NOTES ON PARASITIC FUNGI IN WISCONSIN—X

J. J. Davis

The season of 1921 was characterized by high temperature and low humidity and was consequently unfavorable for the development of most fungous parasites. The low stage of water in the Wisconsin River, however, gave opportunity to explore bottom lands that are ordinarily difficult of access.

After one’s conceptions of generalities have changed, there is a lag in the application of such changes to particulars. When the writer began the collection of data on the parasitic fungus flora of Wisconsin there was in his mind a conception of such a flora as something fixed, static; given time and application it could be fully set forth. The fact of quantitative variation was quickly brought home to him and was expressed in his first contribution. More slowly the conception of vegetation as dynamic and mutable has come to be applied to a special group in a local flora. The records are then seen as datum points having a time as well as a space value. This conception increases rather than lessens their value but shows no finality as a goal. It does not however at all lessen the importance of completeness in the record.

The downy mildews as they occur in Wisconsin are interesting from an evolutionary viewpoint. Typically they bear two kinds of spores, summer dispersion conidia and winter resting oospores, and cause local infections. In many species, however, general infection takes place and allows overwintering as mycelium. Such species show a tendency toward suppression of oospores and abundance of conidia. In Plasmopora pygmaea (Ung.) Schroet. each of these directions of change seems to have been followed. On Hepatica and Anemone quinquefolia and A. canadensis races producing local infections and both kinds of spores; on Anemone quinquefolia a race with general infections and suppression of oospores; on Hepatica acutiloba local infections, abundance of oospores and no conidia. The latter is what Peck described under the name Protomyces fuscus but which I have designated Plasmopora pyg-
maea var. fusca (Pk.). I take it that the state with local infections and both spore forms is the older and that the others have been derived therefrom.

*Synchytrium scirpi* Davis on *Scirpus atrovirens* previously known only from the vicinity of Racine was collected at Oconto in September, 1921, mostly in an abortive state, presumably because of the hot, dry summer. In examining sections of the leaves what appeared to be a Sphaerulina was observed and the following notes made: Perithecia sparse, innate, black, globose, 85–100μ in diameter; asci sessile, fusoid-cylindrical, 60–70x16–18μ; spores long fusoid, slightly curved, hyaline, obtuse, 5-septate, 35–40x5–6μ; paraphyses none. The inconspicuous perithecia are too few to warrant taking the material as a type. [In 1922 *Synchytrium scirpi* was collected on the same species of host opposite Sauk City. There is also a specimen from Little Suamico.]

*Septoria rubi* West. was found by Roark to have an ascigerous stage for which he proposed the name *Mycosphaerella rubi* (Phytopath. 11:329, [1921]). Although the Septoria is abundant throughout the state he was able to find the *Mycosphaerella* only in Door county which lies between Green bay and lake Michigan.

*Piggotia vaccinii* Davis ("Notes" IX, p. 436, fig. 3) is doubtless conspecific with *Leptothyrium conspicuum* Dearn. & House (N. Y. State Museum, Report of the Botanist for 1919, p. 37, [1922]) and is antedated thereby.

A parasite of *Gentiana Andrewsii* was collected in Wisconsin thirty odd years ago and sent to Ellis who identified it as *Depazea gentianaecola* Fr., but referred it to *Phylllosticta* (see N. A. Phylllostictas No. 176) and it was so recorded in the supplementary list. Baeumler in 1889 recorded as *Leptothyrium*, a fungus on Gentiana which he supposed to be the same as the one treated by De Candolle and Fries and used the specific name proposed by De Candolle. In compiling the provisional list there was no time to investigate such matters but simply to follow the Tom Johnson rule, "decide at once and be right half the time." On the principle that things that were equal to the same thing were equal to each other I used Baeumler’s binomial. Dr. Breneckle sent me a specimen from North Dakota and I wrote him that it was the fungus recorded in the provisional list under the name *Leptothyrium gentianaecolum* (DC.) Baeuml. and he issued it in *Fungi Dakotenses* under that
name. This fall I took the matter up and find that it can not be referred to Leptothyrium but that it agrees with Allescher's description of Asteroma gentianae Fckl. (Rabh. Krypt. f. Pilze: 7: 464). I have seen no specimens of Sphaeria gentianaecola DC., Xyloma gentianaecola DC., Depazea gentianaecola (DC.) Fr. and do not know their relationship to our parasite. Neither have I seen a specimen of Fuckel's Asteroma gentiana. As matters stand now, I am inclined to use Fuckel's name provisionally, as the fungus has the characters of Asteroma. [In 1922 this was collected on Gentiana puberula at Arena. Sometimes the proximal portion of the pyenidal wall is thin but distinct while the distal portion is thick and black while other pyenidia have a thick, black wall throughout.]

Fusidium pteridis Kalchbr. was recorded in Trelease's Preliminary List of parasitic Fungi of Wisconsin and was copied therefrom into the provisional list. In "Notes" V, p. 701, a parasite of Pteris was recorded under the name Gloeosporium leptospernum Pk. which is the same fungus. Gloeosporium pteridis Hark. as represented by Griffith's West American Fungi 324 and 324a and Jackson's No. 1688 is the same species. The synonymy is

Fusidium pteridis Kalchbr.
Gloeosporium pteridis Hark.
Gloeosporium leptospernum Pk.

Gloeosporium pteridis (Kalchbr.) Kabat & Bubak.
It is said to be a sporuligious state of Cryptomyces pteridis (Reb.) Rehm. (Gloeosporium obtogens Syd. Ann. Mycol. 2:172), C. F. Baker, Pacific Slope Fungi 3757 can hardly be other than a profusely developed state of the same parasite. Another parasite of Pteris was recorded in the provisional list under the name Marssonina necans (E. & E.) Magn. The sporules of this fungus are developed in a pyenidium and it is referable to Ascochyta and does not differ from Ascochyta pteridis Bres., as represented in Krieger's Fungi Saxonici 989. The synonymy is:


Marssonia necans (E. & E.) Sace.
Ascochyta pteridis Bres. Hedwigia, 1894.

Ascochyta necans (E. & E.) n. comb.

In specimens of Ramularia desmodii Cke. on Desmodium illinoense the penicillate conidiophoral fasciculi sometimes exceed 100µ in length.

In examining a collection of Cerospora cana Sacc. on Erigeron annuus it was observed that the conidiophores ranged up to 100µ in length.

Specimens on leaves of Crataegus collected in 1890 were referred to Mr. J. B. Ellis for determination who reported as follows: "9039. Phleospora oxyacantheae (Kze. & Schm.) I think it must be, but your specimens are much better than any I have in my European collections." At the close of the letter he wrote: "I have had to examine the things in great haste but I think you will find them correct." In the Supplementary List the fungus was recorded under this name and carried from there to the Provisional List where by a slip the specific name was given as "crataegi". This was corrected in "Notes" III p. 254 and some remarks on the character of the parasite added which indicated that it could not be a Phleospora. To the notes there given, I would add that in some specimens the conidia have divided at some of the septa resulting in shorter conidia which sometimes becomes thicker, 15–45x3–7µ. This is quite different from Phleospora oxyacantheae (Kze. & Schm.) Wallr., but appears to be Cerospora mirabilis Pk., for a specimen of which I am indebted to Dr. House which, however, lacks the differentiated conidiophores of Cerospora.

The first Wisconsin collection of Cerospora on Smilax was made at Racine. It was a form with small spots and preponderance of the dark border and was referred to Cerospora mississippiensis Tracy & Earle. Subsequent collections lead me to believe that there is but one species on Smilax in Wisconsin and that it is C. smilacis Thue., as described and figured by Peck (33d Report, p. 29, figs. 1–3). In different collections the spots vary from 1 to 8 mm. in diameter, the border varies in width and intensity of color, the conidiophores are longer or shorter (30–83x4µ) and the conidia are variable in size (30–115x4–5µ) and depth of color. They may be attenuate or subcylindrical and obtuse and, with the conidiophores, vary in septation. Fungi Columbiani 2203 labeled Cerospora mississippiensis Tracy & Earle I have referred to C.
smilacis Thuem. Saccardo however thought the parasite described and figured by Peck to be distinct from Cercospora smilacis Thuem. and called it C. smilacina Sacc. (Michelia 2: 364). I have not seen European specimens but Peck accepted von Thuemen’s description as applying to his species (33d Report, explanation of plate 2, footnote).

A collection of Cercospora davisii E. & E. on Melilotus alba made at Madison in June 1921 (Bensaude, McFarland, & Davis) bears conidiophores up to 140μ in length. Evidence accumulates that length of conidiophores and conidia in this and similar genera as a specific character is to be used with caution. A Cercospora occurring on dark areas on branches of Melilotus alba at Gays Mills is referred to this species. The conidia seen were only about 3μ thick.

Cercospora epigaeina Davis (Trans. Wis. Acad. 16: 758) is evidently not distinct from C. epigaeae Ell. & Dearn. which is the older name.

Examination of a collection of Cercospora saniculæ Davis from Blue Mounds shows that when not crowded the conidiophores are not always straight, that they sometimes occur on the upper leaf surface and that the longest ones may attain a length of 60μ.

Cercospora platypora Ell. & Holw., is doubtfully distinct from Cercospora siti E. & E. and from Fusicladium depressum (B. & Br.) Sacc. Specimens on Angelica were issued in Fungi Columbiani 1924 under the name Didymaria platypora (Ell. & Holw.), but F. Col. 4230 on Taenidia integerrima is labeled Fusicladium depressum (B. & Br.) Sacc.

In a collection of Cercospora stomatica Ell. & Davis made at Woodman, July 4, 1921, the conidia are narrow (about 3μ) and of nearly uniform diameter throughout. A result perhaps of the hot, dry season.

Doassansia ranunculina Davis which had not been seen in Wisconsin for upwards of 20 years was collected at Shiocton in September, 1921. Although the host was abundant there was but very scanty development of the parasite.

Puccinia zygademi Trel. is merged into P. atropuncta Pk. & Cl. in North American Flora.
ADDITIONAL HOSTS

Not previously recorded as bearing the fungi mentioned in Wisconsin.

It is customary in collecting in Wisconsin to find each year sorii of Synchytrium on an additional host at a single station and in small quantity and they have usually been referred to *Synchytrium aureum* Schroet. Such a collection was made July 25, 1921, on leaves of *Acalypha virginica* in the Wisconsin River bottom lands at Lone Rock. In this collection the sorii are first pale yellow becoming castaneous with age. The galls are hypophyllous, discrete, hemispherical, but little larger than the sorii which are globose to elliptical, 125–175 μ in diameter with wall about 5 μ thick.

[Collected in 1922 at Arena and Prairie du Sac.]


*Peronospora calotheca* DBy. This was collected in small quantity on *Galium asprellum* at Madison in November, 1920.


*Erysiphe cichoracearum* DC. On *Vernonia fasciculata* and *Helianthus annuus*. Museoda.


A Phyllachora forming black patches with effused ascomata on leaves of *Panicum virgatum* has been collected at Museoda. Provisionally it is labeled *Ph. graminis panicis* (Schw.) Shear although it differs widely in macroscopic appearance from specimens on other species of Panicum.


*Pseudopeziza singularia* Pk. On *Ranunculus septentrionalis*. Blue River and Iowa County opposite Lone Rock.


Ascochyta lophanthi lycopina Davis. This has been collected on Lycopus virginicus and it is quite possible that other collections are on this species of host.

Darluca filum (Biv.) Cast. On Puccinia asteris growing on Aster Tradescanti. Blue River. Two telial hosts were given in "Notes" VI, p. 707.

Septoria annua Ell. & Evht. On Poa annua. Black Earth. (McFarland & Davis.)

Septoria caricina Sacc. & Roum. A specimen on Carex chordorrhiza from Lost Lake, Vilas County (July 4, 1901) is referred to this species.

Septoria polaris Karst. Specimens on Ranunculus septentrionalis from Richland County opposite Muscoda are provisionally referred to this species. The sporules are 20–30x1–1¼μ.


Septoria solidaginicola Pk. On Solidago patula. Cecil. Aster lateriflorus. Woodman. Of the latter collection it was noted "not abundant on this host and some of the spots atypical".

Septoria atropurpurea Pk. On Aster paniculatus. Lone Rock. The strongly curved sporules range up to more than 100x1½–2μ.

Phleospora ulmi (Fr.) Wallr. On Ulmus fulva. Richland County opposite Boscobel. Sporules mostly about 30x7μ.

A Marssonina on leaves of Salix lucida collected at Shawano I do not distinguish from forms on Populus and have labeled it Marssonina populi (Lib.) Magn. The acervuli are amphibigenous but more abundant and better developed below where they have a resinous appearance. The curved sporules are 13–17x3–4μ. A collection on Populus balsamifera from Little Suamico has hypophyllous subcuticular acervuli with sporules 11–17x3½–5μ.
Marssonina potentillae (Desm.) Magn. On Fragaria virginiana. Crandon and Little Suamico. Of the latter collection it was noted —Immaculate, sporules 17–24x3½–6μ. On Potentilla anserina. Oconto.

Septocylindrium concomitans (Ell. & Holw.) Hals. On Bidens vulgata puberula. Wauzeka.


Ramularia fraxinea Davis. On Fraxinus americana (?) Gays Mills and Blue River. This parasite has been seen only in river bottom lands.


Ramularia dispar Davis. A collection on Eupatorium urticaefolium from Crandon is referred to this species.

In a specimen on Solidago serotina from Gays Mills the conidiophores are mostly subulate, 10–20x3μ, the conidia fusiform to cylindrical, 7–36x2μ. This was referred to Ramularia virgaureae Thuem.

Scolecotrichum graminis Fkl. On Dactylis glomerata. Madison. (Bensaude, McFarland & Davis.)


Cercospora anticus Ell. & Holw. On Lonicera Sullivantii. Weylery. The brown, tufted conidiophores are 40–70x3μ.


Entyloma ranunculi (Bon.) Schroet. Conidiophorous material on Thalictrum dasycarpum collected at Oconto September 8, 1921
I can not distinguish from this species either in the field or in the herbarium. Typical material of *E. thalictri* Schröet. was collected in the same locality.

*Uromyces appendiculatus* (Pers.) Lk. Uredinia on *Strophostyles helvola*. Richland County opposite Blue River.


*Puccinia peridermiospora* (E. & Tr.) Arth. On *Fraxinus pennsylvanica* and var. *lanceolata*. These are probably the most susceptible hosts of the Aecidium in Wisconsin.

*Puccinia polygoni-amphibii* Pers. Uredinia on *Polygonum Persicaria*. Oconto.

*Pucciniastra myrtilli* (Schum.) Arth. Uredinia on *Gaylussacia baccata*. Oconto.

*Aecidium dicentrae* Trel. the type locality of which is in Wisconsin has been shown by Mains to be the aecial stage of a Melampsoraceous rust on *Laportea canadensis* (*Am. Journ. Bot. 8: 445*) which has been collected in Wisconsin at Hannibal, Jump River, Holcombe and Blue Mounds. For this Dr. Mains proposes the binomial *Cerotelium dicentrae* (Trel.) Mains & Anderson, a name which does not accord with the usage followed in this series of notes. [See Saccardo: *De Diagnostica et Nomenclatura Mycologica; admonita quaedam* (Annales Mycologici 2:197.) English translation in *Journal of Mycology* 10:111-2.] I am therefore using *Cerotelium urticastrai* Mains (loc. cit. 451).

**ADDITIONAL SPECIES**

Not previously recorded as occurring in Wisconsin.

In August 1892 a Synchytrium on *Ranunculus recurvatus* was collected in Kenosha County and the following description written and filed with the specimen. As it was not seen again, however, some doubt arose as to its being distinct and it was recorded under *S. aureum* Schröet. in the provisional list which is doubtless an aggregate species as treated in Wisconsin. In 1921 it was found on *Ranunculus septentrionalis* at the base of the Wisconsin River bluff in Iowa County opposite Spring Green readily recognizable as being the same as the original collection. I therefore publish the description.
Synchytrium cinnamomeum n. sp. Galls cinnamon brown, hemispherical to obtusely conical, scattered or aggregated, frequently confluent, 125–150μ in diameter; resting sori solitary, globose to elliptical to pyriform, 42–66μ in the longer diameter; wall brown, contents brown black, granular. On petioles and leaves of Ranunculus recurvatus, Somers, Wisconsin, August 13, 1892 (type). Ranunculus septentrionalis, Iowa County opposite Spring Green, July 20, 1921. Readily recognized by the brown color which suggests rust.

Synchytrium nigrescens n. sp. Sori hypophyllous, scattered, subepidermal, at first pale yellow with abundant oil content, becoming black with content in part black and granular, spherical to ovoid 80–180μ; wall thin, homogeneous, chitinous, black by reflected, fuscous by transmitted light, outer surface smooth or minutely tuberculate. But slight prominences are produced, the sori often extending through to the upper epidermis without causing hypertrophy. On Aster lateriflorus on bottom lands of the Wisconsin river at Spring Green, Lone Rock and Blue River.

Plasmopara illinoensis (Farl.) n. comb. On Parietaria pennsylvanica. This was described by Farlow (Bot. Gaz. 8: 332 [1883]) from collections made by Seymour at Quincy and Camp Point on the Mississippi river in southern Illinois. No further collections seem to have been made. Guy West Wilson gave a new description and referred it to his proposed genus Rhysotheca (Bull. Torr. Bot. Club 34: 407 [1907]). In 1921 it was collected at Blue Mounds, Ridgeway, Fennimore, Werley and Woodman. A collection from Blue Mounds made July 9 contains globose oospores 23–30μ in diameter with wall 3–5μ thick filling the rather thin-walled oogonia. Assuming that southern Wisconsin is the northern limit of this species its development was probably favored by the abnormally hot season of 1921.

Phacidium taxii Fr. On Taxus canadensis. Crandon. The exciple is thick and black and ruptures irregularly in the center. The asci are clavate-cylindrical, about 50x6μ. No mature spores were seen.

Claviceps nigricans Tul. Sclerotia on Eleocharis palustris. Sturgeon Bay (J. E. Sanders), Madison (J. R. Heddle).

Phyllosticta pyrolae Ell. & Evht. Collected in small quantity and not quite mature on leaves of Pyrola elliptica at Blue Mounds.


Phoma alliiicola Sacc. & Roum. A collection on Allium canadense from Madison is referred to this species. The ostiole is often gaping, the sporules 4–6×2–3μ.

Macrophoma arenis n. sp. Pycnidia black, scattered, subepidermal, globose, 130–150μ in diameter; sporules narrow ovoid, becoming subfuligenous, 27×10μ at maturity. On more or less of the distal portion of leaves of Koeleria cristata which become sere and involute. Boscobel, Wisconsin, July 5, 1921.

Asteromella astericola n. sp. Pycnidia epiphyllous on indefinite purple areas in compact orbicular groups, black, globose, 100–165μ in diameter; wall parenchymatous of dark firm cells 6–10μ in diameter; sporules sessile (?), hyaline, terete to fusoid-cylindrical, mostly straight, 20×30×3–4μ. On Aster lateriflorus, Blue River, Wisconsin, August 3 and 4, 1921. It may be that this is a better developed form of Asteromella asteris Pk. (Report for 1912, p. 38).

Stagonospora albescens n. sp. Spots orbicular, sordid white, 1½–2 mm. in diameter surrounded by a broad indeterminate reddish brown border; pycnidia few, innate, dark brown, globose, thick walled, about 150μ in diameter; sporules hyaline, fusoid-cylindrical, straight or sometimes curved, 5–7 septate, 45–67×10–13μ. On living leaves of Carex tribuloides. Muscoda, Wisconsin, October 1920. Macroscopically this resembles Septoria carinellla Sacc. sufficiently to have been mistaken for it in the field. The contents of the cells or cytoplasmic divisions are homogeneous.

May 13 and 19, 1921, spots were observed on leaves of Melilotus alba at a station near Madison. The following notes have been made from these collections: Spots definite, circular to elliptical to irregular, argillaceous with a paler center, 1–10 mm. in diameter; pycnidia in the paler area, hypophyllous, exceptionally epiphyllous also, brown, globose to lenticular, ostiole circular with a dark margin about 30μ across, 135–165μ in diameter;
sporules cylindrical, hyaline, usually straight, sometimes slightly curved or bent, 1–3 septate, about 20 ("13–23", "10–27") x 3–3½ μ. I have labeled it *Stagonospora meliloti* (Lasch) Petr.

Three collections on leaves of *Acer Negundo* were made in 1921 that were referred to *Septoria negundinis* Ell. & Evh. They are evidently members of the acericolous group referred to in “Notes” I, pp. 81–2. In the collection from Werley the round arid spots are but 2 to 3 times the diameter of the usually solitary pycnidia and the curved sporules 32–40 x 1½–2½ μ indistinctly 3–septate. This is much like *Septoria saccharina* Ell. & Evh. The collection from Barneveld is similar with slightly greater range in spore length and septation not apparent. In the collection from Madison (Bensaude, McFarland & Davis) the spots are pale argillaceous with a narrow raised darker margin, amphigenous, circular to angular in outline, 1–3 mm. in diameter, often confluent; pycnidia one to few on the spot, hypophyllous, subepidermal, globose to lenticular, up to 180 μ in diameter; sporules hyaline becoming curved and 3–septate, 25–40 x 1½–2½ μ. A collection made at Galesville in 1914 and recorded in “Notes” III, p. 264, as *Septoria acerella* Sacc. but belonging with these is similar, the sporules being 23–33 x 1½–2½ μ becoming curved and triseptate. In this collection indefinite leaf areas upon which the small spots are numerous become dead and brown. In examining this epiphyllous subcircular acervuli were seen bearing oblong hyaline sporules 10–13 x 4 μ. These collections are evidently *Septoria acerella* Sacc. as treated by Ellis in *Septorias of North America* No. 160 (*Journ. Mycol.* 3: 79) but subsequently described by Ellis & Everhart as a new species for which the name *Septoria negundinis* was proposed in the *Proceedings of the Academy of Natural Science, Phila.* for 1893, p. 165.

Of a *Septoria* on Caoma–infected leaves of *Rubus allegheniensis* collected at Madison June 2, 1921, the following notes were made: Spots epiphyllous, circular to angular, subolivaceous, immarginate, 1–5 mm. in diameter, often confluent; sporules hyaline, usually curved, continuous, 30–50 x 1–2 μ. While it is possible that this is a form of *Septoria rubi* West. modified by the character of the substrate it has been kept separate under the name *Septoria comitata* n. sp. ad interim.

*Septoria lycopi* Pass. Collected on *Lycopus uniflorus* on the river bottoms opposite Muscoda in October 1920. This was a dry
season and the sporules are not well developed, being but about 30x1½μ.

*Cylindrosporium caryogenum* Ell. & Evht. On *Carya cordiformis*, Werley and Woodman. This bears some resemblance to *Microstroma* in the field.

Of a collection on *Aster sagittifolius* obtained at Woodman July 4, 1921, and referred to *Septoria solidaginicola* Pk. the following notes have been made: Spots angular, limited by the veinlets, becoming confluent, reddish brown to pale brown, without halo, 2–7 mm. long, 1–2 mm. wide; pyenidia epiphyllous-innate, globose to ovoid, often with a black ring around the ostiole which is sometimes conical, 60–90μ in diameter; sporules 30–36x1–1½μ. *Septoria angularis* Tharp to which, judging from the description, this bears resemblance was described as having pyenidia 75–80x100–200μ and sporules 35–50x3μ (*Texas Parasitic Fungi, Mycologia* 9: 121). The name is antedated by *Septoria angularis* Dearn. & Barth. (*Mycologia*, 8: 103) on *Solidago latifolia* (Ontario, Dearness) in which the spots are said to be limited “when the pyenidia are well developed by a narrow, raised, sharply defined border”. The collection on *Aster sagittifolius* here referred to is quite similar to this as represented in *Fungi Columbani* 4875. There seems warrant for the suspicion expressed by the authors that this may be *Septoria fumosa* Pk.

*Phleospora anemones* Ell. & Kell. On *Anemone virginiana*. Iowa County opposite Lone Rock. This forms a well-developed pyenidium and might be referred to Septoria without doing violence.

*Cylindrosporium guttatum* Wint. What is perhaps this species was collected on *Hypoxis hirsuta* at Blue Mounds bearing lunate sporules but 18–24x2μ. From the examination it was thought that the short sporules might have been formed by division as in the acervuli (?) were found longer straight ones.

*Cylindrosporium toxicodendri* (Curt.) Ell. & Evht. On *Rhus toxicodendron*. Barneveld and Lone Rock. *Septoria irregularis* Pk. as represented by a specimen collected by Peck at Bolton Landing, N. Y., is the same fungus.

*Septogloeum querceum* n. sp. Spots or areas indefinite, becoming mottled brown; acervuli hypophyllous, subeucticular, sporules sessile, hyaline, falcate, 7–9 septate, 35–50x5–7μ. On languishing
leaves of Quercus bicolor. Blue River, Wisconsin, August 2, 1921. Exceptionally straight conidia occur while some might perhaps be called rostrate.

Fig. 1. Vertical section of acervulus of Septogloeum querceum n. sp. on leaf of Quercus bicolor with sporules in various stages of development. Drawn by E. M. Gilbert with the aid of camera lucida.

[This was collected again in 1922 and was grown on nutrient agar by Miss Helen Johann and in addition to the conidia there was development of pycnidia with spermatioid contents. Later a collection was made at Blue River that no longer bore conidia on the lower surface but with pycnidia on the upper surface with spermatioid, imperfectly developed, contents. Some of these leaves were kept in a moist chamber by Miss Johann and developed hyaline, globose, delicate walled sporules 3–4μ in diameter. When germinating in water these sporules developed first a bud and then bud and sporule developed each a germ tube. Often the bud was nearly and sometimes quite as large as the sporule. Later (Sept. 2) a collection was made at Arena with similar sporules in the pycnidia and acervuli on the lower leaf surface. For the purpose of filing I have designated this pycnidial state Phyllosticta quercea n. sp. ad interim.

In circular groups or later on orbicular brown spots or irregular areas; pycnidia epiphyllous, immersed in the palisade layer, dark brown, globose to elliptical, the longer axis parallel with the palisade cells, 60–100μ in diameter; sporules hyaline, globose, delicate walled, 3–5μ in diameter. On leaves of Quercus bicolor. Arena and Blue River, Wisconsin.

From observation of the cultures Miss Johann is of the opinion that the Septogloeum and the Phyllosticta represent distinct organisms, the mycelium of the former growing very slowly, that of the latter much more rapidly. By placing leaves in a moist chamber she brought about the development of sporules in which one or
two of the cells is divided by a vertical septum. She is quite sure that these are a further development of the sporules represented in fig. 1.]

Fig. 2. Selected sporules from leaf of Quercus bicolor kept in a moist chamber. Drawn by Helen Johann with the aid of camera lucida.


Cercosporella celtidis (Ell. & Kell.) n. comb. (Ramularia celtidis E. & K. Journ. Mycol. 1: 75). On Celtis occidentalis. Bank of Wisconsin river opposite Boscobel. Well characterized by the short conidiophores. The slender, filiform conidia up to 75μ in length are more nearly of the Cercosporella type. To their description the authors appended the statement "approaches Cercospora".

Of a collection on ash leaves in 1921 the following notes were made: Spots epiphyllous, orbicular, sordid white with a reddish brown to black border, 1–2 mm. in diameter; conidiophores fuscous, single or in small fascicles, more or less irregularly undulate and finely denticulate toward the apex, simple, septate, 40–100x3μ; conidia brown, uniseptate, about 13x4μ. On leaves of Fraxinus pennsylvanica. Blue River. This has been provisionally labeled Cladosporium simplex Schw. of which I have not seen an authentic specimen. It may be that the Cladosporium is not the cause of the spots.

Cladosporium astericola Davis. On leaves of Solidago serotina. Lone Rock.

Cercospora molluginis n. sp. Showing first small pallid spots but the infected leaves becoming sere and yellow before the appearance of the fasciculi which blacken the areas upon which they appear; conidiophores amphigenous, fasciculate, fuliginous, suberect or sometimes curved, undulate or geniculate, simple, usually con-
tinuous, 25–65x3–4μ; conidia subhyaline, slender, tapering, straight or slightly curved, 50–100x3μ.

On leaves of *Mollugo verticillata*. Lone Rock, July 22, 1921.

*Cercospora verbenae-strictae* Pk. On *Verbena stricta*. Lone Rock. The conidia appear before tissue death has occurred and therefore before spotting has appeared. There is but a trace of color in the conidiophores.

Of a specimen on *Lepachys pinnata* from Fennimore the following notes have been made. Leaves mottled above with indefinite slightly paler areas; conidiophores amphigenous, solitary or in small fascicles, brown, straight, curved or undulate, sometimes sepa-
tate, often subnodulose and geniculate distally, 50–100x3–4μ; conidia hyaline, straight, obclavate–cylindrical, becoming septate, 50–100x3½–5μ. Pending opportunity to examine more material I have placed this with *Cercospora ratibidae* Ell. & Barth.

*Ustilago sphaerogena* Burrill was collected on *Echinochloa crus-
galli* near Millville in 1913 but has not been recorded in the "Notes". It was collected again on the same species of host at Madison in 1921 by a class in mycology.

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