NOTES ON BRITISH LICHENICOLOUS FUNGI: II*

D. L. HAWKSWORTH**

ABSTRACT. Seven species of obligately lichenicolous fungi are reported from the British Isles for the first time and additional notes are included on a further eight species. The new combinations *Ascochyta lichenoides* (A. L. Sm.) D. Hawksw., *Chaenothecopsis parasitaster* (Bagl. & Car.) D. Hawksw. and *Lecidea lichenicola* (A.L. Sm. & Ramsb.) D. Hawksw. are made (the last being the correct name for the lichenized *L. watsonii* P. James) and two new species (*Nectriella tenuispora* D. Hawksw. and *Vouauxiella uniseptata* D. Hawksw.) are described. *Lophothelium acervatum* Stirt. (the type species of *Lophothelium* Stirt.) and *Microthelia stereocaulicola* Linds. are both later synonyms of *Polycoccum trypethelioides* (Th. Fr.) R. Sant. whilst *M. cookei* Linds. is a synonym of *Tichothecium lichenicola* (Sommerf. ex Fr.) R. Sant. *Trichonectria hirta* (Blox.) Petch is found to be a lichenicolous species.

This is the second of a series of papers discussing new or otherwise interesting lichenicolous fungi found in the British Isles (for the first see Hawksworth, 1975a). Since the appearance of the first part, several other papers dealing with lichenicolous fungi known in the British Isles have been published, notably those of Arvidsson (1976), Clauzade & Roux (1976), Hawksworth (1975b, 1976, 1977a, 1977b), Hafellner & Poelt (1976), Henssen (1976) and Tibell (1975).

Adelococcus cladoniae (Anzi) Keissl. in Rabenhorst, Krypt.-Fl. 8:312 (1930).
Syn.: *Sordaria cladoniae* Anzi in Atti Soc. Ital. Sci. Nat. 11:179 (1868).
Rosellinia cladoniae (Anzi) Sacc., Syll. Fung. 1:275 (1882).
ENGLAND. N Lincolnshire, Saltfleetby, on squamules of *Cladonia* sp. on dunes, 16 iv 1977, *P. M. Earland-Bennett* (HFX 1977, 263/5).
IRELAND. Co. Wicklow, Clogleagh Bridge, alt. 750 ft, on squamules of *Cladonia luteoalba*, 4 iv 1976, *B. J. Coppins et al.* 1638 *p.p.* (E).
SCOTLAND. Islay, Claggain Bay, on squamules of *Cladonia* sp. on roadside trees, 2 vii 1970, *G. G. Graham* (E).

This species, which has not previously been reported from the British Isles, differs from *Adelococcus nephromatis* (Crouan) D. Hawksw. (see Hawksworth, 1975a) primarily in the larger ascospores. In the collection from Co. Wicklow cited above the ascospores are 28–34 × 13–16 μm but in the other two collections they are perhaps immature and measure 21–26 × 10–14 μm. This fungus appears to be restricted to *Cladonia* species but has not previously been recorded on *Cladonia luteoalba* Wheld. & A. Wils.

Adelococcus cf. **groedensis** (Zopf) Keissl. in Rabenhorst, Krypt.-Fl. 8:311 (1930).
Syn.: *Rosellinia groedensis* Zopf in Hedwigia 35:350 (1896).
SCOTLAND. Outer Hebrides, Lewis, Port Geiraha, on thalli of *Parmelia mougeotii* on rock, viii 1959, *S. A. Manning* (E, IMI 211909).
FRANCE. Morbihan, Campénéac, on thalli of *Parmelia mougeotii* on rock, 2 iv 1970, *B. J. Coppins* (E).

* I in Kew Bull. 30:183–203 (1975).

** Commonwealth Mycological Institute, Ferry Lane, Kew, Surrey TW9 3AF.

Two collections of an *Adelococcus* species on the thallus of *Parmelia mougeotii* Schaer. are tentatively referred to *A. groedensis* on the basis of the size and shape of the ascospores which measure (17–)20–25 × 9–13 μm: Keissler (1930) gives the ascospores of *A. groedensis* as 16–25 × 10–12·5 μm. *A. groedensis* was, however, described from thalli of *Pertusaria flavicans* Lamy and is reported to have perithecia 0·5–3 mm in diameter. As in the collections of *Parmelia* no perithecia over 250 μm were seen and in view of the disparate hosts these identifications must be treated as tentative pending a thorough revision of *Adelococcus*. No *Adelococcus* has previously been reported from a *Parmelia* species.

Ascochyta lichenoides (A.L. Sm.) D. Hawksw., **comb. nov.** Fig. 1.
Syn.: *Diplodina lichenoides* A.L. Sm. in Trans. Brit. Mycol. Soc. 3:283 (1910).
ENGLAND. Essex, Writtle, Waterhouse Farm, on walnut trees, 1849, *H. Piggot* (K, holotype of *Diplodina lichenoides* A.L. Sm.).

The delimitation of the genera *Ascochyta* Lib. and *Diplodina* Westend. has recently been considerably clarified (Boerema & Bollen, 1975; Sutton, 1973, 1975) and the latter genus restricted to species where the conidiogenous cells (phialides) are arranged in acervuli or stromata. Examination of the holotype of *Diplodina lichenoides* showed it to have erumpent to almost superficial pycnidia and not acervuli or stromata; its conidiogenous cells were certainly phialidic and these and the conidia are very similar to those of the type species of *Ascochyta*, *A. pisi* Lib. (see Punithalingam & Holliday, 1972). *D. lichenoides* thus requires transfer into *Ascochyta*. In this species the conidiogenous cells are 4–8 × 2·5–3 μm and the conidia hyaline, 1-septate, 2-guttulate, and 8·5–10 × 3·4 μm. The host of *A. lichenoides* is uncertain; it is a sterile crustose lichen which is non-isidiate, non-sorediate, and pale olivaceous grey in colour; it gave no reactions with the usual reagents and no lichen products were detected by thin layer chromatography.

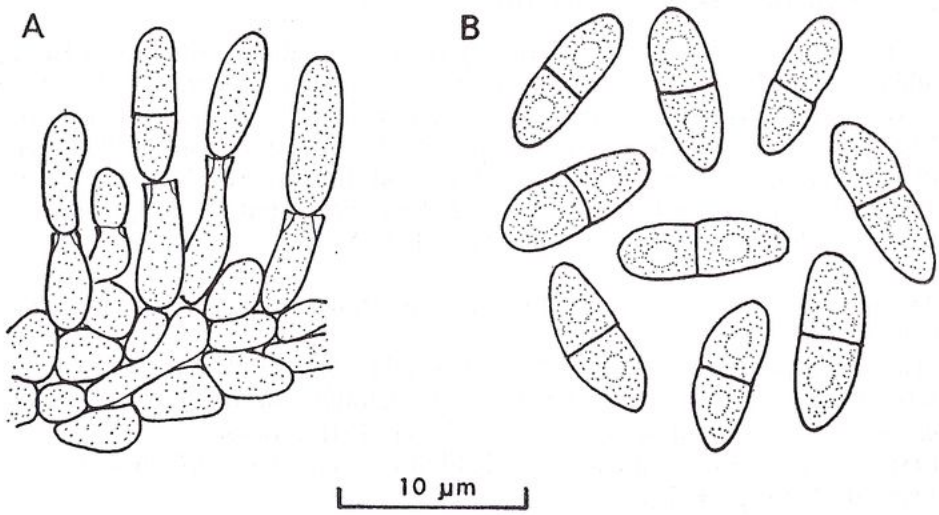

FIG. 1. *Ascochyta lichenoides*. A, conidiogenous cells; B, conidia. From the holotype (K).

Two further *Diplodina* species are mentioned in the British literature (see Watson, 1948): *D. vouauxii* B. de Lesd., the identity of which must remain uncertain in the absence of the type material, and *D. solorinaria* (Linds.) Vouaux which Keissler (1930) suggested was probably a synonym of *Rhagadostoma lichenicola* (de Not.) Keissl.

Chaenothecopsis epithallina Tibell in Symb. Bot. Upsal. 21, 2:116 (1975). Fig. 2A.

SCOTLAND. E Inverness, Guisachan Forest, S of Garve Bridge, on thallus of *Chaenotheca trichialis* on lignum of ? *Sorbus*, 25 v 1975, *B. J. Coppins* 1185 (E; IMI 202907).

The genus *Chaenothecopsis* Vain. is distinguished from allied genera of the Caliciales by the 1-septate or simple ascospores which are under 10 μm long, the failure to produce a mazaedium, and the cylindrical asci usually less than 50 μm long containing uniseriately arranged ascospores. The species occur on lignum or decaying wood and include saprophytes, lichenicolous fungi, and at least partially lichenized species. In addition to the two lichenicolous species reported here, at least four other *Chaenothecopsis* species occurring directly on lignum are now known from the British Isles, viz. *C. debilis* (Turn. & Borr. ex Schaer.) Tibell, *C. lignicola* (Nádv.) A. Schmidt, *C. pusilla* (Floerke) A. Schmidt, and *C. subpusilla* (Vain.) Tibell.

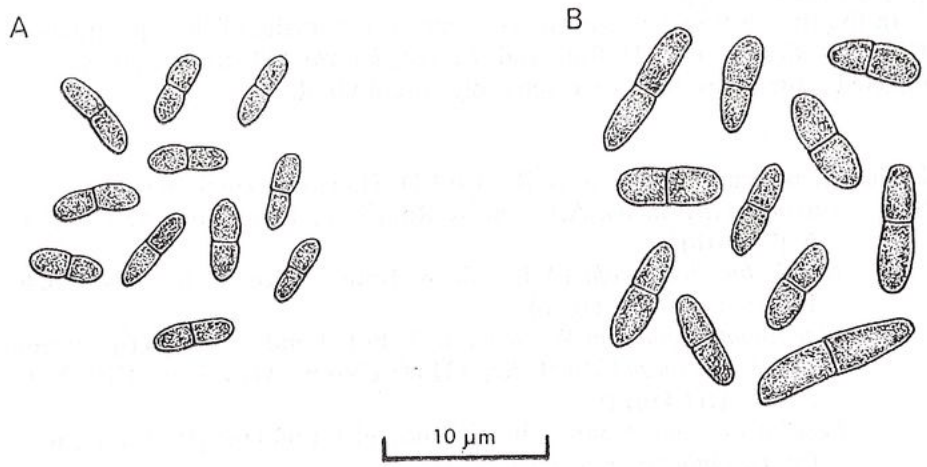

FIG. 2. *Chaenothecopsis epithallina* (A) and *C. parasitaster* (B) ascospores. A from IMI 202907; B from IMI 198440.

Chaenothecopsis epithallina occurs only on the thallus, or exceptionally on the stalks, of *Chaenotheca trichialis* (Ach.) Th. Fr., a lichen only recently recognised as present in the British Isles which is to be discussed in a forthcoming paper by B. J. Coppins and L. Tibell. The characteristic features of *Chaenothecopsis epithallina* are the greenish hypothecium not reacting with potassium hydroxide, asci mainly under 35 μm in length, and the pale olivaceous, smooth-walled ascospores, 5–7 × 1·5–2 μm (in the British collection); for further information on this species see Tibell (1975).

Chaenothecopsis parasitaster (Bagl. & Car.) D. Hawksw., **comb. nov.** Fig. 2B.

Syn.: *Calicium pusillum* var. *parasitaster* Bagl. & Car. in Atti Soc. Crittog. Ital. 2:246 (1880).

C. parasitaster (Bagl. & Car.) Zopf in Hedwigia 35:323 (1896).

C. floerkei var. *parasitaster* (Bagl. & Car.) Zahlbr., Cat. Lich. Univ. 1:601 (1922).

SCOTLAND. E Inverness, Abernethy Forest, by River Nethy south of Forest Lodge, on squamules of *Cladonia digitata* on west-facing bank, alt. *c.* 1000 ft, 24 v 1976, *B. J. Coppins & L. Tibell* 2716 (E); Guisachan Forest, Drochaid na Luib, on *Cladonia* cf. *polydactyla* on underside of old pine stump by river, alt. 850 ft, 25 v 1976, *B. J. Coppins & L. Tibell* 2717 (E). W Sutherland, head of Loch Eriboll, along Strath Beag below Creag Shomhairle, on squamules of *Cladonia polydactyla* in deciduous woods, 26 ix 1974, *P. W. James & F. Rose* (IMI 198440).

This species, which has not previously been reported from the British Isles, was originally described from material referred to *Cladonia deformis* (L.) Hoffm. collected in Italy. Keissler (1938) included it in *Chaenothecopsis pusilla* (Floerke) A. Schmidt (sub *Calicium floerkei* Zahlbr.) but it differs from that species in the larger ascospores which measure (6–)7–9(–10) × 2–3(–3·5) μm in the British material. *C. parasitaster* is also strictly lichenicolous and apparently confined to species of *Cladonia* whilst *C. pusilla* is lignicolous; asci in *C. parasitaster* also tend to be longer than those of *C. pusilla*, reaching 52 μm in IMI 198440.

In the British Isles *C. parasitaster* occurs as a parasite of the squamules of *Cladonia digitata* (L.) Hoffm. and *C. polydactyla* (Floerke) Spreng. The infected squamules become extensively discoloured.

Lecidea lichenicola (A.L. Sm. & Ramsb.) D. Hawksw., **comb. nov.**

Syn.: *Discocera lichenicola* A.L. Sm. & Ramsb. in Trans. Brit. Mycol. Soc. 6:48 (1918).

Nesolechia lichenicola (A.L. Sm. & Ramsb.) Keissl. in Rabenhorst, Krypt.-Fl. 8:140 (1930).

Thrombium cretaceum W. Wats. in J. Bot. Lond., 71:337 (1933); non *Lecidea cretacea* (Muell. Arg.) Hue in Nouv. Arch. Mus. Hist. Nat., sér. 5, 4:11 (1914).

Lecidea watsonii P. James in Lichenologist 3:98 (1965); as nom. nov. for *Thrombium cretaceum* W. Wats.

ENGLAND. Somerset, 'Treborough, Feltham & Britty Common', xi 1916, *W. Watson* (K, includes lectotype selected here of *Discocera lichenicola*).

The monotypic genus *Discocera* A.L. Sm. & Ramsb. was introduced for *D. lichenicola*, a species described from a collection 'Ad thallum Lichenis, supra saxa. Coll. W. Watson at Treborough, Somerset, Dec. 1915'. In K this taxon is represented by a single packet labelled 'Treborough, Feltham & Britty Common, W. Watson, Nov. 1916' in Watson's handwriting. Within this packet is a further packet labelled 'Flint stones Staple hill Limekiln nr. Feltham & top of Britty Common, Nov. 12th 1916', again in Watson's hand, and inside this are to be found *three* subpackets lacking further locality data.

Amongst various notes included is one by Thomas Hebden folded to make a 'packet' with 'Fungus from Treborough' written on the back, but no specimen within. There is no evidence that the material at Kew was that originally seen by Miss Smith or Ramsbottom but no material under their name has been located in BM, KGY (M. M. Hartley, *in litt.*) or TTN (P. C. Davey, *in litt.*). As three localities are mentioned on the packet now in K and three subpackets are within, it seems possible that a subpacket was from each site and the one actually from Treborough became enclosed with the other two. All three specimens are in an extremely poor state of preservation; they had been scraped off the pebbles on which they occurred with a knife, becoming extremely fragmented, and also overgrown by superficial moulds. Fungal material agreeing with the original type description remained in only one of the three subpackets; microscopic examination of the few ascocarps found left no doubt that the organism which Smith and Ramsbottom had been dealing with was not a lichenicolous fungus but the lichenized species for which the name *Lecidea watsonii* P. James has been employed in recent years. As epithets in lichenized fungi are considered as referring to the fungal partner (Art. 13), there is no obstacle to adopting Smith and Ramsbottom's specific name for this species and the necessary new combination is consequently made above.

It should perhaps be noted that *Lecidea lichenicola* occupies a somewhat isolated position within *Lecidea* Ach. and that a detailed re-appraisal of the circumscription of that genus may lead to its exclusion. *L. lichenicola* is a locally abundant species of chalk pebbles in southern England where it forms a characteristic association, the *Lecideetum watsoniae* P. James *et al.*

Microthelia cookei Linds. in Trans. Roy. Soc. Edinburgh 25:537 (1869).
Syn.: *Mycosphaerella cookei* (Linds.) Sacc. & D. Sacc., Syll. Fung. 17:649 (1905).
Arthopyrenia cookei (Linds.) Arnold in Flora 32:139 (1874).
ENGLAND. W Sussex, Chichester Barrack Walls, [on *Lecanora dispersa* thallus], 1866, *M. C. Cooke* (E, holotype).

This species was retained in *Mycosphaerella* Johanson by Vouaux (1912), Keissler (1930), Watson (1948) and Clauzade and Roux (1976) but there is no indication that any of these workers studied Lindsay's material. The holotype, which is growing on the thallus of *Lecanora dispersa* (Pers.) Sommerf., and not *L. crenulata* (Dicks.) Hook. as reported by Lindsay, proves to be a species of *Tichothecium* Koerb. with pseudothecia 50–100 μm wide mostly immersed except at the apex, polyspored asci 35–44 × 10–14 μm, and ellipsoidal, olivaceous brown (*not* colourless), smooth-walled ascospores 5–7 × 2–3 μm which have rounded ends and become 1-septate at maturity. *M. cookei* thus falls within the range of variation of *T. lichenicola* (Sommerf. ex Fr.) R. Sant. (syn. *T. erraticum* Massal.) and should be treated as a synonym of that species. The nomenclature of *T. lichenicola* is discussed by Santesson (1960).

Nectria lecanodes Ces. in Rabenhorst, Herb. mycol. ed. 2: no. 525 (1863).
For synonymy see Keissler (1930).
SCOTLAND. Argyllshire, Seil, Ballachuan, on *Lobaria laetevirens* on *Corylus*,

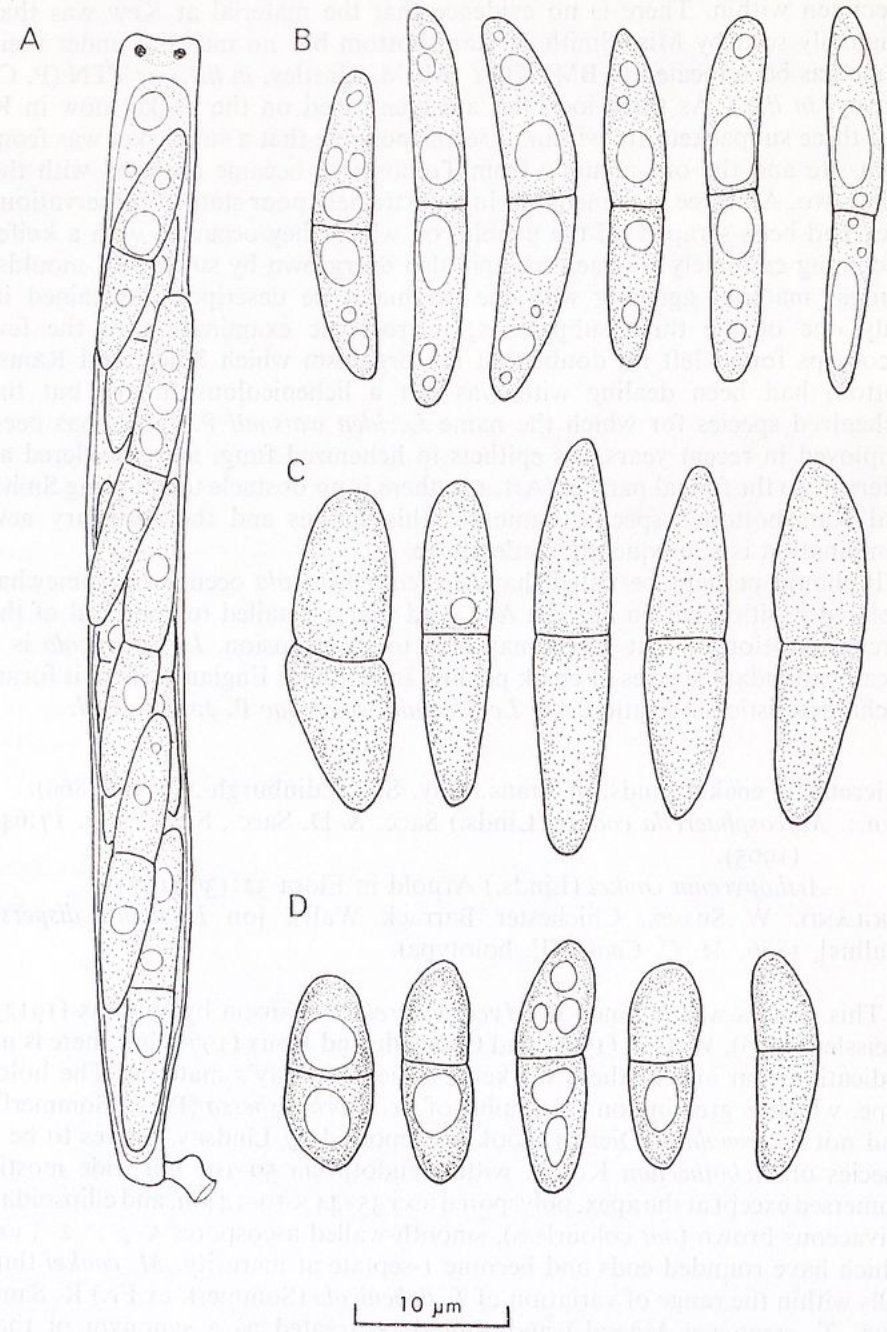

FIG. 3. *Nectriella tenuispora* (A-B), *N. erythrinella* (C) and *N. robergii* (D). A, ascus; B-D, ascospores. A-B from the holotype (E); C from H-Nyl. (holotype); D from IMI 189656.

30 vi 1976, *B. J. Coppins* 2051 (E; IMI 212735). W Inverness, Loch Arkaig, east of bridge over River Arkaig, on *Lobaria amplissima* on *Fraxinus*, 29 v 1975, *B. J. Coppins* 886 (E; IMI 194387).

This species is largely restricted to *Peltigera canina* (L.) Willd. in the British Isles but can also cause severe damage to *Lobaria* (Schreb.) Hoffm., a genus from which it has not previously been reported. On thalli of both *L. amplissima* (Scop.) Forss. and *L. laetevirens* (Lightf.) Zahlbr. the infected thallus becomes discoloured brown over extensive areas: the marginal zone of the infection becomes black with *L. amplissima* but is more diffuse in the case of *L. laetevirens*.

Nectriella tenuispora D. Hawksw., **sp. nov.** Fig. 3A-B.

Perithecia immersa ad erumpescentia, dispersa vel laxe aggregata, subglobosa, ostiolata, aurantiaca sed circa ostiola rubescentia, 150–250(–350) μm lata et 200–300 μm alta; peridium e 10–15 stratis cellularum translucidum, radialiter compressis, usque 20–30 μm latis compositum, cellulis usque 6–10 × 3–4 μm. *Paraphyses* desunt. *Asci* cylindrici, non-pedicellati, unitunicati, unusquisque cum annulo unico ad apicem, 8-spori, 60–90 × (6–)7–9(–10) μm. *Ascosporae* distichae in asco, anguste ellipsoideae et interdum leviter curvatae, 1-septatae cellulis plerumque guttulatis, hyalinae, laevigatae, 22–28(–33) × 3·5–4(–4·5) μm.

HOLOTYPUS: Scotia, Midlothian, proxime West Calder, 160 m, in thallo *Peltigerae polydactylae* (Neck.) Hoffm., 15 v 1976, *D. G. Long & D. F. Chamberlain* (holo. E; laminae vitreae in IMI 209761).

This previously undescribed species differs from the two other species of *Nectriella* Nits. known on *Peltigera* in its longer and narrower ascospores. In *Nectriella erythrinella* (Nyl.) Weese [syn. *Sphaeria erythrinella* Nyl. in Not. Sällsk. Fauna Fl. Fenn, Förh., n.s. 1:125 (1859); holotype: Finland, Helsingfors, xi 1858, *W. Nylander* (H); Fig. 3C] the ascospores are (18–)20–26(–28) × (5–)6–7(–8) μm, while in *N. robergei* (Mont. & Desm.) Weese [isotype: Desm., Pl. Crypt. Fr. sér. 2, no. 374 (K); Fig. 3D] they measure (11–)12–15(–17) × (4–)4·5–7 μm. *N. erythrinella* also differs in the somewhat paler colour of its perithecia and the tendency of the spores to be noticeably constricted at the septum.

In the type locality of *N. tenuispora*, the host was growing on a steep north-facing slope of a roadside, coal-mine, slag heap with scattered *Salix* scrub and a ground flora mainly of bryophytes (including *Bryum pallens* Sw. and *Lophocolea cuspidata* (Nees) Limpr.). The perithecia arise on older, somewhat discoloured, lobes of the host, originating in the algal layer and bursting through the upper cortex which they split. No conidial state was found on the holotype collection.

Phacopsis huuskonenii Räs., Lichenotheca Fennica, fasc. 21, no. 525 (1949). Fig. 4A-D.

Ascocarps (pseudothecia) forming on blackened, most often geniculately

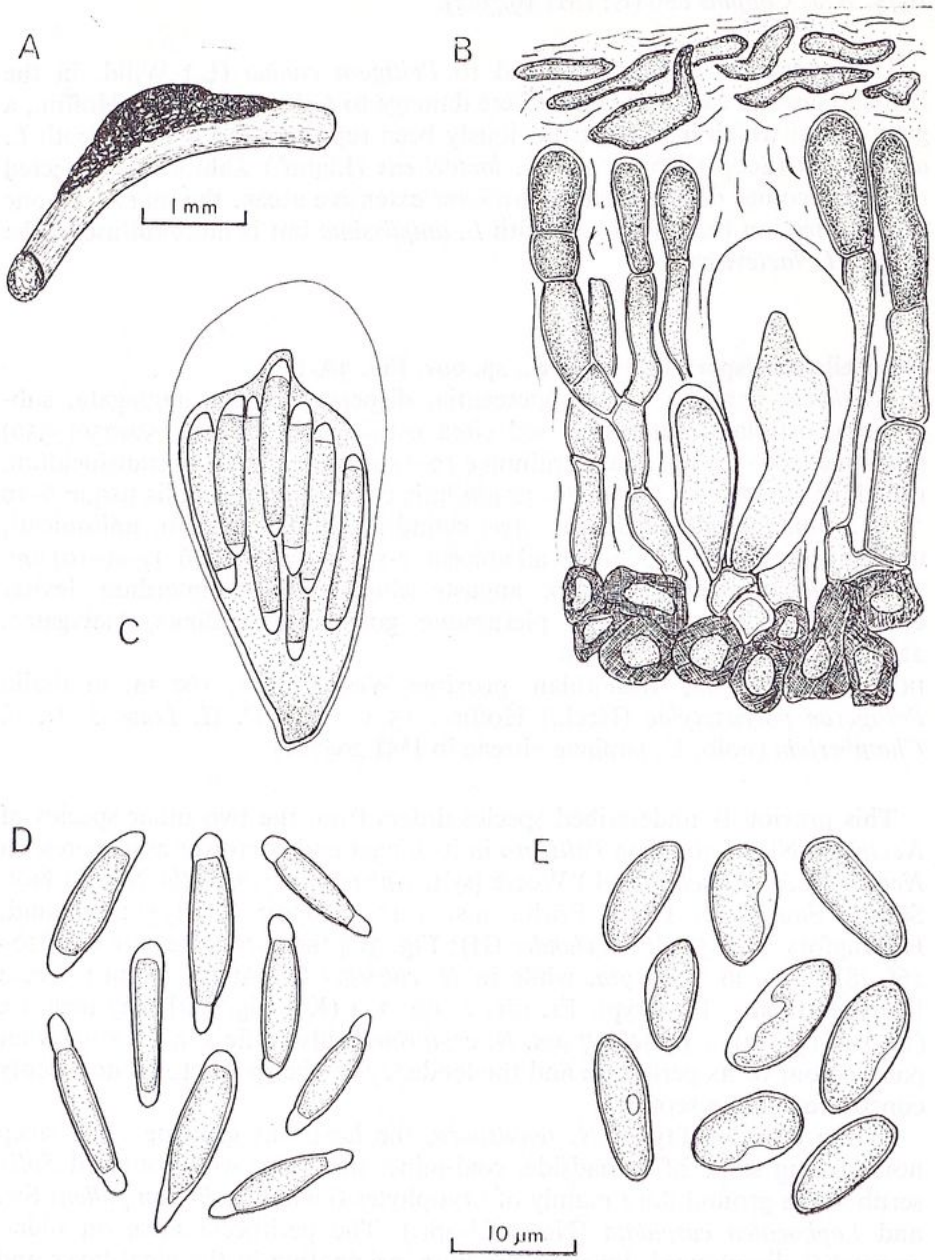

FIG. 4. *Phacopsis huuskonenii* (A-D) and *P. vulpina* (E). A, infected branch of *Bryoria fuscescens*; B, vertical section of portion of ascocarp; C, ascus; D-E, ascospores. A-D from *Coppins* 1781a (E); E from IMI 198491.

deformed, branches of the host lichen, indeterminate, crustose, and lacking a distinct margin (arthonioid), very variable in size, on one side of the branch or ensheathing it, black and generally somewhat shiny; epithecium dark brown, irregular, mainly 5–10 *µm* tall; thecium with an olivaceous tinge, 30–50 *µm* tall; hypothecium dark brown, intermixed with the cortical hyphae of the host whose walls also become pigmented, variable in height. *Paraphyses* (pseudoparaphyses) simple or 1(–2) branched, septate, with cells sometimes swollen between the septa, ± hyaline and 3–5 *µm* wide below, but the upper cells becoming brown to dark brown, somewhat rough-walled and 4–6 *µm* thick. *Asci* clavate, thick-walled, markedly thickened at the apex, with a distinct internal beak, bitunicate, 30–40 × 9–15 *µm*, 8-spored. *Ascospores* arranged ± parallel to each other or distichous in the asci, elongate-ellipsoid to subfusiform, hyaline, smooth-walled, with walls distinctly thickened and sometimes constricted at the apices which appear as if they have 1–3 *µm* thick caps, (12–)14–16(–18) × 2–3·5 *µm*.

On branches of *Bryoria capillaris* (Ach.) Brodo & D. Hawksw. (syn. *Alectoria implexa* auct.) and *B. fuscescens* (Gyeln.) Brodo & D. Hawksw.
FINLAND. Savonia borealis, Pielavesi, Sävia, Lähdemäki, supra ramos [*Bryoria capillaris*] ad corticem *Picea exclesae*, 6 iii 1949, *K. Huuskonen*, Räs., Lichenoth., Fenn. no. 525 (IMI 209424, isotype).
SCOTLAND. Mid-Perthshire, Glen Lyon, Old Wood of Meggernie, on *Bryoria fuscescens* over cushion of *Dicranum scoparium* on *Betula*, 25 vii 1974, *B. J. Coppins* 1781a (E).

Blackened, geniculately deformed branches are not uncommon in several species of *Bryoria* but examination of them rarely reveals any fungus in a determinable condition. Such deformations were figured by Grummann (1941, Pl. VIII) who tentatively considered them as due to a *Coniosporium*-like hyphomycete. In the Scottish collection cited above asci and ascospores were abundantly produced and comparison with isotype material showed the fungus concerned to be *Phacopsis huuskonenii*, a genus and species hitherto not reported from the British Isles. Räsänen gave the spore width as 3·5–5 *µm* but none wider than 3·5 *µm* were noted in the isotype examined.

Lichenoconium usneae (Anzi) D. Hawksw., a species with opportunistic rather than parasitic tendencies, occurs in some of the infection spots caused by *P. huuskonenii* in the Scottish specimen.

Phacopsis Tul. is allied to *Arthonia* Ach. from which it differs principally in the non-septate ascospores. In *P. huuskonenii* the ascospores have characteristically thickened apices; no apical thickening is seen in the spores of the type species of the genus, *P. vulpina* Tul., which forms very similar black encrustations on the non-British *Letharia vulpina* (L.) Hue, but in that species the lateral spore walls have occasional internal thickenings (Fig. 4E) which *may* perhaps correspond to those of *P. huuskonenii*; for the latter reason these species are retained here, with some hesitation, as congeneric.

Sayre (1969) gives the date of publication of the 21st fascicle of Räsänen's *Lichenotheca Fennica* as 1948 but since the collection of no. 525 is indicated as March 1949, which corresponds with the date on duplicates labelled by hand in H, and the list of labels was also dated 1949 (T. Ahti *in litt.*), there can be no doubt that the correct date of issue of the fascicle was 1949.

Polycoccum peltigerae (Fuckel) Vězda in Česká Mykol. 23:109 (1969). Fig. 5.
Syn.: *Didymosphaeria peltigerae* Fuckel in Jahrb. Nassauischen Vereins Naturk. 23–24:140 (1870).

Ascocarps (pseudothecia) immersed in, to slightly erumpent from, the thallus of the host lichen, arising in small groups, subglobose to obpyriform, ostiolate, black, mainly 125–175 μm wide and 125–240 μm tall. *Peridium* pseudoparenchymatous, mainly 15–20 μm thick below but to 30 μm thick near the ostiole, composed of 3–4 layers of brown to dark brown polyhedral and radially compressed cells with somewhat sclerotised walls; cells mainly 7–14 × 3–6 μm except near the ostiole where they are more rounded and 7–10 μm diam. *Paraphyses* (pseudoparaphyses) arising from the inner walls and base of the pseudothecial cavity, filiform, branching and anastomosing, persistent, immersed in a gelatinous matrix and often rather indistinct, 1·5–2·5 μm wide. *Asci* elongate-clavate, bitunicate, thick-walled, with an internal apical beak, 55–75 × 8–12 μm, 8-spored. *Ascospores* irregularly uniseriate, ellipsoid, somewhat pointed at the ends, 1-septate, slightly constricted at the septum, with cells often rather unequal in size, walls smooth, pale brown to greenish brown, (12–)13·5–16(–18) × 4–6(–7) μm.

On the thallus of *Peltigera canina* (L.) Willd. and *P. spuria* (Ach.) DC. ENGLAND. S Lancashire, Formby, Freshfield dunes, on *Peltigera canina*, 14 v 1951, *G. Salisbury* (IMI 189658). SW Yorkshire, Hebden Bridge, Nutcleugh Mill, on *Peltigera spuria*, 23 xi 1973, *P. M. Earland-Bennett* (E, IMI 212820).

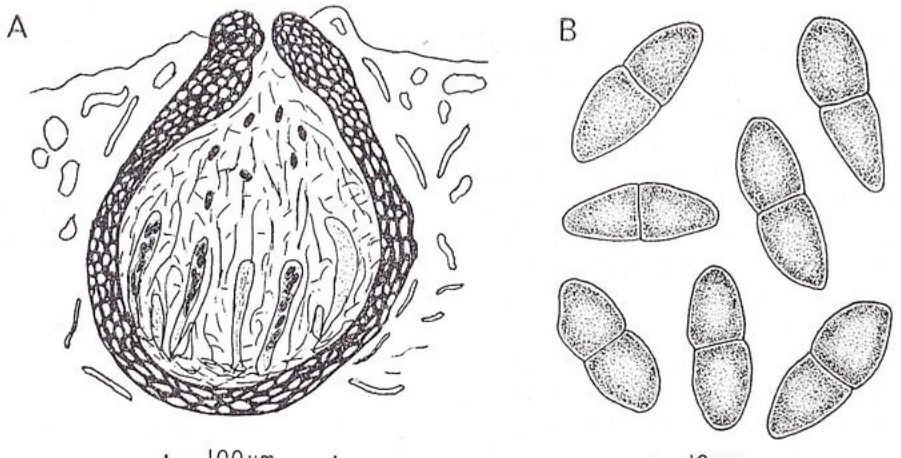

FIG. 5. *Polycoccum peltigerae*. A, vertical section of ascocarp; B, ascospores. From IMI 189658.

This species, which has not previously been recorded from the British Isles, appears to be confined to *Peltigera* species. According to Keissler (1930) *P. peltigerae* is known from France, Germany and Switzerland. This species is generally considered to form rounded rather swollen deformations on the thallus of the host (Vouaux, 1913; Keissler, 1930; Vězda, 1969) but this was not apparent in the British collections although some of the infected areas tend to become rather uneven and slightly raised. As this feature, perhaps,

may not develop immediately and the British material appears to agree with the published descriptions in other respects, it is not separated and regarded as a distinct species here.

Polycoccum trypethelioides (Th. Fr.) R. Sant. in Svensk Bot. Tidskr. 54:505 (1960). Fig. 6.

Syn.: *Diatrype trypethelioides* Th. Fr. in Acta Reg. Soc. sci. Upsal., ser. 3, 2(1):317 [p. 13 of reprint] (1858).
Microthelia stereocaulicola Linds. in Trans. Roy. Soc. Edinburgh 25:537 (1869).
Tichothecium stereocaulicola (Linds.) Arnold in Flora 57:142 (1874).
Discothecium stereocaulicola (Linds.) Vouaux in Bull. Soc. Mycol. France 29:57 (1913).
Didymosphaeria stereocaulicola (Linds.) Sacc., Syll. Fung. 17:681 (1905).
Lophothelium acervatum Stirt. in Scott. Naturalist (Perth) 9:37 (1887).
Discothecium acervatum (Stirt.) A.L. Sm., Monogr. Br. Lich., ed. 2, 2:387 (1926).
Polycoccum sauteri Koerb., Parerg. Lich.: 470 (1865).
Discothecium sauteri (Koerb.) Vouaux in Bull. Soc. Mycol. France 29:55 (1913).

For further synonyms see Keissler (1930).

Ascocarps (pseudothecia) immersed in bluish-grey, thalline, gall-like, subglobose warts, 1–2(–2·5) mm diam, erumpent from podetia of the host lichen, many arising over the surface of each wart, subglobose to obpyriform, ostiolate, black, mainly 150–250 μm wide. *Peridium* pseudoparenchymatous, rather variable in width, mainly 20–30 μm thick, composed of dark brown polyhedral and radially compressed cells with somewhat sclerotised walls, cells mainly about 7 μm diam. *Paraphyses* (pseudoparaphyses) arising from the inner walls and base of the pseudothecial cavity, numerous, filiform, branched and frequently anastomising, persistent, 1·5–2·5 μm wide. *Asci* elongate-clavate, bitunicate, thick-walled, with an internal apical beak, (74–)80–100 × (14–)16–19 μm, 8-spored. *Ascospores* irregularly uniseriate to distichous, ellipsoid, rounded at the ends, 1-septate; cells markedly unequal in size, constricted at the septum, smooth-walled, dark brown, 14–22 × 8–10 μm.

Forming galls on podetia of *Stereocaulon* species.

SCOTLAND. Banff, River Avon, 1½ km NW of Inchrory, on *Stereocaulon* sp. on stable riverside shingle, 10 vii 1975, *B. J. Coppins & P. Harrold* 902 (E, IMI 197662). Perthshire, Ben Lawers, Craig-na-Guur, 18 vii 1866, *J. Stirton* (K, holotype of *Lophothelium acervatum*). S Aberdeenshire, Braemar, Glen Deerie, vii 1854, *A. Croall* (E, holotype of *Microthelia stereocaulicola*).

The discovery of a gall-forming *Polycoccum* on a *Stereocaulon* in Banff by B. J. Coppins and P. Harrold in July 1975 prompted an examination of two lichenicolous fungi with brown, 1-septate ascospores described from the British Isles and reported to form galls on *Stereocaulon*, viz. *Microthelia stereocaulicola* Linds. and *Lophothelium acervatum* Stirt. Both these fungi had been accepted by Smith (1926) as distinct species of *Discothecium* Zopf

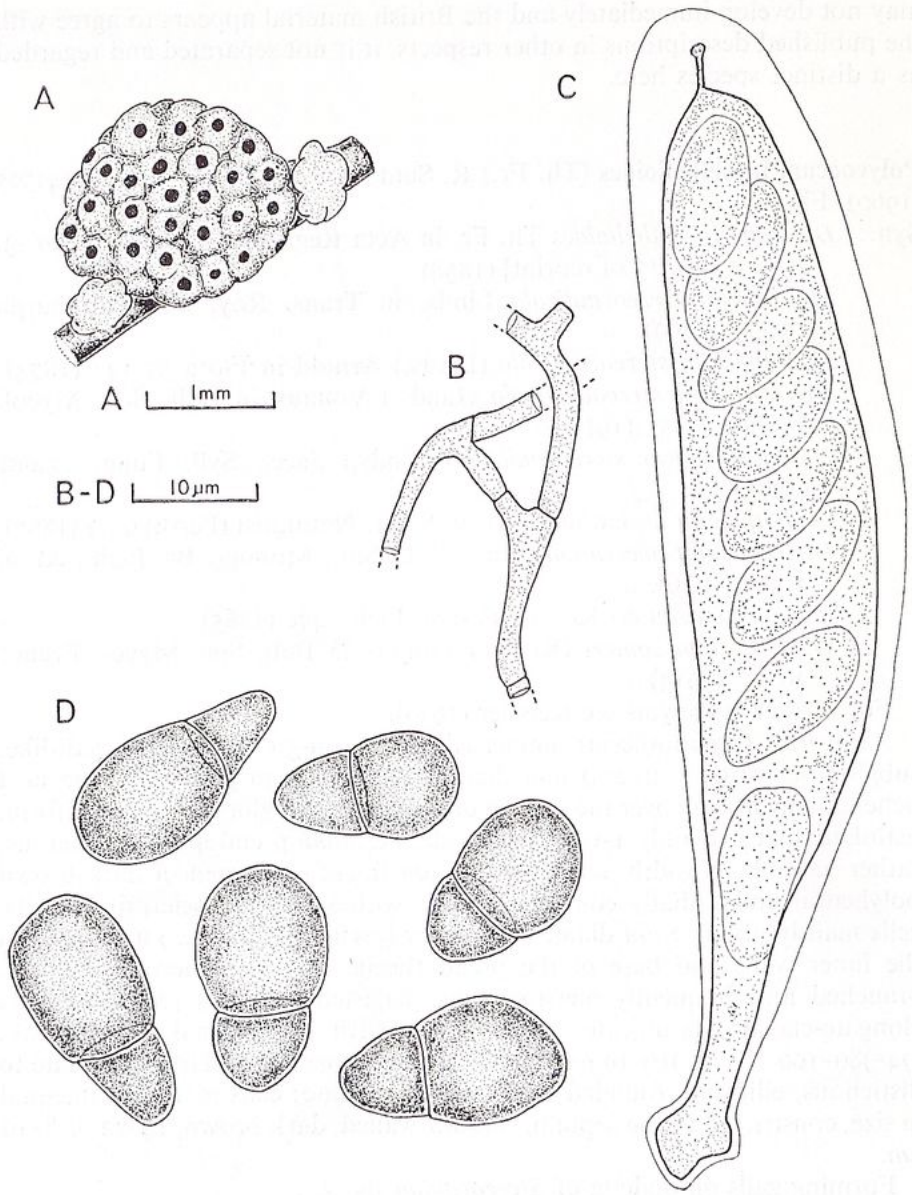

FIG. 6. *Polycoccum trypethelioides*. A, gall-like growths on *Stereocaulon* sp. podetia; B, anastomosing pseudoparaphyses; C, ascus; D, ascospores. From the holotype of *Lophothelium acervatum* (K).

but proved to have anastomosing paraphyses and to be conspecific with the Banff *Polycoccum*. From the published descriptions (Keissler, 1930; Santesson, 1960; Vezda, 1969), and particularly the illustrations of Galløe (1972, Pl. 56–57), there can be no doubt that these specimens belong to *P. trypethelioides*; the names of Lindsay and Stirton are consequently treated here as synonyms of *P. trypethelioides* for the first time. As *Lophothelium acervatum* is the type of the genus *Lophothelium* Stirt., that genus must be treated as a synonym of *Polycoccum* Saut. ex Koerb.

Synaptospora tartaricola (Nyl.) Cain in Sydowia, Beih. 1:6 (1957).

See also Hawksworth (1975a)

SCOTLAND. W Perthshire, Muckhart, E of Vicar's Bridge, N side of River Devon, on thallus of *Lecidea cinnabarina* on *Quercus*, 16 ii 1975, *B. J. Coppins* 340 (E).

Material currently referrable to this species has recently been discovered in Scotland on an additional host, *Lecidea cinnabarina* Sommerf. This collection agrees in most respects with that from other hosts in Britain except that the paraphyses are rather sparse and the ascospores tend to be more consistently globose and individually slightly smaller (mainly 8–9 *µm* diam). Further collections on *L. cinnabarina* will be needed to ascertain conclusively if the *Synaptospora* on this host is really conspecific with *S. tartaricola*.

Trichonectria hirta (Blox.) Petch in Naturalist, Hull 1937:282 (1937). Fig. 7.

Syn.: *Nectria hirta* Blox. apud Currey in Trans. Linn. Soc. London 24:158 (1863).

For further synonyms see Petch (1938).

ENGLAND. Leicestershire, *sine loc.*, *A. Bloxam* (K); Twycross, on decaying rails/ rotten wood/ decaying wood/ etc., *A. Bloxam* (K; 12 specimens including the lectotype of *Nectria hirta*). Middlesex, Highgate, on old rails, *M. C. Cooke*, Fungi Br. exs. no. 584 (K). Shropshire, Whitchurch, 29 November 1872, *W. Phillips* (K; 2 specimens); near Newport, October 1875, *W. Phillips* (K). Warwickshire, Yarningale Common, over lichens on *Sambucus*, 12 xii 1976, *M. C. Clark* (IMI 209974). Yorkshire, Hebden Bridge, on decorticate trunk under Hardcastle Hill, 6 xi 1897, *J. Needham* (K, holotype of *Calonectria vermispora* Massee & Crossl.).

The discovery of what appeared to be this species by Mr M. C. Clark on a mixture of lichens including *Bacidia chlorococa* (Stiz.) Lett. (sterile), *Lecanora conizaeoides* [Nyl. ex] Cromb. and *Lepraria incana* (L.) Ach. on live *Sambucus* bark in Warwickshire prompted a re-examination of this fungus as it has hitherto been consistently regarded as characteristic of decorticate wood and not fungicolous or lichenicolous. The species was originally described from material "on decaying rails" collected by Bloxam at Twycross, Leicestershire. There are now twelve of Bloxam's collections of this species in K from Twycross and most are labelled as "on decaying rails"; closer examination of these shows that it in fact developed on *Lecidea uliginosa* (Schrad.) Ach., *Lecanora conizaeoides*, or indeterminate black encrustations when on wood. One of Bloxam's specimens on bark (not decorticate wood) is labelled in his hand "thinly scattered on the *Lepraria*" and proves to be on *L. incana* and *Lecanora conizaeoides* so it is evident that Bloxam knew the species could be lichenicolous. Phillips' specimen from near Newport, Shropshire, is on *L. conizaeoides*, while his collection from Whitchurch is probably on *Lecidea uliginosa*, as was Cooke's from Highgate. However, the Hebden Bridge, Yorkshire, specimen is not obviously lichenicolous but rather occurs on wood most probablyblackened by some other pyrenomycete, the fruits of which have been lost. These data indicate that *Trichonectria hirta* is generally lichenicolous, may also be fungicolous, but does not occur directly on wood.

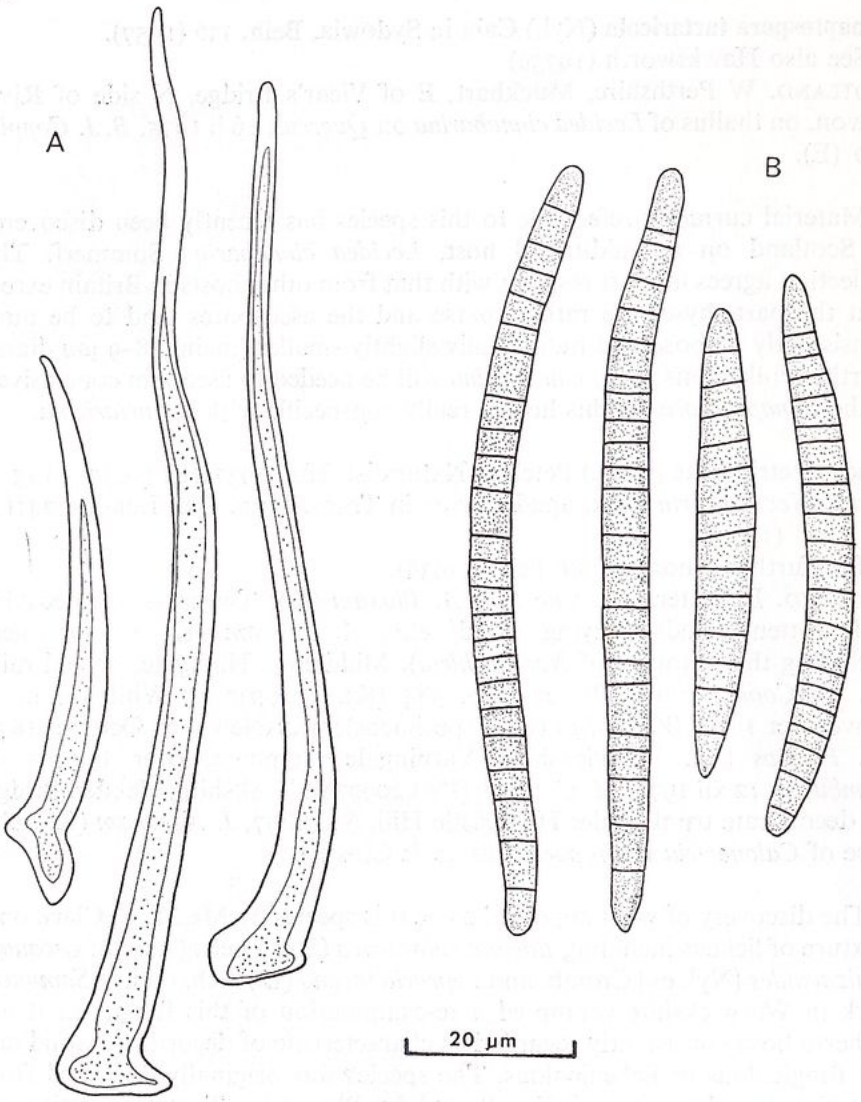

FIG. 7. *Trichonectria hirta*. A, sterile setae from the outer perithecial wall; B, ascospores. From IMI 209974.

This species appears to have been collected extremely rarely in the British Isles as the most recent dated collection located prior to Mr Clark's was made in 1879. It is, however, probably often overlooked as Mr Clark (*in litt.*) has subsequently found it on an old fence and on two old apple trees in his garden in Worcestershire (in both cases on *Lecanora conizaeoides*) and on lichen-encrusted *Sambucus* at three further sites in Warwickshire (Bannams Wood, New End and Warings Green). This fungus is most distinctive as the scattered translucent orange (bright orange when fresh) superficial 125–250 *µm* diam. perithecia are beset with conspicuous pure white hairs; the 8-spored asci bear almost vermiform multiseptate ascospores measuring (45–)60–100(–120) × (4·5)–5–7(–8) *µm*. *T. hirta* does not appear to be a pathogen of the lichens it can grow on but seems to occur only on already unhealthy tissues, i.e. as a saprophyte.

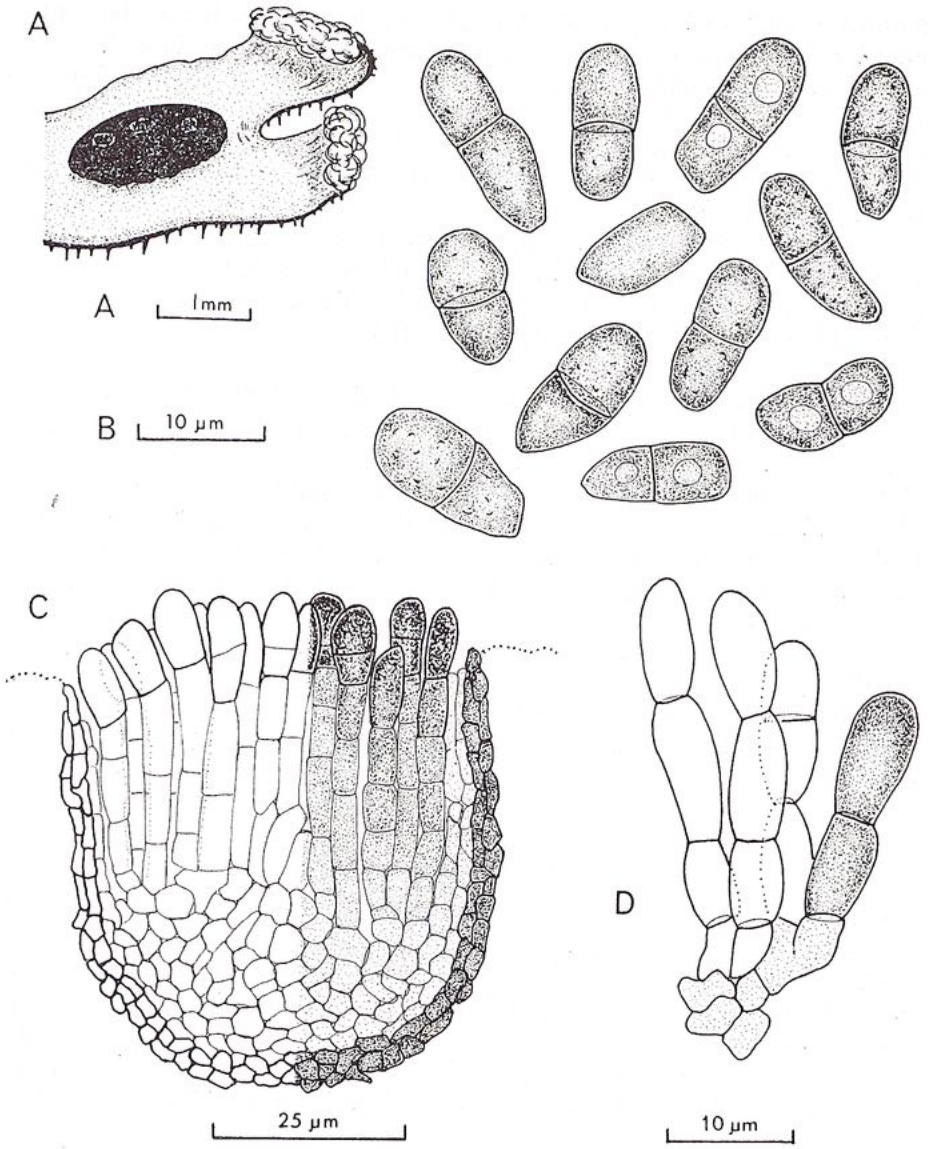

FIG. 8. *Vouauxiella uniseptata*. A, infected lobe of *Parmelia laevigata*; B, conidia; C, vertical section of pycnidium; D, conidiogenous cells and chains of young conidia. From the holotype (IMI 212668).

Vouauxiella uniseptata D. Hawksw., **sp. nov.** Fig. 8.

Pycnidia in thallo nigrescentio immersa, dispersa vel irregulariter aggregata, cupuliformia vel debiliter limitata, nigra, usque 40–60 *µm* lata et 50–70 *µm* alta; muri pycnidii usque 7–10 *µm* crassi, e 2–3 stratis cellularum pseudoparenchymaticarum compositi, cellulis irregularibus, atrobrunneis, usque 3–6 *µm* diam. *Conidiophora* ex cellulis interioribus pycnidiorum producta, hyalina vel pallide brunnea. *Cellulae conidiogenae* holoblasticae, in conidiophoris incorporatae, hyalinae vel pallide brunneae, cellulis interioribus pycnidiorum simulantes. *Conidia* (arthroconidia meristematica) in catenis

paralleliformibus ad 50 μm altis et usque 3–4 μm latis producta, ellipsoidea, interdum basi truncata, 1-septata vel rarissime simplicia, interdum ad septum constricta, 0–2 guttulata, atrobrunnea, leviter ad parce verruculosa, (10–)12–15(–17) × 5–7(–8) μm.

HOLOTYPUS: Scotia, Kintyre, Ellary Woods proxime Abhainn Mhore, in thallo *Parmeliae laevigatae* in *Corylo*, 2 vii 1976, *B. J. Coppins* 2581 (holo. IMI 212668; iso. E).

Two further collections of this fungus have been seen (both on *P. laevigata*). SCOTLAND. Argyllshire, Glasdrum National Nature Reserve, 27 v 1976, *B. J. Coppins & L. Tibell* 2739 (E). Kintyre, Tarbert, 1 km north-east of Avinagillan, 1 vii 1976, *B. J. Coppins* 2655 (E).

This fungus arises on the host thallus in raised pustular black patches which vary in size but are mainly 1–2 mm diam; the infections are thus strictly localized and adjacent areas of the host thallus remain their normal colour. The tips of the conidial chains can be seen as small tufts arising within the blackened areas of the thallus. In vertical section it often proved difficult to determine whether the fungus was sporodochial or pycnidial; as definite pycnidia were noted (Fig. 8C) this fungus is referred to the Sphaeropsidales here and the sporodochia-like areas interpreted as expanded cupulate pycnidia. The only other known species of *Vouauxiella* Petr. & Syd., the conidia of which were illustrated by Hawksworth (1976), have pyriform pycnidia and conidia which are consistently simple and much smaller than in *V. uniseptata*. This new fungus is consequently referred to *Vouauxiella* with some hesitation.

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