Studies in North American Discomycetes. II. Some new or noteworthy Species from central and western New York

By Elias J. Durand

My studies in the Discomycetes extending over several years have brought to light many interesting forms which it is my plan to discuss in this and future papers. Many of these undoubtedly represent undescribed species, while others present such interesting features of already known species that notes upon them will, it is hoped, lead toward a better understanding of our discomycete flora. I wish especially to acknowledge my indebtedness to Dr. H. Rehm, whose work upon the Discomycetes of central Europe will long remain a model for workers elsewhere; and of whose kindly assistance and critical opinions, always so freely extended, I have constantly availed myself.

Ascobolus atro-fuscus Phil. & Plow. Grevillea, **2**: 186. *pl. 24. f. 1.* 1874

A. viridis Boud. Ann. Sci. Nat. V. **10**: 217. *pl. 5. f. 4.* 1869. (Not Currey.)

A. carbonicola Boud. Bull. Soc. Bot. Fr. **24**: 310. 1877.

Phaeopezia Nuttallii E. & E. N. A. F. no. 2908. (Nomen ined.)

Exsicc.: Phil. Elv. Brit. no. 47; E. & E. N. A. F. no. 2908.

Ascomata scattered, sessile, at first spherical and closed, later expanding, becoming orbicular, flattened and scutellate, sometimes contorted, often attached to the substratum by white mycelial threads, 1–10 mm. in diameter; when fresh yellow or greenish-yellow, but in drying and at maturity the disk becomes yellowish-brown, finally dark chestnut or almost black, and papillate from the projecting asci. The exterior usually remains yellowish-brown and furfuraceous, with the margin slightly inrolled. Excipulum parenchymatous throughout, composed of irregularly rounded cells of variable size, 15–50 μ in diameter, the ectal ones projecting from the surface in groups. Hypothecium rather sharply differentiated, cells small, not more than 10 μ in diameter. Hymenium about $\frac{1}{3}$ the total thickness of the cup at the base. Asci clavate-cylindrical, apex rounded and blue with iodine, 150 × 12–15 μ; spores

8, brown, minutely verrucose, broadly elliptical, 18–25 × 9–15 μ; paraphyses numerous, longer than the asci, hyaline, septate, filiform, curved or circinate, sometimes irregularly knobbed at the apex, imbedded in a greenish-yellow jelly.

On burnt wood and soil, New York, *Durand*, nos. 984, 985, 994, 992; W. Virginia, *Nuttall*. Reported also from California, on dung, *Harkness & Moore*, and from Nebraska, on wet sandy ground, *Clements*.

This species was described from specimens collected in England, on charcoal beds. It has been found elsewhere in similar situations in France, Germany and Switzerland. In September, 1900, it was my good fortune to find numerous plants of this species growing in a burnt-out swamp, near Canandaigua, N. Y. The ascomata were in all stages of development, and were attached to burnt wood and adjacent burnt soil. The above description was drawn from fresh plants. I have compared the specimen in N. A. F. no. 2908 with that in the Elv. Brit. no. 47, in my herbarium, and find them identical.

DETONIA FULGENS (Pers.) Rehm; Rab. Krypt. Flora, **I**^{3}: 1269. 1896

Peziza fulgens Pers. Myc. eur. **1**: 241. 1822.

Pseudoplectania fulgens Fckl. Symb. Myc. 324. 1869.

Otidella fulgens (Pers.) Sacc. Syll. Fung. **8**: 99. 1889.

Barlaea fulgens (Pers.) Rehm, Rab. Krypt.-Flora, **I**^{3}: 930. 1894.

Plants usually solitary but occasionally clustered, nearly sessile or with a short thick stem, attached by a yellowish mass of mycelial threads to the soil which it binds together. Ascomata cup-shaped, bowl-shaped, or rarely spread out flat, usually with the margin slightly incurved, commonly regular but often contorted or split at the margin, 0.5–2.5 cm. in diameter; disk clear yellow or orange-yellow, externally yellow at first but becoming greenish, finally yellowish-olive, smooth or pruinose. Excipulum entirely parenchymatous, cells small, the cortical ones rounded, 10–20 μ in diameter, the medullary ones elongated and irregular, showing their hyphal origin. Hymenium about ¼ the total thickness of the cup below. Asci narrowly clavate-cylindrical, apex rounded, not at all blue with iodine, 125–150 × 9–10 μ; spores 8, uniseriate or subbiseriate, hyaline, smooth, globose, 5–8 μ in diameter. Paraphyses slender, filled with orange granules above.

Fine specimens of this beautiful species were collected at Ithaca during the week of May, 1901 (Herb. Cornell, no. 5807). The locality was low warm beech woods, where the plants grew on the bare soil among leaves, or in clumps of moss, or rarely on fragments of rotten wood.

Saccardo established the genus *Otidella* for this species on account of its irregular form and spherical spores. In other words it was a spherical-spored *Otidea*. An examination of fresh material shows that the irregularity of mature plants is certainly not sufficiently constant or peculiar to serve as a basis for generic distinction.

Good illustrations are given by Cooke, Mycogr. *pl. 53. f. 209;* by Gillet, Disc. franc. *pl. 38;* and by Weberbauer, Pilze Nord-Deutschl. *pl. 3. f. 1.*

Hitherto reported from this country only from Deerfield, Mass., and Yosemite Valley, Cal., *Harness & Moore.*

CIBORIA LUTEOVIRESCENS (Rob.) Sacc. Syll. Fung. **8**: 206. 1889

Peziza luteovirescens Rob. Ann. Sci. Nat. III. **8**: 188. 1847.

Peziza pallidovirescens Phil. Grevillea, **6**: 24. 1877.

Hymenoscypha luteovirescens (Rob.) Phil. Man. Brit. Disc. 121. 1887.

EXSICC.: Phill. Elv. Brit., no. 122.

Plants solitary, stipitate; ascomata plane with a slight margin, waxy-membranous, about 2 mm. broad, narrowed below to a long, slender, flexuous stem, 0.5–2 cm. long, tapering downward; whole plant greenish-sulfur-yellow when fresh. Cortex parenchymatous, cells rounded or polygonal, 12–15 μ in diameter. Medullary portion composed of slender hyphae loosely interwoven. Flesh of the cup greenish-yellow when crushed. Asci clavate-cylindrical, apex rounded, becoming deep blue with iodine, 135–145 × 9–10 μ; spores 8, obliquely uniseriate, hyaline, continuous, smooth, elliptical, occasionally slightly unsymmetrical, 12–16 × 5–6 μ; paraphyses filiform, slightly thickened above, somewhat longer than the asci.

On partly buried petioles lying on the ground among leaves under beech trees, Churchville, N. Y., October 26, 1901.

My plants agree with Phillips's specimens in every way except that the cups are smaller. This was also true of the German specimens described by Rehm. The length of the stem varies

with the depth under ground of the petiole from which it springs. If the latter is on the surface the stem may be very short.

Not previously reported from America.

Ciboria sulfurella (E. & E.) Rehm, *in litt.*

Helotium sulfurellum E. & E. Bull. Torrey Club, **10**: 98. 1883.

EXSICC.: Ellis, N. A. F., no. 1275.

Plants solitary, stipitate, ascoma at first vitelline- or sulfur-yellow, but on drying the disk becomes dark ochraceous, finally dark chestnut-brown or almost black, at first globose and closed, then expanding and becoming plane with a slight margin, waxy-membranous in texture, 1–4 mm. in diameter; exterior yellow, becoming chestnut, paler than the disk, furfuraceous and longitudinally striate; stem 1 mm. to 3 cm. long, slender and flexuous, tapering downward, darker and thinly tomentose below; cortex parenchymatous, cells about three times as long as broad, those of the sides and margin of the cup rounded, about 10 μ in diameter; medullary portion of the stem and cup of slender, loosely interwoven hyphae; tomentum of slender threads, 4 μ in diameter. Asci evenly clavate, apex slightly narrowed, rounded, becoming pale blue with iodine, 75–90 × 8–10 μ; spores 8, obliquely uniseriate or irregularly biseriate above, hyaline, smooth, continuous or possibly becoming 1–septate at maturity, elliptical, navicular, 9–15 × 4–6 μ; paraphyses filiform. Flesh of the cup chestnut-brown when crushed.

On partly buried petioles of *Fraxinus*, West Chester, Pa.; not uncommon in central and western New York, in autumn, occurring in moist woods, ravines and swamps where the host abounds. (Herb. Cornell, nos. 5635, 5716). In my experience the species is confined to ash petioles, but Clements reports it as growing on dead limbs in Nebraska.

Ciboria sulfurella is a very distinct species, resembling *C. luteovirescens* in form, size and habit, but differing in the color, in the strongly furfuraceous exterior and smaller asci. There is never any shade of green about the present species, but the ochraceous and chestnut tones are the ones most often met with. The color of the crushed flesh is quite different in the two species.

Ciboria Americana sp. nov.

Plants solitary, stipitate; ascomata cup-shaped, usually becoming plane, or with the margin reflexed and umbilicate, thin, waxy-membranous, pale cinnamon to brown, 3–10 mm. in diameter;

stem 2–10 mm. long, slender, darker below, with the exterior of the cup delicately furfuraceous. Cortex very thin, of polygonal cells, 8–10 μ in diameter, projecting in groups from the sides of the cup and upper part of the stem making the exterior furfuraceous. Toward the base of the stem the cells are prolonged into short hairs, 4 μ in diameter. Hypothecium parenchymatous, cells rounded, 6–10 μ in diameter. Medullary part of the stem and cup of slender hyphae loosely interwoven. Asci clavate, usually curved, about 75 × 9 μ, apex rounded, not blue with iodine; spores 8, biseriate, hyaline, smooth, continuous, eguttulate, elliptical or ovate-elliptical, slightly unsymmetrical, 9–12 × 4–5 μ; paraphyses filiform.

On the inside of decaying involucres of *Castanea vesca*, lying on the ground among leaves. Not uncommon in Coy Glen and Enfield Ravine, in the vicinity of Ithaca, N. Y., October, 1901. (Herb. Cornell, nos. 7942 and 7950, the latter the type.)

This species resembles *Ciboria* (or *Rutstroemia*) *echinophila* (Bull.) Sacc. in size, color, habit and habitat, but differs from it in the smaller spores (in the latter "12–22 × 4–5 μ," Phillips; "16–21 × 5 μ," Massee), which are not strongly curved, and which never, so far as observed, become septate. *C. echinophila* has been reported in America only by Schweinitz, from Bethlehem, Pa., and his specimen may possibly have belonged to the present species. It may be that *C. Americana* will prove to be the American representative of the European *C. echinophila*.

Sclerotinia smilacinae sp. nov.

Plants scattered on gregarious, long-stipitate; sclerotia small, 1–2 mm. in diameter, irregularly spherical, aggregated and sometimes coalesced into a thin crust-like mass 1–2 cm. in diameter; ascoma fleshy-leathery, closed and spherical at first, expanding to cup-shaped, finally becoming campanulate, usually with a depression in the center, sometimes contorted or irregular, .75–3 cm. in diameter, bright cinnamon-brown, externally smooth; stem 2–6 cm. long, 2–3 mm. thick, tapering downward, somewhat tomentose below. Cortex parenchymatous, cells irregular, 10–30 μ in diameter; hypothecium and medullary portion composed of slender hyphae loosely interwoven. Asci narrowly cylindrical, apex rounded, slightly blue with iodine, 120–140 × 6–8 μ; spores 8, obliquely uniseriate, hyaline, continuous, biguttulate, smooth, narrowly elliptical, 12–15 × 4–5 μ; paraphyses scarce, filiform, but little thickened above.

Attached to decaying rhizomes of *Smilacina racemosa*, buried in rich humus, Fall Creek, Ithaca, N. Y., May 13, 1901 (Herb. Cornell, no. 5945).

The plants are usually aggregated, a half-dozen springing from a single rhizome. The sclerotia are so small as to be easily overlooked, and seem ridiculously small for so large a plant.

The spores germinate readily in nutrient agar made up with a decoction of *Smilacina* rootstocks. The spores do not become septate at germination. One or two germ-tubes are produced which branch profusely but do not throw off conidia. Cultures on agar and on sterilized rootstocks produced the minute sclerotia in great numbers.

This species resembles *S. tuberosa* (Hedw.) Fckl. very closely, but differs in the sclerotia, which in the latter are large and tuberous, in the method of germination of the spores and in the host plant. The latter species is said to grow always in connection with the rhizomes of *Anemone nemorosa*.

CYATHICULA MARCHANTIAE (Sommf.) Sacc. Syll. Fung. **8**: 307. 1889

Peziza marchantiae Sommf. Sup. Fl. Lap. 295. 1826.

Ascomata solitary, turbinate, sessile or with a short, thick stem substance fleshy-waxy, thin, translucent, pallid-white usually with a pale lilac tint, 0.5–2 mm. in diameter; disk plane or saucer-shaped, the margin ornamented with ciliate teeth composed of bundles of narrow cells. Excipulum parenchymatous, cells polygonal, 15–18 μ in diameter. Asci clavate-cylindrical, not conspicuously narrowed below, apex rounded, not blue with iodine, 60–75 × 6–8 μ; spores 8, 1–2-seriate, hyaline, contiguous, smooth, ovate-elliptical, 8–10 × 4 μ, minutely 2-guttulate; paraphyses filiform, flexuous, exceeding the asci.

On living *Marchantia polymorpha*, Six-mile Creek, Ithaca, N. Y., November 3, 1901 (Herb. Cornell, no. 8513).

The ascomata usually spring from the margin of the thallus, or sometimes from the summits of the gametophores. One cannot, of course, be certain that this is Sommerfelt's species, but it corresponds fully with the brief description given in Saccardo's Sylloge. This in connection with the peculiar habitat renders it quite probable that ours is the form Sommerfelt had in mind. If this is true we have the interesting fact of the occurrence, in New

York State, of a species which has not been found before since its original discovery, in northern Europe, more than sixty years ago.

LACHNUM INQUILINUM (Karst.) Schroet. Krypt.-Fl. Schl. **3**[2] : 96. 1893

Helotium inquilinum Karst. Myc. Fenn. I. 147. 1871.

Lachnella inquilina Karst. Rev. Monog. 132. 1885.

Trichopeziza inquilina (Karst.) Sacc. Syll. Fung. **8** : 424. 1889.

Pezizella inquilina (Karst.) Rehm, Rab. Krypt.-Fl. **1**[3]: 675. 1892.

Ascomata scattered or gregarious, each with a short but distinct stipe, at first spherical and closed, later becoming plane with the margin upturned, when dry cupulate with the margin inrolled, 0.3–0.5 mm. in diameter, entirely white, but old specimens often becoming brownish, clothed externally with a thick coating of white hairs; hairs short, not more than 50 μ long, 3–4 μ thick, hyaline, rarely septate, more or less irregularly curved or flexuous, the tips uncinate, obtuse, smooth or granular; asci clavate, narrowed at the tips which are not blue with iodine, 35–45 × 5–6 μ; spores 8, biseriate, hyaline, continuous, smooth, clavate-cylindrical, 8–10 × 2 μ; paraphyses abundant, scarcely exceeding the asci, lanceolate-acute at the tips, 3 μ wide at the broadest part, hyaline, septa not seen.

On decaying stems and rootstocks of *Equisetum hyemale*, lying on the ground in wet places, Ithaca, N. Y., April, May and Nov. (Herb. Cornell, nos. 1041, 5836 and 8457); London, Canada, Aug. (Dearness, 2323 !).

This is distinguished among the white species of the genus by the character of the external hairs. These are sometimes so short as to be easily overlooked, but in well-developed specimens collected in the spring they are quite prominent. Their irregular flexuous character and curved tips are peculiar. Not before reported from America.

Dermatella hamamelidis (Peck) Durand

Patellaria hamamelidis Peck, Rep. **33** : 32. *pl. 2. f. 7–10.* 1880.

Lecanidion hamamelidis (Peck) Sacc. Syll. Fung. **8** : 800. 1889.

Dermatella hamamelidis E. & E. Proc. Phil. Acad. Sci. **45** : 149. 1893. (as n. sp.)

EXSICC.: E. & E. N. A. F., no. 2634.

Ascomata scattered or gregarious, originating beneath the epidermis but soon breaking through and becoming apparently sessile on the surface, 0.3–0.5 mm. in diameter, the whole plant dark reddish-brown, the disk plane scarcely margined; excipulum minutely parenchymatous, brown. Asci broadly clavate, narrowed below to a short stout base, apex rounded, not blue with iodine, 65–110 $\mu \times 15$–20; spores 8, irregularly biseriate, at first hyaline and continuous, finally becoming yellowish and three-septate, smooth, oblong-elliptical or oblong-fusiform, usually somewhat inequilateral, 15–21 $\times$ 4–6 μ; paraphyses filiform, longer than the asci, the tips yellowish and cohering to form an epithecium.

On a bark of dead limbs of *Hamamelis Virginiana*, New York, *Peck*, *Fairman*, *Durand* et al. (Herb. Cornell, nos. 923, 5808 and 7938); Penn., *Ellis*; W. Virginia (*Nuttall*).

Specimens may be collected almost any month in the year, but the best fruiting material is to be found in the late autumn. I have compared specimens authenticated by Dr. Peck as *Patellaria hamamelidis* Pk., with the specimen of *Dermatella hamamelidis* E. & E. in the N. A. F., no. 2634, also with material from Dr. Fairman determined by Ellis, and find that the three represent a single species. The continuous spore is multiguttulate. The first septum is near the middle. This is followed by one in each half simultaneously, or one half may be septated long before the other. A section shows clearly the erumpent habit of the ascomata.

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