinois in the southwesterly part of Kenosha Co., and extended slightly west of north to the vicinity of Burlington, Racine Co. At this point it encountered a second lobe of the Michigan glacier, forming an inter-lobate moraine, each glacier contributing material to its formation, and thus accounting for the range of morainic hills in the western part of the counties, which have imparted to this section a varied and attractive topography. Among the

hills and ridges are miniature lakes, swamps and kettle holes, conclusive evidence of the presence of the great ice sheet. East of these hills and extending to Lake Michigan, the surface of the counties varies from level to gently rolling.

The Soil Survey above quoted recognizes soils belonging to three series: the light-colored drift soils belonging in the Miami series, the dark-colored drift soils belonging in the Marshall series, and the glacial lacustrine deposits belonging in the Clyde series. Twelve soil types are recognized and mapped.

The Marshall clay loam, occupying 33.8% of the land surface, is the predominating soil type of Racine Co., and is found throughout the eastern two-thirds of the county. This soil is derived primarily from glacial till which at some former time was in a wet or swampy condition, thus favoring the growth and decay of water-loving vegetation and giving the soil its high organic matter content.

The predominating soil in the western townships is the Miami loam, occupying 19.3% of the land surface of Racine Co. This loam is a glacial till formed by the weathering of the till. The drainage is very good, and on the ridges and steep slopes, where it is excessive, the soil has been removed and the underlying clay or gravel exposed.

The Miami gravel is found only in the western part of the county, occurring as well-rounded hills and knolls, and also as narrow, choppy ridges. It is especially in evidence around Burlington. The surface soil is often lacking, the knolls or ridges forming a huge heap of unsorted gravel and boulders. It is of glacial origin, and consists almost wholly of morainic material.

Nearest Lake Michigan, and occupying the bluff rising 20 to 40 ft. above the surface, lies the Dunkirk fine sandy loam. It is of course lacustrine in origin. Next farther back from the Lake is the Clyde fine sandy loam, its origin being the same as the Dunkirk. The fine sands composing these soils were deposited upon the ancient lake floor at the same time, but the material constituting the Clyde remained in a swampy condition for a greater period and more organic matter was incorporated with the soil.

Still farther back from the Lake, is the Sioux sandy loam, consisting of the sands and gravels which formed the beach line of Lake Michigan while it occupied its highest stage during the Glacial period, and is about 20 ft. above the country lying to the east of it, the former lake bed.

The Miami clay loam, representing 14.9% of the land surface of Racine Co. is the heaviest soil of the area. The largest body of this soil forms a strip three miles wide at its widest point and extending in a north-and-south direction just west of Racine.

Besides the above, there are small alluvial deposits occupying low areas along the Fox and Root Rivers. In the vicinity of Wind Lake some peat beds occur, and swampy and marshy depressions in which a quantity of organic matter has accumulated are characteristic features of the area. 10.4% of the land surface of Racine Co., representing thousands of acres, is typical muck.

Both counties are underlain by the Niagara Limestone, which is common to the Lake Michigan shore of Wisconsin. A magnesium limestone outcrops at Racine, and at Burlington there is an exposure of thin bedded dolomite.

The woods of the territory bordering on the Lake are of the mesophytic forest type, with its deep, rich humus and dense shade. Hard maple, basswood and associated trees prevail. These quickly give way, as one travels westward, to the hemixerophytic oak and hickory forests with their lighter shade and comparatively thin layer of humus. In consequence, distinctively mesophytic species are scarce or altogether wanting in the westerly portion of the counties.

Near Gatliff, in almost the center of Mt. Pleasant township, Racine Co. is a typical bit of prairie flora reminding one of an Iowan prairie. The beach of Lake Michigan and the few tamarack swamps which still persist, also have their own distinct floras.

The sequence of families followed in this list is essentially the same as that of Engler & Prantl's "Naturliche Pflanzenfamilien." The nomenclature is in general that of Gray's Manual, 6th Edition; in some genera, however, in which many

changes and segregations have been made of late, such as *Carex*, *Panicum*, and others, more recent treatment has been observed.

To indicate the degree of frequency as nearly as possible, four adjectives are used; common, frequent, occasional, and rare.

With one or two exceptions, we have followed the practice of including in this list only such numbers as are supported by herbarium specimens. All are in the writer's herbarium except where otherwise noted. This strict rule excludes from the list many species, now disappeared, which were noted by Drs. Hoy and Davis years ago but of which no specimens were preserved.

Grateful acknowledgment is due Prof. M. L. Fernald of the Gray Herbarium of Harvard University, who determined doubtful *Carices* and rendered helpful assistance in other groups. Most of all am I indebted to Dr. J. J. Davis of Racine, Wis., who extended me at all times free access to his herbarium, and freely gave me the benefit of his knowledge of the local flora gained from a score of years acquaintanceship with it. Without his generous assistance this list would have been much more meagre in numbers than it is.

The western and southern parts of the counties have been covered only very superficially, and further search there should yield quite a few additional numbers.

Delavan, Wisconsin, December, 1907.

PTERIDOPHYTA. FERN PLANTS.

OPHIOGLOSSACEÆ. *Adder's Tongue Family.*

1. *Botrychium ternatum*, Swartz, var. *obliquum*, Milde.
Grape-Fern.

Rare; I have collected but two plants in the counties, one in sandy soil by roadside, the other an open prairie.

2. *Botrychium Virginianum*, Swartz. Grape-Fern.
Frequent; rich, moist woods.

FILICES. *Fern Family.*

3. *Osmunda regalis*, L. Royal Fern.

Rare; in tamarack, Wind Lake, Racine Co.

4. *Osmunda Claytoniana*, L. Interrupted Fern.

Rare; rich woods, Bishop Station and similar woods near Wind Point, both bordering Lake Michigan.

5. *Osmunda cinnamomea*, L. Cinnamon Fern.

Probably extinct; a specimen in Dr. Davis' herbarium labeled "Lake Shore Road, Kenosha Co. June 17, 1879."

6. *Onoclea sensibilis*, L. Sensitive Fern.

Frequent; wet meadows and swamp borders.

7. *Onoclea Struthiopteris*, Hoffman. Ostrich Fern.

Rare; moist, rich soil. The writer remembers but one station in each county for this the largest of our ferns.

8. *Cystopteris bulbifera*, Bernh. Bladder Fern.

Rare; on wet limestone faces, Horlicksville, Racine Co., the only station.

9. *Cystopteris fragilis*, Bernh. Brittle Fern.

Frequent; moist, grassy woods.

10. *Aspidium acrostichoides*, Swartz. Christmas Fern.

Rare; a few individuals collected on hillside near Wind Point, Racine Co., the only station.

11. *Aspidium Thelypteris*, Swartz. Marsh Shield Fern.

Occasional; swamps and low prairies.

12. *Aspidium cristatum*, Swartz. Crested Shield Fern.
Occasional; wet woods and shaded swamps.
13. *Aspidium spinulosum*, Swartz. Spinulose Shield Fern.
Occasional; low, swampy woods.
14. *Phegopteris polypodioides*, Fee. Beech Fern.
Extinct; a specimen in Dr. Davis' herbarium labeled "Dr. Hoy's garden, August 4, 1879." Probably transplanted from Green's Inlet, Kenosha Co., where it was once abundant.
15. *Phegopteris hexagonoptera*, Fee. Broad Beech Fern.
Rare; rich woods bordering Lake Michigan at Bishop Station, Racine Co., the only station now known. Years ago it was abundant at Green's Inlet with the preceding species.
16. *Phegopteris Dryopteris*, Fee. Oak Fern.
Extinct; Dr. Davis' herbarium contains a sheet labeled "Green's Inlet, Kenosha Co., Oct. 15, 1878." In its time quite as common as the two preceding at this station.
17. *Asplenium Filix-foemina*, Bernh. Lady Fern.
Occasional; woods and thickets.
18. *Adiantum pedatum*, L. Maidenhair Fern.
Frequent; rich woods.
19. *Pteris aquilina*, L. Brake.
Occasional; dry woods and thickets.
20. *Pellaea gracilis*, Hook. Slender Cliff Brake.
Extinct; sheet in Dr. Davis' herbarium labeled "Racine-Hoy"—no other data.
21. *Polypodium vulgare*, L. Polypody.
Extinct; in Dr. Davis' herbarium from Horlicks-ville, Wis. where it grew years ago on the limestone cliffs.

EQUISETACEÆ. *Horse-Tail Family.*

22. *Equisetum arvense*, L. The name Horse-tail is commonly applied to all the species of this genus.
Common; sandy soil, both moist and dry. Abundant along railroad tracks.

23. *Equisetum sylvaticum*, L.
Rare; along small stream near North Point, Racine Co. The only station.
24. *Equisetum limosum*, L. (*E. fluviatile*, L.)
Occasional; shallow water and swamp borders.
25. *Equisetum hyemale*, L. Scouring Rush.
Frequent; shady banks.
26. *Equisetum variegatum*, Schleich.
Rare; wet banks of ravine $\frac{1}{2}$ mile south of Racine College. The only station.

SPERMATOPHYTA. SEED PLANTS.

GYMNOSPERMS.

CONIFERÆ. *Pine Family.*

27. *Larix Americana*, Michx. Tamarack.
Rare; swamps and peat bogs. There is a large stretch of tamarack at Wind Lake and another at Burlington; elsewhere it seems to be confined to small areas.
28. *Thuja occidentalis*, L. Arbor Vitae.
Rare; growing on limestone ledges at Horlicksville quarries—the only station.
29. *Juniperus communis*, L., var *alpina*, Gaud. Low Juniper.
Frequent; rocky, sterile ground.
30. *Juniperus Virginiana*, L. Red Cedar.
Frequent in the western part of the counties; not known from the eastern part; dry hillsides.

ANGIOSPERMS.

MONOCOTYLEDONS.

TYPHACEÆ. *Cat-tail Family.*

31. *Typha latifolia*, L. Cat-tail.
Common; ponds and marsh borders.
32. *Sparganium curycarpum*, Engelm. Bur-reed.
Common; borders of ponds and streams.

NAIADACEÆ. *Pondweed Family.*

33. *Potamogeton natans*, L. The common name Pondweed is applied to all the species.
Frequent; in shallow water border of streams and in sluggish lakes.
34. *Potamogeton perfoliatus*, L., var. *Richardsonii*, A. Bennett.
Frequent; same habitat as the preceding.
35. *Potamogeton zosteræfolius* Schum.
Frequent; same habitat as No. 33. Not named in Swezey's list.
36. *Potamogeton pectinatus*, L.
Frequent; same habitat as No. 33.
37. *Triglochin palustris*, L. This and the following are commonly called Arrow-Grass.
Occasional; in wet sand, beach of Lake Michigan, and moist depressions on the open prairie.
38. *Triglochin maritima*, L.
Rare; two individuals gotten on edge of sedge marsh on Racine prairie; the only station. Reported in Swezey's list as occurring at Racine on authority of Dr. Hoy.

ALISMACEÆ. *Water Plantain Family.*

39. *Alisma Plantago*, L. Water Plantain.
Common; shallow water of ditches and sluggish streams.
40. *Sagittaria latifolia*, Willd. (*S. variabilis*, Engelm.)
Arrow-head.
Common; shallow water and borders of ponds and streams. Extremely variable as to foliage. A form with extremely narrow linear blades and basal lobes is frequent.
41. *Sagittaria heterophylla*, Pursh. (*S. rigida*, Pursh.)
Rare; occurring in company with the preceding at Horlicksville, Racine Co., though much less abundant than the latter species; the only station.

HYDROCHARIDACEÆ. *Frog's Bit Family.*

42. *Elodea Canadensis*, Michx. Water-weed.
Frequent; ponds and slow streams.

GRAMINEÆ. *Grass Family.*

43. *Andropogon scoparius*, Michx. Beard Grass.
Common; on prairie and along roadsides.
44. *Andropogon furcatus*, Muhl. Beard Grass.
Common; same habitat as the preceding.
45. *Chrysopogon avenaceus*, Benth. Indian Grass.
Occasional; same habitat as the preceding. A handsome grass.
46. *Panicum sanguinale*, L. Crab Grass.
Common; gardens, cultivated ground and waste places.
47. *Panicum glabrum*, Gaudin.
Occasional; roadsides.
48. *Panicum Crus-Galli*, L. Barnyard Grass.
Common; cultivated and waste ground. Troublesome as a weed.
49. *Panicum macrocarpon* Le Conte.
Frequent; rich woods. The "Ill. Flora" given its range as Vermont to New York, New Jersey and Penna. This record extends considerably its westward range. (Determined by Scribner.)
50. *Panicum Liebergii*, Scribner.
Common; low prairies.
51. *Panicum unciophyllum*, Trin. (*P. pubescens* of recent authors, not Lamarek.)
Our commonest native *Panicum*. In all soils, and exhibiting a large diversity of forms.
52. *Panicum depauperatum*, Muhl.
Occasional; prairies.
53. *Panicum virgatum*, L.
Common; along railroad tracks, on open prairie, and in wood borders.
54. *Panicum miliaceum*, L. Millet.
Rare; sometimes found persisting along roadsides.

55. *Panicum capillare*, L. Old-witch Grass.
Common; a troublesome weed in cultivated fields and waste ground. Varies largely in different situations.
56. *Setaria glauca*, Beauv. Pigeon Grass.
Common; fields and waste ground.
57. *Setaria viridis*, Beauv. Green Foxtail Grass.
Common; same habitat as the preceding.
58. *Setaria Italica*, Kunth. Italian Millet.
Common; roadsides and waste places.
59. *Cenchrus tribuloides*, L. Hedgehog Grass; Bur Grass.
Occasional; along railroad tracks and in sand of Lake Michigan beach.
60. *Zizania aquatica*, L. Wild Rice; Indian Rice.
Common; in swamps and lake and river borders.
61. *Leersia Virginica*, Willd. Cut Grass; White Grass.
Occasional; wet woods.
62. *Leersia oryzoides*, Swartz. Rice Cut Grass.
Common; swamps and stream borders.
63. *Phalaris arundinacea*, L. Reed Canary Grass.
Frequent; low prairies.
64. *Phalaris arundinacea*, L., var. *picta*, Hort. Ribbon Grass.
Rare; persisting as a roadside escape.
65. *Phalaris Canariensis*, L. Canary Grass.
Rare; waste grounds near dwellings.
66. *Hierochloe borealis*, R. & S. Holy Grass.
Occasional; moist meadows. A handsome grass with its chestnut-colored spikelets.
67. *Stipa spartea*, Trin. Poreupine Grass.
Common; prairies.
68. *Oryzopsis asperifolia*, Michx. Mountain Rice.
Rare; a single individual collected in rich woods, Caledonia Township, Racine Co.
69. *Oryzopsis melanocarpa*, Muhl.
Rare; Dr. Davis has collected at Somers, Kenosha Co., a few individuals of this species infected with *Sclerotium clavus*, DC. (Ergot.)

70. *Milium effusum*, L. Millet Grass.
Rare; known from two stations, both in Caledonia Township, in rich, low woods. A handsome species.
71. *Muhlenbergia Mexicana*, Trin.
Frequent; low meadows.
72. *Muhlenbergia glomerata*, Trin.
Frequent; wet prairies.
73. *Muhlenbergia sylvatica*, T. & G.
Rare; a single station along Pike Creek near Somers, Kenosha Co., fast becoming exterminated by pasturing.
74. *Muhlenbergia diffusa*, Schreb. Drop-seed Grass.
Rare; low woods within Racine city limits—the only known station. Not noted in Swezey's list. Now known to occur throughout the southern third of the State.
75. *Brachyelytrum aristatum*, Beauv.
Common; rich woods and shaded banks.
76. *Phleum pratense*, L. Timothy.
Common; everywhere in fields, meadows and roadsides. The scales are quite often modified into small leaves, especially in autumnal forms.
77. *Alopecurus geniculatus*, L., var. *aristulatus*, Torr. Floating Foxtail.
Occasional; in shallow water.
78. *Sporobolus cryptandrus*, A. Gray.
Rare; occurring only in sand, beach of Lake Michigan.
79. *Cinna arundinacea*, L. Wood Reed-Grass.
Occasional; moist, swampy woods.
80. *Agrostis alba*, L., var. *vulgaris*, Thurb. Red Top.
Common; fields and meadows—cultivated for hay.
81. *Agrostis scabra*, Willd. Hair Grass.
Common; waste ground and dry fields.
82. *Calamagrostis Canadensis*, Beauv. Blue-joint Grass.
Common; wet meadows.
83. *Deschampsia caespitosa*, Beauv.
Rare; in shallow water of river border at Horlicks-ville, Racine Co., the only station.

84. *Avena fatua*, L. Wild Oat.
Occasional; in fields, roadsides and waste places.
85. *Arrhenatherum avenaceum*, Beauv. Oat Grass.
Rare; occasionally persisting in fields.
86. *Danthonia spicata*, Beauv. Wild-oat Grass.
Common; dry woods.
87. *Spartina cynosuroides*, Willd. Cord Grass.
Common; swamps and stream borders.
88. *Bouteloua racemosa*, Lag.
Rare; dry gravelly hills, Burlington, Racine Co. Not seen elsewhere.
89. *Phragmites communis*, L. Reed.
Frequent; swamps and lake borders.
90. *Eragrostis Purshii*, Schrad.
Frequent; along railroad tracks, roadsides and other dry situations. An introduced grass becoming common in the southern third of the State. Not reported in Swezey's list.
91. *Eragrostis major*, Host.
Common; waste and cultivated ground. A handsome species.
92. *Eatonia Pennsylvanica*, Gray.
Occasional; low, sandy woods.
93. *Koeleria cristata*, Pers.
Frequent; prairies.
94. *Dactylis glomerata*, L. Orchard Grass.
Common; roadsides, fields, and even thriving in sand of Lake Michigan beach.
95. *Poa annua*, L. Low Spear Grass.
Common; waste and cultivated ground.
96. *Poa compressa*, L. Wire Grass; English Blue Grass.
Common; fields, waste places, thickets—in various soils.
97. *Poa pratensis*, L. June Grass; Kentucky Blue Grass.
Common; fields, meadows, woods, and even in wet sand on beach of Lake Michigan, but a few feet from the water's edge.

98. *Poa trivialis*, L. Rough Meadow Grass.
Rare; sparingly established along roadsides.
99. *Poa serotina*, Ehrh. (*P. flava*, L.) False Red-top.
Common; low meadows.
100. *Poa debilis*, Torr.
Occasional; woods, Somers, Kenosha Co.
101. *Glyceria nervata*, Trin.
Common; low meadows and swampy ground in woods.
102. *Glyceria nervata*, Trin., var. *parviglumis*, Scribn. & Merrill, (Bull. Div. of Agrostology, Circular No. 30, March 8, 1901, Pg. 8).
Occasional; type specimen gotten by the writer in rich, low woods, near the line road between Racine and Kenosha Counties.
This variety is distinguished from the species by its smaller and more lax flowered and narrower spikelets, and shorter and narrower flowering glumes.
103. *Glyceria fluitans*, R. Br.
Frequent; swamps and borders of sedge meadows.
104. *Festuca elatior*, L. Meadow Fescue.
Common; roadsides and meadows.
105. *Festuca elatior*, L., var. *pratensis*, Gray.
Common; with the above.
106. *Festuca nutans*, Willd.
Common; woods.
107. *Bromus ciliatus*, L. Brome Grass.
Occasional; woods.
108. *Bromus ciliatus*, L., var. *purgans*, Gray.
Frequent; more open situations than the preceding and more common.
109. *Bromus Kalmii*, A. Gray. Wild Chess.
Common; The Ill. Flora gives as its habitat "woods and thickets." I find it only on the open prairie in full sun.
110. *Bromus secalinus*, L. Cheat; Chess.
Rare; waste ground near grain fields. Not a bad weed with us.

111. *Agropyron repens*, Beauv. Couch Grass; Quitch Grass.
Common; roadsides, railroad tracks and meadows—a troublesome weed.
112. *Agropyron occidentale*, Scribner.
Rare; becoming established along roadsides. An emigrant from the Great Plains and one of the most important of the western grasses. Not in Swezey's list.
113. *Hordeum jubatum*, L. Squirrel-tail Grass.
Common; along railroad tracks, roadsides and in meadows. A weedy grass.
114. *Elymus striatus*, Willd. The species of this genus are commonly called Wild Rye.
Common; wooded hillsides.
115. *Elymus Viginicus*, L.
Common; moist soil along streams.
116. *Elymus Canadensis*, L.
Common; in a variety of soils.
117. *Elymus Canadensis*, L., var. *glaucifolius*, Gray.
Occasional; with the preceding.
118. *Elymus robustus*, Scribner.
Rare; roadsides and along railroad tracks. Observed only at Burlington, Racine Co.
119. *Asprella Hystrix*, Willd. Bottle-brush Grass.
Common; woods.

CYPERACEÆ. *Sedge Family.*

120. *Cyperus diandrus* var. *castaneus*, Torr.
Occasional; low grounds and sand flats. A handsome species.
121. *Cyperus esculentus*, L. Yellow Nut-Grass.
Occasional; roadsides and moist, sandy ground.
122. *Cyperus erythrorhizos*, Muhl.
Extinct; reported by Dr. Davis for Swezey's list as occurring at Racine, and specimen in his herbarium so labeled. Dr. Davis says that the plant gradually decreased in numbers and finally disappeared altogether. The writer has nowhere seen it in the counties.

123. *Cyperus strigosus*, L.
Common; sand flats, river borders and other damp situations.
124. *Dulichium spathaceum*, Pers.
Rare; gotten on border of swamp on edge of tamarack, Wind Lake, Racine Co. Not seen elsewhere.
125. *Eleocharis quadrangulata*, R. Br. Spike-Rush is the common name for all the species of this genus.
Rare; Dr. Davis has kindly shared with me herbarium specimens of this species collected in shallow water at Powers Lake, Kenosha Co. Its occurrence here is of especial interest, not only because of the addition of a rare species to the known Wisconsin Flora, but because of the further fact that this station is, so far as known, the most northerly on record.
126. *Eleocharis obtusa*, Schultes. (*E. ovata*, of recent manuals)
Common; everywhere in muddy places, banks of streams and about ponds.
127. *Eleocharis palustris*, R. Br.
Frequent; shallow water and marshy ground. Less common than the following.
128. *Eleocharis palustris*, R. Br., var. *glaucescens*, Gray.
Common; on wet sand flats of Lake Michigan and marshy ground inland.
129. *Eleocharis acicularis*, R. Br.
Common; muddy borders of streams and ponds.
130. *Eleocharis compressa*, Sullivant.
Extinct; noted in Swezey's list as reported from Milwaukee by Dr. Sherman. Dr. Davis' herbarium contains a specimen collected in moist sand north of Racine harbor. Station now destroyed.
131. *Scirpus pungens*, Vahl.
Occasional; wet sand border of Lake Michigan and inland lakes.
132. *Scirpus lacustris*, L. Great Bulrush.
Common; shallow water of sloughs and river shores.

133. *Scirpus fluviatilis*, Gray.
Frequent; sedge meadows.
134. *Scirpus atrovirens*, Muhl.
Common; swamps and wet meadows.
135. *Scirpus lineatus*, Michx.
Frequent; wet places.
136. *Scirpus cyperinus*, Kunth. Wool-Grass.
Common; swamps and wet meadows.
137. *Eriophorum polystachyon*, L. Cotton-Grass.
Frequent; boggy ground.
138. *Rynchospora alba*, Vahl. Beak Rush.
Rare; edge of tamarack, Wind Lake, Racine Co. The only known station.
139. *Carex intumescens*, Rudge. The names Sedge and Slough Grass are commonly applied to the Carices.
Rare; observed for the first time the past summer in white birch woods near Wind Point, north of Racine. Not known from elsewhere.
140. *Carex lupulina*, Muhl.
Common; in swales.
141. *Carex lupuliformis*, Sartwell.
Rare; in swales. The character of the achene is inconstant, and good authorities incline to the belief that it should be considered merely a formal variety.
142. *Carex rostrata*, Stokes. (*C. utriculata*, var. *minor*, Boott. in Gray Man. ed. 6, 594)
Common; in swales and marshes, Fernald (*Rhodora* 3:51, 1901) finds *C. utriculata* identical with the European *C. rostrata*.
143. *Carex rostrata*, Stokes, var. *utriculata*, Bailey.
Common; in same situations as the foregoing, and much like it except larger throughout.
144. *Carex vesicaria*, L. (*C. monile*, Tuck. in Gray, Man. ed. 6, 594, in part. See *Rhodora* 3:53, 1901)
Rare; in swales. A common Old World species; less common in America.

145. *Carex Tuckermani*, Dewey.
Rare; collected in a low thicket at Ives, Racine Co. Not noted in Swezey's state list. Prof. Cheney reports it from Oneida, Marathon and Portage Counties and from Madison, Dane Co. The writer has gotten it in Vilas and Douglas Counties. Apparently widely distributed throughout the State.
146. *Carex retrorsa*, Schwein.
Common; swales and swamp borders.
147. *Carex hystericina*, Muhl.
Common; ditches, lake, river and swamp borders.
148. *Carex comosa*, Boott.
Rare; edge of tamarack, Wind Lake, Racine Co. Not seen elsewhere.
149. *Carex trichocarpa*, Muhl.
Common; in swales.
150. *Carex aristata*, R. Br.
Common; in swales.
151. *Carex riparia*, Curtis.
Common; swamps and wet meadows. A well-marked sedge, readily distinguishable by its leathery perigynia which become polished at maturity.
152. *Carex lanuginosa*, Michx. (*C. filiformis*, L., var. *latifolia*, Boeckl.)
Common; low prairies and swale borders.
153. *Carex fusca*, All.
Common; low prairies and swamp borders. A handsome sedge, the pale perigynia contrasting beautifully with the brownish-red scales and staminate spikes.
154. *Carex stricta*, Lam.
Common; in swales.
155. *Carex aquatilis*, Wahl.
Occasional; thriving in almost pure sand on the beach of Lake Michigan at several stations in both counties. Our plant is a stout, robust form, the var. *elatior* of Babbington.
156. *Carex Magellanica*, Lam.
Rare; in sphagnum, tamarack swamp, Wind Lake, Racine Co. The only station.

157. *Carex virescens*, Muhl.

Rare; reported for Swezey's list by Dr. Davis from Racine as the only known Wisconsin station. The station is still undisturbed, along roadside at Berryville, Kenosha Co.

158. *Carex gracillima*, Schwein.

Common; rich, low woods. Hardly so graceful as many of our sedges.

159. *Carex longirostris*, Torr.

Rare; observed at two stations, only—one near Somers, Kenosha Co., the other near Tabor, Racine Co. Both in rich woods.

160. *Carex grisea*, Wahl.

Common; rich woods.

161. *Carex granularis*, Muhl.

Common; moist shaded banks and low prairies.

162. *Carex Crawei*, Dewey.

Occasional; moist, shaded banks and low prairies. Associated with *C. granularis*, to which it is closely related.

163. *Carex tetanica*, Schk.

Occasional; on moist shaded banks and in low prairies.

164. *Carex laxiflora*, Lam., var. *varians*, Bailey.

Common; woods.

165. *Carex laxiflora*, Lam., var. *striatula*, Carey.

Rare; collected but once in deep woods.

166. *Carex aurea*, Nutt.

Rare; springy banks and wet meadows. A beautiful little sedge, its golden fruit conspicuous at maturity.

167. *Carex Richardsonii*, R. Br.

Rare; open prairie. A single station where the plant grew sparingly.

168. *Carex Pennsylvanica*, Lam.

Common; our commonest sedge, occurring in a variety of situations from open prairie to deep woods. In the latter situations it is a plant of very different aspect from the prairie form.

169. *Carex pubescens*, Muhl.
Common; moist woods.
170. *Carex Jamesii*, Schwein.
Rare; a single individual of this species handed me by Dr. Davis who collected it in woods near Gatliff, Racine Co. Not reported in Swezey's list. Probably about its northern limit.
171. *Carex polytrichoides*, Willd.
Rare; in tamarack amongst cranberries, Wind Lake, Racine Co. The only station.
172. *Carex stipata*, Muhl.
Common; ditches, swamp and river borders.
173. *Carex vulpinoidea*, Michx.
Common; low open ground and moist thickets.
174. *Carex Sartwellii*, Dewey.
Common; low prairies.
175. *Carex tenella*, Schk.
Rare; in cranberry bog, tamarack swamp, Wind Lake, Racine Co. The only station.
176. *Carex rosea*, Schk.
Common; moist woods.
177. *Carex rosea*, Schk., var. *radiata*, Dewey.
Occasional; with the type.
178. *Carex sparganioides*, Muhl.
Frequent; rich woods.
179. *Carex cephaloidea*, Dewey.
Common; shady banks and low, moist woods.
180. *Carex cephalophora*, Muhl.
Common; same habitat as the preceding and often associated with it.
181. *Carex interior*, Bailey.
Common; moist banks and low meadows. Our plant has somewhat sharper scales than typical interior.
182. *Carex tenuiflora*, Wahl.
Rare; in tamarack, Wind Lake, Racine Co. The only station.
183. *Carex Deweyana*, Schwein.
Rare or extinct; a specimen in the herbarium of Dr.

Davis obtained in "Lake Shore woods, Racine Co."
Not observed by the writer.

184. *Carex tribuloides*, Wahl.
Common; meadows.
185. *Carex tribuloides*, Wahl., var. *Bebbii*, Bailey.
Common; swamps and low meadows.
186. *Carex cristatella*, Britton. (*C. tribuloides*, Wahl., var. *cristata*, Bailey)
Frequent; in meadows and along roadsides.
187. *Carex straminea*, Willd.
Common; along roadsides and in dry soil.
188. *Carex festucacea*, Willd. (*C. straminea*, Willd., var. *brevior*, Dewey)
Occasional; open prairies.

ARACEÆ. *Arum Family.*

189. *Arisaema triphyllum*, Torr. Jack-in-the-Pulpit; Indian Turnip.
Common; moist woods. Clustered berries beautiful in autumn.
190. *Arisaema Dracontium*, Schott. Green Dragon; Dragon-root.
Occasional; wet woods.
191. *Symplocarpus foetidus*, Salisb. Skunk Cabbage.
Frequent; wet soil, borders of streams and swamps.
Our earliest spring bloomer.
192. *Acorus Calamus*, L. Sweet Flag.
Occasional; swamps and stream borders.

LEMNACEÆ. *Duckweed Family.*

193. *Spirodela polyrrhiza*, Schleid. Duckweed.
Common; in quiet waters throughout. Given in Swezey's list as reported by W. A. Kellerman from Winnebago Co. only. Occurs abundantly throughout the state (Cheney).
194. *Lemna trisulca*, L. Duckweed.
Common; with the preceding.

195. *Lemna minor*, L. Duckweed.

Common; with the two preceding.

196. *Wolffia Columbiana*, Karst.

Extinct; Dr. Davis has kindly shared with me herbarium material of this minute plant, collected by him in 1886 in the Gas House Slough at foot of Center St., city of Racine. Station years ago destroyed by filling.

COMMELINACEÆ. *Spiderwort Family.*

197. *Tradescantia Virginiana*, L. Spiderwort.

Common; along railroad tracks, borders of woods, roadsides.

PONTEDERIACEÆ. *Pickerel-Weed Family.*

198. *Heteranthera graminea*, Vahl. Water Star-Grass.

Rare; on muddy shore of Root River, at Horlicksville, Racine Co. Ours is a small form.

JUNCACEÆ. *Rush Family.*

199. *Juncus effusus*, L. The *Junci* are commonly known as Rushes.

Extinct; a sheet in Dr. Davis' herbarium labeled, "Racine Harbor, 1880." Station long since destroyed. This rush, so common in the north, appears to be wanting with us.

200. *Juncus Balticus*, Willd.

Occasional or frequent; a noble species growing in dense clumps, often three feet high, in the wet sand of Lake Michigan beach. It occurs also on Racine prairie, but there it is dwarfed and inconspicuous. The rootstocks are stout and beautifully varnished. Seeds plum-colored.

201. *Juncus bufonius*, L.

Occasional; wet sand of Lake Beach, and in abandoned quarries at Horlicksville. A tiny species, five to six inches in height.

202. *Juncus Gerardi*, Loisel.

Rare; a single station only (and that now destroyed), in sand, Lake Michigan beach under willows. Both Gray and the Ill. Flora say of this rush, "Of rare occurrence about the Great Lakes."

203. *Juncus tenuis*, Willd. Yard Rush.

Common, occupying a variety of situations ranging from roadsides in hard, packed soil to low meadows. Our commonest rush, and varies greatly accordingly as environmental conditions are favorable or otherwise.

204. *Juncus Dudleyi*, Wiegand. (Bull. Torr. Bot. Club, 27: 524, 1900)

Common; prairies. Well distinguished from *J. tenuis* by its cartilaginous auricles, few-flowered inflorescence and shorter involucre bracts. (Verified by Wiegand)

205. *Juncus Richardsonianus*, Schult. (*J. alpinus*, Vahl, var. *insignis*, Fries)

Rare; reported in Swezey's list from Manitowoc Co. only, on authority of Th. A. Bruhin. Occurs at several points in wet sand on beach of Lake Michigan. Also met with on the edge of limestone pits at the Horlicksville quarries. The station at which this rush grows in greatest profusion has been preserved without molestation, and specimens collected by Dr. Davis in 1879 at this very station, were by Dr. Engelman pronounced this species! Seeds hoarhound color.

206. *Juncus nodosus*, L.

Common; wet sand of Lake Beach and wet situations throughout.

207. *Juncus Torreyi*, Coville. (*J. nodosus*, L., var. *megacephalus*, Torr.)

Frequent; wet sand of Lake Beach and low prairies inland. Not reported in any catalogue of Wisconsin plants. Very distinct, and properly raised to specific rank. Seeds cinnamon-colored.

208. *Juncus Canadensis*, J. Gay.

Occasional; in swamps and low grass land. A robust

species, the latest flowering of our rushes. Seeds pepper-colored.

209. *Luzula campestris*, DC. Wood Rush.
Frequent; woodlands. One of our earliest spring flowers.

LILIACEÆ. *Lily Family.*

210. *Tofieldia glutinosa*, Willd.
Rare; a single station in low prairie, Gatliff, Racine Co.
211. *Uvularia grandiflora*, Smith. Bellwort.
Common; rich woods.
212. *Allium tricoccum*, Ait. Wild Leek.
Common; rich woods.
213. *Allium cernuum*, Roth. Nodding Wild Onion.
Common; prairies and along railroad tracks.
214. *Allium Canadense*, Kalm. Wild Garlic.
Occasional; low woods.
215. *Lilium Philadelphicum*, L. Red Lily.
Frequent; wood borders and thickets.
216. *Lilium Canadense*, L. Canada Lily.
Frequent; meadows and fields.
217. *Erythronium Americanum*, Ker. Yellow Dog-tooth Violet; Adder's-tongue.
Common; moist woods and shaded banks.
218. *Erythronium albidum*, Nutt. White Dog-tooth Violet; White Adder's Tongue.
Common; same situations as and occurring with the preceding.
219. *Asparagus officinale*, L. Garden Asparagus.
Occasional; escaped from cultivation and persisting.
220. *Clintonia borealis*, Raf.
Rare; two stations known, both in rich woods bordering on Lake Michigan in Racine Co. Formerly very abundant at Green's Inlet, Kenosha Co., also bordering the Lake. Flowers not always umbelled!
221. *Smilacina racemosa*, Desf. This and the two following species are commonly known as False Solomon's Seal.

Common; woods and thickets, and frequently venturing out into the open.

222. *Smilacina stellata*, Desf.

Common; in dryer soil and stronger sun than the foregoing. Often found in abundance along railroad tracks.

223. *Maianthemum Canadense*, Desf.

Common; woods in moist soil.

224. *Streptopus roseus*, Michx. Twisted-stalk.

Rare; known from but one station,—rich woods at Bishop Station, Racine Co.

225. *Polygonatum biflorum*, Ell. Solomon's Seal.

Frequent; woods, thickets, fence-rows.

226. *Polygonatum giganteum*, Dietrich. Solomon's Seal.

Frequent; situations similar to the preceding.

227. *Medeola Virginiana*, L. Indian Cucumber Root.

Rare; a single sheet of this species, collected by Prof. Lannerd at Caledonia, Racine Co., summer of 1906, is in the Racine High School herbarium. Not met with by the writer.

228. *Trillium recurvatum*, Beck. Purple Trillium or Wake-robin.

Common: moist woods.

229. *Trillium grandiflorum*, Salisb. Large-flowered Trillium.

Common; rich, mesophytic woods.

230. *Trillium erectum*, L. Nodding Trillium.

Occasional; rich woods. Our species is the old var. *declinatum*, with white petals borne on a recurved peduncle.

231. *Trillium cernuum*, L.

Rare; in rich woods at Bishop Station, Racine Co., the only known station. Close to the preceding species.

232. *Smilax herbacea*, L. Carrion-Flower.

Occasional; thickets, fence-rows and river banks. Much less common than the following species.

233. *Smilax ecirrhata*, Watson.

Common; the Ill. Flora gives its habitat as "Dry soil." I find it in rich or moist woods and shaded

banks. Not reported in Swezey's list (though common in the southern half of the State), doubtless because mistaken for *S. herbacea*. The two are very unlike, however.

234. *Smilax hispida*, Muhl. Greenbrier.

Occasional to frequent; thickets and along streams. Reported for Swezey's list by Davis from Racine. Widely distributed throughout the State (Cheney). Flowers sweetscented!

AMARYLLIDACEÆ. *Amaryllis Family.*

235. *Hypoxis erecta*, L.

Common; dry meadows and prairies.

DIOSCOREACEÆ. *Yam Family.*

236. *Dioscorea villosa*, L. Wild Yam.

Occasional; moist thickets along streams.

IRIDACEÆ. *Iris Family.*

237. *Iris versicolor*, L. Blue Flag.

Common; swamps and low meadows.

238. *Sisyrinchium angustifolium*, Mill. Blue-eyed Grass.

Common; moist grass-land.

ORCHIDACEÆ. *Orchis Family.*

239. *Cypripedium spectabile*, Salisb. Showy Lady's Slipper.

Rare; shaded bank near Somers, Kenosha Co. The only surviving station known to the writer, the exact whereabouts of which he is not anxious to divulge!

240. *Cypripedium candidum*, Willd. Small White Lady's Slipper.

Occasional to frequent; in low prairies. The commonest of our Ladies' Slippers.

241. *Cypripedium pubescens*, Willd. Large Yellow Lady's Slipper.

Rare; rich woods.

242. *Cypripedium parviflorum*, Salisb. Small Yellow Lady's Slipper.

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- Rare; wooded hillsides. Appears to intergrade with the preceding and perhaps only a small form of it.
243. *Orchis spectabilis*, L. Showy Orchis.
Rare; rich woods. I have seen but two plants of this orchid during the last ten years. A disappearing species, as indeed are all of the native orchids.
244. *Habenaria Hookeri*, Torr.
Rare; rich woods.
245. *Habenaria hyperborea*, R. Br. Green Orchis.
Occasional; low meadows and wet woods.
246. *Habenaria bracteata*, R. Br. Green Orchis.
Occasional; rich woods.
247. *Habenaria lacera*, R. Br. Ragged Green Orchis.
Rare; in tamarack at Wind Lake, Racine Co., and on hillside at Wind Point.
248. *Habenaria leucophaea*, Gray. White-fringed Orchis.
Occasional to frequent; moist prairies.
249. *Habenaria pycodes*, Gray. Purple-fringed Orchis.
Rare; grassy swamps and wet meadows.
250. *Spiranthes cernua*, Richard. Lady's Tresses.
Frequent; in wet grass-land.
251. *Spiranthes gracilis*, Bigelow. Lady's Tresses.
Rare; low meadows.
252. *Goodyera pubescens*, R. Br. Rattlesnake-Plantain.
Rare; on river bank above Horlicksville, Racine Co.
The only known station.
253. *Corallorhiza multiflora*, Nutt. Coral-root.
Occasional to rare; rather dry woodlands.
254. *Aplectrum hiemale*, Nutt. Adam-and-Eve.
Rare; low woods.

DICOTYLEDONS.

JUGLANDACEÆ. *Walnut Family.*

255. *Juglans nigra*, L. Black Walnut.
Frequent; rich woods and borders of fields. In an early day a very common tree along Pike's Creek, Kenosha Co., so common that it was cut for firewood.

256. *Jugland cinera*, L. Butternut.
Frequent; woods. More abundant than the preceding.
257. *Carya amara*, Nutt. Bitter-nut; Pig-nut Hickory.
Frequent; moist woodland along streams.
258. *Carya alba*, Nutt. Shag-bark Hickory.
Common; woods throughout the area.

SALICACEÆ. *Willow Family.*

259. *Populus alba*, L. White Poplar.
Occasional; has spread from the root of older trees and established itself along roadsides.
260. *Populus balsamifera*, L., var. *candicans*, Gray. Balm of Gilead.
Rare; appears to have occasionally established itself in spots where it hardly seems likely it was set out.
261. *Populus grandidentata*, Michx. Larger Aspen.
Frequent; woods and thickets.
262. *Populus tremuloides*, Michx. Aspen.
Common; same habitat as the preceding.
263. *Populus monilifera*, Ait. Cottonwood.
Occasional; woods and along streams. There are some very large individuals of this, the greatest of the poplars, near Somers, Kenosha Co.
264. *Salix nigra*, Marsh. Black Willow.
Frequent; along streams and swamp edges.
265. *Salix amygdaloides*, Anders.
Frequent; along the beach of Lake Michigan, and borders of streams inland.
266. *Salix lucida*, Muhl. Shining Willow.
Common; along streams and in moist thickets. A beautiful species.
267. *Salix alba*, L., var. *vitellina*, Koch. Golden Osier.
Common; well introduced at many points in both counties, generally in moist situations.
268. *Salix purpurea*, L. Purple Willow.
Rare; sparingly established on beach of Lake Michigan within city limits of Racine. Only staminate trees seen.

269. *Salix longifolia*, Muhl.

Common; wet sand beach of Lake Michigan, and along streams inland.

270. *Salix rostrata*, Richardson.

Common; both dry and moist soils.

271. *Salix discolor*, Muhl. Pussy Willow.

Common; moist and wet ground everywhere, in woods, thickets and along streams.

272. *Salix petiolaris*, J. E. Smith.

Rare; low meadows.

273. *Salix cordata*, Muhl.

Common; wet ground. A variable species.

274. *Salix glaucophylla*, Bebb.

Occasional to frequent; the Ill. Flora gives its habitat as "Sand dunes, Lake Michigan." I find it inland on low prairies more abundantly than near the Lake, and even when found near the Lake it seems to affect wet clayey soils, rather than sand. Occasionally I have met with it along roadsides.

A handsome willow, its leaves dark green and shining above, and white-glaucous beneath.

275. *Salix candida*, Fluegge. Sage Willow.

Occasional; in bogs, Wind Lake, and on Racine prairie. A beautiful species.

276. *Salix myrtilloides*, L., var. *pedicellaris*, Anders.

Rare; bogs, Wind Lake, Racine Co., the only station. The variety is not included in Swezey's state list.

CUPULIFERÆ. *Oak Family.*

277. *Carpinus Caroliniana*, Walt. Iron-wood.

Frequent; thickets and open woods.

278. *Ostrya Virginiana*, Willd. Hop Hornbeam.

Frequent; same situations as the preceding.

279. *Corylus Americana*, Walt. Hazel-nut.

Common; thickets and woods in various soils.

280. *Corylus rostrata*, Ait. Beaked Hazel-nut.

Rare or extinct; leaves of this hazel in Dr. Davis herbarium infected by a *Septoria*, collected near Hor-

licksville, Racine Co. Station now destroyed. Not seen elsewhere.

281. *Betula papyrifera*, Marshall. Paper Birch; Canoe Birch.
Frequent; along Lake Michigan and our larger rivers.
Wanting in the western part of our area.
282. *Betula lutea*, Michx. f. Yellow Birch.
Occasional; along streams and on the bluffs bordering Lake Michigan.
(Interspersed with typical *B. lutea* and *B. papyrifera* at Cedar Bend of Root River, Racine, are several puzzling trees, with bark exfoliating but of a color intermediate between *lutea* and *papyrifera*, and bearing peduncled catkins, which Dr. Rydberg suspects are of hybrid origin, and might perhaps be designated as *Betula lutea* × *papyrifera*.)
283. *Betula pumila*, L. Dwarf Birch.
Rare; known only from the tamarack, Wind Lake, Racine Co.
284. *Betula pumila*, L., var. *glandulifera*, Regel. (Am. Jour. Sci. Vol. XIV, pg. 188)
Occasional; wet banks and bogs. This variety in its long pubescence, suggests *B. pumila*; but mixed with the pubescence, and sometimes upon the leaves, are the characteristic glandular atoms of *B. glandulosa*.
285. *Alnus incana*, Willd. Alder.
Common; forming extensive thickets along streams.
286. *Fagus ferruginea*, Ait. Beech.
Occasional; along Lake Michigan and our larger streams. Does not seem to thrive well in our latitude.
287. *Quercus rubra*, L. Red Oak.
Common; occupying a great variety of soils and situations. Leaves turn reddish-brown in autumn.
288. *Quercus coccinea*, Wang. Scarlet Oak.
Frequent; woodlands in both dry and moist soil. Leaves turn a fine red in autumn.
289. *Quercus velutina*, Lam. (*Q. coccinea*, Wang., var. *tinctoria*, Gray.) Black Oak.
Occasional; with the preceding. The squarrose,

densely puberulent, chestnut-colored scales of the acorn cup in this species are characteristic, separating it from *Q. coccinea* in which the scales are usually closely appressed.

290. *Quercus ellipsoidalis*, E. J. Hill. (Bot. Gaz. 27: 05, 1899.)

Common; with the two preceding. This is doubtless the oak which Dr. Lapham mistook for *Q. palustris*, and on whose authority it has been accredited to the Wisconsin Flora these many years. It is a matter of much doubt whether *Q. palustris* occurs in Wisconsin, Prof. Cheney never having met with it in his work on the trees of the State.

Q. ellipsoidalis resembles *Q. palustris* in that as the branches often come low down, they are apt to die as the trees grow older, and, breaking off a short distance above their base, leave stubs along the trunk, so characteristic of *Q. palustris*. It is quite unlike the latter, however, in the form and size of nut and acorn-cup. In the form of its acorns it is nearest *Q. coccinea*, but unlike the latter, its leaves do not turn scarlet in autumn, but rather a yellowish to pale brown.

291. *Quercus alba*, L. White Oak.

Common; woods and fields, in various soils.

292. *Quercus macrocarpa*, Michx. Burr Oak.

Common; forming the burr-oak openings, so common in Southern Wisconsin.

293. *Quercus bicolor*, Willd. Swamp White Oak.

Rare; a few trees still remain, about a half mile north of Racine City limits.

294. *Quercus Muhlenbergii*, Engelm. Chestnut Oak.

Rare; occurs on the little island and peninsula in Brown's Lake, near Burlington, Racine Co. The only station.

URTICACEÆ. *Nettle Family.*

295. *Ulmus Americana*, L. American Elm.

Common; woods and along streams. One of our handsomest trees.

296. *Ulmus fulva*, Michx. Slippery Elm.
Frequent; woodlands and near streams in moist soil.
297. *Celtis occidentalis*, L. Sugarberry; Hackberry.
Rare; a single individual of this species occurs on 12th St. near Mound Cemetery, Racine, and is probably native. Although known to us for several years, we have never found it in flower or fruit.
298. *Humulus Lupulus*, L. Hop.
Occasional; thickets and stream borders.
299. *Cannabis sativa*, L. Hemp.
Occasional; waste grounds.
300. *Urtica dioica*, L. Nettle.
Frequent; roadsides and waste ground.
301. *Urtica gracilis*, Ait. Nettle.
Frequent; same situations as the preceding.
302. *Laportea Canadensis*, Gaud. Wood Nettle.
Common; moist woods in rich soil.
303. *Pilea pumila*, Gray. Clearweed.
Common; moist shaded places in woods.
304. *Boehmeria cylindrica*, Willd. False Nettle.
Rare; woods near Caledonia, Racine Co.
305. *Boehmeria cylindrica*, Willd., var. *scabra*, Porter.
Rare; Dr. Davis collected a *Cercospora* on this variety at Powers Lake, Kenosha Co. Host-plant determined by Dr. Small.
This find considerably extends the range given in the Ill. Flora,—"Pa., N. J. and Southern N. Y."
306. *Parietaria Pennsylvanica*, Muhl. Pellitory.
Common in open woods at Burlington, Racine Co.
Not known from the eastern part of the area.

SANTALACEÆ. *Sandalwood Family.*

307. *Comandra umbellata*, Nutt. Bastard Toad-flax.
Common; on open prairie.

ARISTOLOCHIACEÆ. *Birthwort Family.*

308. *Asarum reflexum*, Bicknell. Wild Ginger.
Occasional; rich woods in both counties.

309. *Asarum reflexum*, var. *ambiguum*, Bicknell.
Occasional; with the type.

POLYGONACEÆ. *Buckwheat Family.*

310. *Rumex Acetosella*, L. Sheep Sorrel.
Common; everywhere in fields and waste ground.
Becoming a decided pest.
311. *Rumex verticillatus*, L. Swamp Dock.
Frequent; low places in woods.
312. *Rumex altissimus*, Wood. Pale Dock.
Occasional; moist soil.
313. *Rumex Patientia*, L.
Rare; noted for the first time in summer of 1900 at
two stations, both within Racine city limits. A large
robust species. Not noted in Swezey's list, likely be-
cause the plant is of later introduction:
314. *Rumex Britannica*, L. Great Water Dock.
Frequent; wet swamps and along streams.
315. *Rumex crispus*, L. Curled Dock.
Common; roadsides, fields and waste places.
316. *Rumex obtusifolius*, L. Bitter Dock.
Common; waste places, wood borders, and fields. Of-
ten growing with *R. crispus*.
317. *Fagopyrum esculentum*, Moench. Buckwheat.
Occasional; persistent in fields after cultivation.
318. *Polygonum amphibium*, L.
Occasional; ponds, swamps and low meadows.
319. *Polygonum Hartwrightii*, Gray.
Occasional; low meadows. Seldom flowers.
320. *Polygonum Muhlenbergii*, Watson.
Rare to occasional; banks of streams and ditches.
321. *Polygonum lapathifolium*, L.
Common; moist situations.
322. *Polygonum Pennsylvanicum*, L.
Occasional; low places.
323. *Polygonum Persicaria*, L. Lady's Thumb.
Common; fields, gardens and waste places.
324. *Polygonum hydropiperoides*, Michx. Smartweed; Water-
Pepper.

- Occasional; wet places.
325. *Polygonum Hydropiper*, L. Smartweed; Water-Pepper.
Common; low situations.
362. *Polygonum acre*, HBK. Water Smartweed.
Common; borders of ponds and swamps.
327. *Polygonum orientale*, L. Prince's Feather.
Rare; persisting in grain fields and gardens.
328. *Polygonum Virginianum*, L.
Rare; low woods within Racine city limits—the only station that the writer remembers of.
329. *Polygonum aviculare*, L. Doorweed; Knotweed.
Common; yards, waste places and roadsides.
330. *Polygonum littorale*, Link.
Rare; in sand, beach of Lake Michigan.
331. *Polygonum erectum*, L. Knotweed.
Common; roadsides and waste places.
332. *Polygonum Convolvulus*, L. Black Bindweed.
Common; fields and waste ground in all kinds of soil.
333. *Polygonum dumetorum*, L., var. *scandens*, Gray. (*P. scandens*, L.) Climbing False Buckwheat.
Rare; thicket near Gatliff, Racine Co. The only station.
334. *Polygonum sagittatum*, L. Tear-Thumb.
Frequent; low, wet grounds.

CHENOPODIACEÆ. *Goosefoot Family.*

335. *Chenopodium album*, L. Pigweed; Lamb's Quarters; White Goosefoot.
Common; fields and waste ground throughout. A well-known weed.
336. *Chenopodium album*, L., var. *viride*, Moq.
Common; growing with and like the typical form except the plant is brighter green.
337. *Chenopodium glaucum*, L. Oak-leaved Goosefoot.
Common; same situations as the preceding.
338. *Chenopodium hybridum*, L. Maple-leaved Goosefoot.
Common; roadsides and cultivated ground.

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339. *Chenopodium Botrys*, L. Jerusalem Oak.

Occasional; roadsides.

340. *Cycloloma platyphyllum*, Moq. Winged Pigweed.

Rare; in sand, beach of Lake Michigan at mouth of Root River, Racine, and Pike's Creek, Kenosha Co. Not noted in Swezey's list. Cheney reports it from near La Crosse and a single individual from Madison. An emigrant from the Western Plains.

341. *Atriplex patulum*, L.

Common; roadsides and waste ground.

342. *Atriplex patulum*, L., var. *hastatum*, Gray. (*A. hastata*, L.)

Occasional; same situations as the preceding. The Ill. Flora reports this much more common than the foregoing. It is the reverse of this with us.

343. *Corispermum hyssopifolium*, L. Bug-seed.

Occasional to rare; in sand on Lake Michigan beach in both counties. Young plants of this species and *Salsola Tragus* closely resemble each other. Reported in Swezey's list by Dr. Davis from Racine. Cheney finds it all along the south shore of Lake Superior in Wisconsin, as well.

344. *Salsola Tragus*, L. Russian Thistle.

Common; the Russian Thistle was first observed as occurring sparingly in sand of Lake Michigan beach at mouth of Root River, Racine. It is now very common all along the lake beach in both counties and frequently met with inland. Not noted in Swezey's list. Reported by Cheney from many points in the State.

AMARANTHACEÆ. *Amaranth Family.*

345. *Amaranthus retroflexus*, L. Pigweed.

Common; gardens, fields and waste places.

346. *Amaranthus hybridus*, L. Pigweed.

Occasional; same situations as preceding.

347. *Amaranthus hybridus*, L., var. *paniculatus*, Uline & Bray.

Rare; with the type.

348. *Amaranthus blitoides*, S. Wats.

Common; railroad tracks and waste places. Not noted in Swezey's list, probably because of later introduction. Cheney reports common along many railway lines in the State. An emigrant from the Western Plains. Easily distinguishable from *A. albus* by its prostrate habit of growth and larger seeds.

349. *Amaranthus graecizans*, L. (*A. albus*, L.) Tumble Weed.

Common; waste grounds and fields, more often in sandy soil. In autumn the plant is uprooted and blown about by the wind, whence its common name Tumble Weed.

350. *Acnida tuberculata*, Moq. (*A. tamariscina*, Wood, var. *subnuda*, S. Wats.) Water-Hemp.

Occasional; low grounds. Presenting a large variety of forms.

NYCTAGINACEÆ. *Four-o'clock Family.*

351. *Oxybaphus nyctagineus*, Sweet.

Rare; a few individuals observed along the C. M. & St. P. right-of-way at Burlington, Racine Co. Not seen elsewhere. Probably of recent introduction.

FICOIDEÆ. *Carpetweed Family.*

352. *Mollugo verticillata*, L. Carpetweed.

Occasional; cultivated grounds and waste places.

PORTULACACEÆ. *Purslane Family.*

353. *Claytonia virginica*, L. Spring Beauty.

Common; moist woods.

354. *Portulaca oleracea*, L. Purslane; "Pussley."

Common; too-well known in gardens where it is a very troublesome weed, difficult to eradicate.

CARYOPHYLLACEÆ. *Pink Family.*

355. *Agrostemma Githago*, L. (*Lychnis Githago*, Lam.)
Corn Cockle.

Rare; occasionally seen in grain fields.

356. *Silene stellata*, Ait. Starry Champion.
Frequent; wooded banks.
357. *Silene antirrhina*, L. Sleepy Catchfly.
Occasional to frequent; along roadsides, railroad tracks and other xerophytic situations.
358. *Silene noctiflora*, L. Night-flowering Catchfly.
Frequent; in cultivated grounds and along roadsides. Readily distinguished from the next following species by the number of styles; in other respects very similar.
359. *Lychnis vespertina*, Sibth.
Occasional; same habitat as the preceding. Reported for Swezey's list from Racine by Dr. Davis. Now known from many points throughout the State.
360. *Saponaria officinalis*, L. Bouncing Bet.
Frequent; along roadsides and about deserted dwellings.
361. *Stellaria media*, Cyrill. Common Chickweed.
Common; everywhere in shaded situations, especially about lawns and gardens.
362. *Cerastium vulgatum*, L. Mouse-ear Chickweed.
Common; in grass-land, lawns, etc.
363. *Cerastium nutans*, Raf.
Occasional; low woods.
364. *Arenaria serpyllifolia*, L. Thyme-leaved Sandwort.
Rare; abundant on gravelly hillside at Burlington, Racine Co. Not seen elsewhere.
365. *Arenaria Michauxii*, Hook. f.
Rare; two plants gotten on gravelly knoll in company with the preceding at Burlington. The only collection of this species I have ever made in the area.
366. *Arenaria lateriflora*, L. Sandwort.
Frequent to common; woods.

NYPHAEACEÆ. *Water-Lily Family.*

367. *Brasenia peltata*, Pursh. Water-shield.
Occasional; in lakes of western part of the area.
368. *Nuphar advena*, Ait. f. Spatter Dock; Yellow Pond Lily.
Common; in stagnant waters and ponds.

369. *Nymphaea reniformis*, DC. (*Castalia tuberosa*, Greene.)

White Water Lily; Pond Lily.

Common; lakes, ponds and slow streams throughout. Not listed by Swezey. Occurring in many lakes throughout the southern part of the State.

The Manuals make the character of the rootstock a diagnostic feature as between this species and *N. odorata*, and yet the *odorata* I find in Northern Wisconsin waters, with leaves decidedly purplish beneath and fragrant flowers, has on the rootstock the characteristic lateral tuberous-thickened branches of *reniformis*.

RANUNCULACEÆ. *Crowfoot Family.*

370. *Hydrastis Canadensis*, L. Golden Seal; Orange-root.

Rare; rich woods. Observed at but three stations within our limits, and then sparingly. Swezey's list reports it from Milwaukee and Racine, only.

371. *Caltha palustris*, L. Marsh Marigold; incorrectly called Cow-slips.

Common; along streams and in wet meadows, lighting the barren spring landscape with a glorious blaze of color.

372. *Optis trifolia*, Salisb. Gold-thread.

Rare; in sphagnum, tamarack swamp, Wind Lake, Racine Co.

373. *Isopyrum biternatum*, T. & G.

Frequent; moist woods. The thickened root-tubers of this species are very characteristic.

374. *Actaea spicata*, L., var. *rubra*, Ait. (*A. rubra*, Willd.)
Red Baneberry.

Occasional; rich woods. A form with thickened pedicels is sometimes met with, perhaps the result of hybridization.

375. *Actaea alba*, Bigel. White Baneberry.

Frequent; rich woods. With the preceding but more common. Occasionally occurs with slender pedicels.

376. *Aquilegia Canadensis*, L. Columbine.
Frequent; preferring rocky situations, such as crevices in limestone, although occasionally found in rich leaf mould.
377. *Delphinium Consolida*, L. Larkspur.
Rare; escaped from gardens and persisting.
378. *Anemone cylindrica*, A. Gray. Long-fruited Anemone.
Frequent; shaded banks. Easily distinguished from the following by its more slender habit, and long, slim head of fruit.
379. *Anemone Virginiana*, L. Virginian Anemone.
Common; woods and shaded grounds.
380. *Anemone Pennsylvanica*, L. Pennsylvanian Anemone.
Frequent; ditches and wet places.
381. *Anemone quinquefolia*, L. (*A. nemorosa*, L. of Manual)
Wind-flower; Wood Anemone.
Common; woodlands.
382. *Hepatica triloba*, Chaix. Hepatica; Mayflower; Liverleaf.
Rare; leaves of this species, infected with a *Protomyces*, are in Dr. Davis' herbarium, labeled, "Watertown, Racine Co., June 23, 1891." Seems to be wanting in the eastern part of the area.
383. *Hepatica acutiloba*, DC. Same common names as the preceding.
Common; woodlands. Always occurring in shade.
384. *Anemonella thalictroides*, Spach. Rue-Anemone.
Occasional; low, rich woods. Formerly abundant; now more rarely met with.
385. *Clematis Virginiana*, L. Virgin's Bower.
Occasional; river banks and thicket-borders.
386. *Ranunculus multifidus*, Pursh. Yellow Water Crowfoot.
The names Buttercup or Crowfoot are popularly applied to most of the species.
Frequent; shallow water in ditches and low prairies.
The var. *terrestris* appears to be simply an emersed form.
387. *Ranunculus rhomboideus*, Goldie.
Common; on prairies.

388. *Ranunculus abortivus*, L. Small-flowered Crowfoot.
Common; moist, shaded situations in various soils.
389. *Ranunculus sceleratus*, L. Cursed Crowfoot.
Occasional; ditches and low fields.
390. *Ranunculus recurvatus*, Poir.
Occasional; in woods and shades.
391. *Ranunculus acris*, L. Tall Buttercup.
Common; low meadows and pastures. I have seen several pastures almost entirely abandoned to this weed. The Buttercups are avoided by stock by reason of their acrid qualities.
392. *Ranunculus Pennsylvanicus*, L. f. Bristly Crowfoot.
Occasional; wet places.
393. *Ranunculus repens*, L. This and the following called Creeping Buttercup.
Rare; low, wet ground along C. M. & St. P. right-of-way at 10th St., Racine. The only station and probable introduced there.
394. *Ranunculus septentrionalis*, Poir.
Common; ditches, low woods and other moist situations. Very near the preceding. Our commonest Buttercup.
395. *Ranunculus septentrionalis*, Poir., var. *hispidus*, T. & G.
Rare; near Tabor, in low woods, occurs an extremely robust and hispid variety of *septentrionalis*, probably *R. repens*, L., var. *hispidus*, Torr. & Gray of Wood, and which it hardly seems should have been suppressed. It is a striking form, well differentiated from the type and worthy of at least varietal rank. Included in Swezey's list.
396. *Ranunculus fascicularis*, Muhl. Early Buttercup.
Common; banks, with or without shade. Our earliest Buttercup, easily distinguishable by its fascicled root system.
397. *Ranunculus circinatus*, Sibth. White Water Crowfoot.
Common; ponds and slow waters.
398. *Ranunculus Cymbalaria*, Pursh. Seaside Crowfoot.
Rare; in tiny pools in crevices of the limestone bed of Root River at Horlicksville, Racine Co., two miles

inland. The only station now known. Swezey's list says "Along Lake Michigan" and Dr. Davis used to get it in wet sand on beach of Lake Michigan, north of Racine Harbor, a station long since destroyed.

399. *Thalictrum dioicum*, L. Early Meadow Rue.

Common; woods and stream borders.

400. *Thalictrum purpurascens*, L. Purplish Meadow Rue.

Common; same habitat as the preceding.

BERBERIDACEÆ. *Barberry Family.*

401. *Caulophyllum thalictroides*, Michx. Blue Cohosh; Pappoose Root.

Occasional; rich woods.

402. *Jeffersonia diphylla*, Pers. Twin-leaf.

Rare; rich woods, Somers, Kenosha Co. The descriptions fail to do justice to the beauty of the Twin-Leaf.

403. *Podophyllum peltatum*, L. May-apple; Mandrake.

Common; rich woods.

Occasionally develops a monstrous form in which the flower, instead of appearing from between the two leaves on a short, stout peduncle, is borne on the end of a long, naked scape, 6 to 8 inches long, generally accompanied by a single basal leaf. One of these sports, transplanted to the wild-flower garden, reverted to the typical form the following year, and has since shown no deviation from the normal.

MENISPERMACEÆ. *Moonseed Family.*

404. *Menispermum Canadense*, L. Moonseed.

Occasional; banks of streams and thickets.

PAPAVERACEÆ. *Poppy Family.*

405. *Sanguinaria Canadensis*, L. Bloodroot.

Still common; in rich woodlands.

406. *Dicentra Cucullaria*, DC. Dutchman's Breeches.

Occasional to rare; formerly a common plant in rich woods. Now seldom met with.

407. *Adlumia cirrhosa*, Raf. Alleghany Vine.
Rare; has persisted for several years on terrace of Lake Bank at Racine, probably an escape from near-by gardens.
408. *Fumaria officinalis*, L. Fumitory.
Rare; well established in garden of my former Racine home; nowhere else observed.

CRUCIFERÆ. *Mustard Family.*

409. *Lepidium Virginicum*, L. Peppergrass.
Common; roadsides and fields.
410. *Sisymbrium officinale*, L. Hedge Mustard.
Common; abounding in fields, roadsides and waste places.
411. *Sisymbrium altissimum*, L.
Rare; well established along roadside between Racine and Franksville in a small colony. One of the worst weeds in the Northwest.
412. *Cakile Americana*, Nutt. Sea Rocket.
Frequent; but confined to sand of Lake Michigan beach, in both counties.
413. *Brassica nigra*, Koch. Black Mustard.
Common; in fields and waste places.
414. *Brassica Sinapistrum*, Boiss. Wild Mustard; Charlock.
Common; widely distributed as a weed in grain fields and waste places.
415. *Brassica campestris*, L. Turnip.
Occasional; in cultivated grounds, persisting sometimes for a year or more.
416. *Barbarea vulgaris*, R. Br. Yellow Rocket; Winter Cress.
Rare; brookside, Erskine's Woods, Racine. The only station that I now recall.
417. *Nasturtium palustre*, DC. Marsh Cress.
Common; wet ditches.
418. *Nasturtium officinale*, R. Br. Water Cress.
Frequent; well established in brooks and ditches at several stations.

419. *Nasturtium Armoracia*, Fries. Horse Radish.
Frequent; low ground and along streams. Rarely perfecting fruit.
420. *Cardamine Pennsylvanica*, Muhl. (*C. hirsuta* of Man. in part.)
Occasional; ditches and low, swampy woods.
421. *Cardamine rhomboidea*, DC. Spring Cress; Bitter Cress.
Frequent; wet meadows and swampy woods.
422. *Cardamine rhomboidea*, DC., var. *purpurea*, Torr. (*C. purpurea*, Britton.)
Occasional; blooms a couple of weeks earlier than the preceding, and seems to prefer greater shade.
423. *Dentaria laciniata*, L. Toothwort; Pepper-root.
Frequent to common; along stream-borders in rich woods.
424. *Capsella Bursa-pastoris*, Moench. Shepherd's Purse.
Common; a troublesome weed, found almost everywhere. Leaves vary greatly in form, being much more dissected when plants grow in dry soil. Flowering from March to December.
425. *Camelina sativa*, Crantz. False Flax.
Rare; a few individuals gotten in a flax field on Racine Prairie. The only collection.
426. *Arabis hirsuta*, Scop. Hairy Rock Cress.
Rare; in crevices of limestone at Horlicksville, Racine Co. The only station.
427. *Arabis laevigata*, Poir. Smooth Rock Cress.
Frequent; woods and shaded, rocky hillsides.
428. *Arabis Canadensis*, L. Sicklepod.
Rare; a single plant, only, taken in woods near Milman Road.
429. *Berteroa incana*, D. C.
Rare; in hog-pasture, Burlington, Racine Co. Not seen elsewhere. An adventurer from Europe.

CAPPARIDACEÆ. *Caper Family.*

430. *Polanisia graveolens*, Raf.
Rare; gravelly shore of tamarack swamp at Burlington, Racine Co. The only collection.

SARRACENIACEÆ. *Pitcher Plant Family.*

431. *Sarracenia purpurea*, L. Pitcher Plant.
Rare; peat bogs in tamarack, Wind Lake, Racine Co. Also at Wilmot, Kenosha Co.

DROSERACEÆ. *Sundew Family.*

432. *Drosera rotundifolia*, L. Sundew.
Rare; in sphagnum, tamarack swamp, Wind Lake, Racine Co. The only station.

CRASSULACEÆ. *Orpine Family.*

433. *Sedum Telephium*, L. Live-for-ever.
Occasional; roadsides.
434. *Penthorum sedoides*, L.
Common; ditches and shaded places.

SAXIFRAGACEÆ. *Saxifrage Family.*

435. *Saxifraga Pennsylvanica*, L. Saxifrage.
Occasional to frequent; swamps and wet grassland.
436. *Heuchera hispida*, Pursh. Alum-root.
Common; prairies.
437. *Mitella diphylla*, L. Bishop's Cap.
Rare; damp, shaded hillsides and low woods.
438. *Parnassia Caroliniana*, Michx. Grass-of-Parnassus.
Common; wet meadows.
439. *Ribes Cynobasti*, L. The first three numbers in this genus are our Wild Gooseberries.
Common; thickets and woods.
440. *Ribes gracile*, Michx.
Common; woods, thickets and fence rows.
441. *Ribes oxycanthoides*, L.
Frequent; same habitat as preceding.

442. *Ribes floridum*, L'Her. Black Currant.
Common; low woods and thickets.
443. *Ribes vulgare*, Lam. (*R. rubrum*, most authors, not L.
See *Rhodora*, 9:1, 1907.) Red Currant.
Rare; a small colony established in shade of limestone
cliff at Horlicksville, Racine Co. Naturalized from
Europe. This form is quite distinct from the native
Red Raspberry found in low coniferous forests and
mossy swamps of Northern Wisconsin.
444. *Ribes aureum*, Pursh. Golden Currant.
Rare; escaped from cultivation and established in a
few places.

HAMAMELIDÆE. *Witch-Hazel Family.*

445. *Hamamelis Virginiana*, L. Witch-Hazel.
Common; in woods and thickets.

ROSACEÆ. *Rose Family.*

446. *Physocarpus opulifolius*, Maxim. Ninebark.
Occasional; banks of streams.
447. *Spiraea salicifolia*, L. Meadow-Sweet.
Common; low pastures and thickets.
448. *Rubus strigosus*, Michx. Red Raspberry.
Common; in thickets and along roadsides.
449. *Rubus occidentalis*, L. Black Raspberry.
Common; woods, roadsides and fence rows.
450. *Rubus triflorus*, Richard. Dwarf Raspberry.
Rare; in tamarack, Wind Lake, and wet prairie under
willow and aspen, Gatliff, Racine Co.
451. *Rubus villosus*, Ait. Blackberry.
Common; borders of woods, thickets, fence rows.
452. *Rubus hispidus*, L. Running Swamp Blackberry.
Rare; roadside at Berryville, Kenosha Co., once a
rather moist situation, now dry.
453. *Fragaria Virginiana*, Mill. Wild Strawberry.
Common; fields and wood borders.
454. *Fragaria Americana*, Britton. Wild Strawberry.
Frequent; woods, more often in thin soil.

455. *Potentilla arguta*, Pursh.
Common; dry soil, in sun.
456. *Potentilla argentea*, L. Silvery Cinquefoil.
Frequent; dry, sandy soil.
457. *Potentilla Norvegica*, L. Norway Cinquefoil.
Common; occurring as a weed in cultivated ground.
458. *Potentilla fruticosa*, L. Shrubby Cinquefoil.
Rare; on edge of tamarack, Burlington, Racine Co.
The only station.
459. *Potentilla Anserina*, L. Silver-weed.
Occasional; on beach of Lake Michigan in both coun-
ties and occasionally in dry, sandy soil inland.
460. *Potentilla Canadensis*, L. Five-Finger.
Common; fields, roadsides and woods.
461. *Potentilla palustris*, Scop. Marsh Five-Finger.
Rare; in edge of tamarack, Wind Lake, and at Eagle
Lake, Racine Co. Not seen elsewhere.
462. *Geum triflorum*, Pursh. Purple Avens.
Common; prairies.
463. *Geum album*, Gmel. White Avens.
Common; woods and thickets.
464. *Geum Virginianum*, L. White Avens.
Occasional; in rather more open situations than the
foregoing, and much less common.
465. *Geum macrophyllum*, Willd. Yellow Avens.
Frequent; low grounds.
466. *Geum strictum*, Ait. Yellow Avens.
Occasional; same habitat as the preceding but less
common.
467. *Agrimonia hirsuta*, Bicknell. Agrimony.
Common; woods and thickets.
468. *Rosa blanda*, Ait. Early Wild Rose.
Common; banks and fence rows.
469. *Rosa Carolina*, L. Swamp Rose.
Occasional; low grounds.
470. *Rosa humilis*, Marsh. Dwarf Wild Rose.
Common; fence rows and pastures in dry soil.

471. *Rosa rubiginosa*, L. Sweetbrier.
Rare; well-established at a few points.
472. *Pyrus Ioensis*, Bailey. Wild Crab-apple.
Common; in open woods.
473. *Pyrus arbutifolia*, L. f. Chokeberry.
Rare; at Berryville, Kenosha Co., the only known station, in a now dry but at one time probably a rather moist situation.
Cheney has not met with the red choke-berry in Wis. though accredited to Wisconsin in Swezey's list. The fruit is not at hand, but in my specimens the cyme and lower leaf surfaces are densely tomentose, and I therefore refer it to the above without very much doubt.
474. *Amelanchier Canadensis*, T. & G. June-berry.
Common; wood borders.
475. *Amelanchier Canadensis*, T. & G., var. (?) *oblongifolia*, T. & G. (*A. Botryapium*, DC.)
Frequent; inclines to more open situations than the preceding.
475. *Crataegus punctata*, Jacq. The species of this genus are commonly called Thorn Apple.
Common; open woods, thickets and roadsides.
476. *Cataegus coccinea*, L.
Common; same habitat as preceding.
477. *Crataegus coccinea*, L., var. *mollis*, T. & G.
Common; same habitat as preceding.
478. *Crataegus tomentosa*, L.
Common; same habitat as the other thorn-apples.
(Besides the above, other forms occur that were formerly called *C. coccinea*, L. They need further study to determine their proper place in the now most extensive treatment of this genus.)
479. *Prunus Americana*, Marsh. Wild Plum.
Common; in woods and thickets.
480. *Prunus nigra*, Ait. Wild Plum.
Common; quite as much so as the foregoing and readily distinguishable from it. In similar situations.

481. *Prunus Pennsylvanica*, L. f. Wild Red Cherry.
Common; wood-borders and fence rows.
482. *Prunus Virginiana*, L. Choke Cherry.
Common; dry woods and thickets.
483. *Prunus serotina*, Ehrh. Wild Black Cherry.
Common; open woods.

LEGUMINOSÆ. *Pulse or Pea Family.*

484. *Cassia Chamaecrista*, L. Sensitive Pea.
Rare; on dry prairies.
485. *Gleditschia triacanthos*, L. Honey Locust.
Rare; escaped from cultivation and well established
in a few places.
486. *Gymnocladus Canadensis*, Lam. Kentucky Coffee Tree.
Rare; in the manuscript of a bulletin on the Trees of
Wisconsin, began by Prof. Cheney, but never completed,
is a reference to the occurrence of this species in the
neighborhood of Salem, Kenosha Co.
487. *Baptisia leucophaea*, Nutt. False Indigo.
Common; prairies.
488. *Baptisia leucantha*, T. & G. False Indigo.
Occasional to rare; edge of thickets.
489. *Medicago sativa*, L. Alfalfa.
Occasional; escaped from cultivation and established
along roadsides and in waste places.
490. *Medicago lupulina*, L. Black Medick.
Common; fields and roadsides.
491. *Melilotus alba*, Desv. White Sweet Clover.
Common; roadsides and waste places.
492. *Melilotus officinalis*, Lam. Yellow Sweet Clover.
Common; roadsides and waste ground. One of the
most desirable of our roadside "weeds."
493. *Trifolium procumbens*, L. Low Hop Clover.
Occasional; in grassland.
494. *Trifolium pratense*, L. Red Clover.
Common; everywhere, preferring rich, deep soil.
495. *Trifolium hybridum*, L. Alsike Clover.
Common; roadsides, lawns, meadows and cultivated
fields. Not in Swezey's list.

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496. *Trifolium repens*, L. White Clover.
Common; everywhere in lawns, fields and pastures.
497. *Amorpha canescens*, Pursh. Lead-plant.
Common; prairies.
498. *Petalostemon candidus*, Michx. White Prairie Clover.
Common; prairies.
499. *Petalostemon violaceus*, Michx. Violet Prairie Clover.
Frequent; prairies, often in company with the preceding, but less common.
500. *Robinia Pseudacacia*, L. Locust-tree.
Occasional; well established at a number of points in the area.
501. *Astragalus Canadensis*, L. Milk Vetch.
Frequent; along railroad tracks and on open prairie.
502. *Astragalus Cooperi*, A. Gray. Milk Vetch.
Rare; edge of prairie thickets. Swezey's list reports this species from Milwaukee.
503. *Desmodium acuminatum*, DC. The species of this genus are commonly called Tick-Trefoil.
Common; woods.
504. *Desmodium Dillenii*, Darl.
Rare; In the Milwaukee Public Museum herb. is a plant of this species, collected by C. E. Monroe of Milwaukee, at Yorkville, Racine Co.
505. *Desmodium Illinoense*, Gray.
Rare; along C. M. & St. P. right-of-way at Burlington, Racine Co. Not seen elsewhere.
506. *Desmodium Canadense*, DC.
Common; low prairies.
507. *Lespedeza capitata*, Michx. Bush Clover.
Common; prairies and roadsides.
508. *Vicia Americana*, Muhl. Wild Vetch.
Common; shaded banks, sometimes in very dry soil.
509. *Vicia Americana*, Muhl., var. *linearis*, S. Wats.
Rare; a sheet of this variety is in the herb. of the Milwaukee Public Museum, collected by C. E. Monroe in Racine Co. No specific locality mentioned.

510. *Vicia Caroliniana*, Walt. Wild Vetch.
Common; banks and thicket borders.
511. *Lathyrus maritimus*, Bigel. Beach Pea.
Rare; known only from the beach of Lake Michigan,
both counties.
512. *Lathyrus venosus*, Muhl. Wild Sweet Pea.
Common; shaded banks.
513. *Lathyrus palustris*, L.
Frequent; moist grounds.
514. *Lathyrus ochroleucus*, Hook.
Common; banks and hillsides.
515. *Amphicarpaea Pitcheri*, T. & G. Hog Peanut.
Common; low woods and thickets. Not noted in
Swezey's list. Gray gives its range as "Western N. Y.
to Ill., Mo., La., and Tex." so that we must be well
toward its northern limit. Cheney reports it quite as
common in many parts of the State as *A. monoica*. I
have not seen the last-named species in our area.
516. *Apios tuberosa*, Moench. Ground-nut.
Rare; Dr. Davis in his First Supplementary list of
Wisconsin Parasitic Fungi, reports the collection of a
Cercospora on this host at Racine. I have not seen the
plant in the area.

GERANIACEÆ. *Geranium Family.*

517. *Geranium maculatum*, L. Wild Geranium; Cranesbill.
Common; woods.
518. *Geranium Carolinianum*, L.
Rare; in dryer areas of tamarack, especially in recent
clearings, Wind Lake, Racine Co.
519. *Oxalis violacea*, L. Violet Wood Sorrel.
Occasional; edge of woods, fence rows, etc.
520. *Oxalis stricta*, L. Yellow Wood Sorrel.
Common; a weed in gardens and cultivated grounds.

LINACEÆ. *Flax Family.*

521. *Linum usitatissimum*, L. Common Flax.
Occasional; escaped to roadsides.

522. *Linum sulcatum*, Riddell. Yellow Flax.
Rare; prairies and dry, gravelly hillsides.

RUTACEÆ. *Rue Family.*

523. *Xanthoxylum Americanum*, Mill. Prickly Ash.
Common; wood borders.
524. *Ptelea trifoliata*, L. Hop-Tree.
Rare; thickets and stream borders.

POLYGALACEÆ. *Milkwort Family.*

525. *Polygala verticillata*, L. Milkwort.
Frequent; grassland, usually in dry soil.
526. *Polygala sanguinea*, L. Milkwort.
Common; prairies.
527. *Polygala Senega*, L. Seneca Snakeroot.
Common; prairies. The Ill. Flora says of it, "In rocky woods." This is not so with us.
528. *Polygala Senega*, L., var. *latifolia*, T. & G.
Rare; wooded bank along Pike Creek, Somers, Kenosha Co. Not known from any other station.

EUPHORBIACEÆ. *Spurge Family.*

529. *Acalypha Virginica*, L. Three-seeded Mercury.
Rare; gotten in waste ground near Wind Lake, Racine Co. Not seen elsewhere.
530. *Euphorbia polygonifolia*, L. The name Spurge applies to the entire genus.
Frequent; but only on beach of Lake Michigan, both counties.
531. *Euphorbia maculata*, L.
Common; waste places, mostly in sandy soil, throughout.
532. *Euphorbia Preslii*, Guss.
Frequent; along railroad tracks and in waste places, in various soils.
533. *Euphorbia corollata*, L. Flowering Spurge.
Common; prairies and roadsides.

534. *Euphorbia Cyparissias*, L.

Occasional; along roadsides and in cemeteries.

CALLITRICHACEÆ. *Water Starwort Family.*

535. *Callitriche verna*, L. *Water Starwort.*

Rare; in pool, Wind Lake, Racine Co. Not gotten elsewhere.

LIMNANTHACEÆ. *False Mermaid Family.*

536. *Floerkea proserpinacoides*, Willd. *False Mermaid.*

Rare; moist shaded places in both counties.

ANACARDIACEÆ. *Sumach Family.*

537. *Rhus typhina*, L. (*R. hirta*, Sudw.) *Staghorn Sumach.*

Common; along fence rows and streams, forming considerable colonies.

538. *Rhus glabra*, L. *Smooth Sumach.*

Common; same habitat as the preceding.

539. *Rhus Vernix*, L. (*R. venenata*, DC.) *Poison Sumach.*

Common; but only so on edge of tamarack at Wind Lake, Racine Co. A single shrub is found along roadside near Wind Point. These two stations are the only ones the writer knows of in the area. Very poisonous to touch.

540. *Rhus radicans*, L. (*R. Toxicodendron* of American authors, in part, not L.) *Poison Ivy.*

Common; fence rows, wooded banks and meadows. Poisonous to many persons.

R. Toxicodendron L., is a shrub of the Southern States.

ILICINÆÆ. *Holly Family.*

541. *Ilex verticillata*, A. Gray. *Black Alder; Winterberry.*

Rare; sandy roadside at Berryville, Kenosha Co., and edge of tamarack, Wind Lake, Racine Co., the only stations.

542. *Nemopanthes fascicularis*, Raf. *Mountain Holly.*

Rare; edge of tamarack, Wind Lake, Racine Co. The only station.

CELASTRACEÆ. *Stafftree Family.*

543. *Euonymus atropurpureus*, Jacq. Burning-bush.
Rare; low thickets.
544. *Celastrus scandens*, L. Climbing Bittersweet.
Occasional; thickets and fence-rows. The showy
orange and red fruit very ornamental in autumn.

SAPINDACEÆ. *Maple Family.*

545. *Staphylea trifolia*, L. Bladder-nut.
Occasional; low thickets.
546. *Acer saccharinum*, L. (*A. dasycarpum*, Ehrh.) Silver
Maple.
Common; well-known in cultivation and well-established as an escape. There are some splendid specimens of the Silver Maple along Upper Root River, though these perhaps are not native.
The earliest flowering of our trees.
547. *Acer rubrum*, L. Red Maple.
Frequent; wet woods and low fields. The scarlet foliage very conspicuous in autumn.
548. *Acer saccharum*, Marsh. (*A. saccharinum*, Wang.) Hard
Maple; Sugar Maple.
Common; woods, throughout the eastern part of the area.
A large well-known tree, whose sap ought to be the main source of maple sugar!
549. *Acer saccharum*, Marsh., var. *nigrum*, Britton.
Frequent; same habitat as the preceding and intergrading with it.
550. *Negundo aceroides*, Moench. Box Elder.
Occasional; often planted and well established as an escape at a number of stations.

BALSAMINACEÆ. *Jewel-Weed Family.*

551. *Impatiens fulva*, Nutt. Spotted Touch-me-not; Balsam;
Jewel-weed.
Common; moist places, usually in shade.

552. *Impatiens pallida*, Nutt. Pale Touch-me-not; Balsam; Jewel-weed.

Occasional; wet, shaded places. Less common than the preceding.

RHAMNACEÆ. *Buckthorn Family.*

553. *Rhamnus cathartica*, L. Buckthorn.

Rare; established as an escape at a few stations.

554. *Rhamnus alnifolia*, L'Her. Buckthorn.

Rare; edge of tamarack, Wind Lake, Racine Co.

555. *Ceanothus Americanus*, L. New Jersey Tea.

Common; dry woodlands and roadsides.

VITACEÆ. *Vine Family.*

556. *Vitis bicolor*, LeConte. (*V. aestivalis* of Gray Manual in part)

Rare; a single plant collected—in leaf only—in rich woods near Somers, Kenosha Co.

557. *Vitis vulpina*, L. (*V. riparia* of Gray Manual in part)
Wild Grape.

Common; river bottoms, along fence-rows and streams.

558. *Ampelopsis quinquefolia*, Michx. Virginia Creeper;
Woodbine.

Common; thickets and river banks. The crimson foliage very ornamental in autumn.

TILIACEÆ. *Linden Family.*

559. *Tilia Americana*, L. Basswood.

Common; rich woods.

MALVACEÆ. *Mallow Family.*

560. *Malva rotundifolia*, L. Mallow; "Cheeses."

Common; an abundant weed in gardens and waste places.

561. *Malva moschata*, L. Musk Mallow.

Rare; well established as an escape at a few stations.

562. *Abutilon Avicennae*, Gaertn. Velvet Leaf.

Common; waste places and cultivated fields.

563. *Hibiscus Trionum*, L.

Rare; well established for a distance of a quarter of a mile along roadside near Yorkville, Racine Co.

HYPERICACEÆ. *St. John's Wort Family.*

564. *Hypericum perforatum*, L. The name *St. John's Wort* is applied to all the species of this genus and *Elodes*.

Frequent; fields and meadows.

565. *Hypericum maculatum*, Walt.

Frequent; boggy grounds.

566. *Hypericum mutilum*, L.

Occasional; low grounds.

567. *Elodes campanulata*, Pursh.

Rare; wet edges of tamarack swamp, Wind Lake, Racine Co., and Powers Lake, Kenosha Co., the only stations noted.

CISTACEÆ. *Rock Rose Family.*

568. *Lechea stricta*, Leggett. Pinweed.

Rare; along C. M. & St. P. right-of-way at Burlington, Racine Co. The only station.

VIOLACEÆ. *Violet Family.*

569. *Viola palmata*, L. Hand-leaf Violet.

Rare; in meadow land near De Koven Avenue, Racine. Not seen elsewhere. Some forms of this species are not easily distinguishable from *V. pedatifida*, G. Don.

570. *Viola pedatifida*, Don. Larkspur-leaved Violet.

Common; prairies. This species and *V. pedata* carpet the prairies with a mass of color when in flower.

571. *Viola obliqua*, Hill.

Common; meadows and marshes. Varies greatly in different habitats.

572. *Viola sororia*, Willd. Woolly Violet.

Common; woods and shaded roadsides.

573. *Viola pedata*, L. Bird-foot Violet.

Common; prairies. Readily distinguishable from *V. pedatifida* even at some distance by its lighter blue flowers.

574. *Viola blanda*, Willd. Sweet White Violet.
Occasional; swamps and low woods. Becoming rare.
575. *Viola pubescens*, Ait. Downy Yellow Violet.
Frequent; dry woods. Much less common than the preceding. Basal leaves usually wanting at flowering time.
576. *Viola scabriuscula*, Schwein. (*V. pubescens*, Ait., var. *scabriuscula*, T. & G.) Yellow Violet.
Common; rich woods. Basal leaves usually present at flowering time. Blooming earlier than *V. pubescens*.
577. *Viola Labradorica*, Schank. (*V. canina*, L., var. *Muhlenbergii*, Gray) Dog Violet.
Common; moist rich wood sand thickets.

THYMELEACEÆ. *Mezereum Family.*

578. *Dirca palustris*, L. Moose-wood; Leather-wood.
Rare; low thicket near Horlicksville, Racine Co. The only station.

ELAEAGNACEÆ. *Oleaster Family.*

579. *Shepherdia Canadensis*, Nutt.
Frequent; banks of streams.

LYTHRACEÆ. *Loosestrife Family.*

580. *Decodon verticillatus*, Ell. Swamp Loosestrife.
Rare; Wind Lake, Norway Township, Racine Co., and Powers Lake, Kenosha Co., the only stations which have been noted.
Swezey's List reports it from the "Upper St. Croix River" only. This species is widely distributed throughout the State though rather uncommon and local.
581. *Lythrum alatum*, Pursh. Loosestrife.
Common; low, wet grounds.

ONAGRACEÆ. *Evening Primrose Family.*

582. *Ludwigia palustris*, Ell. Water Purslane.
Common; ditches and pond borders.
583. *Ludwigia polycarpa*, Short & Peter. Water Purslane.
Common; same habitat as preceding.

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584. *Epilobium angustifolium*, L. Fire-weed.

Occasional; in dry soil in full sun, or in woodland where trees have recently been cut.

585. *Epilobium lineare*, Muhl. The species of this genus are commonly called Willow-herb.

Occasional; bogs and wet prairies.

586. *Epilobium coloratum*, Muhl.

Occasional; wet grounds.

587. *Epilobium adenocaulon*, Haussk.

Common; wet grounds. Oftener seen than the preceding and closely allied to it.

588. *Oenothera biennis*, L. Evening Primrose.

Common; fields and waste places.

589. *Oenothera pumila*, L.

Occasional; prairies.

590. *Circaea Lutetiana*, L. Enchanter's Nightshade.

Common; woods.

591. *Circaea alpina*, L. Enchanter's Nightshade.

Rare; in springy soil in low woods near Wind Point, Racine Co. The only station.

HALORACEÆ. *Water Milfoil Family.*

592. *Proserpinaca palustris*, L. Mermaid-weed.

Frequent; ditches and pond borders.

593. *Myriophyllum spicatum*, L. Water Milfoil.

Common; shallow waters.

ARALIACEÆ. *Ginseng Family.*

594. *Aralia spinosa*, L. Hercules' Club.

Rare; Cheney (Pharmaceutical Archives, Apl. 1899, pg. 70) reports getting this species about ten miles west of Kenosha, Kenosha Co. where it had evidently escaped and established itself.

595. *Aralia racemosa*, L. Spikenard.

Common; rich woods.

596. *Aralia nudicaulis*, L. Wild Sarsaparilla.

Common; rich woods.

597. *Aralia quinquefolia*, Decsne. & Planch. Ginseng.
Rare; Prof. Lannerd of the Racine High School has kindly sent me a sheet of this now almost extinct species, collected in rich woods north of Racine near Caledonia. I have never seen the plant in the area although Dr. Davis has several times met a few individuals.

598. *Aralia trifolia*, Decsne. & Planch. Ground-nut.
Common; rich woods.

UMBELLIFERÆ. Parsley Family.

599. *Daucus Carota*, L. Wild Carrot.

Rare; escaped to roadsides and railway tracks, and infrequently persisting in meadows.

600. *Angelica atropurpurea*, L.
Common; low grounds.

601. *Tiedemannia rigida*, Coult. & Rose.
Rare; swampy ground.

602. *Heracleum lanatum*, Michx. Cow Parsnip.
Common; low grounds.

603. *Pastinaca sativa*, L. Parsnip.
Common; waste places.

604. *Polytaenia Nuttallii*, DC.
Rare; Dr. Davis has kindly sent me a sheet of this species, collected west of Racine on open prairie.

605. *Eryngium yuccaefolium*, L. Button Snakeroot.
Common; prairies.

606. *Sanicula Marylandica*, L. Sanicle.
Common; rich woods.

607. *Sanicula gregaria*, Bicknell. Sanicle.
Common; woods. A well-marked species, easily distinguishable from the preceding.

608. *Pimpinella integerrima*, A. Gray.
Frequent; along railroad tracks and roadsides in dry soil.

609. *Osmorrhiza brevistylis*, DC. Sweet Cicely.
Common; woods.

610. *Osmorrhiza longistylis*, DC. Sweet Cicely.
Common; woods. With the preceding.

611. *Sium cicutaefolium*, Gmel. Water Parsnip.
Frequent; swampy places.
612. *Zizia aurea*, Koch. Golden Meadow Parsnip.
Common; prairies.
613. *Zizia cordata*, DC.
Common; prairies. Often associated with the preceding.
614. *Carum Carui*, L. Caraway.
Frequent; roadsides and cultivated grounds. Not noted in Swezey's list. Cheney reports it as introduced in some localities in the State.
615. *Cicuta maculata*, L. Water Hemlock.
Common; sloughs. Very poisonous in all its parts.
616. *Cicuta bulbifera*, L. Water Hemlock.
Occasional; sedge marshes and low meadow lands. Quite as poisonous as the preceding but less common.
617. *Cryptotaenia Canadensis*, DC. Honewort.
Common; moist woods.
618. *Berula angustifolia*, Koch. Water Parsnip.
Rare; a sheet of this species collected by C. E. Monroe of Milwaukee, is in the Herb. of the Milwaukee Public Museum, labeled from "Mt. Pleasant Twnp., Racine Co." The writer has not seen the plant in the area.
619. *Erigenia bulbosa*, Nutt. Harbinger-of-spring.
Rare; a small colony discovered in rich woods near Somers, Kenosha Co. The only station.

CORNACEÆ. *Dogwood Family.*

620. *Cornus circinata*, L'Her. The names Dogwood and Cornel are applied to all the species of *Cornus*.
Common; open woods and thickets.
621. *Cornus stolonifera*, Michx. Red-Osier Dogwood.
Common; low woods and thickets.
622. *Cornus paniculata*, L'Her.
Common; same habitat as the preceding.
623. *Cornus alternifolia*, L. f.
Common; thickets, fence rows and wood borders.

624. *Nyssa sylvatica*, Marsh. Sour Gum; Pepperidge.

Rare; two individuals of this species, located within a stone's throw of the P. O. at Berryville, Kenosha Co., are the only trees of the kind known in the State, and extend considerably its known northern range. They were pointed out to me by the owner of the land who stated that there were originally about a dozen of them all told. By a singular coincidence, Prof. Cheney, then working on the distribution of the Wisconsin Forest Trees, accidentally discovered these trees a few weeks after my first visit to the locality!

ERICACEÆ. *Heath Family.*

625. *Pyrola elliptica*, Nutt. Shin-leaf.

Rare; woods.

626. *Pyrola rotundifolia*, L., var. *uliginosa*, A. Gray. (*P. uliginosa*, Torr.)

Rare; a few individuals of this species were gotten in a little thicket on Racine Prairie near Gatliff, Racine Co. The only known station.

627. *Monotropa uniflora*, L. Indian Pipe.

Occasional; deep, rich woods.

628. *Andromeda polifolia*, L.

Rare; bogs, edge of Wind Lake, Racine Co. The only known station.

629. *Cassandra calyculata*, D. Don. Leather-leaf.

Rare; known to me only from bogs on edge of tamarack, Wind Lake, Racine Co.

630. *Gaultheria procumbens*, L. Wintergreen.

Probably extinct; Dr. Davis has shared with me specimens of this species collected in both flower and fruit, gotten in 1879 in bog near Wind Point, Racine Co. Station long since drained and under cultivation!

631. *Gaylussacia resinosa*, Torr. & Gray. Huckleberry.

Rare; along roadside, Berryville, Kenosha Co. The only station.

632. *Vaccinium Canadense*, Richards. Canada Blueberry.

Probably extinct; a specimen in Dr. Davis' herbarium

- gotten in 1888, in tamarack, Norway Township, Racine Co. No present station for it known.
633. *Vaccinium Pennsylvanicum*, Lam. Early Blueberry.
Probably extinct; a sheet in Dr. Davis' herbarium gotten in 1879 in the little bog noted for No. 630.
634. *Vaccinium macrocarpon*, Ait. (*Oxycoccus macrocarpus*, Pers.) Large Cranberry.
Rare; bogs, edge of tamarack, Wind Lake, Racine Co. The occurrence of the Large Cranberry in Southern Wisconsin is of especial interest because this species as limited by Fernald (*Rhodora*, Dec. 1902, pg. 234) is confined for the most part to the Atlantic Coastal Plain! The Cranberry of the sphagnum bogs of Northern Wisconsin is *V. Oxycoccus*, L., var. *intermedium*, Gray, Syn. Fl. ii. pt. 1, ed. 2,396 (1886).

PRIMULACEÆ. *Primrose Family.*

635. *Steironema ciliatum*, Raf. This and the two following numbers are commonly called Loosestrife.
Common; low grounds.
636. *Steironema longifolium*, A. Gray.
Common; moist prairies.
637. *Lysimachia thyrsiflora*, L.
Occasional; swampy grounds.
638. *Trientalis Americana*, Pursh. Starflower.
Occasional; deep woods.
639. *Dodecatheon Meadia*, L. Shooting-star.
Common; prairies.

OLEACEÆ. *Olive Family.*

640. *Fraxinus Americana*, L. White Ash.
Common; woods and roadsides in all soils.
641. *Fraxinus nigra*, Marsh. (*F. sambucifolia*, Lam.) Black Ash.
Common; moist woods, along banks of streams or borders of swamps.

GENTIANACEÆ. *Gentian Family.*

642. *Gentiana crinita*, Froel. Fringed Gentian.
Rare; the only station known to the writer is a shaded hillside at Cedar Bend, Root River, Racine.
643. *Gentiana serrata*, Gunner. (*G. detonsa*, Rottb.) Lesser-fringed Gentian.
Common; low prairies and springy banks. Often found in flower late in October!
644. *Gentiana quinqueflora*, Lam., var. *occidentalis*, Gray.
Common; same habitat as the preceding.
645. *Gentiana puberula*, Michx.
Rare; prairies. Some years blooming in November!
646. *Gentiana Andrewsii*, Griseb. Closed Gentian.
Common; low prairies.
647. *Gentiana alba*, A. Gray. (*G. flavida*, A. Gray)
Rare; wooded hillside near Somers, Kenosha Co.
The only station.
648. *Menyanthes trifoliata*, L. Buckbean.
Rare; in bogs and swampy meadows.

APOCYNACEÆ. *Dogbane Family.*

649. *Apocynum androsaemifolium*, L. Dogbane.
Common; fields and roadsides.
650. *Apocynum cannabinum*, L. Indian Hemp.
Common; dry soil of fields and thickets.

ASCLEPIADACEÆ. *Milkweed Family.*

651. *Asclepias tuberosa*, L. Butterfly Weed; Pleurisy Root.
Rare; roadsides and fields, in dry, sandy soil. I have not seen this Milkweed in the vicinity of Racine for many years. At Burlington and other points in the westerly part of the area, it is more commonly seen.
652. *Asclepias purpurascens*, L.
Rare; a single specimen collected in woods near Gatliff, Racine Co.
653. *Asclepias incarnata*, L. Swamp Milkweed.
Common; low, wet grounds.

654. *Asclepias Sullivantii*, Engelm.
Rare; field bordering on De Koven Avenue and the
C. & N. W. R. R., Racine. The only station.
655. *Asclepias phytollacoides*, Pursh. Poke Milkweed.
Occasional; rich woods.
656. *Asclepias Cornuti*, Dec. Common Milkweed.
Common; fields, roadsides, pastures and waste places.
657. *Asclepias ovalifolia*, Dec.
Common; prairies.
658. *Asclepias verticillata*, L. Whorled Milkweed.
Rare; two individuals gotten on dry, gravelly hillside
at Burlington, Wis. Not seen elsewhere.
659. *Acerates viridiflora*, Eaton. The species of this genus
are called Green Milkweed.
Rare; town of Yorkville, Racine Co. Coll. by C. E.
Monroe, and deposited in herb. of the Milwaukee Pub-
lic Museum.
660. *Acerates longifolia*, Ell.
Common; dry prairies.
661. *Acerates lanuginosa*, Dec.
Rare; town of Yorkville, Racine Co. Coll. by C. E.
Monroe and preserved in the herb. of the Milwaukee
Public Museum.

CONVOLVULACEÆ. *Morning Glory Family.*

662. *Convolvulus sepium*, L. Wild Morning Glory; Bind-
weed.
Common; fence rows, fields and thickets. A trouble-
some weed.
663. *Convolvulus arvensis*, L. Bindweed.
Occasional; same habitat as the preceding.
664. *Cuscuta Gronovii*, Willd. Dodder.
Common; low grounds.

POLEMONIACEÆ. *Phlox Family.*

665. *Phlox pilosa*, L. Phlox.
Common; prairies and open woods in dry soil.

666. *Phlox divaricata*, L. Phlox; Wild Sweet William.
Common; woods, in more moist soil than the preceding.

HYDROPHYLLACEÆ. *Water-leaf Family.*

667. *Hydrophyllum Virginicum*, L. Water-leaf.
Common; low woods.

BORRAGINACEÆ. *Borage Family.*

668. *Cynoglossum officinale*, L. Hound's Tongue.
Common; fields and waste grounds.
669. *Echinosperrum Lappula*, Lehm. Stickseed.
Common; waste grounds.
670. *Echinosperrum Virginicum*, Lehm. Stickseed; Beggar's
Lice.
Common; woods and thickets.
671. *Myosotis laxa*, Lehm. (*M. palustris*, Lam., var. *laxa*,
Gray) Forget-me-not.
Rare; muddy shore of Root River west of Herrick
Ave., Racine. The only station.
672. *Lithosperrum latifolium*, Michx. Puccoon.
Rare; thicket near Somers, Kenosha Co. Not seen
elsewhere.
673. *Lithosperrum canescens*, Lehm. Hoary Puccoon.
Common; prairies and dry, gravelly hillsides.

VERBENACEÆ. *Vervain Family.*

674. *Verbena urticifolia*, L. White Vervain.
Common; waste grounds.
675. *Verbena hastata*, L. Blue Vervain.
Common; waste places.
676. *Verbena bracteosa*, Michx.
Occasional; on beach of Lake Michigan, and dry,
gravelly hillsides, Burlington, Racine Co.
677. *Lippia lanceolata*, Michx. Fog-fruit.
Rare; wet ditch near Tabor, Racine Co. The only
known station.

LABIATEÆ. *Mint Family.*

678. *Teucrium Canadense*, L. Germander.
Common; low grounds.
679. *Scutellaria lateriflora*, L. The species of this genus are
commonly called Skullecup.
680. *Scutellaria versicolor*, Nutt.
Occasional; woods and shaded banks.
681. *Scutellaria parvula*, Michx.
Occasional; dry hillsides and open prairie.
682. *Scutellaria galericulata*, L.
Common; wet places.
683. *Lophanthus scrophulariaefolius*, Benth. Giant Hyssop.
Common; woods.
684. *Nepeta Cataria*, L. Catnip.
Common; near dwellings and in waste places.
685. *Nepeta Glechoma*, Benth. Ground Ivy; Creeping
Charley.
Common; shady places near dwellings.
686. *Prunella vulgaris*, L. (*Brunella vulgaris*, L.) Self Heal;
Heal All.
Common; woods and fields, in all soils.
687. *Phyostegia Virginiana*, Benth. False Dragon's Head.
Common; low, wet grounds.
688. *Leonurus Cardiaca*, L. Motherwort.
Frequent; roadsides and waste places.
689. *Lamium amplexicaule*, L. Dead Nettle.
Rare; in cultivated field, sandy soil, along Lake
Shore Road just south of Racine city limits. Not seen
elsewhere.
690. *Stachys palustris*, L. This and the next number are
called Hedge Nettle.
Occasional; low grounds.
691. *Stachys aspera*, L.
Common; low grounds. More often met with than
S. palustris.
692. *Monarda fistulosa*, L. Wild Bergamot.
Common; roadsides, wood borders and fence rows.

693. *Blephilia ciliata*, Raf.
Common; the Ill. Flora gives its habitat as "dry woods and thickets." With us it occurs on prairies in full sun.
694. *Blephilia hirsuta*, Benth.
Rare; moist woods. Known from a few stations only.
695. *Hedeoma pulegioides*, Pers. Pennyroyal.
Common; dry woods and fields.
696. *Calamintha Nuttallii*, Gray.
Rare; springy banks of Ravine $\frac{1}{2}$ mi. south of Racine College. Not known from any other station.
697. *Pycnanthemum linifolium*, Pursh. Mountain Mint.
Rare; a sheet of this species is in the herb. of the Milwaukee Public Museum; collected by C. E. Monroe in town of Yorkville, Racine Co.
698. *Pycnanthemum lanceolatum*, Pursh. Mountain Mint.
Common; prairies and dry fields and thickets.
699. *Lycopus Virginicus*, L. Bugle-weed.
Common; low places.
700. *Lycopus sinuatus*, Ell. Water Horehound.
Common; moist, shady places.
701. *Mentha viridis*, L. Spearmint.
Common; low grounds.
702. *Mentha Canadensis*, L. Wild Mint.
Common; low grounds. Variable.

SOLANACEÆ. *Nightshade Family.*

703. *Nicandra physaloides*, Gaertn. Apple-of-Peru.
Rare; in garden of my former home at Racine. Not seen otherwheres.
704. *Physalis Virginiana*, Mill. Ground Cherry.
Occasional; barren hillsides and other barren situations.
705. *Physalis heterophylla*, Nees. Ground Cherry.
Common; along railroad tracks, in dry fields, etc.
706. *Solanum nigrum*, L. Black Nightshade.
Common; shaded grounds and waste places.

707. *Solanum Dulcamara*, L. Bitter-sweet.
Common; in moist thickets. The controlling species in a tamarack formation near Burlington, Racine Co. Appearing as if indigenous.
708. *Lycium vulgare*, Dunal. Matrimony Vine.
Rare; well established and persisting at one station, cor. of Washington Ave. and 8th St., Racine.

SCROPHULARIACEÆ. *Figwort Family.*

709. *Verbascum Thapsus*, L. Mullein.
Common; pastures, fields and roadsides.
710. *Linaria vulgaris*, Mill. Butter-and-Eggs.
Common; roadsides and fields.
711. *Scrophularia Marylandica*, L. Figwort.
Common; in woods and along roadsides in the easterly part of the area; wanting in the westerly.
712. *Scrophularia leporella*, Bicknell. Figwort.
Probably will be found to be common in the westerly part of the area, as it is abundant in Walworth Co., adjoining on the west; found on wooded hillside on a little peninsula jutting out into Brown's Lake, Burlington, Racine Co.
A well marked species, wanting in the easterly part of the area, where occurs *S. Marylandica*. *S. leporella* is the form found commonly in the northern part of the State, where *S. Marylandica* seems to be absent.
713. *Chelone glabra*, L. Turtle Head.
Common; low, boggy grounds.
714. *Pentstemon pubescens*, Solander. Beard Tongue.
Rare; Dr. Davis (Suppl. List of Parasitic Fungi of Wisconsin, Pg. 167) reports getting a *Cercospora* on this host at Eagle Lake, Kansasville, Racine Co. Not known from otherwheres.
715. *Mimulus ringens*, L. Monkey Flower.
Common; wet places.
716. *Ilysanthes riparia*, Raf. False Pimpernel.
Rare; edge of muddy pool near Wind Lake, Racine Co. Not noted elsewhere.

717. *Veronica Anagallis*, L. Water Speedwell.
Common; in brooks, swamps and ditches.
718. *Veronica scutellata*, L.
Occasional; swamp borders.
719. *Veronica officinalis*, L. Excepting the last number, the various species of *Veronica* are popularly known as Speedwells.
Common; fields and dry woods.
720. *Veronica serpyllifolia*, L.
Common; fields and roadsides.
721. *Veronica peregrina*, L.
Common; damp soil.
722. *Veronica arvensis*, L.
Occasional; fields and open woods.
723. *Veronica agrestis*, L.
Rare; persisting in garden of my old home at Racine.
724. *Veronica Virginica*, L. (*Leptandra Virginica*, Nutt.)
Culver's Root.
Common; borders of woods and thickets.
725. *Gerardia grandiflora*, Benth. Foxglove.
Occasional; wooded hillsides.
726. *Gerardia purpurea*, L.
Common; low grounds and springy banks.
727. *Gerardia purpurea*, L., var. *paupercula*, Gray. (*G. paupercula*, Britton)
Rare; boggy ground, Wind Lake, Racine Co.
728. *Gerardia tenuifolia*, Vahl.
Common; moist meadows and springy banks. Often associated with *G. purpurea*.
729. *Gerardia auriculata*, Michx.
Rare; roadsides and prairies.
730. *Castilleja coccinea*, Spreng. Painted Cup.
Common; prairies.
731. *Pedicularis lanceolata*, Michx. Lousewort.
Common; swampy grounds.

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732. *Pedicularis Canadensis*, L. Lousewort.

Common; in a variety of situations, prairies, copses and open woods.

LENTIBULARIACEÆ. *Bladderwort Family.*

733. *Utricularia vulgaris*, L. Bladderwort.

Common; slow streams and wet ditches.

OROBANCHACEÆ. *Broomrape Family.*

734. *Conopholis Americana*, Wallr. Squaw Root; Cancer Root.

Rare; collected once near Somers, Kenosha Co., and a second time near Horlicksville, Racine Co., both times by Dr. Davis, to whom I am indebted for my herbarium specimens. Both collections in woods.

735. *Epiphegus Virginiana*, Bart. Beech Drops.

Rare; on roots of the Beech, at two or three stations.

PHRYMACEÆ. *Lopseed Family.*

736. *Phryma Leptostachya*, L. Lopseed.

Common; open woods and thickets.

PLANTAGINACEÆ. *Plantain Family.*

737. *Plantago major*, L. Plantain.

Common; lawns, roadsides, waste places. A troublesome weed.

738. *Plantago Rugelii*, Dec. Plantain.

Common; same situations as the preceding and quite as common. Easily distinguished from *P. major* by its more attenuate spikes, occasionally forked at the tip, purple petiole and utricle circumscissile much below the middle.

Not noted in Swezey's list.

739. *Plantago lanceolata*, L. Ribgrass.

Rare; has established itself along roadsides and in meadows.

Not noted in Swezey's list.

740. *Plantago cordata*, Lam.

Occasional; low ground in woods and along streams.

RUBIACEÆ. *Madder Family.*

741. *Cephalanthus occidentalis*, L. Button Bush.
Common; low grounds and swamps.
742. *Mitchella repens*, L. Partridge Berry.
Rare; roadside at Berryville, Kenosha Co., where
persists a little colony. The only known station.
743. *Galium Aparine*, L. Cleavers; Goose-grass. This plant
is blessed with only 75 English names! The
name Bedstraw is commonly applied to all the
species of the genus.
Common; moist, shaded places.
744. *Galium circaezans*, Michx. Wild Liquorice.
Rare; Dr. Davis (Second Suppl. List of Parasitic
Fungi of Wisconsin, pg. 169) has a *Septoria* on this
host, collected at Racine; precise locality unknown.
745. *Galium boreale*, L.
Rare; along C. M. & St. P. right-of-way, Burlington,
Wis. The only station.
746. *Galium triflorum*, Michx. Sweet-scented Bedstraw.
Common; woods.
747. *Galium tinctorium*, L. (*G. trifidum*, L., var. *latifolium*,
Torr.)
Common; damp woods, springy banks and wet
meadows.
748. *Galium trifidum*, L.
Rare; edge of tamarack swamp, Wind Lake, Racine
Co. The only station noted.
749. *Galium concinnum*, T. & G.
Frequent; woods.
750. *Galium asprellum*, Michx.
Frequent; damp, shaded places and springy banks.

CAPRIFOLIACEÆ. *Honeysuckle Family.*

751. *Sambucus Canadensis*, L. Black-berried Elder.
Common; borders of woods and along fence rows,
preferring moist soil.

752. *Sambucus racemosa*, L. (*S. pubens*, Michx.) Red-berried Elder.
Occasional; low, open ground.
753. *Viburnum Opulus*, L. High Cranberry.
Rare; the only station for this species that now occurs to me is the shaded bank of a ravine running back from the Lake, a couple of miles south of Racine.
754. *Viburnum acerifolium*, L. Arrow-wood.
Frequent; woods.
755. *Viburnum pubescens*, Pursh. Arrow-wood.
Occasional to frequent; woods and roadside thickets. Our plant is a glabrate form, and would be referable to *V. dentatum*, L., were it not for its very short-petioled leaves.
756. *Viburnum Lentago*, L. Sheep-berry; Nanny-berry.
Common; woods, thickets and fence rows.
757. *Viburnum prunifolium*, L. Black Haw.
Occasional; same habitat as preceding.
758. *Triostemum perfoliatum*, L. Feverwort; Horse Gentian.
Frequent; woods.
759. *Symphoricarpos racemosus*, Michx. Snowberry.
Occasional; dry and rocky banks.
760. *Lonicera glauca*, Hill. The members of this genus are commonly called Honeysuckle.
Common; woods and banks.
761. *Lonicera Sullivantii*, A. Gray.
Common; same habitat as the preceding.
762. *Lonicera oblongifolia*, Hook.
Rare; in thickets on edge of tamarack, Wind Lake, Racine Co.
763. *Lonicera Tatarica*, L.
Frequent; escaped from cultivation and well established, on dry hillsides, thicket borders etc.
764. *Diervilla trifida*, Moench. Bush Honeysuckle.
Frequent; woods at Horlicksville, where the Niagara Limestone is very near the surface.

VALERIANACEÆ. *Valerian Family.*

765. *Valeriana edulis*, Nutt. Valerian.
Common; low, wet prairies.

CUCURBITACEÆ. *Gourd Family.*

766. *Echinocystis lobata*, T. & G. Wild Balsam Apple.
Common; low grounds and banks of streams.
767. *Sicyos angulatus*, L. Bur Cucumber; Star Cucumber.
Common; same habitat as the preceding.

CAMPANULACEÆ. *Bellflower Family.*

768. *Campanula rotundifolia*, L. Harebell.
Rare; on limestone faces, Horlicksville, and on dry banks at Burlington, Racine Co.
769. *Campanula rapunculoides*, L.
Frequent; reported from Racine for Swezey's list by Davis. Well established along roadsides at many localities.
770. *Campanula aparinoides*, Pursh. Marsh Harebell.
Frequent; grassy swamps.
771. *Campanula Americana*, L. Tall Harebell.
Common; woods and thickets.
772. *Specularia perfoliata*, A. DC. Venus' Looking-glass.
Rare; Dr. Davis (Suppl. List of Parasitic Fungi of Wis., pg. 170) reports collecting a *Septoria* on this host at Kansasville, Racine Co. I have never seen it within the area.

LOBELIACEÆ. *Lobelia Family.*

773. *Lobelia cardinalis*, L. Cardinal Flower.
Occasional to rare; moist soil, in shade.
774. *Lobelia syphilitica*, L. Great Blue Lobelia.
Common; low grounds.
775. *Lobelia spicata*, Lam.
Common; prairies.
776. *Lobelia inflata*, L. Indian Tobacco.
Common; dry woods.

777. *Lobelia Kalmii*, L.

Frequent; springy banks and wet meadows.

COMPOSITÆ. *Composite Family.*

778. *Cichorium Intybus*, L. Chicory.

Occasional to frequent; roadsides, well established.

779. *Krigia amplexicaulis*, Nutt. (*Cynthia Virginica*, Don.)

Frequent; rich woods.

780. *Tragopogon pratensis*, L. Goat's Beard.

Rare; well established in a few localities along roadsides and railways. Not included in Swezey's list.

Cheney reports the collection of but one individual of this species in the State!

781. *Taraxacum officinale*, Weber. Dandelion.

Common; everywhere, in all kinds of soil.

782. *Sonchus arvensis*, L. Field Sow Thistle.

Rare; in pasture-land bordering on Asylum Ave., Racine. Not seen elsewhere.

783. *Sonchus oleraceus*, L. Sow Thistle.

Common; waste places.

784. *Sonchus asper*, All. Spiny Sow Thistle.

Common; waste places.

785. *Lactuca Scariola*, L. Prickly Lettuce.

Common; fields and waste places. A weed of the worst character. Not reported in Swezey's list. Cheney reports it as spreading over all the older portions of the State.

786. *Lactuca Canadensis*, L. Wild Lettuce.

Common; roadsides and waste ground, in rich soil.

787. *Lactuca leucophaea*, A. Gray.

Common; borders of woods.

788. *Hieracium Canadense*, Michx. Hawkweed.

Common; dry woods and banks.

789. *Hieracium scabrum*, Michx.

Rare; dry woodlands.

790. *Prenanthes alba*, L. (*Nabalus albus*, Hook.) Rattlesnake Root.

Common; wood-borders.

791. *Prenanthes racemosa*, Michx. (*Nabalus racemosus*, DC.)
Common; springy banks and low prairies.
792. *Ambrosia trifida*, L. Ragweed.
Common; roadsides and waste places.
793. *Ambrosia artemisiaefolia*, L. Ragweed.
Common; waste grounds, and often in cultivated fields.
794. *Xanthium strumarium*, L. Cocklebur.
Common; waste places inland.
795. *Xanthium Canadense*, Mill. Cocklebur.
Common; in sand beach of Lake Michigan, and waste places inland.
796. *Vernonia fasciculata*, Michx. Ironweed.
Common; low grounds.
797. *Eupatorium maculatum*, L. Joe-pye Weed.
Common; low ground.
798. *Eupatorium purpureum*, L. Joe-pye Weed.
Common; low grounds. Well distinguished from the preceding.
799. *Eupatorium perfoliatum*, L. Boneset.
Common; low ground and wet places.
800. *Eupatorium ageratoides*, L. f. White Snakeroot.
Common; rich woods.
801. *Kuhnia glutinosa*, Ell. (*K. eupatorioides*, L., var., *corymbulosa*, T. & G.)
Common; dry hillsides about Burlington, Racine Co.
Not known from the eastern part of the area.
802. *Liatris cylindracea*, Michx. The members of this genus are called Blazing Star.
Rare; dry banks and hillsides, Burlington, Racine Co.
Not known from the eastern section.
803. *Liatris scariosa*, Willd.
Common; prairies in dry soil. The long strict racemes of rose-purple flowers render this and the following species very prominent in the summer floral aspect.
804. *Liatris spicata*, Willd.
Common; prairies, in wetter ground than the preceding.

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805. *Solidago caesia*, L. The name Golden Rod is commonly applied to all the members of this extensive genus.

Rare; woods.

806. *Solidago latifolia*, L.

Common; woods and shaded hillsides.

807. *Solidago hispida*, Muhl. (*S. bicolor*, L., var. *concolor*, T. & G.)

Rare; in limestone soil, Horlicksville, Racine Co. The only station known.

808. *Solidago speciosa*, Nutt.

Rare; for several years I have observed a single clump of this species in grassland bordering on De Koven Ave. and the C. & N. W. R. R., Racine. The only known station.

809. *Solidago patula*, Muhl.

Rare; low ground bordering on a now almost extinct tamarack swamp, Racine city limits. Not remembered from any other station.

810. *Solidago ulmifolia*, Muhl.

Common; woods and sheltered roadsides.

811. *Solidago juncea*, Ait.

Common; dry banks and prairies. Our earliest Golden-Rod.

812. *Solidago serotina*, Ait.

Common; thickets and banks, both moist and dry.

813. *Solidago Missouriensis*, Nutt.

Rare; C. E. Monroe reports the collection of this species in Mt. Pleasant Township, Racine Co. Preserved in the Herb. of the Milwaukee Public Museum.

814. *Solidago Canadense*, L.

Common; fence-rows and roadsides.

815. *Solidago nemoralis*, Ait.

Common; dry sterile soil. The least of our Golden-Rods but one of the most beautiful.

816. *Solidago rigida*, L.

Common; prairies, dry banks and roadsides.

817. *Solidago Ohioensis*, Riddell.

Common; low prairies, often associated with the following species.

818. *Solidago Riddellii*, Frank.

Common; low prairies.

819. *Solidago lanceolata*, L. (*Euthamia graminifolia*, Nutt.)

Common; moist, low grounds.

820. *Boltonia asteroides*, L'Her.

Frequent; low, wet places.

821. *Aster divaricatus*, L. (*A. corymbosus*, Ait.) All of this genus called Wild Aster.

Rare; Dr. Davis (Suppl. List of Parasitic Fungi of Wisc., p. 157 reports collecting this as the host of an *Erysiphe*. The writer has not seen this Aster within our area.

822. *Aster macrophyllus*, L.

Common; woodlands.

823. *Aster Shortii*, Hook.

Frequent; dry banks and wood borders. A handsome species.

A southern species finding its northern limits in Southern Wisconsin, which extends somewhat the range allotted to it in Gray's Man. and the Ill. Flora.

824. *Aster azureus*, Lindl.

Common; prairies.

825. *Aster cordifolius*, L.

Rare; known to the writer from a single station only, fence-row in shade, Ives, Racine Co.

826. *Aster Drummondii*, Lindl.

Common; open woods and roadsides.

827. *Aster sagittifolius*, Willd.

Rare; in thin soil underlain by limestone at Horlicks-ville quarries, Racine Co. The only known station.

828. *Aster Novae-Angliae*, L. New England Aster.

Common; moist grounds.

829. *Aster amethystinus*, Nutt.

Rare; one colony known from pasture-land near De Koven Ave., Racine. The only station.

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830. *Aster puniceus*, L.
Common; swamps, ditches and wet places.
831. *Aster prenanthoides*, Muhl.
Rare; roadside, along 12th St., Racine. Not seen elsewhere.
832. *Aster laevis*, L.
Common; dry prairies and roadsides.
833. *Aster longifolius*, Lam.
Rare; swamps and moist woods.
834. *Aster sericeus*, Vent.
Rare; prairies and dry banks, Gatliff and Burlington, Racine Co.
835. *Aster ptarmicoides*, T. & G.
Common; prairies.
836. *Aster ptarmicoides*, T. & G., var. *lutescens*, Gray.
Rare; a sheet in herb. of C. E. Monroe, Milwaukee, Wis., collected on prairie near Gatliff, Racine Co. The writer has never seen this yellow-flowered form.
837. *Aster salicifolius*, Lam.
Common; low grounds.
838. *Aster paniculatus*, Lam.
Common; low grounds.
839. *Aster Faxoni*, Porter.
Rare; I include this on the statement of C. E. Monroe of Milwaukee, who has specimens of this species in his herbarium from Zion City, Ill., and says it undoubtedly comes over the line into Kenosha Co., although he has no specimens from our area.
840. *Aster diffusus*, Ait. (*A. lateriflorus*, Britton.)
Common; roadsides and wood-borders.
841. *Aster diffusus*, Ait. (*A. lateriflorus*, Britton) var. *thyrsoides*, A. Gray.
Common; roadsides and shaded thickets.
842. *Aster vimineus*, Lam.
Dr. Davis (2nd Suppl. List Parasitic Fungi of Wisc., pg. 169) reports a *Septoria* on this host, collected at Racine.

843. *Aster multiflorus*, Ait.
Common; fields and roadsides, in dry soil.
844. *Aster commutatus*, A. Gray (Syn. Fl. 1: Part 2, 185..
1884) (*A. incanopilosus*, Sheldon.)
C. E. Monroe, Milwaukee reports having this specimen collected by him west of Corliss, Racine Co., on C. M. & St. P. right of way.
845. *Aster angustus*, T. & G. (*Brachyaectis angustus*, Britton)
Frequent; waste places, introduced from the west and spreading rapidly. First noted by Dr. Davis in sand lots and wastes at mouth of Root River, north of the harbor. It has now entirely disappeared at this station, but is common along and near railway lines throughout the city. Has also taken possession of several abandoned quarry workings in limestone pits at Horlicksville, at the Rapids of Root River. Not noted in Swezey's list.
846. *Aster umbellatus*, Mill. (*Doellingeria umbellata*, Nees.)
Common; moist prairie thickets and low grounds.
847. *Erigeron bellidifolius*, Muhl. Robin's Plantain.
Occasional; prairies and dry woods.
848. *Erigeron Philadelphicus*, L. Fleabane.
Common; fields and woods. Much commoner with us than the preceding.
849. *Erigeron annuus*, Pers. Daisy Fleabane.
Common; fields and waste places.
850. *Erigeron strigosus*, Muhl. Daisy Fleabane.
Common; same habitat as preceding.
851. *Erigeron Canadensis*, L. (*Leptilon Canadense*, Britton)
Horseweed.
Common; waste grounds and fields.
852. *Antennaria neglecta*, Greene. Lady's Tobacco.
Common; dry hills.
853. *Antennaria fallax*, Greene. (*Pittonia*, iii. 321) Lady's Tobacco.
Common; dry hillsides and pastures.

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854. *Gnaphalium polycephalum*, Michx. Everlasting; Cudweed.
Common; dry fields and open woods.
855. *Inula Helenium*, L. Elecampane.
Rare; collected once, only, in pasture, near Ives, Racine Co.
856. *Polymnia Canadensis*, L. Leaf-cup.
Rare; hillsides in rich woods. Known from three stations, one just west of Racine, the other two near Somers, Kenosha Co.
In Swezey's list reported from Milwaukee, only.
857. *Silphium perfoliatum*, L. Cup-plant.
Rare; known only from one station, that along banks of Pike Creek near its mouth in Kenosha Co.
858. *Silphium integrifolium*, Michx.
Common; prairies.
859. *Silphium laciniatum*, L. Compass-plant; Rosin-weed.
Common; prairies. Conspicuous on account of its extreme size and large yellow flowers. Its lacinate leaves are arranged with reference to morning and evening light.
860. *Silphium terebinthinaceum*, Jacq. Prairie Dock.
Common; prairies. Equally as conspicuous as the foregoing.
861. *Parthenium integrifolium*, L.
Common; prairies.
862. *Heliopsis scabra*, Dunal. Ox Eye.
Common; low grounds and waste places.
863. *Rudbeckia hirta*, L. Cone-flower; Black-eyed Susan.
Common; fields and meadows throughout.
864. *Rudbeckia laciniata*, L. Tall Cone-Flower.
Common; banks of streams and in moist places.
865. *Lepachys pinnata*, T. & G. Cone-flower.
Common; prairies, roadsides and dry banks.
866. *Helianthus annuus*, L. The name Sunflower is applied commonly to all the members of this genus.
Common; escaped from cultivation and well-established in many localities.

867. *Helianthus scaberrimus*, Ell.
Common; prairies and roadsides.
868. *Helianthus rigidus*, Desf.
Common; prairies. Mr. Fernald evidently considers this distinct from the preceding, for in passing upon some Sunflowers I had sent him, he called one *H. rigidus* and the other *H. scaberrimus*!
869. *Helianthus occidentalis*, Riddell.
Common; prairies and dry hillsides.
870. *Helianthus giganteus*, L.
Dr. Davis' herbarium contains a sheet which seems referable to this species, collected at Racine in 1878.
871. *Helianthus Maximiliani*, Schrad. }
C. E. Monroe, Milwaukee, reports the collection of this Sunflower in Mt. Pleasant Township, Racine Co. Specimen in the herbarium of the Milwaukee Public Museum.
872. *Helianthus grosse-serratus*, Martens.
Common; prairies and roadsides.
873. *Helianthus decapetalus*, L.
Rare; Dr. Davis has collected at Racine a Sunflower which seems to belong here.
874. *Helianthus strumosus*, L., var. *mollis*, T. & G.
Common; dry banks and thickets.
875. *Helianthus hirsutus*, Raf.
Dr. Davis' herbarium contains a sheet of this species collected at Racine in 1879. The writer has never seen within the area a Sunflower which he believed could be referred here.
876. *Helianthus tuberosus*, L. Jerusalem Artichoke.
Common; dry ground and fence-rows.
877. *Coreopsis palmata*, Nutt.
Common; prairies and dry hillsides.
878. *Bidens cernua*, L. Bur Marigold.
Common; low, wet grounds.
879. *Bidens connata*, Muhl. Beggarticks; Sticktight.
Common; moist and waste places.

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880. *Bidens frondosa*, L. Beggarticks; Sticktight.
Common; in moist soil, often getting into fields.
881. *Bidens trichosperma*, Britton. (*Coreopsis trichosperma*, Michx.-
Rare; low grounds and wet meadows.
882. *Bidens trichosperma*, Britton, var. *tenuiloba*, Gray.
Rare; low meadow, Wind Lake, Racine Co. The only station.
883. *Helenium autumnale*, L. Sneezeweed.
Common; swamps and low grounds.
884. *Helenium, tenuifolium*, Nutt.
Rare; a single plant collected along railroad right-of-way at Racine Jct. Probably a waif, as our area is many miles north of its northern limits.
885. *Achillea Millefolium*, L. Yarrow; Milfoil.
Common; fields and roadsides. The rose-colored form occurs occasionally.
886. *Anthemis Cotula*, L. Mayweed
Common; in waste grounds, cultivated fields and along roadsides.
887. *Chrysanthemum Leucanthemum*, L. Ox-eye Daisy, Whiteweed.
Common; pastures, meadows and waste places. A bad weed East; not so much so with us.
888. *Chrysanthemum Balsamita*, L.
Rare; persisting for years along roadside west of Berryville, Kenosha Co. The only station noted.
889. *Tanacetum vulgare*, L. Tansy.
Occasional; roadsides.
890. *Artemisia biennis*, Willd. Wormwood.
Frequent; waste grounds.
891. *Erechtites hieracifolia*, Raf. Fireweed.
Occasional; pastures and waste places.
892. *Cacalia reniformis*, Muhl. Great Indian Plantain.
Occasional or rare; rich woods.
893. *Cacalia tuberosa*, Nutt. Tuberous Indian Plantain.
Common; prairies.

894. *Senecio aureus*, L. Golden Ragwort; Squaw-weed.
Occasional; rich woods.
895. *Senecio aureus*, L., var. *gracilis*, Britton.
Common; low prairies.
896. *Senecio vulgaris*, L. Groundsel.
Rare; persisting for years in garden of my old home
at Racine.
897. *Arctium minus*, Schk. Burdock.
Common; waste places.
898. *Cnicus lanceolatus*, Hoffm. Bull Thistle.
Common; pastures, fields and open woods.
899. *Cnicus altissimus*, Willd. Tall Thistle.
Common; fields and open woods.
900. *Cnicus altissimus*, Willd., var. *discolor*, Gray. (C. *dis-*
color, Muhl.) Field Thistle.
Common; same habitat as preceding.
901. *Cnicus arvensis*, Hoffm. Canada Thistle.
Common; cultivated fields, pastures and roadsides.
A bad weed, difficult to eradicate, but which our farmers
do not combat as they should.

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