

## NOTES ON WISCONSIN PARASITIC FUNGI. XXII

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The collections of fungi referred to in this series of notes were made, unless indicated otherwise, in the season of 1955.

*SYNCHYTRIUM CELLULARE* J. J. Davis was reported on *Pycnanthemum virginianum* in my Notes I (Trans. Wis. Acad. Sci. 32:79. 1940). J. S. Karling, in a recent article entitled "Prosori in *Synchytrium*" (Bull. Torr. Bot. Club 82:218-236. 1955), states, as a result of his examination of the Wisconsin material of *S. cellulare*, that "It is not certain that the parasite which Greene collected on *Pycnanthemum virginianum* is identical with *S. cellulare*", but he does not identify it further. The galls induced on *P. virginianum* differ from those on the other hosts according to Karling.

*PHYSODERMA CLAYTONIANA* Greene, described from Wisconsin material (Farlowia 1:569. 1944), was discussed by Sparrow (Amer. Jour. Bot. 34:325. 1947) who, on the basis of specimens collected in Michigan and Ontario, concluded that the type material was somewhat immature and produced an emended description adjusting the limits of spore size upward. D. B. O. Savile has recently compared the type with specimens on both *Claytonia virginica* and *C. caroliniana* from Quebec and finds them to match closely. Savile considers all this material to be mature and concludes that the Michigan and Ontario organism is at least varietally distinct.

*PLASMOPARA HALSTEDII* (Farl.) Berl. & DeToni often infects *Silphium terebinthinaceum* in Wisconsin, but has not so far been observed on *Silphium laciniatum* which is closely related to *S. terebinthinaceum* and indeed often hybridizes with it. Possibly pointing to a definite resistance in *S. laciniatum* is a situation observed in the University of Wisconsin Arboretum at Madison where, in an artificially seeded area, numerous plants of both species are growing intermingled and are so closely crowded that many of their leaves are in contact. Here, in June, there was heavy infection of nearly all the *S. terebinthinaceum* leaves, but none could be found on *S. laciniatum*, although in some cases the leaves were being dusted with spores from leaves of *S. terebinthinaceum* rubbing against them. Although other parasites have been found on *S. terebinthinaceum* X *laciniatum*, it may be significant that *Plasmopara* has not, perhaps indicating resistance imparted by *S. laciniatum*.

*SPHAEROTHECA HUMULI* (DC.) Burr. appears systemic as it occurs on *Physocarpus opulifolius* in Wisconsin, producing witches' brooms of the lateral twigs, which become stiffly elongate and upright and whose leaves tend to grow upright and parallel to the twig. In April, in a woods near Brodhead, Green Co., infected *Physocarpus* shrubs were found where the leaves and twigs were so heavily studded with perithecia as to appear coal black and were very noticeable from a considerable distance. The fungus seemed to have exerted a preservative effect on the leaves and all remained in place on the twigs despite the vicissitudes of a severe previous winter.

Undetermined powdery mildews have been collected on the following host species: *Liatris spicata*. Dane Co., Madison, June 27; *Solidago patula*. Sauk Co., Parfrey's Glen, August 23.

*RHYTISMA ASTERIS* Schw. and *Rhytisma solidaginis* Schw. are different names applied to what is probably the same fungus, depending on whether it occurs on *Aster* or *Solidago*. Specimens taken recently at Madison are on *Aster pilosus* and *Solidago nemoralis*. Most commonly encountered on *Solidago graminifolia*, but Wisconsin specimens on *Solidago patula*, on *Aster sagittifolius* and *A. linariifolius* are in our herbarium.

*MYCOSPHAERELLA* sp. occurs on *Bromus latiglumis* collected at Nelson Dewey Memorial Park near Cassville, Grant Co., August 3, 1954. This is on a leaf bearing lesions with *Colletotrichum graminicola* (Ces.) Wils. and the perithecia are adjacent to the *Colletotrichum* but not intermingled with it. The perithecia are gregarious on the dead distal portion of the leaf. They are black, subglobose, approx. 100–200 $\mu$  diam., ostiolate, with asci narrowly clavate with a rather long pedicel, about 45 x 7 $\mu$  overall. The hyaline ascospores are 15–17 x 3 $\mu$ . Connected with the *Colletotrichum*?

*MYCOSPHAERELLA* which is believed to almost surely represent the perfect stage of *Didymaria didyma* (Ung.) Schroet. has been studied on an overwintered leaf of *Anemone canadensis*. On several occasions leaves of *A. canadensis* have been observed in late summer closely studied with black perithecium-like bodies which, at first sight, were suggestive of *Phleospora anemones* Ell. & Kell., but which proved to be immature. Material collected near Arena, Iowa Co., August 10, 1954, was kept out-of-doors over winter at Madison and brought in for examination following a period of heavy rains in late April 1955. At this time numbers of the black bodies had developed at their apex conidiophores and conidia identical with those of *Didymaria didyma*, commonly found on *A. canadensis* in Wisconsin. Others of the bodies proved to be mature perithecia of *Mycosphaerella*. These were globose, about 125–150 $\mu$  diam.,

bearing short-clavate asci, 35–40 x 12–14 $\mu$ . The uniseptate hyaline ascospores are slender-fusoid, 4–6 x 17–20 $\mu$ . So far as examination of the rather meager specimen showed, imperfect and perfect stages were not produced on and in the same sclerotoid body, but there is no doubt in my mind that they are one and the same. Although it seems extremely probable, it is not proved that the imperfect manifestation is really *Didymaria didyma*. Various similar cases of overwintering of conidial stages have been reported by me where there was no question that the sclerotoid bodies had followed the primary infection.

PHYLLACHORA LESPEDEZAE (Schw.) Sacc. is the subject of a recent morphological-cytological investigation by J. H. Miller (Amer. Jour. Bot. 41:825–828. 1954). It is interesting to note that his findings in general confirm speculations made by me in my Notes III (Trans. Wis. Acad. Sci. 35:114. 1944) concerning this species as it appears in Wisconsin on *Lespedeza capitata*.

RAVENELIA EPIPHYLLA (Schw.) Diet. I on *Tephrosia virginiana* has been collected at Tower Hill State Park, Iowa Co., June 28. This is the first Wisconsin collection of the uredinoid aecia.

UROMYCES SPARGANII Clint. & Peck is now applied to include the former *U. pyriformis* Cooke, originally described as a distinct species confined to *Acorus calamus*, following studies of Parmelee and Savile (Mycologia 46:823–836. 1954) where they show *U. sparganii* and *U. pyriformis* to be morphologically identical and cross-inoculable. *Uromyces sparganii* is also shown to have a hitherto unrecognized aecial stage on *Hypericum virginicum*. The authors state, "There are presumably numbers of specimens of the aecial stage of *Uromyces sparganii* filed in herbaria under *U. hyperici*. Unfortunately *Hypericum virginicum* also takes the latter rust and the aecia do not seem to be safely distinguishable." It is of interest to me that in the summer of 1954, at Tower Hill State Park, Iowa Co., I collected heavily rusted *Acorus* immediately adjacent to plants of *Hypericum virginicum* bearing rather passé aecia. There are no uredia or telia present, as there so commonly are in the autoecious *U. hyperici*, so it seems highly probable that the aecia are those of *U. sparganii* as described by Parmelee and Savile.

PHYLLOSTICTA sp. has been found on aecia of *Aecidium avocensis* Cummins & Greene, collected near Avoca, Iowa Co., June 22, 1951. These were mistaken, under a hand lens, for *Darlucal filum* (Biv.) Cast. The pycnidia are small, black, flask-shaped bodies about half again as high as wide, containing numerous, small, hyaline conidia, about 2–2.5 $\mu$  x 3–4 $\mu$ . Possibly parasitic.

PHYLLOSTICTA sp. on the nodal swellings of flowering stalks of *Festuca ovina* occurred at Madison, August 10. The affected areas

are closely beset with small, 40–60 $\mu$  diam., black, globose pycnidia which contain hyaline (yellowish in mass), narrow-cylindric conidia, approx. 5–8 x 1.5–2 $\mu$ . Since this late in the season the flower stalks are dead it is not possible to say with certainty whether or not the fungus developed as a parasite, but it seems probable that it did.

PHYLLOSTICTA sp. on *Erythronium albidum* was found at two stations in Green Co., May 5. This appears to be a strong parasite, with large areas of the leaves closely beset with the numerous pycnidia. The body of the pycnidium is subglobose to rather markedly flattened, sooty, darker above, often with a well-defined short beak, ostiole present but not well marked, 50–115 $\mu$  diam., with small, hyaline, rod-shaped microconidia, approx. 4–7 x 1.5 $\mu$ . There is profuse production of tortuous, coarse mycelium throughout the affected host tissue. Stained prepared sections show evidence of intraepidermal origin of the pycnidia, and further show nothing to indicate the presence of any early ascomycetous stage.

PHYLLOSTICTA sp., of dubious status as to parasitism, is on leaves of *Ribes cynosbati* collected at Wyalusing State Park, Grant Co., August 17. The rounded to oval spots are sordid grayish-brown with narrow darker border, approx. 2–4 mm. diam.; pycnidia amphigenous, clustered, dark brown, widely ostiolate, globose, small, 30–40 $\mu$  diam.; conidia hyaline, bacilliform, 3–4 x 1 $\mu$ .

PHYLLOSTICTA sp., of somewhat doubtful parasitism, occurred on leaves of *Tephrosia virginiana*, collected in Tower Hill State Park, Iowa Co., June 28. The spots are small, irregular, somewhat sunken and pale brown. Pycnidia are strongly erumpent, appearing almost stalked in some cases, sooty, pseudo-parenchymatous, approx. 100–150 $\mu$  diam.; conidia hyaline, broadly ellipsoid or short-cylindric, 2.5–3.5 x 5–7 $\mu$ . Reminiscent of *Stagonospora tephrosiae* Greene in the spots and the disposition of the pycnidia on them, and mistaken for that species in the field.

PHYLLOSTICTA which it seems may possibly be only a poor development of *Ph. fraxinicola* Curr. occurred in sparse development on leaves of *Fraxinus pennsylvanica* var. *lanceolata* near Arena, Iowa Co., August 12. The pycnidia are decidedly more erumpent than those in other specimens seen and not more than two or three per spot, in contrast the many per spot in *Ph. fraxinicola*. The conidia are very similar, however, and neither fungus is far removed from *Coniothyrium*, as a matter of fact.

PHYLLOSTICTA sp. occurred on leaves of *Gentiana andrewsii* at Madison, June 26. The whitish to pale tan spots are rounded, thin, translucent, sunken, approx. 1.5–3 mm. diam., often confluent; pycnidia scattered to gregarious, pale brown, variable in size,

approx. 75–150 $\mu$  diam.; conidia hyaline, rod-shaped, short-cylindric or subfusoid, 3.5–6 x 2–3 $\mu$ . Possibly secondary, but there is no positive indication that any other agent was involved.

PHYLLOSTICTA sp. on current season's capsules of *Castilleja sessiliflora* was discussed as a possible parasite in my Notes XVIII (Trans. Wis. Acad. Sci. 42:70. 1953). In July 1955 what appears to be the same fungus was found on the 1954 capsules of the related *Aureolaria grandiflora* at Madison.

PHYLLOSTICTA sp. on *Solidago altissima*, collected at Madison, August 25, approaches *Ph. solidaginis* Bres., as it is represented by specimens on *Solidago gigantea* in the University of Wisconsin Cryptogamic Herbarium, but the conidia are somewhat shorter, and the rounded grayish spots smaller and not zonate.

PHOMOPSIS-sp., which may be parasitic, occurs on the midrib of a leaf of *Wulfenia bullii* collected near Brodhead, Green Co., July 10. The pycnidia are black, slightly elongate, about 125 $\mu$  diam. Most of the conidia seen were scolecospores, hyaline, continuous, mostly strongly curved, tapering to a point at one end, approx. 20–30 x 1–1.5 $\mu$ . Reversing the usual situation in *Phomopsis*, only a few conidia of the other type were observed. These were hyaline, broadly fusoid, 7 x 3.5 $\mu$ .

ASCOCHYTA LOPHANTHI J. J. Davis is another of those borderline species to which little violence would be done if it were placed under *Stagonospora*, as this writer has already formally done with *Ascochyta thaspisii* Ell. & Ev. In a specimen of *A. lophanthi* on *Lycopus americanus*, collected at Madison, July 7, a sizeable minority of the large and well-developed conidia are 2-septate, and a very few have 3 septations.

ASCOCHYTA sp. occurs on leaves of *Monarda punctata* collected near Dekorra, Columbia Co., July 15. The spots are ashen, translucent, rounded, with a narrow purplish border, 1–1.5 mm. diam.; pycnidia one to two or three per spot, epiphyllous, subglobose, black, firm-walled, approx. 100–150 $\mu$  diam.; conidia hyaline, cylindrical, 9–13 x 3–4 $\mu$ , showing a median septum very consistently. The spots are somewhat like those usually associated with *Phyllosticta decidua* Ell. & Kell., but the fungus is plainly different. I do not find any reports of *Ascochyta* on *Monarda*. Parasitism rather questionable.

STAGONOSPORA POLYTAENIAE Greene (Amer. Midl. Nat. 39:454. 1948), described before I recognized that *Ascochyta thaspisii* Ell. & Ev. is a good *Stagonospora* and transferred it to that genus (Amer. Midl. Nat. 48:52. 1952), appears upon review and study of additional recent material to belong under *S. thaspisii* (Ell. & Ev.) Greene. Specimens on *Polytaenia nuttallii* and on *Pastinaca sativa* (Amer. Midl. Nat. 44:636. 1950) must therefore be transferred.

SEPTORIA DIDYMA Fckl. has been reported on *Salix interior* (*longifolia*) in Wisconsin on the basis of several collections. Comparison of the Wisconsin specimens with Fungi rhenani No. 1677, issued as this species and stated on the label to have been collected by Fuckel, shows definitely wider and more robust spores in the latter, which is reminiscent of *Marssonina*. Otherwise the Wisconsin material is quite similar and is certainly not more than varietally different.

SEPTORIA DIDYMA Fckl. and *S. salicina* Peck represent, it would appear, the extremes of an intergrading series of parasites on *Salix* in Wisconsin. *Septoria didyma* var. *santonensis* Pass. was erected to receive forms which are intermediate and the late J. J. Davis assigned specimens on *Salix fragilis* to this variety, containing those forms with a spore length of approx. 22–38 $\mu$ . The range for *Septoria didyma* is about 15–25 $\mu$  and for *S. salicina* 40–60 $\mu$ . In my Notes II (Trans. Wis. Acad. Sci. 34:93, 1942) I assigned long-spored specimens on *Salix fragilis* to *S. salicina*, with the statement that I was unable to see a satisfactory distinction between *S. salicina* and *S. didyma* var. *santonensis*. Recent collections on *S. fragilis*, however, are exactly intermediate and I am led to conclude that the varietal category is probably of value and should be recognized.

DILOPHOSPORA ALOPECURI Fr., as it occurs on *Calamagrostis canadensis*, was discussed in my Notes IV (Farlowia 1:577, 1944). As stated, this was described by E. A. Bessey on leaves which had been sent to him from Kenosha Co., Wis., for study of nematode infestation. Bessey mentions the occurrence of the fungus on the same leaves, but does not indicate any closer association with the nematode galls. In a recent collection made near Brodhead, Green Co., and to a much lesser extent in two earlier specimens on the same host from Madison, there is a striking association, and the elongate, golden-yellow galls, in which the nematodes are developed, are closely studied with *Dilophospora* pycnidia. The youngest and newest of the galls are free of the fungus, so that it seems that it becomes established on the galls following infestation. Lesions where the fungus occurs alone, and there are many such, are tissue-paper thin and there would be no subsequent opportunity for development of the thickened, hypertrophied galls.

LEPTOTHYRIUM sp. occurs on leaves of *Liatris aspera* var. *intermedia* (Lunell) Gaiser collected in the University of Wisconsin Arboretum at Madison, August 16. The spots are large, 1.5–3 cm. diam., orbicular, grayish-brown, subzonate. The fruiting bodies are amphigenous, scattered, shining black, rounded above, flattened and imperfect below, approx. 150–200 $\mu$  diam., scattered to gregarious. The conidia are hyaline, cylindrical or short-cylindrical, 6–10 x

3–4.5 $\mu$ . The status of the fungus seems questionable and it is perhaps secondary, although there is no clear-cut evidence that any other external agent has produced the spotting.

COLLETOTRICHUM sp. occurs on conspicuous spots on the leaves of *Geranium maculatum*, collected at Madison, August 7. Parasitism is somewhat uncertain and the possibility cannot be overlooked that the spots were primarily caused by *Cercospora*, as some *Cercospora* conidia were found in one of the half dozen mounts made, although no conidiophores could be found. The spots are orbicular to broadly ellipsoid, .3–1.5 cm. diam., with a wide, blackish-brown border and cinereous center; acervuli epiphyllous, loosely gregarious on the cinereous area, small, approx. 30–50 $\mu$  diam.; setae uniform purplish-black, straight or moderately curved or tortuous, tapering gradually toward the subacute tip, continuous, in number from a half dozen to 20 or more in the acervulus, 20–45 $\mu$  long, 2.5–3 $\mu$  thick; conidiophores short, almost obsolete, closely packed; conidia hyaline, cylindric or subfusoid, 12–14 x 4–4.5 $\mu$ .

VERMICULARIA COMPACTA C. & E. on petioles of *Parthenocissus vitacea* was reported in my Notes XX (Trans. Wis. Acad. Sci. 43: 179. 1954). A specimen collected in July 1954 near Wautoma, Wau-shara Co., occurs on leaf blades of this host. The large, 3–6 cm., rounded, dull bronze lesions are very conspicuous, and in general habit and spore characters the fungus corresponds well with the earlier specimen on petioles. Coll. S. D. Van Gundy.

BOTRYTIS sp., which appears parasitic, has been collected on blighted buds and leaves of *Paeonia officinalis* at Madison in the summer of 1955. On the leaves the spots are light brown, large, rounded and sharply delimited, with the fungus hypophyllous on them. According to Whetzel (Trans. Mass. Hort. Soc. 1915) (1): 108. 1915) *Botrytis* blight is by far the most common and destructive disease of the peony. In his opinion at least two distinct species of *Botrytis* are involved.

BOTRYTIS sp. occurs on large, pale brown, subzonate lesions on leaves of *Menispermum canadense* collected near Juda, Green Co., August 11. Over the years an impressive list of hosts bearing *Botrytis* as a putative parasite has been assembled, but determinations of the species of *Botrytis* concerned have presented equally impressive difficulties.

CLADOSPORIUM sp., which may be parasitic, occurs on leaves of *Desmodium nudiflorum*, collected in Tower Hill State Park, Iowa Co., June 28. The spots are orbicular, approx. 3–7 mm. diam., or sometimes confluent over larger areas, pale brown with very narrow red-brown borders. Fruiting amphigenous, grayish, localized in center of spots. Hyphae non-fasciculate, but tending to be closely

ranked and in contact by their swollen bases, pale grayish brown, simple or subgeniculate, 15–70 x 3.5–5.5 $\mu$ , 1–2-septate; conidia pale olivaceous, subfusoid or cylindrical, smooth, 10–21 x 3.5–4 $\mu$ , continuous or 1-septate.

CLADOSPORIUM HUMILE J. J. Davis, the conidial stage of *Venturia acerina* Plakidas, occurs in consistent and intimate association with *Rhytisma acerinum* on leaves of *Acer saccharinum*, collected at Madison, August 19. The *Cladosporium* has developed about the periphery of the tar spots, perhaps indicating only a rather weak degree of parasitism.

CERCOSPORELLA FILIFORMIS J. J. Davis (*Cercospora filiformis* (Davis) Chupp) on *Anemone patens* var. *wolfgangiana*, like *Cercospora saxifragae* Rostr., overwinters in a sclerotoid condition on the dead host leaves and with the spring rains, produces a large number of fresh conidia on the sclerotoid bodies. These conidia presumably infect the developing current season's leaves, thus perpetuating the fungus without intervention of a perfect stage. This observation is based on leaves bearing the sclerotoid stage, collected near Cambria, Columbia Co., in September 1954, and held outdoors over winter in a cage at Madison.

CERCOSPORA on *Lathyrus latifolius* (cult.), Madison, September 1953, appears to best fit *C. lathyrina* Ell. & Ev., but might possibly also be assigned to *C. lathyri* Dearn. & House.

CERCOSPORA sp. on *Vitis riparia*, collected in small amount in the New Glarus Woods Roadside Park, Green Co., September 7, does not well match any of the species hitherto described on Vitaceae, as outlined in Chupp's monograph of Cercosporae. The fungus is hypophyllous, with effuse, largely superficial, pale olivaceous mycelium, from which the short conidiophores arise in non-fasciculate, seemingly more or less haphazard fashion. The conidia are faintly olivaceous, indistinctly multiseptate, very narrowly obclavate—almost acicular—with a conic base and prominent scar, approx. 3.5–4 x 55–90 $\mu$ .

CERCOSPORA SII Ell. & Ev., which parasitizes *Sium suave* in Wisconsin, has an uncertain taxonomic status. The late J. J. Davis relegated it to *Fusicladium depressum* var. *sii* (E. & E.) Davis, while Chupp in his recent monograph states "Petraik . . . suggests that this is a synonym of *Fusicladium depressum*. It does not seem related in any way to *Fusicladium*, but the spores being nearly all 1-septate, the stromata slight, and the conidiophores relatively long, the fungus is here classed under *Piricularia* rather than *Cercospora*." A specimen recently collected at Madison has many 2-septate conidia, and an occasional one with 3 septa, so I prefer to retain this species under *Cercospora*, while recognizing its variability.



*Spartina pectinata*, collected at Madison, September 5, bears an interesting, but as yet undetermined loculate fungus which is apparently strongly parasitic. An elongate, narrow, dark stroma is produced between leaf ribs on the top surface, just below the cuticle and rupturing and upraising it. The stromata, while only about  $150\mu$  wide at the most, may be up to 1 cm. or more long. The locules are developed at varying levels and quite closely adjacent below the dark continuous common stroma and they are of variable diameter. Vast numbers of hyaline, rod-shaped microconidia,  $3-4 \times 1\mu$ , are produced in some of the locules, while others show structures that are possibly the immature stages of an Ascomycete. It seems likely that the conidia are spermatogonial in nature.

*Salix discolor*, collected in Columbia Co. near Pardeeville, Sept. 24, 1954, has conspicuous sclerotized areas on leaves, the major portions of which are still green and living. The fungus tends to permeate the tissue between the veins, so that the vein islets are black and the veins themselves are pale brown and the venation pattern is strikingly shown. The fungus is sterile, but sections through the infected area show profuse mycelium and the organism appears parasitic.

All scientific papers dealing with taxonomic and ecological studies of fungi which have been carried out on Wisconsin material through 1953—so far as known to the authors—are listed on pp. 37-42 of a paper entitled "A Bibliography of Wisconsin Vegetation" by H. C. Greene and J. T. Curtis. This is No. 1 of a new scientific series of the Milwaukee Public Museum called "Publications in Botany".

#### ADDITIONAL HOSTS

The following hosts have not been previously recorded as bearing the fungi mentioned in Wisconsin.

PERONOSPORA PARASITICA (Pers.) Fr. on *Hesperis matronalis*. Green Co., near Brodhead, June 3.

ERYSIPHE CICHORACEARUM DC. on *Polemonium reptans*. Dane Co., Madison, June 29. Only slight fruiting, as the fungus tended to kill back the leaves at an early stage in its development before perithecia could form.

HPOXYLON PRUINATUM (Kl.) Cke. has been reported on *Populus tremuloides* in Wisconsin in these lists. I am reliably informed that *Populus grandidentata* and *P. balsamifera* are additional hosts for this state.

RHYTISMA SALICINUM (Pers.) Fr. on *Salix petiolaris*. Dane Co., Madison, August 31.

COLEOSPORIUM CAMPANULAE (Pers.) Lev. II on *Campanula rotundifolia*. Marquette Co., Observatory Hill near Montello, July 20. Coll. H. H. Iltis. Not listed on this host in Arthur's Manual.

MELAMPSORA BIGELOWII Thum. II, III on *Salix bebbiana*. Dane Co., Madison, September 6.

MELAMPSORA ABIETI-CAPREARUM Tub. II on *Salix petiolaris*. Dane Co., Madison, September 3.

PUCINIA GRAMINIS Pers. II, III on *Glyceria borealis*. Dane Co., Madison, July 30.

PUCINIA CORONATA Cda. II, III on *Agropyron trachycaulum*. Dane Co., Madison, September 5, 1954. Apparently not hitherto reported on this host.

PUCINIA ANGUSTATA Peck II on *Scirpus cyperinus*. Dane Co., Madison, August 15. Hitherto reported from Wisconsin only on the very distinct var. *pelius*.

PUCINIA EXTENSICOLA Plowr. I on *Solidago missouriensis*. Green Co., near Brodhead, June 3. On *Solidago speciosa*. Lafayette Co., Red Rock, June 7.

PUCINIA EXTENSICOLA Plowr. II, III on *Carex cephalophora*. Pierce Co., Hager City, July 24, 1952. Coll. J. R. Bray. Wisconsin is cited as a host locality in the North American Flora treatment of *P. extensicola*, but there is no mention of its occurrence in Davis' notes, nor do I find a specimen in the Wisconsin Cryptogamic Herbarium. Also on *Carex lanuginosa*. Dane Co., Madison, August 7, 1954. Host det. J. H. Zimmerman.

PUCINIA CARICIS (Schum.) Schroet. II on *Carex lanuginosa*. Dane Co., Madison, July 23.

PUCINIA ANDROPOGONIS Schw. I on *Pentstemon digitalis*. Dane Co., Madison, July 13. The affected plants were much stunted and deformed. Closely adjacent plants of *Andropogon scoparius* bore a very heavy uredial infection of *P. andropogonis*.

PUCINIA ELEOCHARIDIS Arth. I on *Eupatorium altissimum*. Rock Co., near Tiffany, July 29. Although the specimen was small and old, it was readily identifiable. Seemingly the first report on this host.

PUCINIA LIATRIDIS (Webber) Bethel I on *Liatris spicata*. Kenosha Co., 5 mi. S. of Kenosha, August 9. The specimen is old, but aecia with identifiable spores occur at the periphery of some of the lesions.

UROMYCES JUNCI (Desm.) Tul. I on *Helianthus rigidus*. Sauk Co., Spring Green, June 7. Referred here provisionally on the basis of spore size and host, as was done with a similar specimen on *Helianthus occidentalis* in my Notes XVI (Amer. Midl. Nat. 48:743.

1952). There seems to be no satisfactory morphological character other than spore size to differentiate the aecial stage of *U. junci* from *Puccinia helianthi*, and an even more dubious host character to differentiate it from *Uromyces silphii*.

CERATOBASIDIUM ANCEPS (Bres. & Syd.) Jacks. on *Steironema ciliatum*. Iowa Co., near Arena, June 28. On *Eupatorium maculatum*, *Solidago altissima*. Dane Co., near Cottage Grove, July 12.

XENOGLOEAE ERIOPHORI (Bres.) Syd. on *Scirpus fluviatilis*. Dane Co., Madison, July 22.

PHYLLOSTICTA CHENOPODII-ALBI Siemaszko on *Chenopodium hybridum*. Green Co., Oakly, August 2.

PHYLLOSTICTA PUNCTATA Ell. & Dearn. on *Viburnum lentago*. Dane Co., Madison, September 12. The conidia are slightly smaller and the pycnidia somewhat larger than indicated in the description, but the lesions seem highly characteristic.

SELENOPHOMA EVERHARTII (Sacc. & Syd.) Spr. & Johns. on *Danthonia spicata*. Lafayette Co., Red Rock, June 7.

ASTEROMELLA ANDREWSII Petr. on the following cultivated gentians at Madison, August 1954. Coll. & det. J. T. Curtis: *Gentiana cruciata*, *G. newberryi*, *G. parryi*, and *G. flavida* X *andrewsii*. The latter is an authentic hybrid produced under controlled conditions.

ASCOCHYTA COMPOSITARUM J. J. Davis on *Eupatorium perfoliatum*. Dane Co., Madison, July 25. The pycnidia measured are rather small for this species, only about 100 $\mu$  diam., but the conidia are large, well-formed and characteristic. Associated with the *Ascochyta* on the largely dead leaves is a somewhat immature *Mycosphaerella*. Also on *Eupatorium maculatum*. Dane Co., Madison, Sept. 8.

STAGONOSPORA THASPII (Ell. & Ev.) Greene on *Osmorhiza claytoni*. Dane Co., Stewart's Woods, S31, Town of Verona, July 1.

STAGONOSPORA CIRSIJ J. J. Davis on *Carduus acanthoides*. Iowa Co., Jonesdale, August 5.

SEPTORIA PASSERINII Sacc. Microspore stage on *Hystrix patula*. Green Co., near Monticello, September 1, 1954. Det. R. Sprague.

SEPTORIA DIDYMA Fekl. on *Salix nigra*. Dane Co., Madison, September 7.

SEPTORIA CAMPANULAE (Lev.) Sacc. on *Campanula rotundifolia*. Marquette Co., Observatory Hill near Montello, July 20. Coll. H. H. Iltis. Apparently the first report on this host.

SEPTORIA SOLIDAGINICOLA Peck on *Solidago canadensis*. Dane Co., Madison, August 22. The conidia are somewhat longer than in many of the collections of this species, but the lesions are highly characteristic.

SEPTORIA ATROPURPUREA Peck on *Solidago speciosa*. Lafayette Co., Red Rock, June 7. The pycnidia are somewhat more prominent and erumpent than is usual with this species, but the relatively long and thick spores are characteristic.

SEPTORIA ATROPURPUREA Peck on *Aster prenanthoides*. Sauk Co., Parfrey's Glen, August 23.

SEPTORIA CIRSII Niessl on *Carduus acanthoides*. Iowa Co., Jonesdale, June 18. There seem to be no earlier reports of parasitic fungi on this troublesome weed.

GLOEOSPORIUM RIBIS (Lib.) Mont. & Desm. on *Ribes cynosbati*. Grant Co., near Montfort, July 18.

GLOEOSPORIUM CORNI H. C. Greene on *Cornus alternifolia*. Dane Co., Madison, September 6. Since the original collection on *C. femina* other specimens on that host and the current one suggest that this fungus may be associated with insect activity. However, whether or not it is a strong parasite, it is a highly characteristic fungus occurring on sharply delimited spots, usually one to a leaf, on leaves which are otherwise green and vigorous.

COLLETOTRICHUM MADISONENSIS H. C. Greene on *Carex trichocarpa*. Green Co., Oakly, August 2.

CYLINDROSPORIUM APOCYNII Ell. & Ev. on *Apocynum cannabinum*. Rock Co., near Tiffany, July 29.

OVULARIA SPHAEROIDES Sacc. on *Vicia cracca* var. *tenuifolia*. Dane Co., Madison, August 17, 1954. Coll. S. D. Van Gundy.

RAMULARIA STOLONIFERA Ell. & Ev. on *Cornus obliqua*. Grant Co., Blue River, August 5.

RAMULARIA DISPAR J. J. Davis on *Eupatorium maculatum*. Dane Co., Madison, September 8. An earlier specimen collected by J. J. Davis at Crivitz, Marinette Co., labeled as on *E. purpureum*, appears also to be on *E. maculatum*. There is no doubt in my mind that these species are distinct.

CERCOSPORA CARICIS Oud. (*C. caricina* Ell. & Dearn.) on *Carex stricta*. Dane Co., Madison, August 4. On *Carex rostrata*. Sauk Co., Parfrey's Glen, August 23. On *Carex sartwellii*. Dane Co., Madison, September 16.

CERCOSPORA SALICIS Chupp & Greene on *Salix interior* (*longifolia*). Iowa Co., Arena, August 12.

CERCOSPORA HELIANTHI Ell. & Ev. on *Helianthus rigidus*. Dane Co., Madison, September 2.

TUBERCULINA PERSICINA (Ditm.) Sacc. on *Puccinia bolleyana* Sacc. I on *Sambucus canadensis*. Dane Co., Madison, July 7.

## ADDITIONAL SPECIES

The fungi mentioned have not been previously reported as occurring in Wisconsin.

**MICROSPHAERA EUONYMI** (DC.) Sacc. on *Evonymus europaeus* (cult.). Dane Co., Madison, September 21, 1954. Coll. C. G. Ehlers. This species is distinguished primarily by the fasciculate habit of the long appendages, the ultimate branchlets of which are not regularly and strongly recurved as is the case in *Microsphaera alni*. Salmon in his monograph of the Erysiphaceae states that "*M. euonymi* is confined to Europe; the record of its occurrence in California "on *Evonymus*" by Harkness and Moore is doubtless an error." Conceivably the fungus could have been imported along with the cultivated host to account for its presence at Madison, but in this connection it is of real interest that this same fungus has recently been collected, October 11, 1955, on the native *Evonymus atropurpureus* in an isolated maple woods near Oakly, Town of Spring Grove, Green Co. This would seem to demonstrate beyond any reasonable doubt that *M. euonymi* is endemic.

**FABRAEA THUEMENII** sp. nov. is the name proposed by E. A. Stowell in a 1955 University of Wisconsin doctoral dissertation on the fungus which causes leaf blight of English hawthorn, *Crataegus oxyacantha*, and which has as its conidial stage *Entomosporium thuemenii* (Cooke) Sacc. This was reported by me for Wisconsin material as *Fabraea maculata* (Lev.) Atk. (Trans. Wis. Acad. Sci. 34:94. 1942), but Stowell seems to have shown that *F. maculata* is correctly applied only to the fungus causing leaf blight of pear and quince.

**RHIZOSPHAERA KALKHOFFI** Bub. on *Picea glauca*. Dane Co., Madison, May 19. This caused a destructive needle cast of large specimen trees in the University of Wisconsin Arboretum, resulting in virtual defoliation. Waterman (Phytopath. 37:507. 1947) described this disease in some detail, as it affected cultivated *Picea pungens* in Connecticut.

**USTILAGO ANOMALA** Kze. on *Polygonum cilinode*. Marathon Co., Rib Mt. near Wausau, June 28, 1942. Coll. C. G. Shaw and L. H. Shinnors. This specimen is in the mycological herbarium of the Department of Plant Pathology at the State College of Washington, but has been seen by me and a label placed in the University of Wisconsin herbarium.

**PHYLLOSTICTA CONFERTISSIMA** Ell. & Ev. on *Ulmus americana*. Dane Co., Madison, September 26. Although the conidia are of the micro-type there is nothing about the lesions or the fungus to suggest that this is the precursor of a perfect stage. Both lesions and fungus correspond very closely to the original description.

SEPTORIA OUDEMANSII Sacc. on *Hierochloe odorata*. Waukesha Co., near Eagle, May 24, 1941. Coll. C. G. Shaw. Det. R. Sprague.

**Colletotrichum lucidae** sp. nov.

Maculis fuscis, zonatis, conspicuis, amplis, orbicularibus vel irregularibus, 0.5–3 cm. diam. ca.; acervulis epiphyllis, sparsis, inconspicuis, subcuticularibus, 110–175 $\mu$  diam.; setis, rectis, flexuosis, vel subgeniculatis raro, apicibus subobtusis, claro-brunneis, supra pallidioribus leviter, 50–65 x 4–5 $\mu$ , 1–2-septatis; conidiophoris subcylindraceis, subhyalinis, confertis, 12–15 x 3–5 $\mu$ ; conidiis hyalinis, obtusis, cylindraceis, 13–19 x 4–6.5 $\mu$ .

Spots dark brown, banded-zonate, conspicuous, large, orbicular or irregular, approx. 0.5–3 cm. diam.; acervuli epiphyllous, scattered, inconspicuous, subcuticular, 110–175 $\mu$  diam.; setae straight, flexuous, or rarely subgeniculate, clear brown, becoming somewhat paler toward the subobtuse tips, 50–65 x 4–5 $\mu$ , 1–2 septate; conidiophores subhyaline, subcylindric, crowded, 12–15 x 3–5 $\mu$ ; conidia hyaline, obtuse, cylindric, 13–19 x 4–6.5 $\mu$ .

On living leaves of *Salix lucida*. University of Wisconsin Arboretum, Madison, Dane County, Wisconsin, U.S.A., September 4, 1955.

The zonate banding of alternate dark and somewhat lighter brown is very pronounced and characteristic in the larger spots, some of which do not show any acervuli. In this connection it is interesting that the specimen in the Wisconsin Herbarium of Fungi Columbiani No. 3872, issued as *Septogloeum salicinum* (Peck) Sacc. appears to bear sterile *C. lucidae* lesions with *Septoria salicina* Peck included within the boundaries of the larger spots. Although subcuticular, the acervuli are very firmly seated on the epidermis and there is nothing of the superficial saprophytic *Colletotrichum* about *C. lucidae*. The straight, rigid, cylindric conidia are not of the type ordinarily encountered in *Colletotrichum*, but in other respects the fungus seems a characteristic representative of the genus.

SPHACELOMA MURRAYAE Jenkins & Grodsinsky on *Salix lucida*. Sauk Co., Parfrey's Glen, August 23. On *Salix nigra*. Dane Co., Madison, September 2. On *Salix discolor*, *S. interior*. Dane Co., Madison, September 8.

**Cladosporium coreopsidis** sp. nov.

Maculis nullis; conidiophoris amphigenis, non-fasciculatis, obscuro-brunneis, fere rectis vel subtortuosis, prope geniculatis supra, basibus non inflatis, 30–65 x 3.5–4.5 $\mu$ , 2–3 septatis; conidiis catenulatis, fusoides vel angusto-fusoides, levibus, pallidis fumoso-brunneis, 13–20 x 3.5–4 $\mu$ , 1-septatis vel continuis.

No distinct spots; conidiophores amphigenous, arising individually and not in fascicles, dark brown, almost straight to subflexuous, closely geniculate above, base not enlarged, 30–65 x 3.5–4.5 $\mu$ , 2–3 septate; conidia catenulate, fusoid or narrow-fusoid, smooth, pale smoky brown, 13–20 x 3.5–4 $\mu$ , 1-septate or continuous.

On living leaves of *Coreopsis palmata*. University of Wisconsin Arboretum, Madison, Dane County, Wisconsin, U.S.A., June 27, 1955.

A somewhat similar undetermined *Cladosporium* on *Coreopsis* which, however, differed in important characters, particularly in having much shorter spores, was mentioned in my Notes XX (Trans. Wis. Acad. Sci. 43:171. 1954). The present fungus is well-developed and many host plants were infected. The most noticeable effect on the host is a pronounced stunting with suppression of flowering on the infected stalks. Healthy *Coreopsis palmata* clumps are normally very floriferous, with a terminal flower on all or almost all the stems. The conidiophores bear many closely crowded spore scars near their tips and the geniculation often is not very pronounced. The origin of the phores is not obvious in free-hand sections, but they do not appear deep-seated.

CERCOSPORA ALNI Chupp & Greene was described as a new species on *Alnus crispa* (Farlowia 1:580. 1944). S. J. Hughes (Can. Jour. Bot. 31:571. 1953) points out that on the basis of the description this is unquestionably *Passalora bacilligera* Mont. & Fr. Comparison of the Wisconsin specimen with authentic European specimens shows that Hughes is correct and the name *Cercospora alni* is a synonym.

PASSALORA ROBINIAE (Shear) Hughes replaces *Fusicladium robiniae* Shear as the name for this fungus occurring in Wisconsin and elsewhere on *Robinia pseudo-acacia*. Hughes (Can. Jour. Bot. 31:572. 1953) regards an inflated basal cell of the conidium as the best criterion distinguishing *Passalora* from *Cladosporium*. Hughes also transfers *Fusicladium depressum*, occurring on various Umbelliferae, to *Passalora*, but to this writer, basing his opinion on a number of the many specimens in the Wisconsin Herbarium, the shift does not seem justified, in view of the extreme variability noted.

CERCOSPORA ITHACENSIS Chupp on *Geranium maculatum*. Wisconsin specimens on *G. maculatum*, hitherto regarded as being *C. geranii* Kell & Sw. are considered as distinct by Chupp and described as a new species in his "Monograph of Cercospora", p. 241.

CERCOSPORA PTELEAE Wint. on *Ptelea trifoliata*. Green Co., near Juda, August 2.

