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New or Interesting British Helotiales

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## New or interesting British *Helotiales*

R. W. G. DENNIS

The following notes relate to a few of the more interesting collections of British *Helotiales* received at the Herbarium, Royal Botanic Gardens, Kew, in recent years.

***Rutstroemia hercynica*** (*Kirschstein*) *Dennis*, comb. nov.

*Ciboria hercynica* Kirschstein in Ann. Mycol. 33: 205 (1935).

Apothecia solitary, disc concave, light reddish brown, 2 mm. diameter, receptacle bowl shaped, concolorous at the margin, dark brown below and in the short, stout, smooth stalk, surface somewhat wrinkled. Excipulum with a thin brown outer layer, about  $10\mu$  thick, composed of parallel hyphae  $3-4\mu$  diameter with thin brown walls, and an inner, glassy, gelatinised zone  $50-60\mu$  thick, containing hyphae of similar diameter, sparsely distributed through a hyaline matrix; flesh thick, formed of loosely woven, thin-walled, nongelatinised hyphae,  $7-10\mu$  diameter, which become tightly woven in the stipe and form a brownish stromatic base to the apothecium. Asci cylindrical-clavate,  $110 \times 11\mu$ , apex thick-walled, pore plug stained deep blue by Melzer's reagent, 8-spored; ascospores uniseriate or obscurely biseriata above, elliptical to reniform,  $13-14 \times 5-6\mu$ , hyaline, nonseptate, secondary spores not observed; paraphyses simple, cylindrical,  $3\mu$  diameter at the rounded tip. Black lines occur in the substrate. Fig. 1, p. 318.

On stem of *Chamaenerion angustifolium*, Howldale, Pickering, Yorkshire, 11.9.1954, *W. G. Bramley* K55/4.

The type, which I have not seen, was on the same host at Hirschkopf bei Stolberg in the Harz, Germany, July 1922. The genus *Ciboria* Fuckel is restricted by modern authors to species occurring on mummified fruits and catkins. *C. hercynica* is obviously closely related to and congeneric with *Rutstroemia firma* (Pers.) Karst., on fallen twigs of *Quercus*, in which the ascospores are a little larger, become 3 to 5-septate with age and bud off spherical secondary spores. Though neither Kirschstein nor I observed spore septation and secondary spore formation in *R. hercynica* it may occur for there is at Kew an old collection referred by Crossland to *R. firma*, 'On herbaceous stem, Winter well, Crimsworth, Yorkshire, Oct. 13 1894' which is probably *R. hercynica*. Crossland noted: 'Could not find any spores with spicules and globose heads in the asci. Spores elliptical  $11-14 \times 6$ . Those with spicules longer and narrower  $14-16 \times 5-6\mu$  pseudo 1-3 septate'.

While *Rutstroemia firma* is best known as a fungus of *Quercus* twigs it has been reported from Europe on other woody substrates and it may be worth while to record here a British collection on a twig of *Corylus avellana*: Bindon Cliffs, Rousdon, Devon, 2.12.1958, *P. D. Orton*. This has the usual large ascospores,  $16-19 \times 5-6\mu$ . The determination of the host has been confirmed by Dr. C. R. Metcalfe after examination of the anatomy.

***Ombrophila baeumleri*** *Rehm* in Hedwigia 24: 228 (1885)

When I compiled my Revision of the British Helotiaceae I had not seen a British collection of this fungus though there are old British records of its

probable earlier synonym *Peziza viridifusca* Fuck. (1870). Since then one has come to light in the Crossland herbarium, where it had been mis-determined as *Ciboria amentacea*, and a second has been received from Westmorland:

On fallen female catkins of *Alnus*, High Greenwood, Hebden Bridge, Yorkshire, Nov. 1897, ? Crossland; Grasmere, Westmorland, 26.9.1956, E. A. Ellis.

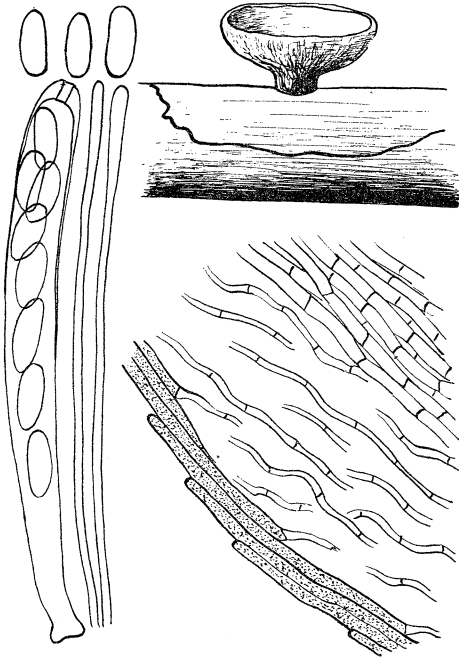


FIG. 1. *Rutstroemia hercynica*. Apothecium  $\times 10$ , section of excipulum  $\times 330$ , asci, spores and paraphyses  $\times 660$ .

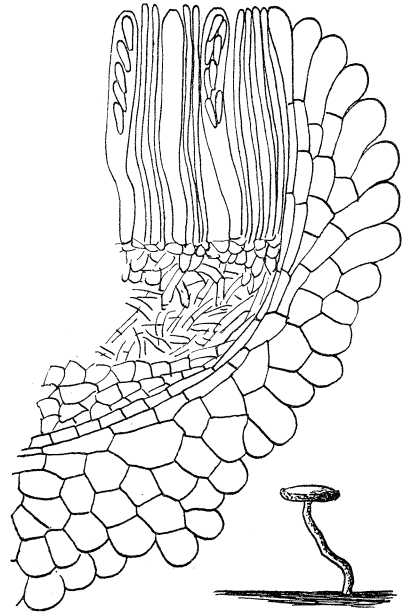


FIG. 2. *Ciboriopsis bramleyi*. Apothecium  $\times 10$ , section of margin  $\times 660$ .

Boudier has already referred another probable synonym of this much named fungus to *Ciboria*, viz. *Chlorosplenium amenticum* Karst. (1887) and though it is scarcely a typical *Ciboria* that is probably the best disposition that can be made of it at present. Though in the body of his *Discomycete* volume Rehm treated *O. baeumleri* and *P. viridifusca* as distinct species, in different genera, when he came to review his work in the supplement, p. 1262 (1896) he admitted their identity. I have not traced the necessary combination in *Ciboria* and accordingly propose it here:

***Ciboria viridi-fusca* (Fuck.) Dennis, comb. nov.**

*Peziza viridifusca* Fuck. in Jahr. Nass. Ver. Naturkunde 23/23: 309 (1870).

#### CIBORIOPSIS DENNIS, A NEW GENUS

There is a small group of Helotioid fungi, currently referred to *Helotium* or *Phialea*, in which the ectal excipulum is composed of isodiametric polyhedral or rounded cells instead of parallel hyphae as in *Helotium*, *Hymenoscyphus*, *Phialea* and *Rutstroemia*. In this they approach *Ciboria*, from which

they are distinguished by not occurring on fruits or catkins. Their uniformly small asci and ascospores also set them apart from the typical species of *Ciboria* while they differ from other genera of *Sclerotiniaceae* in lacking sclerotia or stromatic tissue. As a step towards a more natural circumscription of *Helotium* and *Hymenoscyphus* it seems advisable to segregate these species in a separate genus. At first sight the name *Ciboriella* Seaver seemed appropriate since it was proposed for species formerly referred to *Ciboria* but not found on flowers or fruits. The type species of *Ciboriella* however, is *Ciboria rufescens* Kanouse. Dr. E. B. Mains has kindly made this available for me for study and it proves to have an excipulum composed of broad and short-celled but clearly parallel hyphae like those of *Helotium*. *Discorhemia* Kirschstein (1936) was founded for fungi with apothecia with pseudoparenchymatic excipulum but sessile whereas all the species in the group mentioned above have long stalked apothecia. I therefore rather reluctantly propose a new genus:

**Ciboriopsis** *Dennis*, gen. nov. Apothecia subsuperficialia, stipitata. Excipulum textura globulosa, cellulis isodiametricis, polyedricis, in series divergentes dispositis. Ascospores hyalinae, continuae. Paraphyses graciles  
Typus: *C. bramleyi* *Dennis*.

**Ciboriopsis bramleyi** *Dennis*, sp. nov.

Apothecia sparsa, stipitata, laevia, lutescentia vel testacea. Cupula patelliformis, margine integerrimo, epithecio luteo, planiusculo vel convexiusculo, latit c. 750 $\mu$ . Stipes aequalis, altit. 1.5 mm., crassit. 150 $\mu$ . Asci cylindraco-clavati, 45  $\times$  5 $\mu$ , apice jodo vix coerulescentes. Ascospores octonae, distichae, ellipsoideae, hyalinae, eguttulatae, 6-8  $\times$  2-3 $\mu$ . Paraphyses filiformes, simplices, crassit. 1.5 $\mu$ . Fig. 2.

In caulibus et foliis emortuis *Chamaenerii angustifolii*, Kingthorpe woods, Pickering, Yorkshire, Sept. 1960, *W. G. Bramley* K60/64 (typus).

The apothecia are erumpent from beneath the epidermis but there is no sclerotium. The excipular cells, about 10 $\mu$  diameter, have thin, smooth, brown walls.

To the same genus are to be referred:

**Ciboriopsis advenula** (*Phill.*) *Dennis*, comb. nov.

*Helotium advenulum* *Phill.* in *Grevillea* 6: 24 (1877).

**Ciboriopsis uleana** (*Rehm*) *Dennis*, comb. nov.

*Phialea uleana* *Rehm* in *Hedwigia* 39: 93 (1900).

**Ciboriopsis lenta** (*Berk. & Br.*) *Dennis*, comb. nov.

*Helotium lentum* *Berk. & Br.* in *Journ. Linn. Soc., Bot.* 14: 108 (1873).

**Ciboriopsis phlebophora** (*Pat.*) *Dennis*, comb. nov.

*Helotium phlebophorum* *Pat.* in *Bull. Soc. mycol. France* 18: 179 (1902).

**Ciboriopsis microspora** (*Seaver*) *Dennis*, comb. nov.

*Phialea microspora* *Seaver* in *Mycologia* 17: 50 (1925).

**Ciboriopsis cecropiae** (*P. Henn.*) *Dennis*, comb. nov.*Helotium cecropiae* *P. Henn.* in *Hedwigia* 41: 25 (1902).**Helotium robustius** (*Karst.*) *Karst.* in *Not. Sällsk. Fauna Fl. Fenn.* 11: 238 (1870).

This fungus was recorded from England by *Dennis* (1956), but it is worth mentioning a further collection by *Mr. Palmer* in which the colours of the fresh apothecium were noted and found to agree extremely well with *Karsten's* description. The deep yellow disc contrasted with a cream coloured receptacle, seated on a long slender stalk which was flushed with bright pink throughout. Asci  $110 \times 7$ , I +; ascospores elliptic-cylindric,  $9-10 \times 3-4\mu$ , biguttulate; paraphyses obtuse,  $2.5\mu$  wide, with yellow oily contents; excipular hyphae  $3\mu$  wide, almost parallel with the surface.

On dead stems of *Galium* in a marsh, *Monk's Dale*, *Derbyshire*, 10.6.1961, *J. T. Palmer*.

The bright pink stipe, cylindrical ascospores and habit on marsh plants make this a rather distinctive species and differentiate it readily from *H. juncisedum* *Vel.*, also on marsh plants.

**Helotium juncisedum** *Vel.*, *Monogr. Discomycetum Bohemiae*: 201 (1934).

Apothecia scattered, superficial, disc about 1.5–2 mm. diameter, flat or convex, white to pallid, drying light brown; receptacle obconical with a short, cylindrical, smooth stalk, white, soft; flesh composed of loosely woven hyphae, excipulum of parallel, compact, thin-walled, hyaline hyphae  $5\mu$  wide, lying at a very low angle to the surface. Asci cylindric-clavate,  $75-120 \times 6-8\mu$ , apex conical, pore not blued by *Melzer's* reagent, eight spored; ascospores uniseriate to irregularly biseriate, elliptic-cylindric or tapered below,  $9-14 \times 2.5-4\mu$ , nonseptate; paraphyses cylindrical, obtuse,  $2-3\mu$  wide, *Fig. 3*.

On dead broken stems and fallen fruits of *Juncus effusus*, *Ashop Clough*, north slope of *Kinder Scout*, *Derbyshire*, 9.7.1961, *J. T. Palmer*.

*Dr. Svrček* has kindly searched for the type of *H. juncisedum* in the *Velenovsky herbarium* at *Prague* and reports that it cannot be found there but that an apothecium from the *Derbyshire* collection, sent to him, conforms in general with *Velenovsky's* manuscript notes, apart from some discrepancy in the account of the paraphyses tips.

? **Helotium vasaense** (*Karst.*) *Karst.*, *Mycol. Fenn.* 1: 125 (1871).

? *Peziza vasaensis* *Karst.* in *Not. Sällsk. Fauna Fl. Fenn.* 10: 150 (1869).

Apothecia solitary, sessile on leaves of *Sphagnum*, pulvinate, disc about 1 mm. diameter, whitish, drying light brown; receptacle smooth, saucer-shaped with a small base, very soft fleshed. Excipulum composed of very thin-walled hyaline cells,  $10-12\mu$  diameter,  $\pm$  isodiametric but collapsing when dried, marginal tissue composed of vertical rows of prismatic thin-walled cells  $10-15 \times 6-7\mu$ . Asci about  $75 \times 10\mu$ , pore not blued by *Melzer's* reagent, 8-spored; ascospores  $10-15 (-18) \times 2-4 (-4.5)\mu$ , elliptic-cylindric, hyaline, nonseptate; paraphyses cylindrical, slightly enlarged to  $3-4\mu$

diameter at the rounded tip, apex sometimes slightly curved, often branched below. Fig. 4.

On rotting *Sphagnum* in a bog, Broad Clough, 3.7.1960; Ashop Clough, 1800–1900 ft. [540–570 m.], 9.7.1960; Broad Clough, 3.7.1960; all on Kinder Scout, Derbyshire, J. T. Palmer.

I have queried the determination because the paraphyses of the type collection contain brown oily matter not shown by the Derbyshire fungus. Karsten described it as blackish brown but he apparently only saw it in the dried state, 'Cupula planiuscula, brunneo-atra (saltem in statu sicco)', and soft-fleshed white fungus tissue often dries blackish. *Helotium schimperi* Nawaschin in *Hedwigia* 27: 309 (1888) was possibly the same but the

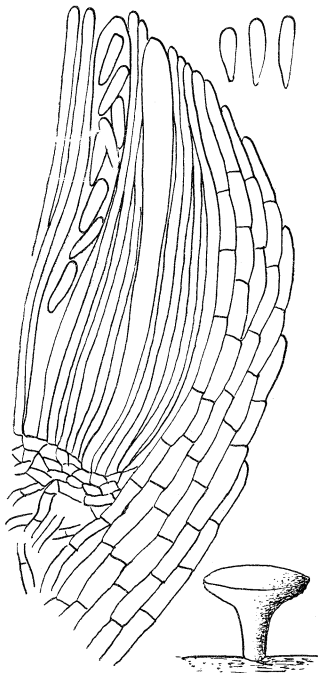


FIG. 3. *Helotium juncisedum*. Apothecium  $\times 10$ , section of margin and free ascospores  $\times 660$ .

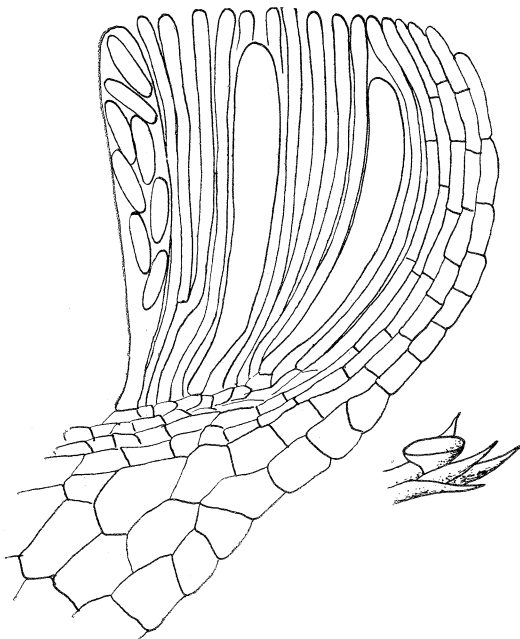


FIG. 4. *Helotium vasaense*? Apothecium  $\times 7$ , section of margin  $\times 660$ .

description and figures are hardly good enough for a definite opinion to be formed. Clearly this is no *Helotium*, *Cudoniella* or *Hymenoscyphus* nor, in the absence of gelatinised tissue, is it a *Sphagnicola* or an *Ombrophila*. It seems to be near *Discinella* but perhaps to be separated by its occurrence on a Byrophyte.

The collection made on 9.7.1960 also contains a blackish *Mollisia*, associated with a dark brown mycelium, having asci  $65 \times 5\mu$ , pore blue with Melzer's reagent, and ascospores  $8-10 \times 2\mu$ .

***Coprotinia cuniculi* (Boud.) Dennis, comb. nov.**

*Helotium cuniculi* Boud. in Bull. Soc. mycol. France 13: 16 (1897).

Apothecia scattered, arising from a blackened layer of stromatic tissue on the surface of rabbit dropping; disc concave, about 2 mm. diameter, light brown; receptacle concolorous or paler below, cupulate with a short cylindrical stalk, smooth. Excipular hyphae with thin-walled prismatic cells about  $30 \times 10\text{--}12\mu$ . Asci cylindrical-clavate, about  $150 \times 10\mu$ , apex truncate, pore blued by Melzer's reagent, 8-spored; ascospores elliptical or inequilateral,  $13\text{--}15 \times 4\text{--}5\mu$ , biguttulate, becoming 1-septate; paraphyses slightly enlarged to  $3\mu$  upwards, obtuse. Fig. 5.

Hightown, Lancashire, 25.3.1961, *J. T. Palmer*.

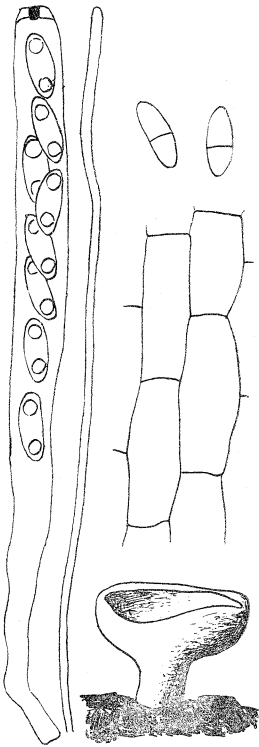


FIG. 5. *Coprotinia cuniculi*. Apothecium  $\times 10$ , excipular cells in surface view, ascus, paraphysis and spores  $\times 660$ .

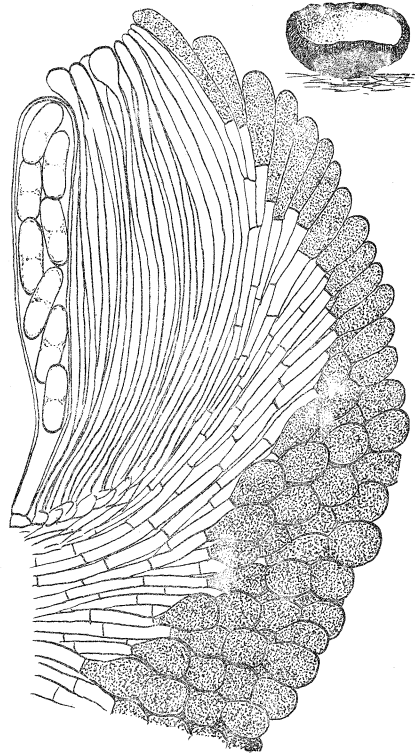


FIG. 6. *Cenangium graddoni*. Apothecium  $\times 10$ , section of margin  $\times 660$ .

As usual Boudier gives slightly larger microscopic measurements: asci  $200\text{--}230 \times 12\text{--}13\mu$ , ascospores  $16\text{--}20 \times 6\text{--}7\mu$ . His figure (*op. cit.* t. III, fig. IV), however, agrees remarkably well with the Lancashire material and I suspect the English and French fungi are the same. The shape of the asci and ascospores, as well as the stromatic tissue on the dung surface, indicate the species belongs to the Sclerotiniaceae and the coprophilous habit points then to Whetzel's genus *Coprotinia*. The type species of this, *C. minutula* Whetzel, has much smaller ascospores but a similar excipular structure. Whetzel (in Farlowia 1: 487) commented on his genus that 'It is perhaps most closely related to *Rutstroemia* but the slender hair-like stipes of the apothecia would seem to deny reference of it to that genus'. This was a

most eccentric reason for proposing a new genus and the short stout stalk of *H. cuniculi* is quite like that of a *Rutstroemia*. However, the latter genus is perhaps already too widely conceived and I am unwilling to extend it further to cover coprophilous fungi until it can be shown that the latter occur also on other substrata. I therefore propose to transfer *H. cuniculi* to *Coprotinia*.

A possible earlier name for the fungus is *Peziza arduennense* Marchal, also described from rabbit droppings, but said to have ascospores 14.5–16 $\mu$  long but 6–7 $\mu$  wide. This seems to indicate a spore with rather different proportions from the Lancashire collection and the apothecia were described as pruinose-furfuraceous beneath.

Madame Le Gal has kindly searched for the type of *H. cuniculi* in the Herbarium of the Muséum National d'Histoire Naturelle, Paris, where Boudier's collections were deposited, and reports that it cannot be found there. Probably, then, Boudier destroyed all his material in the course of his original examination.

***Cenangium graddonii* Dennis, sp. nov.**

Apothecia gregaria, superficialia, sessilia, urceolaria, extra nigro, disco concavo, 1–2 mm. diam., ochraceo, margine involuto; excipulo e cellulis 5 $\mu$  latis pseudoparenchymatice contexto, fusco. Asci clavati, 8-spori, 80  $\times$  10 $\mu$ , apice rotundati, jodo haud tincti; ascosporae subdistichae, oblongo-ellipsoideae, rectae vel subcurvatae, 13–17  $\times$  4–5 $\mu$ , biguttulatae, continuae; paraphyses filiformes, apicem versus ad 5 $\mu$  latae. Fig. 6.

In ramis siccis decorticatis *Alni*, Horner Wood, Porlock, Somerset, May 1957, *W. D. Graddon* 1191 (typus).

There is a second collection on wood of *Ilex aquifolium* from Kinloch, Isle of Rhum, Invernessshire, 13.4.1961, *Dennis*. The structure of the apothecia is exactly that of the type species of *Cenangium*, *C. ferruginosum* Fr., which also has similar round-topped, iodine negative asci, like those of a *Perrotia*, and similar paraphyses. Mr. Graddon noted the ascospores of *Graddon* 1191 to be tardily 1–3-septate. These must have been shot spores, those remaining in the asci seem to be all continuous. Asci and ascospores closely resemble those figured by von Höhnelt for his *C. rosulatum*, on *Salix* in Austria, but this was characterised by its densely caespitose apothecia and by the absence of paraphyses. Its structure was not described but von Höhnelt compared it with *C. tryblidioides* Ell. & Ev., which was said to be 'of fibrous texture'.

***Pezizella eriophori* Dennis, sp. nov.**

Apothecia sparsa, sessilia vel breviter stipitata, planiuscula vel convexiuscula, vitellina, vix 1 mm. diam. Asci cylindraco-clavati, 75–90  $\times$  6–7 $\mu$ , octospori, obturaculo jodo coerulescente; ascosporae fusoido-elongatae, 8–12  $\times$  2.5–3 $\mu$ , hyalinae, continuae. Paraphyses numerosae, filiformes, sursum vix incrassatae, in statu vivo guttulis subaurantiacis repletae. Fig. 7, p. 324.

Ad folia putrida *Eriophori angustifolii*, Cheenal Moor, Derbyshire, 18.6.1961, *J. T. Palmer* (typus); ad culmos *Cyperacearum*, 1800 ft. [540 m.], Kinder Scout, Derbyshire, 9.7.1960, *J. T. Palmer*.

This species differs from *Helotium citrinulum* in having its excipulum composed of parallel hyphae, 3–4 $\mu$  wide, lying at a low angle to the surface and from *H. epiphyllum* in its smaller ascospores.



***Pezizella polytrichi* Dennis, sp. nov.**

Apothecia sparsa, superficialia, subsessilia, disco convexo, pallido, 300 $\mu$  diam., pruinoso. Receptaculum supra concolor, basi brunneum, e pulvino parvo e mycelio hyalino compacto dense intertexto sistente et seriebus 1-2 hypharum parallelarum brunnearum 2 $\mu$  latarum tecto exortum. Stipes rudimentarius, ex hyphis compactis verticalibus sistens, cortice brunneo (e pulvino basali extenso) vaginatus. Excipulum ex hyphis subparallelis hyalinis septatis 2-3 $\mu$  latis omnino efformatum; caro interstitias magnas

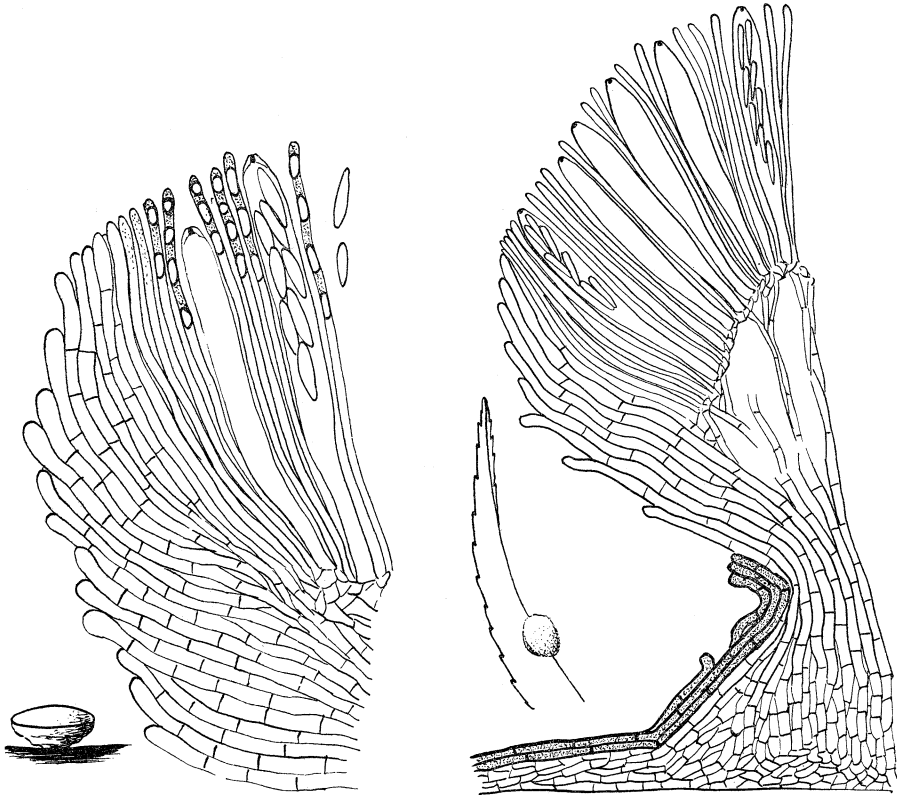


FIG. 7. *Pezizella eriophori*. Apothecium  $\times 12$ , section of margin  $\times 660$ .

FIG. 8. *Pezizella polytrichi*. Apothecium on *Polytrichum* leaf  $\times 20$ , section of margin  $\times 660$ .

vacuas fibrillis perlaxis tenuibus hyalinis permeatas exhibens; subhymenium ex hyphis compacte intertextis sistens. Asci clavati, 8-spori, 50  $\times$  7 $\mu$ , jodo haud tincti; ascosporae subdistichae, clavatae, rectae vel subcurvatae, 8-12  $\times$  1.5-2 $\mu$ ; paraphyses filiformes, ad 2 $\mu$  latae. Fig. 8.

In foliis emortuis *Polytrichorum*, Formby, Lancashire, Aprilis 1957, J. T. Palmer (typus).

***Calycellina ochracea* (Grelet & Crozals) Dennis in Persoonia 2: 187 (1962).**

*Belonidium ochraceum* Grelet & Crozals in Bull. Soc. mycol. France 44: 336 (1928).

Apothecia scattered, superficial, cupulate, sessile, light yellow throughout, disc concave, 0.5 mm. diameter, receptacle minutely downy. Excipulum composed of thinwalled prismatic cells, running out into short, cylindrical, obtuse, unicellular hairs, with delicate finely granulate walls. Asci clavate, 8-spored,  $75-85 \times 8-10\mu$ , pore blued by Melzer's reagent; ascospores biseriata, elliptic-fusoid, straight or slightly curved, hyaline,  $15-20 \times 3\mu$ , becoming 3-septate; paraphyses filiform, enlarged to  $2\mu$  at the obtusely rounded tip. Fig. 9.

On very rotten wood of *Fagus*, Tintern, Monmouthshire, 27.4.1925, ? Buckley.

In its habit and hairyness this approaches *Cistella* Quél. emend. Nannfeldt, but that generic name is illegitimate as a later homonym of *Cistella* Blume (1825).

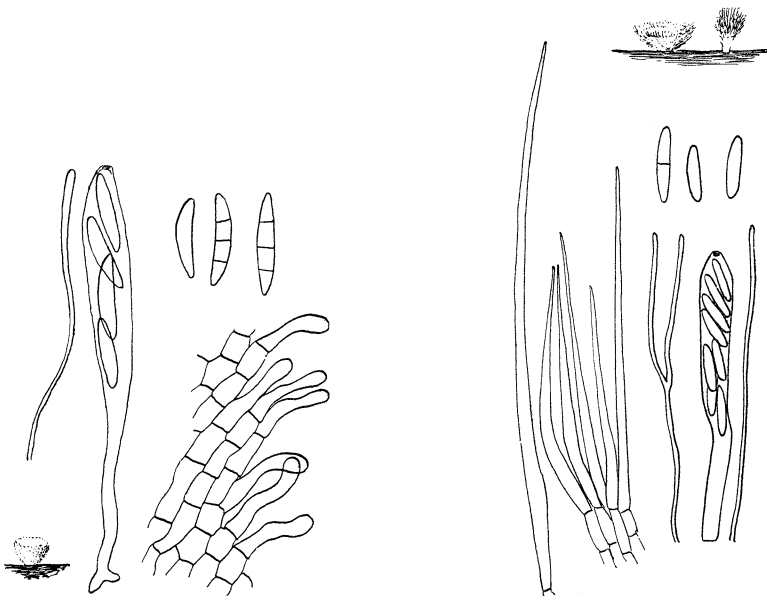


FIG. 9. *Calycellina ochracea*. Apothecium  $\times 10$ , excipular cells with hairs, ascus, spores and paraphysis  $\times 660$ .

FIG. 10. *Hyaloscypha paludosa*. Apothecia  $\times 10$ , hairs, paraphyses, ascus and spores  $\times 660$ .

### ***Hyaloscypha paludosa* Dennis, sp. nov.**

Apothecia sparsa, superficialia, subsessilia, alba vel albida, villosa, latit. circiter 1 mm., disco concavo, margine piloso-fimbriato. Pili apotheciorum inarticulati, laevea, apice longe cuspidati, longit.  $40-115\mu$ , crassit. (basin versus)  $3-4\mu$ . Asci clavati,  $50-85 \times 6-7\mu$ , octospori, obturaculo jodo coerulescente; ascosporae fusoideo-oblongatae, simplices, interdum uniseptatae,  $9-11 (-15) \times 2-2.5\mu$ . Paraphyses filiformes, sursum haud incrassatae, crassit,  $1\mu$ . Fig. 10.

Ad culmos putridos *Cyperacearum*, 1800 ft., [540 m.], Ashop Clough, Kinder Scout, Derbyshire, 9.7.1960, J. T. Palmer (typus).

The same fungus was collected by Mr. J. Gilbert in April 1960 on rotting grass, leaves of *Aulacomnium palustre* etc., near Wisley, Surrey.

**Dasyscyphus clavisporus** Mouton in Bull. Soc. Roy. Bot. Belg. 36, Pt. 2: 18 (1897).

Apothecia scattered, superficial, disc about  $\frac{1}{2}$  mm. diameter, concave, yellow, receptacle saucer-shaped, with a short cylindrical stalk, buff, clothed with white hairs. Hairs cylindrical or slightly clavate,  $45-70 \times 4-5\mu$ , with thin, hyaline, finely granulate walls, septate; asci clavate,  $75-100 \times 9-10\mu$ , 8-spored, pore blued by Melzer's reagent; ascospores mostly uniseriate, clavate, pointed below, nonseptate,  $15-20 \times 3-4\mu$ ; paraphyses very narrowly lanceolate,  $1.5-2\mu$  wide, not longer than the asci. Fig. 11.

On *Juncus effusus*, c. 1900 ft. [570 m.], head of Ashop Clough, NW. slope of Kinder Scout, 9.7.1960, *J. T. Palmer*; Broad Clough, Kinder Scout, Derbyshire, 23.7.1960, *J. T. Palmer*.

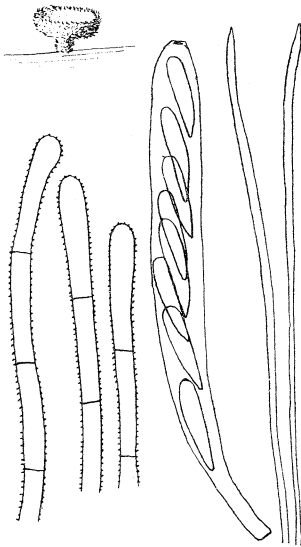


FIG. 11. *Dasyscyphus clavisporus*. Apothecium  $\times 15$ , hairs, ascus and paraphyses  $\times 660$ .

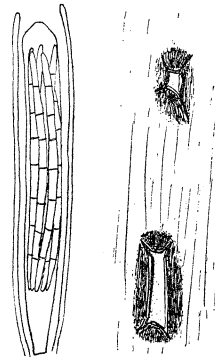


FIG. 12. *Naemacyclus caulium*. Apothecia  $\times 15$ , ascus and paraphyses  $\times 660$ .

The original diagnosis suggests a darker coloured apothecium, 'Extus fusciscentia, pilis fuscidulis', but the material preserved under the name in Mouton's herbarium at Brussels has the apothecia only light brown under a lens and hairs varying from hyaline to very faintly brown. In this it resembles the common graminicolous *D. palearum* (Desm.) Masee. The diagnosis gave the substrata as 'Culmis Molinae et Junci conglomerati', Mouton's surviving specimen is labelled 'Agrostis'. The large asci and broad clavate ascospores make it a very distinct species in the graminicolous group.

**Unguiculella robergei** (Desm.) Dennis in Kew Bull. 10: 136 (1955).

*Trichangium vinosum* Kirchstein in Ann. mycol. 33: 204 (1935).

A full description of the species will be found in Dennis, *l.c.* I take this opportunity of recording the first British collection, on bark of *Rosa* sp., Kilmory cliff, Isle of Rhum, 13.4.1961, *Dennis*, and of pointing out that Kirschstein's genus *Trichangium* seems to have been founded on a German

collection on bark of *Pyrus malus*. Desmazière's type was on bark of *Lonicera*. I have not seen Kirschstein's material but his description of *T. vinosum* fits *U. robergei* remarkably well.

**Naemacyclus caulium** von Höhnel in Sitz. ber. K. Akad. Wiss. Wien, Mathem.-naturw. Classe 115, Abt. I: 650 (1906).

Apothecia immersed, seated beneath a dark grey green patch of host tissue which opens when moistened, usually by four lobes, to expose the grey, round or elliptical, flat disc, up to about 1 mm. long. Asci cylindrical-clavate,  $60-65 \times 7\mu$ , 8-spored, pore not blued by Melzer's reagent; ascospores fasciculate, acicular, hyaline,  $40-50 \times 1.5\mu$ , mostly 7-septate; paraphyses filiform,  $1\mu$  wide, simple, a little longer than the asci. Fig. 12.

Towards the base of dead stems of *Urtica dioica*, Kinloch Castle gardens, Isle of Rhum, 17.4.1961, Dennis.

I am greatly indebted to the collectors cited under the various species listed above for entrusting their finds to me and depositing them in the herbarium of the Royal Botanic Gardens and to Mr. H. K. Airy Shaw for his kind assistance with the Latin diagnoses.

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**Bacterial Plant Pathogens.\***—This work, which is a translation of 'Pflanzenpathogene Bakterien' by C. Stapp, is divided into two sections. The first section is itself subdivided into two parts, the first of which is an account of the techniques involved in plant bacteriology including the preparation and storage of media, the isolation and cultivation of bacterial pathogens and finally a description of the methods used to obtain these organisms in pure culture and to demonstrate their pathogenicity. The second part of this general section of the book is concerned with the identification of plant bacteria. Here useful information is given on measuring and staining techniques, and the detection of various food reserves in the bacterium. Various aspects of bacterial physiology, having a bearing on the identification of these organisms, are also discussed. Such topics include the ability of certain bacteria to utilize various compounds as a food source, methods of testing for certain by-products such as hydrogen sulphide, ammonia, indole, etc., and a short account of measuring thermal death points of bacteria. Serological methods of identification as well as identification by bacteriophages are also described. Finally a brief outline is given of the classification of plant bacteria.

The second section of this volume is devoted to very detailed accounts of 24 selected pathogens which are of importance in Central Europe. Each account includes a description of the pathogen (its morphology, cultural characteristics and biochemistry) the symptoms of disease; method of infection and spread within the host; resistance and susceptibility of host plants; host range; geographical distribution; methods of control and finally a separate bibliography.

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\* *Bacterial Plant Pathogens*. By C. Stapp, translated by A. Schoenfeld. Pp. xviii + 292, 100 half-tone figures. London: Clarendon Press: Oxford University Press, 1961. Price £2 2s.