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.
740 Wisconsin Academy of Sciences, Arts, and Letters.

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.

   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. & De Toni.
    On *Bidens cernua* L. Dousman.

13. **Plasmopara entospora** (Roze & Cornu) Schroet.
    On *Aster puniceus* L. and *Solidago rigida* L. Racine.

14. **Plasmopara pygmaea** (Ung.) Schroet.
    On *Aremone 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. **Erysiphe 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. *Erysiphe polygoni* DC.
   On *Caltha palustris* L. Sullivan and Dousman; *Polygonum aviculare* L. Racine.

64. *Epichloë typhina* (Pers.) Tul.

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.

   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 ferruginea* Fekl. to which specimens on *Compositae* have been referred.


   On *Ribes triste* Pall. Radisson.

130. *Septoria erigerontis* B. & C.

140. Septoria graminum Desm.

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.


203. In a paper on North American Rose Rugs published in Torreya 9, 2, Feb. 1909, Prof. J. C. Arthur includes southern Wisconsin in the range of Phragmidium rosae-setigerae Diet. and Phragmidium rosae-arkansanae 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.)

Uredinia on Pyrola rotundifolia L. Gordon.

(Uredo polypodii (P.) Preliminary List.) On *Cystopteris bulbifera* Bernh. Wisconsin *fide* *North American Flora* 7, 2, 113.


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 impatienstis* (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 impatienstis* Schw.

245. *Gymnosporangium davishi* 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 pycenia 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 australa Speg.
    On Physalis pubescens L. Racine.

263. Entyloma thalictri Schröt.
    On Thalictrum revolutum DC. Racine.

269. Synchytrium aureum Schröt.
    On leaves and petioles of Pedicularis Canadensis L. Racine; on Preanthes 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 Preanthes 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. Urophylctis pluriannulata (B. & C.) Farl.
    (Synchytrium pluriannulatum (B. & C.) Farl. Suppl. List.)
    On leaves and petioles of Zizia aurea Koch. Kenosha county.

276. Erysiphe galeopsidis 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.
Cercospora micchosora Sacc.

On *Tilia europaea* L. (cult.) Madison.

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) *augustifolium* are distinct.

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 × 21½—3 microns).

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 × 3—4 microns and the conidia 25—45 × 3—4.

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* (Feki.) 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 uvulariae* 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 uvulariae** 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 5½—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.


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.


On *Polygonum Hartwrightii* Gray. Racine.


On *Cerastium viscosum* L. Racine.


On *Cnicus lanceolatus* Hoffm. Dousman.

408. *Septoria conspicua* E. & M.

450. Septoria solidagincola Pk.

On Solidago arguta Ait. Racine. In this specimen the sporules are 24—36 \times 13/2 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. Melampsoropsis 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 (Walt.) on a scape of Alisma Plantago L.

491. Tuburcina clintoniae Kom.

Collected in small quantity in Douglas County on Streptopus roseus Michx. This fungus was included in the supplementary list under the name Tuburcina tridentalis B. & Br. the host being given as Smilacina. On reexamination 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. Phyllosticta decidua E. & K.
On Monarda punctata L. Adams county.
On Eupatorium perfoliatum L. Dousman.
On Echinopspermum 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 × 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 × 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 × 1/2—3½ 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 Carex aurea Nutt. Racine.


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 Fall. 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 malanthemi Fckl.

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 Fückel'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 Syllae 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.


Under this number in the 3d supplementary list and under the name *Chrysoomyza 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 *Chrysoomyza 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.


**ADDITIONAL SPECIES.**

An enumeration of species not recorded in previous Wisconsin lists.

662. **Frankia alni** (Wor.)


663. **Frankia ceanothi** Atk.

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

664. **Synchytrium scirpi** Davis.

On *Scirpus atrovires* 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 footnote 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. Peek 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 artemisiifolia* 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 macroporus* 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 *Hemiaspergillaceae*.

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 *Sciarus sp. indet.* Madison. (Olive.)
672. Phytophthora Thalichri 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 zoospores escaping through the apex of the conidium. Apparently with zoospore 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. Taphrina 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. Taphrina Potentillae (Farl.) Johans.


675. Laboulbenia gyrinidearum Thaxt.

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

676. Hypomyces lateritius (Fr.) Tul.


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

2—S. A.
678. **Cordyceps herculae** (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** Fckl.


680. **Pseudoziza medicaginis** (Lib.) Sa.ex.

On *Medicago sativa* L. (cult.) Kenosha county.

681. **Lophodermium pinastri** (Schrad.) Chev.

On *Pinus Strobus* L. Three Lakes.


682. **Phyllachora juncti** Fckl.

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. thalicthri H. var.
On Thalictrum dioicum L. Radisson.
Pycnidia smaller; sporules 8—10 × 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 unisepitate. 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 unisepitate 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.

684. **Cercospora avicularis** Wirt.
   On *Polygonum aviculare* L. Racine.
   On *Polygonum erectum* L. Adams county.

685. **Cercospora ceanothi** Kell. & Swingle.

686. **Cercospora circumscissa** Sacc.
   On *Prunus serotina* Ehrh. Wind Lake.

687. **Cercospora cypripedii** 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 uni-
   formly 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 × 3—4
microns; conidia hyaline straight or somewhat
curved, tapering, pluriseptate, 60—100 × 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 × 3—4 microns; conidia
hyaline, often somewhat curved, tapering upward,
pluriseptate, containing numerous conspicuous
nuclei or globose granules, 80—165 × 5 microns.

690. **Cercospora menispermii** 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 maianthemi* (Fckl.) Sacc. See No. 595 in this list.

693. *Cercospora viticola* Sacc.


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 bacillar, straight or somewhat curved, obtuse, 25—40 × 1½—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 × 1½ 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.
698. **Cylindrosporum 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.


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 *Pteris aquilina* L. Radisson. Magnus has proposed this generic name to replace *Marsonia* or *Marssonia* 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 \( \text{in diameter; pycnidia amphigenous, scattered, globose, rather light brown, 80—110 microns; sporules hyaline, oblong } 3—5 \times 1\frac{1}{2}—2 \) microns. On leaves of Diervilla trifida Moench. Gordon. July, 1907.

708. Phyllosticta Irisidis 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 biguttulate and probably become septate before

710. **Phyllosticta renouana** 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 syringae** 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 × 2½—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 × 3 microns July.

713. **Phyllosticta violae** 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 acteae** 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

716. **Ramularia pratensis** Sacc.

On *Rumex verticillatus* L. Racine. In these specimens the conidia are mostly 10—20 × 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 × 1½ microns connect with *Ramularia angustissima* Sacc.

719. **Septoria atriplicis** (West.) Fekl.

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.


722. **Septoria calamagrostidis** E. & E.

On *Calamagrostis Canadensis* Beav. 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 × 1½—3 microns.
724. Septoria galeopsidis West.

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 pubescens Ait. Racine.

727. Septoria lactucicola E. & M.
   On Lactuca Canadensis L. Raymond and Berryville.

728. Septoria lycopersici Spec.
   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 saltum 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 × 1—1½ microns.
On leaves of *Parietaria Pennsylvanica* Muhl. Sullivan. July 1906. This looks so different from any specimen on *Urticaeae* 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 testaceeous to fulvous in color and 5—15 × 3—5 mm in size.

733. **Septoria xanthii** Desm.


734. **Tuberculina davisiiana** 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.
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 eatoniab 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 malvaeaeaeum Mont.
On Malva rotundifolia L. and Althaea rosea Cav. (cult.) Racine. I first found this at Racine in 1904.

743. Puccinia millii 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** Schrot.
   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 (*fide* Olive.) The genetic connection was demonstrated by Dr. Arthur at the suggestion of Dr. Olive using Wisconsin material for inoculation. (*Journal of Mycology* 14, 93, 22.) I first observed 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. Raddison.

749. **Puccinia stipae** Arth.
   Uredinia and telia on *Stipa spartea* Trin. Racine. Scarce.

750. **Chrysomyxa pyrolea** (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 quantity.

752. **Cronartium quercus** (Brondeau) Schrot.
   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 Banksiiana* Lambert in the same locality are probably due to *Peridermium cerebrum* Pk. the
aerial 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. *indec*. Big Bay (Cheneyc) Long Island (Cheneyc) La Pointe.

755. **Melampsoridium betulae** (Schum.) Arth.  

756. **Phragmidium occidentale** Arth.  
Aecia on *Rubus parvisflorus* 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 ceanothi** E. & K.  

762. **Caroma abietis—canadensis** Farl.  
763. **Peridermium 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. **Peridermium coloradense** (Diet.) Arth. & Kern.

765. **Peridermium 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. **Peridermium 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.

768. **Entyloma crastophilum** Sacc.
   On *Agrostis alba* L. and *Phleum pratense* L. Racine.

769. **Urocystis occulta** (Wallr.) Rabh.
   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.) Fckl.
   In anthers of *Arenaria lateriflora* L. Racine and Kenosha county.
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