

THE PARASITIC FUNGI OF MONTGOMERY COUNTY. I.

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Ten years ago the writers became interested in fungi and began collecting and preserving the parasitic forms which thrive on the rich native and cultivated flora of Montgomery county. No season during that decade has failed to add materially to the number of species collected. College years at Wabash, summers on the farm near Ladoga, vacation excursions to The Shades, Pine Hills and other country stations have been made more interesting and profitable in the hunt for previously uncollected fungi. Even after both of the writers took up their work in other states, at least one month of each year has been spent in Montgomery County, and many collecting trips have added to the growing number of species. The abundance of fungi varies greatly from year to year but hardly a flowering plant can be found which is not parasitized at some time by at least one fungus and frequently by many of them. To be sure, many of these fungi have been previously reported from the county, many more from other counties of the state, others only from other states, but a considerable number have not been reported before from North America and even a few seem to be species new to science.

Non-parasitic forms have also been collected and preserved and it was the original intention to include all in this list. Since, however, the study and determination of the saprophytes has been much more limited, they have been reserved for a future presentation after more collecting and study. In order that this paper may be more useful to students of fungi it has been thought best to include not only all our own collections, but also those of all others who have collected or reported fungi from the county.

The paper is presented with a threefold object: (1) as a contribution to the biological survey of the state, a worthy enterprise, started over twenty-five years ago but the cryptogamic part of which has made little progress during the last two decades; (2) as a help to plant pathologists in determining the range and prevalence of pathogenes; (3) as a reference and finding list for local students of fungi, amateurs and professionals, who will find determination of newly found species much facilitated by the use of the appended host index. This list, however, undoubtedly does not include all the parasites of the county. A summer day spent in the woods or along the low banks of the streams still yields the excitement of finding many a new one and will continue to do so for years to come. Nor have the collecting possibilities of the orchard, garden and flower bed been by any means exhausted. The list of species on plants of economic importance will seem meager to the experienced plant pathologist; for example only one parasite is reported on potato. This is due to the fact that less attention was paid to the common economic fungi than to the rarer parasites on wild plants. It is hoped that other students will find the pursuit as alluring as the writers have and will continue to add to this list and increase its usefulness.

The first published record of fungi collected or observed in Montgomery county is a short paper, "Mildews of Indiana", by J. N. Rose in the Botanical Gazette for 1886 (Bot. Gaz. 11:60-63). He lists and makes notes on 12 species of Erysiphaceae on 30 different hosts which he collected about Crawfordsville during the previous season and deposited in the herbarium of Wabash College.

In 1889, M. A. Brannon read a paper before the Ind. Acad. Sci. entitled "Some Indiana Mildews". He included 7 species of Erysiphaceae on 11 hosts from Montgomery County. Most of these had previously been reported by Rose. Brannon's paper was not published but a list of his collections was secured by Underwood and included in his catalog of 1893.

In 1890, E. M. Fisher read a paper before the Academy entitled "Parasitic Fungi of Indiana", based on collections he made for the Division of Vegetable Pathology, U. S. Dept. of Agriculture. The specimens were deposited in the herbarium of the Department of Agriculture. The paper was never published but his collections were listed by Underwood. He collected rather extensively in Montgomery County as indicated in our list below.

In 1893 the Indiana Academy of Science began a biological survey of the state. L. M. Underwood, at that time professor of botany at DePauw University, was appointed director for the division of botany on the survey. In his first report (Proc. 1893:30-67), he published "A List of Cryptogams at Present Known to Inhabit the State of Indiana". This list was supplemented by another in 1894 (Proc. 1894: 147-154) and by a third short one in 1896 (Proc. 1896:71-72). The name of county and collector is indicated for each species of fungus and host. He included a total of 160 species of fungi on 268 hosts for Montgomery. These figures cannot be regarded as exactly accurate because a number of his species, especially in the rusts, have been shown since that time to be identical with others in his list. Outside the collections by Brannon and Fisher, nearly all the species which he listed from Montgomery were collected by E. W. Olive who was at that time a student in Wabash College. In 1894, M. B. Thomas, professor of botany at Wabash College, stated at the meeting of the Academy (Proc. 1894:65) that the list of parasitic fungi from the vicinity of Crawfordsville had been increased by Olive until there were now 175 species and 250 hosts.

In 1898 J. C. Arthur read before the Academy a list of the rusts of Indiana. He presented another one in 1903. A more complete list was presented by Jackson in 1915 (Proc. 1915: 429-475). The third one of these papers included all the species reported in the first two. In a second paper "Uredinales of Indiana II", (Proc. 1917:133-137), Jackson added 4 more species from as many hosts from Montgomery making a total of 58 species of rusts on 98 hosts from that county. In another paper "The Ustilaginales of Indiana", presented at the same time (Proc. 1917:119-132), Jackson lists four smuts from Montgomery occurring on as many hosts.

Since Underwood had reported in his list 103 parasites, outside the smuts and rusts, on 171 hosts we get the grand total for the county of 165 parasites on 273 hosts. In the present paper this number has been raised

to 336 parasites on 560 hosts. There are 371 different host species. A number of new species collected during the last few years have not been included in this list but will be described separately in a future publication.

The cryptogamic herbarium of Wabash College contains many exsiccated specimens collected by students and instructors for thirty years. Much of the material has been lost or destroyed by use or the data lost, but all specimens which were in recognizable condition and for which data were present were carefully gone over and included here. All other exsiccations on which this list is based are in the private herbaria of the writers. Most of the collections have been from the neighborhoods of Crawfordsville, Ladoga and The Shades but in general the southern and central parts of the county have been pretty thoroly covered. Very few collections have been made in the northern edge of the county.

The nomenclature used in this list is in the main, that of Saccardo, but for the Erysiphaceae, Salmon's Monograph has been followed, Ellis & Everhart's "North American Pyrenomycetes" for the other Pyrenomycetes and Clinton's Ustilaginales in N. A. Flora for the smuts.

The writers are indebted to Professors J. C. Arthur and H. S. Jackson of Purdue University for identification of some of the Uredinales and for other favors.

LIST OF FUNGI COLLECTED.

In the following list the species are arranged alphabetically under the orders of the fungi. The following abbreviations for names of collectors are used throughout: (A)=H. W. & P. J. Anderson, (Bk)=Walter Burkholder, (Br)=M. A. Brannon, (D)=H. B. Dorner, (F)=E. M. Fisher, (Ftz)=H. M. Fitzpatrick, (H)=A. Hughart, (J)=H. M. Jennison, (O)=E. W. Olive, (T)=M. B. Thomas, (CT)=Cecil Thomas. The short abbreviation for the month of collection is used but the date of the month, although on the original packet, is omitted here because it is less essential. The exact station of collection is also omitted in the list because not considered of great importance when all collections were within the boundaries of one county. Exsiccated material representing many of the early collections by Rose, Fisher and Brannon and some of those by Olive and M. B. Thomas were not available for examination. Such are included in this list on the authority of the published records, and the month of collection, not being stated in the published records, is necessarily omitted from our list. In the case of a number of very common fungi the collections were too numerous to include here and some have been omitted, but we have retained those which show the widest range in time of occurrence and number of collectors.

PHYCOMYCETES.

CHYTRIDALES.

1. *Synchytrium decipiens* Farl.

Amphicarpa monoica. Au 1918 (A).