

REMARKS ON THE GENUS HYMENOSCPHUS S. F. GRAY,
WITH OBSERVATIONS ON SUNDRY SPECIES REFERRED BY
SACCARDO AND OTHERS TO THE GENERA HELOTIUM,
PEZIZELLA OR PHIALEA

R. W. G. DENNIS
The Herbarium, Royal Botanic Gardens, Kew
(With 57 Text-figures)

The author proposes to replace the generic name *Helotium* Pers. ex St. Amans, revived by Fries in 1849, by *Cudoniella* Sacc. but to transfer most of the species commonly assigned to the genus to *Hymenoscyphus* S. F. Gray. Eighty-four species referred to genera of Helotiaceae by Saccardo and others are discussed in the light of the types or other authentic material. Finally there is appended a list of 102 accepted species, distributed in *Cudoniella* (3), *Hymenoscyphus* (77 arranged in 7 series), *Ciboriella* (3), *Phaeohelotium* (2), *Sphagnicola* (5), *Discinella* (4) and *Ciboriopsis* (8).

Donk (1962) has pointed out that the commonly accepted ascomycete genus *Helotium* Fr. 1849 is a later homonym of *Helotium* Tode ex Leman 1821, a genus of Agaricales accepted by Fries (*Systema mycologicum* 3: 94. 1832). Donk suggested the desirability of conserving the name *Helotium* for the ascomycete genus of 1849 but there seems to be little justification for such a proposal. The latter genus has to be typified by *Helvella acicularis* Bull. and Boudier long ago indicated the desirability of segregating this from the great majority of species referred by authors to *Helotium* Fr. Instead of attaching the latter name to its type species, however, Boudier transferred the latter to the later genus *Cudoniella* Sacc., a procedure which becomes acceptable once *Helotium* Fr. 1849 is rejected as a later homonym. Evidently, however, for those who follow Boudier another generic name is required for the large residue of the old ascomycete genus *Helotium* and Dennis (1962) suggested this could be found in *Hymenoscyphus* S. F. Gray 1821.

The latter genus, which Gray did not ascribe to any earlier author, was proposed with nine species, several of them apparently arbitrarily renamed by himself, thus:

1. *H. rapaeformis* = *Peziza rapula* Pers. = *Stromatinia rapulum* (Bull. ex Fr.) Boud. the type species of *Stromatinia* Boud.
2. *H. fibulaeformis* = *Helvella fibuliformis* Bolt., a dubious species, probably *Vibrissea truncorum* A. & S. ex Fr. according to Nannfeldt (*in* Trans. Brit. mycol. Soc. 23: 247. 1939).
3. *H. tubaeformis* = *Peziza tuba* Bolt., also a dubious species but interpreted as a "*Helotium*" by Rehm and by Boudier.

4. *H. infundibuliformis* = ?*Peziza infundibulum* Batsch = *P. calyculus* Sow. = *Helotium calyculus* (Sow. ex Fr.) Fr. = *Hymenoscyphus infundibulum* (Batsch) O.K.
5. *H. fructigenus* = *Peziza fructigena* "Sow.", "Pers." = *Helotium fructigenum* (Bull. ex Mérat) Fuck.
6. *H. radiatus* = *Peziza coronata* Bull., *P. radiata* Pers. etc. = *Cyathicula coronata* (Bull. ex Mérat) De Not., lectotype of *Cyathicula* De Not.
7. *H. cyathoideus* = *Peziza cyathoidea* Bull. = *Phialea cyathoidea* (Bull. ex Mérat) Gillet, lectotype of *Phialea* (Fr.) Gillet.
8. *H. tenellus* = *Peziza tenella* Batsch, probably a synonym of the above.
9. *H. chrysocomus* = *Peziza chrysocomus* "Sow.", generally interpreted as an *Orbilia*.

In selecting a lectotype for *Hymenoscyphus* it is obviously desirable to avoid numbers 1, 6 and 7, already employed as type species of other generic names; number 8 is to be avoided on similar grounds. Number 2 is of uncertain interpretation but its adoption might lead to *Hymenoscyphus* being rejected as a synonym of *Vibrissea*, a genus accepted by Fries in *Systema mycologicum* volume 2, 1822. Number 9 is also dubious and its adoption might lead to *Hymenoscyphus* replacing the long accepted name *Orbilia* Fr. 1835. This leaves for consideration numbers 3, 4 and 5, a homogeneous group of species, all referred to the same genus, *Helotium*, by most modern authors.

Fries [*Systema mycologicum* 2 (1): 117. 1822] used the name *Hymenoscyphae* for his Tribus IX of Series 3, *Phialia*, in his comprehensive genus *Peziza*. The tribus included 33 species, of which number 5 was *P. fructigena* Bull., under which *P. calyculus* Sow. was cited as a synonym. It would seem desirable, therefore, to select one of these two species as lectotype of *Hymenoscyphus* S. F. Gray and of Fries' tribus *Hymenoscyphae* and Dennis (1962) proposed *P. fructigena*. This has the advantage of being a wellknown fungus not subject to diverse interpretation in the past and apparently also familiar to Gray, since he noted for it a popular use, "Used in decoction in hooping cough."

Phillips (1887), in reviving *Hymenoscyphus*, as "*Hymenoscypha* Fr.", recognised four subgenera:

Sclerotinia with seven species.

Ciboria with twelve species.

Trichoscypha with one species, *Cyathicula coronata*.

Cyathoidea with thirty species.

If it can be avoided it is undesirable to select a lectotype for *Hymenoscypha* (Fr.) Phill. from among the species of the first three subgenera, all long since raised to generic rank, and it is satisfactory to find that *H. fructigenus* and *H. calyculus* both occur in subgenus *Cyathoidea*.

O. Kuntze (1898) recognised *Hymenoscyphus* Nees 1817, S. F. Gray 1821, accepting as belonging to it Gray's species 3 [as *H. tuba* (Bolt.) Phill.], 4 [as *H. infundibulum* (Batsch) O.K.], 5, 7 [as *H. solani* (Pers.) O.K.] and 8.

Peziza fructigena would appear to be an acceptable lectotype for *Hymenoscyphus* as interpreted by all the above authors. There is, however, a rival interpretation, that

of Schroeter (1893) and in Engler & Prantl (1896). For him *Hymenoscypha* Fr. is a genus distinct from *Helotium* Fr., "Meist auf Pflanzenteilen vorkommende, winzige Pilze von heller Farbe, die sich durch das häutige Fruchthäuse von *Helotium* unterscheiden". As such it comprised two subgenera, *Pezizella* Fuck. and *Phialea* Fr. and the only one of S. F. Gray's nine foundation species retained in it was *H. cyathoidea* "(Bull.) Phill." The author citation shows that Schroeter was unaware of Gray's genus and his action can, therefore, scarcely be taken as implying selection of this species as lectotype for the genus of 1821.

I propose here to accept *Peziza fructigena* as lectotype of *Hymenoscyphus* S. F. Gray and to transfer to that genus the majority of the species referred to *Helotium* by Dennis (1956) and in subsequent papers dealing with the Helotiaceae of tropical America, Australia, New Zealand etc.

Before any real progress can be made in ascomycete taxonomy it is necessary to discover the structure and systematic position of the very numerous species left to encumber the literature by nineteenth century authors who published names without adequate descriptions or figures. Attempts to redispense these species without reexamination of the types, as made by Boudier (1907) and Seaver (1951) have led to the wildest errors, involving confusion between families within the Helotiales and even confusion between operculate and inoperculate ascomycetes. Only when the structure of a high proportion of the named species is known will one be in a position to assess the validity of the genera already proposed and the reality of the discontinuities between them. An important contribution to this end was made by Masee (1897, 1901) in two papers on species earlier published by Berkeley. Masee's work was most reliable and only in a few instances have I been led to disagree with him, notably in regard to *Helotium agaricicola* and *H. rufocorneum*. In interpreting apothecial structure I have had the advantage of a freezing microtome to cut accurate sections, whereas Masee had to depend on crushed mounts or hand sections.

The following notes relate to type or authentic material in Kew herbarium, with the addition of a number of species borrowed from other herbaria, notably those of New York and Stockholm, which I have had an opportunity of examining in recent years. Even so the true affinities of many species with a light coloured pseudo-parenchymatous excipulum are still far from clear. Nannfeldt (1932) declined to assign places in his system to several genera with this kind of structure and the suggestions made below for the disposition of such species must, therefore, be treated as more than usually tentative and subject to revision.

***Dasyscyphus aconiti* (Rehm) Dennis, *comb. nov.*—Fig. 1**

Pezizella aconiti Rehm in Ber. naturh. Ver. Augsburg 26: 43. 1881 (basonym). — *Pezizella rehmi* Sacc., Syll. Fung. 8: 282. 1889.

Apothecia scattered, superficial, about 0.5 mm diameter, disc flat, pinkish especially when dry, receptacle cupulate, yellowish, with downy white hairs especially towards the incurved margin. Hairs cylindrical to clavate, up to $20 \times 5-6 \mu$, thin-

walled, hyaline, finely granulate, nonseptate; asci cylindric-clavate, $50-60 \times 6-7 \mu$, 8-spored, the pore blued by Melzer's reagent; ascospores biseriata, narrowly elliptic-cylindric, $11-13 \times 2-2.5 \mu$, nonseptate; paraphyses cylindrical with pointed tips, $2-2.5 \mu$ wide and often about 5μ longer than the asci.

On dead stems of *Aconitum napellus*, Dzurowa, near Teplicska.

The species is allied to *D. grevillei*, common on umbelliferous stems, but apparently distinct in its larger asci and ascospores (compare with Fig. 23).

There was an earlier *Peziza aconiti* Sauter apud Rabenhorst (Deutschl. Kryptog.-Fl. 1: 344. 1844) which Saccardo (Syll. Fung. 8: 290. 1889) wished to transfer to *Pezizella*. He accordingly printed for this the combination *Pezizella aconiti* (Sauter) Sacc. and renamed Rehm's fungus *Pezizella rehmii* Sacc. but by the existing rules of nomenclature *P. aconiti* (Sauter) Sacc. is a later homonym of *P. aconiti* Rehm and *P. rehmii* Sacc. is a superfluous name. On page 425 of the same volume of the Sylloge Saccardo combined Sauter's fungus name a second time in *Trichopeziza* as *T. aconiti* (Sauter) Sacc. Winter (in *Hedwigia* 20: 134. 1881) commented thus: "*Peziza aconiti* Sauter, schon in Rabenhorst's Deutschlands Kryptogamenflora 1. pag. 344 beschrieben, ist eine *Pyrenopeziza* im Sinne Fuckel's. Asci anguste clavati, $70-75 \mu$ longi, 5μ lati; Sporae 8, inordinatae, oblongo-fusoideae, hyalinae, $7-11 \mu$ longae, 1.5μ crassae". It would seem that in combining the epithet "*aconiti* Sauter" twice over Saccardo intended to dispose of two different interpretations of the name but both are ascribed to Sauter and it was under the *Trichopeziza* that he cited Sauter's original collection.

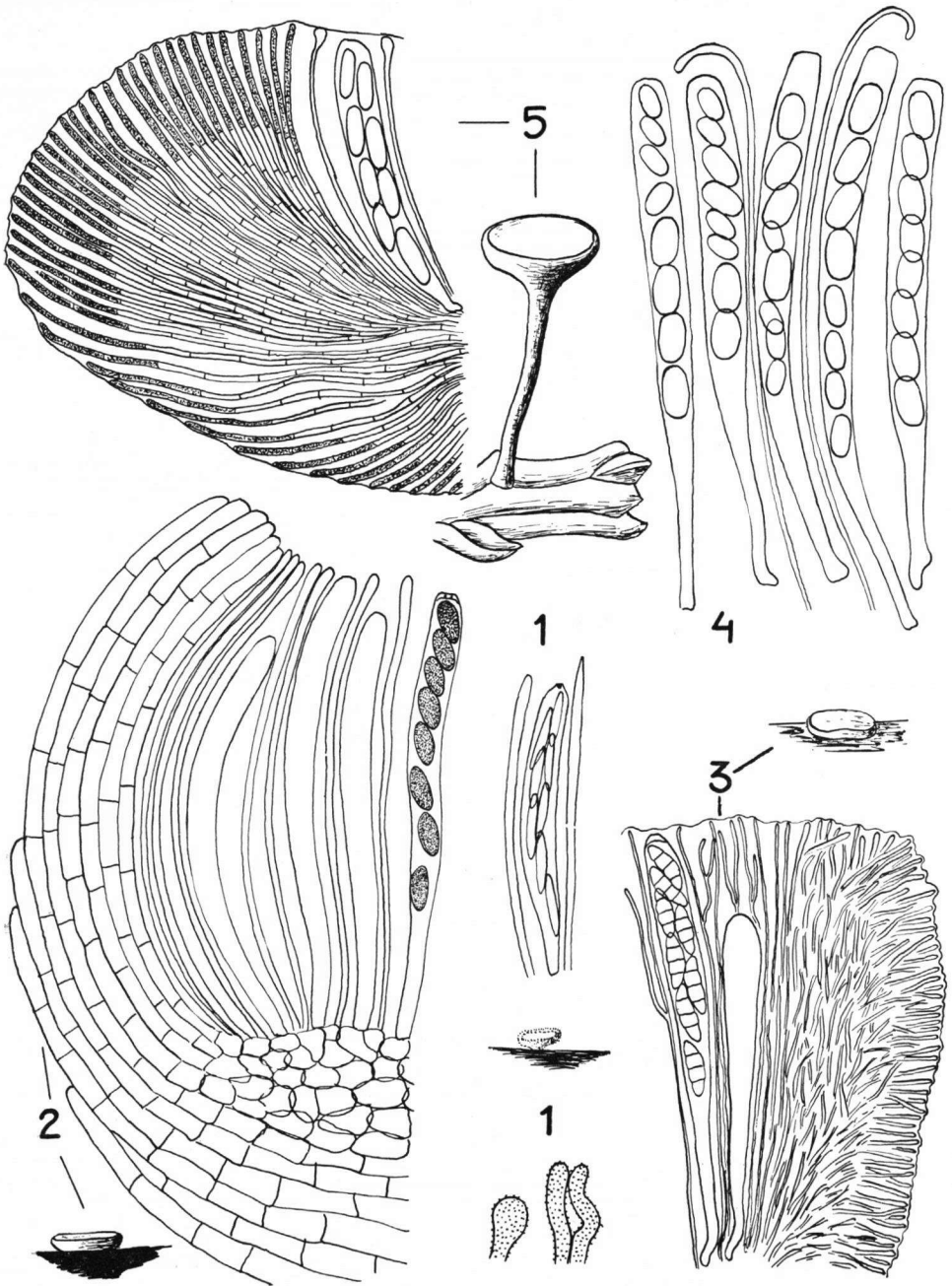
Phaeociboria agaricicola (Berk. & Br.) Dennis, *comb. nov.*—Fig. 2

Helotium agaricicola Berk. & Br. in J. Linn. Soc. (Bot.) 14: 107. 1873 (basionym). — *Bulgaria agaricicola* (Berk. & Br.) Masee in J. Linn. Soc. (Bot.) 31: 474. 1896.

The diagnosis reads simply: "Cupulis breviter stipitatis, extus pulverulentis; hymenio vinoso; sporidiis uniseriatis cymbiformibus pallide fuscis (no. 13). On decaying Agarics. Peradeniya, Nov. 1867." The apothecia are 1–2.5 mm across, with a flat disc and shallow receptacle seated on a short cylindrical stalk. Masee thought there was an "hypothecium and excipulum composed of slender, violettinged, intricately interwoven hyphae which appear to be imbedded in mucilage when moist." My impression is different. The excipulum is formed of parallel hyphae $5-6 \mu$ wide, with very delicate reddish-brown walls, lying at a low angle to the surface, while the flesh is composed of similar but less regularly arranged hyphae without a gelatinised matrix. If this is correct the fungus is not a *Bulgaria*. The asci are narrowly cylindrical, $90 \times 6 \mu$, 8-spored, with a rather flat apex and

EXPLANATION OF FIGURES 1–5

Figs. 1–5. — 1. *Dasyscyphus aconiti*. Habit sketch ($\times 20$), ascus, paraphysis and hairs ($\times 660$). — 2. *Phaeociboria agaricicola*. Habit sketch ($\times 20$), section ($\times 660$). — 3. *Helotium albovirens*. Habit sketch ($\times 20$), section ($\times 660$). — 4. *Octospora alutacea*. Asci and paraphyses ($\times 660$). — 5. *Chloroscypha alutipes*. Habit sketch ($\times 20$), section ($\times 660$).



Figs. 1-5

a pore outlined blue by Melzer's reagent; ascospores uniseriate, elliptical, $8-11 \times 3.5-5 \mu$, brown; paraphyses cylindrical, obtuse, 2μ thick.

HELOTIUM ALBOVIRENS Cke.—Fig. 3

Helotium albovirens Cke. in Bull. Buffalo Soc. nat. Sci. 2: 299. March 1875.

Apothecia superficial, scattered, discoid, 0.5–1 mm diameter, pale gray-green when soaked up, black when dried, with a thin basal pad of whitish hyphae. Flesh gelatinous throughout, excipulum formed of slender undulating hyphae, almost at right angles to the surface except at the margin, where they turn up to become more or less parallel with the hymenial elements. Asci cylindrical-clavate, $85 \times 8 \mu$, 8-spored, apex not blued by Melzer's reagent; ascospores biseriate, fusoid, 3-septate and slightly constricted at the septa, hyaline, $11-13 \times 3-3.5 \mu$ ($18 \times 3 \mu$ according to Cooke); paraphyses slender, cylindrical, branched, embedded in a gelatinous matrix.

On dead wood of maple, August, Newfield, New Jersey, U.S.A., *J. B. Ellis* 2227.

Evidently this is *Corynella prasinula* (Karst.) Boud., though no associated conidial state is apparent.

Octospora alutacea (Berk. & Br.) Dennis, *comb. nov.*—Fig. 4

Helotium alutaceum Berk. & Br. in J. Linn. Soc. (Bot.) 14: 107. 1873 (basionym).

Apothecia solitary or in small clusters on dead wood, disc flat, dingy yellow, about 1 mm diameter, concave when dry, flat when moist and without a raised margin; receptacle shallow cupshaped, sessile on a broad base, paler than the disc, whitish at the margin, smooth, soft-fleshed. Excipulum composed of thinwalled globose cells, $10-12 \mu$ diameter; asci narrowly cylindrical-clavate, apex truncate, operculate, unstained by iodine, $105-120 \times 9 \mu$, 8-spored but only occasionally do all eight mature, usually there are 4 mature ascospores, less often 2 or 6, the remainder remain smaller and thinner-walled; mature ascospores elliptical, $10-12 \times 5-6.5 \mu$, without guttules, hyaline; paraphyses slender, longer than the asci and with conspicuously recurved tips 2μ wide.

Peradeniya, Ceylon, November 1867, *Thwaites* 65.

Chloroscypha alutipes (Phill.) Dennis, *comb. nov.*—Fig. 5

Peziza alutipes Phillips in Grevillea 7: 23. 1878 (basionym). — *Phialea alutipes* (Phill.) Sacc., Syll. Fung. 8: 266. 1889. — *Kriegeria alutipes* (Phill.) Seaver, North Amer. Cup Fungi (Inop.) 103. 1951.

Apothecia scattered, disc flat, about 2 mm diameter, tan colour, drying black, with stout but not raised margin; receptacle cupulate with a long cylindrical stalk, concolorous, smooth, shrivelling on drying. Excipulum composed of slender parallel hyphae, 3μ wide, embedded in a gelatinous matrix and curved outwards at a high angle to the surface, the two outermost cells brown, the remainder subhyaline. Asci cylindrical-clavate, sessile, $90-110 \times 12-15 \mu$, apex rounded, pore not blued by Melzer's reagent, 8-spored; ascospores biseriate, elliptic-cylindrical, $16-22 \times 5-6 \mu$; paraphyses cylindrical, abruptly enlarged to 4μ at the tips.

On dead foliage of *Libocedrus decurrens*, California, *Harkness* 993.

As indicated in Kew Bulletin 9: 410. 1954, I regard *Kriegeria* Rab. as not validly published and to be replaced by *Chloroscypha* Seaver.

HELOTIUM AURANTIACUM Cke. apud Phill.

Helotium aurantiacum Cke. apud Phillips in Grevillea 19: 106. June 1891.

On decaying leaves, Newfield, New Jersey, U.S.A., Oct. 1875, *J. B. Ellis* 75.

I see no reason to question White's (1943) statement that this is a synonym of the common *H. epiphyllum* (Pers. ex Fr.) Fr., though his opinion was ignored by Seaver (1951).

Rutstroemia belisense (Kanouse) Dennis, *comb. nov.*—Fig. 7

Helotium belisense Kanouse in Mycologia 33: 465. 1941 (basionym).

Apothecia solitary, arising on the surface of small blackened areas of lamina, disc up to 2 mm diameter, concave to flat, with a prominently dentate margin, light brown; receptacle saucershaped, with a slender cylindrical stalk, concolorous to reddish-brown when dry, base of stalk blackish. Excipular cells approximately isodiametric, cubical to polygonal, passing at the margin into parallel hyphae $5\ \mu$ wide, with thin brown walls, cohering to form the marginal teeth. Asci cylindrical-clavate, $70\text{--}80 \times 7\ \mu$, apex flattened, pore blued by iodine according to the diagnosis, 8-spored; ascospores uniseriate, elliptical, $8\text{--}9 \times 4\text{--}4.5\ \mu$; paraphyses cylindrical, obtuse, $2\ \mu$ thick.

On under side of decaying *Ilex* leaves, El Cayo district, Valentin, British Honduras, 25.6.1936, *E. B. Mains* 3603, Herbarium of University of Michigan.

HELOTIUM BODENI P. Henn.

Helotium bodeni P. Henn. in Verh. bot. Ver. Prov. Brandenburg 42: xvii. 1900. — *Pachydisca bodeni* (P. Henn.) Boud., Hist. Class. Discom. d'Europe 94. 1907.

The portion of the type collection in Sydow's herbarium at Stockholm is *Pezizula livida* (Berk. & Br.) Rehm, on *Larix leptolepis*, Hameln a Weser, Germany, 30.9.1900.

Laetinaevia carneopallida (Rob. apud Desm.) Dennis, *comb. nov.*—Fig. 8

Peziza carneopallida Roberge apud Desmazières in Ann. Sci. nat. (Bot.), ser. 3, 16: 326. 1851 (basionym). — *Pezizella carneopallida* (Rob. apud Desm.) Sacc., Syll. Fung. 8: 285. 1889. — *Briardia carneopallida* (Rob. apud Desm.) Boud., Hist. Class. Discom. d'Europe 170. 1907. — *Pseudopeziza carneopallida* (Rob. apud Desm.) Höhn. in Ann. mycol., Berl. 16: 337. 1917.

Apothecia gregarious, erumpent, mostly from the lower epidermis of the host; disc flat or slightly convex, without a rim, about $180\text{--}200\ \mu$ diameter, pale flesh colour; receptacle shallow cupulate, sessile, soft, smooth, concolorous. Excipulum and flesh composed throughout of more or less isodiametric, rounded or polygonal, thinwalled cells, about $4\text{--}6\ \mu$ diameter. Asci clavate, $30\text{--}50 \times 6\text{--}9\ \mu$, 8-spored; ascospores irregularly biseriate, $6\text{--}7\text{--}(8) \times 2\text{--}2.5\ \mu$; paraphyses cylindrical, obtuse, $1.5\text{--}2\ \mu$ thick, equalling the asci in length.

On fallen leaves of *Ulmus* in spring. Desmazières Crypt. France 2009.

EXPLANATION OF FIGURES 6–10

Figs. 6–10. — 6. *Pseudonectria aquifoliae*. Perithecium ($\times 100$), section ($\times 660$). — 7. *Rutstroemia belisense*. Two apothecia with their stromatic areas ($\times 10$), ascus, paraphysis and marginal tooth ($\times 660$). — 8. *Laetinaevia carneopallida*. Diagrammatic section ($\times 75$), section of margin and free ascospores ($\times 660$). — 9. *Pezizella carneorosea*. Apothecia ($\times 20$), section of margin ($\times 660$). — 10. *Calycellina castanea*. Habit sketch ($\times 6$), section of margin ($\times 660$).

PHIALEA AMPLA Ell. & Ev.

Phialea ampla Ell. & Ev. in Bull. Torrey bot. Cl. **24**: 135. 1897. — *Helotium amplum* (Ell. & Ev.) Seaver, North Amer. Cup Fungi (Inop.) 133. 1951.

As exemplified at Kew by Reliquiae Suksdorfiana 26, on wood of *Salix*, Mt. Adams, Washington, 17–18 Sept. 1894, said to be part of the type collection, this seems to me indistinguishable from *Helotium conscriptum* (Karst.) Karst., described on twigs of *Salix* in Finland.

Pseudonectria aquifoliae (Cke. & Ellis) Dennis, *comb. nov.*—Fig. 6

Peziza (*Mollisia*) *aquifoliae* Cke. & Ellis in Grevillea **6**: 91. March 1878 (basionym). — *Pezizella aquifoliae* (Cke. & Ellis) Sacc., Syll. Fung. **8**: 288. 1889.

The type is on leaves of *Ilex opaca*, Newfield, New Jersey, *Ellis 2559* and Phillips has commented shrewdly on it, in a letter to Cooke of 22. 6. 1877, "I conclude you have satisfied yourself this is a *Peziza*. I am not satisfied of it from my own observation." Thus warned, Cooke and Ellis described the species as having "Cupulis sessilibus, concavis, margine incurvo, ad basim fibrillis albis radiantibus affixis", with the disarming comment, "A very curious species which seems to diverge in its firm texture and some other points from a true *Peziza*." The "other points" prove to be rather important for in fact the ascocarps are not apothecia but perithecia, about 150 μ broad and high, each with a flattened apex bearing a mat of short downy hairs. The perithecial wall is two-layered, the inner of compressed slender hyphae, the outer of about 2–3 layers of isodiametric cells which run out on the upper surface of the perithecium to form hyaline cylindrical hairs, about 10–12 \times 2–3 μ . The asci are delicate, 8-spored, without any apical ring blued by iodine; ascospores biseriate, elliptic-cylindric, mostly nonseptate, hyaline, 7–8 \times 2–2.25 μ .

Seaver, who monographed the North American Nectriaceae, left this species under doubtful species of *Mollisia*, with the comment that "The type in The New York Botanical Garden is too scant to permit of critical study". Perithecia are very abundant and uniform on the portion of the type collection at Kew.

PHIALEA ARENICOLA Ell. & Ev.

Phialea arenicola Ell. & Ev. in Amer. Nat. **31**: 426. May 1897. — *Helotium arenicola* (Ell. & Ev.) Seaver, North Amer. Cup Fungi (Inop.) 148. 1951.

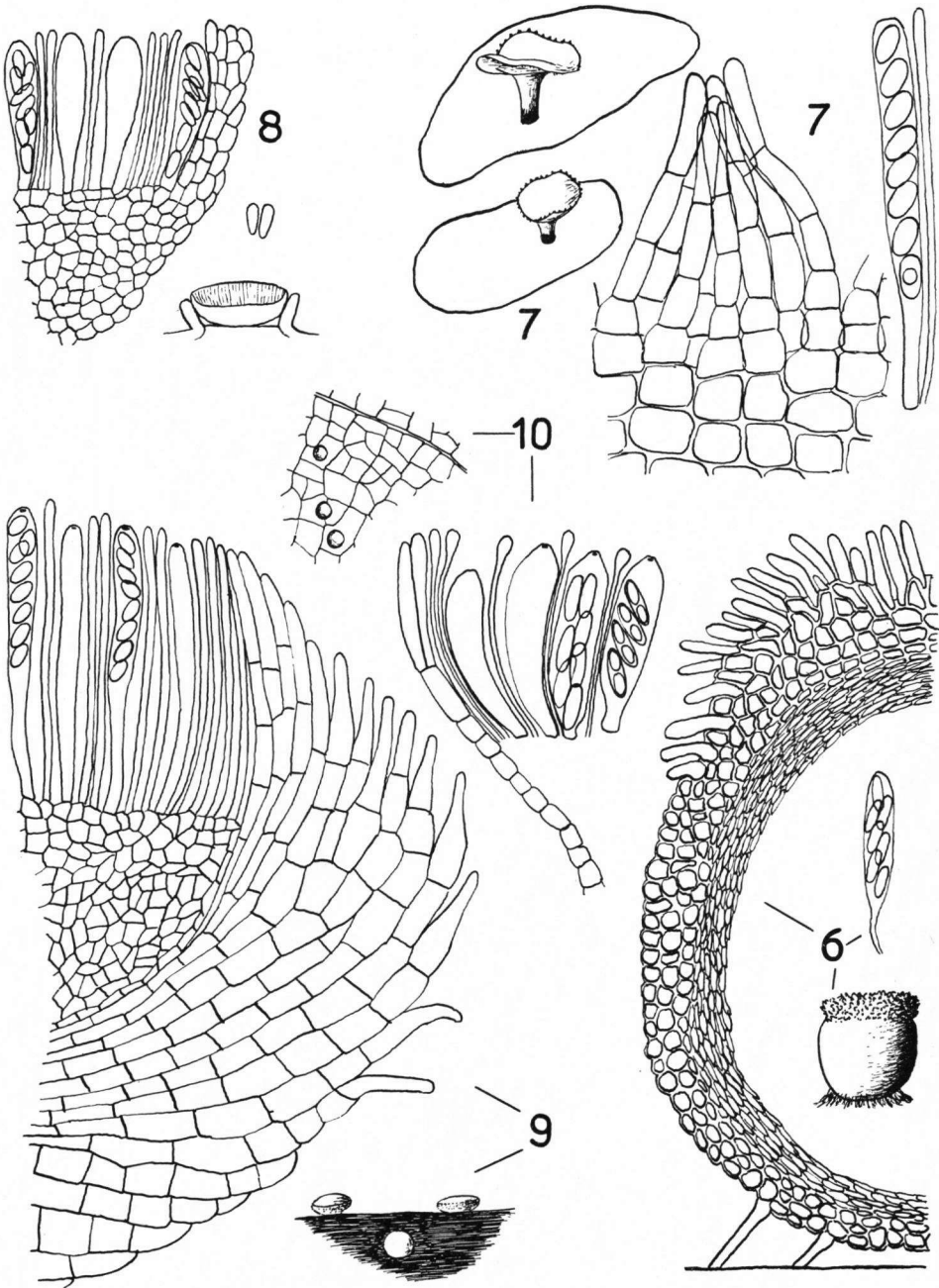
On rootlets and plant debris buried in sandy soil amongst grass, Blackbird Landing, Delaware, U.S.A., 8. 6. 1896, *Commons 2784*, in herb. New York Bot. Garden.

This is typical *Dasyyscyphus pygmaeus* (Fr.) Sacc., as already pointed out by White (in Amer. Midl. Nat. **28**: 522. 1942) long before Seaver made the redundant combination in *Helotium*.

PEZIZELLA ARISTOSPORA Bonar

Pezizella aristospora Bonar in Mycologia **34**: 183. 1942.

This fungus of dead *Sequoia* leaves is no *Pezizella*, nor Helotiaceous at all but apparently a Dermateaceous species somewhere near *Laetinaevia*.



Figs. 6-10

Nannfeldt (1932) listed this as a probable *Laetinaevia* without actually making the combination under that genus.

PEZIZA CARNEOROSEA Cke. & Harkn.—Fig. 9

Peziza (Mollisia) carneorosea Cke. & Harkn. in *Grevillea* 9: 130. June 1881. — *Pezizella carneorosea* (Cke. & Harkn.) Sacc., *Syll. Fung.* 8: 284. 1889.

Apothecia occurring singly, superficial or slightly embedded at the base, disc flat or convex, without a rim, pale pink, 300 μ diameter; receptacle cupulate, sessile on a small base, concolorous or paler, minutely pruinose. Flesh composed of small, angular, closely packed cells; excipulum of rather broad, short-celled, thinwalled, parallel hyphae, curving outwards at a moderate angle to the surface, the terminal cells often protruding as short downy hairs. Asci cylindrical-clavate, 60 \times 5 μ , apex conical, with a small pore deeply blued by Melzer's reagent, 8-spored; ascospores elliptical, uniseriate or biseriate above, 5-6 \times 3 μ ; paraphyses cylindrical, obtuse, 2 μ thick.

On *Eucalyptus* twigs, California, *Harkness* 2164.

The appropriate genus is not clear to me. *Discohainesia* seems excluded by the iodine-positive ascus pores and the stout simple paraphyses, *Pezizella* by the cellular flesh. Seaver's (1951) comment "Apparently an *Orbilia*" is merely ridiculous. If the free hyphal tips are called hairs it will key to *Cistella* beside *C. trabinella* (Karst.) Nannfeldt but I prefer not to propose a recombination until something is known of the life history.

Calycellina castanea (Sacc. & Ellis) Dennis, *comb. nov.*—Fig. 10

Helotium castaneum Sacc. & Ellis in *Michelia* 2: 572. December 1882 (basionym). — *Calycina castanea* (Sacc. & Ellis) O. Kuntze, *Rev. Gen. Pl.* 3 (2): 448. 1898.

Apothecia scattered, superficial, disc flat, 250 μ diameter, chestnut brown, without a raised margin; receptacle saucer-shaped on a broad base, concolorous, smooth, soft-fleshed. Excipulum composed of short-prismatic thinwalled cells, about 6 \times 4 μ , passing towards the margin into parallel brown hyphae, 2-3 μ wide, without hairs. Asci cylindrical-clavate, sessile, 35-40 \times 9 μ (45 \times 16 μ Saccardo), the small pore blued by Melzer's reagent, 8-spored; ascospores mostly biseriate, elliptic-cylindric, hyaline, 10-11 \times 3 μ (11-14 \times 3-4 μ Saccardo), with 2 oil bodies; paraphyses cylindrical, about 1 μ thick, obtuse and often somewhat enlarged at the tip.

On lower surface of living *Quercus laurifolia* leaves, often on patches apparently damaged by insects, Green Cove Springs, Florida, 1881, Ellis N. American Fungi 994. Though not part of the type this material is authentic for the name and agrees with the diagnosis.

PEZIZA CHLORINELLA Ces.—Fig. 11

Peziza chlorinella Cesati in *Bot. Ztg* 12: Col. 186. March 1854. — *Pezizella chlorinella* (Ces.) Sacc., *Syll. Fung.* 8: 278. 1889. — *Hyalinia chlorinella* (Ces.) Boud., *Hist. Class. Discom.* d'Europe 104. 1907.

The diagnosis reads simply "Minutissima, viridula, gregaria, semipellucens. Ad herbarum caules. Vercellis. Ces." and is repeated in *Flora* 12: 203. April 1854. The species was distributed as Klotzsch Herb. viv. myc. Ed. 1, 1812 (1854), issued

with the diagnosis and the slightly amplified information "sero autumnno, ad caules putrescentes herbarum majorum in nemoribus humistratos." The scanty diagnosis is sufficient to validate the name, unfortunately since no one could recognise the species from it and it has accordingly been virtually ignored, even Rehm did not cite it.

The apothecia are gregarious, superficial, with a flat, cream coloured disc, about 0.5 mm diameter, a greenish tint is no longer apparent; receptacle cupulate, smooth, sessile concolorous. Excipulum with rows of short-prismatic, thinwalled, hyaline cells, the terminal ones clavate, up to $10 \times 3 \mu$, passing at the margin into short parallel hyphae. Asci cylindric-clavate, $45-50 \times 4-5 \mu$, apex conical, with a small pore blued by Melzer's reagent, 8-spored; ascospores biseriata, rodshaped, straight or slightly curved, $5 \times 1 \mu$; paraphyses rather stout, cylindrical, rounded above, equalling the asci.

Superficially this resembles *Dasyyscyphus grevillei* but the distinctly cylindrical obtuse paraphyses forbid one to treat it as a state of that species. The asci are not those of a *Hyalinia* nor is the anatomy that of a *Mollisia*. The choice of a genus would seem to lie between *Cistella*, for which the "hairs" seem underdeveloped, and *Calycellina* but it would be well to see recent material that matches the type before making the decision.

HELOTIUM CONSANGUINEUM Ell. & Ev. apud Seaver

Helotium consanguineum Ell. & Ev. apud Seaver, North Amer. Cup Fungi (Inop.) 143, 1951.

Apothecia gregarious, erumpent singly or in pairs, disc flat, light yellow, 0.5 mm diameter; receptacle concolorous, shallow cupulate, subsessile, smooth or very minutely pruinose. Excipulum composed of slender parallel hyphae, 3μ wide, with short prismatic cells, lying at a high angle to the surface on the under side of the receptacle but curving round parallel to the surface at the margin, terminal cells freestanding, clavate, $6-10 \times 3-4 \mu$. Asci clavate, 8-spored, $45-60 \times 7-8 \mu$, pore deep blue in Melzer's reagent; ascospores uniseriate to biseriata, elliptic-fusoid, $7-11 \times 2-2.5 \mu$, nonseptate; paraphyses cylindrical, obtuse, $3-4 \mu$ wide.

On dead stems of *Tephrosia virginiana*, Newfield, New Jersey, Feb. 1879, in herb. New York Bot. Garden.

This remained a manuscript name in the Ellis herbarium until published by Seaver long after Ellis' death and it seems likely the latter had decided it to be too near *H. herbarum* to be worth a name. The material differs from typical *H. herbarum* in its smaller non-septate ascospores. It may be immature, however, and I do not feel confident it represents a distinct species but if it does it is a synonym of *H. humile* Sacc.

Rutstroemia coracina (Dur. & Lév.) Dennis, *comb. nov.*—Fig. 12

Peziza coracina Dur. & Lév. Expl. sci. d'Algérie, Atlas 10, Tab. 28 fig. 4 (basionym). — *Helotium coracinum* (Dur. & Lév.) Sacc., Syll. Fung. 8: 237. 1889. — *Ciboria coracina* (Dur. & Lév.) Boud., Hist. Class. Discom. d'Europe 106. 1907.

Apothecia scattered, superficial, not associated with blackening of the substrate, disc concave, about 0.5 mm diameter, with a prominent toothed margin; receptacle cupulate with a short cylindrical stalk, smooth, black. Excipulum composed of

parallel hyphae with glassy walls, lying parallel to the surface, the outermost layer having dark brown walls and so giving the dark colour to the receptacle. Asci cylindrical-clavate, $125 \times 10-12 \mu$, apex flattened with a small pore blued by Melzer's reagent, 8-spored; ascospores mostly uniseriate, elliptical, $11-13 \times 5-6 \mu$; paraphyses cylindrical, slightly enlarged upwards to 5μ diameter, obtuse.

On veins of dead leaf of *Quercus ilex*, Algeria, herb. Paris.

PEZIZA CRAGINIANA Ell. & Ev.

Peziza craginiana Ell. & Ev. in J. Mycol. 1: 47. March 1885. — *Phialea craginiana* (Ell. & Ev.) Sacc., Syll. Fung. 8: 258. 1889. — *Hymenoscyphus craginianus* (Ell. & Ev.) O. Kuntze, Rev. Gen. Pl. 3 (2): 485. 1898. — *Helotium craginianum* (Ell. & Ev.) Seaver, North Amer. Fungi (Inop.) 144. 1951.

Nothing of the fungus remains in the type packet in New York Botanical Garden and it is impossible to assess the true systematic position of the species, which remains known only from Ellis' brief description. The repositions by Saccardo, O. Kuntze and Seaver were purely literary exercises, not based on examination of the fungus.

Hymenoscyphus crastophilus (Sacc.) Dennis, *comb. nov.*—Fig. 13

Helotium crastophilum Sacc. in Ann. mycol., Berl. 10: 312. 1912 (basonym).

Only a single apothecium could be found in the type collection in the Saccardo herbarium and no anatomical details were recovered from it. According to Saccardo the excipulum has "contextu anguste prosenchymatico" and the species appears to be a normal *Hymenoscyphus*. An ascus recovered from it measured $140 \times 14 \mu$, with conico-truncate apex tipped by a rather broad pore deep blue in Melzer's reagent and containing eight biseriata ascospores. The latter were tapered at each end, not clavate or hooked as in *Helotium scutula* var. *suspecta* (Nyl.) Karst., and measured $19-24 \times 5 \mu$, with two oil globules. The paraphyses were cylindrical, obtuse, 2.5μ wide. This would appear to be a good species, distinguished by its combination of relatively small apothecia, 400μ high, 250μ broad, with large asci and ascospores.

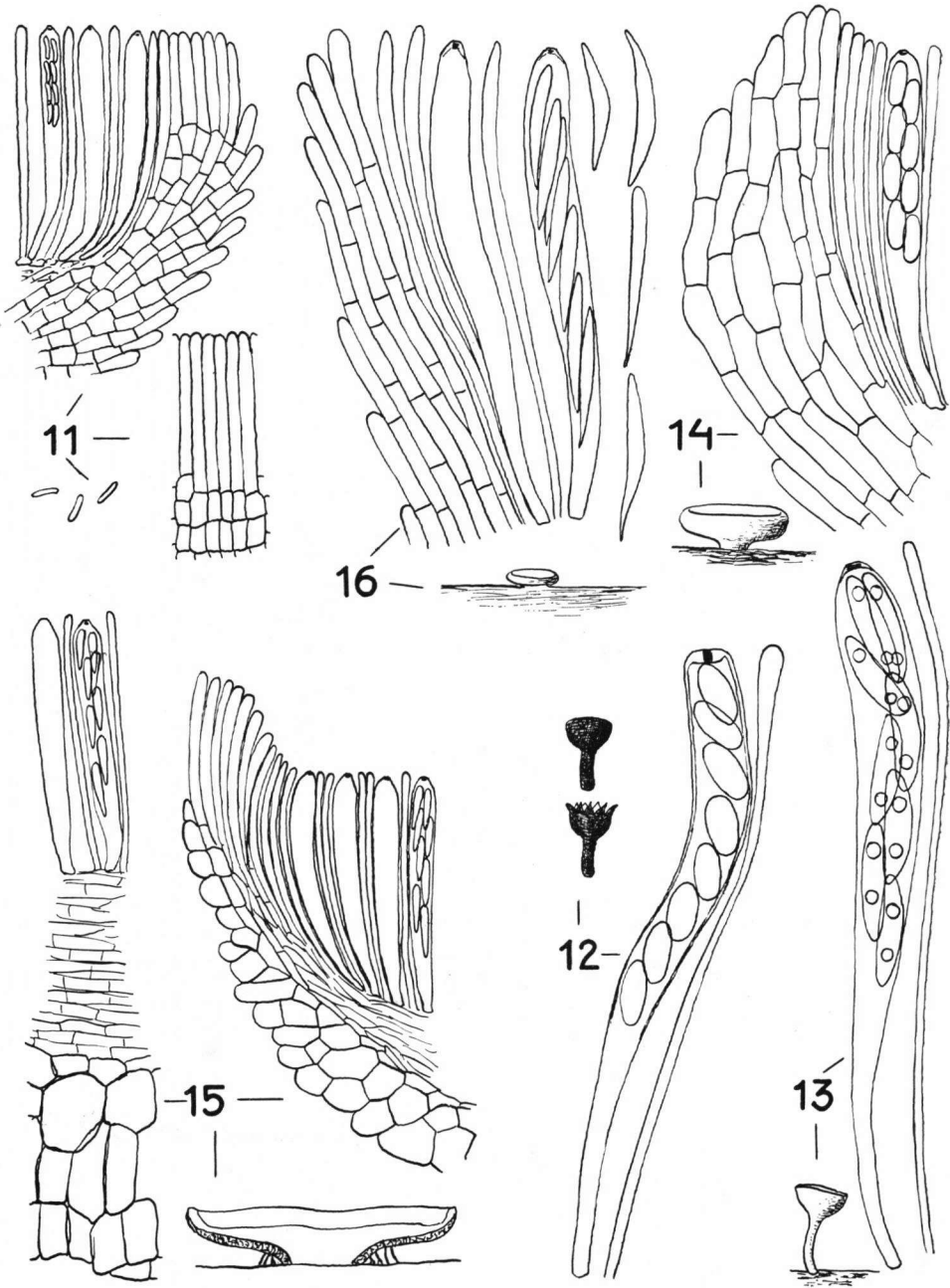
"In caulibus graminum, vetustis, dejectis", Lyndonville, New York, 30 . 10 . 1911, *Fairman 10*.

PEZIZA CUCURBITAE Ger.

Peziza cucurbitae Gerard in Bull. Torrey bot. Cl. 5: 26. 1874. — *Pezizella cucurbitae* (Ger.) Sacc., Syll. Fung. 8: 285. 1889. — *Orbilbia cucurbitae* (Ger.) Seaver, North Amer. Cup Fungi (Inop.) 155. 1951.

EXPLANATION OF FIGURES 11-16

Figs. 11-16. — 11. *Pezizella chlorinella*. Margin in surface view and in section ($\times 660$). — 12. *Rutstroemia coracina*. Apothecia, the upper dry, the lower expanded when soaked up ($\times 15$), ascus and paraphysis ($\times 660$). — 13. *Hymenoscyphus crastophilus*. Apothecium ($\times 20$), ascus and paraphysis ($\times 660$). — 14. *Hymenoscyphus cyathiformis*. Apothecium ($\times 15$), section of margin ($\times 660$). — 15. *Mollisia dakotensis*. Diagrammatic section of apothecium ($\times 25$), detailed sections ($\times 660$). — 16. *Hymenoscyphus dearnessii*. Apothecium ($\times 10$), section of margin and free spores ($\times 660$).



Figs. 11-16

"Cups sessile, when moist waxy, scutellate, disc pale tan color, margin entire, when dry contorted, somewhat horny and disc dark purple-brown; spores simple, oval, .0004' long. On dried rinds of squash (*Cucurbita*) in company with *Phoma cucurbitacearum*. Poughkeepsie, September." The ascospore length .004 inches equals about 10.5μ . The authentic material at Kew, sent by Gerard to M. C. Cooke, yields cylindrical operculate asci, $145 \times 8 \mu$, not blued by Melzer's reagent, containing elliptical, eguttulate, uniseriate ascospores, $10-11 \times 6-7 \mu$, and mixed with slender, cylindrical, obtuse paraphyses 2μ thick. This is *Pseudombrophila deerata* (Karst.) Seaver or a closely allied fungus with slightly smaller ascospores. Comment on the transfer to *Orbilia* seems superfluous.

HELOTIUM CUDONIOIDES Seaver

Helotium cudonioides Seaver in *Mycologia* 37: 267. 1945.

On rotten wood, Cleveland, Ohio, November 1938, *M. Walters*.

The type, at New York Botanical Garden, has been annotated "*Helotium aciculare* Fr., *Cudoniella acicularis* (Fr.) Schroet. by E. B. Mains, January 1955 and this opinion is obviously correct.

HYMENOSCYPHUS CYATHIFORMIS (Rehm) O. Kuntze.—Fig. 14

Phialea cyathiformis Rehm in Rabenhorst, *Kryptog.-Fl.* ed. 2, 1 (3): 712. 1892. — *Hymenoscyphus cyathiformis* (Rehm) O. Kuntze, *Rev. Gen. Pl.* 3 (2): 485. 1898.

Apothecia scattered, superficial, disc flat with a low rounded rim, up to 1.5 mm diameter, whitish, drying yellowish; receptacle cupulate, sessile on a small base, smooth concolorous. Excipulum composed of parallel thinwalled hyphae, $5-6 \mu$ wide at the margin, almost parallel with the surface, becoming enlarged up to 15μ wide in a zone a little below the surface of the flanks of the receptacle; flesh of narrower thin-walled hyphae. Asci cylindrical-clavate, 8-spored, $70 \times 8-10 \mu$, pore blued by Melzer's reagent; ascospores biseriate, elliptical, $7-10 \times 3 \mu$, becoming 1-septate according to Rehm; paraphyses cylindrical, up to 3μ wide.

On decorticated wood, Albachten bei Munster, *Lindau*, in herb. Stockholm.

This seems closely allied to *H. imberbis* and is not a *Phialea* in the sense of von Höhnel, nor a *Calycella* as I interpret the genus.

Mollisia dakotensis (Rehm) Dennis, *comb. nov.*—Fig. 15

Pezizella dakotensis Rehm in *Ann. mycol.*, Berl. 11: 396, Oct. 1913 (basionym). — *Helotium dakotense* (Rehm) Seaver, *North Amer. Cup Fungi* (Inop.) 132. 1951.

Apothecia scattered, superficial, disc concave and yellowish when dry, flat and pellucid light gray, up to 1.5 mm diameter when moist; receptacle saucer-shaped, sessile, brown, with a whitish margin. Subhymenium about 40μ thick on the flanks of the receptacle, formed of slender hyaline hyphae, passing into a compact hyaline tissue occupying the centre of the base. Excipulum composed of 3 to 4 layers of rounded to angular cells, up to $15 \times 10 \mu$, with thin brown walls, passing at the margin into parallel, slender, hyaline hyphae and bearing a few brown anchoring hyphae towards the base. Asci cylindrical-clavate, $45-60 \times 5-6 \mu$, 8-spored, the small pore blued by Melzer's reagent; ascospores biseriate, clavate, $8-13 \times 1.5-2 \mu$; paraphyses cylindrical, 2μ thick, rounded at the tip.

On dead fallen twigs of *Symphoricarpos occidentalis*, Kulm, N. Dakota, 18. 7. 1913, Brenkle. Type in Herb. Rehm, Stockholm.

Though I feel this keys to *Mollisia* it closely resembles *Psilachnum lanceolato-paraphysatum* both externally and structurally, apart from the paraphyses, and it is not surprising Rehm referred them to the same genus, though this should not be *Pezizella* in the sense of *P. vulgaris* (Fr.) Höhn. Nothing can be said for the transfer to *Helotium*.

HYMENOSCYPHUS DEARNESSII (Ell. & Ev.) O. Kuntze—Fig. 16

Phialea dearnessii Ell. & Ev. in Proc. Acad. nat. Sci. Philad. 146. April 1893. — *Hymenoscyphus dearnessii* (Ell. & Ev.) O. Kuntze, Rev. Gen. Pl. 3 (2): 484. 1898. — *Helotium dearnessii* (Ell. & Ev.) White in Mycologia 34: 167. 1942.

Apothecia scattered, erumpent, disc flat or slightly convex, 0.75 mm diameter, subolivaceous, becoming nearly sulphur yellow, without a raised margin; receptacle shallow cupulate on a short, stout, stemlike base, smooth, concolorous. Excipulum composed of parallel thinwalled hyphae, 3–4 μ wide, rather sparingly septate, lying at a low angle to the surface, hyaline towards the margin, brownish towards the base. Asci cylindrical-clavate, subsessile, 75–95 \times 9–10 μ , apex conical, the pore blued by Melzer's reagent, 8-spored; ascospores fusoid, rounded above, tapered to a point below, nonseptate, biguttulate, 25–35 \times 3–3.5 μ ; paraphyses cylindrical, rounded above, 3 μ thick.

On dead stems of *Steironema ciliatum*, London, Ontario, June 1890, Dearness, in Ellis & Everhart, North American Fungi Ser. 2, 2624. The type was on *Monarda* from the same locality, May 1890.

As already indicated by White (sub *Helotium*) this is a good species of *Hymenoscyphus*.

HELOTIUM DESTRUCTOR White

Helotium destructor White in Mycologia 34: 163. 1942.

See *Hymenoscyphus subcarneus* (Cke. & Peck) O. Kuntze.

HELOTIUM EICHLERI Bres.—Fig. 17

Helotium eichleri Bres. in Ann. mycol., Berl. 1: 120. 1903.

This seems structurally very like *Helotium lutescens* (Hedw. ex Fr.) Fr. [*Hymenoscyphus lutescens* (Hedw. ex Fr.) Phill.] on the same substrate. The stated difference lies in the broader ascospores, 10–13(–15) \times 4–5(–6) μ instead of 10–15 \times 3–4 μ . The thick mucous coating of the ascospore mentioned by Bresadola is not now obvious to me and I am dubious about the validity of *H. eichleri* as a species.

Typus on cone scales of *Pinus silvestris*, Poland, July, in herb. Bresadola, Stockholm.

The soft short-celled structure of the subsessile apothecia is perhaps rather that of a *Phaeohelotium* than a *Hymenoscyphus*.

HELOTIUM EPISPHAERICUM Peck

Helotium episphaericum Peck in Rep. N.Y. St. Mus. 40: 66. 1888. — *Calycina episphaerica* (Peck) O. Kuntze, Rev. Gen. Pl. 3 (2): 448. 1898.

I have not seen the type, presumably at Albany, New York and not accessible, but as determined by Cash, on *Xylaria scruposa*, Barro Colorado island, Panama

Canal Zone, 18. 7. 1945, *G. W. Martin 6089*, this is *Patinellaria cubensis* (Berk. & Curt.) Dennis (*in Kew Bull.* 1954: 315–316). White's (1942) description of Peck's material bears out this synonymy.

PEZIZA ESCHSCHOLTZIAE Phil. & Harkn.—Fig. 18

Peziza (Hymenoscypha) eschscholtziae Phil. & Harkn. *in Bull. Calif. Acad. Sci.* 1: 22. 1884. — *Phialea eschscholtziae* (Phil. & Harkn.) Sacc., *Syll. Fung.* 8: 271. 1889. — *Helotium eschscholtziae* (Phil. & Harkn.) Seaver, *North Amer. Cup Fungi (Inop.)* 129. 1951.

Apothecia scattered, superficial, disc concave, up to 0.75 mm diameter, pale yellowish, with a prominent brown margin; receptacle cupulate on a short stemlike base, dark brown and minutely pruinose throughout. Excipulum composed of parallel, hyaline, hyphae with strongly gelatinised walls, lying at rather a high angle to the surface and passing out into short, cylindrical, brown hairs, about $15-20 \times 4 \mu$, with finely encrusted walls. Asci cylindrical-clavate, $65 \times 6 \mu$, pore not distinctly blued by Melzer's reagent, 8-spored; ascospores mostly uniseriate, elliptic-cylindric, straight or slightly curved, $8-10 \times 1.5-2 \mu$; paraphyses cylindrical, obtuse, $3-4 \mu$ thick, with oily contents.

On dead stems of *Eschscholtzia californica*, *Harkness 2615*.

This is doubtfully distinct from the cosmopolitan *Phialea cacaliae* (Pers. ex Fr.) Gillet.

Peziza exarata Berk.

Peziza exarata Berk. *in Grevillea* 3: 160. June 1875. — *Phialea exarata* (Berk.) Sacc., *Syll. Fung.* 8: 268. 1889.

On decorticated wood, South Carolina, *Curtis 2119*.

This is *Guepiniopsis buccina* (Pers. ex Fr.) Kennedy.

PEZIZA EXIDIELLA Berk. & Curt. apud Cke.—Fig. 19

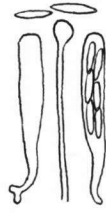
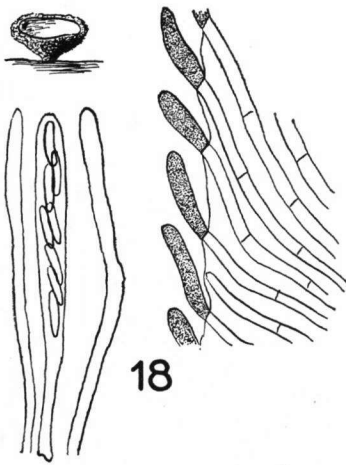
Peziza exidiella Berk. & Curt. *apud Cooke in Bull. Buffalo Soc. nat. Sci.* 2: 297. March 1875. — *Pezizella exidiella* (Berk. & Curt. apud Cke.) Sacc., *Syll. Fung.* 8: 288. 1889.

"On herbaceous stems, gregarious, regular, externally and internally rufous yellow. Asci clavate, sporidia oblong, narrow, hyaline, (.00028 inches). Conn(ecticut) Wright."

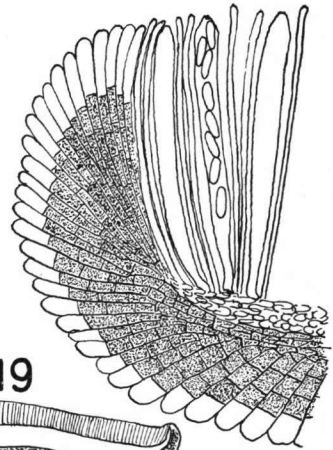
The apothecia have a flat disc 0.5–1 mm diameter, surrounded by a low obtuse margin and borne on a shallow, smooth, saucer-shaped receptacle with small but well defined stemlike base; the whole has dried dark brown. Radial sections show an excipulum formed of radiating rows of short prismatic cells with thin brown walls, the surface layer paler. Asci narrowly cylindric, apex conical with small pore blued by Melzer's reagent, 8-spored, $60 \times 4.5-5 \mu$; ascospores elliptic-cylindric to ovoid, $5-6 \times 2 \mu$; paraphyses cylindrical, obtuse, 2μ thick.

EXPLANATION OF FIGURES 17–21

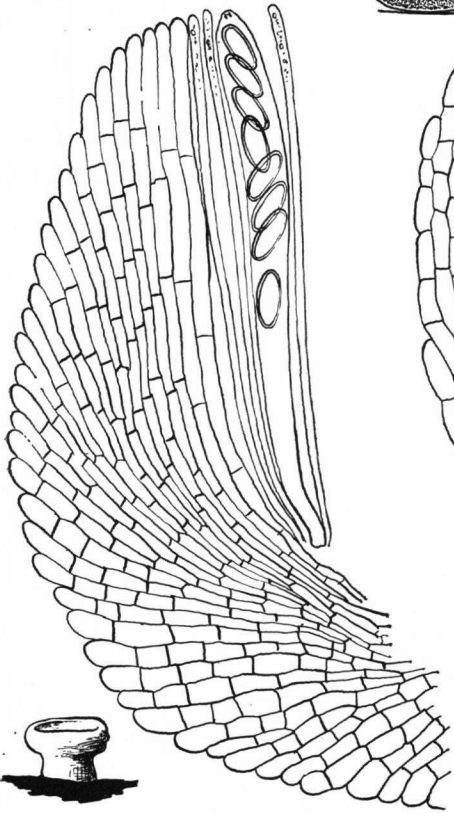
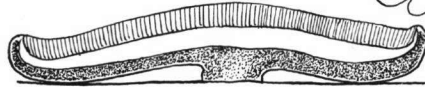
Figs. 17–21. — 17. *Helotium eichleri*. Apothecium ($\times 10$), section of margin ($\times 660$). — 18. *Phialea eschscholtziae*. Apothecium ($\times 15$), ascus, paraphyses and portion of excipulum in section ($\times 660$). — 19. *Pezizella exidiella*. Diagrammatic section ($\times 60$), section of margin ($\times 660$). — 20. *Peziza exigua*. Asci, paraphysis and spores ($\times 660$). — 21. *Hymenoscyphus flavo-fuscescens*. Apothecia ($\times 10$), section of margin and free ascospores ($\times 660$).



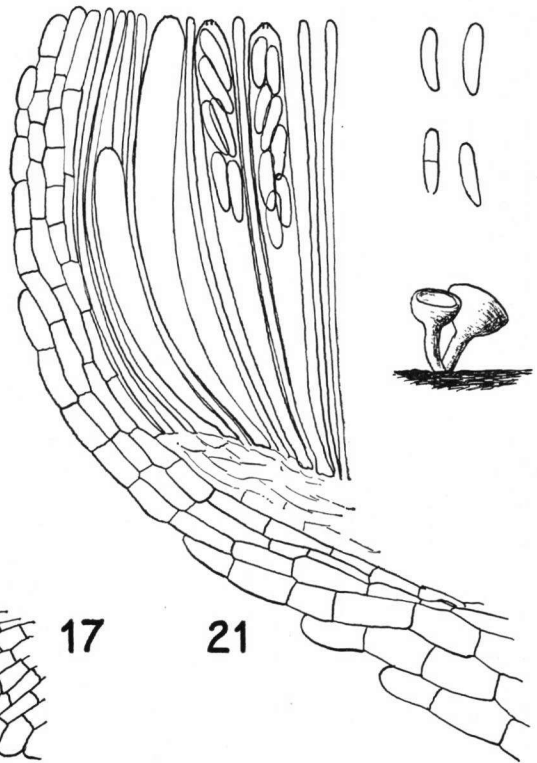
20



19



17



21

Figs. 17-21

There has been some confusion over this species for the name was published a second time as *Peziza (Mollisia) exidiella* Berk. & Curt. (*in Grevillea* 3: 158. June 1875) "On *Cornus florida*. Car. Inf. No. 2474". The host and number are evidently here cited in error for in Curtis' manuscript list of collections sent to Berkeley number 2474 is entered as "*Pez. mitlophthalma*", which is the next species (*in Grevillea* 3: 158) cited with the same substrate and number. The number cited for *P. exidiella* should have been Curtis 5625, which is the Connecticut specimen collected by Wright, under which number the name *Peziza exidiella* is duly entered in the manuscript list.

Peziza exidiella is hardly a typical *Mollisia* or a typical *Pezizella* and is probably to be assigned either to *Cistella* or *Calycellina*, compare *P. chlorinella* Ces. above.

PEZIZA EXIGUA Cke.—Fig. 20

Peziza (Mollisia) exigua Cooke *in Hedwigia* 14: 83. June 1875. — *Pezizella exigua* (Cke.) Sacc., Syll. Fung. 8: 283. 1889. — *Mollisia exigua* (Cke.) Seaver, North Amer. Cup Fungi (Inop.) 207. 1951.

Apothecia scattered, superficial, disc flat, 200 μ diameter, pink; receptacle smooth discoid, seated on a small base. Excipular cells isodiametric, with thin colourless walls, about 8–12 μ diameter. Asci cylindrical-clavate, flat-topped, not blued by Melzer's reagent, with slender stalks, 8-spored, 35 \times 5 μ ; ascospores elliptic-cylindrical or tapered below, 6–8 \times 1.5 μ ; paraphyses cylindrical with subglobose abruptly swollen heads 4 μ diameter.

On old stems of *Erigeron canadense*, Newfield, New Jersey, Aug. 1873, *Ellis* 1016.

Obviously this is a good *Orbilina* but unfortunately there is already an *Orbilina exigua* Velenovský 1934 and it seems unwise to propose a new name for the species until there is a modern revision of the genus with an adequate treatment of synonymy. It is astonishing that Seaver, who made several ridiculous combinations in *Orbilina*, did not recognise a genuine species of the genus when he saw it but combined the name in *Mollisia*, though he claims to have seen part of the type!

Hymenoscyphus flavo-fuscescens (Bres.) Dennis, *comb. nov.*—Fig. 21

Helotium flavo-fuscescens Bres. *in Broteria* 2: 90. 1903 (basionym).

Apothecia solitary or in small clusters, superficial, disc concave, up to 2 mm diameter, light yellow; receptacle cupulate, smooth, concolorous, seated on a cylindrical stalk up to 1 mm long and 350 μ thick. Flesh soft, composed of closely packed, delicate, thinwalled, hyaline hyphae, 3–4 μ wide; excipulum about 20 μ thick, formed of shortcelled hyphae almost parallel to the surface, 4–7 μ broad, with very thin walls stained red-brown by Melzer's reagent. Asci cylindrical-clavate, 8-spored, 80–100 \times 7 μ , the small pore stained blue by Melzer's reagent; ascospores biseriolate, elliptical or slightly clavate, straight or slightly curved, 11–15(–18) \times 3–3.5(–4) μ , rarely 1-septate; paraphyses cylindrical, obtuse, 2 μ thick.

On bark of *Eucalyptus globulus* in Portugal, Nov. 1902, *Torrend.* Typus in herb. Bresadola, Stockholm.

This may prove not distinct from *Helotium vitigenum* De Not. but on the available evidence it is to be separated by its smaller asci and ascospores.

HELOTIUM GRACILE Cke. & Peck

Helotium gracile Cke. & Peck in Rep. N.Y. St. Mus. 26: 83. 1874. — *Phialea gracilis* (Cke. & Peck) Sacc., Syll. Fung. 8: 265. 1889. — *Hymenoscyphus gracilis* (Cke. & Peck) O. Kuntze, Rev. Gen. Pl. 3 (2): 485. 1898.

White (1942) has already correctly indicated this to be a synonym of the cosmopolitan *H. scutula* (Pers.) Karst. but noted he was unable to find ciliate ascospores in the portion of the type in the Peck herbarium. The portion sent to Cooke and now at Kew yields mature ascospores $19-26 \times 4-5 \mu$, with the typical apical and basal cilia, indistinguishable from those of typical *H. scutula*.

HELOTIUM HUMILE Sacc.—Fig. 22

Helotium humile Sacc. in *Michelia* 2: 78. April 1880.

Apothecia scattered or in small groups, erumpent; disc flat, 0.25–0.3 mm diameter, buff, with a prominent paler margin; receptacle cupulate, sessile, slightly paler than the disc, very minutely pruinose. Excipulum composed of slender parallel hyphae, 3–4 μ wide, with thick hyaline walls, lying at a high angle to the surface and terminating in minute, clavate, thinwalled, smooth, hyaline hairs, $10-12 \times 3 \mu$. Asci clavate, subsessile, apex conical with a small pore blued by Melzer's reagent, $50-65 \times 6-7 \mu$, 8-spored; ascospores biseriata, fusoid, $10-12 \times 2.5-3 \mu$ ($15 \times 2-3 \mu$ Saccardo), nonseptate; paraphyses cylindrical, obtuse, 1.5 μ thick.

On branches of *Genista scoparia*, Normandy, typus in herb. Saccardo.

This is evidently akin to *Helotium herbarum* (Pers. ex Fr.) Fr. but the excipular hyphae seem thicker-walled and less closely septate and the ascospores are nonseptate. The species was also reported on capsules of *Aesculus*, on which normal *H. herbarum* sometimes occurs.

PEZIZELLA HUNGARICA Rehm—Fig. 23

Pezizella hungarica Rehm in *Flora N.S.* 30: 526. 1872.

On rotting stems of Umbelliferae, Kaposvar (Somogy), Hungary, *Lojka*, 12.7.1871, Rehm Ascomyceten 64.

This appears to me to be typical *Dasyscyphus grevillei* (Berk.) Masee.

PEZIZA INCARNATA Cke.

Peziza (Mollisia) incarnata Cke. in *Grevillea* 1: 131. March 1873. — *Mollisia incarnata* (Cke.) Phill., Brit. Discom. 191. 1887. — *Pezizella incarnata* (Cke.) Sacc., Syll. Fung. 8: 285. 1889. — *Hyalinia incarnata* (Cke.) Boud., Hist. Class. Discom. d'Europe 103. 1907.

The typus, on needles of *Pinus silvestris*, *A. Jerdon*, presumably in Roxburghshire, is *Pseudohelotium pineti* (Batsch ex Fr.) Fuck., as already indicated by Nannfeldt (in *Trans. Brit. mycol. Soc.* 20: 195. 1936).

HELOTIUM KARSTENII Roum.—Fig. 24

Helotium karstenii Roum., *Fungi selecti galliaei exsiccati* 65, 1879.

Sur une toile de lin pourrissante, Toulouse, Dec. 1872.

This is an *Orbilina*, with asci $35 \times 3-4 \mu$, knob-headed paraphyses and slender rodshaped ascospores, usually accepted as a synonym of *O. luteo-rubella* (Nyl.) Karst.

HYMENOSCYPHUS LACTEUS (Cke.) O. Kuntze—Fig. 25

Helotium lacteum Cooke in Grevillea 8: 63. Dec. 1879. — *Pezizella lactea* (Cke.) Sacc., Syll. Fung. 8: 280. 1889. — *Hymenoscyphus lacteus* (Cke.) O. Kuntze, Rev. Gen. Pl. 3 (2): 485. 1898.

Apothecia solitary, superficial, disc flat, 3 mm across, margin not prominent, white when fresh, drying isabelline; receptacle saucer-shaped, sessile, smooth, concolorous. Excipulum formed throughout of parallel hyphae with thin hyaline walls, 3–6 μ wide, broader towards the surface. Asci cylindrical-clavate, apex conical, truncated by a broad pore with the plug stained blue by Melzer's reagent, 175 \times 12 μ , 8-spored; ascospores uniseriate, elliptic-fusoid, rounded at the ends, 20–28 \times 5–6 μ , without septa or large oil globules but with a somewhat granular cytoplasm; paraphyses cylindrical, obtuse, 2 μ wide.

On very rotten wood (perhaps charred?), Maungaroa, New Zealand, *Berggren* 387.

The habit, asci and ascospores suggest *H. pateriforme* (Berk.) Cke. but that appears to have a different excipular structure.

Hymenoscyphus ellisii Dennis, *nom. nov.*—Fig. 26

Helotium lacteum Ell. & Ev. in J. Mycol. 4: 56. 1888 (basionym); non Cooke 1879 nec *Hymenoscyphus lacteus* (Cke.) O. Kuntze 1898. — *Dasyscypha lactea* (Ell. & Ev.) Sacc., Syll. Fung. 8: 436. 1889. — *Helotiella lactea* (Ell. & Ev.) Sacc., Syll. Fung. 11: 415. 1895. — *Belonioscypha lactea* (Ell. & Ev.) Seaver, North Amer. Cup Fungi (Inop.) 177. 1951.

Apothecia gregarious, superficial, disc "Milk white", drying yellowish, 0.5 mm diameter, flat; receptacle shallow cupulate on a short slender stalk, concolorous, minutely pruinose. Excipulum in the receptacle formed of parallel hyphae about 3 μ wide, hyaline, lying at a low angle to the surface, their tips running out as short, cylindrical, obtuse, smooth-walled hairs; surface of the stipe covered by a layer about 20 μ thick of small isodiametric cells. Asci slender-clavate, 4-spored, 110–135 \times 7–8 μ , apex conical with a small pore blue in Melzer's reagent; ascospores fusoid, tapered below, 1-septate, 15–18(–22) \times 3–3.5 μ ; paraphyses cylindrical, obtuse, 2 μ thick.

On decorticated wood, Cazenovia, New York, U.S.A., Oct. 1887, *O. F. Cook*, typus in herb. New York Bot. Garden.

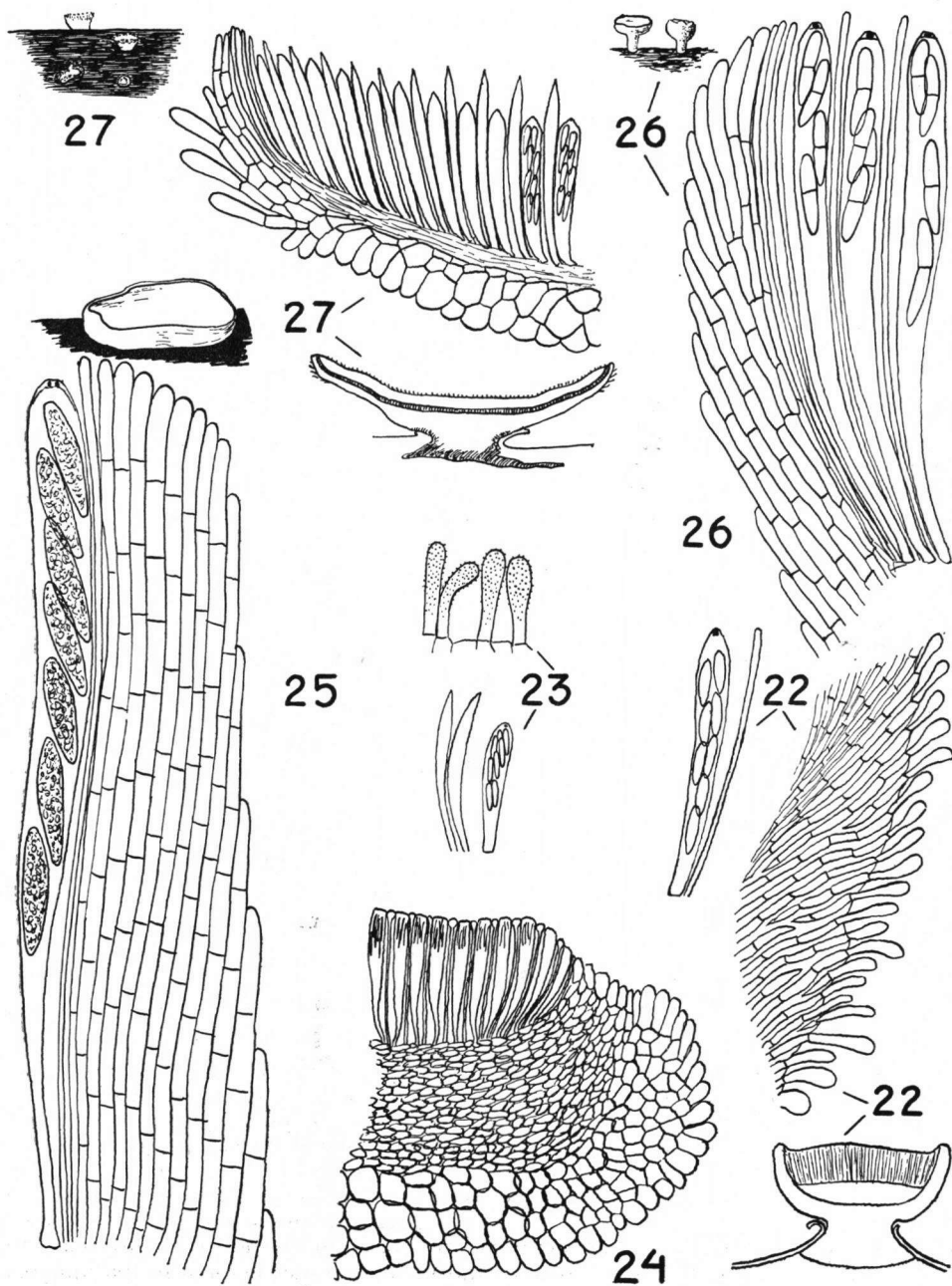
This seems to be a 4-spored analogue of *Helotium parile* (Karst.) Karst. The name *H. lacteum* Ell. & Ev. was published a second time, with the same type, in Proc. Acad. nat. Sci. Philad. 145. April 1893.

Psilachnum lanceolato-paraphysatum (Rehm) Dennis, *comb. nov.*—Fig. 27

Pezizella lanceolato-paraphysata Rehm in Ann. mycol., Berl. 6: 316. Aug. 1908 (basionym). — *Helotium lanceolato-paraphysatum* (Rehm) Seaver, North Amer. Cup Fungi (Inop.) 145. 1951.

EXPLANATION OF FIGURES 22–27

Figs. 22–27. — 22. *Helotium humile*. Diagrammatic section (\times 70), ascus, paraphysis and section of excipulum (\times 660). — 23. *Pezizella hungarica*. Ascus, paraphyses and hairs (\times 660) (Compare with Fig. 1). — 24. *Helotium karstenii*. Section of margin (\times 500). — 25. *Hymenoscyphus lacteus*. Apothecium (\times 7), section of margin (\times 660). — 26. *Hymenoscyphus ellisii*. Apothecia (\times 10), section of margin (\times 660). — 27. *Psilachnum lanceolato-paraphysatum*. Apothecia (\times 6), section of margin (\times 660), diagrammatic section (\times 75), hatched areas stain blue with Melzer's reagent.



Figs. 22-27

Apothecia gregarious, erumpent, sessile, disc concave, up to 0.8 mm diameter, cream coloured; receptacle saucers shaped when moist, becoming cupulate when dry, light brown, with downy white hairs towards the margin. Subhymenium formed of slender agglutinated hyphae which stain blue in Melzer's reagent; excipulum composed of rounded to angular, thinwalled, light brown cells about $7-10 \times 5-7 \mu$, bearing near the margin hyaline, cylindrical, obtuse, 0—1-septate hairs with thin smooth walls, up to about $25 \times 4 \mu$. Asci sessile, cylindrical-clavate, $30 \times 5 \mu$, the pore blued by Melzer's reagent; ascospores biseriata, slender clavate, $6-8 \times 1 \mu$; paraphyses lanceolate, 2—2.5 wide, up to 10μ longer than the asci. An apparently gelatinised or at least agglutinated ring round the base of the apothecium stains blue with iodine.

On dead stems of *Spiraea filipendula*, Lyndonville, New York, 2nd June 1908, typus in herb. Rehm, Stockholm.

Sphagnicola laricina (Ell. & Ev.) Dennis, *comb. nov.*—Fig. 28

Pseudohelotium laricinum Ell. & Ev. in Proc. Acad. nat. Sci. Philad. 349. 1894 (basonym). — *Helotium laricinum* (Ell. & Ev.) Seaver, North Amer. Cup Fungi (Inop.) 139. 1951.

Apothecia scattered, superficial, patellate, disc flat, up to 5 mm diameter, orange, margin evidently toothed when fresh; receptacle smooth, concolorous, soft-fleshed. Excipulum formed of broad thinwalled hyphae, up to 10μ wide, with short-prismatic cells, sheathed in the lower part by a layer of slender interwoven hyphae with more or less gelatinised walls. Asci cylindrical, $120-160 \times 6-9 \mu$, 8-spored, apex obtusely rounded, the pore not blued by Melzer's reagent; ascospores uniseriate, or biseriata above, elliptical, not narrowed below, without guttules, $8-10 \times 4-5 \mu$; paraphyses slender cylindrical, obtuse, 2μ wide.

On a mat of fallen *Larix* needles, Tamarack swamp, Northfield, Michigan, U.S.A., 6. 10. 1893, *L. N. Johnson 657*, in herb. New York Bot. Garden.

The symmetrical ascospores suggest an operculate ascus but I think these are inoperculate. A toothed margin occurs in the type species of *Sphagnicola*, *S. ciliifera* (Karst.) Vel., which has slightly larger ascospores and lacks the orange pigment. At first sight *S. laricina* recalls *Helotium epiphyllum* (Pers. ex Fr.) Fr. but the ascospores are very different; the otherwise rather similar *Hel. citrinum* subsp. *turfaceum* Karst. has ascospores twice the size. The gelatinised stratum at the base of the apothecium is less conspicuous in the present species than in *S. ciliifera* and in this as in excipular structure it seems transitional to *Discinella* Boud. so that it may eventually prove impracticable to separate these two genera.

Chloroscypha limonicolor (Bres.) Dennis, *comb. nov.*

Helotium limonicolor Bres., Fungi tridentini 2: 81. Aug. 1898 (basonym).

Apothecia scattered, superficial, light yellow, drying yellowish brown, disc concave up to 2 mm diameter; receptacle cupulate, concolorous, smooth, with a short cylindrical stalk. Flesh soft, of thinwalled nongelatinised hyphae; excipulum formed of closely packed hyphae about 3μ wide, almost parallel to the surface, with slightly thickened walls which remain hyaline in cotton blue and then give a slightly phialeoid aspect to the longitudinal section. The three outer layers of hyphae are brownish, the remainder subhyaline. Asci cylindrical-clavate, $110 \times 13 \mu$, 8-spored, the pore blued by Melzer's reagent; ascospores biseriata, fusoid or slightly clavate but pointed at each end, with 2 guttules and finely granular cytoplasm; paraphyses cylindrical, obtuse, 2μ thick, with yellowish contents.

On dead leaves of *Thuja orientalis*, Tyrol, June 1896, typus in herb. Bresadola, Stockholm.

There seems nothing but colour to separate this from *Chloroscypha jacksoni* Seaver (in *Mycologia* 23: 249. 1931) described as "yellowish with a greenish tint", on *Thuja occidentalis* in Canada and I suspect they are the same.

Hymenoscyphus limonium (Cke. & Peck) Dennis, *comb. nov.*—Fig. 29

Helotium limonium Cke. & Peck in Rep. N.Y. St. Mus. 26: 83. 1874 (basonym). — *Calycina limonium* (Cke. & Peck) O. Kuntze, Rev. Gen. Pl. 3 (2): 448. 1898.

On herbaceous stem, Center, New York, October.

White (1942) has fully redescribed the species but as Seaver (1951) has nevertheless subsequently cited it in synonymy under *Helotium cyathoideum* (Bull. ex Fr.) Karst. it seems desirable to record that the type has an excipulum of parallel thinwalled hyphae, 4 μ wide, lying at a low angle to the surface. It bears no resemblance to *H. cyathoideum* nor is it a *Phialea*. The ascus pore is blued by Melzer's reagent.

ALLOPHYLARIA MACROSPORA (Kirschst. apud Jaap) Nannf.

Phialea macrospora Kirschst. apud Jaap in Verh. bot. Ver. Brandenburg 64: 12. 1922. — *Allophylaria macrospora* (Kirschst. apud Jaap) Nannf. in Nova Acta Soc. Sci. upsal., ser. 4, 8: 291. 1932.

In 1869 Karsten published a full description of a minute discomycete he called *Peziza sublicoides*, found in October on dead stems of *Artemisia vulgaris* at Mustiala in Finland. This was one of the foundation species of his subgenus *Allophylaria* and was subsequently selected as lectotype of the genus *Allophylaria* (Karst.) Karst. by Nannfeldt. In 1871 Karsten reprinted the diagnosis and recorded the additional hosts *Anthriscus silvestris* (as *Cerefolium*) and *Chamaenerium angustifolium*.

When, therefore, Mr. Bramley forwarded me in 1956 a tiny *Allophylaria* on dead *Chamaenerium* stems from Yorkshire it seemed natural to accept it as Karsten's species. There were, however, small differences between this and Karsten's type collection on *Artemisia* which led me to refrain from publishing the record. He has now forwarded a further abundant collection on the same substrate which shows these differences to be constant. The *Chamaenerium* fungus agrees more closely with the nearly related *Phialea macrospora*, Kirschstein, described from *Populus canadensis* twigs in north Germany. Nannfeldt, who collected Kirschstein's species on *Populus tremula* in Sweden, transferred it to *Allophylaria*. The salient characters of these attractive fungi are summarised below:

	<i>Peziza sublicoides</i>	Yorkshire fungus	<i>Phialea macrospora</i>
Apothecial dimensions	0.3 mm tall 0.1–0.2 mm wide	0.5 mm tall 0.5 mm wide	0.5 mm tall 0.25–0.4 mm wide
Asci	160–170 × 11–15 μ	125 × 11–14 μ	95–125 × 9–10 μ
Ascospores	15–26 × 6–7 μ	17–24 × 4–5 μ	18–22 × 4–5 μ
Ascus pore reaction to iodine	—	+	+

The differences are seen to lie mainly in the length of the asci and the width of the ascospores, it is probably unwise to lay stress on the apparent difference in pore reaction until that of *P. sublicoides* has been confirmed on fresh collections. In all three characters, however, the Yorkshire fungus agrees better with *A. macrospora*, having distinctly shorter asci and narrower ascospores than typical *P. sublicoides*. In spite of the difference in substrate, therefore, it seems better to adopt for this fungus on *Chamaenerium* in England the name *Allophylaria macrospora* (Kirschst.) Nannfeldt.

On *Chamaenerium angustifolium*, Kingthorpe, Pickering, Yorkshire, 13.11.1955; 1.11.1961, W. G. Bramley.

HELOTIUM MACULOSUM Ellis & Martin—Fig. 30

Helotium maculosum Ellis & Martin in Amer. Nat. 17: 1284. Dec. 1883. — *Calycina maculosa* (Ellis & Martin) O. Kuntze, Rev. Gen. Pl. 3 (2): 448. 1898. — *Erinellina maculosa* (Ellis & Martin) Seaver, North Amer. Cup Fungi (Inop.) 293. 1951.

Apothecia scattered, superficial, about 200 μ diameter, disc flat, fawn; receptacle saucer-shaped, sessile on a broad base, dark brown. The margin is fringed with subhyaline, thinwalled, cylindrical to pointed hairs, about $20 \times 2.5 \mu$, which cohere to form small triangular teeth; excipular structure poorly preserved but apparently of small, thinwalled, prismatic cells. Asci cylindrical-clavate, sessile, 8-spored, $50 \times 11 \mu$ ($55 \times 12 \mu$ Ellis), iodine reaction doubtful; ascospores uniseriate to biseriate, narrowly elliptical, hyaline, 3-septate, $16-20 \times 3-4 \mu$ (-5μ Ellis); paraphyses cylindrical, obtuse, 2-3 μ wide.

On dead patches in living leaves of *Persea palustris*, Florida, ex herb. Ellis.

The basal, brown, bristly hairs referred to in the diagnosis appear to be extraneous to the apothecia; a number of more or less erect, dark brown, septate hyphae are commonly associated with them, which may be conidiophores, though no conidia have been seen on them. The hairs hardly seem those of a *Hyaloscypha* and the species may belong rather in *Calycellina* but the material available is not well preserved and study of fresh specimens would be desirable before making a transfer.

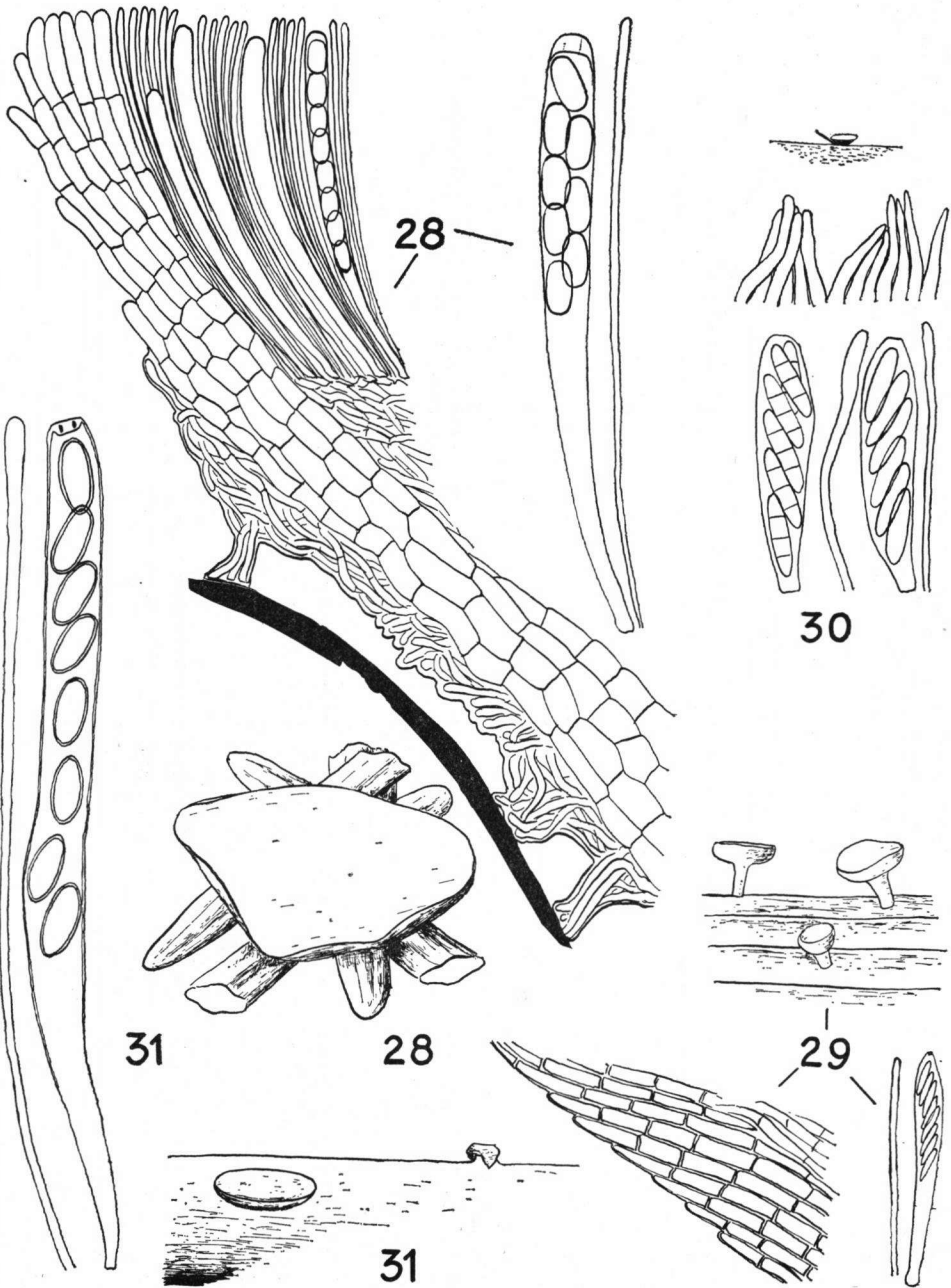
Rutstroemia maritima (Rob. apud Desm.) Dennis, comb. nov.—Fig. 31

Peziza maritima Roberge apud Desmazières in Ann. Sci. nat. (Bot.) ser. 3, 3: 366. 1845 (basonym). — *Helotium maritimum* (Rob. apud Desm.) Sacc., Syll. Fung. 8: 234. 1889.

Apothecia solitary or occasionally up to three in a cluster, erumpent; disc slightly convex when soaked up, without a rim, about 1 mm across, cinnamon; receptacle shallow cupulate, concolorous or with a darker margin, very soft, seated on a short stem-like base, not more than 0.3 mm high according to Desmazières. Excipular cells short prismatic, with thin brown walls, passing into parallel brown hyphae

EXPLANATION OF FIGURES 28-31

Figs. 28-31. — 28. *Sphagnicola laricina*. Apothecium ($\times 20$), section of margin ($\times 400$), ascus and paraphysis ($\times 660$). — 29. *Hymenoscyphus limonium*. Habit sketch ($\times 10$), ascus, paraphysis and portion of excipulum ($\times 660$). — 30. *Helotium maculosum*. Apothecium ($\times 20$), marginal hyphae, asci and paraphyses ($\times 660$). — 31. *Rutstroemia maritima*. Apothecia on marram leaf ($\times 15$), ascus and paraphysis ($\times 660$).



Figs. 28-31

at the margin. Asci cylindric-clavate, $165 \times 13 \mu$, with broad flat top and pore blued by iodine, 8-spored; ascospores elliptical, $14-17 \times 5.5-7 \mu$, nonseptate and not budding in the ascus; paraphyses cylindrical, obtuse, slightly enlarged to 4μ thick upwards.

On dead leaves of *Psamma arenaria*, usually erumpent from the outer face, dunes of Lyon-sur-mer, Calvados, Desmazières Crypt. France 1418.

This seems congeneric with but probably distinct from *Rutstroemia calopus* (Fr.) Rehm.

Hymenoscyphus montaniensis (Ell. & And.) Dennis, *comb. nov.*—Fig. 32

Helotium montaniense Ellis & Anderson in Bot. Gaz. 16: 45. 1891 (basionym). — *Calycina montaniense* (Ell. & And.) O. Kuntze, Rev. Gen. Pl. 3 (2): 448. 1898.

Apothecia scattered, superficial, disc concave, "pale flesh colour", drying yellowish brown, 1-1.5 mm across; receptacle cupulate on a stout stem-like base or almost sessile, smooth, margin prominent, obtuse, even, often lobed or undulating. Excipulum composed of slender parallel hyphae, $2-4 \mu$ wide, lying at a low angle to the surface, the outer layers in the lower part of the receptacle formed of short prismatic cells. Asci clavate, 8-spored, $65-85 \times 7-9 \mu$, pore blued by Melzer's reagent; ascospores uniseriate or becoming biseriate above, ellipsoidal, with small polar guttules, nonseptate, $8-10 \times 3.5-4.5 \mu$; paraphyses cylindrical, obtuse, 2μ thick.

On wet sticks by a spring, Sand Coulee, Cascade Co., Montana, 25th May 1889, F. W. Anderson 490, typus in herb. New York Bot. Garden.

Phaeohelotium monticola (Berk.) Dennis, *comb. nov.*—Fig. 33

Helotium monticola Berk. in Grevillea 4: 1. Sept. 1875 (basionym).

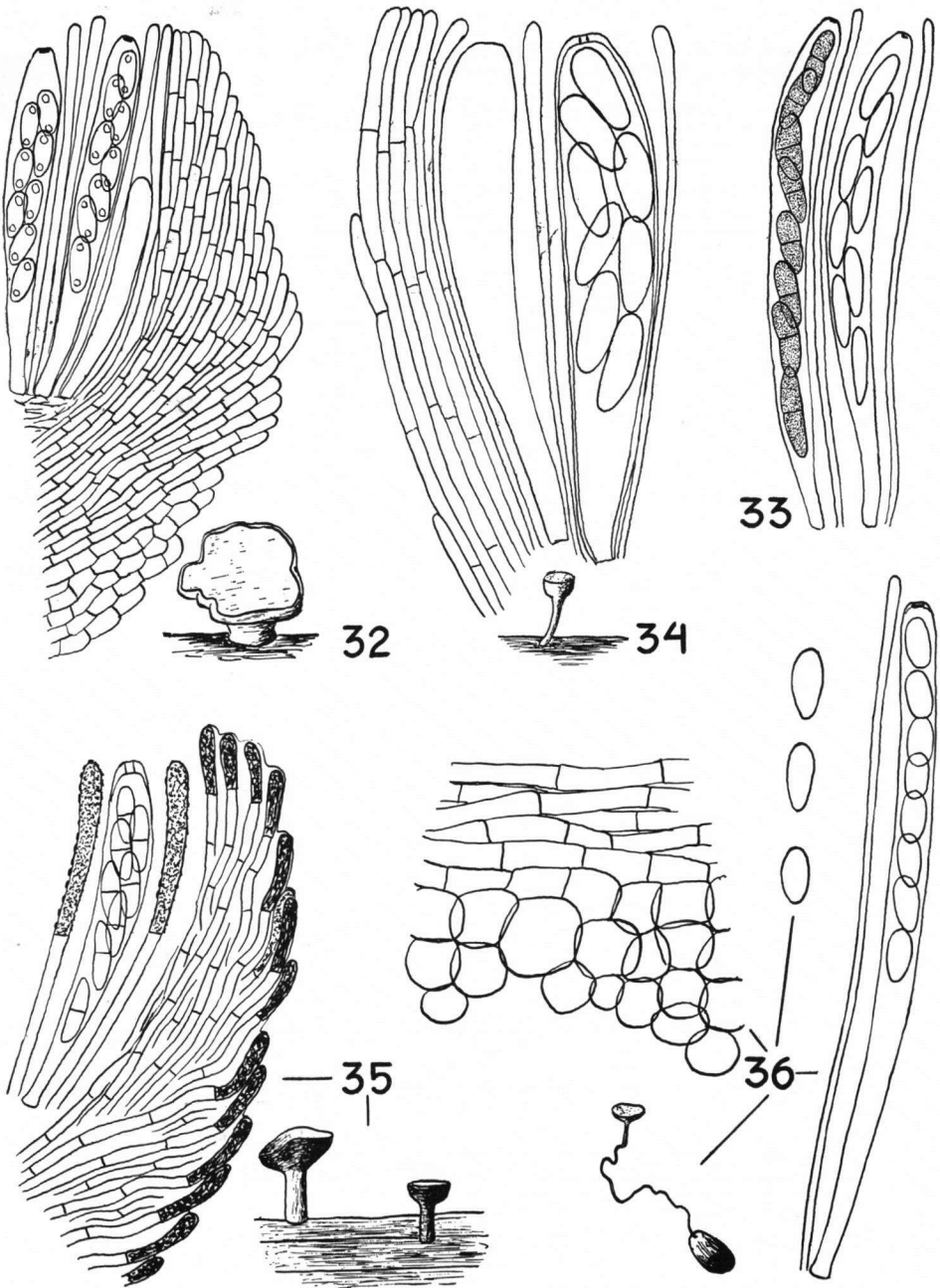
Apothecia solitary or in small clusters, disc convex when moist, slightly concave or dimpled when dry, dingy yellow, about 1 mm diameter; receptacle sessile, shallow cupulate, concolorous, smooth, soft-fleshed. Excipulum composed of hyphae at a high angle to the surface, broken up into short prismatic to rounded cells with thin hyaline walls. Asci narrowly cylindric-clavate, the pore slightly blued by Melzer's reagent, $95-100 \times 7-10 \mu$, 8-spored; ascospores biseriate, elliptic-cylindric or slightly tapered below, long remaining hyaline and nonseptate but eventually becoming 1-septate and brown-walled, $12-18 \times 4-5 \mu$; paraphyses cylindrical, obtuse, about 2μ thick.

On decorticated wood, mountains of North Carolina, 22.7.1856, M. A. Curtis 4471.

Berkeley cited the number in error as 470 but Curtis 470 is an Agaric. Obviously this is an earlier name for *Phaeohelotium flavum* Kanouse (see Kew Bull. 1958: 343). Masee [in J. Linn. Soc. (Bot.) 30: 474. 1896] commented "Allied to *Helotium citrinum*, distinguished by the different structure of the ascophore and the 2-seriate

EXPLANATION OF FIGURES 32-36

Figs. 32-36. — 32. *Hymenoscyphus montaniensis*. Apothecium ($\times 20$), section of margin ($\times 660$). — 33. *Phaeohelotium monticola*. Paraphyses and asci with coloured and colourless ascospores from the same hymenium ($\times 660$). — 34. *Allophylaria myricariae*. Apothecium ($\times 20$), section of margin ($\times 660$). — 35. *Phialea nigrescens*. Apothecia ($\times 10$), section of margin ($\times 660$). — 36. *Ciboria nyssogeta*. Apothecium ($\times 1$), details ($\times 660$).



Figs. 32-36

larger spores" but he did not note that the spores turned brown. The following collections also belong here:

On wood, Windsor Great Park, Berkshire, England, 3.10.1962, *D. A. Reid*.
On wood of *Parrotia persica*, Lenkoran district, Azerbaijan S.S.R., 15.10.1962, *Raitvir 43224*.

Allophylaria myricariae (Keissler) Dennis, *comb. nov.*—Fig. 34

Phialea myricariae Keissler in *Öst. bot. Z.* 73: 126. 1924 (basionym).

Apothecia scattered, superficial, disc light brown, flat, up to 0.2 mm wide; receptacle cupulate, smooth, concolorous, seated on a rather long, slender, often darker stalk. Excipulum composed of slender, parallel, thinwalled, septate, almost hyaline hyphae, 3 μ wide. Asci clavate, sessile, 8-spored, 105–120 \times 18–20 μ , pore outlined blue in Melzer's reagent; ascospores elliptic-cylindric to ovoid, nonseptate, without guttules, 18–22 \times 6–7 μ ; paraphyses cylindrical, slightly enlarged to 5 μ at the rounded tip.

3750 m, on dead branches of *Myricaria rosea*, Doker La, 28°15', Tibetan border of Yunnan, 16.9.1915, *Handel Mazzetti 1492*, issued from Vienna as *Iter Sinense* 8034.

Allophylaria is somewhat doubtfully separable from *Pezizella* on a basis of its large asci and ascospores but as long as it can be maintained this species clearly will belong in it rather than in *Hymenoscyphus* or *Pezizella*. The structure is not that of a *Phialea* in the restricted sense of von Höhnel.

Phialea nigrescens (Cke.) Dennis, *comb. nov.*—Fig. 35

Peziza nigrescens Cooke in *Bull. Buffalo Soc. nat. Sci* 2: 295. March 1875; in *Hedwigia* 14: 83. June 1875 (basionym). — *Helotium nigrescens* (Cke.) Rehm in *Ber. naturh. Ver. Augsburg* 26: 77. 1881.

Apothecia scattered, superficial, disc concave, gray, 0.5 mm diameter; receptacle cupulate, black, smooth, seated on a cylindrical, gray to dark brown, smooth stalk. Excipulum composed of slender, parallel, septate hyphae, embedded in a gelatinous matrix, the terminal cells coated by a brown incrustation to give the dark colour to the surface. Asci clavate, 60–73 \times 9 μ , 8-spored, pore not blued by Melzer's reagent; ascospores biserial, elliptic-fusoid or inequilateral, 13–15 \times 3 μ , 1-septate; paraphyses rather stout, cylindrical, slightly enlarged upwards to 4 μ diameter, apical cell coated by a dark brown incrustation.

On stems of *Erigeron*, Newfield, New Jersey, Aug. 1873, *Ellis 1022*.

PEZIZA NYSSAEGENA Ell.—Fig. 36

Peziza nysaegena Ellis in *Bull. Torrey bot. Cl.* 8: 73. 1881. — *Ciboria nyssogena* (Ell.) Sacc., *Syll. Fung.* 8: 207. 1889. — *Sclerotinia nysaegena* (Ell.) Rehm in *Ann. mycol., Berl.* 4, 338. 1906.

Growing from old drupes of *Nyssa multiflora*, buried under decaying leaves in muddy places, Newfield, New Jersey, Sept.—Oct. 1879, typus in herb. New York Bot. Garden and issued as North American Fungi 389.

There is no sclerotium, the excipulum is composed of globose, thinwalled cells,

8–15 μ diameter and the fungus appears to be a good *Ciboria*, though not listed as such by Whetzel (1945). The name *Helotium nyssogenum* Ell., printed in error in synonymy by Saccardo, seems not to have been validly published.

HELOTIUM NYSSICOLA Seaver

Helotium nyssicola Seaver in *Mycologia* 30: 79. 1938.

On seeds of *Nyssa sylvatica*, New York Bot. Garden, 22.9.1930.

Seaver commented that this resembled *Hel. fructigenum* (Bull. ex Mérat) Fuck. but differed in habitat and in its slightly larger ascospores. The ascospores measure 15–20 \times 3–4.5 μ , are clavate but not beaked or ciliate and become 1-septate with age whereas those of *Hel. fructigenum* in Europe measure 13–21 \times 3–4 μ and I see nothing to separate the two fungi.

PEZIZA OENOTHERAE Cke. & Ell.—Fig. 37

Peziza (Mollisia) oenotherae Cooke & Ellis in *Grevillea* 6: 90. March 1878. — *Pezizella oenotherae* (Cke. & Ell.) Sacc., *Syll. Fung.* 8: 278. 1889. — *Helotium oenotherae* (Cke. & Ell.) Höhn. in *Mitt. bot. Inst. tech. Hochsch. Wien* 3: 105. 1926. — *Discohainesia oenotherae* (Cke. & Ell.) Nannf. in *Nova Acta Soc. Sci. upsal.*, ser. 4, 8 (2): 88. 1932. — *Mollisia oenotherae* (Cke. & Ell.) Seaver, *North Amer. Cup Fungi (Inop.)* 211. 1951.

Apothecia scattered, erumpent from the host epidermis, associated with a *Hainesia* conidial state, disc convex when moist, up to 1 mm diameter, white when fresh, pale ochraceous when dried; receptacle cupulate to discoid, with a short stem-like base, smooth, concolorous. Excipulum composed of isodiametric, thinwalled, subhyaline cells up to 12 μ diameter, passing into short parallel hyphae at the margin. Asci cylindric-clavate, apex conical but with the pore not blued by Melzer's reagent, 70 \times 5–6 μ , 8-spored; ascospores biseriata, clavate, 9–11 \times 2–2.5 μ ; paraphyses filiform, branched, 1 μ thick, not enlarged at the tip.

On *Oenothera*, Newfield, New Jersey, *J. B. Ellis* 2681.

This is the type species of *Discohainesia* and, though Dermateaceous, is clearly separated from *Mollisia* by its slender branched paraphyses, iodine-negative asci, lack of olive pigment and habit as well as by the peculiar conidial state, *Hainesia lythri* (Desm.) Höhn. The latter has been fully described by Shear & Dodge (in *Mycologia* 13: 135–170. 1921), according to whom the apothecia occur commonly on old leaves of *Castanea*, *Gaura*, *Prunus*, *Rubus*, *Salix* and *Steironema* as well as *Oenothera* and the conidial state also on *Acer*, *Ampelopsis*, *Cercis*, *Cornus*, *Duchesnia*, *Epilobium*, *Eucalyptus*, *Fragaria*, *Gaultheria*, *Geranium*, *Hicoria*, *Jambosa*, *Lythrum*, *Nyssa*, *Pelargonium*, *Populus*, *Potentilla*, *Quercus*, *Rhus*, *Ribes*, *Rosa*, *Smilax*, *Ulmus*, *Vaccinium* and *Vitis*.

Allophylaria ogrensis (Kirschst.) Dennis, *comb. nov.*—Fig. 38

Poculopsis ogrensis Kirschstein in *Ann. mycol. Berl.* 33: 204. 1935 (basionym).

I have not seen the type but the following collection agrees so closely with Kirschstein's description, apart from having slightly larger ascospores, that I feel justified in using the name for it.

Apothecia scattered, erumpent, disc flat, less than 500 μ across, yellow when fresh, drying dark brown; receptacle cupulate on a short cylindrical stalk, smooth, concolorous. Excipulum composed of parallel hyphae, 3–4 μ wide. Asci clavate, 100–107 \times 12–14 μ , subsessile, 8-spored, apex flattened, the pore outlined blue in Melzer's reagent; ascospores biseriate, elliptical, 16–21 \times 6–7.5 μ with two large guttules; paraphyses cylindrical, enlarged to 3 μ wide at the rounded tip.

On dead leaves of *Lycopodium clavatum*, in a bog near the saeter Nystolen, c. 1000 m, between Hallingdal and Aurdal, Buskerud fylke, Norway, 3. 8. 1956.

Presumably *Helotium fulvum* Boud. (*in* Bull. Soc. mycol. France 13: 16. 1897), on a moss, is something similar, though with much longer asci. The very soft texture and broad elliptical ascospores suggest affinity with the Ciborioideae but there is no sclerotium and no blackening of the substrate.

PEZIZA PASTINACAE Schw.

Peziza pastinacae Schwein. *in* Trans. Amer. phil. Soc. N.S. 4: 176. 1832. — *Pezizella pastinacae* (Schw.) Sacc., Syll. Fung. 8: 290. 1889.

The fragment sent under this name by Schweinitz to Berkeley bears a single apothecium, externally indistinguishable from those of *Pezizella albotincta* Rehm as distributed in Sydow, Mycotheca germanica 127. It yields 8-spored asci, 100 \times 7 μ , with the pore blued by Melzer's reagent and containing biguttulate, straight or slightly curved ascospores, 12–15 \times 2 μ . The paraphyses are obtusely cylindrical, 2 μ thick and the excipular hyphae hyaline, with short prismatic cells about 5–9 \times 3 μ . Von Hönel held that *P. albotincta* was but a state of *Hel. herbarum* and so, I think, is *P. pastinacae*, which Schweinitz himself annotated "Affinis *P. herbarum*".

PHIALEA PHAEOCONIA Fairman—Fig. 39

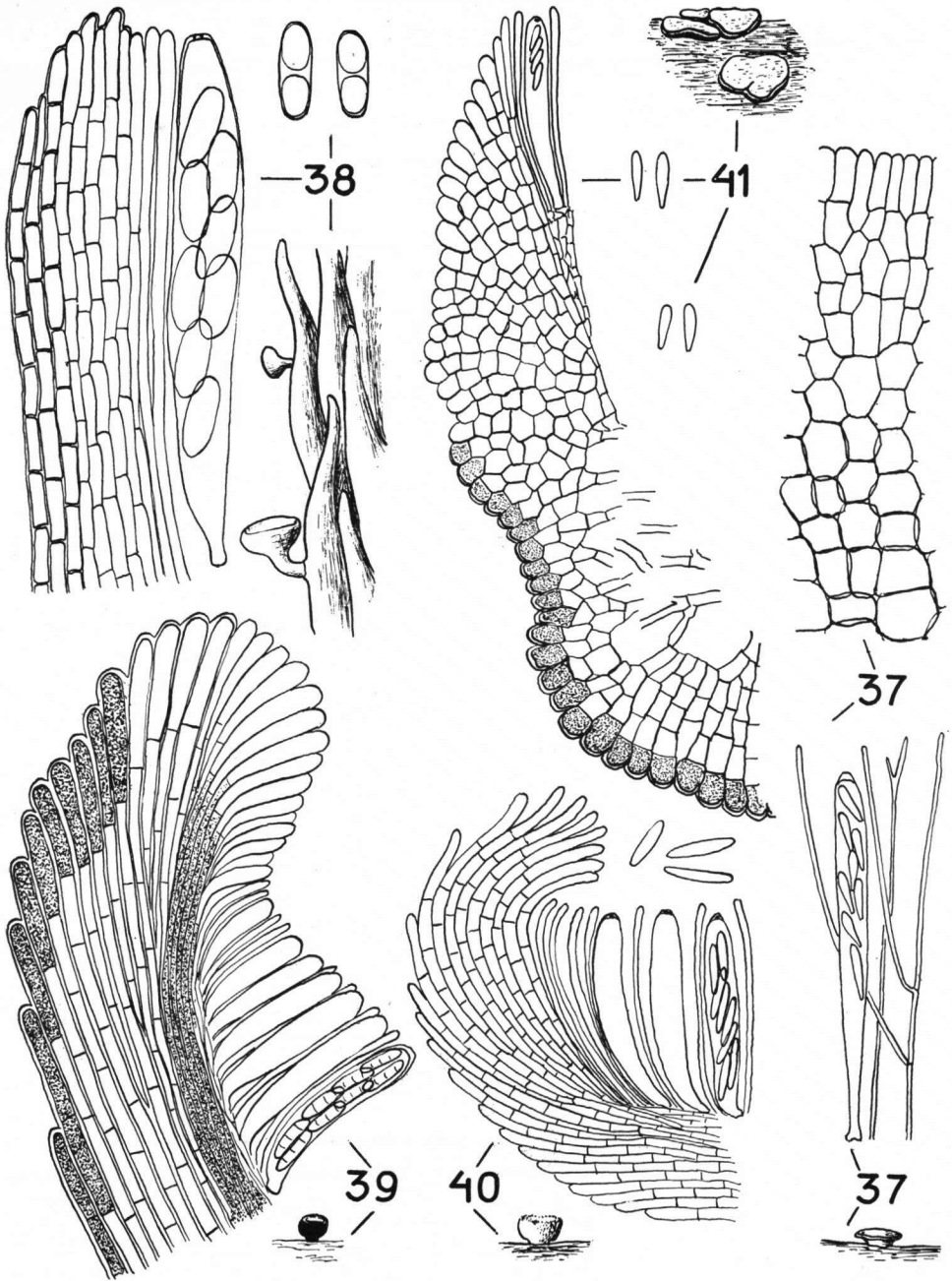
Phialea phaeoconia Fairman *in* Ann. mycol., Berl. 9: 151. 1911. — *Helotium phaeoconium* (Fairman) Seaver, North Amer. Cup Fungi (Inop.) 129. 1951.

The minute black apothecia are erumpent from the under side of faded leaves, cupulate 250 μ diameter, smooth, with short, stout, mainly immersed stalk and light gray incurved margin. The excipulum is typically phialeoid, formed of parallel hyphae, with glassy walls and thin cross septa, the outer cells dark brown with finely granular pigment and there is an equally dark brown zone of slender hyphae forming the hypothecium. Asci with pore blued by Melzer's reagent, 30–40 \times 8 μ (50 \times 10 μ Fairman); ascospores elliptic-cylindric, 10–11 \times 2.5 μ (10–13 \times 3–4 μ Fairman), now appearing 3-septate but described as continuous when fresh; paraphyses cylindrical, 1.5 μ thick, obtuse.

On *Antennaria plantaginifolia*, Lyndonville, New York, 12. 5. 1910, typus in herb. Cornell University.

EXPLANATION OF FIGURES 37–41

Figs. 37–41. — 37. *Discohainesia oenotherae*. Apothecia (\times 7), excipulum in surface view, ascus and paraphyses (\times 660). — 38. *Allophylaria ogrensis*. Habit sketch (\times 20), section of margin and free ascospores (\times 660). — 39. *Phialea phaeoconia*. Apothecium (\times 15), section of margin (\times 660). — 40. *Pezizella phymatodes*. Apothecium (\times 15), section of margin and free ascospores (\times 660). — 41. *Mollisia propinqua*. Habit sketch (\times 15), section of margin (\times 660).



Figs. 37-41

Because of the ultimate septation of the ascospores this will key to *Belonioscypha* but I am not enthusiastic about genera based solely on ascospore septation and am content to leave it in *Phialea* for the present.

PEZIZA PHYMATODES Phill.—Fig. 40

Peziza (Mollisia) phymatodes Phillips in Grevillea 5: 117. March 1877. — *Pezizella phymatodes* (Phill.) Sacc., Syll. Fung. 8: 285. 1889. — *Orbilina phymatodes* (Phill.) Seaver, North Amer. Cup Fungi (Inop.) 156. 1951.

Apothecia scattered, superficial, disc concave, with incurved margin; receptacle cupshaped, sessile on a small base, 300–400 μ diameter, “reddish flesh colour”, smooth or slightly pruinose at the margin, soft-fleshed. Excipulum formed of slender parallel hyphae, 2–3 μ wide, with thin walls, their tips sometimes slightly protruding. Asci cylindric-clavate, apex conical, with small pore blued by Melzer’s reagent, 45 \times 7 μ , 8-spored; ascospores biseriata, elliptic-cylindric, 11–15 \times 2–3 μ ; paraphyses cylindrical, obtuse, 2 μ wide.

On “reeds”, apparently some soft swamp grass, not *Phragmites*, Blue Canon, Sierra Nevada, California, *Harkness* 437.

The structure is consistent with Saccardo’s relegation of the species to *Pezizella* and it may be left there for the present. The transfer to *Orbilina* was ridiculous since the species exhibits no character of the genus, beyond being a discoid ascomycete.

HELOTIUM PRASINUM Masee

Helotium prasinum Masee in Kew Bulletin 1901: 159. 1901.

On dead wood, Tasmania, *Rodway* 565.

This proves to be an older name for *H. novae-zelandiae* Dennis. It is noteworthy that, though Masee found “asci . . . apice iodo haud tincti” and I made a similar observation with the type of *H. novae-zelandiae*, the asci of *Rodway* 565 now give a distinct blue reaction with Melzer’s reagent in the inner portion of the pore plug.

Mollisia propinqua (Sacc. & Ell.) Dennis, *comb. nov.*—Fig. 41

Helotium propinquum Saccardo & Ellis in *Michelia* 2: 572. Dec. 1882 (basonym). — *Calycina propinqua* (Sacc. & Ell.) O. Kuntze, *Rev. Gen. Pl.* 3 (2): 448. 1898.

Apothecia solitary or in small clusters, erumpent, becoming superficial; disc flat, 0.5–0.75 mm across, pallid, drying ochraceous; receptacle patellate, sessile on a small base, without a subiculum, the upper half pallid, the lower half blackish-brown, smooth. Excipulum composed of short prismatic to isodiametric cells in rows at right angles to the surface, passing into a few parallel hyphae at the margin, walls thin, pale, the surface layer of cells over the lower half of the receptacle filled with dark brown matter. Asci clavate, 55 \times 6–7 μ , pore deep blue in Melzer’s reagent; ascospores slender clavate, nonseptate, 9–12 \times 2–2.5 μ ; paraphyses cylindrical, slightly enlarged to 3 μ at the obtuse tip.

On dead twigs of *Cornus*, Pennsylvania, *Ellis* 3545, typus in herb. New York Bot. Garden.

Mollisia pullata (Ger. apud Cke.) Dennis, *comb. nov.*—Fig. 42

Helotium pullatum Gerard apud Cooke in Bull. Buffalo Soc. nat. Sci. 2: 298. 1875 (basionym).

Apothecia scattered, superficial, disc concave, 0.5 to 2 mm diameter, with a broad low rim, "dingy ochre when fresh", drying dark brown, receptacle cupulate, sessile on a short stout base, smooth, soft. Excipulum composed of parallel short-celled hyphae lying at a high angle to the surface, with thin brown walls, more distinctly pseudoparenchymatous on the under side of the cup, with an outer zone of about 4–5 layers of isodiametric cells, 10–15 μ diameter, separated from the flesh of paler compact hyphae by a darker zone about 3 cells thick of smaller somewhat flattened cells. Asci cylindrical-clavate, 110 \times 6 μ , apex conical, truncated by a pore deeply blued by Melzer's reagent, 8-spored; ascospores elliptic-cylindric or tapered below, 7–11 \times 2.5 μ , nonseptate; paraphyses cylindrical, slightly enlarged to 2.5 μ at the rounded tip.

On dead *Vitis* in damp places, New York, Gerard 42.

This is nothing like an *Orbilia*, as suggested by Seaver (1951), nor a *Hymenoscyphus*, but it is not a typical *Mollisia* either and I only refer it there for want of a better idea. *Orbiliopsis* Höhn., to which it might be assigned, is unfortunately an invalid name.

Calycellina pulviscula (Cke.) Dennis, *comb. nov.*—Fig. 43

Peziza (*Mollisia*) *pulviscula* Cooke in Hedwigia 14: 84. June 1875 (basionym). — *Pezizella pulviscula* (Cke.) Sacc., Syll. Fung. 8: 278. 1889. — *Orbilia pulviscula* (Cke.) Seaver, North Amer. Cup Fungi (Inop.) 160. 1951.

Scattered, superficial, disc flat with a low minutely denticulate rim, 300–400 μ diameter, light yellow; receptacle cupulate, concolorous, sessile on a small base with a brown basal ring. Excipulum composed of rows of short prismatic cells, the basal layer brown-walled, the remainder hyaline, passing into parallel hyphae 20 \times 2.5–3 μ at the margin. Asci cylindrical-clavate, apex conical with a very small pore probably blued by Melzer's reagent, 33 \times 4 μ , 8-spored; ascospores rod-shaped, straight or curved, 5–6 \times 0.5 μ ; paraphyses cylindrical, obtuse, 2–2.5 μ thick.

On stems of *Phytolacca*, Poughkeepsie, New York, Gerard 33.

The small rod-shaped ascospores certainly suggest an *Orbilia* but the conical-tipped asci and simple cylindrical paraphyses preclude the possibility of referring the species to that genus. The anatomy seems to suggest *Calycellina* rather than *Hyalinia*.

PEZIZA REGALIS Cke. & Ell.

Peziza (*Mollisia*) *regalis* Cooke & Ellis in Grevillea 6: 91. March 1878. — *Pezizella regalis* (Cke. & Ell.) Sacc., Syll. Fung. 8: 284. 1889.

On apple bark, Newfield, New Jersey, Ellis 2778.

This seems to be an *Orbilia* and Masee has annotated it as a synonym of *Peziza cruenta* Schwein. = *Orbilia cruenta* (Schw.) Seaver. I do not see ripe ascospores and am not prepared to comment on the synonymy.

HELOTIUM RHIZICOLA Seaver

Helotium rhizicola Seaver, North Amer. Cup Fungi (Inop.) 143. 1951.

Apothecia scattered, superficial, disc 1–2 mm diameter, "yellowish or with a tinge of salmon when moist", drying ochraceous to brownish and concave with a low rim;

receptacle shallow cupulate, light yellow, smooth, seated on a slender, smooth, cylindrical stalk. Excipular hyphae thinwalled, hyaline, 5–6 μ wide, lying at a rather high angle to the surface, narrower at the margin. Asci narrowly cylindrical, about $100 \times 6 \mu$, 8-spored, the pore only feebly blued by Melzer's reagent; ascospores uniseriate, subcylindric, tapered below, nonseptate, $8-10 \times 2-2.5 \mu$; paraphyses cylindrical, obtuse, 2–2.5 μ wide.

On exposed roots of *Collinsonia canadensis*, New York Botanical Garden, Sept. 1930.

It should be noted that in the place cited Seaver gave a detailed English description followed by a brief Latin diagnosis which does not refer to the present species "Apotheciis . . . extus pilis brunneis vestitis . . . sporis . . . $4 \times 13-15 \mu$. . ." Evidently the diagnosis of this species and that of *Lachnella populina* Seaver on p. 270 were carelessly transposed when his manuscript went to press. Apparently the fact that the published Latin diagnosis does not apply to the species does not invalidate the name. However, *H. rhizicola* appears to me doubtfully distinct from *H. robustius* (Karst.) Karst., which also characteristically develops pinkish tints.

HELOTIUM RUBENS Sacc. & Roum.

Helotium rubens Sacc. & Roum. in Rev. Mycol. 6: 28. 1884.

The Kew example contains only a *Tapesia* with asci J +, $65 \times 6 \mu$ and straight, or slightly curved, cylindrical-fusoid ascospores $11-12 \times 2 \mu$. It seems doubtful if this was the fungus described.

Hymenoscyphus rufocorneus (Berk. & Br.) Dennis, *comb. nov.*—Fig. 44

Helotium rufocorneum Berk. & Br. in J. Linn. Soc. (Bot.) 14: 108. 1873 (basionym).

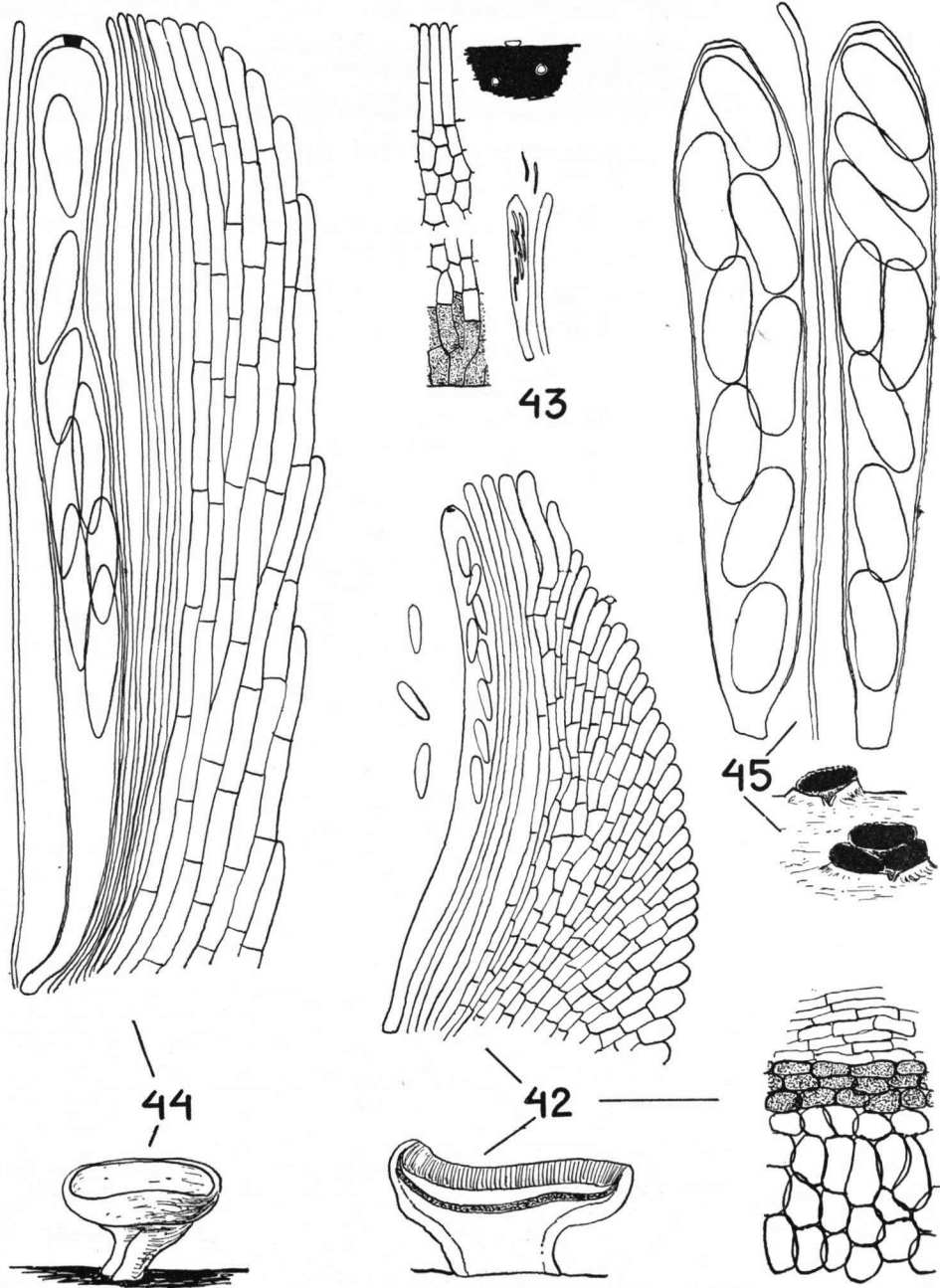
Apothecia scattered, superficial, disc concave, about 2 mm diameter, drying dark reddish brown, with a low raised margin; receptacle cupulate, with a cylindrical stalk about as long as the diameter of the disc, smooth, wrinkling when dry, yellowish-brown. Excipulum composed of parallel hyphae lying at a very low angle to the surface, about 5 μ wide, with thin hyaline walls. Asci cylindrical-clavate, $195 \times 15 \mu$, rather thickwalled, pore plug deep blue in Melzer's reagent, 8-spored; ascospores biseriate, fusoid or clavate and tapered below, nonseptate, hyaline, $25-35 \times 6-7 \mu$; paraphyses slender cylindrical, obtuse, 2 μ wide.

On dead wood, Ceylon, G. H. K. Thwaites 282.

Massee has endorsed the sheet "= *Peziza crocata* Mont." but, according to authentic material of that species at Kew, it has much smaller asci and more slender ascospores, $21-27 \times 3 \mu$. Madame Le Gal (1953) has already rejected Massee's suggestion and *Helotium rufocorneum* would appear to be a good species of *Hymenoscyphus*.

EXPLANATION OF FIGURES 42-45

Figs. 42-45. — 42. *Mollisia pullata*. Diagrammatic section ($\times 40$), section of margin and of excipulum from the flanks ($\times 660$). — 43. *Calycellina pulviscula*. Apothecia ($\times 5$), marginal and basal portion of excipulum in surface view, ascus, paraphysis and spores ($\times 660$). — 44. *Hymenoscyphus rufocorneus*. Apothecium ($\times 10$), section of margin ($\times 660$). — 45. *Pezicula sepium*. Habit sketch ($\times 10$), asci and paraphysis ($\times 660$).



Figs. 42-45

HELOTIUM SCUTELLATUM Kalchbr. & Cke.

Helotium scutellatum Kalchbrenner & Cooke in Grevillea 19: 72. March 1891.

On dead coriaceous leaves, Cape of Good Hope, *MacOwan*.

The type is in very poor condition but does not appear to be Helotiaceous. It bears the note "1098 MacOwan", with a further annotation by Cooke "Call it 9801". Eventually no number was cited.

HELOTIUM SCUTULA (Pers. ex Fr.) Karst. var. AESCULICARPA Syd.

Helotium scutula (Pers. ex Fr.) Karst. var. *aesculicarpa* Sydow in Ann. mycol., Berl. 19: 141. 1921.

Sydow described this variety as follows: "Unterscheidet sich von der Hauptart durch sehr kleine, zarte, 0.3-1 mm breite, gelblichweisse oder gelblichbräunliche Apothecien mit zarten 1-3 mm hohen Stiel, ähnelt demnach der var. *Menthae* Phill. Sporen 15-21 × 4-5.5 μ. Auf faulenden Fruchthüllen von *Aesculus hippocastanum*".

Part of the type collection, Schlossgarten zu Tamsel, Brandenburg, *P. Vogel*, 15. 11. 1914, was distributed as Sydow, Mycotheca germanica 1637. The Kew example duly yields ascospores 15-18 × 4 μ in asci 100 × 8 μ, with the pore blued by Melzer's reagent and paraphyses equal to the asci in length, slightly enlarged upwards to 3 μ broad at the rounded tip. The ascospores are the typical shape of those of *H. scutula*, almost hooked at the obtuse upper end and pointed below and in one free ascospore there is a very short basal bristle about 2 μ long. The asci and ascospores are both a little short for those of *H. scutula* var *scutula* and suggest rather *H. caudatum* (Karst.) Vel. Mr. Bramley has forwarded to Kew three Yorkshire collections on *Aesculus* which are of interest in this connection. Their essential features may be summarised as follows, with a contemporary collection on *Rubus* cited for comparison:

No.	Substrate	Apothecia	Asci	Ascospores
19	<i>Aesculus</i> petioles	Whitish 0.75 mm diam.	95-105 × 9-10 μ	16-20 × 4-4.5 μ becoming 1-septate.
17	<i>Aesculus</i> petioles	Whitish to yellow 0.75 mm	95-100 × 8 μ	18-25 × 3-4 μ nonseptate.
10	<i>Aesculus</i> capsules	Yellow, up to 1.25 mm	95-100 × 8 μ	19-22 × 3-4 μ
9	<i>Rubus caesius</i> canes	Yellow, about 1 mm	100-112 × 9 μ	20-25 × 3.5-4 μ

Number 19 might be placed in *H. caudatum* but if so it is exceptional in having the ascospores septate at maturity. Numbers 16 and 17 are clearly the same race, collected the same day in the same locality, the race on *Rubus* differs only in having slightly longer asci. None of these collections show distinct bristles on the ascospores. Little value can be attached to the colour of the apothecia, small apothecia tend to dry whitish, more massive ones dry yellow to yellow-brown.

In the first place it is evident there is no one race or variety of *H. scutula* peculiar to *Aesculus* capsules. Numbers 16 and 17 are the same race growing indifferently on fallen petioles and capsules, with the apothecia tending to be smaller and paler on the less abundant nutrient supply from the petioles and they are very doubtfully distinct from the fungus collected in the same district on *Rubus caesius*. They do not agree with variety *aesculicarpa* because of their more slender ascospores but collection 19, on petioles, could be referred to it. White (1943) recognised *H. caudatum* as a species but admitted: "It is doubtfully distinct from *H. scutula* (Pers. ex Fr.) Karst., which is common and widely distributed on dead herbaceous stems, while generally more delicate and less deeply coloured than the latter, it appears difficult nevertheless to find any morphological characters . . . on which to make a really meaningful distinction, and the separation here maintained, for the present at least, is largely arbitrary, those forms on leaves being referred to *H. caudatum* and those on herbaceous stems to *H. scutula*." It would seem more in accordance with the facts to regard *H. scutula* as a collective species, including many races with broader or narrower ascospores, with or without distinct bristly appendages, but with them always asymmetrical, more or less hooked above and pointed below, $15-27 \times 3-5 \mu$.

***Pezicula sepium* (Desm.) Dennis, comb. nov.—Fig. 45**

Peziza sepium Desmazières in Ann. Sci. nat. (Bot.), ser. 3, 14: 111. 1850 (basionym). — *Helotium sepium* (Desm.) Sacc., Syll. Fung. 8: 229. 1889. — *Pachydisca sepium* (Desm.) Boud., Hist. Class. Discom. d'Europe 93. 1907.

As exemplified at Kew by Desmazières, Crypt. France 2006 this is a *Pezicula* with 8-spored asci, $135-145 \times 22-25 \mu$, the pore iodine-negative; ascospores elliptic-cylindric to reniform, $22-28 \times 8-12 \mu$, nonseptate. I suppose it to be the same as *Tympanis crataegi* Lasch 1861 = *Ocellaria aurantiaca* (Rehm) Rehm var. *crataegi* (Lasch) Rehm, though the Kew example of Rabenhorst, Fungi europaei 353, probably immature, yields ascospores only $18-21 \times 10-12 \mu$. Rehm gives the ascospores as $18-25 \times 6-9 \mu$ for *O. aurantiaca* and quotes from Hazslinszky ascospores $22-24 \times 10 \mu$ for the var. *crataegi*. Groves (1952) agrees that Rab., Fung. eur. 353 is a *Pezicula*.

***Ciboriopsis simulata* (Ell.) Dennis, comb. nov.—Fig. 46**

Peziza (Hymenoscyphae) simulata Ellis in Bull. Torrey bot. Cl. 8: 73. July 1881 (basionym). — *Phialea simulata* (Ell.) Sacc., Syll. Fung. 8: 254. 1889. — *Hymenoscyphus simulatus* (Ell.) O. Kuntze, Rev. Gen. Pl. 3 (2): 137. 1898.

Apothecia scattered, arising from veins, with no trace of a sclerotium, stroma or stromatic lines in the substrate; disc "dull watery white", convex, drying gray and flat, 0.5 mm diameter, without a raised rim; receptacle concolorous, thin, discoid, smooth, seated on a slender smooth stalk. Excipulum composed of thinwalled isodiametric cells, about 8μ diameter, passing into parallel hyphae at the margin. Asci cylindric-clavate, rounded above, the small pore blued by Melzer's reagent, 8-spored, $75 \times 6 \mu$; ascospores uniseriate, ellipsoidal, $7-8 \times 3-4 \mu$; paraphyses cylindrical, obtuse, 2μ wide.

On maple leaves decaying on wet ground in the swamp, Newfield, New Jersey, June 1879, typus in herb. New York Bot. Garden.

Ellis gave the ascospore size as .0005 inches long = 12.5 μ . The combination *Helotium simulatum* Ell. was printed in error in synonymy by Saccardo and was not validly published.

Hymenoscyphus spadiceo-atra (Mont.) Dennis, *comb. nov.*—Fig. 47

Peziza (Phialea) spadiceo-atra Mont. in Ann. Sci. nat. (Bot.), ser. 2, 3: 352. 1835 (basionym).—*Helotium spadiceo-atrum* (Mont.) Sacc., Syll. Fung. 8: 236. 1889.

The diagnosis runs simply "Spadicea, cupula hypocrateriformis planiuscula, disco nigro, stipite brevi".

The authentic material at Kew has scattered superficial apothecia with disc flat when soaked up, 1–2 mm diameter, dark brown to black; receptacle cupulate with a short cylindrical stalk, smooth, dark brown, yielding a reddish-purple stain in KOH solution. Excipulum composed of broad, rectangular, thinwalled cells, about $20 \times 10 \mu$, passing at the surface into about two layers of parallel slender hyphae, 3–5 μ thick, heavily encrusted with reddish-brown matter. Asci much collapsed and not measured, 8-spored and 75 μ long according to Montagne; ascospores elliptical, $9-10 \times 3 \mu$; paraphyses cylindrical, obtuse, 2.5 μ thick, with reddish-brown oily contents.

On dead leaves of *Gunnera scabra*, Juan Fernandez, May 1830, Bertero 1704.

Calycellina spiraeae (Rob. apud Desm.) Dennis, *comb. nov.*—Fig. 48

Peziza spiraeae Roberge apud Desmazières in Bull. Soc. bot. France 4: 859. 1857 (basionym); non *Peziza spiraeae* Kirchner in Lotos 6: 246. 1856. — *Pezizella spiraeae* (Rob. apud Desm.) Sacc., Syll. Fung. 8: 290. 1889. — *Urceolella spiraeae* (Rob. apud Desm.) Boud., Hist. Class. Discom. d'Europe 129. 1907.

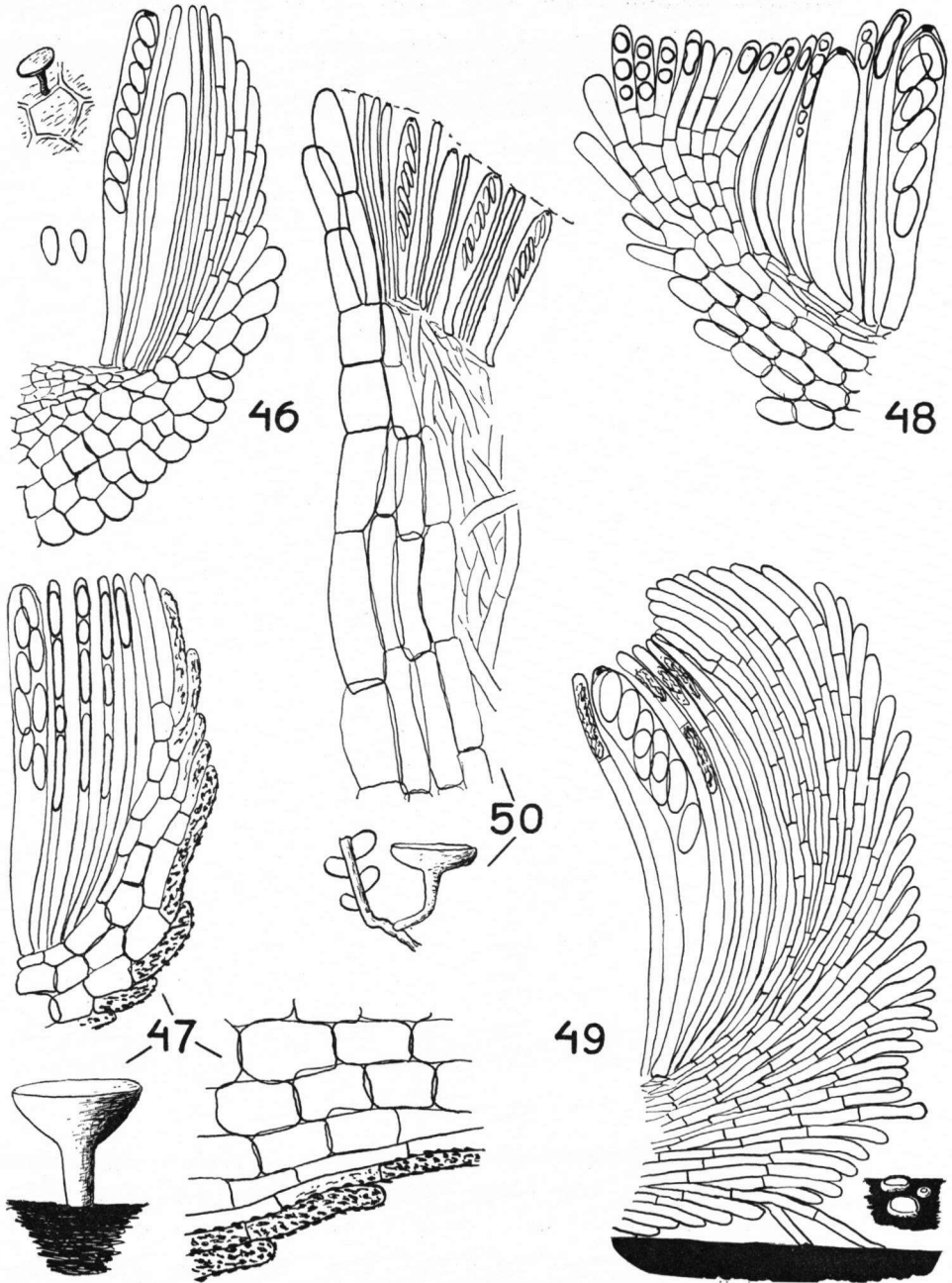
Apothecia mainly hypophyllous and embedded among the hairs of the host. "Le duvet cotonneux qui couvre ordinairement la face inférieure des feuilles de la Reine des prés, empêche souvent de l'apercevoir, et ce n'est que lorsque cette face est glabre, ou à peu près, qu'on la distingue bien." Disc flat at maturity, gray when moist, reddish-brown when dry, about 200 μ diameter; receptacle cupulate when young, discoid when old, seated on a small obconical base, concolorous, smooth, margin even or denticulate. Asci cylindrical-clavate, 55–70 \times 8–10 μ , 8-spored, pore blued by Melzer's reagent; ascospores uniseriate or biseriata above, elliptic-cylindric to ovoid, 10–12 \times 3–4 μ ; paraphyses stout, cylindrical, rounded above, 4–5 μ thick, with oily contents. Excipular cells rounded to rectangular, soft, thinwalled, running out at the margin into short hyphae, with oily contents similar to the paraphyses.

On dead leaves of *Filipendula ulmaria*, neither season nor locality indicated.

Were it not for the pale excipulum the fungus might be sought in *Pyrenopeziza*.

EXPLANATION OF FIGURES 46–50

Figs. 46–50. — 46. *Ciboriopsis simulata*. Apothecium ($\times 10$), section of margin ($\times 660$). — 47. *Hymenoscyphus spadiceo-atra*. Apothecium ($\times 10$), details ($\times 660$). — 48. *Calycellina spiraeae*. Section of margin ($\times 660$). — 49. *Calycella strumosa*. Apothecia ($\times 10$), section of margin ($\times 660$). — 50. *Hymenoscyphus subcarneus*. Apothecium ($\times 20$), section of margin ($\times 660$).



Figs. 46-50

Calycella strumosa (Ell. & Ev.) Dennis, *comb. nov.*—Fig. 49

Helotium strumosum Ellis & Everhart in J. Mycol. 4: 56. June 1888 (basionym). — *Pseudo-helotium strumosum* (Ell. & Ev.) Sacc., Syll. Fung. 8: 300. 1889.

Apothecia gregarious, sessile, disc up to 0.3 mm diameter, flat when moist, slightly concave, ochraceous, with a low paler margin when dry (“bright lemon yellow” E. & E.); receptacle discoid, seated on a broad base, with a few white anchoring hyphae, paler than the disc, minutely pruinose. Excipular hyphae thinwalled, hyaline, 2–3 μ wide, lying at a fairly high angle to the surface, their tips protruding as short, cylindrical, obtuse, smooth-walled hairs. Asci clavate, 8-spored, 80–90 \times 9–12 μ , apex conical, the pore deep blue in Melzer’s reagent; ascospores irregularly biseriolate, ellipsoidal, nonseptate, 10–12 \times 4–4.5 μ ; paraphyses cylindrical, septate, obtuse, 3 μ wide, with oily yellow contents.

On old *Dichaena strumosa* Fr., Newfield, New Jersey, 20. 12. 1887, typus in herb. New York Bot. Garden.

According to Ellis and Everhart the fresh ascospores are 2 to 3-guttulate and become 1-septate, they are much broader than those of *C. sulfurina* (Quél.) Boud., commonly found on stromatic ascomycetes.

HYMENOSCYPHUS SUBCARNEUS (Cke. & Peck) O. Kuntze—Fig. 50

Peziza subcarnea Cooke & Peck in Bull. Buffalo Soc. nat. Sci. 2: 295. 1875. — *Phialea subcarnea* (Cke. & Peck) Sacc., Syll. Fung. 8: 265. 1889. — *Hymenoscyphus subcarneus* (Cke. & Peck) O. Kuntze, Rev. Gen. Pl. 3 (2): 486. 1889; non *Hymenoscyphus subcarneus* (Schum.) Schroet. 1893.

Helotium destructor White in Mycologia 34: 163. 1942; non *Helotium subcarneum* [Schum.] Sacc. in Michelia 2: 260. 1881.

“On *Jungermanniae*, Indian Lake, New York, July”, *C. H. Peck* 319.

To the full description provided by White it will suffice to add that the excipulum is composed of broad parallel hyphae, with thinwalled cells about 20–30 \times 10 μ , lying at a very low angle to the surface and covering a flesh formed of more slender loosely woven hyphae. The ascus pore is blued by iodine. It is a normal *Hymenoscyphus*.

HELOTIUM SUBCONFLUENS Bres.

Helotium subconfluens Bres. in Ann. mycol., Berl. 1: 120. 1903. — *Calycella subconfluens* (Bres.) Boud., Hist. Class. Discom. d’Europe 95. 1907.

The typus, at Stockholm, appears to me the same as *Calycella subpallida* (Rehm) Dennis, though the ascus pore is certainly blued by iodine.

HELOTIUM SUBTRABINELLUM Bres.

Helotium subtrabinellum Bres. in Ann. mycol., Berl. 1: 120. 1903.

I see no grounds for separating this from *Cistella trabinella* (Karst.) Nannf. The excipulum has the same structure, of rows of short prismatic cells at a high angle to the surface and terminated by small, smooth-walled, clavate hairs, 12–22 \times 5–7 μ ; the ascus pore is blued by Melzer’s reagent, though Bresadola says “jodo vix tinctis.” The ascospores are predominantly nonseptate, 10–16 \times 4–5 μ , occasionally 1-septate — Bresadola saw a few 3-septate — and Karsten said of *H. trabinellum*

"Sporae demum saepe spurie tenuiter uniseptatae, plerumque 10 mmm longae et 4 mmm crassae." The substrate of *H. subtrabinellum* is *Alnus* wood, in Poland, October; that of *H. trabinellum* was ?*Alnus*, in Finland, September to October.

PHIALEA TETRASPORA Feltgen—Fig. 51

Phialea tetraspora Feltgen in Rec. Soc. bot. Luxemb. 15: 51. 1902.

Apothecia gregarious, superficial or with the base slightly inserted in the substrate, disc flat with a low rim, about 200 μ diameter (–400 μ Feltgen), light yellow; receptacle shallow cupulate, with a short stout stalk, smooth or appearing very minutely pruinose when dry, concolorous. Excipulum composed of parallel hyphae, 4–5 μ wide, lying at rather a high angle to the surface but turning up parallel with it towards the margin, terminal cells protruding slightly. Asci clavate, 4-spored, pore blued by Melzer's reagent, 50 \times 7 μ ; ascospores fusoid to clavate, 8–11 \times 2.5 μ (10–13 \times 3.5–5 μ Feltgen); paraphyses cylindrical, obtuse, 1 μ thick.

On the inner surface of decaying capsules of *Aesculus hippocastanum*, Luxembourg Glacis, Oct. 1900, Feltgen, typus in Musée d'Histoire naturelle, Luxembourg.

This seems to me indistinguishable from *Phialea winteri* Rehm, on stems of *Aconitum*.

PEZIZA TRANSLUCENS Gill. apud Pat.

Peziza translucens Gillet apud Patouillard, Tab. anal. Fung. 36. 1883. — *Mollisia translucens* (Gill. apud Pat.) Gill., Champ. France, Discom., Suppl. 212. 1883. — *Pezizella translucens* (Gill. apud Pat.) Sacc., Syll. Fung. 8: 287. 1889.

Patouillard cited Roumeguère, Fungi gallici exsiccati 2382, which was published as "*Peziza (Mollisia) translucens* Gill. in litt., sur bois pourri (chêne, hêtre etc.) Poligny (Jura), Juillet 1882. The Kew example of this is *Orbilia auricolor* (Bloxam & Berk.) Sacc.

PEZIZELLA TYROLENSIS Rehm—Fig. 52

Pezizella tyrolensis Rehm in Ber. naturh. Ver. Augsburg 26: 30. 1881.

Apothecia scattered, superficial; receptacle cupulate, about 0.5 mm diameter, sessile on a small base, yellow to orange when fresh, drying pinkish, with a minutely fimbriate whitish margin. Excipular cells prismatic, thinwalled, running out at the margin into cylindrical, obtuse, simple or rarely forked, hyaline hairs, up to 30 \times 4 μ , with thin smooth walls. Asci 40 \times 5 μ (–60 \times 8 μ Rehm), pore blued by Melzer's reagent; ascospores 6–8 \times 1.5 μ (6–9 \times 2.5 μ Rehm); paraphyses varying from cylindrical to narrowly lanceolate, 1.5–3 μ wide, slightly longer than the asci.

On rotting stems of *Cirsium spinosissimum*, 700', Tyrol, Aug. 1872, Rehm Ascom. 116.

Von Höhnel (1926) concluded "*Pezizella tirolensis* Rehm mit den mehrfach ausgegebenen Stücken dieses Pilzes stimmt Persoon's Beschreibung seiner *Peziza micacea* vollkommen überein. Auch die Nahrungspflanzen sind verwandt (*Cirsium* — *Carduus*) es ist daher kein Zweifel, dass beide Pilze zusammenfallen." He regarded it as a *Pezizella* in the sense of *P. vulgaris* (Fr.) Höhn. Nannfeldt (1932), on the other hand, concluded that "Ferner gehören die zwei von v. Höhnel als typische *Pezizella* Arten bezeichneten *P. micacea* (Pers.) Rehm (= *P. tyrolensis* Rehm) und *P. saxonica*

Rehm ebenfalls zu *Lachnum*." I agree with this when *Dasyscyphus* (= *Lachnum*) is taken in the broad sense. As subdivided by Dennis (1962) *P. micacea* Pers. will be a *Psilachnum*, viz. *Psilachnum micaceum* (Pers.) Dennis, basionym *Peziza micacea* Pers., *Mycologia europaea* 1: 268. 1822 and Fries, *Syst. mycol.* 2: 105. 1822.

PEZIZELLA VOGELII Syd.—Fig. 53

Pezizella vogelii Sydow in *Ann. mycol., Berl.* 14: 246. 1916.

On dead petioles of *Robinia pseudacacia*, Tamsel, Brandenburg, 16. 7. 1913, *P. Vogel*, issued as Sydow, *Mycotheca germanica* 1349.

This is a *Calycellina* and for me not distinct from *C. populina* (Fuck.) Höhn., which White (1943) recorded on this substrate.

PEZIZA VULGARIS Fr. var. MYCETICOLA Berk. & Curt.—Fig. 54 left

Peziza (Mollisia) vulgaris Fr. var. *myceticola* Berk. & Curt. in *Grevillea* 3: 159. June 1875. — *Pezizella vulgaris* (Fr.) Sacc. var. *myceticola* (B. & C.) Sacc., *Syll. Fung.* 8: 279. 1889.

"On decaying Polypores, Santee River, No. 1571, on oak Car. Inf. No. 2683. More concave than the usual form. It occurs on Polypores in England."

I take No. 1571, on a Polypore, as lectotype. This is an *Orbilbia* with asci $22 \times 2.5-3 \mu$ and rod-shaped ascospores $5 \times 0.25 \mu$ and is presumably *O. epipora* (Nyl.) Karst. Berkeley interpreted *Peziza vulgaris* Fr. as an *Orbilbia* but it is generally understood today in the interpretation of von Höhnel, as a *Pezizella*.

PEZIZA VULGARIS Fr. var. SANGUINELLA Berk. & Curt.—Fig. 54 right

Peziza (Mollisia) vulgaris Fr. var. *sanguinella* Berk. & Curt. in *Grevillea* 3: 159. 1875. — *Pezizella vulgaris* (Fr.) Sacc. var. *sanguinella* (B. & C.) Sacc., *Syll. Fung.* 8: 279. 1889.

"White externally, disc pale orange. On *Liquidambar* Car. Inf. No. 2180; New England, Sprague, No. 5372, 5380."

Number 2180 is also an *Orbilbia*, quite distinct from *O. epipora*, with much thicker and fleshier context, asci $35 \times 4 \mu$; the ascospores are not well seen but appear to be fasciculate and about $8 \times 0.5 \mu$.

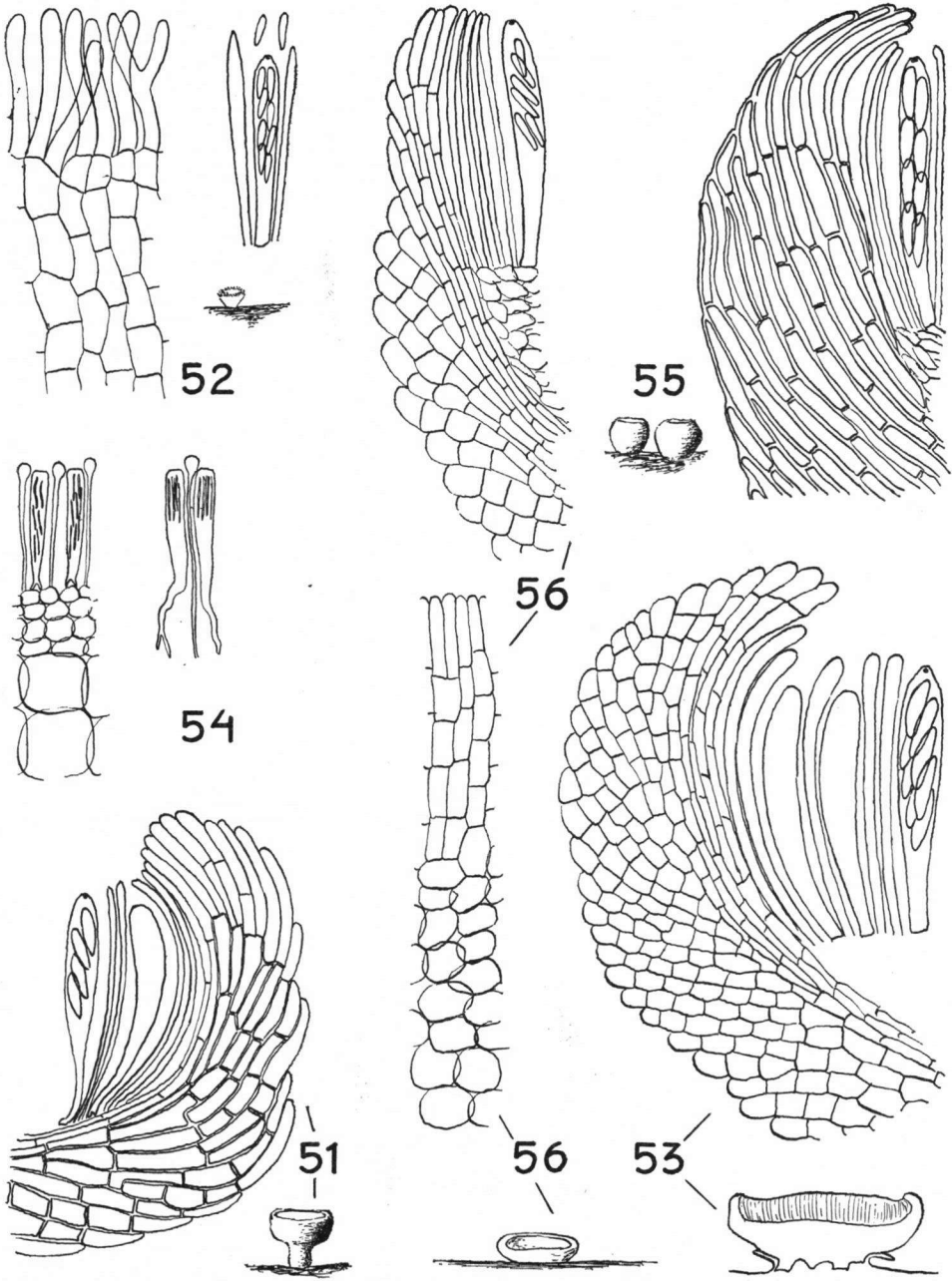
***Pezizella winteri* (Rehm) Dennis, comb. nov.—Fig. 55**

Phialea winteri Rehm in *Rabenhorst, Kryptog.-Fl.*, ed. 2, 1 (3): 726. 1893 (basionym).

Apothecia gregarious, superficial, disc flat, yellowish, with a low rim, about 250μ diameter; receptacle cupulate, with a short stout stalk, concolorous, smooth.

EXPLANATION OF FIGURES 51-56

Figs. 51-56. — 51. *Phialea tetraspora*. Apothecium ($\times 40$), section of margin ($\times 660$). — 52. *Psilachnum micaceum* (as *Pezizella tyrolensis*). Apothecium ($\times 7$), margin in surface view, ascus, paraphyses and spores ($\times 660$). — 53. *Calycellina populina* (as *Pezizella vogelii*). Diagrammatic section ($\times 25$), section of margin ($\times 660$). — 54. *Peziza vulgaris* (left: var. *myceticola*; right: var. *sanguinella*). Asci and paraphyses ($\times 660$). — 55. *Pezizella winteri*. Apothecia ($\times 30$), section of margin ($\times 660$). — 56. *Helotium xeroplaticum*. Apothecium ($\times 5$), section of margin and strip of excipulum in surface view ($\times 660$).



Figs. 51-56

Excipulum composed of parallel hyphae, 5 μ wide, lying at a high angle to the surface, with moderately thick white walls. Asci clavate, 60 \times 7 μ , 4-spored according to Rehm but some, at least, are 8-spored, pore blued by Melzer's reagent; ascospores biseriata, elliptic-fusoid to clavate, 10–11 \times 3 μ ; paraphyses cylindrical, obtuse, 1.5 μ wide.

On dead stems of *Aconitum*, Albula Pass, Switzerland, July 1882, *Winter*, in herb. Rehm, Stockholm.

HELOTIUM XEROPLASTICUM Rehm—Fig. 56

Helotium xeroplacticum Rehm in Hedwigia 20: 37. 1881. — *Pezizella xeroplastica* (Rehm) Rehm in Rabenhorst, Kryptog.-Fl., ed. 2, 1 (3): 674. 1892.

Apothecia scattered, superficial; disc concave, light yellow, drying isabelline, up to 3 mm diameter; receptacle cupulate, sessile, smooth, concolorous with a paler margin. Excipulum composed of approximately isodiametric, polygonal to rounded, thinwalled, subhyaline cells, 8–12 μ diameter, becoming smaller and then arranged in radial rows on the flanks of the receptacle, margin of slender parallel hyphae, arising from an inner brownish band in the excipulum. Asci cylindrical-clavate, 50 \times 6 μ , 8-spored, pore blued by Melzer's reagent; ascospores irregularly biseriata, about 9 \times 1.5 μ , nonseptate; paraphyses cylindrical, obtuse, 2 μ thick.

1500 m, on dead stems of *Adenostylis*, Bauernalpkopf in Allgäu, July 1879, *Britzelmayr*, Rehm Ascomyceten 565.

This seems to be Dermateaceous, not Helotiaceous at all.

There follows a redistribution of such species of "*Helotium* Fr." as I have seen or have been adequately figured, in accordance with the ideas set out above. It will be understood that the arrangement is still tentative and that the generic limits are still not fixed to my entire satisfaction.

CUDONIELLA Sacc.

Cudoniella Sacc., Syll. Fung. 8: 41. 1889.

The genus was proposed with four species, on which Nannfeldt (1932: 314) commented: "Die erste Art der Gattung, *Phallus marcidus*, ist überhaupt höchst unsicher, wahrscheinlich ist sie jedoch mit *Leotia lubrica* (Scop.) Pers. identisch. Die zweite Art, *Cudonia Queletii* Fr., ist ebenfalls unsicher, wahrscheinlich aber mit *Helotium aciculare* (Bull.) Pers. identisch. Die dritte Art, *Cudonia stagnalis* Qué!, ist zweifelhaft. Die vierte Art, *Leotia aquatica* Lib., die später zur Typusart der Gattung *Haplocybe* Clem. gewählt wurde, ist wahrscheinlich mit *Ombrophila clavus* (A. & S.) Cke identisch."

Nannfeldt cited *Phallus marcidus* as "Pseudotypus" and hence referred the genus to Geoglossaceae but Boudier (1907: 90) had clearly designated *Cudonia queletii* Fr. as lectotype and identified it with *Hel. aciculare*. Schroeter (1893) had earlier accepted *Cudoniella* with only two species, *C. aquatica* (Lib.) Sacc. and *C. acicularis* but in his case it could be argued that the other two foundation species were not excluded, merely omitted as not being known to occur in the region dealt with in his work. He placed *Cudoniella* in Geoglossaceae, next to *Leotia*, and did not cite *Phallus*

marcidus in synonymy under the latter. Schroeter in Engler & Prantl (1894) adopted a similar treatment and here the objection that he was dealing only with a restricted flora does not hold. Clements and Shear (1931) accepted *C. acicularis* as lectotype and I feel justified in doing so here until its identity with *C. queletii* Fr. has been disproved.

The accepted species then are:

Cudoniella acicularis (Bull. ex Fr.) Schroet. in Cohn, Kryptog.-Fl. Schles. **3** (2): 21. 1893.

C. clavus (A. & S. ex Fr.) Dennis, *comb. nov.* — *Peziza clavus* A. & S. ex Fr., Syst. mycol. **2** (1): 137. 1822 (basionym).

C. clavus var. **grandis** (Boud.) Dennis, *comb. nov.* — *Ombrophila clavus* var. *grandis* Boud., Icon. mycol. **4**: 249. 1910 (basionym).

C. rubicunda (Rehm) Dennis, *comb. nov.* — *Mollisia rubicunda* Rehm in Hedwigia **21**: 103. 1882 (basionym).

It seems improbable Rehm's fungus on cones of conifers was the same as *Peziza ianthina* Fr., a renaming of *Octospora violacea* Hedwig, on old rotting trunks of *Salix*. In making the combination in *Cudoniella* I rely on a collection referred here by Mr. W. D. Graddon, on *Pinus silvestris* cones, Delamere forest, Cheshire, August 1955, for no apothecia remain on the Kew example of Rehm Ascomyceten 558, cited by him as this species.

HYMENOSCYPHUS S. F. Gray

Hymenoscyphus S. F. Gray, Nat. Arrang. Brit. Pl. **1**: 673. 1821.

I have tried various arrangements of the species on a purely morphological basis, especially on ascospore characters, but have found none more practical than the traditional artificial disposition according to the substrate. One must aim eventually to abandon this, however, for it leads to a wide separation of closely allied species, as in the *H. scutula* series, and may be responsible for an unnecessary proliferation of specific names.

SERIES 1. *Hymenoscyphus*. Stalked apothecia on wood and bark

I. Ascospores 0-1-septate

A. Ascospores over 15 μ long

a. North temperate species

H. carmichaeli Phill. in Grevillea **19**: 106. 1891. Spores 20-30 \times 4-6 μ .

H. serotinus (Pers. ex Fr.) Phill., Brit. Discom. 125. 1887. Spores 18-30 \times 3-4 μ .

H. salicellus (Fr.) Dennis, *comb. nov.* — *Peziza salicella* Fr., Syst. mycol. **2** (1): 133. 1822 (basionym). Spores 20-30 \times 4.5-7 μ .

H. calyculus (Sow. ex Fr.) Phill., Brit. Discom. 136. 1887. Spores 15-22 \times 3-4.5 μ .

H. fructigenus (Bull. ex Fr.) S. F. Gray, op. cit. 1821. Spores 13-21 \times 3-4 μ .

H. laetus (Boud.) Dennis, *comb. nov.* — *Pachydisca laeta* Boud. in Bull. Soc. mycol. France **4**: 78. 1888 (basionym). Spores 17-25 \times 5-6.5 μ .

H. subferrugineus (Nyl.) Dennis, *comb. nov.* — *Peziza subferruginea* Nyl. in Not. Sällsk. F. Fl. fenn. **10**: 43. 1861 (basionym). Spores 15-21 \times 4-6 μ .

H. infarciens (Ces.) Dennis, *comb. nov.* — *Peziza infarciens* Ces. in Rabenhorst, *Fungi europaei* 515. 1863 (basionym). [= *Hymenoscyphus laburni* (Berk. & Br.) Phill., *Brit. Discom.* 135. 1887]. Spores 18–22 × 6–7 μ .

H. vitigenus (De Not.) Dennis, *comb. nov.* — *Helotium vitigenum* De Not. in *Comm. Soc. critt. ital.* 2: 377. 1861 (basionym). Spores 16–20 × 5–6 μ .

H. ellisii Dennis, *supra* p. 48. Spores 15–22 × 3–3.5 μ .

b. Tropical species

H. rufocorneus (Berk. & Br.) Dennis, *supra* p. 62. Spores 25–35 × 6–7 μ .

H. subserotinus (P. Henn. & Nym.) Dennis, *comb. nov.* — *Helotium subserotinum* P. Henn. & Nym. in *Monsunia* 1: 33. 1900 (basionym). Spores 27–32 × 4–5 μ (up to 50 × 8 μ Le Gal).

H. velhaensis (P. Henn.) Dennis, *comb. nov.* — *Ciboria velhaensis* P. Henn. in *Hedwigia* 41: 28. 1902 (basionym). Spores 28–40 × 4.5–6.5 μ .

H. miniatus (Pat. apud Duss) Dennis, *comb. nov.* — *Helotium miniatum* Pat. *apud* Duss, *Champ. Guadeloupe* 65. 1903 (basionym). Spores 30–36 × 5.5–6 μ .

H. fuscopurpureus (Rehm) Dennis, *comb. nov.* — *Helotium fuscopurpureum* Rehm in *Hedwigia* 39: 94. 1900 (basionym). Spores 29–31 × 5–7 μ .

H. camerunensis (P. Henn.) Dennis, *comb. nov.* — *Helotium camerunense* P. Henn. in *Bot. Jb.* 22: 73. 1895 (basionym). Spores 25–35 × 4–5 μ .

B. Ascospores under 15 μ long

H. flavo-fuscescens (Bres.) Dennis, *supra* p. 46. Spores 11–15(–18) × 3–4 μ .

H. parilis (Karst.) Dennis, *comb. nov.* — *Peziza parilis* Karst. in *Not. Sällsk. F. Fl. fenn.* 10: 146. 1869 (basionym). [= *Hymenoscyphus emergens* Cke. & Phill. *apud* Phill., *Brit. Discom.* 139. 1887]. Spores 10–15(–17) × 2 μ .

H. fagineus (Pers. ex Fr.) Dennis, *comb. nov.* — *Peziza faginea* Pers. ex Fr., *Syst. mycol.* 2 (1): 136. 1822 (basionym). Spores 8–16 × 4–5 μ .

H. byssigenus (Berk.) O. Kuntze, *Rev. Gen. Pl.* 3 (2): 485. 1898. [= *Helotium pezizoideum* Cke. & Phill. in *Grevillea* 19: 72. 1891]. Spores 10–14 × 2.5–3 μ .

H. subsordidus (Dennis) Dennis, *comb. nov.* — *Helotium subsordidum* Dennis in *Kew Bull.* 15: 310. 1951 (basionym). [= *Helotium sordidum* Phill. in *Grevillea* 15: 17. 1886; non *H. sordidum* (Fuck.) Rehm 1881 nec *Hymenoscyphus sordidus* (Fuck.) Phill. = *Pezizella vulgaris* (Fr.) Höhn.]. Spores 7–8 × 4 μ .

H. atrosubiculatus (Seaver & Waterston) Dennis, *comb. nov.* — *Helotium atrosubiculatum* Seaver & Waterston in *Mycologia* 32: 397. 1940 (basionym). Spores 6–7 × 2–2.5 μ .

II. Ascospores 3-septate

Hymenoscyphus sclerogenus (Berk. & Curt.) Dennis in *Persoonia* 2: 190. 1962. Spores 32–39 × 5–6 μ .

H. lasiopodium (Pat.) Dennis, *op. cit.* 1962. Spores 25–30 × 5 μ .

H. musicola (Dennis) Dennis, *op. cit.* 1962. Spores 17–25 × 5–6.5 μ .

H. parilis and *H. ellisii* are closely allied and form a transition to Series 5 *Herbarum*.

SERIES 2. *Imberbis*. Subsessile apothecia on woody substrata, mostly with short broad excipular cells and with elliptical ascospores less than 15 μ long

H. lutescens (Hedw. ex Fr.) Phill., Brit. Discom. 131. 1887. Spores 10–15 \times 3–4 μ .

H. imberbis (Bull. ex St. Amans) Dennis, *comb. nov.* — *Peziza imberbis* Bull. ex St. Amans, Fl. agen. 532. 1821 (basionym). Spores 8–11 \times 3–4 μ .

H. cyathiformis (Rehm) O. Kuntze, Rev. Gen. Pl. 3 (2): 485. 1898. Spores 7–10 \times 3–4 μ .

H. cortisedus (Karst.) Dennis, *comb. nov.* — *Peziza cortiseda* Karst., Fungi fennici 544. 1866 (basionym). Spores 8–12 \times 3–3.5 μ .

H. lasserii (Dennis) Dennis, *comb. nov.* — *Helotium lasserii* Dennis in Kew Bull. 14: 432. 1960 (basionym). Spores 10–12 \times 4 μ .

H. gratus (Berk. apud Hook.) Dennis, *comb. nov.* — *Peziza grata* Berk. apud Hook., Fl. Tasmaniae 2: 275. 1860 (basionym). Spores 13 \times 3 μ .

H. brevisporus (Cke. & Phill. apud Cke.) Dennis, *comb. nov.* — *Helotium brevisporum* Cke. & Phill. apud Cke. in Grevillea 8: 63. Dec. 1879 (basionym). Spores 8–12 \times 3–4 μ .

H. montaniensis (Ell. & And.) Dennis, supra p. 54. Spores 8–10 \times 3.5–4.5 μ .

SERIES 3. *Scutula*. Stipitate apothecia on dead leaves or herbaceous stems, structurally like series 1

A. On stems

H. scutula (Pers. ex Fr.) Phill. var. *fucatus* Phill., Brit. Discom. 137. 1887. Spores 24–34 \times 5–7 μ .

H. scutula var. *scutula*; Phill., op. cit. p. 136. Spores 18–27 \times 3.5–5 μ .

H. scutula var. *menthae* Phill., op. cit. p. 137. Spores 12–16 \times 3–3.5 μ .

H. dearnessii (Ell. & Ev.) O. Kuntze, Rev. Gen. Pl. 3 (2): 484. 1898. Spores 25–35 \times 3.5 μ .

H. sublateritius (Berk. & Br.) Dennis, *comb. nov.* — *Helotium sublateritium* Berk. & Br. in Ann. Mag. nat. Hist. Ser. 4, 15: 38. 1875 (basionym). Spores 17–19 \times 4–5 μ .

H. pileatus (Karst.) O. Kuntze, Rev. Gen. Pl. 3 (2): 485. 1898. Spores 16–32 \times 2.5–4 μ .

H. juncisedus (Vel.) Dennis, *comb. nov.* — *Helotium juncisedum* Vel., Monogr. Discom. Bohem. 198. 1934 (basionym). Spores 9–14 \times 2.5–4 μ .

H. robustior (Karst.) Dennis, *comb. nov.* — *Peziza rhodoleuca* Fr. subsp. *robustior* Karst. in Not. Sällsk. F. Fl. fenn. 10: 139. 1869 (basionym). Spores 7–14 \times 3–5 μ .

H. repandus (Phill.) Dennis, *comb. nov.* — *Helotium repandum* Phill., Brit. Discom. 161. 1887 (basionym). Spores 8–13 \times 2–2.5 μ .

H. limonium (Cke. & Peck) Dennis, *comb. nov.* — *Helotium limonium* Cke. & Peck in Rep. N.Y. St. Mus. 26: 83. 1874 (basionym). Spores 8 \times 1.5 μ .

B. On cladodes of *Acacia*

H. ceratinus (Berk.) O. Kuntze, Rev. Gen. Pl. 3 (2): 485. 1898. Spores 18–20 \times 4–4.5 μ .

C. On fallen leaves of trees

H. crocatus (Mont.) O. Kuntze, Rev. Gen. Pl. **3** (2): 485. 1898. Spores 21–30 × 2.5–3 μ.

H. caudatus (Karst.) Dennis, *comb. nov.* — *Peziza caudata* Karst., Fungi fenn. exs. 547. 1866 (basonym). Spores 15–21 × 4–5.5 μ.

H. leucopus (Mont. apud Gay) Dennis, *comb. nov.* — *Helotium leucopus* Mont. apud Gay, Hist. de Chile, Bot. **7**: 410. 1850 (basonym). Spores 18–22 × 4.5–5.5 μ.

H. fraternus (Peck) Dennis, *comb. nov.* — *Helotium fraternum* Peck in Rep. N.Y. St. Mus. **32**: 47. 1879 (basonym). Spores 15–20 × 3–4 μ.

H. albidus (Rob.) Phill., Brit. Discom. 138. 1887 [= *Helotium robergei* Dennis 1956 = *Hel. albidum* (Rob.) Pat. 1885 non Crouan 1867]. Spores 13–17 × 3–5 μ.

H. albopunctus (Peck) O. Kuntze, Rev. Gen. Pl. **3** (2): 485. 1898. Spores 14–17 × 3–4.5 μ.

H. cereus (Rick) Dennis, *comb. nov.* — *Ciboria cerea* Rick in Broteria (Bot.) **25**: 119. 1931 (basonym). Spores 13–16 × 3–3.5 μ.

H. phyllogenus (Rehm) O. Kuntze, Rev. Gen. Pl. **3** (2): 485. 1898. Spores 11–14 × 4–5 μ.

H. phyllophilus (Desm.) O. Kuntze, Rev. Gen. Pl. **3** (2): 485. 1898. Spores 11.5–16 × 3–4 μ.

H. immutabilis (Fuck.) Dennis, *comb. nov.* — *Helotium immutabile* Fuck., Symb. mycol., Nachtr. 1: 50. 1871 (basonym). Spores 10–14 × 4–4.5 μ.

H. titubans (Mont. apud Gay) Dennis, *comb. nov.* — *Helotium titubans* Mont. apud Gay, Hist. de Chile, Bot. **7**: 408. 1850 (basonym). Spores 10–13 × 3–3.5 μ.

H. lividus (Mont. apud Gay) Dennis, *comb. nov.* — *Helotium lividum* Mont. apud Gay, Hist. de Chile, Bot. **7**: 407. 1850 (basonym). Spores 8 × 2 μ.

H. caracasensis (Dennis) Dennis, *comb. nov.* — *Helotium caracasensis* Dennis in Kew Bull. **1958**: 463. (basonym). Spores 5–8 × 1.5–2 μ.

D. On Gramineae, Cyperaceae (see also *H. pileatus* above)

H. magnificus (Vel.) Dennis, *comb. nov.* — *Helotium magnificum* Vel., Monogr. Discom. Bohem. 198. 1934 (basonym). Spores 25–32 × 4.5–6 μ.

H. airae (Vel.) Dennis, *comb. nov.* — *Helotium airae* Vel., op. cit. 199. 1934 (basonym). Spores 16–19 × 4–6 μ.

H. crastophilus (Sacc.) Dennis, supra p. 40. Spores 19–24 × 5 μ.

E. On Pteridophyta

H. cejpi (Vel.) Dennis, *comb. nov.* — *Helotium cejpi* Vel., op. cit. 207. 1934 (basonym). Spores 20–26 × 3.5–4.5 μ.

H. rhodoleucus (Fr.) Phill., Brit. Discom. 131, 1887. Spores 9–12 × 3–4 μ.

F. On Bryophyta

H. procerus (Karst.) Dennis, *comb. nov.* — *Helotium procerum* Karst., Mycol. fenn. **1**: 130. 1871 (basonym). Spores 10–12 × 2 μ.

H. subcarneus (Cke. & Peck) O. Kuntze, *Rev. Gen. Pl.* **3** (2): 486. 1898. Spores $5-6 \times 2 \mu$.

H. titubans should possibly be referred elsewhere because of its dark hyphae. *Helotium lentrisporum* Kirschst. on *Typha* (in *Ann. mycol.*, Berl. **34**: 182. 1936) and *Discorehmia hyalina* Kirschst. on *Betula* leaves (in *Ann. mycol.*, Berl. **37**: 123. 1939), neither of which I have seen, presumably belong here also.

SERIES 4. *Epiphyllum*. Subsessile apothecia on dead leaves or thalli

H. epiphyllum (Pers. ex Fr.) Rehm *apud* Kauffm. in *Pap. Mich. Acad. Sci.* **9**: 177. 1929.

H. marchantiae (Berk.) Dennis, *comb. nov.* — *Peziza marchantiae* Berk. in Smith, *Engl. Fl.* **5** (2): 204. 1836 (basionym).

H. vasaensis (Karst.) Dennis, *comb. nov.* — *Peziza vasaensis* Karst. in *Not. Sällsk. F. Fl. fenn.* **10**: 150. 1869 (basionym).

For somewhat similar apothecia on woody substrata see *Phaeohelotium*.

SERIES 5. *Herbarum*. Subsessile apothecia erumpent from herbaceous stems, with minutely downy excipulum composed of short-celled hyphae at rather a high angle to the surface

H. herbarum (Pers. ex Fr.) Dennis, *comb. nov.* — *Peziza herbarum* Pers. ex Fr., *Syst. mycol.* **2** (1): 136. 1822 (basionym). Spores $13-17 \times 2.5-3 \mu$.

H. separabilis (Karst.) Dennis, *comb. nov.* — *Helotium separabile* Karst., *Mycol. fenn.* **1**: 118. 1871 (basionym). Spores $10-15 \times 2-2.5 \mu$.

H. humuli (Lasch) Dennis, *comb. nov.* — *Peziza humuli* Lasch in *Bot. Ztg* **3**: col. 66. 1845 (basionym). Spores $14-17 \times 3.5-4 \mu$.

SERIES 6. *Cupreum*. Stipitate tropical or South temperate species on woody substrata, with excipulum of parallel hyphae, asci mostly I + and small rod-like spores

H. cupreus (Bres.) Dennis, *comb. nov.* — *Helotium cupreum* Bres. in *Hedwigia* **35**: 295. 1896 (basionym). Spores $6-8 \times 2-2.5 \mu$.

H. leucopsis (Berk. & Curt.) Dennis, *comb. nov.* — *Peziza leucopsis* Berk. & Curt. in *J. Linn. Soc. (Bot.)* **10**: 368. 1868 (basionym). Spores $7-10 \times 2-2.5 \mu$.

H. quintinae (Dennis) Dennis, *comb. nov.* — *Helotium quintinae* Dennis in *Kew Bull.* **15**: 309. 1961 (basionym). Spores $5 \times 2 \mu$.

H. javanicus (P. Henn.) Dennis, *comb. nov.* — *Cudoniella javanica* P. Henn. in *Monsunia* **1**: 173. 1899 (basionym) (= *Helotium gedeanum* Dennis 1954 non *Helotium javanicum* Penz. & Sacc.). Spores $7-11 \times 2-2.5 \mu$.

SERIES 7. *Prasinum*. Stipitate species with a large-celled inner excipulum covered by dark encrusted hyphae or at least with brown walled hyphae covering the stipe

The series shows affinities with *Rutstroemia* but I think its addition to that genus inadvisable.

H. prasinus (Masse) Dennis, *comb. nov.* — *Helotium prasinum* Masse in Kew Bull. 1901: 159 (basionym) (= *Helotium novae-zelandiae* Dennis in Kew Bull. 15: 307. 1961). Spores $6-7 \times 2-2.5 \mu$.

H. microspermus (Speg.) Dennis, *comb. nov.* — *Helotium microspermum* Speg. in Bol. Acad. Cienc. Córdoba 11: 132 (reprint). 1887 (basionym). Spores $3-5 \times 1.5-2.5 \mu$.

H. metrosideri (Dennis) Dennis, *comb. nov.* — *Helotium metrosideri* Dennis in Kew Bull. 15: 306. 1961 (basionym). Spores $14-17 \times 4-5 \mu$.

H. spadiceo-atra (Mont.) Dennis, *supra* p. 66. Spores $9-10 \times 3 \mu$.

H. vernus (Boud.) Dennis, *comb. nov.* — *Ombrophila verna* Boud. in Bull. Soc. mycol. France 4: 77. 1889 (basionym) (= *Helotium vernale* Dennis 1956 non *Hel. vernum* Vel. 1934). Spores $8-12 \times 3-4 \mu$.

CIBORIELLA Seaver

Ciboriella Seaver, North Amer. Cup Fungi (Inop.) 107. 1951.

Soft-fleshed species with reddish tints, reminiscent of Sclerotiniaceae but with an excipulum composed of short-celled parallel hyphae and with no sclerotium or stromatic tissue; asci I +, on dead leaves.

C. rufescens (Kanouse) Seaver, *op. cit.* 107. 1951. Spores $7-11 \times 3.5-4 \mu$.

C. griseliniae (Dennis) Dennis, *comb. nov.* — *Helotium griseliniae* Dennis in Kew Bull. 15: 304. 1961 (basionym). Spores $12-14 \times 4-5 \mu$.

C. subcinnabarina (Dennis) Dennis, *comb. nov.* — *Helotium subcinnabarinum* Dennis in Kew Bull. 15: 310. 1961 (basionym). Spores $8-9 \times 2-2.5 \mu$.

PHAEOHELOTIUM Kanouse

Phaeohelotium Kanouse in Pap. Mich. Acad. Sci. 20: 75. 1935.

Subsessile apothecia with flesh of closely woven hyphae covered by an outer excipulum of thinwalled isodiametric rounded to angular cells, ascospores sometimes becoming septate and brownish with age. Mostly on woody substrata.

Phaeohelotium monticola (Berk.) Dennis, *supra* p. 54 (= *P. flavum* Kanouse, *op. cit.* 1935).

P. recurvum (Rodway) Dennis in Kew Bull. 1958: 339.

Pachydisca subturbinata (Rehm) Le Gal, which I have not seen, perhaps belongs here; so probably do *Helotium obconicum* Höhn., *H. pateriforme* (Berk.) Cke., *H. quisquiliarum* Berk. & Curt., *H. tasmanicum* Rodway, many species of *Pachydisca* etc., but the group needs much further study.

SPHAGNICOLA Vel.

Sphagnicola Vel., Monogr. Discom. Bohem. 111. 1934.

Pseudodiscinella Dennis in Kew Bull. 1955: 567. 1956.

Sessile apothecia with pseudoparenchymatous excipulum, sheathed at least towards the base by a zone of slender gelatinised hyphae.

Sphagnicola ciliifera (Karst.) Vel., *op. cit.* 111. 1934.

S. fergussoni (Sacc.) Dennis, *comb. nov.* — *Helotium melleum* Berk. & Br. in Ann. Mag. nat. Hist., ser. 4, 15: 38. Jan. 1875 [non *H. melleum* Berk. & Br. in J. Linn.

Soc. (Bot.) 14: 107. Dec. 1873]. — *H. fergussoni* Sacc., Syll. Fung. 8: 233. 1889 (basionym).

S. iodocyanescens Dennis & Korf in Kew Bull. 13: 181. 1958.

S. laricina (Ell. & Ev.) Dennis, supra p. 50.

S. obstricta (Karst.) Dennis, *comb. nov.* — *Peziza obstricta* Karst. in Not. Sällsk. F. Fl. fenn. 11: 243. 1870 (basionym).

S. marchantiae Vel. and *S. rivularis* Vel. are dubious species.

DISCINELLA Boud.

Discinella Boud. in Bull. Soc. mycol. France 1: 112. 1885.

Terrestrial sessile apothecia with excipulum of soft, broad, parallel hyphae.

SERIES A. Ascospores permanently colourless

Discinella boudieri (Quél.) Boud., Icon. mycol., Ser. 2, Livr. 6. tab. 446. 1905.

D. margarita Buckley in Trans. Brit. mycol. Soc. 6: 347. 1920.

D. menziesi Boud. in Trans. Brit. mycol. Soc. 4: 323. 1914.

SERIES B. Ascospores ultimately brown

D. terrestris (Berk. & Br.) Dennis in Kew Bull. 1958: 342.

Though said to have grown on rotten wood *Pseudohelotium undulatum* Rodway appears scarcely separable from *D. terrestris*. *Helotium lutisedum* Karst. possibly belongs here, in series A., but I would like to see it fresh before proposing the transfer. The structure of *D. margarita* and *D. menziesi* needs further investigation on fresh material for comparison with species of *Sphagnicola*.

CIBORIOPSIS Dennis

Ciboriopsis Dennis in Kew Bull. 16: 319. 1962.

Small long-stalked apothecia, without a sclerotium or basal stroma, but with an excipular structure approaching *textura globulosa* and small rod-shaped ascospores, typically on fallen leaves or herbaceous stems.

Ciboriopsis advenula (Phill.) Dennis, op. cit. 319. 1962.

C. bramleyi Dennis, op. cit. 319. 1962.

C. cecropiae (P. Henn.) Dennis, op. cit. 320. 1962.

C. lenta (Berk. & Br.) Dennis, op. cit. 319. 1962.

C. microspora (Berk. & Br.) Dennis, op. cit. 319. 1962.

C. phlebophora (Pat.) Dennis, op. cit. 319. 1962.

C. simulata (Ell.) Dennis, supra p. 65.

C. uleana (Rehm) Dennis, op. cit. 319. 1962.

Of species still unassigned *Helotium phormium* Cke. is perhaps a *Rutstroemia*. *Helotium chlorosplenioides* Speg. and *H. pseudociliatum* Phill. seem to be congeneric and both have been transferred to *Cyathicula*, though I am not entirely satisfied with this. *H. allantosporum* Dennis shows affinity with *Chlorosplenium*.

Addendum

Pezizella minutula (Bres. apud Strasser) Dennis, *comb. nov.*—Fig. 57

Phialea minutula Bres. apud Strasser in Verh. zool.-bot. Ges. Wien 55: 612. 1905; non *Phialea minutula* Sacc. in Malpighia 11: 268. 1897.

No apothecia could be found on the holotype in Bresadola's herbarium at Stockholm but a few remain on the isotype in Strasser's herbarium at the Natural History Museum, Vienna.

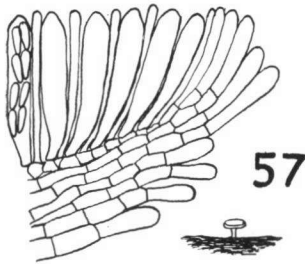


Fig. 57. *Pezizella minutula*. Habit sketch ($\times 12$), section of margin ($\times 660$).

Apothecia scattered, superficial, disc flat, 250 μ diameter, white, receptacle discoid, thin, white, very minutely pruinose, seated on a slender, smooth, yellowish stalk. Excipulum composed of thinwalled, hyaline, parallel hyphae, 3–5 μ diameter, the terminal cells protruding, especially towards the margin, as cylindrical-clavate, smooth, thinwalled hairs, up to $20 \times 4 \mu$. Asci cylindrical-clavate, sessile, $30(-40) \times 4.5-5 \mu$, apex conical with minute pore blued by Melzer's reagent, 8-spored; ascospores biseriolate, narrowly ellipsoidal, $5-6 \times 1.5-2 \mu$ ($5-7 \times 2.5 \mu$ Bresadola); paraphyses cylindrical, as long as the asci, rounded above, 1.5–2 μ thick.

On decorticated wood of some broad-leaved tree, Sonntagberg, Austria, 8.3.1902, *P. Strasser*.

The structure is exactly that of *Pezizella eburnea* (Rob.) Dennis and not at all that of a *Phialea* sensu von Höhnel.

LITERATURE CITED

- BOUDIER, E. (1907). Histoire et Classification des Discomycètes d'Europe. Paris.
- CLEMENTS, F. E. & SHEAR, C. L. (1931). The genera of Fungi. New York.
- DENNIS, R. W. G. (1956). A revision of the British Helotiaceae . . . In *Commonw. mycol. Inst. mycol. Pap.* 62.
- (1962). A reassessment of *Belonidium* Mont. & Dur. In *Persoonia* 2: 171–191.
- DONK, M. A. (1962). The Generic Names proposed for Agaricaceae. In *Nova Hedwigia*, Beih. 5.
- GROVES, J. W. (1952). The genus *Tympanis*. In *Canad. J. Bot.* 30: 571–651.
- HÖHNEL, F. VON (1926). Über die Gattung *Pezizella* Fuckel. In *Mitt. bot. Inst. tech. Hochsch. Wien* 3: 54–108.
- KUNTZE, O. (1898). Revisio generum plantarum 3 (2). Leipzig.
- LE GAL, M. (1953). Les Discomycètes de Madagascar. Paris.
- MASSEE, G. (1897). Redescriptions of Berkeley's Types of Fungi. In *J. Linn. Soc. (Bot.)* 31: 462–525.
- (1901). Redescriptions of Berkeley's Types of Fungi Part II. In *J. Linn. Soc. (Bot.)* 35: 90, 118.
- NANNFELDT, J. A. (1932). Studien über die Morphologie und Systematik der nicht-lichenisierten inoperculaten Discomyceten. In *Nova Acta Soc. Sci. Upsal.*, Ser. 4, 8 (2).
- PHILLIPS, W. (1887). A manual of the British Discomycetes. London.
- SCHROETER, J. (1893). Pilze. In *Kryptogamen-Flora von Schlesien* 3 (2). Breslau.
- (1894–6). Pilze. In *Die Natürlichen Pflanzenfamilien* 1 (1).
- SEAVER, F. J. (1951). The North American Cup Fungi (Inoperculates). New York.
- WHETZEL, H. H. (1945). A synopsis of the genera and species of the Sclerotiniaceae, a family of stromatic Inoperculate Discomycetes. In *Mycologia* 37: 648–714.
- WHITE, L. (1942). Studies in the genus *Helotium* I. In *Mycologia* 34: 154–179.
- (1943). Studies in the genus *Helotium* III. In *Farlowia* 1: 135–170.