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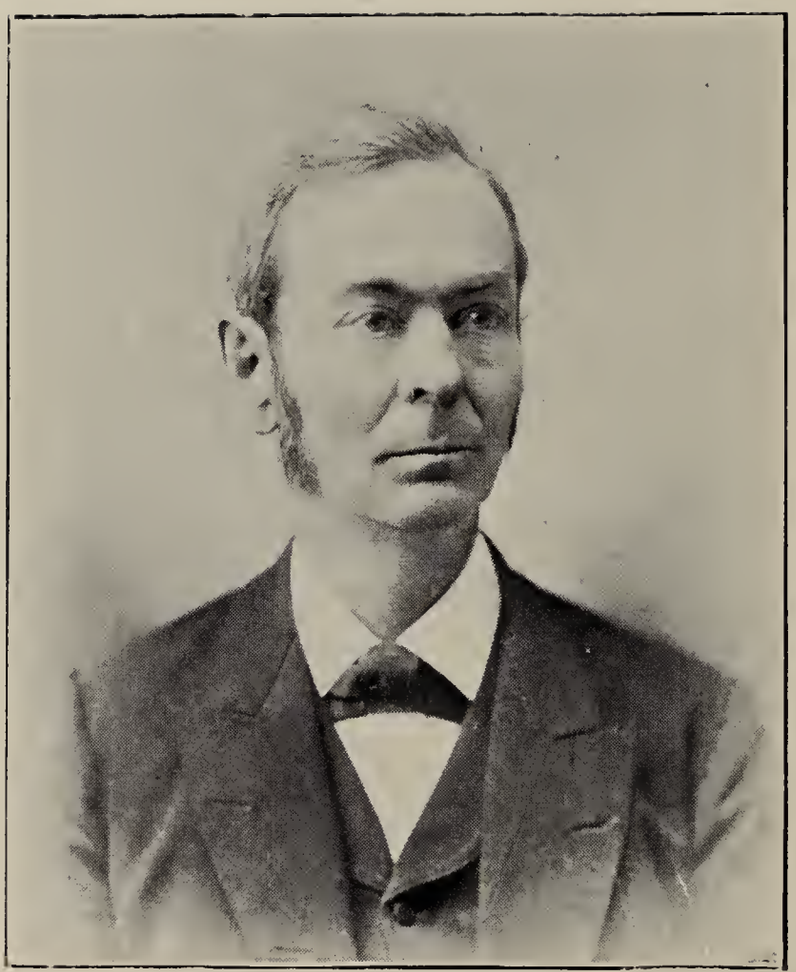

Very truly Yours
Chas. H. Peck

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CONTINUATION OF THE JOURNAL OF MYCOLOGY

The Journal of Mycology was inaugurated in 1885 by the undersigned, Messrs. J. B. Ellis and B. M. Everhart joining in the editorship. Under this arrangement the publication was continued four years; it was then discontinued by reason of expense involved, but the United States Department of Agriculture, Division of Vegetable Pathology, issued three volumes during the years 1889-94.

The Journal was at first published almost exclusively in the interest of systematic or taxonomic Mycology. The later volumes however were much changed in character and devoted mainly to the economic phase of the subject. Important articles in the first four volumes were such as North American Geasters, Enumeration of the North American Cercosporas, New Kansas Fungi, Heterœcismal Uredineæ, North American Species of Ramularia, Canadian Fungi, The Phyllostictas of North America, New Species of Fungi, North American Agarics, Septorias of North America, etc.

In the last three volumes most space was given to such articles as Treatment of Gooseberry Mildew and Apple Scab, History of the Development of the Pyrenomycetes, Peach Rot and Blight, A New Holyhock Disease, Recent Investigations in Smut Fungi and Smut Diseases, Experiments in the Treatment of Plant Diseases, Treatment of Pear-Leaf Blight, etc.

There was from the first a generous support on the part of many amateurs and all of the working mycologists of the country but the number was of course then very limited. It is believed that now the good company has so much increased, the general

interest in Mycology so greatly widened and its usefulness so generally appreciated, that the continuation of the Journal —devoted to this broad and important branch of Science — will be welcomed by a very large constituency.

The State Agricultural Experiment Stations beginning the publication of their work four years after the Journal of Mycology was established turned the attention of a host of students and workers to economic mycology, and many of them have made important contributions as well to the morphological and physiological in addition to the economic aspects of the subject. The instruction to students and opportunities for work in Mycology at Universities, Colleges and Stations have been greatly extended in recent years. No other branch of botany has enjoyed such popularity or received more attention than Mycology.

It is hoped that such encouragement and assistance will be received in the revival and continuation of this Journal, both in the way of subscriptions and contributions for publications, that an enlarged and valuable publication will be possible in the very near future. The editor is by no means so sanguine as to expect that the expense will be fully met by such income, yet he does hope to make a Journal that will perhaps be worth more than the amount charged subscribers, and on that basis most earnestly solicits the aid of all working mycologists and of all the professional and amateur botanists of our country.

In no way will this Journal encroach on the mycological province of the State Experiment Stations, devoted as they necessarily and properly are, exclusively to the economic phases of the subject; on the other hand, it proposes to be an aid to such work by supplementing it in a very essential manner. To discourage and retard the investigations in the Morphology, Physiology, Ecology and Taxonomy of Fungi — the work that will be made prominent in the Journal of Mycology — would be on the part of Economic Mycologists seriously to interfere with the scope and value of their investigations. All branches of botany no less than all branches of science, must proceed simultaneously and harmoniously; the divorcement of any one will be to its detriment and a detriment to the whole. The co-operation of the botanists of the Stations is therefore solicited, their more technical and purely scientific publications, descriptions of new species, investigations into the life histories of Fungi, observations and notes on Ecology and Distribution, and other articles not adapted to popular Bulletins, are respectfully solicited. The mycologists of the Stations have broad opportunities for advancing the science, yet the intended practical character of the publications forbid much technical matter that is very essential to the promotion of this science.

The Journal proposes to be an index, and it is hoped that the aid of working mycologists will also make it an exponent of North American Mycology. Those contributing descriptions

of new species of Fungi, monographing large or small groups, or preparing other mycological articles are invited to make use of its pages. If haply this Journal would be made the repository for all descriptions of new species and all that pertains to the taxonomy of North American Fungi, the advantage to workers and to students would be invaluable.

It is hoped that issuing four numbers a year, in February, May, October and December, there may be given sufficiently prompt opportunity for publication of articles pertaining to any and every phase of mycology.

W. A. Kellerman.

Ohio State University,
Columbus, May 20, 1902.

NOTES ON SOME FLORIDA MYRIOSTOMAS AND GEASTERS.

A. P. MORGAN.

More than a year ago, a correspondent, Mr. A. S. Bertolet, sent me a "Christmas Box" of specimens from Florida. It was well stuffed and seeming to be a "miscellaneous lot" I stowed it away and neglected to look at it for several months. I finally got it down and went through it expending my leisure time for three or four days upon it. I take this opportunity to acknowledge my pleasure in the offering, to thank Mr. Bertolet for the same, and to make note of some of the choice things in the box.

First, wrapped up together was a nest of small puff balls that looked very much like minute Indian Turnips; they were smooth above, wrinkled all around the sides and rooted from the base; they excited my curiosity greatly. After much cutting and prying and pulling to pieces I discovered them to be incipient Myriostomas. I had never seen the young unopened plant before.

There were some remarkable specimens of Geaster velutinus Morg.; they were large and fine, of much greater size than the type which Atkinson sent me from South Carolina. Although the species roots from the base like Geaster saccatus Fr., one of the specimens had stripped off its epidermis and vaulted upon its tips exactly as in Geaster fornicatus Huds. The species is more abundant and widely distributed than we had before suspected. Lloyd has a fine lot of it from Pennsylvania and the State Botanist notes it from New York.

Geaster radicans B. & C. is about the size and has much the same appearance as Geaster fornicatus Huds. as described by Fries and which Mr. Bertolet sent me from Northern Michigan;

in fact the two are confused in American and European herbaria. But G. radicans has a silky fimbriate mouth while in G. fornicatus the mouth is sulcate-striate.

In the box sometimes mixed together and sometimes wrapped in separate lots were vast numbers of two very small Geasters. One has the particles of sand bound to it all over by the mycelium and it has a protruding sulcate mouth; this is evidently Geaster striatulus Kalch. The other little Geaster roots from the base and has a fimbriate mouth. So far as figure and description go it is Geaster floriformis Vitt. and has never been noted in this country before.

Most of all however, I prize what I believe to be genuine specimens of Geaster fimbriatus Fr., the only ones I have ever seen that filled the bill, though I have seen many specimens labeled Geaster fimbriatus Fr. It is buried in the ground and mycelium issues from the whole outer surface; when it expands it carries away a coat of sand or else the sand strips off the cuticle. The most marked feature is, as stated by Fries, "Sporidia fuliginosa"! Fries' reference to Micheli's first figure on Tab. 100, however, is erroneous as he himself evidently suspects, in parenthesis. This figure of Micheli's plate applies to what we are accustomed to call in this country Geaster triplex Jungh. It should be called Geaster stellatus Linn.

A NEW GENUS OF FUNGI.

A. P. MORGAN.

The following genus with its type species Acontium album I have had on hand for some time. It will be recognized easily by its relationship to Cephalosporium. I can furnish a number of the specimens of the type to microscopists desiring them. By "hyphasma" I mean the general aspect of the mould to the naked eye or with a simple lens; this is different from the sense in which Link uses it.

ACONTIUM Morgan genus nov.— Hyphæ decumbent hyaline, septate, vaguely branched, the sporiferous branches uniform, ascending, each producing at the apex several spores which are conglutinate into a pellucid glomerule. Spores simple, cylindric or fusiform, smooth, hyaline.

A genus somewhat resembling Cylindrocephalum, but the spores are involved in mucus as in Cephalosporium.

1. ACONTIUM ALBUM Morgan sp. nov.—Hyphasma effused, thin, dense, white, minutely pubescent. Hyphæ creeping, slender, hyaline, scarcely septate, intricately much branched; the sporifer-

ous branches ascending, short, simple or with a few slender divisions at the apex, producing an elongated subfusiform glomerule of spores. Spores cylindric-fusiform, straight, hyaline, 18-25 x 1 mic.

Growing on the inner side of old bark of Acer. Sporiferous branches 40-60 mic. long, the glomerule clinging to the upper half usually leaving the apex naked; sometimes two or three or several adjacent glomerules are confluent. There are usually from five or six to a dozen spores in a glomerule.

2. Acontium minus Morgan sp. nov.—Hyphasma effused, very thin, white. Hyphæ creeping, slender, hyaline, septate branched; the sporiferous branches simple, tapering upward, ascending or erect, producing at the apex a glomerule of spores. Glomerules small, globose or obovoid, white, pellucid; spores cylindric, smooth, hyaline, obtuse at each end, 5-9 x 2 mic.

Growing on old pod of Gleditsia. The sporophores variable, tapering to a point, 20-60 mic. in length and not thicker than the spores.

3. Acontium velatum Morgan sp. nov. — Hyphasma effused, thin, dense, flocculose, white. Hyphæ long prostrate, intricately much branched, hyaline, septate; the spores conglutinate in subglobose or irregular glomerules and borne at the apex of slender branchlets. Spores variable in form and size, elliptic-oblong, subclavate and subcylindric, hyaline, smooth, 8-12 x 2. 5-3.5 mic.

Growing on the cut surface of a black walnut stump apparently feeding upon the sap in which were spores of Pionnotes. Glomerules 15-25 mic. in diameter, in places much confluent, large and irregular.

OHIO FUNGI. FASCICLE III.

W. A. KELLERMAN, OHIO STATE UNIVERSITY.

The following species are included in Fascicle III:

43. Exoascus deformans (Berck.) Fckl., on Amygdalus persica L.
44. Gymnosporangium globosum Farlow, on Crataegus punctata Jacq.
45. Melampsora populina (Jacq.) Lév., on Populus deltoides Marsh.
46. Melampsora salicis capreae (Pers.) Winter, on Salix amygdaloides Anders.
47. Melampsora salicis capreae (Pers.) Winter, on Salix amygdaloides Anders.
48. Microsphaera alni (Wallr.) Salmon, on Viburnum cassinoides L.
49. Phyllachora lespedezae (Schw.) Sacc., on Lespedeza capitata Mx.
50. Phyllachora graminis (Pers.) Fckl. on Elymus canadensis L.
51. Phyllachora graminis (Pers.) Fckl. on Panicum clandestinum L.
52. Phyllosticta paviae Desm., on Aesculus glabra Willd.

53. Phyllosticta phaseolina Sacc., on Stylosanthes biflora (L) B. S. P.
54. Puccinia andropogonis Schw., on Andropogon scoparius Mx.
55. Puccinia podophylli Schw. on Podophyllum peltatum L.
56. Puccinia emaculata Schw., on Panicum capillare L.
57. Puccinia thompsonii Hume, on Carex frankii Kunth.
58. Septoria helianthi Ell. & Kellerm., on Helianthus annuus L.
59. Uromyces caladii (Schw.) Farl., on Arisaema triphyllum (L.) Torr.
60. Uromyces caladii (Schw.) Farl., on Arisaema triphyllum (L) Torr.

Grateful acknowledgment is made for assistance in various ways by Messrs. Ellis, Arthur, Thaxter, Lloyd, and P. L. Ricker. As in the former Fascicle Dr. Arthur kindly inspected all the Uredineæ, but Dr. Thaxter identified No. 44, Roestelia "globosa."

43. Exoascus deformans (Berck.) Fckl.

On Amygdalus persica L. (cultivated.)

Columbus, Ohio, June 9, 1901.

Coll. W. A. Kellerman and E. D. Coberly.

"Ascomyces.....

"A species of this genus distorts the leaves of peaches in a most extraordinary way. The increase in thickness is caused by the interposition of eight or more strata of parenchymatous cells between the cuticullar stratum and the oblong close-packed cells which in healthy peach leaves follow it. At the same time the intercellular spaces of the lower part are narrowed as the leaf contracts." M. J. Berkeley. Introduction to Cryptogamic Botany, 284. 1857.

44. Gymnosporangium globosum Farlow.

Roestelia globosa Thaxter.

On Crataegus punctata Jacq.

Lakeside, Ottawa Co., Ohio, Sept. 11, 1901.

Coll. W. A. Kellerman.

This name, Roestelia globosa Thaxter, was perhaps first used by Ed. Fischer, Hedwigia, 34:4, 1895, the description having been published in 1886 as given herewith:—

"Turning next to *R. laccrata*, there seems to have been a confusion of forms in this instance also. The material thus named occurring in America includes at least two, and perhaps three forms; one, ... A second form, *lacerata, y* infests the leaves of *Crataegus*, and does not appear until early in August; while a third and smaller form, *lacerata, z*, is found abundantly on *Pyrus malus* simultaneously with it.

"In the forms *y* and *z* the spores are smaller, about 20 μ in diameter, while the peridial cells are smaller and broader in proportion to their length, about 20×65 μ, with a tendency to a rhomboidal shape; the ridges are deep and sharply cut as a rule, with the striæ clearly marked and running obliquely in two directions; those above the median line, where the striæ are horizontal, running in a plane nearly at right angles to those below it. The two forms seem nearly identical

microscopically; the spores and peridial cells of *z* are perhaps slightly smaller, but otherwise it differs from *y* only by its smaller size and faded yellow color." Roland Thaxter. Proc. Amer. Acad. Arts & Sci. 14:266. 1886.

45. Melampsora populina (Jacq.) Lev.

Sclerotium populinum Persoon.

On Populus deltoides Marsh.

Columbus, Ohio, December 10, 1901.

Coll. W. A. Kellerman.

Supplement to No. 23.

"Sclerotium populinum: epiphyllum congestum subimmersum incarnato-rufum, demum nigrescens, formis varium subrotundum aut angulato-confluens." D. C. H. Persoon, Synopsis Methodica Fungorum, 1:125. 1801.

46. Melampsora salicis capreæ (Pers.) Winter.

Uredo farinosa *a* Salicis capreae Pers.

On Salix amygdaloides Anders.

Columbus, Ohio, October 5, 1901.

Coll. W. A. Kellerman.

"Uredo farinosa: confluens farinosa ochracea.

a. Uredo *Salicis capreae*: maiuscula, colore pallidiore.

"Frequens in foliis *Salicis capreae*, praesertim in ramis iunioribus luxuriantibus ex trunco caeso erumpentibus occurriit per aestatem." D. C. H. Persoon, Synopsis Methodica Fungorum, 217. 1801.

47. Melampsora salicis capreæ (Pers.) Winter.

On Salix amygdaloides Anders.

Columbus, Ohio, March 10, 1902.

Coll. W. A. Kellerman.

Supplement to No. 46.

"Sclérote du Saule. Sclerotium salicinum.

"S. Salicinum. Pers. in Moug. et Nestl crypt. vog. n. 386.

"Il ressemble au S. du peuplier, mais sa couleur est d'un rouge un peu plus décidé, sa superficie plus luisante, ses pustules plus planes, puis régulièrement arrondies, plus éparses, et presque jamais soudées les unes avec les autres. M. M. Mougeot et Nestler l'ont trouvé dans les Vosges, au printemps, croissant à la surface supérieur des feuilles mortes du saule marceau. Cette espèce et la précédente ressembient beaucoup aux *xyloma salicinum* et *populinum* surtout dans leur vieillesse, où elles deviennent d'un rouge un peu brun. Je ne sais si ces espèces ne devront pas être plutôt rapprochées des xyloma que des vrais sclérotiums." DeCandolle, Flore Française, 6:114. 1815.

48. Microsphæra alni (Wallr.) Salmon.

Alphitomorpha penicillata var. alni. Wallr.

On Viburnum cassinoides L.

Lakeside, Ottawa Co., Ohio, September 15, 1901.

Coll. W. A. Kellerman.

"Alphitomorpha alni Wallr.

"A. subiculo effuso subtilissimo dense intertexto albo-griseo obsoletoque, sporangiis demum depressis nitidis minutissimus, capillitio radiante expanso apice tumidulo adfixis. .....

....."Nisi subiculum albo-griseum perfectum obvenit et obsoletum, ut frequentius est, aegerrime modo haec species inveniri protest. Sporangia omnium minutissima, conferta, nudo oculo fere inconspicua, primum globoso, dein vero concava, nitida, nigro-fusca. Capillitium breve, diametrum sporangiorum paullulum superans, apice pulverulentum, indeque quasi incrassatum, filis subiculi adnatum, tandem solutum, introrsum paullisper vergens." F. G. Wallroth, Annalen der Wetteranischen Gesellschaft für die gesammte Naturkunde, 4:237. 1819.

49. Phyllachora lespedezæ (Schw.) Sacc.

Sphaeria lespedezae Schw.

Stroma; no spores.

On Lespedeza capitata Michx.

Bowling Green, Wood Co., O., September 2, 1901.

Coll. W. A. Kellerman.

"Sphaeria lespedezae, L. v. S.....

"S. semper macula latiori lutescenti in folio effusa insidet valde varians magnitudine, rarius adaeqans S. Trifolii. Peritheciis pluribus quidem junctis in plaga atra consimili priorum maculis—sed non rariter occurrit perithecium majusculum solitarium in minori plaga atronitenti, demum evacuatum, praeditum ostiolo pertuso non elevato. Et in speciminibus vere confertis caespitulus atronitens non tuberculoso-rugulosus evadit, peritheciis inclusis, sed tantum superficie inaequabili sed ostendit. In simplicibus margo sterilis semper adest; centro quasi hemisphaerice elevato." L. D. de Schweinitz, Transactions of the American Philosophical Society, Philadelphia, New Series, 4:209. 1834.

50. Phyllachora graminis (Pers.) Fckl.

Sphaeria graminis Pers.

On Elymus canadensis L.

Columbus, Ohio, December 20, 1901.

Coll. W. A. Kellerman.

"Sphaeria graminis: epiphylla sublinearis maculaeformis nitente-nigra, ostiolis latentibus.

"Hab. in foliis praesertim Elymi europaei exsiccatis, ubi ut macula, latitudine et longitudine inaequalis sese exhibet et totum folium occupat." D. C. H. Persoon, Synopsis Methodica Fungorum, 1:30. 1801.

51. Phyllachora graminis (Pers.) Fckl.

Spaeria graminis Pers.
On Panicum clandestinum L.
Sugar Grove, Fairfield Co., O., October 12, 1901.
Coll. W. A. Kellerman.
Supplement to No. 50.

52. Phyllosticta paviæ Desm.

Phyllosticta sphaeropsidea E. & E.
On Aesculus glabra Willd.
Columbus, Ohio, May 26, 1896.
Coll. W. A. Kellerman.

"Phyllosticta Paviae, Desmaz.
"P. maculis magnis, effusis, indeterminatis, fulvo–rufis vel castaneis. Peritheciis epiphyllis, minutissimis, sparsis vel approximatis, subnigris, convexis dein repressis. Cirrhis albidis. Sporidiis cylindrico–ellipticis; sporulis 2, globosis." J. B. H. J. Desmazières. Annales des Sciences Naturelles, Botanique, 8:32. 1847.

53. Phyllosticta phaseolina Sacc.

On Stylosanthes biflora (L.) B. S. P.
Sandusky, Erie Co., Ohio, September 8, 1901.
Coll. W. A. Kellerman.

"Phyllosticta phaseolina Sacc. Maculis amplis vagis, arescendo ochraceis, peritheciis sparsis lenticularibus, 70 micr. diam., pertusis; spermatiis ovoidea–oblongis, $6 \times 2\frac{1}{2}$, rectis, rarius inaequilateralibus, hyalinus." P. A. Saccardo. Michelia, 1:149. 15 Januar. 1878.

54. Puccinia andropogonis Schw.

On Andropogon scoparius Michx.
Columbus, Ohio, December 15, 1901.
Coll. W. A. Kellerman.

"P. Andropogi, L. v. S.....
"P. maculis obliteratis, acervis dense aggregatis, elevatis, fuscis, obtusis, linearibus, abbreviatis. Sporidiis fuscus. Quamquam non confluit, tamen fere tota folia occupat." L. D. de Schweinitz, Transactions of the American Philosophical Society, Philadelphia, New Series, 4:295. 1834.

55. Puccinia podophylli Schw.

On Podophyllum peltatum L.
Columbus, Ohio, May 30, 1901.
Coll. O. E. Jennings.

"Puccinia podophylli Sz.
"P. maiuscula subconcentrica spadiceo–nigra in macula lutescenti, sporidiis oblongis bilocularibus aculeatis.

"Passim in foliis Podophylli.—Sporidia ovalia sub lente lutescentia, aculeis prominulis rectis. Pedicelli non distincti brevissimi." L. D. de Schweinitz, Synopsis Fungorum Carolinae Superioris (excerpta), p. 46. No. 489. 1822. (Schrift d. Nat. Gesellschaft zu Leipzig.)

56. Puccinia emaculata Schw.

On Panicum capillare L.

Columbus, Ohio, January 5, 1902.

Coll. W. A. Kellerman.

"P. emaculata, L. v. S.....

"P. omnino emaculata; primum acervis totis tectis rarioribus sparsis erumpentibus; demum saepe confluentibus, minutis, abbreviatis, angustis parallelis, utrinque plerumque acuminatis. Sporidiis aterrimis, minoribus; aquae immersis, fuscescentibus." L. D. de Schweinitz, Transactions of the American Philosophical Society, Philadelphia, 4:295. 1834.

57. Puccinia thompsonii Hume.

On Carex frankii Kunth.

Sugar Grove, Fairfield Co., O., October 12, 1901.

Coll. W. A. Kellerman.

"Puccinia Thompsonii; Epiphyllous or occasionally amphigenous. Sori scattered, oblong to linear oblong, 0.25—6mm. long reddish to chestnut-brown, erumpent, the ruptured epidermis flanking the sides. Spores oblong-clavate, constricted at the septum; vertex rounded; epispore rather thin, very smooth, color golden-brown or lighter, 48–68 × 15–24. Pedical slender, hyaline, 1.5—2.5 times the length of the spore." H. Harold Hume. Botanical Gazette 29:352. May, 1900.

58. Septoria helianthi Ell and Kellerm.

On Helianthus annuus L. (Cultivated.)

Columbus, Ohio, June 6, 1901.

Coll. W. A. Kellerman.

"Septoria helianthi E. & K. Perithecia epiphyllous, immersed, brown, collapsing, 150 μ diam., on brown definitely limited spots $\frac{1}{4}$–$\frac{3}{4}$ cm., diam., with a yellowish scarcely raised border; spores linear-filiform, hyaline, nucleate, becoming 3–5 septate, 30–70×2–3μ, generally attenuated towards one or both ends." J. B. Ellis and W. A. Kellerman, American Naturalist 17:1165. November, 1883.

59. Uromyces caladii (Schw.) Farl.

Aecidium caladii Schw.

On Arisæma triphyllum (L.) Torr.

Columbus, Ohio, June 20, 1901.

Coll. O. E. Jennings.

"Aecidium caladii Sz.

"A. simplex in longissimis tractibus, peridiis rufo-luteis sphaeriaemorphis, pulvere aurantio.

"Peridia clausa sphaerias simulant." L. D. de Schweinitz, Synopsis Fungorum Carolinae Superioris (excerpta), p. 43. No. 457. 1822. (Schrift. d. Nat. Gesellschaft zu Leipzig.)

60. Uromyces caladii (Schw.) Farl.

Uredo caladii Schw.

Uredo and Teleutospores.

On Arisæma triphyllum (L.) Torr.

West Alexandria, Preble Co., O., July 4, 1901.

Coll. W. A. Kellerman.

"Uredo caladii Sz.

"U. punctiformis solitaria, maculae magnae lutescenti insidens, pulvere fusco.

"In aversa pagina foliorum Caladii frequens. Primum clausa, demum pulverem spargentia peridia." L. D. de Schweinitz, Synopsis Fungorum Carolinae Superioris (excerpta), p. 45. No. 480. 1822. (Schrift. d. Nat. Gesellschaft zu Leipzig.)

NEW SPECIES OF FUNGI FROM VARIOUS LOCALITIES.

J. B. ELLIS AND B. M. EVERHART.

AECIDIUM JACQUEMONTIAE E. & E. On leaves of Jacquemontia pentantha. Yucatan, Mexico. Com. Dr. Chas. F. Millspaugh, No. 1192.

Amphigenous, evenly scattered; aecidia hemispheric-erumpent, then flattened at the apex, finally open, deep cup-shaped with the margin erect and soon entire, about $\frac{1}{4}$ mm. diam., nearly slate color inside when dry, (color when fresh not seen); spores globose or angular, about 12 μ diam. or ovate or elliptical, 12-15x10-12 μ, epispore thin, contents granular, component cells of the aecidia subelliptical, about 15 μ diam.

Cannot be the aecidium of Puccinia opulenta Speg. which has the aecidia in hypophyllous groups.

DOTHIORELLA RADICANS E. & E.— On dead stems of Rhus toxicodendron (the climbing var. radicans). Newfield, N. J. May 20, 1900.

Stromata small, about 1 mm. diam., bursting through the cuticle in a subseriate manner and confluent for 2-3 mm. Perithecia 3-12 in a stroma or sometimes scattered singly, hemispheric-prominent, about 1-3 mm. diam., rounded and obtuse at the apex, ostiolum inconspicuous; sporules ovate, pale, yellowish-brown, 10-13x5-6 μ; basidia slender, about as long as the spores.

This differs from D. rhoina E. & E. (Torr. Bull. 27:55. 1900) principally in its sporules nearly twice as large.

CYTISPORA PALLIDA E. & E.— (Neocytispora pallida E. & E. in Herb.). On dead fallen limbs of Quercus tinctoria. Newfield, N. J. Nov.-April, 1901-2.

Stroma membranaceuos, pallid-white and at first white-pulverulent, convex, 2-4 mm. diam., erumpent. loosely embraced by the ruptured epidermis, soon irregularly perforated above, multilocular, cells subovate; sporules numerous, allantoid, hyaline, 4-5x1 μ, borne on dendroidly branched basidia, 40x1$\frac{1}{2}$-2 μ.

This differs from the usual type of Cytispora but the essential characters are those of that genus. The specimens were found associated with Polyporus pocula (Schw.) Cke. with which it may be generically connected.

CONIOTHYRIUM JUNCI E. & E.— On Juncus balticus (dead scapes). Andrews, Oregon. Aug., 1901. Griffiths & Morris.

Perithecia scattered, imperfect, subcuticular, about $\frac{1}{4}$ mm. diam., visible through the thin cuticle as minute, black circles with a white spot in the center. Sporules globose, olivaceous, 1$\frac{1}{2}$-2 μ. diam., borne on fasciculate basidia. Simple or branched from the base, 12-15x2 μ.

On account of the imperfectly developed perithecia, this approaches the Melanconiaceae.

DIPLODIA IVAICOLA E. & E.— On dead stems of Iva xanthifolia. Aberdeen, South Dakota. April, 1896. David Griffiths.

Perithecia scattered; 150-200 μ diam., subcuticular, raising the epidermis into small pustules which are pierced above by the papilliform osteolum which is soon perforated. Sporules oblong or oblong-elliptical, uniseptate, scarcely constricted, 10-16x6-7 μ yellowish-brown, obtuse at the ends.

ASCOCHYTA SMILACIS E. & E.— On living leaves of Smilax hispida. Yates, N. Y. (Fairman, 1512.)

Spots small (1-4 mm.), of irregular shape, dirty-white with a brown border or situated in a large brown space 1-2 cm. diam. Perithecia scattered over the spots, epiphyllous but mostly visible on both sides of the leaf, punctiform, black. Sporules elliptical, obtuse, smoky-hyaline, uniseptate but not constricted, 6-8 x 4μ.

This differs from the Ascochyta mentioned in the description of Phyllosticta smilacis E. & M. (in the North American Phyllostictas) in its smaller, smoky sporules.

SEPTORIA SPICULISPORA E. & E. — On leaves of Euonymus, Delaware (Commons).

Spots orbicular, 1-3 mm. diam., white with a purple margin; perithecia semiimmersed, epiphyllous, black, subglobose, 100-110 μ diam. Sporules spiculiform, continuous, 15-20x$\frac{3}{4}$-1 μ.

S. eunonymella Pass. and S. euonymi-japonici Pass. Both have sporules 2$\frac{1}{2}$ μ thick. S. enonymi Rabh. has spots scarcely margined, perithecia lenticular and sporules 1$\frac{1}{2}$ μ thick. This was issued in N. A. F. 2675 as Phyllosticta euonymi Sacc.

SEPTORIA PENTSTEMONICOLA E. & E.— On leaves of Pentstemon gracilis. Aberdeen, South Dakota, July, 1896. (David Griffiths.)

Spots subindefinite, 2-3 mm. diam., brown, soon confluent giving the leaf a dried up, dead appearance. Perithecia punctiform, minute (75 μ), scattered over the leaf and not confined to the spots. Sporules filiform, slightly curved, faintly nucleolate, 30-45x1-1$\frac{1}{2}$ μ.

Differs from S. pentstemonis E. & E. in the character of the spots and in its longer sporules.

SEPTORIA CORYDALIS Ell. & Davis.— On leaves of Corydalis glauca, Vilas Co., Wis. July, 1901. (Davis No. 019.)

Spots white, transparent, definite, surrounded by a reddish-brown halo, roundish or irregular, 2-6 mm. diam. Perithecia few, black, visible on both sides of the leaf but more distinct above, sporules cylindrical, 3-5x1-2 μ.

SEPTORIA LIATRIDIS Ell. & Davis.— On leaves of Liatris spicata, Racine, Wis. June, 1901. (Davis 013b) and L. scariosa (013).

Spots round or elliptical, 2-4 mm. diam., of a dirty brown color, with a narrow slightly raised margin, finally thin, white and transparent; perithecia innate, more prominent above, small 75-80 μ. Sporules filiform, continuous, hyaline, nearly straight, 20-30 x 1$\frac{1}{4}$-1$\frac{1}{2}$ μ.

ZYTHIA RHOINA E. & E.— On dead stems of Rhus radicans, Newfield, N. J. May, 1900.

Perithecia cespitose, ovoid, light yellow, 150 x 200 μ, surface slightly granular-roughened, astomous, collapsing to cup-shaped, clustered on a rather soft, tubercular, yellowish stroma about 1 mm. diameter and outwardly not distinguishable from a Nectria. Sporules oblong-elliptical, hyaline, continuous or faintly uniseptate, 6-10x2$\frac{1}{2}$-3$\frac{1}{2}$$\mu$, on slender basidia mostly a little curved and permanently attached, 8-15 μ long.

CYLINDROSPORIUM INFUSCANS E. & E.— On leaves of Elymus condensatus. Waitsburg, Wash. Oct. 1899. (Robt. M. Horner, No. 1406.)

Acervuli innate, black outwardly, elliptical, 100-110x120-150 μ, erumpent above, seriate between the nerves of the leaf; conidia lanceolate-cylindrical, straight or slightly curved or bent, continuous or slightly curved; hyaline with a slight yellowish tinge, 40-55x3-4 μ.

The fungus gives the upper side of the leaf a dark smoky hue, but there are no spots.

PESTALOZZIA MALI E. & E.— On apple tree leaves. Newfield, N. J. Aug. 18, 1900.

Spots circular, 1-3 mm. diam., white or cream color above with a narrow, purplish-brown margin, rusty-brown below; acervuli epiphyllous, innate-erumpent, sublenticular; conidia cylindrical, 5-septate, scarcely constricted, 20-25x6-7 μ, the terminal cells conical and hyaline, intermediate cells brown, the apical cell with a single short (6-8 μ), oblique, hyaline bristle-like crest; basidia simple, slender, about as long as the conidia, the riper part remaining to the base of the spore which in this way becomes bicristate.

The conidia are not quite as broad as in P. crataegi E. & E. and there is no concentric arrangement of acervuli as in that species. The conspicuous spots in P. mali afford a striking and easily recognizable character. Often one or more of the light colored spots are included in a larger brown spot, thus giving the leaf a marble-like aspect.

Ramularia hydrophylli E. & E.— On Hydrophyllum capitatum. Blue Mts. Columbia Co., Wash. April 1900. (Robert M. Horner, 1494.)

Spots dark-brown, irregular in shape, 3-6 mm. long, mostly extending out to the margin of the leaf or occupying the tips; hyphae amphigenous, caespitose, hyaline, continuous, geniculate above and slightly toothed, 20-30x5-7 μ, forming a loose white layer like Peronospora; conidia narrow-ovate, or elongated-clavate, rounded at each end, 20-30x7-10 μ.

Cercospora simulans Ell. & Kellerm.— On leaves of Falcata comosa, Gauley Mts., W. Va. Aug. 1901. (Prof. W. A. Kellerman, 3775.)

Hypophyllous: hyphae in loose, spreading tufts, geniculate and faintly septate, brownish, 75-100x3-4 μ, forming reddish-brown patch 2-3 mm. diam., leaf mottled above with corresponding whitish or reddish subindefinite spots subangular and partly limited by the veinlets of the leaf; conidia clavate-oblong, hyaline, 1-4 (mostly 3-) septate, 20-40x4μ.

Differs from C. monoica Ell. & Holw. on the same host, in its hypophyllous growth and shorter, broader conidia.

Fusarium spartinae E. & E.— On leaves of Spartina stricta. Pacific Grove, Cal. July 1900. (Robt. M. Horner, 1488.)

Hyphae arising from a minute, tremelloid base, branching above, hyaline, forming a loose, flocculent, pale orange-colored growth on the lower side of the dead leaves; conidia terminal, oblong-elliptical or oblong-fusoid, straight, 1-3 septate, 12-15x3-4 μ, ends mostly obtuse.

Diatrype megastoma E. & E.— Jour Mycol. I. p. 141, N. A. F. 1556, is the same as Eutypella cerviculata Fr.

Eutypella alpina E. & E.— Proc. Phil. Acad. 425. 1895, N. A. F. 3331, 3436 is also Eutypella cerviculata Fr.

Lophiotrema oenotherae E. & E.— Torr. Bull. 24:128. 1897. Species found at Newfield, N. J., July 1901. Fully matured, have sporidia distinctly 3-septate or constricted at the septa, 15-20x5-6 μ.

Phyllosticta clypeata E. & E.— On living limbs of Pirus malus. Corvallis, Oregon, May 1902. (A. B. Cordley.)

Spots discoid or shield-shaped, dull yellowish, $\frac{1}{2}$-1cm. diam., circular or elliptical, closely embraced by the upturned epidermis, which, however, soon shrinks away, leaving the margin partially free. Perithecia scattered on the spots, depressed-globose, slightly prominent, 150-200 μ diam. Sporules elliptical or subglobose, hyaline, $3\frac{1}{2}$-4x$2\frac{1}{2}$-3 μ.

Apparently very injurious to the trees.

Phyllosticta virginica E. & E.— In N. A. F. 2830; is doubtless only a form of P. destruens Desm. This fact was recognized in preparing the copy for the "North American Phyllostictas," as shown by the reference under P. destruens on p. 15, but through some oversight was not fully explained and corrected.

In the North American Phyllostictas, under Phyllosticta destruens, add 2676 to the N. A. F. reference, and under P. vulgaris cancel the Syn. Phoma virginiana and the reference to N. A. F. 2830.

Puccinina circinans E. & E.— Bull. Torr. Bot. Club. Feb. 1900, p. 61.

Change this to Puccinia chasmatis E. & E. There is already a Puccinia circinans Fckl. Symb. p. 53.

Venturia rubicola E. & E.—On dead canes of Rubus occidentalis, Tacoma Park, D. C. Oct. 1900. (C. L. Shear, 903.)

Perithecia thickly scattered; subcuticular, membranaceous, or rather coarse cellular texture, pierced above, 80-110 μ diam., tardily rupturing the cuticle and suberumpent, finally collapsing, surrounded by a ring or fringe of short, black continuous bristles mostly a little curved, 20-40x3 μ. Asci sessile aparaphysate, oblong, 50-60x10-12 μ. Sporidia crowded-biseriate, oblong-elliptical, biguttulate (becoming unseptate?) hyaline, 12-15x 6-8 μ.

Differs from V. kunzei Sacc. on Rubus caesius in its caulicolous growth and large asci and sporidia.

Hypocopra kansensis E. & E.— On cow dung. Rooks Co., Kansas. May 1901. (Bartholomew, 2871.)

Perithecia ovate, $\frac{3}{4}$-1 mm. high, $\frac{1}{2}$-$\frac{3}{4}$ mm. broad, entirely sunk in the stroma except the erumpent, hemispherical, soon perforated ostiola; stroma 1-2 mm. diam., black on the surface, inside about the same color as the matrix, slightly convex, often confluent for 1 cm. or more. Asci cylindrical, p. sp., 200-230 x 25-30 μ, thin, septate; sporidia obliquely; paraphyses stout, 4-5 μ

uniseriate, elliptical, hyaline at first, becoming opaque, slightly narrowed at the ends, 40-52 x 18-22 μ.

Differs from H. fimeti Pers. in its much larger sporidia.

Rosellinia bigeloviæ E. & E.—Am. Nat. 341. 1897. N. A. F. 3520. When this was published the fact that the sporidia are compressed was overlooked. From careful re-examination of the original species we give a revised measurement of the sporidia 6-9 (mostly 7-8) x 4-5½ μ, and about 3½ μ thick.

What is evidently the same thing has since been found on dead stems of Amorpha fruticosa, Rooks Co., Kans. (Bartholomew, 2928). On this host the sporidia are somewhat larger, 8-10½ x 5-5½ μ, and rather more distinctly compressed (3-3½ μ thick). Species from the same locality and collector on Negundo aceroides have sporidia 8-10 x 4-5, 3 μ thick. The perithecia on these hosts are ovate-globose, here and there densely crowded and subconfluent, and range from 250-350 μ diam. Ostiolum papilliform or conic-papilliform.

Cucurbitaria arizonica E. & E.—On dead branches of Acacia grayii, Tucson, Arizona, June, 1891. (David Griffiths).

Perithecia erumpent-superficial, in patches ¾ mm. in extent, or thickly scattered, globose, brownish-black, about ½ mm. diam., with a papilliform ostiolum, collapsing but not deeply. Asci cylindrical, p. sp. 75-80 x 12 μ, short-stipitate, paraphysate. Sporidia mostly obliquely uniseriate, oblong-elliptical, 3-septate and submuriform, slightly constricted at the middle septum, straw-yellow becoming dark brown, 14 x 6-8 μ.

Pleospora alismatis E. & E.— On dead stems of Alisma plantago. South Dakota (David Griffiths).

Perithecia scattered, erumpent and hemispheric-prominent, or strongly convex, about 200 μ diam. Asci clavate-cylindrical, short stipitate, 90-100 x 12-15 μ, with abundant filiform paraphyses. Sporidia uniseriate or partially biseriate above, fusoid-oblong, inequilateral, 7-9-septate, one or more of the cells divided by a partial longitudinal septum, 22-77 x 10-12 (exceptionally 15) μ.

The distinctly inequilateral sporidia attenuated towards each end are characteristic.

Physalospora lepachydis E. & E.— On living but partly faded leaves of Lepachys columnaris. Billings, Montana, Aug. 1898. (Williams & Griffiths).

Perithecia epiphyllous, gregarious, semi-erumpent, about ¼ mm. diam., with a papilliform ostiolum soon perforated. Asci cylindrical, short-stipitate, paraphysate, 60-65 x 8, or when the sporidia are partly biseriate, 10-12 μ broad. Sporidia mostly uniseriate, elliptical with the ends broadly rounded, often with two large nuclei, 10-12 x 5-6 μ.

PHYSALOSPORA MINIMA E. & E.— On dead canes of Rubus strigosus. Tuskegee, Ala. (Prof. G. W. Carver).

Perithecia evenly scattered, subcuticular, the minute ostiolum barely rupturing the epidermis, small (80-90 μ). Asci oblong-clavate, short-stipitate, paraphysate, 40-50 x 6 μ. Sporidia irregularly crowded in the asci, elliptical, mostly narrowed at the ends, 9-11 x 3-4 μ.

Smaller in all parts than P. vagans E. & E. var. rubi on the same host.

PLEOSPORA KANENSIS E. & E.— On dead stems of Melilotus alba. Rooks Co., Kansas, June, 1901. (Bartholomew, 2888).

Perithecia scattered, subcutaneous, ovate-globose $\frac{1}{4}$-$\frac{1}{3}$ mm. diam., raising the closely appressed cuticle into pustules pierced at the apex by the conical or short-cylindrical ostiolum, finally collapsing to cup-shaped. Asci clavate, rounded above, gradually narrowed below to the short, nodular stipe-like base; paraphyses stout (3 μ thick), septate, hyaline; sporidia biseriate, oblong-obovate, rounded above, narrowed below and bent a little to one side, 5-6-septate, with a longitudinal septum more or less distinct running through 2 or 3 of the middle cells, slightly constricted in the middle, bright straw-yellow, 20-22 x 7-9 μ.

This comes very near P. meliloti Rabh. on the same host, but the shorter clavate asci, the smaller sporidia and short-cylindrical ostiolum may perhaps separate it. P. dura Niessl has larger perithecia which do not collapse.

LEPTOSPHÆRIA ASTERICOLA E. & E.— On dead stems of Aster multiflora. Rooks County, Kansas, June, 1901. (Bartholomew, 2885).

Perithecia erumpent-superficial, globose, becoming depressed or collapsing to cup-shaped, subseriately arranged, sometimes 2-3 confluent, ostiolum papilliform, more distinct in the collapsed perithecia. Asci subcylindrical, short-stipitate, paraphysate, 80-110 x 7-8 μ; sporidia biseriate, fusoid, slightly curved, 3-septate, not constricted, straw-colored, 30-40 x 3-4 μ. Pycnidial perithecia resembling the ascigerous but not collapsing, sporules oblong or oblong-elliptical, hyaline, 6-8 x $2\frac{1}{2}$-3 μ, uniseptate.

Allied to L. fusipora Niessl and L. leptospora DeNot., but both have much shorter, broader sporidia and the latter has the pycnidial spores continuous.

METASPHÆRIA SUBSERIATA E. & E.— On dead culms of Panicum virgatum, Rooks County, Kansas, March, 1901. (E. Bartholomew, 2841).

Perithecia buried in the unchanged substance of the culm, raising the epidermis into distinct pustules pierced by the papilliform ostiolum, depressed-globose, $\frac{1}{3}$-$\frac{1}{2}$ mm. diam., scattered

singly or arranged in short series and covered by the blackened epidermis, then more or less confluent. Asci cylindrical, sessile, obscurely paraphysate, 60-75 x 6-7 μ, mostly curved; sporidia biseriate, fusoid, curved, faintly 1-3-septate, not constricted, yellowish-hyaline, 30-35 x 2½-3 μ.

In the species examined most of the sporidia showed only one septum across the middle, but in some two additional septa were visible.

Melanconis (Melanconiella) nyssægena E. & E.— On dead limbs of Nyssa multiflora, Newfield, N. J., October 23, 1900.

Stroma cortical, formed of the scarcely altered substance of the bark, circular, depressed-globose, about 2 mm. diam., raising the bark into little pustules which are ruptured at the apex by the fascicle of black, smooth, rounded ostiola. Perithecia circinate, globose, black and shining inside, about ½ mm. diam., sporidia uniseriate, elliptical or oblong-elliptical, uniseptate and constricted, becoming olive-brown, 30-40 x 12-20 μ (mostly 12-15 μ).

Phyllachora serialis E. & E.— On Spartina stricta. Pacific Grove, Cal. July, 1900. (Robt. M. Horner, 1487).

Stroma seriate between the nerves of the leaf, punctiform and buried at first, then suberumpent and more or less confluent for 2-3 mm. The separate stromata are about ½ mm. in diam., and the ascigerous cells remain sunk in the parenchyma of the leaf. Asci densely fasciculate, clavate-cylindrical, short-stipitate, 75-80 x 12-15 μ. Sporidia obliquely uniseriate or subbiseriate, ovate, hyaline, continuous, 10-12 x 5-6 μ.

Botryosphæria hysterioides E. & E.— On leaves of Hesperaloe dayi, Peyotes, Mexico. April 27, 1900. (Dr. Wm. Trelease).

Spots oblong-elliptical, soon confluent for 10 or more cm., reddish-brown, becoming greyish-white with a reddish-brown border. Perithecia globose 200-300 μ diam., lying 2-4 together in a narrow hysteriform stroma acute at each end, and ½-¾ mm. long, covered by the thin, whitened epidermis which is soon ruptured by the obscurely papilliform ostiolum. Asci broad clavate oblong, 75-100 x 25-30 μ, contracted below into a short stipe-like base; paraphyses inconspicuous and obscure. Sporidia oblong, slightly narrowed at the ends, with granular contents, with or without a large vacuole, hyaline with a slight yellowish tinge, 25-30 x 8-12 μ.

On the same spots are scattered perithecia with sporules of the Diplodia type, 5-7 x 4-5 μ (Diplodia hesperaloes E. & E.); Others with globose, brown, continuous, 6-7 μ sporules (Coniothyrium sp.), others again with oblong or subcylindrical, hyaline, 3-5 (mostly 3-) septate sporules 60-80 x 8-12 μ (Phleospora

minor E. & E.) These three forms of stylospores are apparently generically connected with the ascigerous form. This last mentioned may be only a more mature stage of growth of Septoria megaspora Speg. which is described as having uniseptate spores and perithecia not on spots. The fungus on Hesperaloe has typically 3-septate spores and the spotted leaves are very conspicuous. Dr. Trelease has sent on Agave sp. from Mexico, a fungus that in some respects comes nearer Spegazzini's plant but in this, too, the spores are 6-8-septate. Septoria megaspora Speg. seems more properly a Phleospora.

Dothidea yuccæ E. & E.— (Phyllachora yuccæ E. & E. Torr. Bull. 22:440. 1895.) On leaves of Yucca angustifolia, Manitou, Colorado. July, 1895. (Prof. E. T. Harper, 474).

Stromata gregarious amphigenous, small, sunk in the substance of the leaf and covered by epidermis which is soon ruptured, mostly oblong, $\frac{1}{2}$-$1\frac{1}{2} \times \frac{1}{2}$ mm., surrounding and blackening the leaf for $\frac{3}{4}$ cm. in extent, the adjacent parts of the leaf being entirely free from the fungus. Ascigerous cells numerous, small. Asci oblong-cylindrical, 75-80 x 10-12 μ. Sporidia mostly biseriate, ovate-oblong, yellow-brown, uniseptate and constricted, 12-15 x 5-6 μ.

This is evidently the mature state of the fungus cited above, the larger dimensions of the asci being due to their more perfect development.

Hysterographium nucicola (Schw.) Syn. N. A. F. 2080. (H. hians E. & E. in Herb.)—On old hickory-nuts lying on the ground. Newfield, N. J., April 7, 1902.

Gregarious elongated $\frac{3}{4}$-1 mm. long by nearly $\frac{1}{2}$ mm. wide, lying in various directions on the matrix, shining black, smooth, not distinctly striate, straight or curved, ends obtuse, lips distinctly gaping. Asci oblong-clavate, paraphysate, 60-70 x 12-15 μ. Sporidia ovate-oblong biseriate, hyaline, becoming dark brown, 4-6-septate, with a longitudinal septum running through 1-3 of the cells, sometimes distinctly constricted in the middle but often scarcely constricted at any of the septa, 15-22 x 6-9 μ.

In the shape of the perithecia and the partly open lips this differs from the description and specimens of H. nucicola Schw. in Herb. Schw. at the Acad. Nat. Sci. Philadelphia. The surface of the nut is more or less blackened around each group of perithecia but this is more like a discoloration than a crust.

PUCCINIA PECKII (DeToni) Kellerm. N. N.

Infection Experiments and Correction of Labels, O. F.

W. A. KELLERMAN

A great quantity of aecidium on Onagra biennis (L.) Scop. (Oenothera biennis L.) was noticed the past season adjacent westward to a still larger area, two or three acres in extent, of Carex trichocarpa, in a broad and partially drained swail a few miles south of Columbus. This suggested the probable connection of the abundant Rust on the Sedge with the equally abundant Aecidium on the Evening Primrose.

The Rust seemed to be the form usually called Puccinia caricis, or Puccinia caricina, of wide distribution on this host. Under the name of Puccinia caricina specimens were issued in the second fascicle of Ohio Fungi as No. 28; the aecidium on Onagra was issued as No. 17 in the same set of exsiccata.

Inoculation experiments have just been completed, sowings of the teleutospores from the Carex producing abundant spermogonia and aecidia on the Onagra. I am able to state also that Dr. Arthur has at the same time carried out similar infection experiments with material which I furnished from the Carex growing in the area referred to above. He has also used with similar positive results spores on this host from many localities in the states of Iowa and Wisconsin, as stated in a letter just received. This confirmation of results obtained by each of us is very gratifying, and it is with Dr. Arthur's approval that I propose the new combination as above.

It becomes necessary, therefore, to correct the labels of O. F. Nos. 17 and 28; they should be as follows:

17. Puccinia peckii (DeToni) Kellerm. Aecidiospores.
28. Puccinia peckii (DeToni) Kellerm. Teleutospores.

NOTES ON THE NORTH AMERICAN MYCOLOGICAL LITERATURE OF 1901

W. A. KELLERMAN

The activity of the American mycologists is shown in the very large number of important contributions published in magazine or book form. A large list of new species has been described by Ellis & Everhart, Thaxter, Earle, Peck, Griffiths, A. L. Smith, Dietel and Holway, Arthur, Tracy, Clements, Olive, and others. Lloyd is continuing the generous distribution of his Mycological Notes, mostly with illustrations.

Important contributions in Morphology and Cytology have also appeared. Several text-books have been issued, a fair amount of space generally being allotted to Fungi. One that deserves special mention here is Campbell's University Text-book of Botany[1] which will doubtless prove invaluable to the general student. Nearly four pages are devoted to the Myxomycetes, six to Bacteria, and forty-seven pages to the Fungi. A good general discussion introduces each subject; then follows the more recent classification with life histories of many representatives, illustrated with numerous and very satisfactory figures. Half-tones, the fad of the day, but indispensable in illustrating some subjects, do not occur in this portion of the text.

In Bacteriology we have an admirable treatise by Conn,[2] no less indispensable to the professional botanist than to the amateur and general reader. The simple, clear style, free from technical terms, makes this an attractive book, full as it is of up to date general Bacteriology, given in chapters that deal with the Nature of Bacteria, Fermentation, The Manure Heap and Sewage, Bacteria in the Dairy, and Parasitic Bacteria. Other topics amply treated are the Origin of Soil, Bacteria in Water, Bacteria relative to Farm Products, Preservation of Foods, Resistance Against Bacteria, Anthrax, Turberculosis and other Bacterial Diseases, and Disinfection.

For students and amateurs interested in Mushrooms the treatises of Professor Atkinson[3] and Nina L. Marshall[4] and also Peck's Report of the State Botanist for 1900[5] are important and admirable, even sumptuous publications. In this group is manifest the indispensable aid of camera and brush. The Marshall book is designed for beginners, and is to be highly commended. Even moderate concentration and patience on the part of amateurs will yield good returns, and accurate as well as useful knowledge of our higher fungi may be gained with the book and the specimens in hand. Atkinson's book is more extensive and ought to be in the hands of all interested in Mushrooms, the amateur no less than the student and professional botanist. The perfect pictures of the species are accompanied by plain scientific

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(1) A University Text-book of Botany. Douglass Houghton Campbell. New York. The Macmillan Company. 1902. Pp. XV and 579.

(2) Agricultural Bacteriology. H. W. Conn. Philadephia. P. Blakiston's Son & Co. Pages VI and 412. Price $2.50. 1901.

(3) Mushrooms edible, poisonous, etc. George Francis Atkinson. Ithaca, N. Y. Andrews & Church. Pages 322. With 230 photographs and colored plates.

(4) The Mushroom Book, A Popular Guide. Nina L. Marshall. New York. Doubleday, Page Co. Pages 167. With many illustrations in color and black and white, photographer from nature. Price $3.00.

(5) Reprinted from the 54th Annual Report of the New York State Museum.

text. The scope of the work can be seen by the more important chapter headings, as Form and Character of the Mushrooms, Development of the Mushroom, the Agarics (and other groups), Collection and Preservation of the fleshy Fungi, Cultivation of Mushrooms, Recipes for Cooking Mushrooms, Chemistry and Toxicology of Fungi, Analytical Key, and Glossary. Peck's fine and well-illustrated Reports, this as well as those of previous years, cannot be too highly commended, and fortunate are those who are successful in procuring copies. Besides the new species described in this Report, including a synoptical table of New York species of Trametes, pp. 173-186 are devoted to an account of Edible Fungi, accompanied by thirteen double-page colored plates.

INDEX TO NORTH AMERICAN MYCOLOGY

Alphabetical List of Articles, Authors, Subjects, New Species and Hosts.

W. A. KELLERMAN

This installment of the Index represents the mycological literature of North America for the entire year 1901. Authors are asked kindly to assist in prompt publication of the index of their articles hereafter by forwarding copies of Magazines which contain the same or of separates, with original paging, volume, date, etc.

The possible omissions for 1901, or failure of prompt listing of articles, authors and subjects in the future, will be much regretted, and an earnest request is hereby expressed that attention may be called immediately to such items by the authors themselves.

Separates will be issued *printed on one side of page only;* the opposite blank page serving for corrections or additional entries or notes by those using the list.

Working mycologists and those in charge of libraries can with very little labor, if desired, *use the reprints for card-indexing,* the separate items being clipped from the pages and pasted on the library cards.

It is designed to issue separately, as indicated above, once a year, the accumulated references properly placed in alphabetical order.

ABIES alba and A. balsamea (Balsams), a new disease of. (Trimmatostroma abietina Doherty.) An. Rep. Ontario Agr. Coll. & Exp. Farm, 1900, 26:20. 1901.

ABIES lasiocarpa Nutt., host to Peridermium ornamentale Arthur sp. nov. Bull. Torr. Bot. Club, 28:665. Dec. 1901.

ACANTHOSTIGMA conocarpi Tracy & Earle n. sp., on Conocarpus sericea (DC) Frank. Bull. Torr. Bot. Club, 28: 186. March 1901.

ACER glabrum, host to Platystomum aceris Tracy & Earle n. sp. Pl. Bakerianae, 1: 32. 22 Feb. 1901.

ACER rubrum, decaying wood, matrix to Flammula alnicola marginalis Peck n. var. An. Rep. N. Y. State Mus. 54: 167. 1901.

ACHILLEA millefolium, dead stems, host to Pleospora megalotheca Tracy & Earle n. sp. Pl. Bakerianae, 1: 35. 22 Feb. 1901.

ACOMPSOMYCES Thaxter nov. gen. (Laboulbeniaceae.) Proc. Amer. Acad. Arts & Sci. 37:37. June 1901.

ACOMPSOMYCES corticariae Thaxter nov. sp., on elytron of Corticaria sp. Proc. Amer. Acad. Arts & Sci. 37:37. June 1901.

ACROSTALAGMUS tetraclados A. L. Smith sp. n., on decaying Agaric. Jour. Linn. Soc. 35:11. 1 April 1901.

AECIDIUM and Puccinia on Common Sunflower, stages of one and the same species, culture experiments, by M. A. Carleton. Science, N. S. 13:250. 15 Feb. 1901.

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GROUND in woods, matrix for Cortinarius sublateritius Peck n. sp. An. Rep. N. Y. State Mus. 54:151. 1901.

GROUND in mixed woods, matrix for Gomphidius flavipes Peck n. sp. An. Rep. N. Y. State Mus. 54:153. 1901.

GROUND in thin woods, matrix for Cortinarius torvus nobilis Peck n. var. An. Rep. N. Y. State Mus. 54:168. 1901.

GROUND, rich, matrix to Naucoria striata Clements & Shear n. sp. Univ. Nebr. Bot. Surv. 5:11. 30 March 1901.

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JUNIPERUS, smooth bark of dead twigs, host to Tryblidiopsis occidentalis Earle, sp. Pl. Bakerianae, 2:9. 25 March 1901.

JUNIPERUS monosperma, bark, host to amphisphaeria juniperi Tracy and Earle n. sp. Pl. Bakerianae 1:30. 22 Feb. 1901.

JUNIPERUS monosperma, decorticated branches, host to Lophiostoma occidentalis Tracy & Earle n. sp. Pl. Bakerianae, 1:31. 22 Feb. 1901.

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NOTES

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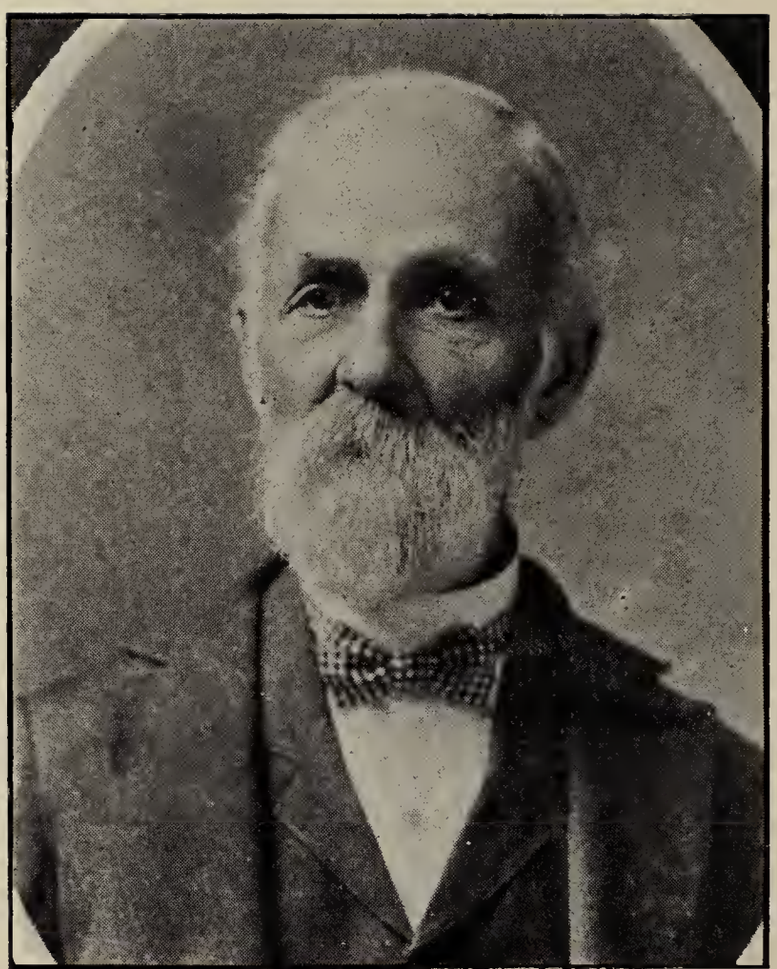

Very truly yours
J. B. Ellis

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MORCHELLAE — THE MORELS

A. P. MORGAN.

With plentiful showers in the springtime the Morels grow abundantly in my vicinity. I have observed them critically for many years and have taken much pains to recognize as many as possible of the species that have been described. I invariably arrive at the same conclusion: that there are but two species. In the same spots the species vary much in form, size and color from year to year in accordance with the difference in warmth, sunshine and shower. The spores vary somewhat in different specimens but there is nothing characteristic in their variation. No paraphyses are present in the hymenium of either species; I do not recognize immature or undeveloped asci as paraphyses.

My bundles of specimens gathered in different years bear a variety of labels as I look them over, but they are all assembled in my mind under two names: The first is MORCHELLA ESCULENTA, the second MORCHELLA PATULA; in the first the pileus is wholly adnate to the apex of the stipe; in the second the lower part of the pileus is separate from the stipe. The difference in the plants under each species do not seem to me sufficient to establish good varieties even.

Judging by the plants growing in this region I venture to present the synonomy of the two species as follows:

I. MORCHELLA ESCULENTA.

1. Boletus esculentus rugosus, etc., Tournefort. I. R. H. 1719.
2. Phallus esculentus. Linnaeus. Sp. Plant. 1753.
3. Morchella esculenta. Persoon. Tent. disp. 1797.
4. Phallus crassipes Ventenat. Diss. Ph. 1798.

5. Morchella conica.
   Persoon, Champ. com. 1818.
6. Morchella deliciosa.
   Morchella elata.
   Fries. Syst. Myc. 1823.
7. Morchella prierosa.
   Krombholz. Schw. 183-.
8. Morchella distans.
   Fries. S. V. Scand. 1849.
9. Morchella angusticeps.
   Peck. Bulletin N. Y. Mus. 1887.

II. MORCHELLA PATULA.

1. Phallus, capitulo conico, subtus patente, etc.
   Gleditsch. Meth. Fung. 1753.
2. Phallus patulus.
   Schrank, Baier. Fl. 1789.
   Gmelin. Syst. Nat. 1791.
3. Phallus squamosus.
   Ventenat. Diss. Ph. 1798.
4. Helvella hybrida.
   Sowerby, Eng. Fung. 1799.
5. Morchella semilibera.
   Morchella rimosipes.
   Lam. & Dec. Fl. Fr. 1805.
6. Morchella fusca.
   Persoon. Myc. Eur. 1822.

If any mycologist can dress one or more of these synonyms up in proper specific characters, I will be pleased to see it done.

A NEW SPECIES OF RHYTISMA

W. A. KELLERMAN.

At West Mansfield, Logan County, Ohio, July, 1901, a thicket several acres in extent of Ilex verticillata was inspected and found to be universally and abundantly affected with a Rhytisma, which though immature seemed to be an undescribed species. Specimens representing the stage are issued in Ohio Fungi, No. 76. Mr. Ellis received the same form immature from Professor Carver, 292, on the same host (apparently), at Tuskegee, Alabama. He also says: "In the specimens issued in N. A. F. 3134, and F. Col. 535 collected on the same host in Vigo County, Indiana, by Professor Underwood, the stromata are amphigenous but more prominent below, instead of being *concave,* a character not found in any other species of Rhytisma on Ilex."

The accompanying figures illustrate the important characters of the form in question. At St. in Plate 1 is shown a diagramatic transverse-section in which the concavity of the underside of the stroma is pronounced. On the leaf in the same figure are shown a number of stromata of varying sizes, most of which are ruptured above in the somewhat regular manner. Figures represent the characteristic asci (A), accompanied by the slender elongated paraphyses (P). The ascus to the left contains ascospores, the others are empty or immature. The spores are also shown on the same Plate (S). Mature speci-

Rhytisma concavum Ell. & Kellerm. sp. n.

mens were obtained early in June 1902, and are issued simultaneously in Ohio F., No. 75.

The technical description of the proposed species is as follows:

RHYTISMA CONCAVUM Ell. & Kellerm. n. sp. — Stromata epiphyllous but also visible below, forming thin, black, thickly scattered blotches, 1-4 mm. diameter, orbicular or subangular, the surface uneven, surrounded by a pale yellowish, narrow margin, more or less concave below and the margin broader and paler, at maturity rupturing by radiating fissures, in the oblong forms a central elongated fissure also occuring and in the larger ones a circular area being cut out, the hygroscopic lobes strongly recurved when moist exposing a light yellowish, later sordid yellow then blackish disk. Asci 80-110 x 8-10 μ, oblanceolate, much elongated below, strongly acute at the apex, accompanied by abundant slender and at the tips. Spores 20-35 x 2-3 μ hyaline, nearly straight to strongly elongated mostly flexuous paraphyses about 4 μ wide, usually enlarged curved, slightly thicker at one end in which are large clear granules.

On leaves of Ilex verticillata; spores mature in June. Type specimen in Herb. W. A. Kellerman.

CULTURES OF UREDINEAE IN 1900 AND 1901

BY J. C. ARTHUR.

The first especially important cultures of plant rusts made by the writer were conducted in 1899, and the results published in the Botanical Gazette for April 1900 (29:268-276). During the two following years only a small number of cultures were made, and for a number of reasons the results have not been put into type until now. This article is, therefore, the second of the series.

The method pursued in most cases in making the cultures has been stated in the preceding article. It was, in brief, to remove spores with a knife from the host, and place them on a dampened plant which it is desired to infect. The plants are grown in pots. After the spores are sown the whole plant is covered with a belljar and kept shaded for a day, or sometimes two days. The plants are then uncovered and placed on a greenhouse bench, where they remain until the period of observation is ended.

In 1900 the only cultures made that require mention were with Euphorbia rust. The results supplement and confirm those made in 1899 (Bot. Gaz. 29:270-271). It was again found that spores from Euphorbia nutans would grow upon the same species, but not upon E. maculata. It seems quite probable that this rust, Uromyces euphorbiae C. & P. possesses specialized forms. The record is as follows:

July 21, Aecidiospores from Euphorbia nutans sown on E. nutans; July 30, uredo.

July 21, Aecidiospores from E. nutans sown on E. maculata; no infection.

July 21, Uredospores from E. nutans sown on E. nutans; July 31, uredo.

July 21, Uredospores from E. nutans sown on E. maculata; no infection.

There are two ways in which the right species of plant may be selected on which to make a sowing of a heterœcious rust. One is to sow upon any species known to harbor an aecidium, hoping after making a smaller or larger number of tests to hit upon the right one. This method in my own work has led to very meagre results, so slight, in fact, as scarcely to be worth the trouble. During 1901 the following rusts were tried in this blind way, all being very common forms in this vicinity, only to ascertain that wrong plants were selected for the sowings or else the spores did not gain entrance possibly through defective treatment.

Puccinia emaculata Schw. on Panicum capillare was sown twice on Onagra biennis, with no infection.

Puccinia caricina DC. A form of this aggregate on Carex tetanica was sown on Erigeron annuus and Onagra biennis, with no infection.

Puccinia atkinsoniana Diet. on Carex lurida. The name of this species was unknown at the time the cultures were made, but through the kindness of Professor Atkinson, it has since been compared with type material and its status definitely settled. It was sown on Aster cordifolius, Aster paniculatus, Solidago serotina, Xanthium canadense, Ambrosia trifida, Impatiens aurea and Ribes cynosbati, with no infection.

Puccinia peckii (DeT.) Kellerm. on Carex trichocarpa. The names of both host and rust were unknown at the time the cultures were made. The host has since been found in fruit, and the rust has been successfully grown by Professor Kellerman and also the writer, as recorded in the preceding number of this Journal (8:20). Spores were sown on Aster cordifolius, Aster paniculatus, Solidago serotina, Solidago canadensis, Ribes cynosbati, Erigeron annuus, and Eupatorium perfoliatum, with no infection.

Puccinia rubigo-vera DC. A form of this aggregate of Bromus ciliatus was sown on Hepatica acuta and Viola cucullata, with no infection.

During 1901 the culture of seven species was successfully carried out. Three of these were in confirmation of previous work, as follows:

Puccinia caricis (Schum.) Reb. April 25, teleutospores from Carex stricta were sown on Urtica gracilis; May 2, spermogonia appeared, and May 5, æcidia.

Puccinia angustata Pk. May 3, teleutospores from Scirpus atrovirens were sown on Lycopus americanus; May 11, Spermogonia appeared, and May 20, aecidia.

Puccinia poculiformis (Jacq.) Wettst. May 2, teleutospores from Cinna arundinacea were sown on Berberis vulgaris; May 13, spermogonia appeared, and May 22, aecidia.

Of the remaining four species, all Carex rusts, the clues which led to successful cultures were obtained in the field, and have been mentioned and explained in an article in the Botanical Gazette for January of the present year. For three of these species it seems necessary to propose new names. All are yet insufficiently studied to determine their exact boundaries.

PUCCINIA ALBIPERIDIA sp. nov.

O. Spermogonia amphigenous, small, pale orange.

I. Aecidia hypophyllous, small in circular clusters; substratum scarcely thickened; peridia white, low, margin incised, reflexed; spores pale yellow when fresh, subglobose, 15-20 μ in diameter; wall thin, smooth.

II. Uredosori hypophyllous, small, round or oblong, soon naked; uredospores oblong, small, echinulate.

III. Teleutosori hypophyllous, globose or oblong, pulvinate, dark brown. Teleutospores oblong-cuneate, 17-24 by 32-45 μ; apex semicircular or obtuse, thickened to half the length of the upper cell; side walls thin, slightly or not constricted; pedicel slender, colored, as long as the spore or shorter.

On Ribes cynosbati L. grown June, 1901 from teleutospores collected on Carex pubescens Muhl, Lafayette, Ind., April 30, 1901.

This species is characterized by the white or nearly white aecidia, which may be called Aecidium albiperidium. They are in marked contrast with the deep orange aecidia that are so abundant throughout North America on various species of Ribes. The only field collection known to the writer is one on Ribes gracile made at Decorah, Iowa, by E. W. D. Holway on June 2, 1901. When dry and faded the two forms of aecidia are much alike. Cultures were made as follows:

May 16, teleutospores from Carex pubescens sown on Aster paniculatus; no infection.

May —, teleutospores from Carex pubescens sown on Ribes cynosbati; May 30, spermogonia; June 9, aecidia.

PUCCINIA CARICIS-ERIGERONTIS sp. nov.

O. Spermogonia epiphyllous, prominent, golden yellow.

I. Aecidia hypophyllous, in circular clusters; substratum slightly thickened; peridia short, much divided and recurved; aecidiospores yellow when fresh, isodiametric, 12-15 μ in diameter, wall thin, minutely tuberculate.

II. Uredosori hypophyllous, small, oblong, tardily naked; uredospores brownish-yellow when fresh, oval or obovate, small, 12-18 by 16-22 μ wall thin, thickly echinulate, pores 3 or 4 scattered.

III. Teleutosori hypophyllous, small, oblong, pulvinate, blackish brown, ruptured epidermis evident; teleutospores clavate or oblong-clavate, 14-20 by 35-42 μ; septum above the middle; apex obtuse or truncate, much thickened; side walls thin; pedicel firm; colored, one fourth or one half the length of the spore.

On Erigeron annuus (L.) Pers. and Carex festucacea Willd., Lafayette, Ind.

This species is without doubt the Caeoma (Aecidium) erigeronatum Schw. (Trans. Amer. Phil. Soc. 4:292), and probably occurs on many species of Erigeron throughout North America. Cultures were made as follows:

April 25, teleutospores from Carex festucacea sown on Erigeron annuus; May 2, spermogonia; May 11, aecidia.

April 25, teleutospores from C. festucacea sown on Taraxacum taraxacum; no infection.

PUCCINIA CARICIS-ASTERIS sp. nov.

O. Spermogonia epiphyllous, yellow, punctiform, sunken in tissue of the leaf.

I. Aecidia hypophyllous, collected in groups on slightly swollen yellow or purplish spots, low, margin much divided and recurved; aecidiospores subglobose, 12-17 μ in diameter, wall thin, minutely roughened.

II. Uredosori hypophyllous, oblong; uredospores oblong or obovate, 12-16 by 18-22 μ; wall thin, echinulate; pores few, scattered.

III. Teleutosori hypophyllous, oblong to oblong-linear, prominent, soon naked, dark brown, ruptured epidermis noticeable; teleutospores oblong or clavate-oblong, 16-22 by 48-56 μ.; apex rounded, greatly thickened; pedicel slender, colored, half the length of the spore.

On Aster paniculatus Lam., Aster cordifolius L. and Carex foenea Willd. The latter collected at Decorah, Iowa, Dec. 30, 1900 by E. W. D. Holway, and at Lafayette, Ind., April 30, 1901, by the writer.

The common aecidium, found on many species of Aster, is probably included in this species, but not the aecidia found on Erigeron, Solidago or Geranium. It is the same as Aecidium asterum Schw. The uredospores and teleutospores are very similar to those of the preceding species, and are suggestive of biological species. Much work, however, must be done before an approximately accurate statement can be made regarding the Carex species having aecidia upon Compositae. Data for the present separation was obtained as follows:

April 25, teleutospores from Carex foenea (Iowa) sown on Erigeron annuus; no infection.

April 29, teleutospores from C. foenea (Iowa) sown on Erigeron annuus; no infection.

May 4, teleutospores from C. foenea (Indiana) sown on Aster paniculatus; May 13, spermogonia; May 22, aecidia.

May 4, teleutospores from C. foenea (Indiana) sown on Erigeron annuus; no infection.

May 11, teleutospores from C. foenea (Indiana) sown on Geranium maculatum; no infection.

May 11, teleutospores from C. foenea (Iowa) sown on Erigeron annuus; no infection.

May 13, teleutospores from C. foenea (Iowa) sown on Aster paniculatus; May 20, spermogonia; May 28, aecidia.

May 13, Teleutospores from C. foenea (Iowa) sown on Solidago canadensis; no infection.

May 13, teleutospores from C. foenea (Indiana) sown on Aster cordifolius; May 23, spermogonia; May 30, aecidia.

May 13, teleutospores from C. foenea (Indiana) sown on Solidago canadensis; no infection.

Puccinia bolleyana Sacc.

This species is first mentioned in the Amer. Mo. Micr. Journal for 1889 (10:169), with an illustration but no description. It was first described in Saccardo's Sylloge (9:303), two years later. It was collected originally on a sterile sedge, presumably a Carex, growing from two to four feet high. The type locality is within two miles of Lafayette, Ind., and only an area ten or fifteen feet across supports the sedge, but almost every leaf over this area has been thickly covered with the rust each season since its discovery. Last year it was found in another locality about four miles distant. It has not been reported from any other place in this or other states, but a specimen sent from Kenosha county, Wisconsin, by Dr. J. J. Davis has proved to be this species. The species is especially characterized by the large teleutospores, and the brown, fusiform uredospores. Within the last month a fruiting specimen of the host has been found upon the type area, which shows it to be Carex trichocarpa Muhl. This in brief is the history of the rust up to the time of making the following cultures. Whether the aecidium, which has been found to grow on Sambucus canadensis, is the wide-spread Aecidium sambuci Schw., or not, it would be premature to say.

May 2, teleutospores from Carex trichocarpa sown on Sambucus canadensis; May 10, spermogonia; May 22, aecidia.

May 3, teleutospores from C. trichocarpa sown on Xanthium canadense; no infection.

May 3, teleutospores from C. trichocarpa sown on Impatiens aurea; no infection.

June 15, aecidiospores from Sambucus canadensis sown by Wm. Stuart on Carex trichocarpa; July 16, abundant uredospores first noticed, but probably not the first sori to appear.

SUMMARY.

During 1900 and 1901 the life cycle of the following eight species of rusts was demonstrated by cultures. Of these successful cultures, the first four have been previously reported, while the cycle of the second four is here reported for the first time.

1. UROMYCES EUPHORBIA C. & P. and Aecidium euphorbiae Amer. Auct. with sowings of aecidiospores and uredospores.
2. PUCCINIA CARICIS (Schum.) Reb. and Aecidium urticae Schum. with sowings of teleutospores.
3. PUCCINIA ANGUSTATA Pk. and Aecidium lycopi Ger. with sowings of teleutospores.
4. PUCCINIA POCULIFORMIS (Jacq.) Wettst. and Aecidium berberidis Pers. with sowings of teleutospores.
5. PUCCINIA ALBIPERIDIA Arth. and Aecidium albiperidum Arth. with sowings of teleutospores.
6. PUCCINIA CARICIS-ERIGERONTIS Arth. and Aecidium erigeronatum Schw. with sowings of teleutospores.
7. PUCCINIA CARICIS-ASTERIS Arth. and Aecidium asterum Schw. with sowings of teleutospores.
8. PUCCINIA BOLLEYANA Sacc. and Aecidium sambuci Schw. (?) with sowings of teleutospores and aecidispores.

Purdue University, Lafayette, Ind., June, 1902.

OHIO FUNGI. FASCICLE IV

W. A. KELLERMAN, OHIO STATE UNIVERSITY.

The following species are included:

61. Aecidium cimicifugatum Schw., on Cimicifuga racemosa (L.) Nutt.
62. Aecidium ranunculi Schw., on Ranunculus abortivus L.
63. Albugo candidus (Pers.) Kuntze, on Camelina sativa (L.) Crantz.
64. Cercospora althaeina Sacc., on Althaea rosea Cav. (cultivated).
65. Cercospora hydropiperis (Thuem.) Speg., on Polygonum punctatum Ell.
66. Cintractia junci (Schw.) Trel., on Juncus tenuis Willd.
67. Gymnoconia interstitialis (Schlecht.) Lagh., on Rubus occidentalis L.
68. Plasmopara halstedii (Farl.) Berl. & De Toni, on Vitis sp., cultivated.
69. Puccinia caricis (Schum.) Reb., on Urtica gracilis Ait.
70. Puccinia caricis (Schum.) Reb., on Carex stricta Lam.
71. Puccinia caricis (Schum.) Reb., on Carex riparia Curtis.
72. Puccinia mariae-wilsoni Clint., on Claytonia virginica L.
73. Puccinia taraxaci Plowright, on Taraxacum taraxacum (L.) Karst.
74. Puccinia taraxaci Plowright, on Taraxacum erythrospermum Andrz.
75. Rhytisma concavum Ell. & Kellerm., on Ilex verticillata (L.) Gray.
76. Rhytisma concavum Ell. & Kellerm., on Ilex verticillata (L.) Gray.
77. Septoria astericola E. & E., on Aster cordifolius L.
78. Septoria kalmiaecola (Schw.) B. & C., on Kalmia latifolia L.

79. Urocystis carcinodes (B. & C.) Fisch., on Cimicifuga racemosa (L.) Nutt.
80. Venturia orbicula (Schw.) C. & P., on Quercus prinus L.

Thanks for assistance are extended to Messrs. Arthur, Clinton, Ellis, Lloyd, Morgan, Ricker, and to all whose names appear on the labels as collectors.

61. Aecidium cimicifugatum Schw.

On Cimicifuga racemosa (L.) Nutt.
Sugar Grove, Fairfield Co., Ohio. May 30, 1902.
Coll. W. A. Kellerman.

"Caeoma (Aecidium) Cimicifugatum, L. v. S.....
"C. maculis magnis orbiculatis luteis bullatis. Pseudoperidiis in pagina inferiori, concentricis, longissimis, cylindricis, apice primum clausis, demum subfimbriatis. Sporidiis aurantiacis albescentibus." L. D. de Schweinitz, Transactions of the American Philosophical Society, Philadelphia, 4:293. 1834.

62. Aecidium ranunculi Schw.

On Ranunculus abortivus L.
Brush Lake, Champaign Co., Ohio. May 4, 1902.
Coll. J. H. Schaffner and F. J. Tyler.

"Aecidium.
"Ranunculi (abortivi). Frequens in foliis rotundis radicalibus, expers fere macula." L. D. de Schweinitz, Synopsis Fungorum Carolinae Superioris (excerpta), p. 41, No. 440, 1822. (Schrift. d. Nat. Gesellschaft zu Leipzig.)

63. Albugo candidus (Pers.) Kuntze.

On Camelina sativa (L.) Crantz.
Columbus, Ohio. May 15, 1902.
Coll. F J. Tyler.

"Uredo candida: effusa candida.
"Aecidium candidum. in Gmel. Syst. nat. Linn. 2. p. 1473." D. C. H. Persoon, Synopsis Methodica Fungorum, 1:223. 1801.
"Uredo cheiranthi: sparsa subglobosa prominens candida.
"Acervuli globose prominent, epidermide cingente clausi, dimidiam lineam lati. Ob formani distinctam ab anticedente remouendam duxi." D. C. H. Persoon, Synopsis Methodica Fungorum, 1:224. 1801.

64. Cercospora althaeina Sacc.

On Althaea rosea Cav. (Cultivated.)
Columbus, Ohio. June 9, 1901.
Coll. W. A. Kellerman.

"Cercospora althaeina Sacc. sp. nova. Maculis amphigenis angulosis, brunneis, lyphis fasciculatis filiformibus, 40 x 5 (rarius usque 100 lgs.)

pauciseptatis, fusco-olivaceis; conidiis in hypharum apicibus cylindraceo-obclavatis, v. anguste fusoideis, rectiusculus, 40-50 x 5, 2-4 septatis, apice obtusiusculus, hyalinus." P. A. Saccardo. Michelia, 1:269. 15 Januar, 1878.

65. Cercospora hydropiperis (Thuem.) Speg.

Helminthosporium hydropiperis Thuem.; Cercospora polygonorum Cke.

On Polygonum punctatum Ell.

Columbus, Ohio. September 22, 1901.

Coll. W. A. Kellerman.

"Helminthosporium Hydropiperis Thuem. nov. spec.

"H. caespitibus hydrophyllis, plerumque foliam totam occupans, velutinis, effusis, tenuibis, olivaceis, densis; hyphis erectis, subrectis, simplicibus, non vel vix septatis, tenuibus, brevibus, dilute fuscis; sporis longeclavatis, subcurvatis, apice dilatatis, vertice angustatis, subacutatis, 6-10 septatis ad septas non constrictis, cum nucleo hyalino unico in cellulis omnibus, dilute fuscis, 50-60 mm. long., 8-10 mm. crass." F. de Thuemen, Mycotheca universalis, no. 1087.

66. Cintractia junci (Schw.) Trel.

On Juncus tenuis Willd.

Brush Lake, Champaign Co., Ohio. May 30, 1902.

Coll. J. H. Schaffner and F. J. Tyler.

Caeoma (Ustilago) Junci, L. v. S.....

"C. aterrimum, longitudinaliter in glumis effusum, primum tectum cortice quasi spurio nigronitido. Sporidiis minutissimis conglutinatis. An idem Ustilago in Rhynchosporis rarissime obvia, sporidiis majoribus." L. D. de Schweinitz, Transactions of the American Philosophical Society, Philadelphia. 4:290. 1834.

67. Gymnoconia interstitialis (Schlecht.) Lagh.

On Rubus occidentalis L.

Olena, Huron Co., Ohio. June 2, 1902.

Coll. O. E. Jennings.

The host occurred with Rubus nigrobaccus but the latter harbored none of the fungus.

Supplement to No. 20.

68. Plasmopara halstedii (Farl.) Berl. & De Toni.

Peronospora halstedii Farl.

On Vitis sp., cultivated.

Columbus, Ohio. June 6, 1901.

Coll. W. A. Kellerman.

"P. halstedii Farlow. Mycelium with oval haustoria. Conidiophores rather stout, undivided below, above with numerous 1 to 4 pinnate

horizontal branches, the lower of which are considerably longer and more compound than the upper. Tips long, slender, acute, loosely diverging. Conidia oval or elliptic, 19-30 μ by 15-26 μ Oospores 23-30 μ in diameter, yellowish, thin walled, exospore with a few folds or ridges." W. G. Farlow. Botanical Gazette, 8:310. October, 1883.

69. Puccinia caricis (Schum.) Reb.

Aecidium urticae Schum.

On Urtica gracilis Ait.

Carey, Wyandot Co., Ohio. May 20, 1902.

Coll. Thos. Bonser.

"Aecidum Urticae, orbiculare effusumque, elevatum purpureo crocatum; peridiis cupulaeformibus flavis, ore laciniato; laciniis crenulato-dentatis, obtusiusculis; pulvere citrino. In foliis et petiolis Urticae dioicae." Christ. Frieder. Schumacher, Enumeratio plantarum in partibus Saellandiae Septentrionalis et orientalis, 2:222. 1803.

70. Puccinia caricis (Schum.) Reb.

On Carex stricta. Lam.

Columbus, Ohio. March 20, 1902.

Coll. W. A. Kellerman.

Sowings of the spores on Urtica gracilis Ait. produced aecidia.

Supplement to No. 69.

It is more than doubtful whether the following descriptions apply to the Rust here distributed; but since the name as given above has been used for the American species it seems best to present the original diagnoses.

"Uredo carciis, peridiis oblongis, pallido-cinereis, distinctis rarius confluentibus paullulum elevatis; pulvere ferrugineo-badio." Christ. Frieder. Schumacher. Enumeratio plantarum in partibus Saellandiae septentrionalis et orientalis, 2:231. 1803.

"Puccinia striola L.

"P. maculis pallidis, acervis linearibus confertis distinctis amphigenis subconvexis, sporidiis nigricantibus." H. F. Link, Species Plantarum, 62:67. 1825.

Puccinia caricina DC.—Description given on label to Ohio Fungi No. 28.

71. Puccinia caricis (Schum.) Reb.

On Carex riparia Curtis.

Columbus, Ohio. April 17, 1902.

Coll. W. A. Kellerman.

Supplement to Nos. 69 and 70.

Species determined by culture experiments; sowings of the teleutospores on Urtica gracilis Ait. resulting in the production of spermogonia and aecidia.

72. Puccinia mariæ-wilsoni Clint.

On Claytonia virginica L.

Cincinnati, Ohio. May 15, 1902.

Coll. Walter H. Aiken.

"P. Mariae-Wilsoni *Clinton.*

"Amphigenous; spots none; sori scattered or clustered, unequal, at first covered by the epidermis, then surrounded by its ruptured remains, reddish-brown; spores sub-elliptical, scarcely constricted, crowned with a pustule, .0013′-.0018′ long, .0007′-.0008′ broad." Chas. H. Peck, Report on the State Museum, State of New York, 25:115. 1872.

73. Puccinia taraxaci Plowright.

On Taraxacum taraxacum (L.) Karst.

Columbus, Ohio. June 10, 1902.

Coll. W. A. Kellerman.

"Puccinia taraxaci. Plow.

"*Spermogonia.*—On yellow oval or rounded spots. Paraphyses not conspicuous. Spermatia globose or oval, 1-2 μ in diameter.

"*Uredospores-Primary*: Sori scanty, large, dark, brown, elongated or circinating. Spores ovate, round, or subpyriform, echinulate, brown, 25-30 x 25 μ. *Secondary*: Sori small, very profuse, round, cinnamon-brown, soon pulverulent, often confluent. Spores subglobose, brown, echinulate, 20–25 μ in diameter.

"*Teleutospores.* — Sori amphigenous, minute, blackish, round, pulverulent, surrounded by the ruptured epidermis. Spores obtuse, shortly oval, ovoid, or even subglobose, constriction almost none, brown, echinulate, especially above, 30-40 x 20-25 μ. Pedicels short, hyaline, deciduous." Charles B. Plowright, A Monograph of the British Uredineae and Ustilagineae, 186. 1889.

74. Puccinia taraxaci Plowright.

On Taraxacum erythrospermum Andrz.

Columbus, Ohio. May 18, 1902.

Coll. F. J. Tyler.

Supplement to No. 73.

75. Rhytisma concavum Ell. & Kellerm.

On Ilex verticillata (L.) Gray.

West Mansfield, Logan Co., Ohio. June 10, 1902.

Coll. W. A. Kellerman.

"Rhytisma concavum Ell. & Kellerm. n. sp. — Stromata epiphyllous but also visible below, forming thin, black, thickly scattered blotches, 1-4 mm. diameter, orbicular or subangular, the surface uneven, surrounded by a pale yellowish, narrow margin, more or less concave below and the margin broader and paler, at maturity rupturing by radiating fissures, in the oblong forms a central elongated fissure also occurring and in the

larger ones a circular area being cut out, the hygroscopic lobes strongly recurved when moist exposing a light yellowish, later sordid yellow then blackish disk. Asci 80-110 x 8-10 μ, oblanceolate, much elongated below, strongly acute at apex, accompanied by abundant slender and elongated mostly flexuous paraphyses about 4 μ wide, usually enlarged at the tips. Spores 20-35 x 2-3 μ, hyaline, nearly straight to strongly curved, slightly thicker at one end in which are large clear granules." J. B. Ellis and W. A. Kellerman, Journal of Mycology, 8:51. June, 1902.

76. Rhytisma concavum Ell. & Kellerm.

On Ilex verticillata (L.) Gray.

West Mansfield, Logan Co., Ohio. July 19, 1901.

Coll. W. A. Kellerman.

Supplement to No. 75.

Stroma only; no asci.

77. Septoria astericola E. & E.

On Aster cordifolius L.

Columbus, Ohio. April 22, 1902.

Coll. W. A. Kellerman.

"Septoria astericola, n. s. — Spots amphigenous, dark brown, subindefinitely limited, bounded by a broad yellow border, the brown central part 3-4 millimeters across. Perithecia innate, finally partially erumpent above, numerous, scattered, small (75μ), scarcely visible in the earlier stages of growth, light brown. Sporules slender, nearly straight, nucleate, 30-45 by 1-1¼ μ. Differs from S. atropurpurea, Pk. in its yellow bordered spots and shorter, narrower sporules. J. B. Ellis and B. M. Everhart, Journal of Mycology, 5:150. 1889.

78. Septoria kalmiæcola (Schw.)) B. & C.

On Kalmia latifolia L.

Sugar Grove, Fairfield Co., Ohio. May 17, 1902.

Coll. W. A. Kellerman.

"Sphaeria (Depazea) Kalmicola, L. v. S.....

"S. maculis candidis orbiculatis, margine intumescente cinctis, et folia circumcirca nigricantibus. Peritheciis convexis atris concentricis innatis." L. D. de Schweinitz, Transactions of the American Philosophical Society, Philadelphia, 4:226. 1834.

79. Urocystis carcinodes (B. & C.) Fisch.

On Cimicifuga racemosa (L.) Nutt.

Sugar Grove, Fairfield Co., Ohio. May 30, 1902.

Coll. W. A. Kellerman.

"Thecaphora carcinodes. B. & C. — Soris maximis ellipticis e ramulis tumentibus; sporis globosis cellulis 4-6 hyalinis cinctis.

"Sori large, swelling out in elliptical masses; spores globose, surrounded by from four to six hyaline cells." M. J. Berkeley, Grevillea, 3:58. December, 1874.

80. Venturia orbicula (Schw.) C. & P.

On Quercus prinus. L.

Sugar Grove, Fairfield Co., Ohio. May 17, 1901.

Coll. W. A. Kellerman and Clara G. Mark.

"Sphaeria orbicula, L. v. S.....

"S. in maculis exacte orbiculatis, margine quasi linea nigra limitatis, ob aggregationem peritheciorum in margine perithecia numerosa aggregata sunt. Maculis ¼ uncialibus diametro, cinerascentibus. Peritheciis minutissimus, innatis, nigris, prominentibus pilis longis sparsis obsitis, demum deciduis, concoloribus." L. D. de Schweinitz, Transactions of the American Philosophical Society, Philadelphia, 4:224. 1834.

NEW ALABAMA FUNGI

BY J. B. ELLIS AND B. M. EVERHART.

The following fungi were collected in the vicinity of Tuskegee, Alabama, by George W. Carver, Director of the Department of Agriculture and Agricultural Experiment Station at Tuskegee, Ala.

PHYLLOSTICTA RICHARDSONIAE E. & E.—On leaves of Richardsonia scabra, Tuskegee, Ala. Aug. 1901.

Perithecia amphigenous, on irregularly shaped, dirty white spots and bleached areas of the leaves, mostly occupying and killing the tips of the leaves, perithecia scattered, globose, 80-110 μ diam., pierced above. Sporules oblong-elliptical, abundant, 4x1½ μ.

PHOMA APOCRYPTA E. & E.—On dead stems of Phytolacca decandra, Tuskegee, Ala. Oct. 1900 (Carver 704).

Perithecia subcuticular, raising the epidermis into little pustules pierced by the subconical ostiolum, globose, 150-200 diam., scattered or often three or more approximated, or sometimes seriately arranged and splitting the epidermis in clefts or cracks 2-3 mm. in length. Sporules elliptical or ovoid, 1-2 nucleate, with a slight smoky tinge, 3-4x1½-2 μ.

Its much smaller sporules as well as its pseudo-stromatic habit will separate it from P. herbarum West. and from P. phytolaccae B. & C. May be the spermogonial stage of Diaporthe aculeata Schw.

PHOMA ZEICOLA E .& E.—Bull. Torr. Bot. Club, 27:573. 1900. Specimens recently sent show that the perithecia appear at first on definite, pallid spots, which finally become confluent.

MACROPHOMA SUBCONICA E. & E.—Jour. Mycol. 5:147, 1889. Mr. Carver has sent what we now refer to this species on the following hosts—On Luffa acutangula (dried pericarp), spor. 15-22x10-12 μ; on Dolichos sinensis, spor. 15-20x10-11 μ; on Melia azederach; Pelargonium zonale, and Cassia tora, spor. 15-22x5-7 μ; on Mucuna utilis, spor. 15-18x12-14 μ.

The perithecia vary from 120-400 μ in diameter, with a distinct conic-papilliform ostiolum, and become depressed and flattened or collapse to concave. The ostiolum is soon deciduous leaving the perithecium perforated.

APOSPHAERIA TURMALIS E. & E.—On weatherbeaten wood of Diospyros virginiana.

Perithecia superficial, densely crowded and angular from mutual pressure, forming a continuous crust several centimeters in extent, ovate, globose, 300-400 μ diam. with an obscure papilliform ostiolum. Sporules ovate or piriform, hyaline, filled with small nuclei, 15-20x10-12 μ.

DOTHIORELLA MAJOR E. & E.—On dead stems of Gossypium herbaceum.

Perithecia in clusters of 3-8, stromatically connected and surrounded by the ruptured epidermis, with a few scattered singly, globose, $\frac{1}{4}$-$\frac{1}{3}$ mm. diam. Sporules oblong-elliptical or ovate, 20-22x12 μ, on basidia of about the same length, others (sterile basidia) are longer than the sporules and resemble paraphyses.

D. botryosphaerioides Sacc. on the same host has sporules only 8x3 μ.

SPHAEROPSIS GRANDIFLORA E. & E.—On dead leaves of Magnolia grandiflora.

Perithecia scattered quite evenly over the upper side of the leaf, raising the cuticle into little pustules, 99-110 μ diam., perforated at the apex. Sporules oblong-elliptical, 15-20x8-10 μ.

SPHAEROPSIS SABALICOLA Ell. & Carver.—On Sabal andansonii, Beloit, Ala.

Perithecia gregarious, 150-200 μ diam., often subseriate, 2-4 in a short line, splitting the epidermis over them but hardly confluent, suberumpent, finally deciduous. Sporules oblong-elliptical, 15-22x9-11 μ, on rather slender basidia about as long as the spores.

SPHAEROPSIS BEGONIICOLA E. & E.—On Begonia, cultivated.

Perithecia hypophyllous, on dead, indefinitely limited areas of the leaves, hemispheric-prominent, finally collapsing, large (400-500n), carbonaceo-membranaceous, with a distinct tuberculo-papilliform ostiolum. Sporules elliptical, 15-22x12 μ nearly hyaline at first, filled with granular matter becoming brown.

HAPLOSPORELLA GRANDINEA E. & E.—On dead limbs of Magnolia glauca.

Stromata small, thickly scattered, ½-1 mm. diam., sunk in the bark, raising the epidermis into pustules and rupturing it but not erumpent. Perithecia 2-6 in a stroma, 150-200 μ diam., with a papilliform ostiolum, sometimes scattered singly in the bark. Sporules oblong-elliptical, 15-20x8-11 μ.

H mexicana E. & E.—(Bull. Torr. Bot. Club, 22:440. 1895) differs from this in its larger, seriate, carnose, erumpent stromata.

HAPLOSPORELLA JASMINI E. & E.—On dead limbs of Jasminum fruticans.

Perithecia ovate, bursting out through the bark in clusters of 6-20 and loosely surrounded by the lobes of the ruptured epidermis. Sporules oblong-elliptical or ovate, 18-20x8-11 μ.

DIPLODIA ATROCOERULEA E. & E.—On dead steams of Datura stramonium.

Perithecia innate, the apex erumpent, discharging the ovate-elliptical, dark brown, 12-22x12 μ spores abundantly, and blackening the surface of the stem.

Accompanied by a Helminthosporium (H. socium E. & E. in herb.) with elongate-elliptical, 3-septate, pale yellow conidia, 30-50x12-15 μ. The sporules are more or less distinctly longitudinally striate.

BOTRYODIPLODIA MELIAE E. & E.—Diplodia meliae E. & E. Bull. Torr. Bot Club, 25:288. 1897. Diplodia langloisii Sacc. & Syd., Sacc. Syll. 14:929. 1897. On dead limbs of Melia azedarach, Louisiana (Langlois), Alabama (Carver).

Perithecia globose or ovate, 150-200 μ diam., 3-15 in a flattish-verruciform stroma, ½-1 mm. diam., closely covered by the irregularly ruptured but closely adherent epidermis, black inside and of a waxy or subcarnose consistency; ostiola papilliform. Sporules oblong-elliptical, more or less distinctly constricted, 15-20x8-10 μ.

The Louisiana specimens which were published in the Torr. Bull. as Diplodia were not as well developed as those from Alabama but a re-examination of the species in Herb. Everhart shows that the stromatic arrangement of the perithecia is the normal condition, although in specimens from both of the localities named, perithecia scattered singly occur.

BOTRYODIPLODIA PALLIDA E. & E.—On dead stems of Glycine hispida.

Perithecia collected in little groups 3-8 in a more or less evident stroma, ovate globose, 250-300 μ diam., the papilliform ostiolum and generally the apex of the perithecium projecting slightly above the stroma. Sporules oblong-elliptical, obtuse, hyaline and continuous at first, tardily becoming brown and uniseptate, 20-26x12 μ in the hyaline state, a little smaller when mature and brown; basidia about as long as the sporules.

LASIODIPLODIA TUBERICOLA E. & E.—Bot. Gaz. 21:92. 1896. On cotton-balls. This has been sent by Mr. Carter on the following hosts: On beets, tomatoes, egg-plant, old corn husks, and on a rind of Crookneck-squash, indicating that it is indigenous to this country and not imported.

SEPTORIA CYPERI E. & E.—On Cyperus sp. Tuskegee, Ala. Aug. 1900.

Perithecia at first on small rust-colored spots on the living leaves, but when these become dead, scattered irrgeularly, suberumpent, 150-200 μ diam. Sporules filiform, continuous, curved, 80-120x2 μ.

HENDERSONIA OPUNTIAE E. & E.—On Opuntia ficus indica.

Perithecia gregarious, pustuliform, 150-200 u diam. Sporules cylindrical, slightly curved, 3-septate, brown, 20-25x4-5 μ, ends obtuse.

COLLETOTRICHUM CARVERI E. & E.—On leaves of tea plant, cult.

Acervuli epiphyllous, on dead, brown areas of the leaf, erumpent, amber-colored, $\frac{1}{4}$-$\frac{1}{2}$mm. diam., sparingly girt around the base with weak, brown, continuous, bristle-like hairs, slightly swollen at the base and 40-80x3 μ. Conidia oblong-cylindrical, 12-15x3$\frac{1}{2}$-5 μ, obtusely rounded at the ends.

COLLETOTRICHUM PHYLLOCACTI E & E.—On Phyllicactus latifrons.

Spots brown, whitening out, large, 3-4 cm. across with a narrow raised concolorous margin. Acervuli in groups both on the spots and on adjacent areas of the leaf, erumpent, black, surrounded with a fringe of dark-colored continuous bristles, 30-40x3-3$\frac{1}{2}$ μ, tapering above. Conidia oblong-elliptical, or oblong-cylindrical, granular, continuous, hyaline, 10-12x3$\frac{1}{2}$-4 μ, on basidia longer than the conidia.

Differs from C. carveri E. & E. in its smaller conidia and shorter, subundulate bristles.

GLOEOSPORIUM AMARANTHI E. & E.—On dead stems of Amaranthus spinosus.

Acervuli subcuticular, raising the epidermis into pustules, then suberumpent, discharging the conidia in a flesh-colored globule, seated on elongated, blackened strips on the stem. Conidia oblong-elliptical, 2-nucleate, 12-15x5-6 μ.

PESTALOZZIA BATATAE E. & E.—On tubers of Batatas edulis.

Acervuli raising the cuticle into hemispherical pustules which roughen the surface of the tuber. Conidia clavate-oblong, 20x5-6 μ, terminal cells hyaline, acutely conical, intermediate cells brown, apical cell surmounted by a crust of three spreading, hyaline bristles about 12 u long, pedicels becoming oblique.

The conidia are hardly distinguishable from those of P. guepini Desm. which is found around Tuskegee on leaves of Rosa, Vitis, Ulmus, Liriodendron, Sassafras and Diospyros.

VENTURIA NEBULOSA E. & E.—On dead leaves of Eragrostis sp.

Amphigenous. Perithecia ovate-globose, 75-100 μ diam., pierced above, membranaceous, clothed with black, continuous, spreading hairs 30-40x3 μ, seated on cloudy or smoky, elliptical spots 2-5 mm. diam. or by confluence more. Asci oblong, abruptly contracted at base into a short stipe, aparaphysate, 35-45x 12-15 μ. Sporidia biseriate, oblong-ovate, hyaline, uniseptate, slightly constricted, 12-15x5 μ.

Differs from V. erysipheoides E. & E. in its more abundant, shorter and narrower bristles and different sporidia and from V. graminicola Winter in its broader, shorter sporidia.

NECTRIA SECALINA E. & E.—On dead culms of Secale cereale.

Perithecia gregarious, ovate-globose, 100-120 μ diam., orange yellow, sometimes slightly collapsed but not very distinctly so, ostiolum papilliform, minute, inconspicuous; Asci clavate-cylindrical sessile, aparaphysate, 40-55x7-8 μ, Sporidia subbiseriate, oblong or oblong-elliptical, uniseptate, scarcely constricted, hyaline, 7-10x3-4 μ.

Differs from N. gibberelloides E. & E. and from N. brassicae & S. E. in its orange color and rather smaller, straight sporidia.

NECTRIELLA CACTI E. & E.—On Opuntia ficus indica.

Perithecia gregarious, bright blood-red, soft, ovate 200 μ high, 110 μ broad. Asci sublanceolate, 45-55x4 μ; paraphyses obscure. Sporidia biseriate, oblong, hyaline, continuous, 5-6x $1\frac{1}{2}$ μ.

Outwardly resembles Nectria sanguniea (Sibth.) but the sporidia are very different; nor can it be mistaken for N. opuntiae Roll. in Sacc. Syll 14:632.

ZIGNOELLA SABALINA E. & E.—On petioles of Sabal adansonii.

Perithecia superficial, gregarious or subcespitose, ovate, rough, collapsing, 300-350 μ diam., with a papilliform ostiolum. Asci clavate-cylindrical, 45-60x10-12 μ, subsessile, aparaphysate. Sporidia fusoid, subinequilateral or slightly curved, hyaline, 3-septate, scarcely constricted, 15-20x$4\frac{1}{2}$-5 μ. The sporidia scarcely differ from those of Metasphaeria palmetto Cke.

LAESTADIA PRENANTHIS E. & E.—On living leaves of Prenanthus crepidinea. Aug. 1901.

Spots elliptical or irregular, 3-5 mm. diam., partly limited by the veinlets, light brown, with a narrow, slightly raised border. Perithecia hypophyllous, scattered on the spots, semierum-

pent, minute, (50-60μ), pierced above. Asci oblong, subsessile, rather abruptly narrowed at the ends, 30-35x6-7 μ. Sporidia biseriate, fusoid-oblong, 3-guttulate, hyaline, 10-12x3-3½ μ.

Laestadia ari E. & E.—On living leaves of Arum arifolium.

Spots subcircular, dark gray above, deep brown below, 1 cm. diam., with a narrow darker border; perithecia epiphyllous, abundant, evenly and thickly scattered over the central portion of the spots, 100-110 μ diam., pierced above, semi-erumpent. Asci oblong-cylindrical, short-stipitate, 40-50x7-8 μ, paraphyses rudimentary or wanting. Sporidia biseriate, subnavicular, 2-3-nucleate, hyaline, obtuse, 8-10x3½-4½ μ.

Vermicularia trichella Fr. is found in a narrow belt just within the margin of the spots.

Sphaerella yuccae E. & E.—On leaves of Yucca filamentosa.

Perithecia evenly scattered on the dead leaves, subcuticular, slightly raising the epidermis, at length more or less collapsing, small (110-120 μ). Asci clavate-cylindrical, short-stipitate, 45-55x10-12 μ. Sporidia biseriate, short, oblong-fusoid, 12-15x 4-5 μ, uniseptate but not perceptibly constricted.

Didymella ricini E. & E.—Proc. Phil. Acad. 421. 1895. Prof. Carver sends this on dead shoots of Ailanthus glandulosa; the asci 45-50x10-12 μ, spor. oblong-elliptical, obtuse, yellowish-hyaline, scarcely curved, 12-15x5-6 μ; on stems of Mucuna utilis, asci 40-45x8-10 μ, spor. oblong-fusoid, distinctly curved, 12-15x 4-5½ μ, yellowish-hyaline, becoming uniseptate; on Hibiscus esculentus, asci 50x10 u, spor. curved, yellowish, 12-15x4-4½ u, 2-3 guttulate (becoming unseptate).

The perithecia in all these collapse. This is closely allied to D. sphaerellula (Pk.) and D. fuschiae (Ck. & Hark.).

Physalospora vagans E. & E.—On dead, bleached canes of Rubus strigosus.

Perithecia scattered, singly or 3-5 subconfluent, membranaceous, of rather coarse cellular structure, black, pierced above, 100-200 μ diam., raising the cuticle into little pustules which, especially over the clustered perithecia, are ruptured by a narrow cleft. Asci clavate-cylindrical, 110-200x12-20 μ, short,stipitate and obscurely paraphysate. Sporidia uniseriate in the narrower asci, biseriate in the broader, elliptical, 12-20x8-12 μ hyaline, The asci soon collapse so that the sporidia bulge out all round like a bag stuffed full of apples. Many of the perithecia, especially the scattered, single ones, contain only stylospores narrow-elliptical, hyaline, 15-20x7-8 μ, on basidia 12-20x1½ μ.

Physalospora obtusa (Schw.) Cke.—On Rubus villosus, has longer, narrower sporidia 35-40x9 μ. This occurs also on the following hosts: on dead stems of spiraea—asci 150x20-25 μ, spor.

18-25x10-12 μ; on Hemerocallis—asci 90-150x12-15 μ spor. 20-24x8-10 μ; on Polygonum pennsylvanicum—asci 100x15 μ, spor. average 15x10 μ.

PHOMATOSPORA WISTARIAE E. & E.—On partly dead leaves of Wistaria frutescens.

Perithecia mostly epiphyllous, on small, mostly round, gray spots, 2-4 mm. diam., bounded by a narrow dark line; but often confluent over a great part of the leaf, subdepressed, membranaceous, 110-120 μ. Asci oblong, sessile, 35-45x10-12 μ, without paraphyses. Sporidia biseriate oblong-elliptical, hyaline, rounded at the ends, about 12x6 μ.

METASPHAERIA IPOMOEAE E. & E.—On dead stems of Ipomoea.

Perithecia scattered or 2-3 together, subcuticular, then emergent and mostly collapsing, $\frac{1}{2}$-$\frac{1}{3}$ mm. diam. with a disinct papilliform ostiolum. Asci clavate, short-stipitate, 75-90x10-14 μ, with filiform paraphyses. Sporidia overlapping and crowded, often biseriate above, elongate-ovate or broad fusiod-clavate, 3-4 septate and constricted especially at the next to the upper septum, 15-25 (mostly about 20) x8-12 μ.

Comes very near M. kali (Fabr.) according to his description and figure, differing principally in its subaggregated perithecia.

METASPHAERIA CARVERI E. & E.—On dead stems of Sesamum orientale, Glycine hispida, Cassia tora and Mucuna utilis.

Perithecia thickly scattered or gregarious, occasionally cespitose-conglomerate, semierumpent but mostly remaining covered by thin cuticule, depressed-hemispherical when fresh, wrinkled and collapsed when dry, 120-200 μ diam. of thin membranaceous texture, pierced above. Asci oblong, short-stipitate, 50-55x8-12 μ, paraphyses evanescent. Sporidia biseriate, oblong-cylindrical, moderately curved, hyaline, 15-20x4-5 μ, ends obtuse, contents granular, with 3-4 nuclei (becoming 2-3 septate?).

Has the general appearance of Vermicularia.

METAPSHAERIA SANGUINEA E. & E.—On dead stems of Helenium tenuifolium.

Perithecia subcuticular, scattered or 2-3 together, membranaceous, and finally collapsing, about 200 μ diam., raising the red-stained cuticle into pustules which are soon ruptured at the apex; ostiolum papilliform, inconspicuous. Asci clavate-cylindrical, 50-70x7-8 μ, paraphysate. Sporidia biseriate (mostly), narrow-elliptical, or subfusoid, hyaline, 4-nucleate, becoming 3-septate, 15-18x4 μ.

The perithecia are sparingly clothed with loose, spreading blood-colored hyphae 40-80x3 μ.

BOTRYOSPHAERIA MURICULATA E. & E.—On dead steams of a white berried Smilax.

Perithecia ¼-⅓ mm. diam., 2-6 together in a cortical stroma, white inside, contracted above into slender necks, the papilliform ostiola raising the blackened epidermis into little tubercles mostly ruptured across the top by a single hysteriform slit. Asci clavate-cylindrical, short-stipitate, paraphysate, p. sp. 75-80x18-20 μ. Sporidia biseriate, oblong- elliptical, subinequilateral, rounded at the ends or obtusely pointed, 20-25x10-12 μ.

The surface of the bark occupied by the fungus is overspread by a thin black, finely muriculate crust presenting under the lens quite an ornamental appearance.

Hysterium compressum E. & E.—On decaying wood of Pinus palustris.

Perithecia scattered, mostly lying parallel, 1-3 mm. long, ½ mm. broad, straight or in the elongate forms undulate or curved, faintly longitudinally striate above, narrow at the ends but subobtuse, lips closed or slightly opened. Asci oblong-cylindrical, short-stipitate, 75-80x15-20 μ, broadly rounded above, paraphyses filiform, abundant. Sporidia crowded bi-tri-seriate, fusoid, 3-septate, scarcely constricted, hyaline at first, soon brown (reddish-brown), subinequilateral, slightly curved, compressed, 25-30x7-10 μ, cell next to the upper one very slightly swollen.

The perithecia scarcely differ from those of H. insidens Schw. but the sporidia are constantly only 3-septate and are compressed so as to be only 4-5 μ thick.

Mollisia alabamaensis E. & E.—On decaying canes of Rubus villosus.

Scattered, erumpent-superficial, gelatin-carnose, immarginate, ½ mm. diam., convex when fresh and pale-rose-color, subconcave when dry and about the color of lean beef steak, finally becoming almost black. Asci ventricose-oblong, subsessile, 60-65x15 μ, paraphyses enlarged and colored above, united in a brown epithecium and bearing subglobose conidia 5 μ diam. Sporidia subseriate, hyaline, 12-13x6-7 μ.

Allied to Mollisia fuscorubra Rehm. which it much resembles.

Belonium bicolor E. & E.—On dead stems of Eupatorium.

Ascomata scattered or gregarious, sessile of soft carnose substance, convex and amber color when young and fresh, concave and nearly black when dry, ½-¾ mm. diam., margin narrow, subdentate, the substance of the ascomata yellow when crushed under the microscope. Asci clavate-cylindrical, short-stipitate, 80-90x12 μ, with stout simple paraphyses slightly thickened above. Sporidia mostly uniseriate, oblong-elliptical, 15-20x6-8 μ, 3-4-nucleate becoming 3-septate, hyaline at first becoming dull yellow and more or less constricted when mature.

The sporidia are more like those of Dermatella but the other characters are those of Belonium.

Belonium consanguineum E. & E.—On decorticated, decaying wood of Ilex.

Ascomata gregarious, sessile, slightly narrowed at the base, black, mostly a little less than ½ mm. diam., soft-carnose, disk circular roughish, margin narrow, slightly toothed, convex and dull amber color when young and fresh, concave and nearly black when dry, substance dull yellow under the microscope. Asci clavate-cylindrical, short-stipitate, 45-55x6-8 μ, paraphyses simple, stout, longer than the asci. Sporidia biseriate, fusoid, hyaline, slightly curved, 4-nucleate, becoming 3-septate, scarcely constricted, 15-20x3½-4 μ.

Differs from B. bicolor in its smaller size, cellular-fibrose texture and narrower, sessile base. The asci also are shorter and narrower, and the sporidia only about half as broad.

Godronia rugosa E. & E.—On dead limbs of Oxydendrum arboreum.

Ascomata scattered, erumpent, 1-1½ mm. diam., sessile, closely embraced by the ruptured epidermis, hymenium when moist subgelatinous, turgid and rugose, obscurely glandular-roughened, sooty-black, lighter within. Asci clavate-cylindrical, 70-75x8-10 μ, paraphyses abundant, united above in a sooty-olivaceous epithecium. Sporidia elongated, fusoid, nucleate, arcuate when free, hyaline with a faint tinge of yellow, 45-55x3-3½ μ.

The scanty glandular pubescence of the hymenium would indicate Belonium, but the members of that genus are mostly on Gramineae or on herbaceous plants.

Plasmopora vincetoxici E. & E.—On leaves of Vincetoxicum.

Hypophyllous, forming loose white woolly patches 3-4 mm. across, at length subconfluent, the upper side of the leaf opposite becoming brown. Conidiophorous hyphae continuous, 8-10 μ thick, branched above, the branches issuing at a right angle and sending out short secondary branches with brownish, conical sterigmata 8-10 μ long, both lateral and terminal. Conidia globose or short-elliptical, averaging about 15x13 μ. Oospores globose, brown, about 20 μ diam.

Cercospora capreolata E. & E.—On leaves of Bignonia capreolata.

Spots reddish-brown with a reddish-purple shaded margin, ½-1 cm. diam., hyphae hypophyllous in the central portion of the spots, arising in small spreading tufts from a small tuber-base, 15-20x3 μ, continuous, pale brown. Conidia slender, obclavate, continuous, brownish, slightly curved, 60-80x3 μ.

Very different from C. bignoniicola Speg.

Cercospora hieracii E. & E.—On leaves of Hieracium venosum.

Epiphyllous, on pale yellowish, indefinite spots at first, but soon spreading over the entire surface of the leaf, forming a thin, mouse-colored stratum, the spots now being scarcely recognizable. Hyphae in dense tufts, 15-20x3 μ, subnodulose, continuous, or faintly septate, obtuse at the apex, subolivaceous, Conidia slender, obclavate, with a slight oblivaceous tinge, slightly curved, 50-80x2$\frac{1}{2}$-3 μ, faintly 3-5-septate.

CERCOSPORA SESSILIS E. & E.—On (dead)? leaves of Populus monolifera. Beloit, Ala. Sept. 1901.

Epiphyllous; conidia fasciculate, sessile (or nearly so) on a minute, sphaeriform base, curved or undulate, 20-60x3 μ, olivaceous, guttulate, becoming 3-or more-septate.

On the same leaves are many small grayish-white spots but the Cerocospora is on the dark colored part of the leaf and not on the spots though it may partly overrun some of them.

C. populina E. & E. (Jour. Mycol. 3:20) is on definite spots and is different from this.

CERCOSPORA GRATIOLAE E. & E.—On Gratiola pilosa.

Hyphae cespitose, short (25-35x3 μ), continuous, brown, somewhat crisped and toothed above, tufts effused, forming an olivaceous layer over the lower side of the leaves, but not on any spots. Conidia cylindrical, olivaceous, nucleate, becoming about 5-septate, 60-75x3$\frac{1}{2}$-4 μ.

CERCOSPORA HYDRANGEAE E. & E.—On leaves of Hydrangea cult.

Spots amphigenous, subangular, more or less confluent so as to cover a greater part of the leaf, rusty-brown becoming dark brown. The brown spots become pale silver gray in the center on both sides of the leaf and on these gray spots the tufts of hyphae are sparingly scattered. Hyphae nodulose and geniculate, brown, simple, continuous or 1-2-septate below, subdentate at the tips, 40-60x3$\frac{1}{2}$-4 μ. Conidia slender obclavate, hyaline, faintly septate towards the thick end, 60-80x3$\frac{1}{2}$-4 μ.

CERCOSPORA OXYDENDRI E. & E.—On leaves of Oxydendrum arboreum.

Leaves at first mottled with dull red, more distinctly so above, the red areas bounded at first by the veinlets, soon confluent over a great part of the leaf, here and there forming distinct, indefinitely limited spots of a deep-brown color, one or more centimetres in extent. Hyphae tufted, short, the tufts becoming almost black, especially above, of a lighter color but not so abundant below. Conidia slender, obclavate-cylindrical, 3-5-septate, subolivaceous, 50-75x3-4 μ, mostly a little curved.

CERCOSPORA BRACHYPUS E. & E.—On leaves of Vitis rotundifolia.

Hypophyllous on brown, dead areas of the leaves. Hyphae mere conical points on a brown, sphaeriform base, bearing abundant, slender, curved, faintly nucleate, nearly hyaline conidia, acute at each end and 50-70x2½-3 μ.

Very distinct from all the other species described on Vitis. The effused tufts look like a thin, mouse-colored down.

CERCOSPORA TAGETICOLA E. & E.—On leaves of Tagetus patula which it soon blackens and kills.

Hyphae in loose, spreading tufts, 200-300x4 μ, geniculate and septate. Conidia filiform about as long as the hyphae, thickened, 6-8-septate near the base and when well developed, constricted at the septa and 5-6 μ thick.

Differs from the original C. canescens E. & M. principally in its longer hyphae and conidia.

CERCOSPORA CYDONIAE E. & E.—On leaves of Cydonia japonica.

Spots amphigenous, irregular in outline, 1-3 mm. diam., definite but without any raised border, subconfluent, dark brown, almost black above; hyphae epiphyllous, tufted, short, 15-20x2½-3 μ, continuous, subgeniculate, pale-yellowish under the microscope. Conidia mostly curved, subcylindrical, hyaline or with a very faint shade of yellow, 30-45x2½ μ, nucleolate, becoming 1-3 septate.

Under the pocket lens the tufts of hyphae with the conidia appear like minute cinerous specks.

CERCOSPORA RICHARDSONIAE E. & E.—On leaves of Richardsonia scabra.

Hyphae amphigenous, tufts effused more or less over the entire leaf, forming an olivaceous coat, few in a tuft, subundulate above and sparingly toothed, continuous or sparingly septate, 20-40x3-3½ μ. Conidia long and slender, gradually attenuated above, faintly 3-5-septate, with a slight yellowish tint, 75-90x3 μ.

CERCOSPORA MACLURAE E. & E.—On living leaves of Maclura aurantiaca.

Hypophyllous, forming irregularly shaped, olive-green patches 2-4 mm., diam., partly limited by the veinlets of the leaf but not on any definite spots; hyphae cespitose, short (8-10x5 μ. continuous, nearly hyaline. Conidia obclavate, the lower broader part olive brown, 5-7-septate and slightly constricted at the septa, abruptly contracted above into a cylindrical, subhyaline beak which forms about half the length of the spore.

CERCOSPORA SEDI E. & E.—On living leaves of Sedum sp.

Amphigenous, effused, giving the leaves a smoky look. Hyphae fasciculate, continuous or faintly septate more or less sinuous or crooked, short, 15-25x4 μ. Conidia straight, guttulate, 30-110x2½-3 μ with a slight brownish tint.

CERCOSPORA VINCETOXICI E. & E.—On leaves of Vincetoxicum hirsutum.

Spots subcircular, reddish-brown, 4-10 mm. diam., with a narrow slightly raised, concolorous margin. Fertile hyphae amphigenous, simple, erect, continuous, 15-20x3 μ, brownish, slightly toothed or entire above, densely cespitose, the tufts effused and forming a slate-colored layer covering the central area of the spots. Conidia oblong 20-30 or elongated 30-60x3 μ, slightly colored, continuous.

CERCOSPORA CANESCENS E. & M.—Am. Nat. 1003. 1882. Mr. Carver sends this on dead stems of Lycopersicum esculentum, Petunia parviflora and on leaves of Ricinus communis and Amaranthus. The hyphae which are crowded in dense tufts are at first cylindrical, straight and truncate at the apex but in the more elongated ones they sometimes become geniculate and some of them branched. The conidia often reach 300 μ long and become 10-12 (or more) septate. They are quite perfectly hyaline and are so abundant as to give the tufts a light-gray appearance.

STEMPHYLIUM COPALLINUM E. & E.—On leaves of Rhus copallina.

Hyphae creeping, loosely and irregularly branched, not interwoven, brown, sparingly septate, 4-5 μ thick. Conidia subglobose, 20-25 μ diam., mostly 4-celled with two septa at right angles to each other, some of them 5-6-celled, pale brown at first, then opaque, nearly sessile and lateral.

S. epochniodeum (Berk.) has the conidia much smaller and the hyphae hyaline.

VERMICULARIA OBLONGISPORA E. & E.—On dead stems of Portulaca oleracea, Tuskegee, Ala. June 1901.

Perithecia 80-110 μ diam., thin membranaceous, sparingly clothed with short (20-50x3 μ) brown, continuous hairs mostly curved or irregularly bent. Sporules oblong, obtuse,11-14x3-4 μ on basidia longer than the sporules.

VERMICULARIA RUGULOSA E. & E.—On dead stems of Rumex crispus, Tuskegee, Ala. Aug. 1900.

Perithecia scattered, superficial, about $\frac{1}{2}$ mm. diam. membranaceous, rugulose, rather sparingly clothed especially around the base and sides with straight, rather short (90-120) black bristle-like hairs. Sporules oblong-fusoid, hyaline, straight, subobtuse, continuous, 13-15x2 μ.

Different from V. orthospora Sacc. or V. rectispora Cke.

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NOTES

CORRECTIONS — The word "species" should be changed to "specimens on p. 15, 2d line, and on p. 16, 13th line; "Kanensis" to "Kansensis," p. 17, 10th line; "Anthiscus" on p. 25, 3rd and 6th, and on p. 35, 19th and 21st lines to "Anthicus"; "Philonothus" on p. 34, 2d line from bottom, to "Philonthus"; "Laccapholus" to "Laccophilus" on p. 31, 14th line.

The price of the journal of Mycology to Foreign subscribers is one dollar and ten cents ($1.10). Subscriptions are solicited.

The third No. of Vol. 8 will be issued the first day of October, 1902. Contributors are asked to forward MS. the first day of September.

For the cordial reception of the May number of the Journal of Mycology the editor wishes to express grateful acknowl-

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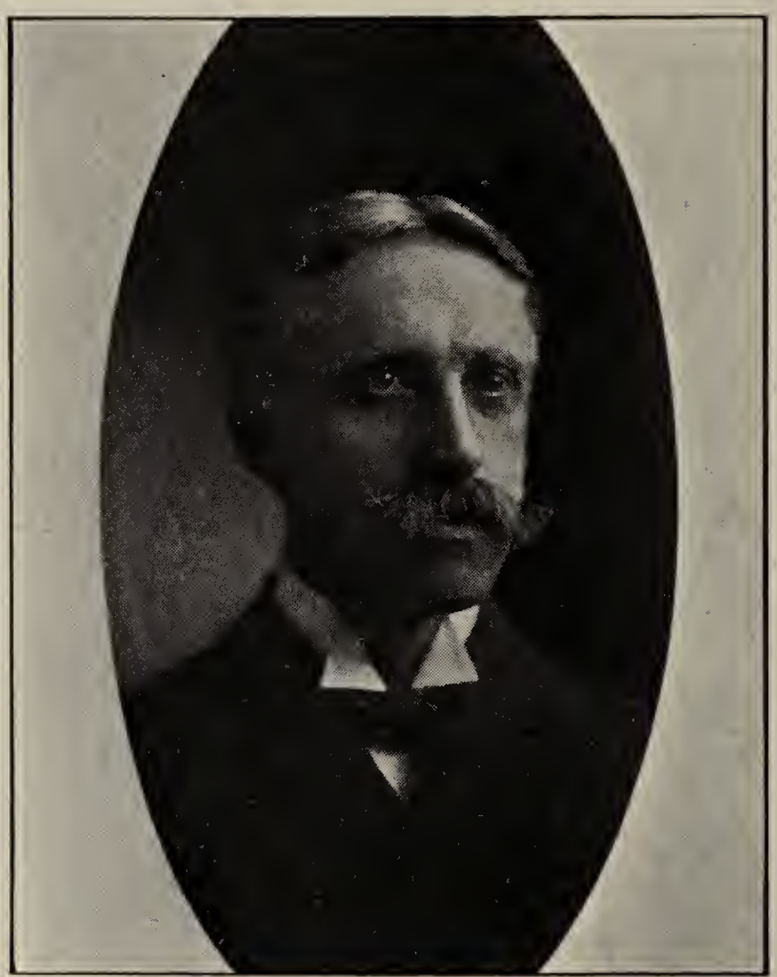
edgement to all of the American botanists; and furthermore begs the co-operation of mycologists to the end that the Journal may merit in the future their continued commendation.

It is intended to continue the series of "Journal of Mycology Portraits with Facsimile Autographs"— a host of American mycologists deserving recognition. Extra copies will be printed and the portraits may be obtained at ten cents each.

Reprints of the "Index to North American Mycology" may be obtained, printed on *alternate pages;* the first reprint will include the installments (for 1901) given in Nos. 61 and 62. Price 25 cents.

Thanks are extended to the several mycologists who have kindly forwarded interesting and important MS., but sincere regrets are expressed that the articles could not, notwithstanding the increased number of pages, appear in the present No. A considerable and doubtless permanent enlargement of the JOURNAL seems to be necessary.



Very truly yours
J. C. Arthur

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NOTES ON NORTH AMERICAN FUNGI.

A. P. MORGAN.

From R. A. Harper, Madison, Wis., I have specimens of the following species of fungi:

1. PORIA CRUENTATA Mont. — The species of Poria are greatly multiplied and many are not clearly distinguished. The colors of most of them, perhaps, are given from the dried specimens. This species is closely related to P. purpurea Fr., P. rufa Schrad., P. salmonicolor B. & C. and P. sub-rufa E. & D. In a proper classification, they should all stand close together.

2. ODONTIA FIMBRIATA P.— This is the type species. It is easily recognized by the rhizomorphoid fibres running beneath the hymenium. The color of the hymenium given in the Hym. Europaei of Fries is "pallida," but in Person's Synopsis it is "incarnato-rufum" which answers best to all the specimens I have seen.

3. POLYSTICTUS PERGAMENUS Fr.— This is a fine specimen. The color of the hymenium by Saccardo's Chromotaxia is *livid* rather than violet. It answers to the description of Polystictus abietinus Dickr. almost perfectly and I know of nothing to hinder its being so referred, except Fries's stout assertion "sed nunquam in arboribus frondosis."

4. IRPEX TULIPIFERAE SCHW.— The synonymy of this species is as follows:

Polyporus tulipiferae, Schweinitz, Syn. Car. 1822. Polyporus corticola, var. tulipiferae, Fries, Elenchus I. 1828. Irpex tulipiferae, Schweinitz, N. A. Fungi, 1834. Poria tulipiferae, Saccardo, Sylloge VI. 1888.

It is not a Poria, because it is not truly resupinate; when fully grown it has a distinct reflexed pileus. The hymenium is at first wholly porose and the species might be called *Polystictus tulipiferae*. The early stage is liable to be confused with Merulius corium Fr. I have seen it labeled Polyporus niphodes B. & Br., which may be true for all I know, but Schweinitz's name must take precedence. The favorite habitat of the species is on the timber of the Liriodendron, but it abounds on branches of Hickory and it may be found on Acer, Fagus, and other trees. I have never seen it on Pine or any other Evergreen.

PRELIMINARY NOTE ON TWO NEW GENERA OF BASIDIOMYCETES.

GEO. F. ATKINSON.

I. TREMELLODENDRON, A NEW GENUS OF TREMELLINEAE.

In studying the structure of *Thelephora candida* (Schw.) Fr., and *T. pallida* Schw., a little more than a year ago, I was surprised to find that they are not members of the *Thelephoraceae*, but belong in the *Tremellineae*, on account of the globose, cruciately divided basidia. They differ quite markedly from any of the described genera of the Tremellineae, but approach nearest (especially T. candida), perhaps, to Sebacina Tul. In Sebacina Tul., however, the plants are effuse and incrusting, only rising from the substratum in an irregular manner, or when encrusting erect objects, as grasses, herbs, sticks, etc. T. candida (Schw.), Fr., and T. pallida Schw. normally grow erect from the substratum and have a characteristic, more or less dendroid branching. They represent the type of a new genus for which I propose the name TREMELLODENDRON Atkinson n. g., with Tremellodendron candidum (*Merisma candida* Schw.), and Tremellodendron schweinitzii (*Thelephora schweinitzii* Pk., *T. pallida* Schw., not *T. pallida* Pers.) as representative species (at least in part), for it appears that there are true Thelephorae which are nearly or quite impossible to separate from *T. pallida* Schw., without an examination of the hymenium.

II. EOCRONARTIUM, A NEW GENUS OF AURICULARIACEAE.

This very interesting plant might very easily be mistaken for *Typhula muscicola* if the spores and basidia were not carefully examined. The plant was collected on living moss, July 8, 1902,

by H. H. Whetzel. The basidia are curved, transversely divided, and formed on the outside of the long, slender, erect, fruit body. It represents the type of a new genus for which I propose the name Eocronartium. The use of this name does not imply that this plant is the direct progenitor of Cronartium of the Uredineae, but its form, habitat, and fructification forcibly suggest that it represents a type of the lower Basidiomycetes closely related phylogenetically with Cronartium. This suggestion is even more striking when we know that the long, slender, columnar fruit body of Cronartium forms the curved, transversely septate promycelia, bearing the sporidia, as soon as mature; and the question may well be asked if the Uredineae do not represent a group of later development than the Auriculariaceae, and greatly specialized through a long period of parasitism.

The new genus may be provisionally characterized as follows:

Eocronartium Atkinson n. g. — Plants standing out from the substratum, more or less erect, filiform, or columnar, tough, subgelatinous when fresh. Hymenium covering all sides, and exposed. Basidia curved or flexuous, slender, transversely divided, sterigmata about four (vary 3-5, etc.). Spores continuous, white, hyaline, germinating without division and forming one or several threads. One species at present known.

Eocronartium typhuloides Atkinson n. sp. — Plants pallid, or white, filiform, tapering gradually downward to a very slender base, 10-15 mm. high, .5-1 mm. thick. Bases free, but when the plants are numerous the clavulae of several adjacent ones may touch and in the course of development become grown together so that it gives the appearance of a stout, longitudinally grooved body with several stalks. Where the plants are more scattered, they remain simple. Basidia curved or more or less sinuous, 25-40x6-9 μ, 3-5 septate. Sterigmata flexuous elongate, usually 10-20 x 3-4 μ. Spores fusoid, curved or inequilateral granular, 18-24 x 3.5-5 μ.

The plants are tough, pallid when fresh, but whiter when dry. In attempting to cut or break them, they stretch slightly, suggesting the consistency of rubber. Parasitic on mosses, Cascadilla woods, Ithaca, N. Y., July 8, 1902, C. U. herb. No. 9693; and other places at Ithaca.

Botanical Department, Cornell University.

THE GENUS ANGELINA Fr.

ELIAS J. DURAND.

The genus *Angelina* was established by Fries in 1849 to include a single species, the *Ascobolus conglomeratus* of Schweinitz. The original description of the genus indicated a plant with gelatinous ascomata, which became horny and closed in a hysteriiform manner when dry, the disk becoming papillate from the protuding asci. Schweinitz had already remarked the resemblance of this species to his own *Hysterium rufescens*, and Duby, concluding that the two species were identical, reverted to the older name, so that the species has since passed under his combination as *A. rufescens* (Schw.) Duby. The same author quoted Fries to the effect that after an examination of two authentic specimens of *H. rufescens* in the herbarium of the Museum of Paris, he had concluded that one was simply an older stage of the other, and that it was this older condition which Schweinitz had called *Ascobolus conglomeratus*. This species he had already recognized as approaching more nearly to the Discomycetes than to the Pyrenomycetes.

Schweinitz had originally described the plant as an *Hysterium* because in the dried condition the margins were inrolled or approximated in an hysteriiform manner. In his later description the supposedly different species was referred to *Ascobolus* because the disk appeared black-papillate from the protruding asci. Duby remarked correctly that Fries had exaggerated the gelatinous nature of the moist plant, but incorrectly, as I think, placed the genus in the Hysteriinieae. Boudier doubtfully included *Angelina* in the Ascobolaceae, while Saccardo and Ellis and Everhart placed it in the Hysteriaceae. Lindau puts it in the Hysteriineae, family Hypodermataceae.

I have recently had the opportunity of examining the types in the herbarium of Schweinitz, as well as of studying material in the perfectly fresh natural condition, in the vicinity of Ithaca. The following conclusions are based on these specimens. Schweinitz possessed several specimens marked "*Ascobolus conglomeratus*." Some one has separated these into two groups based on the color. In the first group the ascomata are crowded, elongated and variously bent and curved. The dry disk is widely exposed, and dark chestnut-brown. The exterior is the same color, but the margin is pale yellowish brown, the contrast being quite strongly marked. In the second group the ascomata are similar in habit, form and color, but the margins are not perceptibly paler. The structural characters are identical in the two groups. The type of *Hysterium rufescens* is in color intermediate between the two. Its structural characters agree

in every respect with those of *Ascobolus conglomeratus*. In my own recent collections all the above variations in the color of the margin are shown in a single patch. In the fresh specimens the substance is rather a fleshy-waxy, not at all gelatinous. The disk is widely exposed, and the asci do not project above the hymenium. It is rather difficult to see how the disk could become black-punctate from projecting asci when both they and the spores are hyaline. A section shows that the paraphyses cohere above the asci forming an epithecium.

On the basis of the above characters I think the genus *Angelina* should be located in the Pezizineae, family Cenangiaceae, where its spore characters place it near *Cenangella*.

I add a description and synonymy:

ANGELINA Fr., Summa Veg. Scand. p. 358. 1849.

A genus of the Cenangiaceae. Ascomata erumpent-superficial, sessile, without a stroma; when fresh fleshy-waxy, disk exposed, elongated, curved or sinuous, when dry rather horny, inrolled in an hysteriiform manner. Asci 8-spored. Spores 1-septate, hyaline. Paraphyses slender, flexuous.

Angelina rufescens (Schw.) Duby, Mem. Soc. Phys. Hist. nat. Gen. 16:51. 1861.

Hysterium rufescens Schw., Syn. Fung. Car. no. 252. p. 50. 1822.

Ascobulus conglomeratus Schw., Syn. Fung. Am. no. 960. p. 178. 1831.

Angelina conglomerata (Schw.) Fr., Summa Veg. Scand. p. 358. 1849.

Exsic.: Ellis, N. A. F. no. 466.

Ascomata usually densely gregarious, erumpent-superficial, sessile, when fresh elliptical or elongated and variously curved and sinuous, disk widely exposed, slate-gray, externally brown and grumous, margin paler, rather thick, about .75 mm. wide, 1–3 mm. long; when dry hysteriiform, disk and exterior reddish-brown, the margin usually paler or yellowish. Excipulum minutely parenchymatous, brown. Asci conspicuously narrowed below to a slender pedicel the ascigerous portion narrowly elliptical or lanceolate, apex rounded, not blue with iodine, 90–110 x 4–8 μ. Spores 8, biseriate in the upper part of the ascus, fusoid-oblong or clavate-oblong, ends rounded, hyaline, smooth, for a long time continuous, finally 1-septate, not constricted, 8–15 x 3–4 μ. Paraphyses very slender, branched, curved and flexuous, slightly thickened at the apices which cohere to form the epithecium.

On much decayed wood, especially on the tops of rotten oak and chestnut stumps. Spring and Autumn.

New England (Curtis); New York (various collectors); New Jersey (Ellis); Pennsylvania (Schweinitz); N. Carolina (Curtis and Schweinitz); S. Carolina (Ravenel).

Excluded species. *Angelina nigro-cinnabarina* (Schw.) B. & C., Jour. Linn. Soc. 10:373, and *A. lepieurii* Mont., Syll. p. 188, also Jour. Linn. Soc. 10:372, belong to the genus *Tryblidiella*.

Botanical Laboratory, Cornell University.

PRELIMINARY NOTES ON SOME NEW SPECIES OF FUNGI.

GEO. F. ATKINSON.

AGARICUS CRETACELLUS, Atkinson n. sp. — Plants gregarius, sometimes a few jointed at the base; 5-8 cm. high, pileus 4-7 cm. broad, stems 6-10 mm. in thickness. PILEUS white convex to expanded, thin, smooth, sometimes inclined to be slightly viscid in wet weather, when leaves cling to the surface; sometimes with slight yellowish stains, flesh white with a tinge of pink sometimes. GILLS narrow, 3-4 mm., narrowed behind, free, first white, then pink, and later dark greyish brown, not becoming blackish. The caps are sometimes fully expanded when the gills how only a slight tinge of pink. SPORES 4-5 x 3μ. STEM tapering from the enlarged base, white, smooth above the annulus, chalky white below and covered with minute white powdery scales often arranged in irregular concentric rings below; stem solid but the center less dense. ANNULUS persistent, white, smooth above, the lower surface with very fine floccose scales similar to those on the stem from which the annulus was separated. Odor and taste of almonds, as in A. arvensis. Growing in leaf mold, woods, Cascadilla creek, Ithaca, N. Y. C. U. herb. No. 5359, collected by Geo. F. Atkinson, September 7, 1900.

AMANITA FLAVOCONIA, Atkinson n. sp.—Plants usually scattered, sometimes gregarious, 6-12 cm. high, pileus 3-8 cm. broad stems 4-15 mm. thick. PILEUS convex then expanded, plane or broadly umbonate, fleshy, very thin except at the center, chrome yellow to orange yellow, darker when young and on the center, smooth, that is not striate, viscid, flesh white, covered with numerous small flocculent patches or heaps of fragments of the yellow powdery volva, which is easily removed and in wet weather sometimes is entirely absent from the pileus. GILLS broad in the larger specimens, narrow in the smaller ones, 4-8 mm. broad, rounded at each end, free, not very crowded, white, very finely serrate or fimbriate from threads which attached the gills to the stem in the young plants. SPORES oval-ovate, white, 6-9x4-6μ. STEMS stuffed, straight or flexuous, slightly tapering from the bulbous base, and at the apex broadening slightly, covered with flocculent scales, tinged with sulphur, fine sulphur powder above the annulus, portions below the annulus covered with powdery masses or particles of the universal veil. Bulb not very prominent, smooth or rarely somewhat cracked, powdered with remnants of the volva. ANNULUS sulphur yellow or chrome yellow, membranous. The VOLVA or universal veil consists of a yellowish powdery substance which separates into numerous powdery masses, covering the pileus and base of the stem, but which easily falls away.

This species has been confounded with *A. frostiana,* and possibly the larger specimens with *A. muscaria.* It differs from both in the pileus not being striate, and from *A. frostiana* in the volva not being ocreate, and from *A. muscaria* in the stem being smooth, that is, in not having the coarse concentrically aranged scales.

Ground under Spruce hemlock east of Woodwardia Swamp, Freeville, N. Y., June 30, 1898, G. F. A. C. U. herb. No. 2420; woods north of Fall Creek, Ithaca, July 25, 1902, Bradfield & Thom, C. U. herb. No. 9963, and other places at Ithaca. It was quite common at Ithaca during the summer of 1902. It is the common yellow Amanita in the Adirondack woods.

AMANITA FLAVORUBESCENS Atkinson n. sp.— Plants scattered of gregarious, sometimes with the bases joined, 10-14 cm. high, caps 6-10 cm. broad, stems 6-12 mm. thick. PILEUS convex to expanded, smooth, with very faint striæ on the margin, covered with thick, chrome yellow, floccose patches of the volva, margin of pileus yellow, center wood brown to raw umber, flesh thin, yellowish even under the brown cuticle over the center. GILLS long elliptical free, white, not crowded. BASIDIA clavate, 40-50 x 9-11 μ, 4-spored. SPORES oboval, granular, smooth, 8-10 x 6-8 μ. TRAMA of cap floccose, outer layer more compact and the threads slender. STEM even, with an ovate bulb, floccose scaly with fine floccose yellow scales above, and with reddish scales below. ANNULUS thin, membranous, yellow, 3 cm. from the apex of the stem, sometimes tearing into fragments. VOLVA yellow, breaking up into fragments.

This species is near *A. rubescens,* but the margin of the pileus, the volva, annulus and the upper part of the stem is canary yellow. Bruises of the pileus and the upper part of the stem do not turn red, (or only slightly so and very tardily), but bruises of the lower part of the stem turn slowly reddish. Ground, Coy Glen, Ithaca, N. Y., July 22, 1902, C. H. Kauffman, C. U. herb. No. 9884. The species has also been received from Connecticut and from Pennsylvania.

AMANITOPSIS ALBOCREATA Atkinson n. sp.—Plants 10-13 cm. high, pileus 5-8 cm. broad, stems 6-12 mm. thick. PILEUS convex to expanded, viscid when moist, white, or pale maize yellow in the center, or sometimes entirely pale maize yellow, finely striate and minutely tuberculate on the margin, covered with floccose patches of the volva which are easily removed when moist, but in drying become firmly agglutinated to the viscid surface; flesh very thin except at the center, white. GILLS rounded in front, narrowed behind, 3-6 mm. broad, free or slightly adnexed, edge floccose. BASIDIA 30-45 x 7-10 μ, 4-spored. SPORES globose, white, smooth, granular when young, with a large oil drop when old. Subhymenium of globose cells 6-12 μ in

diameter. TRAMA of gills thin, middle layer of parallel cells, and from these the branches diverge as they descend in the trama. TRAMA of cap, inner portion of large cells, surface of minute slender threads. STEMS cylindrical, slightly tapering upward, white, minutely floccose mealy scales, hollow, abruptly enlarged below into a bulb. VOLVA ocreate, the limb narrow as in *A. pantherina,* sometimes very slight, the stem also sometimes with floccose patches of the upper part of the volva in irregular concentric rings on the lower part of the stem, the upper part of the volva forming floccose patches on the pileus.

This species differs from *A. nivalis* Grev., in the ocreate volva, that of *A. nivalis* Grev. being vaginate. *A. nivalis* of Peck, 42d Rept. N. Y. State Mu., p. 48, is probably identical. Ground in woods, Ithaca, N. Y. C. U. herb. No. 6097, Cascadilla woods, Miss Fisher, July 9, 1901; No. 9757, west shore Cayuga Lake, July 14, 1902, Miss A. T. Young; No. 9822, Beebe Lake woods, July 12, 1902, H. H. Whetzel.

BOLETUS CHAMAELEONTINUS Atkinson n. sp. — Plants 9-11 cm. high, pileus 8-10 cm. broad, stem 2 cm. thick. PILEUS convex, thick, flesh 2 cm. thick at the center, drab to hair brown, subtomentose and with minute appressed scales, later rimose areolate something like *B. scaber,* but the chinks not so deep; flesh white tinged with yellow, changing first to reddish, then to blue, the red appearing first in the upper half, later spotted red and blue. TUBES convex, depressed around the stem, first yellowish, then reddish, in age the mouths tinged with red; tubes small, mouths round or uneven, changing to blue where bruised. SPORES olive yellow under the microscope, elliptical to oblong, smooth, 12-15 x 4-5 μ. STEM reddish all over or only at top and bottom, reticulate or dotted as in *B. luridus,* even or slightly enlarged below; flesh yellow, deep red just under the surface, center yellow changing to blue. Ground woods, Ithaca, N. Y. C. U. herb. No. 9842, July 19, 1902, and other dates.

BOLETUS UMBROSUS Atkinson n. sp. — Plants 8-10 cm. high, pileus 5-9 cm. broad, stems 1.5-2 cm. thick. PILEUS convex then expanded, fleshy, subtomentose and in age cracking into very fine areoles somewhat as in *B. subtomentosus*; flesh whitish very slowly changing to flesh color then brown; pileus mummy brown to walnut brown. TUBES convex, at first white, then becoming pale brown, in age deeper brown, when bruised becoming dark brown. STEM same color as the pileus but paler, broadly and irregularly furrowed or rugose longitudinally, with very minute dark points seen under the lens. Base of stem tapering into a short root. West shore Cayuga Lake, July 29, 1902, C. H. Kauffman, C. U. herb. No. 13067.

COLLYBIA RUGOSOCEPS Atkinson n. sp.— Plant 8 cm. high, pileus 5 cm. broad, stem 1.5 cm. thick. PILEUS somewhat cam-

panulate, very strongly and deeply rugose, dull yellow with a smoky tint which is darker on the center, flesh white, thin. GILLS broad (6 mm.), distant, adnate, white. BASIDIA long clavate, 50-65 x 6-8 μ, 4-spored. SPORES oboval to subelliptical, smooth, white, 8-11 x 7-9 μ, with a large oil drop. CYSTIDIA clavate to subelliptical, very long, arising from the trama of the gills, 100-180 x 25-35 μ, hyaline, thin walled. TRAMA of gills broad, of flexuous much interwoven threads. TRAMA of pileus of two layers; inner layer floccose; outer layer a palisade layer of long clavate cells, 60-100 x 15-20 μ. STEM white, dusky below, furrowed, ventricose, spongy within, then hollow, with a cartilaginous rind and with a short root. Taste and odor not marked.

Ground, South Hill woods, Ithaca, N. Y., July 27, 1902, C. O. Smith, C. U. herb. No. 13062.

ECCILIA MORDAX Atkinson n. sp.—Plants gregarious usually, 5-7 cm. high, pileus 2-5 cm. broad, stem 3-5 mm. thick. PILEUS convex, umbilicate, margin inrolled, smooth, dull reddish brown or pale chestnut, hygrophanous, tough, rarely cracked radially, flesh dirty white, thin. GILLS dirty flesh color, adnate to slightly decurrent, not crowded. BASIDIA clavate, 25-30 x 6-8 μ, 4-spored. CYSTIDIA none. SPORES oval, 6-7 x 4-5 μ, pale flesh color. SUBHYMENIUM of small cells 4-8 μ in diameter. TRAMA of gills of short flexuous cells, 30-60 x 6-10 μ. TRAMA of pileus floccose, homogeneous. STEM same color as cap, cartilaginous, tough, fistulose, smooth, often compressed. Taste at first not marked, but if a small portion of the plant is swallowed, in fifteen to twenty minutes afterward there is a burning sensation in the throat which often continues for 24 hours. Ground, McGowan's woods, Ithaca, N. Y., August 1, 1901, C. O. Smith, C. U. herb. No. 7593*a*, and other numbers and localities.

ECCILIA RHODOCYLICIOIDES Atkinson n. sp.— Plants scattered, or two or three clustered, small 3-5 cm. high, pileus 5-12 mm. broad, stem 1-2 mm. thick. Entire plant mouse color, gills a little paler and slightly tinged with flesh color. PILEUS convex, umbilicate, fine floccose scales in the center, margin faintly striate, thin. GILLS arcuate, distant, decurrent, bristling with white cystidia under the hand lens. BASIDIA clavate-cylindrical, 30 x 10-12 μ, 4-spored. SPORES quadrate to subquadrate, 8-10 μ, attached to sterigmata by one of the angles. SUBHYMENIUM of irregular cells, 10-15 μ in diameter. TRAMA of gills of long large interwoven cells. TRAMA of pileus floccose, outer portion of long adpressed cells with smoky content. STEM cartilaginous, hollow, above paler than the pileus. McGowan's woods, Ithaca, N. Y., July 23, 1901, J. M. Holzinger, C. U. herb., No. 7045.

ECCILIA PENTAGONOSPORA Atkinson n. sp. — Plants scattered, 2-3 cm. high, pileus 5-1.5 cm. broad, stems 1-2 mm. thick. Pileus and stem mouse gray to light gray, gills flesh color.

PILEUS umbilicate to infundibuliform, very thin, fibrous striate, smooth or with very minutely roughened surface. GILLS 2-4 mm. broad, not very crowded, decurrent, ascending. BASIDIA clavate, 25-30 x 8-10 μ, 4-spored. STERIGMATA conic, broad at the base. SPORES subquadrate, prominently 4-5 angled, usually 5 angled, 6-10 μ in diameter, pink. SUBHYMENIUM of cells 6-10 μ in diameter. TRAMA of gills of long nearly parallel cells, 80-200 x 10-15 μ, hyaline. TRAMA of pileus of floccose cells, the surface ones more or less ascending. CYSTIDIA none. STEMS cylindrical, even, solid, mouse gray, white within, base sometimes with delicate white threads. Ground, lawn, Stewart Ave., Ithaca, N. Y., June 29, 1901, G. F. A., C. U. herb. No. 6078. Taste and odor mealy.

NOLANEA NODOSPORA Atkinson n. sp. — Plants 6-7 cm. high pileus 1-1.5 cm. broad, stem 1.5-2.5 mm. thick. Entire plant dark brown (seal brown). PILEUS campanulate, very scaly with squarrose scales, flesh brown. GILLS ascending, ventricose, and then adnate. BASIDIA 30-35 x 8-10, 4-spored. SPORES elongate, nodulose elongate, 12-18 x 6-9 μ, flesh color on paper, faint pink under the microscope. CYSTIDIA on edge of the gills, giving a hairy or fimbriate appearance to the edge, unevenly distributed, ventricose, lanceolate. TRAMA of gills flexuous interwoven threads. TRAMA of pileus two-layered; inner floccose; outer more compact and separated often by a dark line, surface with colored threads, rich wine color under the microscope. STEM very hairy, paler above, becoming fistulose, slightly enlarged at base. Ground, woods, Six Mile Creek, Ithaca, N. Y., Aug. 8, 1902, R. R. Gates, C. U. herb., No. 13431.

HYGROPHORUS PECKII Atkinson n. sp.— Plants gregarius or scattered, 6-10 cm. high, pileus 1-2.5 cm. broad, stems 2-4 mm. thick. PILEUS convex with the margin somewhat incurved, in age and when expanded often depressed or slightly umbilicate, entire plant buff to pinkish or vinaceous buff, when damp showing fine striations on margin of pileus, sometimes the pinkish color showing only in the depressed portion of the pileus; entire plant very slimy, when young sometimes the slime is greenish in color. GILLS broad, distant, arcuate and as the pileus expands decurrent. SPORES elliptical, slightly inequilateral, smooth, granular, 6-8 x 4-5 μ. STEMS fragile, hollow, often splitting longitudinally. Odor fœtid. Sometimes when the plants are young they are covered with a greenish slime as in *H. psittacinus,* which gives a green color to the pileus and the upper part of the stem and sometimes to the gills, so that the plant has a different aspect, but it has the same odor and the spores are the same. It differs from *H. foetens* in the pileus and stem not being scaly, and from *H. psittacinus* in the arcuate and decurrent gills and the odor. Sometimes the gills are white and the stem yellowish. Ground, woods,

near Cornell Heights, Ithaca, N. Y., July 11, 1902, C. H. Kauffman, C. U. herb., No. 9733; McGowan's woods, July 2, 1902, H. H. Wetzel, No. 9667. I have also collected it at Blowing Rock, N. C., and Dr. Peck and myself collected it at Piseco, N. Y., in August, 1902.

LEPIOTA CALOCEPS Atkinson n. sp.—Plants gregarius, 6-10 cm. high, pileus 4-8 cm. broad, stems 6-10 mm. in thickness. PILEUS oval to convex and expanded, margin somewhat incurved at first, fleshy, solid, firm and somewhat brittle when fresh, 3-4 mm. thick at the center, thinning out to the margin, center sometimes broadly gibbous. First when young of an even wood brown to a tawny olive color, or yellowish toward the margin, as the pileus expands the outer layer cracks deeply into rectangular or nearly square areas showing the white flesh of the pileus beneath, color of the patches wood brown or tawny olive, or in some plants yellowish toward the margin. GILLS dingy white, firm and somewhat brittle, crowded, free but somewhat close and angular behind, 3-4 mm. broad, edge eroded. SPORES narrowly elliptical or nearly oblong somewhat obliquely truncate at the base and attached to the sterigma by one corner as in *L. cristata,* white, granular, smooth, 6-8x2.5-3 μ. STEM cylindrical, nearly even, fleshy, hollow, white above and dull flesh color below, the flesh showing the same colors in the same part of the stem; covered up to the veil by transversely elongated or angular patches of the universal veil of the same color as the patches on the surface of the pileus and showing the color of the stem between, these exposed parts of the stem covered more or less with white threads pulled out from the patches as they separate. VEIL more or less silky hairy, that is the inner portion, the outer portion of the same character as the universal veil. STEM nearly even, somewhat bulbous, and with rooting mycelial cords. Woods below spring in ravine, Cornell Heights, Ithaca, N. Y., Sept, 4, 1900, D. Griffin, C. U. herb., No. 5344.

LEPIOTA ECITODORA Atkinson n. sp.—Plants 5 cm. high, pileus 2 cm. broad, stem 2.5 mm. in thickness. PILEUS convex, pale lavender, minutely scaly, flesh white, thin. GILLS 3 mm. broad, narrow in front, rounded behind, white, tinged with yellow. BASIDIA clavate, 25-28 x 6-7 μ, 4-spored. CYSTIDIA none. SPORES cylindrical, smooth, 9-11 x 2-2.5 μ. SUBHYMENIUM of irregular cells, 4-10 μ in diameter. TRAMA of gills of large flexuous cells, 80-150 x 10-20 μ. TRAMA of pileus floccose, surface scaly of globose cells, 20-25 μ in diameter. STEM gradually smaller below, white and pruinose above, dark brown to blackish below, fleshy fibrous, rather tough. ANNULUS powdery, evanescent. Odor foetid, resembling that of eciton ants. Ground, Cascadilla woods, Ithaca, N. Y., Aug. 9, 1901, C. O. Smith, C. U. herb., No. 7656.

LEPIOTA PURPUREOCONIA Atkinson n. sp.—Plants scattered, 4-5 cm. high, pileus 1-2 cm. broad, stems 3-4 mm. in thickness. PILEUS convex, flesh very thin, whitish but covered with a heliotrope purple powdery substance which forms a universal veil when young. GILLS broad, stout, rounded, close but free, rather distant. SPORES elliptical, smooth, white, 8-10 x 3-4 μ. STEM even, solid, fleshy, whitish and covered with the powdery substance up to annulus. ANNULUS evanescent, remnants of universal veil. STEM heliotrope purple. Flesh and gills white, yellowish tinged. Ground, woods, Ithaca Flats, N. Y., Sept. 27, 1900. C. O. Smith, C. U. herb., No. 5404.

LEPTONIA SETICEPS Atkinson n. sp.—Plants scattered, 1-2 cm. high, pileus 1-3 cm. broad, stems 2-3 mm. in thickness. PILEUS convex to expanded, margin somewhat incurved at first, walnut brown, darker on the center, faintly and finely striate. Under the hand lens minutely granulose, darker points, otherwise smooth, flesh whitish, very thin. GILLS slightly adnexed, about 4 mm. broad, elliptical, edge eroded, pale flesh color. BASIDIA cylindrical, 18-25 x 6-8 μ, 4-spored. PARAPHYSES oblong with rounded ends somewhat shorter and broader than the basidia. Do they elongate and form basidia? CYSTIDIA none or very rare on the surface of the gills; on the edge numerous, clavate to elliptical, hyaline, 50-60 x 10-15 μ. SPORES oval to subglobose, smooth, flesh color on white paper, very pale under the microscope. TRAMA of gills of long cylindrical cells conveging as they descend in the gill and often lying more or less criss cross at different angles of divergence, cells 200-300 x 10-15 μ. TRAMA of pileus of two layers; middle and lower portion floccose but many cells long, slightly clavate and lying at various angles to the surface of the pileus and each other and criss cross; surface layer of two different kinds of cells, 1st oval to clavate usually long pedicelled cells 30-50 x 25-40 μ with smoky content forming a rather compact layer two cells in thickness; 2d, cells lanceolate to fusoid, 90-120 x 10-15 μ, straight or somewhat curved with smoky content, arising from small cells just beneath the larger ones, and projecting above the surface. STEM smooth, whitish below, above same color as pileus but paler, fibrous striate, even or very slightly enlarged below, straight or curved, fleshy, continuous with the pileus, solid. Taste not marked. On rotten logs or *very* rotten wood on the ground. McGowan's woods, July 2, 1902, Ithaca, N. Y., C. U. herb., No. 9664, and other places.

PLEUROTUS STRATOSUS Atkinson n. sp — Plants gregarious and sometimes imbricate. PILEUS sessile or with a very short lateral stem, 2-5 cm. broad, 2-3 cm. long, obovate to broadly cuneate, margin plane or crenate wavy in the larger and older specimens, sordid white or pale tawny, minutely tomentose, or some with the hairs long and gathered into reticulate tufts, convex or de-

pressed, thin, soft, tough, not striate. GILLS sordid white, or in age pale yellow, very narrow, 1-1.5 mm., converging to point of attachment of pileus to the wood, crowded. BASIDIA clavate, 20-25 x 4-5 μ, 4-spored. *SPORES* oval to subglobose, smooth, white granular, 2-3 μ. CYSTIDIA numerous, short lanceolate to fusoid, thickwalled, hyaline or sordid yellowish, arising below the subhymenium, exposed portion of tip rough, 45 x 10-14 μ. Cystidia on edge of gills smaller and some of them capitate as in some species of *Galera*. SUBHYMENIUM of irregular cells, 4-6 μ in diameter. TRAMA of gills of very irregular flexous interwoven threads. TRAMA of pileus remarkable, of four layers; inner layer about half the thickness of the pileus, compact, floccose interwoven; second layer, open, slender, distant, palisade threads in a gelatinous matrix; third layer compact, thin; fourth and outer layer erect tomentose. On rotting wood. On decaying bass wood limb, Warner's Glen, Cayuga Lake, Ithaca, N. Y., June 30, 1901, G. F. A., C. U. herb., No. 6083; on rotting log, McGowan's woods, Ithaca, N. Y., August 5, 1901, C. O. Smith, C. U. herb., No. 7620; rotten wood, west Cayuga Lake, July 19, 1902, C. H. Kauffman, C. U. herb., No. 9841.

PLUTEUS FLAVOFULIGINEUS Atkinson n. sp.—Plants scattered, 5-7 cm. high, pileus 4-5 cm. broad, stems 4-6 mm. in thickness. PILEUS oval to convex, sometimes slightly umbonate, very thin, chrome yellow with a smoky tinge and with smoky radiating lines which anastomose more or less near the center. In young plants surface darker, minutely tomentose from numerous fusoid, acuminate, straight or curved cells containing a dull pigment which gives the smoky color to the cap. Margin not striate, flesh thin. GILLS free, rounded at both ends, 3-5 mm. broad, not very crowded, deep flesh color. BASIDIA clavate, 30-35 x 6-7 μ, 4-spored. SPORES oval, smooth, colored like the gills, 5-7 x 4-6 μ. CYSTIDIA numerous, fusoid, ends blunt, hyaline, 80-100 x 12-20 μ. SUBHYMENIUM of rounded cells 6-10 μ. TRAMA of gills of cylindrical cells converging as they descend in the gills. STEM pale pink to flesh color, smooth, solid, flesh pink, becoming fistulose. On very rotten wood, woods, Coy Glen, Ithaca, N. Y., August 6, 1901, G. F. A., C. U. herb., No. 7619.

POLYPORIS HOLOCYANEUS Atkinson n. sp.— Plants gregarious and somtimes several with the bases joined, 5-7 cm. high, pileus 2-6 cm. broad, stems 4-8 mm. in thickness. Entire plants deep blue when fresh, the tubes lighter colored, and somewhat iridescent when fresh, giving to the unaided eye somewhat the appearance of a *Hydnum*. In drying the color becomes much duller, the cap dull brown to dull reddish brown or in younger specimens with a tinge of blue or purple, the stem passing through similar changes but remaining darker, while the tubes quite lose the blue color and

become grayish brown. PILEUS thin, convex to expanded, in age depressed, margin more or less irregular and wavy, hygrophanous, smooth. TUBES rather large, angular and irregular, dissepiments thin and the edge more or less lacerate or fimbriate. BASIDIA clavate, 20-25 x 5-6 μ, 4-spored. SPORES hyaline, smooth, with a large oil drop, 4-5 x 3-4 μ. STEM even, reticulate above. On the ground under conifer trees (*Picea* or *Tsuga*), in Glen Burney, Blowing Rock, N. C. September, 1901, Atkinson and Troyer. C. U. herb., No. 10523.

POLYPORUS CASTANOPHILUS Atkinson n. sp.—PILEUS dimidiate, sessile, convex, 10-20 cm. broad, 10-12 cm. long, zonate, more or less rugose and sometimes tomentose toward the base, reddish yellow to reddish orange, flesh yellowish, zoned, soft and watery but tough and drying somewhat shrunken but hard and firm. TUBES plane, medium size, dissepiments thin, edges very finely fimbriate, chrome yellow to bright orange, drying dull yellow or reddish brown, tubes 6-8 mm. long. BASIDIA clavate, 15-20 x 4-5 μ, 4-spored. SPORES white, hyaline, smooth, with a few granules, 3 x 2 μ. On decorticated and one-half rotted chestnut logs. Woods, Blowing Rock, N. C., September 1901, G. F. A., C. U. herb., No. 10072.

STROPHARIA COPRINOPHILA Atkinson n. sp.—Plants clustered, often with the bases of several joined, 3-7cm. high, pileus 2-6 cm. broad stems 6-15 mm. in thickness. PILEUS convex to expanded and margin often elevated in age, fleshy, 2-3 mm. thick, thin at the margin, dingy white and soft with a finely floccose surface appearing something like a chamois skin and often with numerous appressed scales. Margin appendiculate with fragments of the veil. GILLS adnate, slightly sinuate, 4-6 mm. broad, grayish then dark brown, edge white. SPORES blackish with a slight purplish tinge, brown with purplish tinge under the microscope, oval to short oblong or elliptical, smooth, 7-8 x 3.5-4.5 μ. BASIDIA clavate, 30-35 x 6-8 μ, 4-spored. CYSTIDIA clavate to subventricose, extending above the hymenium and arising from the lower part of the subhymenium, 60-65 x 10-12 μ. STEM fleshy, separating easily from the flesh of the pileus, soft, hollow, even or somewhat enlarged at the base, whitish, fibrous striate, floccose scaly with a delicate annulus near the base where the margin of the cap separates from the stem in young stage. Parasitic on clusters of *Coprinus atramentarius,* Ithaca Flats, N. Y., October 9, 1900, C. O. Smith, C. U. Herb., No. 5424; lawn near armory, C. U. campus, October 14, 1901, G. F. A., C. U. Herb., No. 7852. Also at St. Paul, Minn., autumn 1901, O. W. Taylor. Edible. Taste when fresh exactly like that of *Coprinus atramentarius.* The host is deformed and prevented from opening fully, but in some specimens the gills and pileus were well enough developed to permit of identification.

HYDNUM CRISTATUM Bresadola n. sp.—Plants scattered,6-10 cm. high, pileus 6-10 cm. broad, stems 8-15 mm. in thickness. PILEUS convex to expanded, more or less uneven, irregular, and margin sometimes wavy, fleshy, thick, soft but rather tough, ochre yellow covered with numerous strigose hairs in the form of crests. TEETH 3-6 mm. long, tawny olive, becoming dark grayish brown in drying. BASIDIA clavate 25-30 x 6-8 μ, 4-spored. SPORES tawny olive on paper, dull brownish under the microscope, globose, tuberculate, 4-5 μ. STEMS same color as cap, teeth decurrent. Ground in mixed goods, Blowing Rock, N. C., August-September 1901, G. F. A., C. U. herb., No. 11127, collected also in 1899 at same place.

LACHNOCLADIUM ATKINSONII Bresadola n. sp.—Subcoriaceum; stipite elongato, compresso-canaliculato, pallido, tomentoso, 5-6 cm. longo, 1 cm. circiter crasso, apice subquadrifido; raris compressis, sulcatis, repitito verticillato—aut dichotomo—divisis, latere sterili tomentosulis, luride ochraceis; ramulis subteretibus, apice furcatis, flavido-stramineis; sporis hyalinis vel substramineis, lævibus, amygdaliformis-oblongatis vel subcylindriceis, 9-10 x 4.5-5.5 μ; basidiis clavatis.

Species pulchra, ambitu ramosum 6-7 cm. alta, 5-6 cm. late, gracilitate et colore ad *Clavariae* vergens, sed hymenio unilateri et stipite evidenter subceraceo inter *Lachnocladia* adnumeranda. Blowing Rock, N. C., August 1899, G. F. A., C. U. herb., No. 4216.

OHIO FUNGI. FASCICLE V.

W. A. KELLERMAN, OHIO STATE UNIVERSITY.

List of species:

81. Aecidium grossulariae (Pers.) Schum., on Ribes cynosbati L.
82. Aecidium hibisciatum Schw., on Hibiscus moscheutos L.
83. Albugo portulacae (DC.) Kuntze, on Portulaca oleracea L.
84. Cercospora elongata Peck., on Dipsacus sylvestris Huds.
85. Coleosporium solidaginis (Schw.) Thum., on Solidago canadensis L.
86. Coleosporium vernoniae B. & C., on Vernonia gigantea (Walt.) Britton.
87. Phragmidium potentillae (Pers.) Karst., on Potentilla canadensis L.
88. Puccinia atkinsoniana Dietel, on Carex lurida Wahl.
89. Puccinia caricis-erigerontis Arth., on Carex scoparia Schk.
90. Puccinia menthae Pers., on Monarda fistulosa L.
91. Puccinia nesaeae (Ger.) Ell. & Ev., Aecidium, on Decodon verticillatus (L.) Ell.
92. Puccinia polygoni-amphibii Pers., on Polygonum punctatum Ell.
93. Puccinia polygoni-amphibii Pers., on Polygonum convolvulus L.

94. Puccinia rhamni (Pers.) Wettst., on Avena sativa L. (cult.)
95. Puccinia sorghi Schw., on Zea mays L.
96. Puccinia violae (Schum.) DC., on Viola blanda Willd.
97. Scolecotrichum graminis Fuckel, on Alopecurus geniculatus L.
98. Uromyces euphorbiae Cke. & Pk., Aecidium, on Euphorbia humistrata Englm.
99. Uromyces hedysari-paniculati (Schw.) Farl., on Meibomia canescens (L.) Kuntze.
100. Uromycés howei Peck, on Ascelepias syriaca L.

In the study of the above species and compilation of the descriptions I have had the assistance of many mycologists to whom cordial thanks are hereby extended. To those to whom in addition special obligations are acknowledged are Messrs. J. B. Ellis, and J. C. Arthur.

This fascicle completes a century of specimens and those purchasing, rather than exchanging for the same, are notified that the price ($5.00) is now due.

The issue of specimens will be continued at intervals, perhaps four or five fascicles appearing in the course of the next twelve months.

81. Aecidium grossulariæ (Pers.) Schum.

On Ribes cynosbati L.

Olena, Huron Co., O. June 2, 1902.

Coll. O. E. Jennings.

"Aecidium rubellum *b*) grossulariae, thecis sparsis seminibusque pallidis. Persoon. Linn. Syst. Veg. 2:1473. 1796. (ed Gmelin.)

82. Aecidium hibisciatum Schw.

On Hibiscus moscheutos L.

Buckeye Lake, Licking Co., O. July 11, 1902.

Coll. W. A. Kellerman.

"Caeoma Aecidium Hibisciatum, L. v. S.....

"C. maculis orbiculatis lutescentibus, confluentibus. Pseudoperidiis, irregulariter sed densim sparsis tenuibus luteis. Sporidiis non compactis sed laxis lutescentibus." L. D. de Schweinitz, Transactions of the American Philosophical Society, Philadelphia, New Series, 4:293. 1834.

83. Albugo portulacæ (DC.) Kuntze.

On Portulaca oleracea L.

Perry, Lake Co., O. July 12, 1902.

Coll. F. J. Tyler.

"Uredo du pourpier. *Uredo portulacae.*

"Serait-ce encore une des variétiés de l'U. blanc? Il en diffère parce qu'il ne croit qu'à la surface supérieure des feuilles que ses pustules sont plus régulièrement arrondies, et s'ouvrent d'elles-mêmes à la fin de leur vie, pour donner issue à la poussière." De Candolle, Flore Francaise, 6:88. 1815.

84. Cercospora elongata Peck.

On Dipsacus sylvestris Huds.
Columbus, Ohio. July 25, 1902.
Coll. W. A. Kellerman.

"Cercospora elongata, *n. sp.* Spots irregular, angular, limited by the veinlets, often confluent, sometimes arid, brown, grayish-brown or cinereous; flocci emphigenous, tufted, colored, subflexuous, sometimes nodulose; spores elongated, obscurely three to manyseptate, gradually narrowed toward one end, colorless, .002 in. to .006 in. long, .00015 into .0002 in. broad, generally longer than the flocci." Chas. H. Peck, Annual Report of the State Museum, New York, 33:29. 1880.

85. Coleosporium solidaginis (Schw.) Thuem.

On Solidago canadensis L.
Edgerton, Williams Co., O. Sept. 15, 1902.
Coll. W. A. Kellerman.

"Coleosporium Solidaginis, Thuem.— C. acervulis hypo-raro etiam epiphyllis, gregariis, pulveraceis, minutis, tandem confluentibus, inquinantibus, applanitis, fulvis; sporis in catenulis conjunctis, catenulis erectis, sporidiis plus minus ellepticis vel globoso- ellipsoideis, 24–30 mm. long., 20 mm. crass., episporio distincto, crasso, granuloso-verruculoso, 2–3 mm. crasso, hyalino, nucleo flavo, intrinque rotundatis vel ad umbilico applanatis." F. De Theumen, Bulletin Torrey Botanical Club, 6:216. March, 1878.

86. Coleosporium vernoniæ B. & C.

On Vernonia gigantea (Walt.) Britton.
Columbus, Ohio. Sept. 8, 1902.
Coll. O. E. Jennings.

"Coleosporium Vernoniae. *B.* & *C.*— Maculis pallidis; soris parvis sparsis melleis; sporis ex obovatis subfusiformibus triseptatis." M. J. Berkeley, Grevillea, 3:57. December, 1874.

87. Phragmidium potentillæ (Pers.) Karst.

On Potentilla canadensis L.
Brush Lake, Champaign Co., O. May 30, 1902.
Coll. J. H. Schaffner and F. J. Tyler.

"Puccinia potentillae: subrotunda sessilis nigra, sporulis cylindricis obtusis.

"Pustulas in inferiore folii pagina sistit nigras sparsas. *Sporulae* eadem fere sunt forma, ac in sequente specie, sed mucrone destitutae sunt; septulis ut plurimum tribus distinctae sunt." D. C. H. Persoon, Synopsis Fungorum, 229. 1801.

88. Puccinia atkinsoniana Dietel.

On Carex lurida Wahl.
Columbus, Ohio. April 5, 1902.
Coll. W. A. Kellerman.

"Puccinia atkinsoniana Dietel n. sp. Sori on the under side of the leaves, a few also upon the upper side. Uredo-sori elliptical to linear, cinnamon-brown, surrounded by the ruptured epidermis. Uredospores elliptical, obovate or rarely spherical, 22–30x17–22, epispore spinulose, yellowish-brown, with 2 germpores lying very near the apex. Teleutosori blackish-brown, arched in the form of a cushion, circular, elliptical or linear, firm. Teleutospores mostly clavate, at the septum generally somewhat deeply constricted, 40–60 x 18–28, upper cell spherical or oval, rounded at the apex, provided with a thick wall, at the apex 5–10 in diameter, lower cell generally cuneiform and narrowing into the pedicel or rounded at the base, epispore smooth, brown; pedicel 20–60 long, durable." Geo. F. Atkinson, Some Fungi from Alabama, Bulletin of the Cornell University (Science) 3:19. June 1897.

89. Puccinia caricis=erigerontis Arth.

On Carex scoparia Schk.
Buckeye Lake, Licking Co., O. Sept. 10, 1902.
Coll. W. A. Kellerman.

PUCCINIA CARICIS ERIGERONTIS sp. nov.

O. Spermogonia epiphyllous, prominent, golden yellow.

I. Aecidia hypophyllous, in circular clusters; substratum slightly thickened; peridia short, much divided and recurved; aecidiospores yellow when fresh, isodiametric, 12–15 μ in diameter, wall thin, minutely tuberculate.

II. Uredosori hypophyllous, small, oblong, tardily naked; uredospores brownish-yellow when fresh, oval or obovate, small, 12–18 by 16–22 μ wall thin, thickly echinulate, pores 3 or 4 scattered.

III. Teleutosori hypophyllous, small, oblong, pulvinate, blackish brown, ruptured epidermis evident; teleutospores clavate or oblong-clavate, 14–20 by 35–42 μ; septum above the middle; apex obtuse or truncate, much thickened; side walls thin; pedicel firm; colored, one fourth or one half the length of the spore. J. C. Arthur, Journal of Mycology, 8: 53–4. June, 1902.

90. Puccinia menthæ Pers.

On Monarda fistulosa L.
Toledo, Lucas Co., O. Sept. 15, 1902.
Coll. W. A. Kellerman.

"PUCCINIA MENTHAE: sparsa punctiformis obscure spadicea, sporulis subquadrangularibus: cauda brevissima. *"Sporulae septulo unico distinctae."* D. C. H. Persoon, Synopsis Methodica Fungorum, 227. 1801.

91. Puccinia nesaeæ (Ger.) Ell. & Ev.

Aecidium nesaeae Ger.

On Decodon verticillatus (L.) Ell.

Brush Lake, Champaign Co., O. June 18, 1902.

Coll. J. H. Schaffner and F. J. Tyler.

"Aecidium Nesaeae, *n. sp.* — *Spermogonia.* — Spermogonia situated on a thickened yellowish spot, on the upper surface of the leaves, opposite the clusters of peridia. *Protospores.* — Perithecia densely aggregated seated on a greatly thickened subiculum, either in circinating or elongated clusters; spores orange yellow, .0007 in. in diameter." W. R. Gerard, Bulletin of the Torrey Botanical Club, 4:47. October 1873.

92. Puccinia polygoni-amphibii Pers.

On Polygonum punctatum Ell.

Columbus, Ohio. Sept. 3, 1902.

Coll. F. J. Tyler.

PUCCINIA POLYGONI AMPHIBII: opaca spadicae depressa, sporulis oblongo-ovatis in caudam tenuem attenuatis. "Maculam exhibet difformem, colore sordidam griseo-fuscam." D. C. H. Persoon, Synopsis Methodica Fungorum, 227. 1801.

93. Puccinia polygoni-amphibii Pers.

On Polygonum convolvulus L.

Columbus, Ohio. Sept. 1, 1902.

Coll. W. A. Kellerman and F. J. Tyler.

Supplement to No. 92.

94. Puccinia rhamni (Pers.) Wettst.

On Avena sativa L. (cult.).

Columbus, Ohio. July 21, 1902.

Coll. W. A. Kellerman.

The following is copied from description of American Uredineae, II, by J. C. Arthur and E. W. D. Holway, as printed in the Bulletin Lab. Nat. Hist. State Univ. Iowa, 4:398. Dec., 1898.

"P. coronata: Tab. 11. fig. 96. acervulis linearibus, brevibus, minutis, obscure-fuscis, epidermide palescente cinctis; sporis sessilibus, subclavatis, apice dentibus acutis stellato-radiatis flammeis coronatis, infra luteis. Long. spor. 0,00175. p. p." Hab. in foliis Luzulae albidae prope Reichenberg." — Corda, Icones, 1:6. 1837.

95. Puccinia sorghi Schw.

On Zea mays L.

Columbus, Ohio. Sept. 12, 1902.

Coll. O. E. Jennings.

"Puccinia Sorghi, L. v. S.,.....

P. emaculata. Acervis latis difformibus varie lobatis, primum epidermide tectis, demum denudatis sed in margine cinctis et tum epider-

mide lacerata Acervis saepe etiam, quasi versus centrum internum lobatis—2—4 lineas longis latisque. Majores acervi ad nervos foliorum occurrunt. Sporidiis aterrimis grossis, breviter pedicellatis." L. D. de Schweinitz, Transactions of the American Philosophical Society, Philadelphia, N. S. 4:295. 1834.

96. Puccinia violæ (Schum.) DC.

On Viola blanda Willd.

Buckeye Lake, Licking Co., O. July 24, 1902.

Coll. W. A. Kellerman and O. E. Jennings.

"Puccinie de la violette. *Puccinia violae.*

"Il faut se garder de confondre cette puccinie avec l'urédo des violettes qui paraît plus fréquent; la puccinie naît à la surface inférieure des feuilles de la violette hérissée; ses capsules sont éparses, assez petites, d'un brun foncé, entourées par les débris de l'epiderme, de forme arrondie, rarement ovales ou confluentes; leur poussière, vue au microscope, présente des capsules ovoïdes, obtuses aux deux extrémités, divisées en deux loges par une cloison transversale, et munies d'un très-court pédicelle." De Candolle, Flore Francaise, 6:62. 1815.

97. Scolecotrichum graminis Fuckel.

On Alopecurus geniculatus L.

West Mansfield, Logan Co., O. May 10, 1902.

Coll. W. A. Kellerman.

"Scolicotrichum graminis. — Hyphis fasciculatis, brevibus, simplicibus, septatis, flavis, acervulos minimos formantibus, in macula exarida lineare seriatis; conidiis oblongis, didymus, flavis." L. Fuckel, Symbolae Mycologicae, 107. 1869.

98. Uromyces euphorbiæ Cke. & Pk.

Aecidium.

On Euphorbia humistrata Englm.

Columbus, Ohio. Sept. 1, 1902.

Coll. F. J. Tyler and O. E. Jennings.

"Lycoperdon Euphorbiae. Oraniengelbe, zerstreute Puncte; der Staub gesättigter." Franz von Paula Schrank, Baierische Flora, 2: 631. 1789.

"Aecidium euphorbiae. AE. confertum cylindricum, ore reflexo, seminibus aurantiis. Persoon. Jo. Frid. Gmelin, in Linn. Systema Vegetabilium, 2:1473. 1796.

99. Uromyces hedysari-paniculati (Schw.) Farl.

On Meibomia canescens (L.) Kuntze.

Belpre, Washington Co., O. Sept. 3, 1902.

Coll. W. A. Kellerman.

Supplement to No. 37.

100. Uromyces howei Peck.

On Asclepias syriaca L.

Belpre, Washington Co., O. Sept. 3, 1902.

Coll. W. A. Kellerman.

"Trichobasis Howei *n. sp.*

"Spore clusters scattered or subconfluent, hypogenous, surrounded by the ruptured epidermis, from one-half to one line in diameter; spores brown, subglobose, roughened with slight indentations, 1–1200 in.–1–1000 in. in diameter." "The spore clusters are sometimes sparingly, sometimes profusely scattered over the under surface of the leaf, or over a part of it. The spores are sometimes a little longer than broad, sometimes subpyriform, and occasionally furnished with a slight pedicel." Chas. H. Peck, Annual Report of the Regents of the University of the State of New York, 23:58. 1873.

NOTES ON SOME WEST AMERICAN FUNGI.

P. L. RICKER.

The following list is made up largely of some fungi collected by Messrs. E. D. Merrill and E. V. Wilcox in Wyoming and Idaho during the summer of 1901. The other notes were made from specimens found on grasses in the herbarium of the U. S. Department of Agriculture. The author is indebted to Dr. J. C. Arthur for verification of the determinations and descriptions of the Uredinaceæ. Two species which have not been determined are included to call the attention of botanists to them in hopes that other collections may be made. The author would be glad to receive additional specimens of both for further study.

PYRENOMYCETACEÆ.

Lasiobotrys loniceræ subcircinata E. & E. — On Symphoricarpus pauciflorus, No. 1216, Merrill and Wilcox, Leucite Hills, Wyo. June 16.

Physalospora aurantia E. & E.— On Astragalus pectinatus. No. 1222, Merrill and Wilcox, Laramie River, 16 miles S. W. of Laramie, Wyo.

Sphærotheca humuli (DC.) Burr. — On Collomia linearis. No. 1226, Merrill and Wilcox, St. Anthony, Idaho, July 5.

Ustilago caricis (Pers.) Fckl. — On Carex geyeri. No. 1205, Merrill and Wilcox, Jenny's Lake, Wyo., July 25.

Ustilago funalis E. & E.. — On Eriocoma cuspidata. Nos. 1197 and 1198, Merrill and Wilcox, Flockert's Ranch, Wyo., June 30.

UREDINACEÆ.

ÆCIDIUM ABUNDANS Pk. — On Symphoricarpus sp. No. 1191, Merrill and Wilcox, Leucite Hills, Wyo., June 16.

ÆCIDIUM ALLENII Clint.—On Lepargyræa canadensis. No. 1195, Merrill and Wilcox, Teton Pass, Wyo., July 13.

ÆCIDIUM SARCOBATA Pk.— On Sarcobatus vermiculatus. No. 1192, Merrill and Wilcox, Black Rock, Wyo., July 23.

ÆCIDIUM sp. indet.— On Thalictrum occidentale. No. 1256, Merrill and Wilcox, Victor, Idaho, July 11. It is doubtful if this is A. thalictri Grev. The cups are considerably elongated, and are in dense clusters which are scattered over the leaf.

CALYPTOSPORA GŒPPERTIANA J. Kühn.— On Vaccinium myrtillus. No. 1206, Merrill and Wilcox, Jenny's Lake, Wyo., July 25.

PHRAGMIDIUM FRAGARIASTRI (DC.) Schroet.— On Potentilla blaschkeana. No. 1209, Merrill and Wilcox, Wilson, Wyo., July 13.

PHRAGMIDIUM ANDERSONI Shear.— On Potentilla andersonii. No. 1201, Merrill and Wilcox, Jackson, Wyo., July 23.

PUCCINIA AGROSTIDIS Flowr. I.— On Aquilegia cærulea. Nos. 1222 and 1255, Merrill and Wilcox, Teton Pass, Wyo., July 12.

PUCCINIA CALOCHORTI Pk. — On Calochortus gunnisoni. No. 1223, Merrill and Wilcox, Victor, Idaho, July 10.

PUCCINIA DISTICHLIDIS E. & E. — On Spartina gracilis. No. 1219, Merrill and Wilcox, Laramie River, 20 miles S. W. of Laramie, Wyo., Aug. 22. This species has usually been referred to P. phragmitis (Schum.), but the specimen in question is not that species. P. distichlidis E. & E. was described[1] as occurring on Distichlis maritima, but according to Dr. Arthur who has examined the type specimen, the host should be Spartina.

PUCCINIA GIGANTISPORA Bubak.[2] — On Anemone globosa. No. 1194, Merrill and Wilcox, Gros Ventre River, Wyo., July 14.

PUCCINIA INTERMIXTA Pk.— On Iva axillaris. No. 1190, Merrill and Wilcox, Granger, Wyo., July 3.

PUCCINIA BARTHOLOMEWII Diet. — On leaves and sheaths of Leptochloa mucronata pulchella. No. Dr. Edw. Palmer, Guaymas, Mex., 1887.

PUCCINIA POCULIFORMIS (Jacq.) Wettst.— On Alopecurus geniculatus aristulatus. C. F. Wheeler, Agricultural College, Mich., Aug 3, 1892. I, On Berebis aquifolium (B. repens) No. 1224, Merrill and Wilcox, Victor, Idaho, July 10. This is

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[1]Proc. Acad. Nat. Sci. Phila. 1893: 152. 1893.
[2]Sitzungsber. Böhm. (Königl.) Gesell. der Wissensch. 1901.

evidently the same form as referred to by Tracy and Galloway,[3] and T. D. A. Cockerell.[4] It is characterized by its elongated cup; but according to Dr. Arthur it is not thought to be specifically distinct from the above. Both of the above citations refer it doubtfully to the Aecidium stage of P. mirabilissima Pk. No cultures have been made to lead to this belief, and we do not know of the two having been observed in the same locality.

PUCCINIA SAXIFRAGÆ Schlecht.— On Mitella pentandra. No. 1202, Merrill and Wilcox, Snake River, 20 miles south of Jackson, Wyo., July 19.

PUCCINIA SETARIÆ Diet. & Holw.— This species was described[5] and issued by Arthur and Holway in their Uredineæ Exsiccatae as occurring on Sectaria imberbis (Poir.) R. & S. At the time the host was determined by Prof. Scribner the species of Setaria (now Chætochloa) were imperfectly known. Later in revising the genus,[6] Scribner and Merrill changed the determination of the specimen sent by Mr. Holway, which is now in the herbarium of the office of the Agrostologist, to Chætochloa purpurascens (H. B. K.) S. & M. The species also occurs on No. 3556, J. N. Rose, City of Mexico, Mex. October 3, 1899.

PUCCINIA THALICTRI Chev.— On Thalictrum fendleri. No. 1215, Merrill and Wilcox, Leigh's Lake, Wyo., July 26.

PUCCINIA TOSTA Arth.— Under the description of this species[7] was cited two collections on Sporobolus utilis. The author has the specimen that was sent by Mr. Cockerell to the office of the Agrostologist for identification of the host, and it was determined at that time as Sporobolus depauperatus. The author has again compared the specimen with typical material in the herbarium of the office of the Agrostologist and confirms the original determination. The two species are easily confused from a small specimen or without roots, but their habit is quite different. It is probable that the specimens collected by Griffiths are also on the same host.

PUCCINIA VARIOLANS Hark.— On Eriocarpum spinulosum. No. 1221, Merrill and Wilcox, Laramie River, 16 miles S. W. of Laramie, Wyo., August 22.

RŒSTELIA sp. indet.—On Amelanchier pumila. No. 1204, Merrill and Wilcox, Snake River, Menoe's Ferry, Wyo., July 23. In habit this resembles R. harknessi, but Dr. Thaxter thinks that it is neither of our eastern ones. It may prove to be new.

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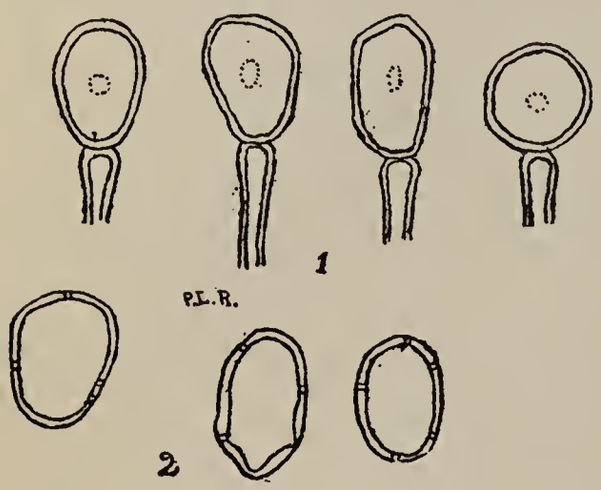
[3]Bot. Gaz. 13: 126–127. 1888.
[4]Journ. Mycol. 5: 85. 1889.
[5]Bot. Gaz. 24: 28. 1897.
[6]U. S. Dept. Agr. Div. Agrost. Bull. 21. 1900.
[7]Bull. Torr. Bot. Club, 29: 228. 1902.

UREDO POLYPHODII (Pers.) DC. — On Cystopteris fragilis, No. 1214, Merrill and Wilcox, Laramie River, 16 miles S. W. of Laramie, Wyo., August 22.

UROMYCES FRASERÆ Arthur & Ricker. sp. nov.— Sori amphigenous, oval or elliptical, sometimes confluent, 1-2 mm. long; uredospores obovate elliptical or oblong, 22-32 x 19-26 μ, with a colorless minutely verrucose membrane, and a greenish yellow content; germ-spores numerous, scattered over the whole surface; teleutospores globose obovate or oblong, often somewhat angular, 25-35 x 19-26 μ, chestnut brown, wall medium thick, apex not thickened; pedicel fragile hyaline, 7-16 x 3 μ. On Frasera speciosa. No. 1211, Merrill and Wilcox, Wilson, Wyo., July 13.



Figs. 1 and 2, four teleutospores and three uredospores, x 315.

UROMYCES GERANII (DC.) Otth. & Wartm. — On Geranium sp. No. 1208, Merrill and Wilcox, Wilson, Wyo., July 13.

UROMYCES SCUTELLATUS (Schrank.) Lev.— On Euphorbia robusto. No. 1189, Merrill and Wilcox, Point of Rocks, Wyo., June 20.

U. S. Dept. Agr., Bureau of Plant Industry.
Washington, D. C.

NORTH AMERICAN USTILAGINEAE.

G. P. CLINTON.

CONTRIBUTION FROM THE CRYPTOGAMIC LABORATORY OF HARVARD UNIVERSITY. 53.

The following paper is a result of studies made upon this group of fungi by the writer during the past two years in the Cryptogamic Laboratory of Harvard University. It is preliminary to a monograph of the Ustilagineae of North America that he hopes to issue in the near future, the work on this having been largely completed. In the present paper there is given a list of the species with their hosts and distribution so far as is now known. Synonyms have also been given in those cases where needed to show the identity of the species. The writer's studies have shown that a number of forms, described chiefly from this country, do not deserve distinct specific recognition and in such

cases these are also given as synonyms under the proper species. The generic position of a number of species has been changed and such changes are indicated at the proper place. A few new species are also described here for the first time. In this paper proper specific names are not capitalized in order to conform to the usage of this Journal though this does not represent the writer's ideas on the subject.

The writer is responsible for the following synonyms (printed in italics): *Cintractia patagonica* Cke. & Mass. (synonym of Ustilago bromivora); *Doassansia affinis* Ell. & Dearn. (Doassansia intermedia); *Entyloma castaliae* Holw. (Entyloma nymphaeae); *Entyloma holwayi* Syd. (Entyloma polysporum); *Schizonella subtrifida* Ell. & Ev. (Thecaphora trailii); *Sorosporium atrum* Pk. (Thecaphora aterrima); *Sorosporium bigeloviae* Griff. (Thecaphora pilulaeformis); *Sorosporium cenchri* Henn. (Sorosporium syntherismae); *Sorosporium williamsii* Griff. (Ustilago hypodytes); *Thecaphora astragali* (Pk.) Wor. and *Thecaphora desmodii* (Pk.) Wor. (Thecaphora deformans); *Tilletia serpens* Karst. and *Tilletia aculeata* Ule. (Ustilago macrospora); *Tilletia externa* Griff. (Cintractia externa); *Tilletia mixta* Mass. p. p. (Ustilago mulfordiana); *Tilletia rotundata* (Arth.) Ell. & Ev., *Ustilago maclagani* Berk. (Tilletia maclagani); *Tolyposporium davidsonii* Diet. & Holw., *Poikilosporium davidsonii* Diet., (Thecaphora piluaeformis); *Urocystis gei* Ell. & Ev. (Urocystis waldsteiniae); *Ustilago ambiens* Karst., *Entyloma ambiens* Johan., (Schizonella melanogramma); *Ustilago americana* Speg. and *Ustilago hilariae* Henn. and *Ustilago stenotaphri* of both Hennings and Massee (Ustilago affinis); *Ustilago andropogonis-saccharoides* Henn. (Sphacelotheca andropogonis-hirtifolii); *Ustilago apiculata* Ell. & Gall. (Tolyposporella brunkii); *Ustilago caricicola* Tr. & Earle (Ustilago olivacea); *Ustilago caricis* var. *douglasii* Shear. (Cintractia caricis); *Ustilago cylindrica* Pk. (Sphacelotheca ischaemi); *Ustilago eriocauli* Clint. *Cintractia eriocauli* Mass., (Ustilago eriocauli [Mass.] Clint.); *Ustilago filifera* Nort. (Ustilago hieronymi); *Ustilago fimbristylis* Thuem. (Cintractia axicola); *Ustilago holwayi* Diet. (Ustilago lorentziana); *Ustilago insularis* Henn. (Ustilago panici-leucophaei); *Ustilago juncicola* Speg.? (Cintractia montagnei); *Ustilago liebmanni* Henn. (Cintractia junci?); *Ustilago washingtoniana* Ell. & Ev. (Ustilago striaeformis).

The following species reported or described from North America are excluded from the Ustilagineae in this paper. The genera Cerebella and Graphiola, which have had several species reported from this country and which are usually placed by American botanists in this group, are omitted as not properly belonging here.

Ustilago arenariae Ell. & Ev. on Arenaria congesta from Colorado is certainly not an Ustilago but has the appearance of ascomycetous spores merely mechanically adhering to the host. Ustilago cyanea, parasitic on Balsamea vulgaris, was found in California by Harkness and made the basis of anew genus, Sporophaga, with possible relationship to the Uredineae or Ustilagineae. It may possibly belong with the Chytridineae but certainly not with the Ustilagineae. Ustilaginoidea oryzae (Pat.) Bref. has been reported in this country on imported rice seed. Brefeld's later work has shown that this genus does not belong with the Ustilagineae. Ustilago flavo-nigrescens B. & C. on Scleria sp. from Cuba and Ustilago viridis Ell. & Ev. on Setaria sp. from Louisiana appear, from an examination of authentic specimens, to be the sclerotial stages of species of Ustilaginoidea, the latter probably being the same as Ustilaginoidea setariae Bref. These species are therefore excluded. Ustilago ficuum on figs and Ustilago phoenicis on dates, both not uncommon in markets and Ustilago fischeri on kernels of corn (reported from Jamaica) are now known to be species of Sterigmatocystis. Sorosporium borrichiae Ell. & Ev. on Borrichia argentea from the island of Cozumel, off Yucatan, has been examined by the writer and likewise seems to be a species of Sterigmatocystis, appearing on the host apparently because the flower heads were dried under unfavorable conditions of moisture. Ustilago gynerii Vize on Gynerium argenteum from California was long ago shown to be a species of Gymnosporium. Entyloma alsines Hals. on Stellaria media from New Jersey seems not to be an Entyloma, at least a careful examination of the type material in several exsiccati and that received especially for examination failed to show any spore stage except the Cercospora-like conidia on the surface of the leaves. The writer is indebted to Bresadola for type material of Doassansia sintensii Bres. on Cedro matchos from Porto Rico. This is certainly no Doassansia. The diseased leaves are coriaceous and therefore not of the type infected by this genus; besides this, the discolored spots show nothing to indicate definitely what caused them. Doassansia zizaniae on old stems of Zizania aquatica and Burrillia globulifera occurring on similar parts of Glyceria fluitans, both described by Davis from Wisconsin, do not seem to be true Ustilagineae but are more probably sclerotial stages of species of Ascomycetes. Ustilago osmundae Pk., reported on Osmunda regalis first from New York and later from other eastern states, probably belongs with the Hyphomycetes instead of the Ustilagineae. This curious species needs further study. Ustilago panici-miliacei (Pers.) Wint. has been reported erroneously in this country, having been confused with Sorosporium syntherismae.

Sphacelotheca has been extended by the addition of a number of species usually placed under Ustilago. A few species have

also been changed from Ustilago to Cintractia. Sphacelotheca and Cintractia are not considered good genera by some botanists though apparently they deserve such recognition. As considered here Sphacelotheca is characterized by the possession of a false membrane of definite sterile fungous cells, that envelopes the sorus before its rupture. Groups of these sterile cells are also often found within the spore-mass. There is also present a central columella, usually composed of the remains of the plant tissues, and the spore mass when young shows a centripetal development around this. Because of this method of spore development certain of these species, as well as a few Ustilagos, have been placed under Cintractia by some botanists. Cintractia (including Anthracoidea of Brefeld), however, is characterized by spores, usually of a peculiar black-brown color, that develope gradually in a centripetal manner forming a sorus that remains rather permanently and firmly agglutinated. Species of this genus also often have more or less evidence of a false membrane and a columella. They occur usually on the Cyperaceae or on related families. The genus Thecaphora, as considered here, includes those species whose rather firmly united spore-balls consist of reddish-brown spores smooth on the contiguous surfaces but variously marked on the free. So far as is known the germination is by elongated germ tubes that usually produce solitary terminal conidia. Sorosporium, with which it has been confused, has spores much like Ustilago and the spore-balls are often only temporarily united. Burrillia has been made to include those Doassansia-like species that lack a true cortex.

The writer wishes to express his especial obligation to Professors Farlow and Thaxter, of Harvard, for their very great help, in many ways, in furthering his study of this group. He is also indebted to a considerable number of American and some European botanists who have furnished specimens or otherwise rendered aid. Specific acknowledgment of such aid will be made later. That a wealth of material has been available for examination is shown by the fact that every species listed from this country, except one, has been seen. Type material of all species described from North America has been examined. A great difficulty in the systematic study of the group is that with such an abundance of material one finds, in some cases, such great variation that it is often a matter of arbitrary decision as to the disposition of certain specimens or even as to the treatment of certain species. It is hoped that the minimum of errors of judgment have attended the work in this respect.

USTILAGINACEÆ.

* Spores pale to dark reddish brown (Ustilago).

USTILAGO HYPODYTES (Schl.) Fr.— Ustilago minima Arth., Bull. Ia. Agr. Coll. 1884:172. 1884. Ustilago sporoboli Ell. & Ev., Bull. Torr. Bot. Club 24:282. 1897. Ustilago funalis Ell. & Ev., Bull. Torr. Bot. Club 24:457. 1897. Sorosporium williamsii Griff., Bull. Torr. Bot. Club 29:296. 1902.

Hosts: Agropyron occidentale, Mont., S. Dak.; Distichlis maritima, Nev., Ore., Tex.; Elymus canadensis, Ia.; E. condensatus, Nev., Ore., E. sitanion, Wash.; E. striatus, Mont.; Oryzopsis cuspidata, — ; Sporobolus cryptandrus, Colo. (type U. sporoboli); Sporobolus sp., Calif.; Stipa comata, Mont., Neb.; Sicoronata, Calif.; S. eminens, Calif.; S. occidentale, Ore.; S. richardsonii, Wyo. (type S. williamsii); S. setigera, Calif., Tex.; S. spartea, Ia. (type U. minima), Ill., S. Dak.; S. viridula, S. Dak.; Stipa sp., Utah, Wash.

When the spores of this species begin to germinate they often swell in size and split off a cap from the epispore or else crack irregularly. Sorosporium williamsii seems to be merely this condition of this species. The so-called spore-balls are nothing more than a mechanical adhering of irregular masses of the spores that is often met with in Ustilago where the specimens have dried under certain conditions.

USTILAGO LONGISSIMA (Sow.) Tul.— Hosts: Glyceria arundinacea, Ia.. Minn.; G. grandis, Mass., Mich., N. Y., Verm.; Glyceria sp. N. H.

The spores of the American specimens of this species average slightly larger than those from Europe even on the same host.

USTILAGO LONGISSIMA var. MACROSPORA Davis. — Hosts: Glyceria fluitans, Ill., Me., Wis. (type); G. laxa, Me.

The form on G. laxa from Maine is somewhat intermediate between this and the species.

USTILAGO MEXICANA Ell. & Ev.— Host: Muhlenbergia sp., Mex. (type).

USTILAGO HORDEI (Pers.) Kell. & Sw. Host: Hordeum sp. cult. More or less commonly found where barley is grown.

USTILAGO LEVIS (Kell. & Sw.) Magn.— Host: Avena sativa, Conn., Ia., Ill., Kans. (type), Ohio, Wis., W. Virg.

This species is often confused with Ustilago avenae. While probably not so common as that species it is much more common than the reported distribution would indicate.

USTILAGO PERENNANS Rostr.— Cintractia avenae Ell. & Tr., Journ. Myc. 6:77. My. 1890.

Host: Arrhenatherum avenaceum, Conn., Ia., Ill., Miss. (type Cintractia avenae Ell. & Tr.), Ohio, Verm.

USTILAGO AVENAE (Pers.) Jens.— Hosts: Avena fatua Calif.; A. sativa, commonly distributed over N. Amer. where oats are grown.

USTILAGO NUDA (Jens.) Kell. & Sw. — Host: Hordeum sps. cult., commonly found where barley is raised as a farm crop.

USTILAGO TRITICI (Pers.) Jens. — Host: Triticum vulgare, a common parasite on this host in North America.

USTILAGO MUHLENBERGIAE Clint. n. sp.—Sori in the inflorescence, ovoid to subspherical, about 3-6 mm. in length, protected by thin, semi-transparent membrane of the infected enveloping glumes, upon rupture disclosing black-brown dusty spore mass; spores rather dark reddish brown, chiefly spherical, with brittle epispore that breaks up into very small granular echinulations (especially at opposite sides of the spore thus leaving a darker less broken central band) 4-6 μ in diameter.

Host: Muhlenbergia texana, Ariz. (type).

The writer is indebted to Professor Farlow for this species which was collected by Pringle in southern Arizona in 1884. It is peculiar because of its very small spores and because of the curious way, as shawn by an immersion, in which the epispore breaks into granular echinulations. The germination of the spores has not been observed.

USTILAGO RESIDUA Clint. n. sp. — Ustilago segetum Auct. p. p. Ustilago segetum f. Danthoniae Ell. and Ev. N. A. F. 1893a. 1887.

Sori prominent, in the inflorescence, infecting the whole, or sometimes confined to the individual spikelets, usually enclosed by leaf sheaths, on exposure showing as olive brown dusty spore mass; spores rather light olive brown, ovoid or ovate to spherical or occasionally irregular, thin walled, with coarse granules giving granular reticulate appearance, usually 5.5-8.5μ, sometimes even 11μ in length.

Hosts: Danthonia compressa N. Y.; D. spicata, N. H.; Danthonia sp., Colo.

This is near Ustilago tritici but has spores more granular reticulate, averaging larger and not lighter colored on one side. It is one of the forms that have been included in the old species Ustilago segetum, and, so far as the writer can ascertain, has not, as yet, been given specific distinction. Ustilago danthoniae Kalchb., if described accurately, differs decidedly in its much larger spores.

USTILAGO AFFINIS Ell. & Ev. — Ustilago affinis Ell. & Ev. Bull. Torr. Bot. Club, 20:297. 1893. Ustilago hilariae Henn., Hedw. 37:267. 1898. Ustilago stenotaphri Henn., Hedw. 37:293. 1898. Ustilago americana Speg., Fung., Argent. Nov. Vel. Crit. no. 375. 1899. Ustilago stenotaphri Mass. Kew Bull. 153-4:184. 1899. Ustilago henningsii Sacc. & Syd., Syll. Fung. 16:368. 1902.

Hosts: Hilaria cenchroides, Mex. (type U. hilariae Henn.); Stenotaphrum americanum, Bermuda, Jamaica (type).

This fungus has been described a number of times during recent years by different botanists. The first named applied to it is apparently that used by Ellis and Everhart in 1893. Ustilago hilariae Henn. on Hilaria sp. does not seem distinct from the form on Stenotaphrum and so they have been placed together here. Ustilago stenotaphri of McAlpine is apparently a distinct species which was described in 1895.

USTILAGO LORENTZIANA Thüm.— Ustilago holwayi Diet., Bot. Gaz. 18:253. 1893.

Hosts: Hordeum jubatum, Mont., N. Dak., S. Dak.; H. maritimum, Ida.; H. murinum, Calif.; H. pratense, Calif. (type U. holwayi), Utah; H. pusillum, Calif.; Hordeum sp., Calif., Wash.

Dietel's Ustilago holwayi does not seem to be specifically different from de Thümen's species if one takes into consideration the variations that are met with in specimens from this country, some of which agree exactly with the South American type of the species.

USTILAGO BROMIVORA (Tul.) Fisch. d. Waldh.— Cintractia patagonica Cke. & Mass., Grev. 18:34. 1889.

Hosts: Bromus arvensis, Colo.; ? B. breviaristatus, Calif., Ia.; B. ciliatus, Colo.; B. hookerianus, Calif., Wash.; B. hordeaceus var. glabrescens, Wash.; B. kalmii, Utah; B. marginatus, Colo., Ore., Wy.; B. mollis, Wash.; B. racemosus, Wash.; B. secalinus, Calif., Ore.; B. vulgaris, Mont.; B. vulgaris var. eximius, Wash.

An examination of the type of Cintractia patagonica shows it to be only an unusually vigorous form infecting the basal parts of the outer glumes as well as the inner parts.

USTILAGO BROMIVORA var. MACROSPORA Farl.— Host: Bromus ciliatus, Colo (type), Ia.?

This seems entitled only to varietal rank though the spores are much larger than those ordinarily possessed by the species. Specimens have been found on the same host that apparently belong to the species rather than this variety.

USTILAGO CRAMERI Körn.—Host: Setaria italica, Ill., Ohio, N. Dak., S. Dak.

USTILAGO PANICI-PROLIFERI Henn.—Host: Panicum proliferum var. acuminatum, Mex. (type).

USTILAGO PANICI-LEUCOPHAEI Bref.—Ustilago insularis Henn. Hedw. 35:51. 1896.
Host: Panicum leucophaeum, Jamaica.

USTILAGO ULEI Henn.—Host: Chloris submutica, Mex.

USTILAGO CHLORIDICOLA Henn.—Host: Chloris sp., Calif. (type).

USTILAGO TILLANDSIAE Patters. n. sp.—Sori destroying inner flower parts, protected by enclosing bracts and perianth, forming an irregular dusty black spore mass about 1-3 cm. in length; spores olive brown, chiefly ovoid to spherical, thin walled, more or less collapsed or hemispherically cupped, smooth or with brittle epispore breaking up into thin polygonal areas, 7-13 μ in length.
Hosts: Tillandsia leiboldiana, Mex.; Tillandsia sp., Costa Rica (type).
The writer first learned of this species through Mrs. Flora W. Patterson of the Department of Agriculture and later on searching in the Gray Herbarium found it on specimens from Mexico. It is somewhat questionable whether the species is a true Ustilago or some Hyphomycete having the appearance of a smut, though it is more probably the former. A study of the method of spore production and germination may be necessary to determine its true position.

USTILAGO OLIVACEA (DC.) Tul.—Ustilago caricicola Tr. & Earle, Bull. Torr. Bot. Club 26:493. 1899.
Hosts: Carex folliculata, Miss. (type U. caricicola); C. polystachya, Mex.; C. utriculata, Wash.; Carex sp., Mex.

USTILAGO SPARSA Underw. — Host: Dactyloctenium aegyptiacum, Ala. (type), S. Car.
This is issued in Ravenel's Fungi Amer. No. 790 as Ustilago destruens Schl.

USTILAGO SPERMOPHORA B. & C.—Hosts: Eragrostis major, Ia., Ill., Ind., Kans., Mass., Miss., Neb., N. Car., N. Y., S. C. (type), S. Dak., Wisc.; E. reptans, D. C., S. Dak.

USTILAGO BOUTELOUAE Kell. & Sw.—Host: Bouteloua oligostachya, Kans. (type), Okl.

USTILAGO TRICUSPIDIS Ell. & Gall. n. sp.—Sori in ovaries, ellipsoidal, about 4 mm. in length, infecting an occasional spikelet and showing between the spreading glumes; spores medium reddish brown, ovoid to chiefly subspherical or spherical, rather prominently verruculo-echinulate, chiefly 8-11 μ in length.

Host: Triodia cuprea (Tricuspis seslerioides), Mo. (type).

This species bears the above name in the U. S. Dept. Agr. Herbarium and is evidently new. The writer is indebted to Mrs. Flora W. Patterson for the privilege of examining specimens. The fungus was collected by M. B. Waite at Charleston, Mo., in the fall of 1889. It is related to Ustilago spermophora but has spores that are more regular, more prominently verruculo-echinulate and darker colored.

USTILAGO MINOR Nort.—Host: Bouteloua hirsuta, Kans. (type).

Griffiths has listed a number of additional hosts for this species but they seem to the writer, who has examined the type of the species, to come more properly under Ustilago hieronymi. The specimens assigned to these two species show such variation that it is difficult to determine where the specific lines should be drawn.

USTILAGO HIERONYMI Schröt.—Ustilago filifera Nort., Trans. Acad. Sci. St. Louis 7:237. 1896.

Hosts: Bouteloua aristidoides Ariz., Mex.; B. bromoides, Ariz.; B. eriopoda, Ariz.; B. oligostachya, Ariz., Kans. (type U. filifera), Mont.; B. polystachya, Ariz.; B. racemosa, Kans. (type U. filifera), Tex.; Pappophorum wrightii, Ariz.

Perhaps some of the larger spored forms (on B. oligostachya for instance) deserve specific recognition. The writer is also somewhat in doubt about the specific position of the specimens issued by Griffiths in his West American Fungi on Pappophorum wrightii and Bouteloua polystachya as in both of these cases the sori are in the aborted inflorescence instead of on the leaves.

USTILAGO BUCHLOES Ell. & Tr. — Host: Buchloe dactyloides, Neb., N. Mex. (type).

Further study may possibly show this to be the same as the last species.

USTILAGO PUSTULATA Tr. & Earle.—Hosts: Panicum proliferum, Ia., Ill., Kans., Miss. (type); P. virgatum, Tex.

USTILAGO SPHAEROGENA Burr.—Host: Panicum crus-galli. Conn., Ia., Ill. (type), Neb.

USTILAGO CRUS-GALLI Tr. & Earle.—Ustilago crus-galli Tr. & Earle, Bull. Torr. Bot. Club 22:175. 1895. Cintractia seymouriana Magn. Ber. Deut. Bot. Ges. 14:217. 1896. Cintractia crus-galli Magn., Ber. Deut. Bot. Ges. 14:392. 1896.

Host: Panicum crus-galli, Ark., Ill., Mass., Minn., Ore., S. Dak., Utah (type), Wash.

Magnus has placed this species under the genus Cintractia because of the method of spore formation. As considered here

Cintractia is limited to species possessing quite a different type of spores.

USTILAGO ZEAE (Beckm.) Ung.—Hosts: Euchlaena luxurians, Ala., Ia., Ill., Kans., Wisc.; Zea mays, common throughout N. Amer.

USTILAGO PANICI-GLAUCI (Wallr.) Wint.—Ustilago neglecta Niessl, Rab. Fungi Eur. 1200. 1866.

Host: Setaria glauca, Conn., Ia., Ill., Ind., Kans., Mass., Neb., N. H., N. J., N. Y., Ohio, S. Dak., Verm., Wisc.

USTILAGO UNIOLAE Ell. & Ev.—Host: Uniola gracilis, Miss., Tex. (type).

USTILAGO ERIOCAULI (Mass.) Clint.—Cintractia eriocauli Mass. Grev. 22:67. 1894. Ustilago eriocauli Clint., Rhodora 3:82. 1901.

Host: Eriocaulon septangulare, Mass. (type U. eriocauli Clint.), N. H., Conn.

This was described by the writer in 1901 as a new species, as it was considered distinct from Cintractia eriocauli on Eriocaulon fenestratum, described by Massee from Madagascar. Since then specimens of the latter have been received from Massee and the two prove to be the same. Massee's original description is at fault in that it gives the spores as smooth when they are distinctly verruculose; the fungus, also, seems to come more properly under Ustilago than under Cintractia.

USTILAGO ORNATA Tr. & Earle.—Host: Leptochloa mucronata, Miss. (type).

USTILAGO SPOROBOLI Tr. & Earle.—Host: Sporobolus junceus, Miss. (type).

USTILAGO VILFAE Wint.—Host: Sporobolus vaginaeflorus, Kans., Penn. (type).

USTILAGO RABENHORSTIANA Kühn.—Hosts: Panicum filiforme, N. J., Mex.; P. glabrum, Ill., Kans., Minn., N. H.; P. sanguinale, Ala., Conn., D. C., Ia., Ill., Ind., Kans., Mary., Mass., Miss., Mo., Neb., N. J., Ohio, N. Car., Tex., Wisc.; Panicum sp., N. Y., S. Car.

USTILAGO HOLWAYANA Henn.—Host: Paspalum velutinum, Mex. (type).

USTILAGO MULFORDIANA Ell. & Ev.—Tilletia mixta Mass., Kew Bull. 153-4:145. 1899.

Hosts: Festuca tenella, Ariz., Ida., Mont., Ore., Wash., Wyo.; Festuca sp., Calif., Ida. (type).

USTILAGO HILARIAE Ell. & Tr.—Uredo hilariae Sacc., not Ell. & Tr., Syll. Fung. 9:333. 1891.
Host: Hilaria jamesii, Colo., N. Mex. (type).

USTILAGO AEGOPOGONIS Henn.—Host: Aegopogon cenchroides, Mex. (type).

USTILAGO ELEGANS Griff.—Host: Chloris elegans, Ariz. (type).

USTILAGO DIETELIANA Henn.—Host: Tripsacum dactyloides, Mex. (type).

USTILAGO STRIAEFORMIS (West.) Niessl.—Tilletia striaeformis Oud., Bot. Zeit. 36:440-1. 1878. Ustilago washingtoniana Ell. & Ev., Bull. Torr. Bot. Club 22:57. 1895.
Hosts: Agrostis alba var. vulgaris, Conn., Ia., Ill., Mo.; Ammophila arundinacea, Mass.; Elymus canadensis var. glaucifolius, Wisc.; E. virginicus, Ill.; Phleum pratense, Ia., Ill., Ind., Mass., Mo., Ohio, N. J., N. Y., Wisc., Can.; ? Poa annua, Mass.; P. pratensis, Ia., Ill.; Unknown grass, Mass., N. J., N. Y., Tex., Wash. (type U. washingtoniana).

USTILAGO CALAMAGROSTIDIS (Fckl.) Clint. n. nom. — Tilletia calamagrostis Fckl., Symb. Myc.: 40. 1869.
Hosts: Calamagrostis canadensis, Verm.; C. canadensis var. acuminatus, Wyo.; C. pickeringii, N. Y.

USTILAGO MACROSPORA Desm.— Ustilago macrospora Desm., Pl. Crypt. II, 1727. 1850. Tilletia serpens Karst., Fung. Fenn. 599. 1886. Tilletia aculeata Ule, Verh. Bot. Ver. Prov. Brand. 25: 213. 1884.
Host: Agropyron repens, Ia., Mass., Wisc.

USTILAGO ECHINATA Schröt.— Host: Phalaris arundinacea, Neb., Wash.

USTILAGO TULIPAE (Heufl.) Wint.— Ustilago erythronii Clint., Bull. Buff. Soc. Nat. Sci. 1:67. 1873.
Host: Erythronium americanum, Mo., N. J., N. Y. (type U. erythronii), Penn.

** Spores golden. (Ustilago.)

USTILAGO VAILLANTII Tul.— Host: Scilla praecox, Mass.

USTILAGO OXALIDIS Ell. & Tr.—Host: Oxalis stricta, Conn., Ill., Miss. (type), Mo., N. Y., Wisc.

*** Spores lilac to purple. (Ustilago.)

USTILAGO KOENIGIAE Rostr. — Host: Koenigia islandica, Greenland (type).

USTILAGO VINOSA (Berk.) Tul. — Host: Oxyria digyna, Calif., Greenl.

USTILAGO VIOLACEA (Pers.) Fckl.—Hosts: Arenaria groenlandica, Me., N. H., N. Y.; A. lateriflora var. glabrescens, Wash.; Cerastium maximum, Alaska; Lychnis sp., Minn.; Silene acaulis, N. H.; S. douglasii var. macounii, Mont.; S. multicaulis, Wash.; S. tetonensis, Wyo.; S. watsoni, Calif., Wash; Stellaria borealis, Greenl.

USTILAGO VIOLACEA var. MAJOR Clint. n. var.— Sori inconspicuous, filling swollen anthers, soon rupturing and disclosing violet colored dusty mass of spores; spores pale lilac to violet, ovoid to spherical, occasionally somewhat irregular, with rather conspicuous spore wall covered with numerous minute reticulations (1 μ or less in diameter), chiefly 7-12 μ in length.

Host: Silene watsoni, Wash. (type).

European botanists seem inclined to keep Schroeter's species of Ustilago major on Silene otites distinct from Ustilago violacea. The spores of the variety described here are much like those of the former species and if the two are the same it seems doubtful if the European form on Silene otites deserves specific rank. This variety represents the extreme variation from the species as found in this country. Silene watsoni is also a host for the species.

USTILAGO GAYOPHYTI Hark.— Host: Gayophytum ramosissimum Calif. (type), Ore.

USTILAGO ANOMALA Kze.— Hosts: Polygonum cilinode, Me., N. H., N. Y., Verm.; P. convolvulus, Ill.; P. dumetorum var. scandens, Ind., Mo., Verm., W. Virg.

USTILAKO UTRICULOSA (Nees.) Tul.— Hosts: Polygonum acre, Ill., Kans., Miss.; P. amphibium, Ind., Penn.; P. aviculare, Calif.; P. erectum, Miss.; P. hydropiper, Ala., Conn., Ia.; P. hydropiperoides, Conn., Miss., Verm.; P. lapathifolium, Ill.; P. lapathifolium var. incarnatum, Ia., Ill.; P. pennsylvanicum, Ala., Ia., Ill., Kans., Mass., Miss., Mo., Neb., N. H., N. J., N. Y., Ohio, R. I., Verm., W. Virg.; P. sagittatum, N. Y.; Polygonum sp., Ill., Mass., Mich., Mo., N. Car., N. J., R. I., Mex.

On some of these hosts, especially those growing in moist situations, as Polygonum acre and Polygonum hydropiperoides, the smut approaches very closely to Ustilago anomala.

USTILAGO KUEHNEANA Wolff. — Host: Rumex acetosella, S. Car.

USTILAGO PARLATOREI Fisch. d. Waldh. — Hosts: Rumex britannica, Mo., Neb.; R. mexicanus, Mex.

USTILAGO BISTORTARUM (DC.) Körn.— Host: Polygonum viviparum, Colo., Wyo., Greenl.

SPHACELOTHECA PAMPARUM (Speg.) Clint. n. nom.— Ustilago setariae Niessl?, Speg. Fung. Argent. pug. 2 no. 24. 1880. Ustilago pamparum Speg., Fung. Guar. pug. 1:49. 1886. Ustilago kolaczekii Kuhn, Rab-Wint. Fungi Eur. 3401. 1886.

Host: Setaria sp., Mex.

SPHACELOTHECA DIPLOSPORA (Ell. & Ev.) Clint. n. nom.— Ustilago diplospora Ell. & Ev., Journ. Myc. 6:119. 1891.

Hosts: Panicum crus-galli, Ill.; P. sanguinale, Miss. (type).

SPHACELOTHECA SORGHI (Lk.) Clint. n. nom.— Ustilago sorghi Pass., Hedw. 12:114. 1873. Cintractia sorghi-vulgaris Clint., Bull. Ill. Agr. Exp. Stat. 47:404. 1897.

Hosts: Sorghum vulgare and vars., Ala., Calif., Conn., D. C., Ia., Ill., Kans., Neb., N. J., N. Y., Ohio, S. Dak., Wisc., Jamaica, Ontario.

SPHACELOTHECA ISCHAEMI (Fckl.) Clint. n. nom.— Ustilago ischaemi Fckl., Enum. Fung. Nass. 22. 1861. Ustilago cylindrica Pk., Bot. Gaz. 7:55. 1882. Cintractia ischaemi Syd., Oesterr. Bot. Zeit. 51:12. 1901

Hosts: Andropogon contortus, Mex.; A. furcatus, Kans.; A. saccharoides Ariz., Mex.; A. scoparius, Ill.; Andropogon sp., Ariz. (type U. cylindrica).

SPHACELOTHECA PASPALI-NOTATI (Henn.) Clint. n. sp.— Ustilago paspali-notati Henn., n. sp. in Herb. Holway.

Sori in the inflorescence, linear, about 4-6 cm in length, with evident false membrane gradually flaking away from apex and exposing reddish brown dusty spore mass surrounding evident often forked columella; sterile cells hyaline, with those of the membrane adhering rather firmly, with inner loose ones in roundish clusters, usually larger than the spores; spores light reddish brown, ovoid to spherical or slightly angled, apparently smooth but very minutely verruclose, 7-10 μ in length.

Host: Paspalum notatum, Mex. (type).

This species is very near Sphacelotheca ischaemi, in fact is scarcely to be distinguished from the verruculose forms of that species, though it has a more luxuriant sorus and different host. For this reason there may be some question if it is entitled to the specific rank given it by Hennings.

SPHACELOTHECA MONILIFERA (Ell. & Ev.) Clint. n. nom. — Ustilago monilifera E. & Ev., Bull. Torr. Bot. Club 22:362. 1895. Ustilago andropogonis-contorti Henn., n. sp., in Herb. Holway.

Hosts: Andropogon contortus, Ariz. (type), Mex. (type U. andropogonis-contorti Sandw. Isl.

It is possible that Ustilago nealii Ell. & And. is the same as this species. It is a true Sphathelotheca but the writer has not decided definitely if it comes here or is distinct.

SPHACELOTHECA ANDROPOGONIS-HIRTIFOLII (Henn.) Clint. n. nom.— Ustilago andropogonis-hirtifolii Henn., Bot. Gaz. 28:274. 1899. Ustilago andropogonis-saccharoidis Henn., Syd. Ust. 251. 1901.

Hosts: Andropogon hirtifolius pubiflorus, Mex. (type); A. saccharoides, Mex. (type U. andropogonis-saccharoidis).

SPHACELOTHECA OCCIDENTALIS (Seym.) Clint. n. nom. — Sorosporium ellisii var. occidentalis Seym., Ell. & Ev. N. A. F. 2265. F. 1889. Ustilago andopogonis Kell. & Sw., Journ. Mycol. 5:12-13. Mr. 1889.

Hosts: Andropogon furcatus, Kans. (type U. andropogonis), N. Dak. (type), Neb.; A. hallii, Kansas (type U.) andropogonis, Neb.; A. hallii var. flaveolus, Ill. (cult.); A. macrourus, Calif.

SPHACELOTHECA MONTANIENSIS (Ell. & Holw.) Clint. n. nom. — Ustilago montaniensis Ell. & Hollw., Ell. & Ev. N. A. F. 2263. 1899. Described in Journ. Mycol 6:19 1891.

Hosts: Muhlenbergia glomerata, Mont.; M. glomerata var. setiformis, Mont,; Muhlenbergia sp., Mont. (type).

SPHACELOTHECA REILIANA (Kühn) Clint. n. nom. — Ustilago reiliana Kühn, Rab. Fung. Eur. 1998. 1875. Cintractia reiliana Clint., Bull. Ill. Agr. Exp. Stat. 57:346. 1900.

Hosts: Sorghum vulgare, Ia., Ill., Kans., Minn., Miss., Neb., N. J., Ohio, Tex.; Zea mays, Kans., Ohio.

SPHACELOTHECA HYDROPIPERIS (Schum.) DeBy. — Hosts: Polygonum acre, Ill., Mass.; P. bistortoides, Wash., Wyo.; P. hydropiper, Neb., R. I.; ? P. persicaria, N. Y.; P. sagittatum, Ia., Ill., Me., N. Y., Verm., W. Virg.; P. viviparum, Wyo., Greenl.; Polygonum sp., Mo.

MELANOPSICHIUM AUSTRO-AMERICANUM (Speg.) Beck.— Ustilago austro-americana Speg., Fung. Argent. pug. 4, n. 45. 1881. Melanopsichium austro-americanum Beck, Ann. Natur, Hofmus. Wien, 9:22. 1894.

Hosts: Polygonum aviculare, Calif.; P. hydropiper, D. C., Mo.; P. lapathifolium, Calif., Ill.; P. lapathifolium var. incar-

natum, Ill., Mo.; P. pennsylvanicum, Ill., Kans., Mo., N. Y.; ?P. virginianum, Mo.; Polygonum sp., D.C., Ia., Mo., N. J., Tex.

CINTRACTIA TAUBERTIANA (Henn.) Clint. n. nom.—Ustilago taubertiana Henn., Engl. Bot. Jahrb. 17:525. 1893.

Hosts: Rhynchospora alba, Mass., N. J.; R. cephalantha, Miss.; R. fascicularis, Fla.; R. inexpansa, S. Car.; Rhynchospora, ? Tex.

This smut has smaller and usually lighter colored spores than Cintractia montagnei.

CINTRACTIA MONTAGNEI (Tul.) Magn.—Ustilago caricis Auct. p.p. ?Ustilago juncicola Speg., Fungi Guar. 15. 1891.

Hosts: Rhynchospora alba, Me., Newf., N. Y., Verm.; R. eximia, Mex.; R. glomerata, Mass., Miss., N. Y.; R. tenuis, Mex.; Rhynchospora sp., N. Car., S. Car.

CINTRACTIA PSILOCARYAE (Tr. & Earle) Clint. n. nom.—Ustilago psilocaryae Tr. & Earle, Bull. Torr. Bot. Club 26:493. 1899.

Hosts: Psilocarya nitens, Fla., Miss. (type); P. scirpoides, Mass., R. I.

CINTRACTIA CARICIS (Pers.) Magn.—Ustilago caricis Ung., Einfl. Bodens 211. 1836. Anthracoidea caricis Bref., Unters. Gesammt. Myk. 12:144. 1895. Cintractia caricis Magn., Abh. Bot. Ver. Prov. Brand. 37:78. 1896. Ustilago caricis douglasii Shear, Fungi Col. 1485. 1901.

Hosts: Carex sps., distributed over North America; Kobresia caricina, N. Amer.; K. scirpina, Greenl.; Scripus caespitosus, Greenl.

The writer has listed this smut on over forty species of Carex.

CINTRACTIA EXTERNA (Griff.) Clint. n. nom.—Tilletia externa Griff., Bull. Torr. Bot. Club 29:290. 1902.

Host: Carex fllifolia, Mont. (collected by F. W. Anderson, Apr. 1888 at Sand Coulee), Neb. (collected by T. A. Williams, June 23, 1890, at War Bonnet Canon), Wyo. (type T. externa).

This species was first collected nearly fifteen years ago by Anderson who distributed it to several herbaria under the name of Ustilago caricis. Later it was collected by Williams. Recently it has been described from Wyoming, as a new species, by Griffiths. The writer had it described (in manuscript) as a new species when Griffiths description came to hand. It is related to C. caricis but differs by having more regular, smooth spores with evident hyaline enveloping membranes. These membranes are evidently hygroscopic and by means of the absorbed water the

spores are shed, becoming glued over the adjacent parts. When dry the spores are very firmly agglutinated in the sorus.

CINTRACTIA SUBINCLUSA (Körn.) Magn.—Ustilago subincluse Körn., Hedw. 13:159. 1874. Anthracoidea subinclusa Bref., Unters. Gesammt. Myk. 12:146. 1895. Cintractia subinclusa Magn., Abh. Bot. Ver. Prov. Brand. 37:79. 1896.

Hosts: Carex lanuginosa, Nev.; C. michauxiana, Brit. Amer., New Bruns.; C. oligosperma, Newf.; C. trichocarpa var. deweyi, N. Dak.; C. utriculata, Nev., Ore.

CINTRACTIA LUZULAE (Sacc.) Clint. n. nom.—Ustilago luzulae Sacc., Myc. Ven. Spec. 73. 1873.

Host: Luzula campestris, Ind.

CINTRACTIA JUNCI (Schw.) Trel. — Hosts: Juncus acuminatus, Miss.; J. effusus, N. J.; J. tenus, Conn., Ia., Ill., Mass., Ohio, N. J., N. Y., Penn. (type), Verm., Wisc.; Juncus sp., Mass., N. Car., Mex.

CINTRACTIA AXICOLA (Berk.) Cornu.—Ustilago axicola Berk., Ann. Mag. Nat. Hist. II, 9:200. 1852. Ustilago fimbristylis Thm., Bull. Torr. Bot. Club 6:95. 1876. Cintractia axicola Cornu., Ann. Sci. Nat. Bot. VI, 15:279. 1883.

Hosts: Fimbristylis autumnalis, Ala., Miss., Virg. (type U. fimbristylis); Fimbristylis sp., Costa Rica, Cuba, Mex., San Domingo (type).

CINTRACTIA AXICOLA var. MINOR Clint. n. var. — Sori and spores as in the species except latter smaller, chiefly 10-13 μ in length.

Host: Cyperus grayii, N. Y.

This variety is based on the specimen issued in Ell. and Ev. N. A. F. no. 2423 as Ustilago (Cintractia) axicola Berk. Besides having a different host it differs from this species in having smaller spores. It sometimes occurs at the base of the spikelets forming a conspicuous smutty mass. In some respects it agrees with a species Spegazzini has described from South America as Cintractia peribebuyensis on Cyperus.

CINTRACTIA UTRICULICOLA (Henn.) Clint. n. sp.—Cintractia leucoderma f. utriculicola Henn., Hedw. 34:336. 1895. Cintractia axicola f. spicularum Juel, Bih K. S. Vet. Akad. Handl. 23 (3°) :7. 1897.

Sori in ovaries, ovoid to subspherical, chiefly 3-6 mm. in length, covered by an evident whitish false membrane that ruptures irregularly from the apex disclosing semi-agglutinated black spore mass; sterile cells hyaline, chiefly subspherical, often semi-gelatinized; spores dark reddish brown, often subopaque, with irregular lighter areas, somewhat compressed laterally and there-

fore in cross-section appearing oblong to circular according to view, smooth, 11-16 μ in length.

Host: Rhynchospora sp., Mex.

This form is described from specimens issued in Sydow's Ustilagineen no. 220 from Mexico. The synonyms given are those that have been assigned by others, the writer not having seen type specimens of these. This Mexican collection, at least, seems to deserve specific distinction from both Cintractia axicola and Cintractia leucoderma. From the former it differs not only in the host and part infected but also in its darker colored spores and from the latter in the position and size of the sorus and in its smooth spores.

CINTRACTIA LEUCODERMA (Berk.) Henn.—Cintractia krugiana Magn. Engl. Jahrb. 17:490. 1893.

Hosts: Rhynchospora gigantea, Porto Rico (type C. krugiana), Rynchospora sp., Mex.; ?Rhynchospora, Cuba, San Domingo (type).

SCHIZONELLA MELANOGRAMMA (DC.) Schröt.—Ustilago ambiens Karst., Oefv. Svensk. Kongl. Vet. Akad. Förh. 29:108. 1873. Entyloma ambiens Johans. Oefv. Svensk. Kongl. Vet. Akad. Förh. 41^9:160. 1884.

Hosts: Carex atrata, Colo.; C. laxiflora, Ill.; C. pennsylvanica, Conn., Ia., Ill., Mass., Mich., N. Y.; Carex sp., Calif., Colo., Ind., Mich., Ore., Utah, Wyo.

The writer has received a specimen of the type of Ustilago ambiens from Karsten and it proves to be this species.

MYKOSYRINX CISSI (DC.) Beck.—Schroeteria cissi De Toni, Sacc. Syll. Fung. 7^2:501. 1888. Mykosyrinx cissi Beck, Ann. Natur. Hofmus. Wien, 9:123. 1894.

Hosts: Cissus acida, Porto Rico; C. erosa, Porto Rico; C. sicyoides, Fla., Bahamas, Jamaica, Porto Rico, San Domingo (type); Vitaceae, Haiti, Mexico.

SOROSPORIUM CONSANGUINEUM Ell. & Ev.—Ustilago aristidae Pk., Bull. Torr. Bot. Club 12:35. 1885.

Hosts: Aristida basiramea, S. Dak.; A. longiseta robusta, Neb.; A. purpurea, Neb.; A. rusbyi, Ariz. (type); A. scheideana, Ariz.; Aristida sp., Kans., Tex. (type U. aristidae).

With age the spore-balls very easily separate into the individual spores and then the fungus may be taken for an Ustilago.

SOROSPORIUM SYNTHERISMAE (Pk.) Farl.—Ustilago syntherismae Pk. (not Schw.) Ann. Rep. N. Y. St. Mus. 27:103. 1875. Sorosporium syntherismae Farl., Host Index N. A. F. 152. 1891. Sorosporium cenchri Henn, Hedw. 35:221-2. 1896.

Hosts: Cenchrus multiflorus, Mex.; C. tribuloides, Conn., Ia., Ill., Ind., Kans., Mich., Minn., Neb., N. Y., S. Dak., Tex., Wisc.; Cenchrus sp., Kans., Mex.; Panicum agrostoides, Mo.; P. capillare, Ia., Ind., Kans., Mass., Neb., S. Dak.; P. proliferum, Ia., Ill., Kans., Mo.; Panicum sp., Kans., D. C., Mo.

SOROSPORIUM ELLISII Wint.—Sorosporium syntherismae Amer. Auct. p. p.

Hosts: Andropogon scoparius, Conn., Ill., Kans.; A. virginicus, N. J. (type); Aristida dichotoma, Ohio, Penn. (type).

SOROSPORIUM EVERHARTII Ell. & Gall.—Tolyposporium everhartii Diet., Nat. Pflanzenf. 1^{1**}:14. 1897.

Hosts: Andropogon macrourus, Fla.; ? A. scoparius, Ala.; A. virginicus, Ala., Miss., N. J. (type).

SOROSPORIUM PROVINCIALE (Ell. & Gall.) Clint. n. sp.—Sorosporium ellisii var. provincialis Ell. & Gall., Journ. Mycol. 6:31-2. 1890.

Sori in the inflorescence, linear, often 6 or more cm. in length, concealed within the leaf sheath or the upper part protruding, with false membrane that becomes lacerated as exposed and with black brown granular spore mass; spore-balls variable, apparently gradually wearing away, chiefly 50-100 μ or possibly even longer; spores medium light reddish brown though often darker in places, rather regular, ovoid to chiefly subspherical, minutely verruculose, with thick (3 μ) uniform cell wall, 14-19 μ in length.

Host: Andropogon furcatus, Mo. (type), Neb.

This species is based on specimens No. 2425 in Ell. & Ev. N. A. F. It seems entitled to specific rather varietal rank as it is the most sharply marked off of the related species on Andropogon. It is especially distinguished by the thick uniform walls of the spores.

SOROSPORIUM RHYNCHOSPORAE Henn.—Host: Rhynchospora semiplumosa, Miss.

SOROSPORIUM GRANULOSUM Ell. & Tr.—Host: Stipa viridula, Col. (type).

THECAPHORA PILULAEFORMIS B. & C.—Thecaphora pilulaeformis B. & C., Grev. 3:58. 1874. Tolyposporium davidsonii Diet. Holw., Bot. Gaz. 19:395. 1894. Poikilosporium davidsohnii Diet., Flora 83:87. 1897. Poecilosporium davidsornii Sacc. & Syd., Syll. Fung. 16:380. 1902. Sorosporium bigeloviae Griff., Bull. Torr. Bot. Club 29:295. 1902.

Host: Bigelovia veneta, Calif. (type); Bigelovia sp., Ariz. (type S. bigeloviae).

Dietel and Holway erroneously reported the host as Atriplex. The writer has examined both the Berkeley and Curtis specimens

and those of Dietel and Holway and the two prove to be the same fungus. Recently Griffiths has described the species under the name of Sorosporium bigeloviae.

THECAPHORA TRAILII Cke.—Thecaphora trailii Cke., Grev. 11:155. 1883. Thecaphora cirsii Boud., Bull. Soc. Myc. Fr. 3:149. 1887. Schizonella subtrifida Ell. & Ev., Journ. Mycol. 6:119. 1891. Poikilosporium trailii Vesterg., Micr. Rar. Sel. 452. 1902.

Host: Cnicus ochrocentrus Colo. (type S. subtrifida).

THECAPHORA CALIFORNICA (Hark.) Clint. n. nom. —Sorosporium californicum Hark., Bull. Calif. Acad. Sci. 1:161-2. 1885.

Host: Grindelia robusta, Calif. (type).

THECAPHORA CUNEATA (Schof.) Clint. n. nom.—Sorosporium cuneatum Schof., Contr., Bot. Dep. Uni. Neb. 3:48. 1892. Sorosporium solidaginis Ell. & Ev., Proc. Acad. Nat. Sci. Phil. 1893:156. 1893.

Hosts: Grindelia squarrosa, Neb. (type), Kans.; Solidago missouriensis, Kans. (type S. solidaginis).

THECAPHORA DEFORMANS Dur. & Mont.—Thecaphora deformans Dur. & Mont., Ann. Sci. Nat. Bot. III, 7:110. 1847. Thecaphora lathyri Kühn, Rab. Fungi Eur. 1797. 1873. Thecaphora affinis Schneid., Jahrb. Schles. Ges. Vat. Kult. 1874:90. 1874. Sorosporium desmodii Pk., Bot. Gaz. 3:35. 1878. Sorosporium astragali Pk., Bot. Gaz. 4:218. 1879. Thecaphora astragali Wor., Abh. Senck. Nat. Ges. 12:579. 1882. Thecaphora desmodii Wor., Abh. Senck. Nat. Ges. 12:579. 1882.

Hosts: Astragalus bisulcatus, Colo.; A. drummondii, Colo. (type S. astragali); A. multiflorus, Utah; A. scopulorum, Colo.; Desmodium acuminatum, N. J. (type S. desmodii); D. nudiflorum, Mary., Penn.; Hosackia parviflora, Wash.; Lupinus sp. Colo.; Trifolium tridentatum, Calif.

THECAPHORA MEXICANA Ell. & Ev. n. sp.—Sori on stems, prominent, forming clustered subglobose pustules each about 4 mm. in diameter, firm, upon rupture scattering dusty umber spore mass and leaving behind the remains of the hollowed pustules; spore-balls light reddish yellow, ovoid to spherical, composed of 15-30 spores separated by prominent hyaline areas that apparently widen with maturity, 50-90 μ in length; spores angular when young but with age becoming more rounded, irregular, oblong to polyhedral or subpherical, with distinct inner and outer coats, the latter thick and provided with prominent irregular papillae, chiefly 16-22 μ, most elongated rarely 25 μ in length.

Host: Guardiola platyphylla, Mex. (type).

This interesting species bears the above name in the U. S. Dept. Agr. Herb. (Div. Veg. Path. & Phys.) and is evidently

new. It was collected by Dr. Palmer in Mexico. The pustules are larger and more clustered than those formed by Thecaphora pilulaeformis. The hyaline intersporal areas are peculiar and it is probable that by further gelatinization of these the spores become separated. In the younger conditions the spore-balls are imbedded in the prominent semi-gelatinized mycelium. The germination of the species is not known.

THECAPHORA ATERRIMA Tul.—Sorosporium atrum Pk., Bot. Gaz. 5:35. 1880. Tolyposporium aterrimum Diet., Nat. Pflanzenf. 1^{1**}:14. 1897.

Hosts: Carex adusta, Ia.; C. pennsylvanica, Colo. (type S. atrum), Kans.; Carex sp., Ia.

There is some doubt as to the true generic position of this species. Dietel places it under Tolyposporium.

TOLYPOSPORELLA BRUNKII (Ell. & Gall.) Clint. n. nom. — Ustilago (Sorosporium?) brunkii Ell. & Gall., Journ. Mycol. 6:31. 1890. * Ustilago apiculata Ell. & Gall., Tex. Agr. Exp. Sta. Bull. 9:29. 1890.

Hosts: Andropogon argenteus, Tex. (type); A. perforatus, Mex.; A. saccharoides, Tex., Mex.

This species is related through its very thick but much more regular epispore to Tolyposporella chrysopogonis though it does not form the definite spore-balls of that species. Its spores have considerable resemblance to Kuntzeomyces ustilaginoideus but the outer coat, upon pressure, does not break open and let out the unruptured spore as does that species but the fissure extends clear through the spore.

TOLYPOSPORELLA CHRYSOPOGONIS Atk.—Host: Chrysopogon nutans, Ala. (type), Tex.

TOLYPOSPORIUM BULLATUM Schröt.—Host: Panicum crus-galli, Conn., Ia., Ill., Mass.

TOLYPOSPORIUM ERIOCAULI Clint.—Host: Eriocaulon septangulare, Mass. (type), N. H.

TESTICULARIA CYPERI Klotz.—Hosts: Rhynchospora macrostachya, N. Y.; Cyperaceae, N. Amer. (type).

TILLETIACEÆ.

* Spores smooth. (Tilletia.)

TILLETIA FOETENS (B. & C.) Trel. — Host: Triticum vulgare, Ia., Ind., Ill., Kans., Ky., Md., Mass., Mich., Minn., Mont., Neb., N. Car. (type), N. Dak., N. J., Ohio, S. Dak., Wisc., Wyo., Manitoba, N. W. Ter.

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* Listed by Jennings as a new species but not described.

** Spores reticulate. (Tilletia.)

TILLETIA TRITICI (Bjerk.) Wint.—Host: Triticum vulgare, Ia., Kans., Mich., Minn., Nev., N. J., Ohio, W. Virg. on leaves (?).

TILLETIA ANTHOXANTHI Blytt.—Host: Anthoxanthum odoratum, Conn.

This species was first described in 1896 from Norway. It has not been reported very often. The writer found it the past summer at New Haven, Conn. Apparently this is the only time it has been collected in this country.

TILLETIA ELYMI Diet. & Holw.—Hosts: Elymus glaucus, Mont.; Elymus sp., Wash. (type).

TILLETIA CEREBRINA Ell. & Ev.—Host: Deschampsia caespitosa, Rocky Mts. (type).

TILLETIA MONTANA Ell. & Ev.—Hosts. Redfieldia flexuosa, Neb.; Sporobolus gracillimus, Rocky Mts. (type).

TILLETIA FUSCA Ell. & Ev. — Hosts: Festuca microstachya, Rocky Mts. (type), Wash.; F. tenella, Ida., Mont., Ore., Wyo.

TILLETIA ASPERIFOLIA Ell. & Ev. — Hosts: Sporobolus asperifolius Colo., Mont., N. Mex., Ore., Rocky Mts. (type), Wash., Wy.; ?S. simplex, Mont.

*** Spores verruculose. (Tilletia.)

TILLETIA MACLAGANI (Berk.) Clint. n. nom.—Ustilago maclagani Berk., Grev. 3:58-9. 1874. Ustilago rotundata Arth., Bull. Ia. Agr. Coll. 1884:173. 1884. Tilletia rotundata* Ell. & Ev., N. A. F. no 1894. 1887. Tilletia rotundata Mass., Kew Bull. 153:145. 1899.

Host: Panicum virgatum, Conn., Ia. (type U. rotundata). Kans., Neb., Montreal (type).

The writer is indebted to Massee for a specimen of Berkeley's type of Ustilago maclagani and this proves to be the same as Arthur's Ustilago rotundata. The smut is evidently a Tilletia though its germination has not been reported.

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* Ellis and Everhart called the fungus Ustilago rotundata Arth., but said it was evidently a Tilletia and therefore American botanists have since called the fungus Tilletia rotundata (Arth.) Ell. & Ev.

**** Spores with prominent tubercles, spines or scales. (Tilletia.)

TILLETIA EARLEI Griff.—Host: Agropyron occidentale, S. Dak. (type).

This species is peculiar in that the sorus occurs in the modified culm of his host.

TILLETIA TEXANA Long n. sp.— Sori in ovaries, ovoid or oblong, about 3-5 mm. in length, more or less hidden by enveloping glumes, forming a somewhat agglutinated light-reddish brown spore mass; sterile cells not very numerous, hyaline, with very thick often lamellate walls and central contents; spores very light-colored, orange yellow (appearing as if somewhat immature) chiefly subspherical or spherical, with prominent conical tubercles (blunt or sometimes quite pointed) which extend out 2-3 μ to the evident hyaline envelope, chiefly 19-25 μ in diameter.

Host: Hordeum pratense, Tex. (type).

In Europe Tilletia hordei occurs as a parasite on a species of Hordeum but that smut possesses reticulate spores and so is quite distinct from the species described here. This description is based on the single collection made by Long and as the spores have somewhat the appearance of being immature, it may be that the description will need some changing with further study of the fungus. It is closely related to Tilletia buchloeana but apparently differs in the slightly larger lighter colored spores with more prominent tubercles and in the character of the hyaline membrane. The spores have not been germinated.

TILLETIA BUCHLOEANA Kell. & Sw.—Host: Buchloë dactyloides, Kans. (type).

TILLETIA CATHESTECI (Henn.) Clint. n. nom.— Ustilago cathesteci Henn., Hedw. 36:212. 1897.

Host: Cathestecum procumbens, Mex. (type).

TILLETIA CORONA Scrib.—Hosts: Leersia lenticularis, Miss.; L. oryzoides, D.C. (type), Mo.; L. virginica, D.C. (type), Ill., Miss., Ohio.

TILLETIA PULCHERRIMA Ell. & Gall.—Tilletia pulcherrima Ell. & Gall., Bull. Torr. Bot. Club, 23:210. 1896.

This herbarium name was merely mentioned here by Earle. The writer believes the fungus to be a distinct species from Tilletia corona Scrib.

TILLETIA RUGISPORA Ell. & Gall.—Hosts: Paspalum plicatulum, Tex. (type); Paspalum sp., Mex.

TILLETIA HORRIDA Tak.—Host: Oryza sativa, S. Car.

NEOVOSSIA IOWENSIS Hume & Hods.— Host: Phragmites communis, Ia. (type), Conn.

TUBURCINIA CLINTONIAE Kom.— Urocystis colchici Amer. auct. p. p. Tuburcinia trientalis Amer. auct. pp. Tuburcinia clintoniae Kom. Jacq-Koö-Tranz. Fungi Rossiae 260. 1899.

Hosts: Polygonatum giganteum, Ia.; Smilacina stellata, Mont.; Smilacina, Wisc.; Streptopus roseus, Brit. Col.

TUBURCINIA TRIENTALIS B. & Br.—Host: Trientalis europaea, Alaska.

UROCYSTIS WALDSTEINIAE Pk.—Urocystis waldsteiniae Pk., Ann. Rep. N. Y. Stat. Mus. 46:32. 1893. Ustilago waldsteiniae Paz., Rab-Wint-Paz. Fungi Eur. 4011. 1895. Urocystis gei Ell. & Ev., Bull. Torr. Bot. Club 27:572. 1900.

Hosts: Geum ciliatum, Wash. (type Urocystis gei); Waldsteinia fragarioides, N. Y. (type), Wisc.

This is not a typical Urocystis since it lacks the sterile peripheral cells. Pazschke has placed it under Ustilago but it has characters not in entire agreement with that genus. It seems best to let it remain under Urocystis until more is known of its development; especially of the germination of the spores.

UROCYSTIS ANEMONES (Pers.) Wint.—Hosts: Actaea alba, W. Virg.; Anemone caroliniana, Kans., Tex.; A. nemorosa, Conn., Ia., Mass., Me., Mich., N. Y., Wisc.; A. patens var. nuttalliana, Colo.; A. pennsylvanica, N. Y., Wisc.; A. virginiana, Tex.; Anemonella thalictroides, N. Y.; Hepatica acutiloba, Ia., Ill., Ind., N. Y., Wisc.; H. triloba, Mo.; Ranunculus fascicularis, Ill.; Trollius sp., N. Y.

UROCYSTIS CARCINODES (B. & C.) Fisch. d. Waldh. —Host: Cimicifuga racemosa, N. Car., Ohio, Penn. (type), Tenn.

UROCYSTIS SOROSPORIOIDES Körn.— Hosts: Aconitum columbianum, Utah; Aquilegia coerulea, Utah; Delphinium sp., Calif.; Thalictrum alpinum, Greenl.; Thalictrum sp., Mass.

UROCYSTIS VIOLAE (Sow.) Fisch. d. Waldh. — Hosts: Viola odorata, Canada; Viola sp., Minn.?

UROCYSTIS CEPULAE Frost.—Hosts: Allium cepa, Conn. (type), Ind., Mass., N. J., N. Y., Ohio; A. nevadense, Nev.

UROCYSTIS OCCULTA (Wallr.) Rab.—Host: Secale cereale, Conn., Mass., Minn., Ohio, N. J., N. Y., R. I.

UROCYSTIS AGROPYRI (Preuss) Schröt. — Hosts: Agropyron divergens, Wash.; A. repens, Mass., Verm.; Bromus ciliatus, Ia.; Calamagrostis canadensis, Ore.; Elymus arenarius, Greenl.; E. canadensis, Ia., Ill., Mo., Neb., Wisc.; E. robustus, Ia.; E. virginicus, Ill.

UROCYSTIS JUNCI Lagerh. — Host: Juncus balticus, Nev.

UROCYSTIS GRANULOSA Clint. n. sp.—Sori in the spikelets, ovoid to oblong, about 5-10 mm. in length, chiefly confined to the inner parts but showing through the more or less infected glumes, forming a granular, black spore mass; spore-balls reddish to black brown, ovoid to spherical, not easily ruptured, chiefly 28-50 μ in length; sterile cells reddish yellow, ovoid to subspherical, completely covering the spores, often somewhat indefinite in appearance through the collapsing of outer wall, about 8-13 μ in length; spores dark reddish brown, ovoid to spherical or polyhedral through pressure, smooth, about 13-19 μ in length.

Host: Stipa comata, Ida. (type).

This species is based on a specimen in S. M. Tracy's herbarium labeled Sorosporium granulosum Ell. & Tr. on Stipa comata, collected by Dr. F. V. Hayden in Idaho in 1859. It differs from the type of Sorosporium granulosum in the same herbarium on Stipa viridula in that the sori are in the spikelets, and the spore balls, have fewer spores and possess a definite covering of sterile cells.

UROCYSTIS HYPOXYIS Thaxt.—Host: Hypoxys erecta, Conn. (type), Mass.

*Spores dark colored. (Entyloma.)

ENTYLOMA LINEATA (Cke.) Davis.—Entyloma crastophilum. Amer. auct. p. p.

Host: Zizania aquatica, Conn., Ga. (type), Ill., Neb., S. Dak., Wisc.

ENTYLOMA CRASTOPHILUM Sacc.—Hosts: Holcus lanatus, N. Y.; Phleum pratense, Ia., Ill.

ENTYLOMA IRREGULARE Johans.—Host: Poa pratensis, Ill.

ENTYLOMA SPECIOSUM Schröt. & Henn.—Hosts: Alopecurus geniculatus, Tex.; Panicum proliferum, Ill.; Panicum sp., Ill.

ENTYLOMA CARICINUM Rostr.—Host: Carex rigida, Greenland (type).

⁂ Spores light colored. (Entyloma.)

ENTYLOMA THALICTRI Schröt.—Entyloma ranunculi forma thalictri Farl., Bot. Gaz. 8:275. 1883.

Hosts: Anemone nemorosa, Wisc.; Thalictrum dioicum, Wisc. (type E. ranunculi forma thalictri Farl.); T. purpurascens, Ill.

This is probably the same as Schröter's E. thalictri though no specimen of the European fungus has been available for comparison.

ENTYLOMA MENISPERMI Farl. & Trel.—Host: Menispermum canadense, Ia., Ill., Kans., Minn., Mo., N. Dak., Wisc. (type).

ENTYLOMA COMPOSITARUM Farl. — Hosts: ?Ambrosia artemisiaefolia, Mass.; A. psilostachya, Kans., Wisc.; A. trifida, D.C., Ill., Mo., Wisc.; Ambrosia sp., Ohio; Aster cordifolius, Mass.; A. novi-belgii, Mass., Me.; A. paniculatus, Wisc.; A. puniceus, Mass., N. H. (type); Aster sp., N. Bruns.; Bidens chrysanthemoides, Kans.; Erigeron elatus, Wash.; E. philadelphicus, N. Dak.; ?Eupatorium ageratoides, Ill.; Gnaphalium sp., Ala.; Helenium autumnale, Wisc.; Heterotheca lamarkii, Kans.; Lactuca canadensis, Minn.; Lepachys pinnata, Ia., Ill., Minn., Wisc.; Rudbeckia laciniata, Mo., Ohio; Senecio aureus, Neb., Wisc.; S. aureus var. balsamitae, Kans.; Silphium integrifolium, Wisc.

The writer has not examined this species on all of the above hosts and in such cases has depended upon the reported identity of the species. It is possible that on some of these hosts the species may be E. polysporum. In some cases the same host may have either species attacking it, however.

ENTYLOMA POLYSPORUM (Pk.) Farl. — Entyloma holwayi Syd. Ust. 282. 1901.

Hosts: Ambrosia artemisiaefolia, Ia., Ill., Ind., Mich., N. Y., Wisc.; A. bidentata, Ill.; A. trifida, Ill., N. Y. (type): Cosmus sulphureus, Mex. (type E. holwayi); Gaillardia pulchella, Kans.; Helianthus annuus, Mont.

ENTYLOMA ARNICALIS Ell. & Ev.—Hosts: Arnica chamissonis, Wash. (type); A. cordifolia, Ida.; A. latifolia, Wash.

ENTYLOMA GUARANITICUM Speg.— Hosts: — ?Bidens frondosa, Mass.; B. leucantha, Fla.

ENTYLOMA FLOERKEAE Holw. — Host: Floerkea proserpinacoides, Ill., Ohio, Wisc.

ENTYLOMA COLLINSIAE Hark.—Host: Collinsia bartsiaefolia, Calif. (type).

ENTYLOMA LOBELIAE Farl.—Host: Lobelia inflata, Conn., Ill., Mass., Me., (type), Mo., N. Car., N. H., Ohio, Wisc., W. Va.

ENTYLOMA PHYSALIDIS (Kalchb. & Cke.) Wint. — Entyloma besseyi Farl., Bot. Gaz. 8:275. 1883.

Hosts: Physalis angulata, Miss.; P. lanceolata, Ill., Kans., Ohio, S. Dak.; P. lanceolata var. laevigata, Kans.; P. Philadelphica, Ind.; P. pubescens, Ill., Ind., Kans., Tex., Wisc.; P. virginiana, Ia., Ill., Mich., N. J., N. Y., Wisc., Can.; Physalis sp., Conn., Ia. (type E. besseyi Farl.), Kans., Ky., Neb., N. Y., Tex., Wisc.; Solanum nigrum, Ia., Kans.; S. triflorum, N. Dak.

ENTYLOMA SEROTINUM Schröt.—Host: Mertensia virginica, Ia., Mary.

ENTYLOMA SANICULAE Pk.—Hosts: Sanicula marylandica, Ia., Ill., N. Y. (type), Wisc.; S. menziesii, Calif.; Sanicula sp., Ala., Ind.

ENTYLOMA ERYNGII (Cda.) DeBy.—Host: Eryngium yuccaefolium, Ia.

ENTYLOMA LINARIAE Schröt.—Host: Linaria vulgaris, N. J.

ENTYLOMA LINARIAE var. VERONICAE Hals.—Hosts: Veronica americana, Colo., N. Y.; V. peregrina, Ia., Ill., Mary., Mo., Wisc.

ENTYLOMA ELLISII Hals. — Host: Spinacia oleracea, N. J. (type).

ENTYLOMA ESCHSCHOLTZIAE Hark.—Host: Eschscholtzia californica, Calif. (type).

ENTYLOMA FUSCUM Schröt.—Host: Papaver sp. cult., Me., N. Brunsw.

ENTYLOMA MICROSPORUM (Ung.) Schröt.—Hosts: Ranunculus fascicularis, Wisc.; R. septentrionalis, Ill., Wisc.; Ranunculus sp., Ia.

ENTYLOMA MICROSPORUM var. PYGMAEUM Allesch. — Host: Ranunculus pygmaeus, Greenl. (type).

The writer has not seen a specimen of this variety. Judging from the description it does not seem to differ very essentially from the species.

ENTYLOMA NYMPHAEAE (Cunn.) Setch.—Entyloma castaliae Holw., Trans. Wisc. Acad. Sci. Arts. Let. 11:174-6. 1897.

Hosts: Nuphar advena, Conn., Ill., Mass., Wisc.; Nymphaea odorata, Conn., Mass., Ohio; N. reniformis, Ia., Ill., Wisc.; Nymphaea sp., Ia., N. J., Ohio.

BURRILLIA DECIPIENS (Wint.) Clint. n. nom. — Doassansia decipiens Wint., Journ. Mycol. 1:102. 1885.

Host: Limnanthemum lacunosum, N. J. (type).

The spore-balls of this species have no definite cortical layer and for this reason it has been placed by the writer under Burrillia.

BURRILLIA ECHINODORI Clint. n. sp. — Doassansia alismatis of Hark. in Proc. Calif. Acad. Sci. II, 2:231. 1889.

Sori in the leaves, forming irregular to sub-circular areas, showing spore-balls as closely clustered very minute elevations on both surfaces of the leaf; usually a single spore-ball occupying entire section of leaf between layers of the epidermis, more or less merged sidewise, often irregular but chiefly oblong to subspherical, without distinct cortex but composed of sterile cells and spores intermixed; sterile cells light reddish brown, with thinner walls than the spores and more irregular in shape and size; spores light-colored, chiefly ovoid to spherical, occasionally somewhat flattened, apparently thick-walled, 12-18 μ in length.

Host: Echinodorus rostratus, Calif., Fla. (type).

This species was, apparently, first reported from California by Harkness, who called it Doassansia alismatis. Setchell evidently made an examination of this material as he states that it is not this species but an Entyloma with a compact sorus. The writer's description is based on a specimen in the herbarium of the U. S. Dept. Agr., Div. Veg. Path. and Phys., collected by Simson in Florida in 1892. Sections from this material show that the sori have no definite cortex and that the spores are larger and thicker walled than either Doassansia alismatis or D. sagittariae to which the species has superficial resemblance. The sori are also much larger; these larger sori in some cases, however, appear to be due to a very complete fusion of smaller sori. The peculiarity of the species is that the sori are not composed entirely of spores but of sterile cells and spores intermixed. The sterile cells are not strikingly different from the spores but have more the appearance of the ordinary cortical cells. Upon staining with eosin the spores become more evident through their thicker more regular walls.

BURRILLIA PUSTULATA Setch.—Doassansiopsis pustulata Diet., Nat. Pflanzenf. 1^{1**}:22. 1897.

Host: Sagittaria variabilis, Ill. (type), Wisc.

* Eudoassansia.

DOASSANSIA EPILOBII Farl.—Host: Epilobium alpinum, N. H. (type).

DOASSANSIA RANUNCULINA Davis.—Host: Ranunculus multifidus, Wisc. (type).

DOASSANSIA SAGITTARIAE (West.) Fisch.—Hosts: Sagittaria arifolia, Ill.; S. graminea, Ill.; S. heterophylla, Wisc.; S. variabilis, Kans., Mo., Ohio, N. Y., Wisc.; Sagittaria sp., Mo., Verm., Can.

DOASSANSIA ALISMATIS (Nees.) Cornu.—Host: Alisma plantago, Calif.?, Ia., Kans., Minn., Mo., Neb., Wisc.
Alisma plantago, Calif.?, Ia., Kans., Minn., Mo., Neb., N. Y. Wisc.

DOASSANSIA OPACA Setch. — Host: Sagittaria variabilis, Conn., Ill., Mass. (type), R. I.

** Pseudoassansia.

DOASSANSIA OBSCURA Setch.—Host: Sagittaria variabilis, Conn. (type), Mass. (type), Wisc.

*** Doassansiopsis.

DOASSANSIA OCCULTA (Hoffm.) Cornu.—Doassansiopsis occulta Diet., Nat. Pflanzenf. 1^{1**}:21. 1897.
Hosts: Potamogeton pennsylvanicus, Conn., N. Y.; Potamogeton sps., Ill.?, Kans.

DOASSANSIA OCCULTA var. FARLOWII (Cornu.) Setch.—Hosts: Potamogeton natans, Can.; P. pennsylvanicus, Verm.; P. perifoliatus var. lanceolatus, Can.; P. pusillus, Can.; P. vaseyi, Can. (type).
There is some question whether the variety is distinct. It has been studied especially only on Potamogeton vaseyi.

DOASSANSIA MARTIANOFFIANA (Thüm.) Schröt.—Doassansiopsis martianoffiana Diet., Nat. Pflanzenf. 1^{1**}:21. 1897.
Hosts: Potamogeton natans, Mass.; Potamogeton sps., Conn., Ill., N. Y., Wisc., Can.

DOASSANSIA DEFORMANS Setch.—Doassansiopsis deformans Diet., Nat. Pflanzenf. 1^{1**}:21. 1897.
Hosts: Sagittaria variabilis, Conn. (type), Ill., Mass., Mo., R. I., S. Dak., Wisc., Can.; S. variabilis var. angustifolia, Ill.; Sagittaria sps., Fla., Tex.

DOASSANSIA INTERMEDIA Setch.—Doassansia intermedia Setch., Bot. Gaz. 19:185-6. 1894. Doassansia affinis Ell. & Dearn., Bull. Torr. Bot. Club 22:364. 1895.

Host: Sagittaria variabilis, Minn., N. H. (type), Can. (type D. affinis).

TRACYA LEMNAE (Setch.) Syd.—Cornuella lemnae Setch., Proc. Amer. Acad. Arts. Sci. 26:19. 1891. Tracya lemnae Syd., Hedw. Beibl. 40:2. 1901.

Host: Spirodela polyrrhiza, Conn., Mass. (type), R. I., Wisc.

Conn. Agr. Exp. Station, September, 1902.

NOTES ON FUNGI.

JOHN W. HARSHBERGER, PH. D.

The following notes are largely composed of observations made upon a variety of fungi and are based upon field and laboratory study of the same during the intervals of a busy career of teaching. They are gathered together, therefore, in the hope that they may prove useful to other workers in the same field of inquiry. It is the intention of the writer to add to them from time to time, as the material collected and the observations upon the same seem to warrant their publication in serial form.

Box Tortoises and Toadstools.— The common box tortoise (*Cistudo virginica*) of our eastern woodlands is extremely fond of a rather frequent toadstool, *Russula virescens* Fr. A number of caps of this fungus, found in the woods at Primos, Delaware Co., Pa., on August 7, 1901, were gnawed in a rather jagged manner. Later, a tortoise was found immediately in front of a large light green Russula. It stopped work upon the approach of the observer, and although it was watched for some time, it remained perfectly quiet and alert. An inspection of its horny beak, however, revealed torn fragments of the toadstool smeared over the horny surface. I, therefore, succeeded in connecting the tortoise with the torn aspect of the fungus.

The Culture of Monilia martini S. & E. var. incendiarium E. & E.— The fungus in question grows on trees killed by fire, where it forms a superficial growth of a bright, orange-yellow color. It was distributed by Ellis in his North American Fungi (No. 1389), and I am indebted to that botanist for the identification of the plant discovered by me in great abundance on burned willow limbs in Woodland Cemetery, Philadelphia.

It was found to be good material to demonstrate to botanical classes typical conidial formation. The following experiments

were tried to ascertain the best media upon which to cultivate it. A number of substances, viz., potatoes, slices of bananas, banana skins, slices of orange, Neuchatel cheese, orange peels, slices of apple, prune broth, stewed prunes, molasses, pine charcoal and bread were used as culture media. The pine charcoal was tried, because the fungus was found growing on burned trees. Spores were sown by means of a sterilized platinum loop wetted in distilled water and applied with the spores to the surface of the several culture media. The following account gives in synopsis the results obtained.

Potato (raw and cut open).— No perceptible growth.

Banana Slices.— No growth of Monilia, but a rich development of *Penicillium glaucum* Link. and later of *Rhizopus nigricans* Ehbg.

Banana Skin.— Covered by *Penicillium glaucum* Link. and a small round patch of Monilia.

Orange Slices.— Invaded by Penicillium and Rhizopus.

Orange Peels.— Not suitable for Monilia.

Apple Slices.— No development of the orange-yellow fungus.

Prune Broth.— Monilia made a rapid growth upon the surface of the broth, the conidial chains being formed most plentifully along the edges of the Petri dishes in contact with the air.

Stewed Prunes.— This culture material was covered by a luxuriant growth of Rhizopus, later by Penicillium and a scattering growth of Monilia between the denser mycelia of the above named moulds.

Neuchatel Cheese. — No development of *Monilia martini* S. & E. var. *incendiarium* E. & E.

Molasses.— No growth of any sort, although a plentiful supply of spores was sown.

Pine Charcoal.— Spores of the fungus studied were sown upon the surface of several charcoal blocks. Monilia, although, as its varietal name implies, made a growth on this medium.

Bread.— Of all the materials experimented with, bread was found to be the most suitable substance upon which to grow *Monilia martini* S. & E. var. *incendiarium* E. & E. The fungus later was kept for several months in a flourishing condition on bread alone. Upon bread, it forms a white, cottony mycelium, later, as the conidia are formed, assuming an orange-yellow color. Three to five days elapse, depending upon the weather, from the time the spores are sown until a new crop of spores is obtained. The fungus can be kept alive for about three weeks, when another sowing upon fresh bread should be made.

PEZIZA REPANDA WAHLENB. IN PENNSYLVANIA. — McIlvaine in his book "One Thousand American Fungi" (p.558) gives the distribution of this fungus, as: New York, Ellis; Minnesota, Johnson; Ohio, Lloyd; Pennsylvania, Miller. It occurs, according to him, on the ground, or on decaying wood. M. C. Cooke (Handbook of British Fungi II, p. 669) mentinos it as one of the British funguses occuring on the ground and on stumps. It was discovered by the writer at Sherwood, near Angora, Philadelphia on an old rotten log in very considerable abundance. The specimens collected, some two or three hundred in number, varied in size from the diameter of a ten cent piece to one or two, or three inches across. The individuals were clustered, or disposed singly; some were saucer-shaped, others deeper and more bowl-shaped. The color was nearly white on the outer surface and a light, yellowish-brown color on the concave inner side.

SPORE DISCHARGE IN PEZIZA BADIA PERS.— A considerable amount of this ascomycete was found at Crum Creek, Penna., May 20, 1901. When gathered in the hand and held for a moment, a discharge of the spores took place with a puff, like the curling smoke at the muzzle of a discharged gun. At intervals of several minutes, the same phenomenon took place until apparently all of the spores had been set free from the asci.

CLITOPILUS ABORTIVUS B. & C.— The statement is made in an authoritative work on the fungi of North America, that "the fungus is so named because of the abortive form of it frequently found associated with it." From this sentence, one would infer, that the normal form is more abundant than the aborted one which is found with it. Nevertheless in the season of 1901, the aborted plants were by far the most abundant in the neighborhood of Philadelphia. A search through several woods was rewarded by the collection of many specimens of the rounded, egg-shaped, aborted form and only a few examples of the normal gill-bearing fungus.

DISTRIBUTION OF THE NUCLEI IN THE FEEDING PLASMODIUM OF FULIGO SEPTICA GMEL.— I have described elsewhere* the peculiar feeding habits of the plasmodium of *Fuligo septica* Gmel. Sections of the host fungus *Pleurotus sapidus* and of the plasmodium which was actively streaming over it were made and mounted in balsam. The material was killed and hardened in 95 per cent. alcohol, was passed into paraffin, cut, and stained on the slide. Iron-haematoxylon was found the most satisfactory stain, the sections being left in the iron stain 4 hours and in haematoxylon 12 hours. A study of the sections, thus prepared, showed an interesting character of nuclear distribution, and served to prove further, that the nucleus serves as the trophic

* Harshberger, Bot. Gaz. 31:198. 1901.

center of the cell. A fragment of a cell deprived of its nucleus may live for a considerable time and manifest the power of coordinated movement without perceptible impairment. Such a mass of protoplasm is, however, devoid of the powers of assimilation, growth and repair, and sooner or later dies. In other words, those functions that involve constructive metabolism cease with its removal. There is, therefore, strong reason to believe, that the nucleus plays an essential part in the constructive metabolism of the cell, and through this is especially concerned with the formative processes involved in growth and development. For these and many other reasons, the nucleus is generally regarded as a controlling centre of cell activity.* This activity of the nucleus is still further confirmed by a study of the plasmodium in question. Before hardening the material in alcohol, the streaming protoplasm of the myxomycete formed a loose reticulum. The main streams of movement were cord-like and in places heaped up into considerable masses lying upon the gill surface of the mushroom. A section across the gills of the oyster-mushroom with the feeding plasmodium upon it shows the strings of plasmodial protoplasm in cross section. The protoplasm, when stained with iron haematoxylon, is found to be spongy in nature with large, open chambers across which run delicate strands of plasmic substance. The nuclei vary in such sections of individual streams of protoplasm, according to the following count: 175, 45, 33, 157, 8, 25, 20, 50, 172, made at random. The nuclei are dark, and they appear, therefore, as small dark circular grains in the faintly stained protoplasm. Their distribution in this protoplasm concerns us here. The larger number of nuclei are found in close proximity to the gill surface of the mushroon upon which the plasmodium is feeding. In some cases, they are so crowded together as to appear in the form of an irregular deeply staining mass in close contact with the food substance. The distal surface of the plasmodium contains few, or no nuclei, and the central body of protoplasm quite a number. One, however, is struck by the large number of nuclei that lie near the actively digesting lower surface. This distribution of the nuclei is of interest in connection with the statement above that the nucleus controls the constructive metabolism of the cell. The digestion of the food presupposes the activity of several ferments. That a process of digestion is going on is evident from an inspection of the gill surfaces. Here the spores have been removed from their sterigmata, the sterigmata have been digested and the free ends of the basidia have been planed down by the zymogenic activity of the plasmodium. Apparently, the distribution of the food supply is regulated by the large number of nuclei, that seem to be attracted

* Wilson, The Cell in Development and Heredity, 30. 1900.

chemotactically to the incoming supplies of newly prepared food substances.

Hypoxylon coccineum Bull. and Alcohol. — Hypoxylon coccineum Bull. is a pyrenomycetous fungus found growing on the limbs of beech trees. As far as the writer knows, the species is confined to a single host — the beech. In color, the fruit bodies are a dark, brick-red color. The stromata are erumpent, subglobose; $\frac{1}{4}$-$\frac{3}{4}$ cm. in diameter, and solitary, or partially confluent. When placed in alcohol, the brick-red color is removed and the subglobose stroma became umber-brown in color. The alcohol becomes a sherry wine color through the presence of the dissolved pigment. The solution of the pigment begins almost immediately after the fungus is placed in alcohol.

Relationship of a Fungus (Scorias spongiosa Schw.) and a Scale Insect (Schizoneura imbricator).— Living on the limbs, twigs and leaves of the beech in the deep shade of the forest is found a scale insect (*Schizoneura imbricator*), which is covered by a woolw coat consisting largely of a waxy secretion from the body. This wool-like material is quite abundant, and where the insects live in masses together the entire limb, or leaf surface has a downy white appearance. The abdomen of the insect keeps constantly moving up and down with a jerking motion, and the cottony material, therefore, is in constant agitation. The insects secrete a honey dew, so copiously, that it flows down the main branches and trunks of the beech trees, spreads out over the surface of the beech leaves and finally reaches the ground where it covers the mosses and forest litter. As the insects die, their bodies covered with the downy wax become mixed up together with honey dew, so that a rich pabulum is provided suitable for the growth of fungi.

One fungous species in particular seems to be confined to the rich food, which as found upon the trees and on the ground is of an ash-gray color. The pyrenomycetus fungus in question, *Scorias spongiosa* Schw., soon appears and completely covers the ground, limbs and leaves where the ash-gray material collects. The mycelium of much branched, rigid, septate hyphæ is compacted together by a mucilagenous substance and forms a blackish, spongy mass, which bleaches to a yellowish brown color upon weathering. The larger glued together strands of the mycelium bristle with branches developed from the larger hyphæ. These rather rigid branches, interlocking together, assist in making a spongy texture, which gives specific name to the plant.

The perithecia of the fungus found by the writer are abundant, ovate, or pyriform. The spermagonia, however, which are enlarged at the base and taper into a long neck open at the apex, are more plentiful in the material from the woods along Crum Creek, Delaware Co., Penna., than the perithecia. The ascos-

pores are multicellular of a dark brown color, their cell walls being more evident and the constrictions between the cells more distinct than in the example figured by Ellis * in plate X, figure 3, of his North American Pyrenomycetes. The prodigious formation of sporidia in the spermagonia accounts for the phenomenal spread of the fungus during the early autumn days. The presence of the mycelium on the surface of the leaves does no apparent injury to the leaf substance. The fungus is a saprophyte and feeds superficially on the mixed honey dew and insect substance. When fully matured, the whole mass can be removed from the beech without the slightest injury to the upper leaf epidermis. However, the formation of starch in the leaf cells seems to be checked, *Scorias spongiosa* Schw., of a black color, acts as an almost perfect screen, shutting off the sun's rays, and thus influencing in a substantial manner the starch production of the beech host, so that, if it were not for supplies derived from other parts of the tree fully exposed to the sunlight considerable damage might be done to the shaded leaves. We have, therefore, in the saprophytic association here described another interesting example of the inter-dependence of organisms.

University of Pennsylvania.

* Ellis & Everhart, N. A. Pyrenomycetes, 55, pl. 10. 1892.

NOTES FROM MYCOLOGICAL LITERATURE. II.

W. A. KELLERMAN.

An interesting study of Cladochytrium alismatis, found for the first time in America at Glacialis pond, Cambridge, Mass., is given by G. P. Clinton in the Botanical Gazette, 33:49-61. 3 pl. Jan. 1902.

Alternaria citri Ellis & Pierce n. sp., the cause of Black Rot of Oranges, is described in the Botanical Gazette, 33:234-5, March 1902. The losses are from 3 to 10 per cent of the crop of navel oranges in the districts of California. The cells of the pulp sacks are destroyed, and soon become black in color and bitter to the taste.

The Ohio Agricultural Experiment Station has issued (Bulletin 128) a general index to its Reports and Bulletins, volumes 1 to 20, 1882 to 1901, a 43-page pamphlet. The references are not to the several Annual Reports and Nos. of the Bulletins but to the year and pages — a continuous pagination having been followed for the publications of each year after 1888. Under the head of "Diseases" of plants, of alfalfa, apple, asparagus,

barberry, barley, bean, beet (and all other commonly cultivated plants), the entries cover about 4 pages. After each the disease or the fungus in question is given, thus: Alfalfa, leaf spot fungus; Asparagus, rust; Tomato, fusarium, etc. There is also a complete index to technical [botanical] names. These Reports, though containing no account of extended research along mycological lines, nevertheless record numerous observations of the occurrence of parasitic fungi, experiments for checking their ravages, and voluminous compilations as to the character and life histories as well as their economic aspects. Amateurs, beginners and even specialists will therefore find the Ohio publications a useful encyclopedia of plant diseases.

Text Book on Bacteriology. — The Laboratory Guide in Elementary Bacteriology by William Dodge Frost (published by the author, Madison, Wisconsin) is a book in demand as shown by the appearance after one year of a second, but slightly changed edition. The secret of its success is doubtless centered in the fact that it is essentially the work that the author has been using in his classes. Part I, General Bacteriology, occupies 133 pages; Part II, Medical Bacteriology, covers pages 134-348. The actual use of this book will doubtless show its thorough practicability, satisfactory completeness and excellent character which are evident to the reviewer; it is therefore most highly commended to all interested in practical bacteriology.

Apple Scab is the title of an important Bulletin (No. 67, pp. 109-156, Illinois Agricultural Experiment Station, December 1901) by George P. Clinton. A general account is given of the fungus including its parasitic or temporary stage on leaves and fruit, Fusicladium dendriticum; and its saprophytic or permanent stage, Venturia, on the dead leaves. The connection of the former with the latter, — suggested by Goethe in 1887, figured by Brefeld in 1891, and fully studied (the scabs of Apple, Pear, and Cherry) in 1894 by Aderhold who connected them with species of Venturias, — was corroborated by Mr. Clinton; the latter's work however was successful, it should be said, while he was yet ignorant of the investigations by the other botanists named. He says, "From the results of these and the writer's investigations there is no doubt that apple scab is merely a parasitic summer stage of a permanent saprophytic fungus occurring on the fallen leaves. It also appears to be this latter form that is largely (in its immature condition) responsible for carrying the fungus through the winter. At least the writer has been unable to find any satisfactory evidence that the scab stage persists on the young twigs, as has been stated by some investigators, and by means of a new crop of scab spores in the spring spreads the disease to the young fruit and leaves. Neither was there found any evidence that the old spores lived over the winter on

the fallen leaves, or that the mycelium in these gave rise to a new crop for spring infection." Details need not be here transcribed relative to the Injury, Prevention, Time of appearance, Artificial cultures, and Microscopic structures. Under the head of Nomenclature it is pointed out that the earliest name given the scab stage (fructigenous form) was SPILOCAEA POMI Fries, Nov. Fl. Suec. 5:79. 1819. Eleven different names were subsequently used by various authors. "In 1833 Wallroth unquestionably found the leaf form and named it Cladosporium dendriticum." Cooke in 1866 (Seem. Jour. Bot.) described the apple-leaf Venturia as a new species, namely Sphaerella inaequalis. Mr. Clinton therefore follows Aderhold and sanctions the name Venturia inaequalis (Cke.) Winter. It seems to us on the contrary that the evidence is ample to justify the name Venturia pomi (Fries.). Half-tones and outline drawings, 18 pages, are used in illustrating this thorough and commendable Bulletin. Still another important portion should be mentioned, namely, the Bibliography; this covers 12 pages and includes about 170 items.

THREE NEW GENERA OF THE HIGHER FUNGI, by Professor Atkinson, are described, each with one species only, in the July No. of the Botanical Gazette (34:36-43, 1902). Three half-tones of outline drawings illustrate these three interesting forms. EOMYCENELLA, a new genus of Hymenomycetes, is based on specimens found on fallen leaves of Rhododendron, in September 1899. They are very small, 3-8 mm. high, pileus 0.5-0.75 mm. broad, stem slender and fleshy, very delicate, entirely white, the hymenium plane or in large forms with a few short, narrow, distant lamellae, not reaching the stipe. EOTERFEZIA, the type of a new genus and family of Elaphomycetes, is based on specimens that appeared as a parasite on Sordaria grown in the laboratory in 1897 on cow dung. There appeared on the perithecia of Sordaria white, knot-like protuberances, subglobose or kidney-shaped, nearly the entire interior of the body being occupied by minute asci scattered and intermingled with the mycelium. The DICTYBOLE, a new genus of Phalloids, is based upon specimens collected in sandy soil in Texas in 1901, having a dimorphic gleba, the upper part traversed by sterile, radiating, imbricate plates, the lower part latticed something after the fashion of Simblum. The upper part of the volva remains adherent to the pileus, rupturing in a circumscissile manner, often leaving the pileus more or less irregularly lobed and pendent around the upper part of the receptacle.

DR. J. C. ARTHUR SUMMARIZES Eriksson's paper on the Rusts of cereals, published in the first two issues of the Annales des Sciences Naturelles for 1902, in an admirable manner, in the July No. of the Botanical Gazette under Notes for Students.

Reference is made to the experiments from 1892 to 1899, growing wheat, oats and barley protected from atmospheric contagion — though rust appeared on the plants. The summary continues: "Seeds from rusted plants, it is asserted, are capable of giving rise to rusted plants, with no external source of infection; and the author believes that the rust fungus exists in the seed in a mycoplasmic form, and may so exist as long as the seed is viable. Seeds sometimes bear sori filled with teleutospores, but it is not from these spores that the infection is derived. While it is impossible to demonstrate the mycoplasm, the fungus for the time having lost definite form and become intimately associated with the protoplasm of the host, yet many observations and experiments are arrayed by the author in proof of its existence. Moreover, certain analogous states have been observed in other organisms. Among the most striking instances are Rozella and Woronina, belonging to the Chytridineae, and parasitic on Saprolegnia. According to the studies of Cornu and Fischer, when these plants penetrate the host they become diffused for a time in the protoplasm of the cell, and are then quite unrecognizable. Afterward they assume the usual form and produce spores. In accordance with this theory rust may be checked by treating the seed in a manner to kill the mycoplasm. A change of climate, conditions of growth, etc., may also cause the death of the mycoplasm, which will account for the fact that seed from rust-infested fields when taken to another locality or a distant country often gives plants free from that particular kind of rust."

Apple Rots in Illinois is the title of an instructive Bulletin (No. 69 Ill. Agr. Exp. Sta., Feb. 1902) by G. P. Clinton, in which is mentioned briefly the four diseases, Brown Rot (Monilia fructigena Pers.), Soft Rot (Rhizopus nigricans Ehr.), Fruit Blotch (Phyllosticta sp.), and Black Rot (Sphaeropsis malorum Berk.); but the main portion of the Bulletin is devoted to the Bitter Rot, whose summer stage [Gloeosporium fructigenum Berk.] and permanent or winter stage [Gnomoniopsis fructigena (Berk.) Clint. n. n.] were thoroughly investigated and are here fully described and illustrated. The author states that in practically all of the cultures that were made, including the Petri dish separation cultures, there developed in time an ascomycetous fungus that proved to be the permanent stage of the Bitter Rot. This generally appeared, more or less matured, within two weeks after the cultures were started and usually after the Gloeosporium spores had chiefly disappeared after germination. So far as is known this is the first time that the permanent stage has been found.

The Uredineae occurring upon Phragmites, Spartina, and Arundinaria in America, by Dr. J. C. Arthur is published in the July No. of the Botanical Gazette (34:1-20, 1902). The con-

fusion of the American species is here cleared up. Full descriptions and many illustrations are given of the seven species, of which two are new and two others receive new names. The article concludes with a serviceable key for determining unnamed material, based upon distinctions of host, position on the host, and the character of the uredospores, as follows:

ON SPARTINA.

Sori arising from soft tissues (intercostal.)
Uredospores wth wall thin, colored, echinulate.....U. acuminatus.
Uredospores with wall thick, pale, echinulate.....P. distichlidis.
Uredospores with wall thckened above, colorless, tuberculate
.....P. seymouriana.
Sori arising from hard tissues (supercostal.)
Uredospores with wall thickened above, colorless, tuberculate
.....P. fraxinata.

ON PHRAGMITES.

Sori amphigenous, uredosori without paraphyses,
Uredospores with four equatorial pores.....P. rubella.
Sori amphigenous, uredosori with paraphyses,
Uredospores with indefinite, scattered pores.....P. simillima.

ON ARUNDINARIA.

Sori hypophyllous, uredosori without paraphyses,
Uredospores with rather thick wall, echinulate.....P. arundinariae.

THE CONTINUATION of Rud. Lüdi's Beiträge zur Kentniss der Chytridiaceae in Hedwigia (Beiblatt), March, 1902, enumerates a large number of infection experiments with Synchytrium taraxaci and Synchytrium anemones. In the summary he states that Synchytrium taraxaci from Taraxacum officinale Wigg. could be transferred to T. ceratophorum DC., T. palustre DC., T. erythrospermum Andrz. (and also the vars. rubicundum Dahlst., lacistophyllum Dahlst., laetum Dahlst. and brachyglossum Dahlst.), T. corniculatum DC. and T. crepidiforme DC.; also that Synchytrium anemones wurde von Anemones nemorosa übertragen auf Anemone silvestris.

THE GEASTRAE is the title of a useful pamphlet of 44 pages concisely written, profusely illustrated and generously distributed by C. G. Lloyd, the well known mycologist of Cincinnati. A general account of the group covers 4 pages, followed (pp. 8-38) by keys, descriptions and many half-tones of each species. An appendix of "References" — which are "to plants and not to authorities for names of plants"—occupies pp. 39-41; but the several paragraphs would perhaps be more convenient for consultation had they been placed immediately after the names in the text after the usual method.

THE PEAR BLIGHT in California has been noticed by Newton B. Pierce (Science, N. S. 16:193. 1 Aug. 1902) in 1899 as a normal epidemic form of Spring development and has now spread to a large percentage of the leading pear-growing districts of

Southern California and of the San Joaquin and Sacramento valleys. The Santa Clara valley and other coast regions are wholly or nearly free from its ravages. The leading characters distinguishing the Winter blight are given as follows: "First, it rarely if ever attacks a tree at points higher than a man's head, always affecting the trunk or base of the main limbs, hence the larger and more vital portions of the tree; second, the infection takes place about the time the crop is gathered or shortly after; third, it continues in a most active and destructive state during the months of November, December and January; and, fourth, it may prevail in an orchard showing little or no signs of the Spring form of the disease." The article states relative to the agency of bees: "The contrast between the number of infections in orchards near large colonies of bees and those more distant was very striking in both cases noted in the San Joaquin valley. The field conditions presented convincing evidence that near proximity of large colonies of bees to pear orchards greatly increases the danger to, and hastens the time of destruction of the latter."

THOSE WHO WOULD be students of the Uredinae will read with interest and profit the article by Dr. Arthur on Clues to Relationship among Heteroecious Rusts, published in the Botanical Gazette, 33:62-6, Jan. 1902. All observations affording clues, he says, must be made in the field. Stress is laid on the juxtaposition of the two kinds of spore formation, aecidial and teleutosporic. "It will be many years before any large proportion of our numerous heteroecious rusts will be connected with their respective aecidia, and in the mean time all clues to relationship will be much prized by students, and their pursuit will give to the collector an additional source of pleasure."

TOO MUCH IMPORTANCE has been ascribed to a cellulose-dissolving enzyme, says Ralph E. Smith, in the summary of his article in the Botanical Gazette (33:421-36, June, 1902), on the Parasitism of Botrytis cinerea. "Two stages in the process should be clearly distinguished: First, a poisoning and killing of the cells; and second, their disintegration and utilization as food by the cells. The first effect appears to be produced by a substance which there are strong reasons for supposing to be oxalic acid, formed by the fungus as a by-product of its metabolism. Following this, a number of different enzymes are secreted which digest the various constituents of the tissue."

THE GOOSEBERRY MILDEW, Sphaerotheca mors-uvae (Schw.), though claimed by E. S. Salmon to be confined to North America, has been reported as indigenous in Ireland by S. Salmon, and as indigenous in Russia by P. Hennings. Dr. P. Magnus in a recent number of the Gartenflora maintains that the latter are

cases of importation. He calls attention to the fact that Sphaerotheca tomentosa (Otth.) Jacz.—of which Erysiphe gigantasca Sorok., reported on Euphorbia virgata from Moskow, is a synonym — is somewhat different from Sphaerotheca mors-uvae (Schw.) with which Salmon in his Monograph of the Erysiphaceae, unites it. Magnus is therefore of the opinion that the form on Euphorbia is really a different species, saying moreover "bei der verschiedenen geographischen Verbeitung beider Formen zweifle ich nicht, dass sie zwei verschiedenen Arten entsprechen."

Professor P. Hennings has published in Hedwigia, March, 1902, under the title, "Fungi blumenavienses II, a cl. Alfr. Möller lecti," an article of 33 pages, containing an enumeration of the Ascomycetes from Blumenau (South Brazil) obtained in 1891-3. Some of the species had been previously reported, but are also included in this article. They are all grouped in proper systematic order under Pyrenomycetes and Discomycetes, 8 families of the former and 12 of the latter. The new genera proposed are Aschersoniopsis (Hypocreaceae), Moelleroclavus (Xylariaceae), Stilbohypoxylon (Xylariaceae), Midotiopsis (Dermateaceae), Bulgariopsis (Bulgariaceae), and Moellerodiscus (Cudoniaceae). Seventy-two new species are described, the diagnoses in Latin.

OHIO FUNGI EXSICCATI.

The fifth fascicle of the Ohio Fungi is today issued. It completes a century — the fascicles averaging 20 specimens. The 100 specimens belong to the following genera: Aecidium (8 sp.), Albugo (1 sp.), Cercospora (2 sp.), Cintractia (2 sp.), Exoascus (1 sp.), Gymnoconia (1 sp.), Gymnosporangium (2 sp.), Melampsora (2 sp.), Microsphaera (1 sp.), Peronospora (1 sp.), Piggotia (1 sp.), Phyllachora (2 sp.), Phyllosticta (3 sp.), Plasmopara (1 sp.), Polystictus (1 sp.), Puccinia (25 sp.), Rhytisma (1 sp.), Septoria (6 sp.), Urocystis (2 sp.), Uromyces (8 sp.), Ustilago (4 sp.), Venturia (1 sp.). Although instituted for the purpose of exchange with botanists many requests for the purchase of the specimens suggested at once the enlargement of the edition; now all can be accommodated who may wish the fascicles as they are issued. The price fixed, intended to cover but part of the actual cost, is $5.00 for each five fascicles (100 specimens). Four or five fascicles will probably appear during the coming year, the labels as heretofore having a reprint of the original description of the species.

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NOTES

The editor desires to thank the Botanists for the continued cordial reception of the renewed Journal, and especially those who have made contributions of articles; also those from whose complimentary letters the following sentences are taken:

"A splendid resurrection, a well gotten up copy of our old friend, the Journal of Mycology; it will prove to be an excellent aid to working botanists and amateurs."

"Long may the Journal of Mycology wave."

"It will be of great service to workers along this line."

"Am delighted with it; may it be a success is my wish and hope."

"You are certainly getting out the Journal in good shape in every way."

"I am pleased to see that the publication is to be upon broad lines of interest."

"Brimful of interesting mycological matter."

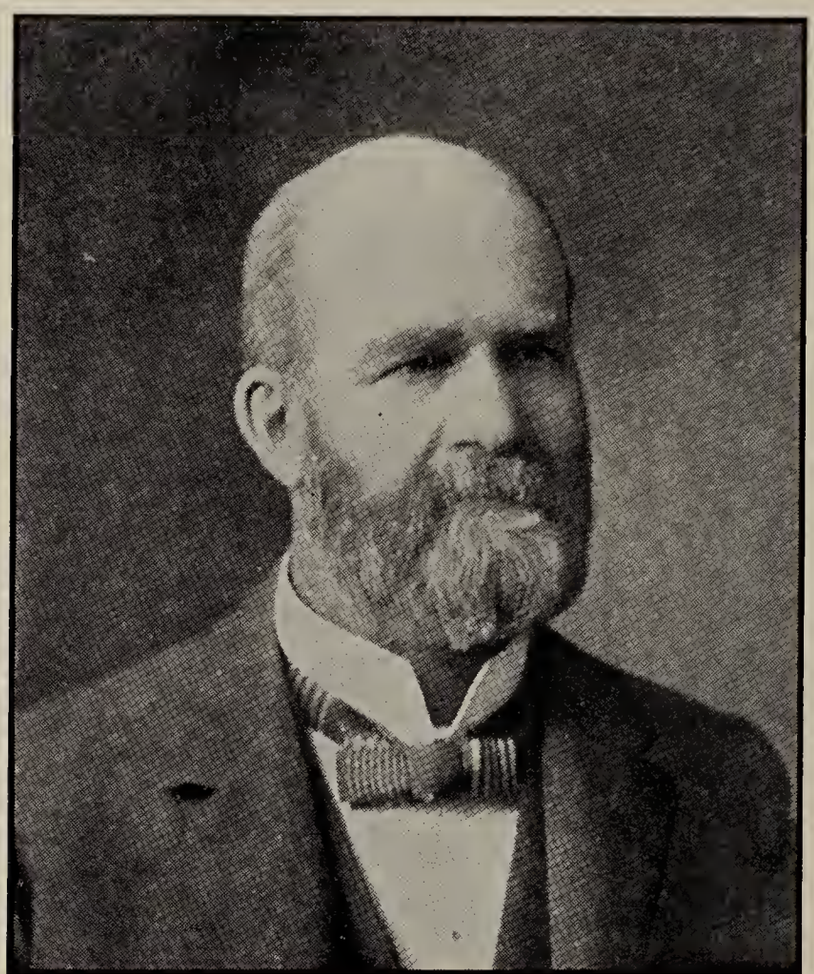
"Je vous prie de me considerer comme souscripteur au Journal of Mycology, dont je salue la re-apparition avec beaucoup de plaisir."

"Ich freue mich, dass Sie dieses wichtige Journal wieder herausgeben."

A very annoying and misleading error has just been noticed in the second line of label 68 (p. 58) where inadvertantly "Vitis sp." was used; it should be "Helianthus annuus L."

The crowded condition of the pages rendered it impractical to print an installment of the Index to North American Mycology in this issue of the JOURNAL. The citations for the year 1902 for the most part can be given in the December Number. It may be of interest to many to state that the Index for 1901 has been reprinted *on one side of the page only;* price 25 cents.

MS. is in hand for a Systematic Index of the N. A. Smuts. Hosts for any of the species not reported in print are requested; please send same to the editor of the JOURNAL.



Very truly yours,
T. J. Burrill

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A NEW GENUS OF FUNGI.

A. P. MORGAN.

The following unique genus and species I have discovered in my range the present autumn. It necessitates an additional section, HYALODICTYAE in the Tuberculariaceae of Saccardo's Sylloge Fungorum.

SPOROCYSTIS CONDITA Morgan gen. & sp. nov. — Stroma large, subglobose, fleshy, white, with a mycelium of slender white filaments; the spores a dense superficial layer. The pellucid hyphae compacted into a soft parenchymatous tissue, rich in fatty globules; the spores borne on the more or less distinct extremities. Spores sub-globose, white, 50-70 mic. in diameter, each composed of many small spherical cells, 9-11 mic. in diameter.

Growing on old leaves in woods; Preston, Ohio, October 1902. The stromata usually scattered, 1-2 mm. in diameter, occasionally two or three confluent. The dry spore shows best the cells of which it is composed. The stroma, mycelium and spores all abound in oil-globules as in the Entomophthoraceae; these are best exhibited in a drop of water.

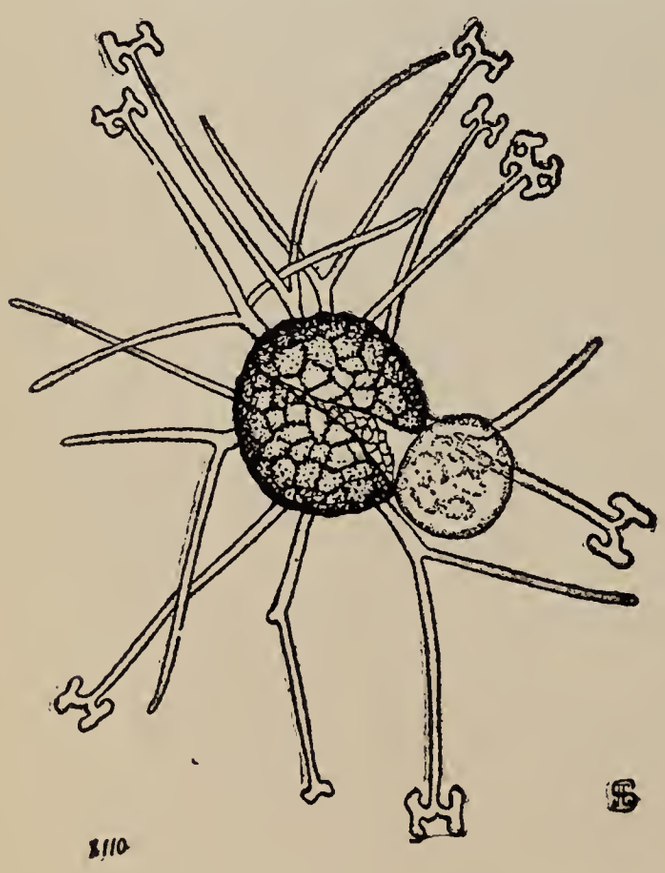
INTERESTING VARIATIONS IN THE APPENDAGES OF PODOSPHAERA OXYACANTHAE (DC.) De B.

J. G. SANDERS.

While examining some specimens of the Erysiphaceae collected in October at Newark, O., I found upon leaves of cultivated cherry a *Podosphaera oxyacanthae* with a large proportion of the perithecia bearing compound appendages. A few of the compound appendages were perfectly developed, but in the majority of cases one of the branches would be scarcely or not at all developed at the apex. The appendages varied in length from one to four times the diameter of the perithecia; the branching seemingly not affecting the length, as in two cases of tri-compound appendages, they were of maximum length with one branch three times dichotomously branched at the apex. In only two cases I found two asci in one perithecium, which precludes the idea of malformation of the perithecia as a cause of the compound appendages.

In one slide preparation of about fifty (50) perithecia, the following was noted:

Perithecia bearing one compound appendage.....12
Perithecia bearing two compound appendages..... 7
Perithecia bearing three compound appendages..... 3
Perithecia bearing four compound appendages..... 1
Perithecia bearing six compound appendages. 1
Perithecia bearing one tri-compound appendage..... 2



The accompanying figure, drawn with an Abbe camera lucida, amplification 110 diam, shows a perithecium bearing one tri-compound and five bi-compound appendages. It, however, contained a single ascus and the normal number (8) of ascospores of normal size. The majority of the appendages were branched near the perithecia, and only a few very near the apex, while many bore nodules or incipient branches at various locations. An examination of specimens from several other localities, resulted in finding, only rarely, a compound appendage.

Botanical Department, Ohio State University.

NOTES ON UREDINEAE. I.

E. W. D. HOLWAY.

PUCCINIA COLUMBIENSIS. — In July 1891, J. Macoun collected at Banff, Canada, a rust which he sent to J. B. Ellis as on Oenothera biennis. This was distributed to correspondents as Puccinia tuberculans E. & E., but published as Puccinia columbiensis E. & E. I collected at Banff in 1901, and found a Puccinia on Troximon glaucum which proved to be Macoun's plant, and a comparison of the specimens sent me by Mr. Ellis showed that his host plant was also Troximon. To be certain that the type was the same thing I asked Prof. Underwood to look it up. There are two specimens in the Ellis Herbarium. "Puccinia columbiensis E. & E., I, on Oenothera biennis, Cypress Hills, Assinaboine, J. Macoun," and "Puccinia columbiensis E. & E., III, on Oenothera biennis, Banff, J. Macoun." Mr. Rydberg kindly examined the hosts and considers the first Solidago mollis, and the second Troximon glaucum, or Troximon parviflorum.

PUCCINIA SUFFUSCA. — In the "Catalogue des plantes que la societe botanique de Copenhague peut distribuer au printemps 1881," a rust was offered under the name of Puccinia Pulsatillae Rostr., but without desription. Specimens have since been issued under this name in Sydow, Uredineen, No. 1529, and in Vestergren, Micromycetes rariores selecti, No. 316, both collected in Bohemia on Pulsatilla pratensis. Vestergren, in Bot. Notiser, 1902: 269, quotes from a letter written by the collector, Fr. Bubák, as follows: "Durch grössere grobwärzigere Sporen, deren Zellen nicht kuglig, sondern elliptisch bis länglich sind (besonders die Bazalzelle), ebenso durch spätere Entwicklungszeit von Puccinia fusca (Relh.) Wint. verschieden."

This seems to be a good species, but the name has been used by Kalchbrenner, 1865, Math. s. termiszett. Közlemenyek 3:307, for a different Puccinia. This necessitates a new name for the plant and *Puccinia suffusca* is offered for it. Puccinia fusca seems to occur in the United States on Anemone nemorosa only. I have examined P. suffusca on Pulsatilla hirsutissima, Decorah, Ia. Holway; Ute Pass, Col. Trelease; Helena, Mont., Kelsey. On Anemone parviflora, Col. Crandall; Anemone multifida, Helena, Mont., Kelsey. In addition to the characters noted by Bubák, the species has numerous one-celled spores, which are quite variable in form and size, and the spores are also darker in color. In all the specimens examined there is a very distinct difference in the markings of the epispore. Under a high power the tubercles of P. fusca appear like dots, quite uniform in size and evenly distributed over the surface. Those of P. suffusca are longer, irregular, and often united.

In this connection it may be of interest to republish Mr.

Relhan's first notice of Puccinia fusca. It is in the Gentleman's Magazine, 1793 : 414.

"King's Coll. Cam., May 15.

Mr. Urban:

The conjurer of Chalgrave's Fern having excited the curiosity of the public, I shall be glad through your means to inform your botanical correspondents that I have found the plant this spring, in great abundance, in Madingley Wood, near Cambridge. It appears to me, from repeated examinations, in all its different stages, to be Aecidium Fuscum. Lin. Syst. Nat. Gmelin, p. 1473. It is parasitical on the leaves and sometimes, though rarely, on the petals of Anemone Nemorosa. I shall, in a few days, publish a description of it in a third supplement to my "Flora Cantabrigiensis," and intend, in a short time, in a separate publication, to give a full history of the plant, illustrated by colored plates. In the meantime, I shall be happy, upon application being made to me by letter, to send twenty specimens of the plant, if so many of your correspondents inform me that they will be acceptable; having ever esteemed the giving away of a curious plant the second pleasure to the original discovery.

Yours, &c.,

R. Relhan."

The description was published in 1793. Flora Cantab. 3rd. Supp.: 36. not as a new species, but as Aecidium fuscum 1791. Lin. Syst. Nat. 1473. where it is given as Aecidium fuscum Pers. Mr. Relhan does not appear to have carried out his intention as to the separate publication, but he did contribute the specimens for the colored plate in Sowerby, English Fungi, 1797, pl. 53. This plate shows a leaf with Puccinia fusca, and a plant and leaf with aecidium. The Puccinia is without doubt the same as Persoon's 1791 Aecidium fuscum, otherwise he would have mentioned it in his review of Lycoperdon Anemones Poult. He says: (1796. Neue Ann. d. Bot. Stuck 13:43.) "Uebrigens habe ich diese Art schon vor der Erscheinung der Transactions dem Herrn Hofrath Gmelin zu der neuen Ausgabe des Linneischen Natursystems unter dem Namen: Aecidium Anemones, mitgetheilt. Das von Hrn. Relhan (Sup. Fl. cantabrig.) hierhin gerechnete *Aecidium fuscum,* ist eine ganz andere Art, und vermuthlich eine uredo."

If this view is correct, Persoon should have the credit of it and the name should be Puccinia fusca (Pers.) especially as Relhan did not, evidently, separate the aecidium and puccinia, and Persoon did.

Dr. Winter considered Aecidium Anemones Pers. (Aecidium leucospermum DC.) to be a state of Puccinia fusca. This is probably erroneous. H. T. Soppit made some cultures which led him to the conclusion that this aecidium was an Endophyllum. His experiments, as reported, (1893. Jour. of Bot. : 273) are not conclusive, and need repeating.

OHIO STATIONS FOR MYRIOSTOMA.

JOHN H. SCHAFFNER.

Myriostoma coliformis is regarded as quite a rare species for America. So far as the writer is informed, it has been reported from only four states, widely separated; in Colorado, Florida, Ontario, and South Dakota. The past summer, while on a collecting trip with Professors E. L. Moseley and W. E. Wells, on Cedar Point, Erie Co., Ohio, the writer discovered a large patch of this interesting fungus growing in the rich leaf mold on the bay side of the Point. Most of the specimens were in excellent condition. Later the writer collected the plant at several other places on Cedar Point. Miss L. C. Riddle found it on Green Island, Ottawa Co., where a considerable number of fine specimens were collected by the writer in a short time.

The plants grow in open places under trees and shrubs where there is an abundance of moist leaf mold. It is probably quite common in this region wherever the environment is suitable. The plants found matured the latter part of July and the early part of August and this is probably the best time to look for them.

Botanical Department, Ohio State University.

NEW SPECIES OF FUNGI FROM VARIOUS LOCALITIES.

BY J. B. ELLIS AND E. BARTHOLOMEW.

AECIDIUM DELPHINII Barthol.—On leaves of Delphinium scopulorum. Steamboat Springs, Colo. July 15, 1902. E. Bethel.

Hypophyllous. Spots on the upper side of the leaf yellowish brown with lighter margin. Circinate-clustered, 3-5 mm. diam., deep orange color, irregularly scattered over the leaf. Aecidia medium height, 250-350 μ diam., lacerate fringed at first but smooth with even surface when fully expanded. Spermogonia few and indistinct. Spores irregular, rough in outline, subglobose or angular, containing one or more bright golden nuclei, 20-25 μ diam. Mr. Bethel in his notes says: "Epidemic this year — there are thousands of acres of it here."

DIAPORTHE (CHOROSTATE) CELASTRINA E. & B. — On dead stems of Celastrus scandens. Clyde, Kansas, May 1901. (No. 2856.)

Perithecia in circinate groups of 5-15, globose, $\frac{1}{2}$ mm. diam., horn color inside, slightly raising the surface of the wood, and the short-cylindrical, smooth, subconical-pointed fasciculate ostiola

piercing and slightly raising the bark and finally rising ½-1 mm. above it; asci clavate-cylindrical, 50-60 x 6-8 μ; sporidia biseriate above, oblong-cylindrical, 2-nucleate, 1-septate, constricted at the septum, 12-15 x 4-5μ.

CUCURBITARIA JUGLANDINA E. & B. — On dead limbs of Juglans nigra. Rooks Co., Kansas, February 1902. (No. 2939.)

Perithecia erumpent in small cespitose clusters of 5-10, less than ½ mm. diam., with an inconspicuous ostiolum; asci cylindrical, short-stipitate, paraphysate, 100-120 x 8-10 μ; Sporidia uniseriate, elongated-obovate, 3- (becoming 5-7) septate, yellow-brown, mostly constricted in the middle, 15-22 x 8-10 μ, with a more or less continuous longitudinal septum.

Differs from Cucurbitaria juglandis Fuckel in its cylindrical asci and smaller sporidia.

SOLENOPEZIZA FIMBRIATA E. & B. — On decorticated logs of Populus tremuloides. Steamboat Springs, Colo., July, 1902. E. Bethel. (No. 940.)

Semierumpent, urceolate, thickly scattered, surrounded by the bleached, loosened fibers of the weather-beaten wood, ½-¾ mm. diam., slate color inside and out, margin deeply fimbriate-toothed. Asci cylindrical, sessile, 50-55 x 7-8 μ. Paraphyses filiform. Sporidia biseriate, oblong-elliptical, uniseptate, not constricted, hyaline, 7-8 x 2½-3 μ.

PHYLLOSTICTA JULIFLORA E. & B. — On pods of Prosopis juliflora. Austin, Texas, July 1900. W. H. Long, Jr. (No. 442.)

Spots pallid-white, irregular in shape, with a darker, purplish shade around the margin, 2-4 mm. diam., subconfluent. Perithecia pustuliform, about ½ mm. diam., black, flattening out and subhysteriiform when dry, subconfluent. Sporules ovate-oblong, 9-12 x 4-5 μ.

Differs from P. prosopidis P. Hen. in its much larger sporules.

DOTHIORELLA MULTICOCCA E. & B. — On bark of Populus deltoides. Ft. Scott, Kansas, July 1902. A. O. Garrett. (No. 15.)

Perithecia numerous, minute, 200-250 μ diam., white inside, buried in the black, subcontinuous stroma which occupies the outer layer of the inner bark, their papilliform ostiola raising the epidermis into numerous pustules which are soon ruptured. Sporules oblong-fusoid, hyaline, continuous, 15-20 x 6-7 μ

This is very distinct from D. decorticata E. & E., D. populnea Thum., D. populea Sacc., and D. populina Karst., all of which have much smaller sporules.

SPHAEROPSIS PERSICAE E. & B. — On dead limbs of Amygdalus persica. Rooks Co., Kans. Oct. 2, 1901. See Fungi Columbiani No. 1590.

Perithecia thickly scattered, globose-depressed, $\frac{1}{4}$-$\frac{1}{3}$ mm. diam., jet black throughout, deep seated in the inner bark but not penetrating to the wood. Epidermis raised into prominent pustules which are soon ruptured, exposing the ostiola and upper part of the perithecia. Sporules dark brown, elliptical, 8-12 x 18-24 μ often profusely discharged, blackening the surface of the host.

Common and abundant in old peach-tree brush heaps.

SPHAEROPSIS SALICIS E. & B. — On dead shoots of Salix cordata. Rockport, Kans. May 1901. (No. 2947.)

Perithecia scattered, globose, $\frac{1}{3}$-$\frac{1}{2}$ mm. diam., white inside, buried in the inner bark and raising the epidermis into pustules and piercing or rupturing it but not erumpent. Sporules oblong-elliptical, brown, 15-22 x 7-10 μ.

Some of the sporules appear globose, but this is owing to their being viewed endwise. Very near S. populi E. & B. but the pustules in that species are flattish and the epidermis is generally not ruptured. It differs from S. salicicola Pass. in not being erumpent.

CONIOTHYRIUM HELIANTHI E. &. B. — On dead stems of Helianthus annuus. Rooks Co., Kans., November 1901. (No. 2933.)

Perithecia scattered or cespitose, erumpent-superficial, membranaceous, 200-300 μ diam., collapsing to cup-shaped or discoid when dry, obscurely perforated above. Sporules elliptical, subolivaceous or cloudy, 4-5 x $2\frac{1}{2}$-3 μ.

HAPLOSPORELLA SAMBUCINA E. & B. — On dead stems of Sambucus canadensis. Louisville, Kans., May 1900. (No. 2820.)

Stroma buried in the bark, orbicular or elliptical, 1-2 mm. diam., raising the bark into pustules and rupturing it but not erumpent; perithecia 5-10 in a stroma, small ($\frac{1}{4}$ mm.). Sporules oblong, 12-15 x 6-7 μ.

Cannot be referred to H. alpina E. & E. or to H. seriata E. & E.

HAPLOSPORELLA WISTARIAE E. & B. — On Wistaria in cult. Louisville, Kans. May, 1900. (No. 2821.)

Stroma elliptical or orbicular, 1-2 mm. diam., sunk in the bark which is raised into pustules and ruptured; perithecia small (120-150 μ) white inside; sporules oblong, 12-16 x 6-7 μ.

BOTRYODIPLODIA GOSSYPII E. &. B. — On dead stems of Gossypium herbaceum. Tuskegee, Ala. July 29,1901. G. W. Carver. See Fungi Columbiani No. 1510.

Perithecia included in a semierumpent, tubercular stroma, 1-2 mm. diam., closely embraced by the ruptured epidermis, or arranged in a single or double series 3-5 mm. long and visible through longitudinal cracks in the bark, or some of them scattered singly. The perithecia are at first white inside and solid but become hollow and dark $\frac{1}{4}$-$\frac{1}{3}$ mm. diam., with a distinct papilliform ostiolum; sporules oblong-elliptical, or ovate, 15-22 x 12 μ, hyaline and continuous at first, then dark brown and uniseptate but not constricted.

Diplodia herbarum (Cda.) Lev. has perithecia simply gregarious and must differ from this which has the perithecia mostly in a distinct stroma.

STAGONOSPORA BIFORMIS E. & B. — On small, decorticated limbs of apple tree. Rooks Co., Kans. March, 1902. (No. 2940.)

Perithecia scattered or gregarious, at first covered by the fibers of the weather-beaten wood, soon bare and superficial, globose and about $\frac{1}{4}$ mm. diam. or often compressed, hysteriiform $\frac{1}{2}$-$\frac{3}{4}$ mm. long, ostiolum conical or short-cylindrical, sometimes compressed as in Lophiostoma. Sporules cylindrical, hyaline, narrower in the middle but not visibly septate, ends obtusely rounded, 12-15 x $2\frac{1}{2}$-3 μ.

S. prominula (B. & C.) and S. mali Delacr. are on leaves of apple tree. Both these have sporules of about the same length as our species but in the former they are short-clavate and in the latter fusoid, besides the much smaller (95 μ) perithecia.

CAMAROSPORIUM ASTERICOLUM E. & B. — On dead stems of Aster multiflorus, Rooks Co., Kans. June, 1901. (No. 2884.) See Fungi Columbiani, 1512.

Perithecia subcuticular, ovate-globose, $\frac{1}{4}$ mm. diam., only the apex and papilliform ostiolum projecting, the surface of the stem around the ostiolum blackened by the abundantly discharged sporules which are oblong or ovate-elliptical, 3-septate and slightly constricted, slightly compressed, brown, 12-15 x $4\frac{1}{2}$-7 μ, one or two of the cells divided by a longitudinal septum.

SEPTORIA MUNROAE E. & B. — On leaves of Munroa squarrosa. Rooks Co., Kans. July 22, 1902. (No. 2980.)

Perithecia epiphyllous, punctiform, 100 μ diam., rather abundant, black, subprominent. Sporules long, slender clavate, 80-110 x $2\frac{1}{2}$-3 μ, hyaline, with 1-3 septa near the broad end, very much resembling the conidia of Cercospora.

TORULA BRACHIATA E. & B. — On dead branches of Symphoricarpus occidentalis. Steamboat Springs, Colo. July, 1902. E. Bethel.

Forming a soft, black, velutinous layer on the dead limbs. Hyphae slender, 200-300 μ long, about 3 μ thick, at first obscurely septate, becoming moniliform, the joints subglobose, 3-4

μ diam. The hyphae send out moniliform branches above, at a large angle.

TORULA SEPULTA E. & B. — On old pine wood saturated with pitch, under side of an old pine board lying on the ground and on a pine post below the surface of the ground. Rockport, Kans. April and June, 1901. (Nos. 2844 and 2900.)

Conidia cylindrical, 2-5-septate, constricted at the septa, 10-22 x 4-5 μ, 4-5-catenulate, arising directly from prostrate sterile hypha often at a right angle and forming olive-black, sphaeriaeform tufts about $\frac{1}{2}$ mm. diam., thickly scattered and subconfluent.

Allied to Torula binalis C. & E. and T. sparsa B. & C. the latter of which differs in its conidia 7 μ diam.

STACHYBOTRYELLA n. gen. E. & B. — Differs from Stachybotrys in its paler color, creeping habit and absence of any perceptible basidia, the conidia arising directly from the slightly swollen, minutely roughened apex of the fertile hyphae.

STACHYBOTRYELLA REPENS E. & B. — On living leaves of Verbesina virginica. Austin, Texas. Oct. 1900. W. H. Long, Jr.

Hypophyllous; the sterile hyphae creeping along the sides of the hairs that clothe the lower face of the leaf and sending out at right angles short (20-35 x 3 μ), straight, simple, fertile branches which are slightly swollen and roughened with projecting points at the tips. Conidia ovate-globose, 4-5 x 3 μ, brown, sessile on the roughened tips of the fertile hyphae and forming a compact cluster or head 15-20 μ in diameter. The hyphae are of a yellow-brown, and mostly continuous.

CERCOSPORA CROTONICOLA E. & B. — On leaves of Croton fruticulosus, Austin, Texas. Oct. 1900. W. H. Long, Jr. (No. 62.)

Hypophyllous, forming small (1-1$\frac{1}{2}$mm.) olivaceous patches scattered over the under side of the leaf without any definite spots, except that the upper side of the leaf opposite the patches of hyphae is sometimes a little darker. Fertile hyphae hyaline, filiform, fasciculate, branched above, 100-150 μ long. Conidia oblong-cylindrical or clavate-oblong, olivaceous, 1-3 septate, 30-40 x 6-7 μ.

Differs from C. crotonifolia Cke. and C. crotonis E. & E. in its hypophyllous growth and the absence of any definite spots.

CERCOSPORA RATIBIDAE E. & B. — On Ratibida columnaris. Rooks Co., Kans. July 19, 1902. (No. 2976.)

Spots dirty brown with a white center, 2-4 mm. across amphigenous. Hyphae in minute, punctiform tufts, scattered over the spots both on the white and on the brown portions, subundulate and notched or shouldered above, continuous, yellow-brown,

30-40 x 4-4½ μ at base, narrower above. Conidia at first cylindrical and slightly curved, then elongated, narrowed above, 30-40 x 3½-4 μ, 4-8 septate.

MACROSPORIUM ORNATISSIMUM E. & B.— On living leaves of Sorghum vulgare, Rooks Co., Kans. Oct. 1901.

On bleached (buff color), extensive areas of the leaf, 5-10 cm. or more in length and often occupying the entire width of the leaf and separated from the green, living portion by a very distinct, narrow, red line. The parasite appears at first in little smoky-colored orbicular patches 2-3 mm. diam., soon confluent. Hyphae in small fascicles, 2-6 together rising from a small cellular base, simple, continuous or faintly 1-3 septate, soon disappearing. Conidia clavate, 30-60 x 12-16 μ, narrowed below into a yellowish, transparent stipe 10-25 x 4 μ, often slightly swollen at the lower end. Conidia 4-10 septate with several cells divided by a longitudinal septum, pale, yellow-brown.

CHAETOSTROMA GRAMINIS E. & B. — On dead leaves of some grass, Austin, Texas, Feb. 1901. W. H. Long, Jr. (No. 757.)

Sporodochia convex or plane, black, round or elliptical, ½-1 mm. diam. Bristles black, straight or slightly curved, opake, 175-250 x 6-8 μ. Conidia globose or subelliptical, brown, 6-9 μ diam., about the same as in C. aterrimum (Cke.) but that species is described as lineate-maculate.

EXOSPORIUM CESPITOSUM E. & B. — On dead (birch?) limbs. Mackinac Island, Mich., July 1899. E. T. Harper. (No 452.)

Sporodochia cespitose in erumpent clusters of 10-20, obovate or of irregular shape, ½-1 mm. diam., rusty-brown, finally deciduous, subconnate, much resembling the perithecia of Hypoxylon multiforme Fr., of horn-like texture and grayish-white within. Conidia at first globose 10-12 μ diam. becoming obovate, 50-60 x 18-20 μ, brown, the plasma cuboidly divided into 3-4 nuclei, 2-3-pseudoseptate, borne singly on simple, brown, 1-2-septate sporophores 10-20 x 5-6 μ which thickly clothe the surface of the sporodochia.

Differs from the other described species in its cespitose growth.

THE DISCOMYCETES OF THE MIAMI VALLEY, OHIO.

BY A. P. MORGAN.

The collections of several years enable me at this present time to increase very considerably the list of the species of Discomycetes growing in this region, since the publication of Lea's Catalogue in 1849. Many specimens have been sent to Chas. H. Peck, the State Botanist of New York, and many also to Mr. J. B. Ellis of New Jersey. Upwards of sixty numbers were sent to George Massee of the Royal Herbarium, Kew, England; these were chiefly small Pezizeae not figured in Cooke's Mycographia. Among these Mr. Massee detected several new species which he described and figured. I have also profited much by the papers published recently by Mr. Massee, in the Journal of the Linnaean Society and entitled "Redescriptions of Berkeley's Types of Fungi."

The classification of the Discomycetes is as yet tentative; no two writers divide the order similarly into families and genera. Hence in making up only a catalogue, I have been obliged to survey critically the nomenclature. In doing so I have indicated my notion in regard to genera and species; in many places I have suggested the correct writing of the specific names, on the accepted principle of priority; and I have also been able to describe the spores and give the spore measurements of some of de Schweinitz's little known species.

1. Coccomyces triangularis Saccardo, Sylloge VIII. 1889.
   Cenangium triangulare Fries, Syst. Myc. II. 1823.
   Peziza triangularis Schweinitz, Syn. Car. 1822.

2. Schizoxylon sepincolum Persoon, Ann. Wetter. 1810.
   Limboria sepincola Acharius, Acta. Holm. 1815.
   Schizoxylon persoonii Schweinitz, N. A. Fungi. 1834.

3. Schizoxylon occidentale E. & E., Journ. Mycol. I. 1834.
   Saccardo, Sylloge VIII. 1889.

4. Schizoxylon cinereum E. & E., (Ined.)

5. Lichenopsis sphaeroboloidea Schweinitz, N. A. Fungi. 1834.

6. Rhytisma punctatum Fries, Syst. Myc. 1823.
   Xyloma punctatum Persoon, Obs. Myc. 1798.

7. Stictis radiata Persoon, Obs. Myc. 1798.
   Lichen excavatus Hoffman, En. Lich. 1784.
   Lycoperdon radiatum Linn. according to Fries, Syst. Myc. III is Diderma stellare. See also Fries's Index.

8. Propolis faginea Karsten, Myc. Fenn. 1871.
Stictis versicolor Fries, Syst. Myc. 1823.
Hysterium fagineum Schrader, Journ. Bot. 1799.

9. Melittosporium hysterinum Gillet, Disc. Fr. 1879.
Stictis hysterina Fries, Syst. Myc. 1823.

10. Karschia lignyota Saccardo, Sylloge VIII. 1889.
Patellaria lignyota Fries, S. V. Scand. 1849.
Peziza lignyota Fries, Syst. Myc. 1823.

11. Karschia stygia Massee, Berk. Types. 1901.
Patellaria stygia B. & C., N. A. Fungi. 1875.
Patellea stygia Saccardo, Sylloge VIII. 1889.

12. Patellaria atrata Fries, Syst. Myc. 1823.
Peziza patellaria Persoon, Synopsis. 1801.
Lichen atratus Hedwig, Musc. frond. 1787.
"Typus generis est P. atrata," Fries, S. O. V. 114. The name Patellaria was once used extensively for a genus of Lichens. This species is to be distinguished from P. clavispora by the thicker asci and larger spores. Asci 100-130 x 17-19 mic. Spores 7-10 septate, 36-46 x 8-10 mic. The asci vary in the number of their spores.

13. Patellaria clavispora B. & Br., Am. Nat. Hist. 1854.
Durella clavispora Saccardo, Sylloge VIII. 1889.
This species is commonly confused with P. atrata. Asci 90-110 x 11-13 mic. Spores 5-8 septate, 28-35 x 6-8 mic.

14. Patellaria tetraspora Massee & Morgan n. sp. — Ascophore applanate, usually elliptical, margin very slightly upraised, and more or less distinctly vertically striate, entirely black, 0.5-1 mm. long; asci cylindrical, rather abruptly narrowed into a slender pedicel, apex rounded and slightly thickened, not blue with iodine, 140-160 x 12-14 mic., four spored; spores hyaline, smooth, narrowly clavate, apex blunt, base rather acute, 7-9 septate at maturity 1-seriate, 40-50 x x10-11 mic.; paraphyses numerous, slender tips thickened, deep blackish blue, agglutinated together.
On dead wood of Juglans cinerea. Preston, Ohio. A. P. Morgan. n. 25. March 1888. Allied to Patellaria clavispora B. & Br. but differs in the tetrasporic asci, and the larger spores.

15. Leciographa triseptata Morgan.
Mycolecidea triseptata Karsten, Symb. XXVI.
Patellaria triseptata Saccardo, Sylloge VIII. 1889.

16. Leciographa clavispora Morgan.
Tryblidium clavisporum Peck, 35th N. Y. Rep. 1882.
Patellaria clavispora Saccardo, Sylloge VIII. 1889.

This species is also referable to Pseudotryblidium Rehm, if it is desirable to multiply genera, but Saccardo's Patellaria is not tenable.

17. Holwaya gigantea Durand, Bull. Torr. Bot. Club. 1901.
Stilbum giganteum Peck, 24th N. Y. Rep. 1871.
Holwaya ophiobolus Saccardo, Sylloge VIII. 1889.
Bulgaria ophiobolus Ellis, Am. Nat. 1883.

18. Urnula craterium Fries, S. V. Scand. 1849.
Dermea craterium Schweinitz, N. A. Fungi. 1834.
Cenangium craterium Fries, Elenchus. 1828.
Peziza craterium Schweinitz, Syn. Car. 1822.

19. Midotis plicata Phillips & Harkness, Bulletin of the California Academy of Sciences. 1884.

"Resembles *M. irregularis* (Schw.) but differs in the smaller bi-nucleate curved sporidia and the longitudinally plicate hymenium."

20. Tympanis fraxini Fries, Syst. Myc. 1823.
Peziza fraxini Schweinitz, Syn. Car. 1822.

21. Tympanis conspersa Fries, Syst. Mycol. 1823.
Peziza sphaerioides Roth, Usteri. Ann. 1791.

22. Cenangella violacea E. & E., Proc. Ac. Nat. Sc. Philadelphia. 1893.

23. Scleroderris rubra Morgan, Journ. Cin. Soc. Nat. Hist. 1895.

It is possible that this species is Rhytidopeziza nigro-cinnabarina, Spegazzini. Fungi Guaranitici I. 1883. This claims to be the real Patellaria nigro-cinnabarina, Schweinitz. N. A. Fungi. 1834. Then again the latter is said to be the Hysterium rufulum of Sprengel. Schweinitz's species stands as Blitrydium nigro-cinnabarinum in Saccardo's Sylloge VIII. 1889.

24. Orbilia rubella Karsten, Myc. Fenn. 1871.
Peziza rubella Persoon, Synopsis. 1801.

25. Orbilia vinosa Karsten, Myc. Fenn. 1871.
Peziza vinosa Persoon, Synopsis. 1801.

26. Orbilia rubro-coccinea Saccardo, Sylloge. VIII. 1889.
Calloria rubro-coccinea Rehm, Hedwigia. 1883.

27. Orbilia epipora Karsten, Myc. Fenn. 1871.
var. major Spegazzini, F. Arg. 1880.

28. Orbilia leucostigma Fries, S. V. Scand. 1849.
Peziza leucostigma Fries, Obs. Myc. 1815.

29. Orbilia xanthostigma Fries, S. V. Scand. 1849.
Peziza xanthostigma Fries, Obs. Myc. 1815.

30. Orbilia cruenta Morgan.
Orbilia rufula Massee, Berkeley's Types. 1901.
Peziza regalis C. &. E. Grevillea. 1878.
Peziza fibriseda, Peziza saccharifera B. & C., N. A. Fungi. 1875.
Peziza cruenta, Peziza rufula Schweinitz, N. A. Fungi. 1834.

31. Bulgaria rufa Schweinitz, N. A. Fungi. 1834.
Asci cylindric, with a long slender stalk, the spores obliquely uniseriate, the sporiferous part of the ascus 125-135 x 11-14 mic. Spores simple, hyaline, elliptic-oblong, 18-22 x 9-10 mic.

32. Burcardia turbinata Schmidel, Icones, Tab. LXX.
Peziza sessilis infundibuliformis, etc., Haller, Hist. St. 1768.
Tremella agaricoides Retzius, Act. Holm. 1769.
Elvela pulla Schaeffer, Index, 1774.
Peziza polymorpha Lightfoot, Fl. Scot. 1777.
Polymorphus tremelloides "Naum. diss. Erf. 1782."
Peziza brunnea Batsch, El. Fung. 1783.
Octospora elastica Hedwig, Musc. frond. 1787.
Peziza nigra Bulliard, Champ. 1791.
Peziza inquinans Persoon, Disp. 1797.
Bulgaria inquinans Fries, Syst. Myc. 1823.

33. Angelina conglomeratus Fries, S. V. Scand. 1849.
Ascobolus conglomeratus Schweinitz, N. A. Fungi. 1834.
This is said to be the same thing as Hysterium rufescens Schw. It is strange that neither Schweinitz nor Fries perceived their identity.

34. Coryne purpurea Fuckel, Symb. Myc. 1869.
Elvela purpurea Schaeffer, Index, 1774.
Spores hyaline, fusiform, 3-5 septate, 20-25 x 5-6 mic.

35. Ascobolus furfuraceus Persoon, Obs. Myc. I. 1796.
Peziza stercoraria Bulliard, Champ. 1791.
Elvella fimetaria Scopoli, Ann. Hist. Nat. 1772.

36. Ascobolus brunneus Cooke, Hedwigia, VI. 1867.

37. Lasiobolus equinus Karsten, Syn. Arc. 1885.
Peziza equina Muller, Flora Danica.
Peziza papillata Persoon, Synopsis. 1801.

38. Ryparobus pelletieri Saccardo, Mich. I. 1877.
Ascobolus pelletieri Crouan, Ann. Sc. Nat. 1857.

39. Mollisia atrocinerea Phillips, Brit. Disco. 1887.
Peziza atrocinerea Cooke, Fung. Brit. Ser. I. 382.
Peziza Polygoni. Lasch., in Rab. Herb. Myc. 1127.

40. Mollisia cinerea Karsten, Myc. Fenn. 1871.
Peziza cinerea Batsch, El. Fung. cont. 1789.

41. Mollisia fusca Massee, Fung. Fl. 1895.
Trichopeziza fusca Saccardo, Sylloge. VIII. 1889.
Peziza fusca Schumacher, En. Plant. 1803.

42. Belonidium album Saccardo, Sylloge, VIII. 1889.
Lecanidion album Crouan, Fl. Finist. 1867.

This is truly a Peziza; there is little to the ascoma besides the asci and paraphyses. It grows on old hyphae of Helminthosporium.

43. Stamnaria americana Massee & Morgan n. sp. —

Erumpent, gregarious or crowded in clusters of three or four, sessile or with a very short stem-like base, about ½ mm. across and high, thin, translucent, margin scarious, uneven, entirely pale amber when dry, concave; asci clavate, apex rounded, not blue with iodine, 8-spored, 170 x 15-16 mic.; spores irregularly 2-seriate, hyaline, smooth, continuous narrowly elliptic-fusiform, often slightly inaequilateral, 2-guttulate, 26-29 x 7-8 mic.; paraphyses slender, tips slightly clavate, often branched; excipulum and cortex formed of very slender septate hyphae running from base to margin.

On dead stems of Equisetum hyemale Preston, O. Entire fungus delicate, thin, soon collapsing. Readily distinguished from S. equiseti in the much larger asci and spores.

44. Helotium citrinum Fries, S. V. Scand. 1849.
Octospora citrina Hedwig, Musc. frond. 1787.

Helotium confluens Schweinitz, N. A. Fungi, does not seem to be different from this species.

45. Helotium virgultorum Fries, S. V. Scand. 1849.
Phialea virgultorum Saccardo, Sylloge. VIII. 1889.
Peziza virgultorum Vahl, Flora Dan. Tab. 1016.
Octospora fungoidaster Hedwig, Musc. frond. 1787.
Peziza flaviscens, petiolata, etc. Haller, Hist. St. 1768. By Persoon and Fries this species was included as a variety in P. fructigena.

46. Helotium scutula Karsten, Myc. Fenn. 1871.
Phialea scutula Saccardo, Sylloge, VIII. 1889.
Peziza scutula Persoon, Myc. Eur. 1822.

As defined by later writers there seems little difference between this species and P. virgultorum except that it grows on herbaceous stems.

47. Helotium fructigenum Fuckel, Symb. Myc. 1869.
Peziza fructigena Bulliard, Champ. 1792.

Massee includes this species as a variety in H. virgultorum.

48. Helotium calyculus Fries, S. V. Scand. 1849.
Phialea calyculus Saccardo, Sylloge VIII. 1889.
Peziza calyculus Sowerby, Eng. Fungi. 1799.

49. Helotium discretum Karsten, Myc. Fenn. 1871.
On old pod of Gleditschia.

50. Helotium galbula Karsten, Myc. Fenn. 1871.
Phialea galbula Saccardo, Sylloge, VIII. 1889.

51. Helotium crocinum B. & C., Cuban Fungi. 1869. Massee, Berk. Types. 1901.

52. Helotium delectabile Massee & Morgan n. sp. —
Ascophore stipitate, at first closed by the incurved margin, disc finally plane, clear crimson, permanently marginate, up to 1 mm. broad, externally even, glabrous, whitish with a tinge of pink, narrowing downwards into a short, stout, pale stem; asci 90 x 10 mic., clavate, apex slightly thickened, pore blue with iodine, 8-spored; spores obliquely 1-seriate, hyaline, continuous smooth, narrowly elliptic-fusiform, 12-13 x 4 mic. paraphyses slender, tips scarcely thickened, tinged red.
On slender twigs. Preston, Ohio, U. S. A. Allied to Helotium geurnisaci Crouan.

53. Helotium chlora Morgan.
Chlorosplenium chlora Massee, Berk. Types. 1901.
Peziza chlora Schweinitz, Syn. Fung. Car. 1822.
Chlorosplenium schweinitzii Fries, S. V. Scand. 1849.
Peziza crocitincta B. & C., Grevillea, I 1872 and III 1875.
Pezizella crocitincta Saccardo, Sylloge, VIII. 1889.
Specimens examined from Schweinitz, Berkeley and Fries; not by any means uncommon in the United States. The colour ranges from yellowish-green, through clear yellow, to orange or saffron; all shades may sometimes be seen in the same group of specimens." (George Massee.)

54. Ciboria renispora Saccardo, Sylloge, VIII. 1889.
Ciboria sydowiana Rehm, Hedwigia, 1885.
Helotium renisporum Ellis, Bull. Buff. 1875. Massee, Fungus Flora. 1895.
The spores are not correctly given in the Sylloge. C. tabacina E. & Holw. does not appear to be a different species.

55. Chlorosplenium aeruginosum De Notaris, Discom. 1864.
Helotium aeruginosum Fries, S. V. Scand. 1849.
Peziza aeruginosa Vahl, Fl. Dan. Tab. 1260.
Helvella aeruginosa Oeder, Fl. Dan. Tab. 534.
Peziza viridissima, etc. Haller, Hist. Stirp. 1768.
Peziza aeruginascens Nylander, Obs. Pez. 1868.

56. Chlorosplenium viride Morgan.
Cantharellus viridis Schweinitz, N. A. Fungi. 1834.
Peziza aeruginascens Nylander, Obs. Pez. 1868.

57. Chlorosplenium versiforme Karsten, Myc. Fenn. 1871.
Helotium versiformis Fries, S. V. Scand. 1849.
Peziza versiformis Persoon, Ic. & Desc. 1800.

The genus Chlorosplenium was established by Fries for the reception of Peziza chlora, P. chlorascens and P. torta of Schweinitz under the mistaken notion that "the disk is rendered green-pulverulent by the bursting of the asci and pouring out of the spores." In the same connexion Peziza aeruginosa and P. versiformis were placed in Helotium.

It is doubtful whether Peziza chlora, P. chlorascens, P. torta belong in Chlorosplenium as now understood. The generic type at present is rather Chlorosplenium aeruginosum, which colors the wood on which it grows a deep verdigris-green.

58. Pezicula carpinea Tulasne, S. F. Carp. 1865.
Dermatea carpinea Fries, S. V. Scand. 1849.
Patellaria carpinea Berkeley, Lea's Cat. 1849.
Peziza carpinea Ehrhardt, Pl. crypt. ex. 130. See Persoon, Synopsis. 1801.

59. Tapesia aurelia Phillips, Brit. Disco. 1887.
Belonidium auratum Saccardo, Mich. I. 1877.
Arachnopeziza aurelia Fuckel, Symb. Myc. 1869.
Belonidium aurelia De Notaris, Prop. Disc. 1864.
Peziza aurelia Persoon, Myc. Eur. 1822.

60. Tapesia arachnoidea Saccardo, Sylloge, VIII. 1889.
Peziza candido-fulva Schweinitz, N. A. Fungi. 1834.
Peziza rhabdosperma B. & Br., Ann. Nat. Hist. 1876.
Arachnopeziza aurata Fuckel, Symb. Myc. 1870.
Peziza arachnoidea Schweinitz, N. A. Fungi. 1834.
Mr. Massee determined the specimen as Tapesia aurata.

61. Tapesia candido-fulva Saccardo, Sylloge, VIII. 1889.
Peziza candido-fulva Schweinitz, N. A. Fungi. 1834.

The ascoma differs from that of T. aurelia in the tawny-brown fasciculate hairs on the margin. The asci are cylindric-clavate, 60-70 x 7-8 mic.; the spores are fusiform-clavate, simple or 1-septate, 11-16 x 3 mic.

62. Tapesia mollisioides Saccardo, Mich. II. 1880.
Peziza mollisiaeoides Schweinitz, N. A. Fungi. 1834.

63. Tapesia sanguinea Fuckel, Symb. Myc. 1869.
Peziza sanguinea Persoon, Disp. 1797.

64. TAPESIA CAESIA Fuckel, Symb. Myc. 1869.
Peziza caesia Persoon, Synopsis. 1801.
Peziza lichenoides Persoon, Ic. & Descrip. 1800.

65. TAPESIA DERELICTA Morgan sp. nov. — Ascophore subcupulate, more or less irregular, rufescent, externally furfuraceous, seated on a thin white subiculum, close or crowded and sometimes confluent. Asci cylindric, stipitate, 90-100 x 7-8 mic., 8-spored, the spores obliquely uniseriate; paraphyses filiform. Spores cylindric-clavate, hyaline, 1-sepate, 12-15 x 3 mic.

Growing on old wood and mosses; Preston, Ohio. Ascophore 1-2 mm. in diameter, when fresh closely crowded so as to almost conceal the thin subiculum, but when dry the fleshy cups are much contorted disclosing the white threads between. I suspect this to be the lost Peziza bloxami B. & Br.

66. TAPESIA FUSCA, T. rosae, T. prunicola, Fuckel, Symb. Myc. 1869.
Peziza fusca Persoon, Obs. Myc. 1798.

67. TAPESIA DISCINCOLA Saccardo, Sylloge, VIII. 1889.
Peziza discincola Schweinitz, N. A. Fungi. 1834.
Spores 0-1-septate, clavate-oblong, 7-9 x 2-3 mic.

68. TAPESIA PRUINATA Saccardo, Sylloge, VIII. 1889.
Peziza pruinata Schweinitz, Syn. Car. 1822.
Peziza conspersa Persoon, Myc. Eur. 1822.
Thelebolus hirsutus De Candolle, Fl. Fr. 1805.

This seems to me an imperfect Lichen, a Verrucaria. It grows commonly on the bark of Grape vines, but I never find any fruit; the vegetation is not fungoid.

69. LACHNELLA CORTICALIS Fries, S. V. Scand. 1849.
Peziza corticalis Persoon, Disp. 1797.

70. LACHNELLA CANESCENS Phillips, Brit. Disco. 1887.

71. LACHNELLA RUFO-OLIVACEA Phillips, Brit. Disco. 1887.
Schweinitzia rufo-olivacea Massee, Fung. Flora. 1895.
Velutaria rufo-olivacea Fuckel, Symb. Myc. 1869.
Peziza fraxinicola B. & Br., Ann. Nat. Hist. 1866.
Peziza rufo-olivacea A. & S., Consp. Fung. 1805.

72. LACHNELLA PENICILLATA Morgan.
Trichopeziza penicillata Saccardo, Sylloge, VIII. 1889.
Peziza penicillata Schweinitz, Syn, Car. 1822.

73. LACHNELLA SOLENIIFORMIS E. & E., Journ. Mycol. 1888.
Dasyscypha soleniiformis Saccardo, Sylloge. VIII. 1889.

74. LACHNELLA DEMATIICOLA Phillips, Brit. Disco. 1887.
Trichopeziza dematiicola Saccardo, Sylloge, VIII. 1889.
Peziza dematiicola B. & Br., Ann. Nat. Hist. 1865.
Peziza escharodes B. & Br., Ann. Nat. Hist. 1872.

75. Lachnella chlorascens Morgan.
Chlorosplenium repandum Fries, S. V. Scand. 1849.
Peziza chlorascens Schweinitz, N. A. Fungi. 1834.

76. Lachnella atrofuscata Saccardo, Sylloge. VIII. 1889.
Peziza atrofuscata Schweinitz, N. A. Fungi. 1834.

77. Lachnella hyalina Phillips, Brit. Disco. 1887.
Pseudohelotium hyalinum Fuckel, Symb. Myc. 1869.
Peziza hyalina Persoon, Disp. 1797.

78. Lachnum agaricinum Retzius, Act. Holm. 1769. Flora Scand. 1795.
Lachnella virginica Phillips, Brit. Disco. 1887.
Lachnum virginicum Karsten, Myc. Fenn. 1871.
Dasyscypha virginica Fuckel, Symb. Myc. 1869.
Peziza virginica Batsch, El. Fung. 1783.

Lachnum niveum (Hedw.) Karsten, appears to be practically indistinguishable from this species. Retzius himself gives it as a synonym.

79. Lachnum cerinum Morgan.
Lachnella cerina Phillips, Brit Disco. 1887.
Heliotium cerinum Karsten, Myc. Fenn. 1871.
Dasyscypha cerina Fuckel, Symb. Myc. 1869.

80. Lachnum luteo-album Morgan.
Dasyscypha luteo-alba Saccardo, Sylloge, VIII. 1889.
Peziza luteo-alba Schweinitz, N. A. Fungi. 1834.

81. Lachnum viridulum Masse & Morgan n. sp. —

Gregarious, closed at first then expanding until widely cup-shaped, narrowed below into a very short, stout stem-like base. about .5 mm. across, disc dark green, externally pale green and downy, marginal hairs 60-80 x 3-4 mic., septate; cortex minutely parenchymatous, cells elongated from base to margin; asci cylindrical, apex rounded, 8-spored, 45-50 x 6 mic., spores 2-seriate, continuous, smooth, hyaline, cylindrical, often slightly curved, 7-9 x 2 mic.; pharaphyses filiform.

On dead wood of Quercus alba, Preston, O., readily distinguished by the green colour of every part. Contracted when dry, and looking like minute yellowish-green specks of fluff.

82. Patella scutellata Morgan.
Lachnea scutellata Gillet, Disco. 1879.
Humaria scutellata Fuckel, Symb. Myc. 1869.
Octospora hirta Hedwig, Musc. Fround. 1789.
Patella ciliata Roth, Flora Germ. 1788. Wiggers Fl. Hols. 1780.
Elvella ciliata Schaeffer, Index. 1774.
Peziza scutellata Linnaeus, Sp. Pl. 1753.

83. PATELLA LUTEA Morgan.
Lachnea stercorea Gillet, Disco. 1879.
Peziza stercorea Persoon, Obs. Myc. 1798.
Peziza lutea Reich. in Besch. Berl. 1775 (?).
Elvella lutea Scopoli, Fl. Carn. 1772.

84. PATELLA ERINACEUS Morgan.
Lachnea erinaceus Saccardo, Sylloge, VIII. 1889.
Peziza erinaceus Schweinitz, Syn. Car. 1822.

85. SEPULTARIA ALBIDA Morgan.
Lachnea hemispherica Gillet. Disco, 1879.
Peziza hemispherica Wiggers, Fl. Hols. 1780.
Elvela algida Schaeffer Index 1774.

86. SEPULTARIA SEMITOSTA Morgan.
Macropodia semitosta Saccardo, Sylloge, VII. 1889.
Peziza semitosta B. & C., N. A. Fungi. 1875.

According to Massee in Journal Linn. Society, 1876, Peziza pubida, B. & C. is a synonym of this species.

87. GEOPYXIS COCCINEA Massee, Fungus Flora. 1896.
Sarcoscypha coccinea Saccardo, Sylloge, VIII. 1889.
Lachnea coccinea Gillet, Disco. 1879.
Peziza coccinea Jacquin, Fl. Aust. 1776.
Elvela coccinea Scopoli, Fl. Carn. 1772.

88. GEOPYXIS FLOCCOSA Morgan.
Sarcoscypha floccosa Saccardo, Sylloge, VIII. 1889.
Peziza floccosa Schweinitz, N. A. Fungi. 1834.

Sarcocyphi, Martins, was applied to Peziza stenostorna Mart., and P. rhizopus A. & S. There is no reason for substituting Plectania.

89. GEOPYXIS OCCIDENTALIS Morgan.
Sarcoscypha occidentalis Saccardo, Sylloge, VIII. 1889.
Peziza occidentalis Schweinitz, N. A. Fungi. 1834.

This species is given in Lea's Catalogue. The form I find corresponds better to Geopyxis hesperidea C. & P. Grevillea, I. 1872.

90. GEOPYXIS NEBULOSA Saccardo, Sylloge, VIII. 1889.
Peziza nebulosa Cooke, Mycographia. 1879.

91. BARLAEINA CONSTELLATIO — Barlea constellatio Saccardo Sylloge, VIII. 1889.
Aleuria constellatio Gillet, Disco. 1879.
Peziza constellatio B. & Br. Ann. Nat. Hist. 1875.

92. HUMARIA OMPHALODES Massee, Fungus Flora. 1875.
Pyronema omphalodes Fuckel, Symb. Myc. 1869.
Peziza omphalodes Bulliard, Champ. 1792.

93. Humaria scabra Morgan.
Humaria granulata Saccardo, Sylloge, VIII. 1889.
Ascobolus granulatus Fuckel, Symb. Myco. 1869.
Peziza granulata Bulliard, Champ. 1792.
Peziza scabra Müller, Fl. Dan. Tab. 655.

94. Humaria vitigena Massee & Morgan n. sp. — Gregarious, sessile on a broad base, fleshy, 2-3 mm. broad; globose and closed at first, gradually expanding but the extreme margin persistently incurved and minutely silky; externally dingy white, disc glaucous; asci cylindrical apex rounded, plug brown — not blue with iodine, 120 x 12 mic.; spores 8, 1-seriate, broadly ellipitical, ends obtuse, hyaline, smooth, 8-8 x 6-6.5 mic.; paraphyses filiform, slightly thickened at the apex.

On dead twigs of Vitis riparia, Preston, O. The present species is not a typical Humaria, neither can it be considered as agreeing well with any established genus. The excipulum consists entirely of irregularly nodulose cells which are scarcely coloured by iodine but appear refractive as if very thick-walled, and with scarcely any cell contents. Perfectly globose at first, the hymenium gradually developing as in Bulgaria. Substance firm, but not at all cartilaginous or gelatinous.

95. Humaria fuscocarpa Morgan.
Phaeopeziza fuscocarpa Saccardo, Sylloge, VIII. 1889.
Peziza fuscocarpa Ellis Q Holway, Journ. Mycol. 1885.

96. Phaeopeziza nigrans Morgan.
Detonia nigrans Saccardo, Sylloge, XIV. 1899.
Peziza nigrans Morgan, Journ. Cin. Soc. Nat. Hist. 1895.

97. Peziza vesiculosa Bulliard, Champ. 1792.
Peziza lycoperdoides DeCandolle, Fl. Fr. 1805.
Helvella vesculosa Bolton, Hist. Fung. 1788.
Elvella lycoperdoides Scopoli, Fl. Carn. 1772.

98. Peziza irrorata B. & C., N. A. Fungi. 1875. Massee, Berkeley's Types. 1896.

This was at first referred to Peziza repanda; Massee's description makes the species clear.

99. Peziza palmicola B. & C. Cuban Fungi. 1869. Massee, Berkeley's Types. 1896.

This grows in a solitary way with me, always on old Hickory trunks; it resembles Peziza repanda.

100. Peziza clypeata Schweinitz, Syn. Car. 1822.
Peziza adnata B. & C. Cuban Fungi. Massee, Berkeley's Types. 1896.

I had always taken this for Psilopezia numularia until I got Massee's work; I supposed the three names to be synonyms.

101. Peziza numularia Morgan.
Psilopezia numularia Berkeley, Lond. Journ. 1847. Lea's Catalogue. 1849. Massee, Berkeley's Types. 1896.

Although the type of this species was sent from Cincinnati by Mr. Lea, I do not appear to have collected it, my specimen examined by Mr. Massee being pronounced Peziza adnata B & C. Aside from the spores, there should be no confounding the two species; The ascophore of one is parenchymatous and of the other wholly prosenchymatous.

102. Peziza nana Massee & Morgan n. sp. — Gregarious sessile, thin, concave, entirely pale brown when dry, up to 6 mm. across, scurfy-pulverulent externally; asci cylindrical, apex rounded, deep blue with iodine, 8-spored, 350 x 12 mic.; spores broadly elliptical, ends obtuse, hyaline, continuous, epispore densely covered with minute warts, 18 x 10 mic. 1-seriate; paraphyses slender, very slightly thickened at the apex; hypothecium and excipulum formed of very slender, interwoven hyphae, passing into a cortex of small parenchymatous cells.

On the ground; Preston, O. The asci and spores are large in proportion to the size of the ascophore.

103. Peziza succosa Berkeley, Ann. Nat. Hist. 1841.
Galactinia succosa Saccardo, Sylloge, VIII. 1889.

104. Peziza pustulata Gmelin, Syst. Nat. 1791.
Octospora pustulata Hedwig, Musc. frond. 1787.

105. Peziza morgani Massee n. sp. — Ascophore cup-shaped, abruptly narrowed into a very short, slightly lacunose, stem-like base, entirely pale brown (when dry), minutely furfuraceous externally, substance thin, not brittle; hypothecium and excipulum formed of interwoven hyphae, passing into a parenchymatous cortex, 2-3 cm. across; asci cylindrical, apex rounded, not blue with iodine, 8-spored, 280-300 x 16-17 mic. spores obliquely 1-seriate, elliptic-fusiform, epispore delicately warted, hyaline, 2-guttulate, 37-40 x 10-12 mic.; paraphyses cylindrical, apex very slightly thickened.

On the ground in woods, Preston, O. A remarkably fine species, very distinct in the large, elliptic-fusiform warted spores.

106. Peziza petersii B. & C. N. A. Fungi. 1875. Massee, Berkeley's Types. 1896.

107. Peziza griseo-rosea Gerard, Bull. Buff. 1874.

108. Peziza adae Sadler, Trans. Bot. Soc. Edinburg. 1857.

I have referred to this species specimens of a large thin Peziza growing on the walls and bottom of a cellar.

109. Otidea leporina Fuckel, Symb. Myc. 1869.
Peziza leporina Batsch, El. Fung. 1783.
Fungus auriculae leporis forma. Mentzelius, Pug. Rar. 1682.

110. Otidea onotica Fuckel, Symb. Myc. 1869.
Peziza onotica Persoon, Synopsis. 1801.
Peziza leporina Sowerby, Eng. Fung. 1797.

111. Otidea alutacea Massee, Fungus Flora. 1895.
Peziza alutacea Persoon, Comm. 1800.
Elvela ochracea Schaeffer, Index. 1774.

112. Otidea aurantia Massee, Fungus-Flora. 1895.
Peziza aurantia Persoon, Comm. 1800.
Elvella coccinea Schaeffer, Index. 1774.

113. Otidea cochleata Fuckel, Symb. Myc. 1869.
Peziza cochleata Linnaeus, Sp. Pl. 1753.

The specific name originates with Linnaeus, but the application of it has been various. Recent writers accept the interpretation of Dr. Cooke in Mycographia; in this the spores are smooth.

A very large Peziza grows in this region in early spring, agreeing in form, size, and color with this species, but the spores are minutely roughened. I have called it Peziza badia, Pers. (Helvella cochleata, Bolton); but this plant is said to grow in summer and autumn. It may be the plant called Peziza umbrina by Boudier, but the figure in Mycographia does not look like our plant.

114. Acetabula vulgaris Fuckel, Symb. Myc. 1869.
Peziza acetabulum Linnaeus, Sp. Pl. 1753.
Fungoides fuscum acetabuli forma, etc. Micheli, N. P. G. 1749.

115. Leotia stipitata Schroeter, Pflanzen. 1894.
Leotia viscosa Fries, Syst. Myc. 1823.
Tremella stipitata Bosc., Berl. Mag. 1811.

The pileus in this species is dark green; the spores subfusiform, more or less curved, 16-20 x 4-5 mic.

116. Helvella crispa Fries, Syst. Myc. 1823.
Phallus crispus Scopoli, Fl. Carn. 1772
Fungoides fungiforme crispum, etc. Micheli. N. P. G. 1749.

117. Helvella barlae Boudier & Patouillard in Journ de Bot. 1888.

There is a minute pubescence on pileus and stipe.

118. Helvella sulcata Afzelius, Vet. Ac. Hand. 1783.

The specimens of this are 2-3 cm. in hight.

119. HELVELLA ELASTICA Bulliard, Champ. 1785.

120. HELVELLA GRACILIS Peck, 24. N. Y. Rep. 1871.

121. HELVELLA PEZIZOIDES Afzelius, Vet. Ac. Hand. 1783.
Peziza helvelloides Fries, S. V. Scand. 1849.
Helvella helvelloides Massee, Fungus Flora. 1895.

122. HELVELLA EPHIPPIUM Leveille, Ann. Sc. Nat. 1841.

123. HELVELLA CRATERELLA Quelet, Enchiridion. 1886.
Peziza craterella Persoon, Synopsis 1801.
Octospora craterella Hedwig, Musc. froud. 1787.

My note on the fresh specimen is as follows; Stipe 5-6 x 1-1.5 cm. Ascoma 4-7 cm. Asci 200-250 x 16-18 mic. Spores smooth, 18-20 x 12-14 mic. Compare with Massee's account of Helvella macropus.

124. GYROMITRA ESCULENTA Fries, S. V. Scand. 1849.
Helvella esculenta Persoon, Comm. 1800.

This species is recorded in Lea's Catalogue. I have never found it.

125. GYROMITRA COSTATA Cooke, Mycographia. 1879.
Helvella costata Schweinitz, Syn. Car. 1822.

I have two or three times found specimens of what appeared to be this species, but in no instance did they yield spores.

Mature specimens of this species and of G. caroliniana are greatly desired by mycologists; they do not seem to be known at the present time.

126. GYROMITRA BRUNNEA Underwood, Proceedings Indiana Academy of Science. 1893.

In the spring of 1895, this species grew abundantly in our vicinity. One specimen which we weighed, measured and figured, had dimensions as follows; Height 18 cm.; diameter of Pileus 14 cm.; thickness of stipe 8.5 cm.; weight 1 lb. 2 oz.

127. MORCHELLA ESCULENTA Persoon, Synopsis. 1801.
Phallus esculentus Linnaeus, Sp. Pl. 1753.
Boletus esculentus, rugosus, etc. Tournefort. I. R. H. 1719.

128. MORCHELLA PATULA Persoon, Synopsis. 1801.
Phallus patulus Schrank, Baier. Fl. 1789. Gmelin, Syst. Nat. 1791.

NOTES FROM MYCOLOGICAL LITERATURE. III.

W. A. KELLERMAN.

ANNALES MYCOLOGICI EDITI IN NOTITIAM SCIENTIAE MYCOLOGICAE UNIVERSALIS. Early in January 1903, the first number of a new periodical headed as above will appear, which proposes dealing thoroughly with the cultivation and furtherance of Mycological Science. So states a circular notice just received from H. Sydow, Berlin, W., Goltz str. 6., Germany. The periodical will be issued every other month; the size about 640 pp. per year; the price 25 Marks. At present only one North American and two French Mycological periodicals are published. We welcome the appearance of the fourth journal devoted to this widening field of botanical science. Annales Mycologici will contain in the main original "mycological articles of the first class," list of latest literature, critical reviews, etc.

A PLEA BY PROFESSOR UNDERWOOD FOR THE CONCENTRATION of the energy of Mycological Clubs and of isolated individuals on a limited number of genera, say Boletus, Boletinus, Coprinus, Lactarius, Russula, Hygrophorus, Lentinus, and Marasmius, was made in the January No. of Torreya, pp. 1-2 (1902), which it is to be hoped was numerously heeded during the year, and that abundant success may induce a continuation in the same line the next season.

NO END TO THE NEW HIGHER FUNGI — Prof. Peck, the veteran American Agaricologist, describing fourteeen new species in the Bulletin of the Torrey Botanical Club, 29:69-74, Feb., 1902.

IN NO GROUP OF PLANTS IS CAREFUL STUDY IN THE FIELD SO necessary as with Mushrooms, says F. S. Earle, in Torreya (2:2-4. Jan. 1902); and besides valuable suggestions for the beginner and amateur Prof. Earle gives a commendable description blank.

BACTERIUM TRUTTAE, A NEW SPECIES pathogenic to Trout, is described by M. C. Marsh in Science, 16:706-7, 31 Oct., 1902. The organism was obtained from diseased brook trout and stands in specific causal relation to the disease; found only in domesticated or aquarium fish, never in wild trout from the natural waters. It is not pathogenic to warm-blooded animals.

C. A. J. OUDEMANS AND C. J. KONIG HAVE PUBLISHED a Prodrome d'une Flore Mycologuique obtenue par la culture sur Geletine preparée de la terre humeuse du S'panderswoud, près Bussuns, in Achives Nederlandaises des Sciences exactes et naturelles. Forty-five species are figured — 8 Mucoraceae, 3 Sphaeropsideae, 34 Mucedineae — on 33 colored plates. Thirty-one of the species are new with Latin diagnoses by Oudemans.

The Nidulariaceae of North America are monographed by V. S. White, Bulletin of the Torrey Botanical Club, 29: 251-280, 5 pl. May 1902. Cyathia replaces the generic name Cyathus; a key to the eleven North American species is given; one species and one variety are new. Crucibulum vulgare Tol. (1844) the only species of this genus is to be called C. crucibuliforme (Scop.) White. Nidula, a new Genus is proposed; under it two species and one variety are given; the variety and one species are new. Granularia (Roth, 1791) replaces the generic name Nidularia (Fr. and Nord., 1817-18); a key to the three species is given; two of the species are new. A table showing the known distribution of the species is included.

As animal mycophagists W. A. Murrill lists (Torreya, 2:25-6. Feb. 1902) a large sphingid larva (Virginia) — feeding on Polyporus flavovirens; red, or "pine," squirrel of Alaska in the region west of the Yukon River — living on [seeds of Picea alba and] mushrooms (three kinds of Agarics noticed) which they place in forks of branches, etc., visiting their collections every day in the winter for a meal.

Quite extended "Supplementary Notes on the Erysiphaceae," by Ernest S. Salmon, are published in the Bull. Torr. Bot. Club, 29:1-22, 83-109, Jan. and Feb. 1902. A considerable amount of further material has enabled the author "to continue the study of critical forms of several species; to investigate many cases of the reported occurrence of a species on an unusual host plant; and to extend the geographical range and add further hosts for many species. Several recent important papers are also critically reviewed, followed by a bibliography of 89 references, a host index, and a species index.

The Ohio Fungi exsiccati, the labels to the specimens of which contain a reprint of the original descriptions besides the customary data, is being issued by W. A. Kellerman, Ohio State University. Five fascicles, average of 20 specimens each, have been distributed, according to statement in Journal of Mycology, 8:167. Oct. 1902.

A phytopathological study of Canker Growth on Abies balsamea in Minnesota by Alexander P. Anderson is reported in the Bulletin of the Torrey Botanical Club, 29:23-34. 2 pl. Jan. 1902. The cause of the disease was found to be Dasyscypha resinaria (Cooke & Phil.) Rehm., a species hitherto found in North Wales and in Hungary.

Notes on the Amanitas of the Southern Appalachians is the title of an eight-page pamphlet, author H. C. Beardslee, publisher Lloyd Library, devoted to the subgenus Amanitopsis. It contains a key to the seven species — vaginata, baccata, farin-

osa, strangulata, pubescens, nivalis, muscaria var. coccinea; descriptions and critical notes, occurrence, etc.; also three plates illustrating A. baccata, A. strangulata, and A. muscaria var. coccinea.

FIGURES AND DESCRIPTIONS OF SEVEN new species of Puccinia are published by W. H. Long Jr. in the Bulletin of the Torrey Botanical Club, 29:110-16, Feb. 1902.

HERMANN VON SCHRENK NOTICES BRIEFLY (Botanical Gazette, 34:65. July, 1902) a root rot of apple trees caused by Thelephora galactina Fr., and promises an extended account of the occurrence and growth of the latter before long.

AN EXCELLENT ACCOUNT BY L. R. JONES, of a Soft Rot of Carrot and other vegetables, caused by Bacillus carotovorus Jones, is given in the An. Rep. Vt. Agr. Exp. Sta. 1899. A three-page summary precedes the extended article, under the subheads: Occurrence and character of the disease; Pathogenesis; Morphological characters; and Physiological characters. A preliminary report and the publication of Bacillus carotovorus Jones n. sp. was printed in the Centralblatt für Bakteriologie, Parasitenkunde u. Infektions-Krankheiten, Zweite Abt. 7:12-21, 61-68, 5 and 26 January, 1901.

THE DESTRUCTIVE FUNGUS, PENICILLIUM DIGITATUM, ATTACKS ONLY CITROUS FRUITS, as stated by C. W. Woodworth under the title of "Orange and Lemon Rot," California Agr. Exp. Sta. Bull. 139:1-12,, February, 1902.

A PRELIMINARY LIST OF MAINE FUNGI, by Percy LeRoy Ricker (pp. 1-87, April, 1902), contains 1136 species. The arrangement of the orders and families is that of Saccardo's Sylloge, the genera and species arranged alphabetically. It is prefaced with a historical sketch, list of works treating of the Maine species, general characters and classification of Fungi; and supplemented with an index to genera and an index to hosts.

ERIKSSON'S WORK ON THE TIMOTHY RUST.—An interesting article by Jakob Eriksson (Oefversigt af Kongl. Vetenskaps-Akademiens Förhandlingar 1902. N:o. 5) having the title, "Ist der Timotheengrasrost eine selbständige Rostart oder nicht," recalls his infection experiments in 1891-3 as a result of which the species Puccinia phlei-pratensis Er. & Hen. was established (1894), and details numerous additional experiments made in 1895-1900. This species has almost completely lost its power to infect Barberry. It is found occasionally (in experimentation) on Festuca elatior, Oats, Rye, and Phleum michelii. Eriksson includes it in the category of Rust species "nicht scharf fixiert," of which he has listed also the following: "Puccinia graminis f. sp. Tritici auf Triticum vulgare (Hordeum vulgare, Secale

cereale und Avena sativa); P. triticina auf Triticum vulgare (und Secale cereale); P. bromina auf Bromus mollis, B. arvensis etc. (und Secale cereale); und P. agropyrina auf Triticum repens (Secale cereale und Bromus arvensis). Zu derselben Kategorie wäre auch in Folge des oben mitgeteilten P. Phleipratensis auf Phleum pratense, Festuca elatior (Phleum michelii, Avena sativa und Secale cereale) zu rechnen." Referring again to the peculiarities of this species the following conclusion is recorded, namely, that perhaps "P. phlei—pratensis ursprünglich aus P. graminis entstanden sei, und dass sie sich allmählich auf dem seit langer Zeit im Grossen gebauten gewöhnlichen Timotheengrase zu einer selbständigen Art differenziert habe, selbständig insofern, dass sie die ursprüngliche aecidienerzeugende Fähigkeit verloren, die innere Natur jedoch so beibehalten habe, dass sie, wenn auch schwierig, auf den Hafer und Roggen zurükgehen kann. Weniger vorgeschritten aber denke man sich die Differenzierung an den seltenen, nur zufällig in den botanischen Gärten kultivierten Phleum-Arten, welche durch daneben angebauten Getreide direkt angesteckt worden sind. Der Pilz hat hier keine Gelegenheit gehabt, sich Generation nach Generation zu einer Form mit specifischen Eigenschaften herauszubilden und zu fixieren."

Binucleate cells in certain Hymenomycetes is the title of an important article in the January No. of the Botanical Gazette (33:1-25, pl. 1, January, 1902), by Robert A. Harper, which from its length can not be here properly summarized. Two sentences however may be quoted. "It must not be assumed without further evidence that the Rusts are primitive Basidiomycetes." . . "The binucleate condition of the hyphal cells suggests very strongly that Rusts and Basidiomycetes must have arisen from some ancestral type characterized, at least in some stage of its development, by the possession of binucleate instead of uninucleated or multinucleated vegetative cells."

A very interesting and important preliminary report of work done during the last two years by John L. Sheldon, at the University of Nebraska, in co-operation with the U. S. Dept. of Agr., on the Rusts of Asparagus and Carnation—and incidentally on Darluca—is given in Science, N. S. 16:235-7. 8 Aug. 1902. The account pertains to inoculation experiments. The period of incubation in the greenhouse varied from 18 to 8 days. "When the mean daily temperature in the greenhouse was 69° and the average hours of sunshine were five, it required fourteen days for the sori to appear after an inoculation was made; and when the temperature increased to 76° and the number of hours of sunshine increased to 6.3, only eight days were required; the period of incubation being in each case inversely as the temperature and the hours of sunshine." Only vigorous

plants were found to be readily susceptible to inoculation. Mr. Sheldon also demonstrated that the Carnation Rust is local instead of being distributed throughout the plant, and that certain varieties are practically immune. It is interesting also to note that observations have led to the opinion that Darluca filum Cast. is not parasitic on the Rust, its saprophytic tendencies having been demonstrated by growing it on various culture media. "There are strong indications that it may be parasitic on Asparagus."

European Fungus Flora, Agaricaceae, George Massee, F. L. S., is the title of a recent important book of 274 pp., published by Duckworth & Co., London. For each of the five primary divisions of the group (based on the color of the spores as seen in mass), a concise synoptical key to the genera is given, followed by descriptions of 2750 European species (of which 1553 are British). "The idea of this work is to give the essential characters of each species as presented by pileus, gills, stem and spores respectively." No figures are given. The author thinks that "a lengthy and laboured description suggests lack of power to grip essentials on the part of the compiler, and does not as a rule facilitate the recognition of the species intended." An illustration or two will show the character of this treatise. For example, p. 7, under the genus Lepiota is given this description:—

"Procera, Scop. P. soon expanded, umbonate, with brownish scales, 10–25 cm.; g. free, crowded; s. 12–20 cm., base thickened, brownish, transversely cracked, ring free; sp. 12–15 x 8–9. Edible."

On p. 205, under the genus Agaricus occurs the following paragraph:—

Campestris, L. 6–12 cm. convex then plane, floccosely silky or fibrillose, whitish, flesh reddish-brown when cut; g. close to stem, subliquescent, fleshy then umber; s. stuffed, even, white, ring median, torn; sp. 7–8x5–6. Edible.

Var. *alba*, Berk. P. rather silky white; s. short.

Var. *hortensis*, Cke. P. fibrillose or squamulose, brownish. The variety commonly cultivated in England. [Eleven other vars. given under this speces.]

A New Mushroom for the Market is reported by H. Webster in Rhodora, 4:199, October, 1902. The plant referred to is Lepiota naucina — and this with several species as Agaricus campestris, Coprinus atramentarius, Coprinus comatus, Tricholoma personatum, have found a ready sale in the Boston market.

Prof. Dr. P. Magnus gives in the Berichte der Deutschen Botanischen Gesellschaft (20:291-296, 1 pl. 1902) an account of a species of a root-inhabiting, gall-producing Urophlyctis which is the cause of a destructive disease of Medicago sativa, or Lucerne. He refers to his previous assertion, dass die Gattung Urophlyctis Schroet. eine gute Gattung ist and scharf von den Gattungen Physoderma und Cladochytrium zu trennen ist. He also

shows that the species in question is different from Urophlyctis coproides (Trab.) P. Magn., on Beta vulgaris, and Urophylctis pulposa (Wall.) Schroet., on Chenopodium and Atriplex; the name proposed is Urophlyctis alfalfae (v. Lagerheim olim) P. Magnus. The galls are rounded protuberances; when sectioned large brown irregular figures may be seen; these correspond to cavities filled with the resting spores.

The Bitter Rot of Apples is the title of Bulletin No. 77 (Ill. Agr. Exp. Sta.), July 1902, by Thomas J. Burrill and Joseph C. Blair. The authors say it is essentially a hot weather disease. The second spore-forms were not found in exposed apples but the fungus ordinarily retains its vitality in a dormant state in the winter, and in May or later, continues its growth. It was also found that spores from the *cankers* on the limbs could be used successfully in inoculation experiments. This seems to be the first verified case to show that there is a connection between *cankered* places on the limbs and the disease on the fruit. [To the reviewer it would seem desirable that the scientific names of the fungi or forms discussed in a Bulletin should be given in parentheses or as foot notes.]

Hermann von Schrenk and Perley Spaulding give a brief preliminary account (Science, N. S. 16:669-670, Oct. 31, 1902) of observations and experiments showing "a causal relation between apple cankers found in numerous orchards and the bitter rot disease, and that it is very probable that this fungus is capable of living both in the bark and in the fruit of the apple." In cultures made from the cankers Gloeosporium fructigenum appeared; the spores inoculated into living apple branches gave rise to apple cankers with pycnidia and spores of Gloeosporium fructigenum, and these spores inoculated into apple produced the bitter rot disease. To the reviewer this would seem a confirmation of results obtained by Burrill & Blair.

Howard J. Banker gives A historical Review of the proposed genera of the Hydnaceae, Bull. Torr. Bot. Club, 29: 436-448, July 1902; he proposes *Tylodon* based on T. friesii (Radulum pendulum Fr. El. Fung. 149) and *Etheirodon* based on E. fimbriatum (Odontia fimbriata Fr) as generic names to replace respectively Radulum and Odontia. In the summary 71 generic names are enumerated; of these 32 are free to be used.

An extended article on the toxic properties of some copper compounds, by Judson F. Clark, is published in the Jan. No. of the Botaincal Gazette (33: 26-48 1902). Several hundred cultures with fifteen species of Fungi were made and fully described. He says that all experiments go to show that the Bordeaux Mixture is effective from the day it is applied. As to its toxicology: "The solution of that part of the Cu (OH)2 of

Bordeaux Mixture which under orchard conditions is of fungicidal value, is chiefly accomplished by the solvent action of the fungous spores themselves, for they have power to dissolve sufficient copper to kill themselves."

In the Botaniska Notiser for 1902 (pp. 113-128 & 161-179) Tycho Vestergren gives a "Verzeichniss nebst Diagnosen und Kritischen Bemerkungen zu meinem Exsiccatenwerke, Micromycetes rariores selecti," Fasc. 11-17. A dozen new species are described.

The article by David Griffiths, concerning some West American Fungi, Bull. Torr. Bot. Club, 29: 290-301, May 1902, deals with seventeen parasitic fungi belonging to the genera Tilletia, Ustilago, Sorosporium, Gymnoconia, Puccinia, Aecidium, and Claviceps (?); twelve of the species are described and named as new to science.

In Science, (N. S. 16: 434-5) Sept. 12, 1902, P. J. O'Gara gives some Notes on Canker and Black-Rot,, the former on Rhus glabra caused by Sphaeropsis rhoina (Schw.) Starb. Incompleted experiments are reported to determine whether Sphaeropsis rhoina of the Sumac and Sphaeropsis of the apple may not be the same. The facts already established "go to show that Sphaeropsis rhoina will cause black-rot in the fruit of the apple and will also produce the typical 'canker' on the branches and limbs just as readily as Sphaeropsis malorum. Although the evidence is not complete it is probable that the two species are identical."

An Abstract of a paper by Dr. V. C. Vaughan on the Nature of the specific Bacterial Toxins is given in Science, N. S. 16: 312-5, Aug. 22, 1902.

A list of Bar Harbor (Mt. Desert) Fungi, about 255 in number is given by V. S. White, Bull. Torr. Bot. Club, 29:550-563, Sept. 1902. Most of the interesting list are the higher fungi — eight of which are new species, six by Peck and two by Banker. The starred species, 120 in number, are not found in Ricker's List of Maine Fungi (April 1902).

The prevention of Molds on Cigars, by Rodney H. True, is a short article in Science, N. S. 16: 115-6, July 18, 1902, in which it is shown that this affection pertains only to cigars whose wrapper-leaf has been treated with tragacanth paste, and is preventable by making the latter with a saturated solution of boracic acid instead of water.

Investigations on a Bacterial Soft-Rot of certain Cruciferous Plants and Amorphophallus simlense by H. A. Harding and F. C. Stewart are reported in Science, N. S. 16: 314-5, Aug. 22, 1902.

NEOCOSMOSPORA VASINFECTA VAR. TRACHEIPHILA ERW. SM., the cause of the Wilt Disease of the Cowpea, its characters, distribution, extent of loss, preventive measures, and experiments, are fully discussed by W. A. Orton, in U. S. Dept. Agr. Bureau Pl. Industry, Bull. 17:7-22, pl. 1-4, 22 April, 1902.

EDGAR W. OLIVE HAS PUBLISHED in the Proc. Boston Soc. Nat. Hist. 30:415-513, pl. 5-8, August, 1902, a monograph of the Acrasieae — a small group of saprophytic organisms which have been associated with the Myxomycetes. There are seven genera and twenty species, twelve of which occur in the United States.

THE STUDIES IN NORTH AMERICAN DISCOMYCETES by Elias J. Durand are continued with valuable results; the first paper was on the genus Holwaya (Bull. Torr. Bot. Club, 28:349-355, June, 1901), the second on some new or noteworthy species from central and western New York (L. c. 29:458-165, July, 1902). Three new species are described in the last paper.

A LIST OF FOURTEEN OF THE MORE IMPORTANT MOULDS injurious to foods is given by Mary Dresbach in the June number of the Ohio Naturalist (2:288-9), 1902. The orders represented are Bacteriales, Mucorales, Saccharomycetalis, Aspergillales and Moniliales.

THE 22ND ANNUAL REPORT OF THE NEW JERSEY EXPERIMENT STATION for 1901 (issued in 1902) contains an extended account of the work by the botanist, B. D. Halsted. The mycological topics briefly touched on are the Asparagus Rust, Experiments with Pear Blight, Ergot upon Grass, Notes on Corn Smut, the Blight of Cumumbers, the Mildew of the Grape, Tulip Mould, and Fungi as related to weather.

IN THE NOTE ON BOLETUS BETULA (182, Lloyd's Myc. Notes, 10:97, September, 1902) H. C. Beardslee says that three species of shaggy-striped Boleti have been described by American Mycologists — B. betula by Schweinitz, B. russelli by Frost, but these seem to be one and the same thing; and he adds that Mr. Lloyd regards B. morgani as a state of B. betula — hence this would reduce these three species to one and unite them "under the oldest and best name," viz., B. betula.

MR. C. G. LLOYD HAS DISTRIBUTED MYCOLOGICAL NOTES No. 10, dated September, 1902. The notes are: 182 — Boletus betula (by H. C. Beardslee); 183 — Hypocrea alutacea; 184 — Looking backwards; 185 — An inexcusable blunder; 186 — Acknowledgement of specimens received since last report; 187 — How little we know; 188 — More about Geasters; 189 — Gyrographmium delilei; and 190 — Gathering Puff-balls. Figures are given of Boletus betula and Hypocrea altacea.

TORRENDIA, A NEW GENUS OF HYMENOGASTRACEAE, and twelve new species of the higher fungi are described by I. Bresadola (Mycetes Lusitanici Novi), Atti I. R. Acad. Agiati, II, 8:129-133. 1 pl. 1902.

A BULLETIN OF 43 pages, 3 plates, author Margaret C. Ferguson, containing a preliminary Study of the Germinatoin of Agarious compestris and other Basidiomycetous Fungi, was issued June 14, 1902, by the Bureau of Plant Industry, U. S. Dept. Agr. Besides the record and explanation of the tests, there is given also a Historical Review of the literature, 1842 to 1901, (6 pages) and a Bibliography (2 pages).

HERMANN VON SCHRENK IS THE AUTHOR of Bulletin No. 14, Bureau of Plant Industry, issued March 25, 1902, entitled the Decay of Timber and Methods of preventing it. It contains 96 pages, 18 plates and numerous text figures. The scope of the Report is as follows: (1) Structure of Timber and its mechanical and chemical nature; (2) Factors which cause decay of wood; (3) Timber preservation; (4) Account of an experiment to test the value of preservative processes; (5) Report of an inspection trip to Europe for the purpose of investigating the results of timber impregnation; (6) Conclusions and recommendations.

THE OFFICE OF THE PATHOLOGIST AND PHYSIOLOGIST, Bureau of Plant Industry, offers to the State Agricultural Experiment Stations and other interested workers such specimens of fungi as they may select from a list which has been prepared by Flora W. Patterson, Mycologist, and sent out February 3, 1902 (Bulletin No. 8). The general arrangement and the nomenclature correspond mainly with Saccardo's Sylloge Fungorum. The list contains 543 species, often several hosts being given.

GENERIC NOMENCLATURE IS DISCUSSED BY C. L. SHEAR in the March number of the Botanical Gazette (33:220-9, 1902), the remarks relating especially to Fungi. His apology if any were needed is as follows: "but there is no student of plant life in any of its multitudinous phases but must have occasion at some time to use plant names, and hence should be interested to some degree, at least, in any sincere effort to secure stability and uniformity in nomenclature." Mr. Shear points out the fatal difficulties of the "species majority method," and the "residue method." The type method is urged as desirable and practicable.

PROFESSOR UNDERWOOD GIVES A GENERAL ACCOUNT of the Bracket Fungi in the June No. of Torreya (2:87-90, 1902), mentioning about two dozen species and incidentally remarking that a certain species "has passed as Polyporus lucidus, which is a wholly different species," and that P. leucophaeus "has masqueraded in this country under an incorrect name as P. applanatus."

ABIGAIL A. O'BRIEN CONFIRMS Dr. Duggar's assertion that in case of some fungi the mycelium may be as resistant to moist heat as are the spores, by a series of experiments with Aspergillus flavus, Botrytis vulgaris, Rhizopus nigricans, Sterigmatocystis nigra and Pencillium, reported in the Bulletin of the Torrey Botanical Club (29:170-2), March 1902) under the title: Notes on the Comparative Resistance to High Temperature of the Spores and Mycelium of Certain Fungi.

ELSIE M. KUPFER REPORTS A CRITICAL STUDY of Urnula and Geopyxis in the Bulletin of the Torrey Botanical Club, 29:137-144. 1 pl. March 1902. The conclusion of the whole matter is: Urnula craterium Fr. represents a distinct genus from Geopyxis; Urnula terrestris (Niessl) Sacc. is not allied to U. craterium and is to be called Podophacidium xanthomelan; Urnula geaster Peck forms a new genus, CHORIOACTIS, and is designated as C. geaster (Peck) Kupfer.

THE APOTHECIA REPRESENTING THE ASCIGEROUS stage of Sclerotinia fructigena (Pers.) Schroet. (of which Monilia fructigena Pers. is the conidial form) were unknown till discovered on April 10th this year by J. B. S. Norton, who has given a note in Science (N. S. 16:34 4 July 1902) relative to the same, and an extended account of the observations and cultures with illustrations in Trans. Acad. Sci. St. Louis, 12:91-7. 4 pl. 25 Aug. 1902.

THE KEYS TO THE NORTH AMERICAN SPECIES of various genera of Fungi, on the dichotomal plan, which F. S. Earle is publishing in TORREYA (1902) are to be highly commended to beginners in the study of those groups. The following have been issued: Lactarius, Hypholoma, Coprinus, Bolbitius, Gomphidium, Nyctalis, Limacium, Hygrophorus, Russula.

THE OCCURRENCE OF THE LARGER FORM of Boletus felleus on *stumps,* at Alstead, N. H. is noted by H. Webster, Rhodora, 4:187-8, Sept. 1902.

F. S. EARLE GIVES A NOTE in Torreya (2:159-160, Oct. 1902) concerning a "much-named fungus," pointing out that Cooke and Ellis's *Fusicladium fasciculatum* published in Grevillea in 1878 (6:88) had been renamed Scolecotrichum euphorbiae by Tracy and Earle, Piricularia euphorbiae by Atkinson, Cercosporidium euphorbiae by Earle, Scolecotrichum fasciculatum by Shear; and now it is Passalora fasciculata in the judgement of the same. Prof. Earle also transfers his Cercosporidium helleri to Passalora.

VOLVARIA VOLVACEA FOUND IN EXTRAORDINARY abundance at Lawrence, Masachusetts, in a bed formed by dumping soiled cop, roving waste, bits of rag and paper, and night soil affords Francis H. Silsbee an opportunity of giving an amplified de-

scription of this interesting species, Rhodora, 4: 3-5, January 1902. In the same number (pp. 5-7) Hollis Webster also comments on the same and adds some notes as to *Volvaria bombycina,* "as beautiful and striking agaric as the woods produce," and *V. speciosa,* grayish and viscid, said to be edible, reported poisonous by Bresadola.

Dr. L. O. Howard reports in the Yearbook of the U. S. Department of Agriculture for 1901 (pp. 459-470) some experimental work with Fungous Diseases of Grasshoppers, but he says it is "nothing more than a report of progress" and that "the results obtained so far do not justify very sanguine hopes." The fungi more or less successfully used were: a species of Mucor (work in South Africa), perhaps also Empusa grylli, and Sporotrichum globuliferum (S. A. and U. S.).

Albert Schneider reports (Botanical Gazette, 34:109-113, July 1902) success in obtaining Rhizobium mutabile in artificial culture media, and illustrates the forms seen on a full-page plate. Tubercles were used from young seed-grown plants of Melilotus alba. The organism develops slowly, is essentially aerobic, devoid of all active motion, undergoes great change in form and size, apparently does not develop true spores.

Clathrus columnatus, a tropical species of Phalloid, was found in November last by Mr. F. Silsbee at Lawrence, Massachusetts, as reported by H. Webster in Rhodora, 4:134-5, June 1902.

Monographia Uredinearum by P. & H. Sydow, Vol. I, Fasc. I, has just been issued from the Leipzig firm of Fratres Borntträger. The work contemplated by these uredinists, and of which the first Fascicŭlŭs is a part, shall "in erster Linie der Systematik dienen, also vor allem das Auffinden und Bestimmen einer Art so viel als möglich erleichten soll;" accordingly the division into subgenera or sections (Eupuccinia. Heteropuccinia, etc.) have not been regarded, but all of the species are arranged according to the host plants. The 192 pages issued includes the Puccinia on Compositae, the genera of hosts arranged in alphabetical order. The descriptions are Latin, the additional notes in German. Many figures drawn by the authors, illustrate the rarer species. They are outline figures, not shaded or colored, and all drawn to the same amplification, namely, about 480. Fast sämtliche Diagnosen sind nach Untersuchung von original-exemplaren entworfen. As to the synonomy, the authors say: Auf die oft so verworrene Synonymik haben wir das grösste Gewicht gelegt and dieselbe so ausführlich wie nur möglich gegeben. It is expected that 3 volumes will complete the work, and all the parts issued in the course of three or four years. The first volume is to contain only the genus Puccinia.

INDEX TO NORTH AMERICAN MYCOLOGY.

Alphabetical List of Articles, Authors, Subjects, New Species and Hosts, New Names and Synonyms.

(Continued from page 103.)

W. A. KELLERMAN.

Previous installments of this Index (mainly for the literature of 1901) were given in the May and June Nos., current year. That given below is for the most part an index to the literature for 1902. It will be continued in the next number of the JOURNAL.

A *separate* — printed on one side of the page only — of the previous installments combined, was issued under the heading "FIRST REPRINT." In a similar manner the present installment will be issued as the "SECOND REPRINT." The price for each Reprint is fixed at 25 cts. These will be sent as issued to those who request their names to be placed on a permanent mailing list for the same.

It has seemed desirable to extend the scope of the Index to include the North American literature of Lichenology. Synonyms — at least the more important ones — will also be listed.

Botanists and Librarians will be able soon to determine the utility of this Index — especially if they clip the items from the Reprints and paste them on regular *library cards* — only a trifling amount of labor and time being required for this purpose. If orders are numerous not only will the mycological literature of the present be promptly listed, but an effort will eventually be made to include as well all that pertains to the time previous to Jan. 1st, 1901.

ACACIA grayii, host to Cucurbitaria arizonica E. & E. n. sp. Jour. Mycol. 8:16. May 1902.

ACALLOMYCES Thaxter nov. gen. [Laboulbeniaceae.] Proc. Am. Acad. Arts & Sci. 38-23. June 1902.

ACALLOMYCES homalotae Thaxter n. sp., on the superior surface of the abdomen of Hemalota sp. Proc. Am. Acad. Arts & Sci. 38:24. June 1902.

ACER, old bark, host to Acontium album Morgan n. sp. Jour. Mycol. 8:5. May 1902.

ACOMPSOMYCES atomariae Thaxter n. sp., on elytra of Atomaria ephippiata Zimm. Proc. Am. Acad. Arts & Sci. 38-22. June 1902.

ACOMPSOMYCES pauperculus Thaxter n. sp., on elytra, prothorax, and legs of Atomaria sp. Proc. Am. Acad. Arts & Sci. 38-33. June 1902.

ACONTIUM Morgan gen. nov. Jour. Mycol. 8:4. May 1902.

ACONTIUM album Morgan n. sp., on the inner side of old bark of Acer. Jour. Mycol. 8:4. May 1902.

ACONTIUM minus Morgan n. sp., on old pod of Gleditsia. Jour. Mycol. 8:5. May 1902.

ACONTIUM velatum Morgan n. sp., on the cut surface of a black walnut stump. Jour. Mycol. 8:5. May 1902.

ACRASIEAE, Monograph of the. Edgar W. Olive. Proc. Boston Soc. Nat. Hist. 30:451-513. pl. 5-8. Aug. 1902.

ADENOSTEGIA pilosa (A. Gray) Greene (Cordylanthus pilosus Gray), host to Puccinia adenostegiae Arthur n. sp. Bull. Torr. Bot. Club, 29:231. April 1902.

AECIDIAL stage (of Puccinia phragmitis) on Rumex britannica, R. altissima, R. crispus, and on rhubarb in gardens (John M. Bates). Science, N. S. 16:138. 25 July 1902.

AECIDIUM albiperidium Arthur n. sp., on Ribes cynosbati L. Jour. Mycol. 8:53. June 1902.

AECIDIUM atriplicis Shear n. sp., on leaves of Atriplex nuttallii. Bull. Torr. Bot. Club, 29:453. July 1902.

AECIDIUM dakotensis Griffiths n. sp., on Aquilegia canadensis L. Bull. Torr. Bot. Club, 29:300. May 1902.

AECIDIUM fraxini Schw., *syn of Puccinia fraxinata, q. v.*

AECIDIUM grindeliae Griffiths n. sp., on Grindelia squarrosa Dunal. Bull. Torr. Bot. Club, 29:299. May 1902.

AECIDIUM helianthellae Arthur n. sp., on leaves of some species of Helianthella. Bull. N. Y. Bot. Garden, 2:(348). 25 April 1902.

AECIDIUM jacquemontiae E. & E. n. sp., on leaves of Jacquemontia pentantha. Jour. Mycol. 8:11. May 1902.

AECIDIUM rubellum Pers., *syn. of Puccinia rubella, q. v.*

AECIDIUM rumicis Hoff., *syn. of Puccinia rubella, q. v.*

AECIDIUM zephyranthis Shear n. sp., on leaves of Zephyranthes sp. Bull Torr. Bot. Club, 29:454. July 1902.

AGARICUS campestris, a preliminary study of the Germination of the Spores of, and other Basidiomycetous Fungi. Margaret C. Ferguson. U. S. Dept. Agr. Bureau of Plant Industry, Bull. No. 16:143. 3 pl. 14 June 1902.

AGARICUS campestris, germination of spores of, *see Ferguson, Margaret, A Preliminary Study, etc.*

AGARICUS cretacellus Atkinson n. sp., growing in leaf mold in woods. Jour. Mycol. 8:110. October 1902.

AGARICUS sterlingii Peck n. sp. Bull. Torr. Bot. Club, 29:73. Feb. 1902.

AGROPYRON occidentale Scribn., host to Tilletia earlei Griffiths n. sp. Bull. Torr. Bot. Club, 29:291. May 1902.

AILANTHUS glandulosa, dead shoots, host to Didymella ricini E. & E. Jour. Mycol. 8:67. June 1902.

ALECTORIA, *see Lichens-Alectoria, Evernia.* . . . .

ALISMA plantago, host to Pleospora alismatis E. & E. n. sp. Jour. Mycol. 8:16. May 1902.

ALNUS sp., host to Diatrypella rimosa Shear n. sp. Bull. Torr. Bot. Club, 29:454. July 1902.

ALTERNARIA, Prevalence of, in Nebraska and Colorado during the Drouth of 1901. [Abstract.] George Grant Hedgcock. Science, N. S. 16:136. 25 July 1902.

AMANITA (Amanitopsis) agglutinata Berk., to be referred to A. baccata sec. H. C. Beardslee in Notes on the Amanitas of the Southern Appalachians. Part 1. p. 4.

AMANITA flavoconia Atkinson n. sp., ground under Spruce Hemlock. Jour. Mycol. 8:110. Oct. 1902.

AMANITA flavorubescens Atkinson n. sp., ground. Jour. Mycol. 8:111. October 1902.

AMANITA muscaria var. coccinea Beardslee n. var. Notes on the Amanitas of the Southern Appalachians. Part 1, sub-genus Amanitopsis. 8 September 1902. H. C. Beardslee.

AMANITOPSIS albocreata Atkinson n. sp., ground in woods. Jour. Mycol. 8:111. Oct. 1902.

AMANITOPSIS, key to the sub-genus (and 7 species described), in Notes on the Amanitas of the Southern Appalachians. Part 1. September 1902.

AMANITOPSIS vaginata crassivalvata Peck n. var., in damp soil. Bull. Torr. Bot. Club, 29:562. Sept. 1902.

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NOTES.

The very cordial reception of the Journal of Mycology, revived after a long suspension, has been exceedingly gratifying to the editor. The kindly support by contributors and subscribers to Volume 8 is gratefully acknowledged. I must say to inquiring friends too, that *"it does pay"* and I am well satisfied since the income pays a goodly fraction (nearly half) the cash cost of publication.

The first No. of the current Volume contained 48 pages; it was necessary to enlarge the second No. to 56 pages; the third No. was 64 pages, and the present No. contains 80 pages. But I hasten to say that the editor is not an unlimited and unconditional expansionist — so that further Nos. will doubtless keep within proper bounds.

It is to be regretted that Vols. 1-7 are wholly exhausted. It may be well to reprint a Summary Volume, reproducing in full all the *original descriptions* contained in Vols. 1-7, and the titles and abstracts of all the articles. This could probably be furnished for $2.00.

Mycologists are invited to use the pages of the Journal of Mycology freely and should any question arise as to the scope and purpose of this periodical it will be settled by a sympathetic perusal of pages 1-3.

Contributors are kindly asked to note the months for the quarterly issue of the Journal, and send copy by the 15th or latest 20th of the preceding month.

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