Sydowia, Annales Mycologici Ser. II.
Vol. 38: 294–316 (1985)
Verlag Ferdinand Berger & Söhne Gesellschaft m.b.H., 3580 Horn, Austria

New or Interesting Ascomycetes from the Highlands and Islands

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During the past few years, intensive collecting by one of us R. W. G. D.) in the Highlands and Islands of Scotland has yielded a number of ascomycetes, mostly Helotiales, which are either undescribed or have not been previously reported from the British Isles. An account of these species is provided here, together with a redescription of *Hyaloscypha stevensoni* based on a collection from the Isle of Skye.

Hemisphaeriales

Lembosina gontardi Müller, Nova Hedwigia 6: 148 (1963) – Fig. 1, D–E

Thyriothecia elongated, curved or forked, 0.5–1 mm long, ca. 200 µm wide, 100 µm high, amphigenous, scattered, superficial on attached dead leaves, surrounded by dark brown superficial mycelium, opening by a longitudinal slit. – Superficial mycelium composed of septate, branching hyphae 3–5 µm diam., with dark brown, somewhat thickened walls, lacking hyphopodia. – Thyrothecial wall almost opaque, composed of small, dark brown cells. Marginal hyphae dark brown, lobed, branched and adherent, passing into the superficial mycelium. – Asci bitunicate, broadly clavate or clavate-ellipsoid, 35–44(–50) × 23–28 µm, 8-spored. – Ascospores 17–25.5 × 8–9 µm, ellipso-fusoid, hyaline, slightly constricted at the single median septum, each cell containing one or several irregular guttules. – Paraphysoids numerous, hyaline, septate, often branched near the apex, obtuse, expanded to 3–4 µm diam. at the apex, walls thickened.

Specimen examined. – Isle of Skye, between Aird and Point of Sleat, on leaves of *Arctostaphylos uva-ursi*, 25 May 1982, leg. R. W. G. Dennis.

The species was described from this host in Switzerland and France, and was reported as common in Fennoscandia by Eriksson (1974). It has not previously been reported from the British Isles. The thyriothecia occur scattered on both surfaces of the leaf blade, and evidently vary somewhat in form. In the present collection they are

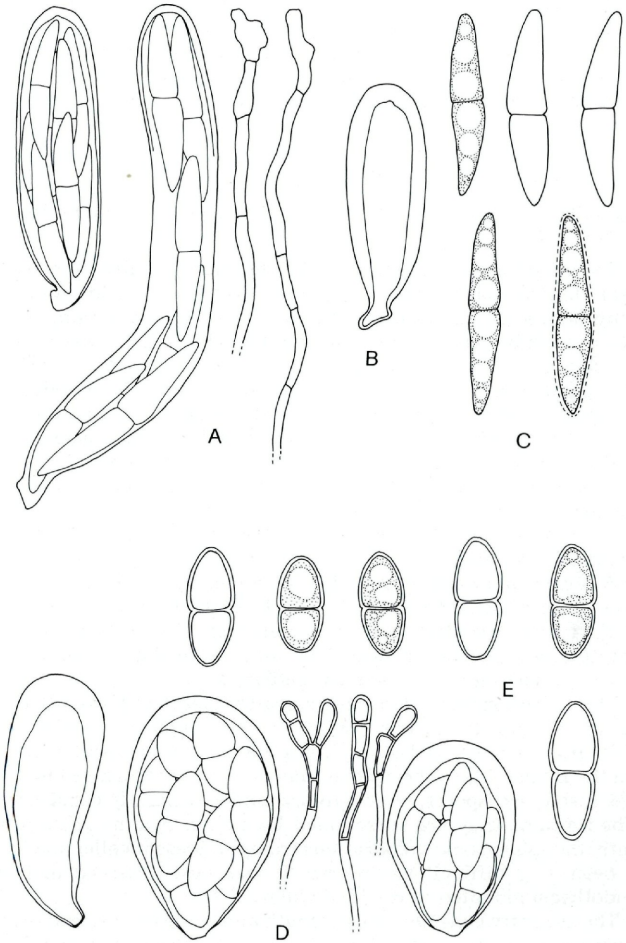

Fig. 1: *Didymella caricis*. – A. Asci and pseudoparaphyses. – B. Immature ascus. – C. Ascospores. – *Lembosina gontardi*: D. Asci and paraphysoids. – E. Ascospores. – All × 1000.

elongated, angled and forked but, as described by MÜLLER (1963), may be triangular or stellate in shape.

The British collection agrees in all respects with the type description. Two further species of *Lembosina* were described by ERIKSSON (1974) from members of the Ericaceae in Fennoscandia: *L. empetri* and *L. ericae*. Both appear to be host-limited and differ from *L. gontardi* in having much small asci and spores.

Pleosporales

Didymella caricis SYDOW, Annales Mycologici 19: 305 (1921) – Fig. 1, A–C

Pseudothecia minute, 100–150 µm diam., totally immersed, gregarious, subglobose, black, smooth. – Ostiole circular, not projecting above the epidermis. – Pseudothecial wall thin, composed of dark brown, thin-walled, angular cells 10–18 × 4–10 µm. – Asci clavate or cylindric-clavate, bitunicate, narrowed at the base and expanded into a small foot 4–6 µm diam., broadly rounded at the apex, 8-spored, 57–96(–105) × 12–20 µm. – Ascospores 31–37 × 4.5–6(–6.5) µm, fusoid, surrounded by a thin gelatinous sheath, hyaline, slightly constricted at the single, median septum, each cell containing 2–4 large guttules, biseriate or irregularly arranged in the ascus. – Pseudoparaphyses hyaline, septate, somewhat flexuous, 2–2.5 µm diam., irregularly expanded at the apex to 4–5 µm diam.

Specimen examined. – Isle of Skye, Sleat, Armadale, on leaves of *Carex* sp., 23 Sept. 1984, leg. R. W. G. DENNIS.

The minute pseudothecia are scarcely visible to the unaided eye, being totally immersed in dead leaf tissue with the ostiole not or scarcely projecting above the host epidermis.

The collection from Skye agrees in all respects with the description of *Didymella caricis,* which occurs typically on *Carex lepidocarpa* in Kurland, Latvia. It has not been previously reported from the British Isles. The species may be readily recognised by the large, fusoid ascospores, which are hyaline and slightly constricted at the septum. They are surrounded by a thin, hyaline gelatinous sheath, though in some preparations from the present collection this has been very difficult to observe. It was best observed in freh pseudothecia mounted in distilled water.

The asci vary considerably in length and evidently expand prior to discharge of the spores. Initially they are short-cylindric, less than 70 µm long, with the spores arranged in 3 or 4 overlapping rows. Later, the asci expand to 95–105 µm in length and become slightly narrower, with the spores mostly biseriately arranged.

Helotiales

Cistella hymenophylli SPOONER & DENNIS, sp. nov. – Fig. 2, A–D

Derivation: From the host genus, *Hymenophyllum*.

Apothecia 200–250 µm diam., hypophylla, albida, superficialia, sessilia, Discus plano-concavus, laevis. Receptaculum cupulatum vadosum, minute puberulum. Pili 12–20 × 3–4 µm, cylindrici vel anguste clavati, obtusi, hyalini, non-septati, parte superiore granulati. Asci 17–21 × 4.5–5 µm, 8-spori, cylindrico-clavati vel clavato-fusoidei, brevistipitati, apice angustati, poro in Melzero non caerulescente. Ascosporae hyalinae, 5–6 × 1.2–1.5 µm, cylindrico-clavatae, rectae vel leviter curvatae, non-septatae, biguttulatae. Paraphyses 1.5–2(–2.5) µm diam., ramosae, septatae, hyalinae, obtusae, apice leviter expansae. Excipulum ectale e cellulis cuboideis vel breviprismaticis 5–8(–11) × 3–5 µm, e muris hyalinis vel pallide brunneis sistens.

Apothecia 200–250 µm diam., hypophyllous, scattered, superficial, sessile or subsessile, whitish throughout. – Disc plano-concave, smooth. – Receptacle shallow cupulate, narrowed below to a base ca. 50 µm diam., the surface minutely puberulent, more densely so at the margin. – Hairs arising from superficial cells, 12–20 × 3–4 µm, cylindric or narrowly clavate, obtuse, hyaline, with firm walls ca. 0.5 µm thick, non-septate, granulate, often sparsely so, over the upper part, becoming smooth towards the base. – Asci minute, 17–21 × 4.5–5 µm, 8-spored, cylindric-clavate or clavate-fusoid, short-stalked, apex narrowed, the pore not blue in Melzer's reagent. – Ascospores hyaline, 5–6 × 1.2–1.5 µm, cylindric-clavate, rounded at the ends, straight or slightly curved, non-septate, containing 2 small polar guttules, biseriate. – Paraphyses 1.5–2(–2.5) µm diam., branched, septate, hyaline, obtuse, distinctly broader towards the apices, sometimes exceeding the asci in length. – Ectal excipulum composed of angular, cuboidal or short-prismatic cells 5–8(–11) × 3–5 µm, arranged in rows at a low angle to the surface, hyaline or pale brown, those lower on the receptacle frequently with slightly thickened walls.

Specimen examined. – Scotland, Lochaber, Loch Ailort, gorge of Allt na Criche, on dead frond of *Hymenophyllum wilsonii*, 4 May 1984, leg. R. W. G. DENNIS (Holotype, K).

The minute, whitish apothecia occur sparsely scattered on the underside of dead fronds. The type collection is unfortunately scanty, so that microtome sections have not been cut, but the apothecia are mature and sufficient for description of the species.

The distinctive, branches paraphyses of this species are atypical of *Cistella*, as is the ascus pore which remains unstained in Melzer's reagent. In addition, the hairs are less clavate than usual, though characteristic in other respects. The structure of the ectal excipulum is also typical of *Cistella*, and there seems no other more appropriate genus to which the species may be referred.

There appear to be no other species of *Cistella* known from pteridophytes.

Cystopezizella venceslai (VELEN.) SVRČEK, Česká Mykologie 37: 70 (1983) – Fig. 2, E–H

Apothecia scattered or gregarious, superficial, short-stipitate. – Disc 200–400 µm diam., plano-concave, yellowish, minutely whitish-pruinose, marginate, when dry becoming pale buff or reddish, with the margin somewhat inrolled. – Receptacle shallow cupulate, minutely puberulent, whitish, becoming pale buff of reddish when dry. – Stipe central, shorter than disc diam., concolorous. – Asci 35–40(–43) × 6–7.5 µm, cylindric-clavate, 8-spored, narrowed below to a short stipe, apex narrowed, rounded, the pore not blue in Melzer's reagent. – Ascospores 6–7.5 × 2.8–3.2 µm, hyaline, broadly ellipso-fusoid or ovate-fusoid, biguttulate when fresh, non-septate, biseriate or irregularly arranged with the ascus. – Paraphyses cylindric, obtuse, slightly broader towards the apex, 2.5(–3) µm diam., slightly overtopping the asci. – Ectal excipulum hyaline, composed of rows of narrow, irregularly prismatic, thin-walled cells 7–10(–13) × 3–4(–5) µm, lying at a low angle to the surface and terminating as free, clavate, smooth cells 11–18 × (3–) 4–5.5 µm.

Specimen examined. – Isle of Skye, Sleat, Coille Dalavil, on decorticated log of *Pinus silvestris*, 8 Oct. 1982, leg. R. W. G. DENNIS.

Apothecia occur scattered or in small groups on rotten wood. The disc is minutely pruinose and the receptacle minutely but distinctly puberulent. When dry, apothecia are usually pale buff throughout, but a few exhibit a marked reddish tinge in the disc and/or receptacle. Such development of red coloration is typical of this species as redescribed by SVRČEK (1983). The holotype collection was on bark of *Picea abies,* but the above collection agrees well in other respects. It differs in having the ascus pore unstained in Melzer's reagent, but this seems unlikely to be significant as this character is evidently variable also in the type of the genus, *C. conorum* (REHM) SVRČEK. A collection from Oxshott, Surrey, described by DENNIS (1956) similarly has asci which are atypical in having the pore unstained in Melzer's reagent.

Reddening of the apothecia on drying is also characteristic of *C. conorum,* and the present taxon was introduced as a variety of that species by VELENOVSKY (1934). It was shown by SVRČEK (1983) to be specifically distinct, differing particularly in having stipitate apothecia and much broader ascospores. The spores of the present collection were biguttulate when examined from fresh apothecia, but eguttulate after drying. This character is noted for the type collection by SVRČEK (1983).

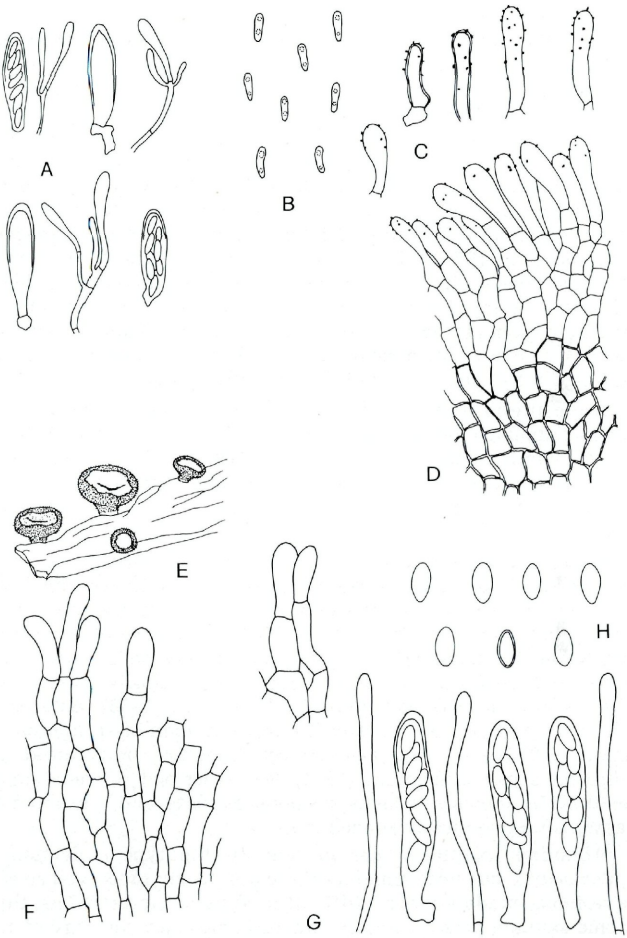

Fig. 2: *Cistella hymenophylli*. – A. Asci and paraphyses. – B. Ascospores. – C. Hairs. – D. Ectal excipulum. – *Cystopezizella venceslai:* E. Apothecia, × 22. – F. Ectal cells, upper receptacle. – G. Asci and paraphyses. – H. Ascospores. – All × 1000 unless stated.

Hyaloscypha stevensoni (BERK. & BR.) NANNF. – Fig. 3, A–H

Apothecia 300–500 µm diam., scattered or in small groups, sessile or shortstipitate, superficial, whitish, drying pale yellowish-orange. – Disc concave, smooth, margin slightly incurved when dry. – Receptacle shallow cupulate, narrowed below, puberulent throughout. – Hairs 35–45 × 2–3 µm, hyaline, non-septate, usually slightly curved or flexuous, tapered upwards and slightly swollen and obtuse or subacute at the apex, walls thin, encrusted with particles of orange-yellow resinous matter which become reddish-orange when dry. – Asci (47–)50–58 × 7–7.5 µm, 8-spored, broadly cylindric-clavate, narrowed at the base into a short, stout stipe, apex narrowed, rounded, the pore *c.* 1.5 µm deep, blue in Melzer's reagent. – Ascospores (8.5–)9–12(–14) × 2.5(–3) µm, hyaline, cylindric or cylindric-clavate, often inequilateral, sometimes curved, rounded at the ends, non-septate, biseriate. – Paraphyses filiform, obtuse, 0.8–1.2 µm diam., sometimes forked near the apex, equal to the asci. – Ectal excipulum composed of hyaline, irregularly prismatic cells 5–13 × 3–8 µm, with slightly thickened walls.

Specimens examined. – Isle of Skye, Sleat, Coille Dalavil, Glen Meadhouach, on rotting log of *Pinus*, 8 Oct. 1982, leg. R. W. G. DENNIS; Glamis, on decorticated wood, undated, leg. J. STEVENSON 52. (Holotype of *Peziza stevensoni*, K); Cheshire, Wildboarclough, on dead wood of *Larix* sp., 1 July 1961, leg. W. D. GRADDON 1538. (Isotype of *H. velenovskyi*, K).

Hyaloscypha stevensoni occurs throughout Britain on dead wood and cones of various coniferous trees. It is fully described here as the characters of the species have apparently not been fully documented since SVRČEK (1978) noted the presence of a resinous exudate on the hairs. This character has otherwise not been fully appreciated, although *Dasyscypha resinifera* v. HÖHNEL was shown to be a synonym of *H. stevensoni* by NANNFELDT (1936). As a result the species was erroneously treated as a synonym of *H. hyalina* by RAITVIIR (1970), and *H. velenovskyi* GRADDON, introduced for *H. hyalina* sensu VELENOVSKY (1934), was described on the assumption that *H. stevensoni* lacks resinous exudate and, as noted by SVRČEK, is taxonomically superfluous.

Abundant apothecia are present on the type collection of *H. stevensoni*, but unfortunately these are poorly preserved so that the resinous exudate is very difficult to observe. Nevertheless, there is some exudate present, and the microscopic characters are identical in this, the type of *H. velenovskyi* and the Skye collection cited above. The amorphous, reddish-orange granules occur mostly on the upper part of the hairs and are frequently more prominent on hairs near the margin, creating a reddish fringe to the disc as observed

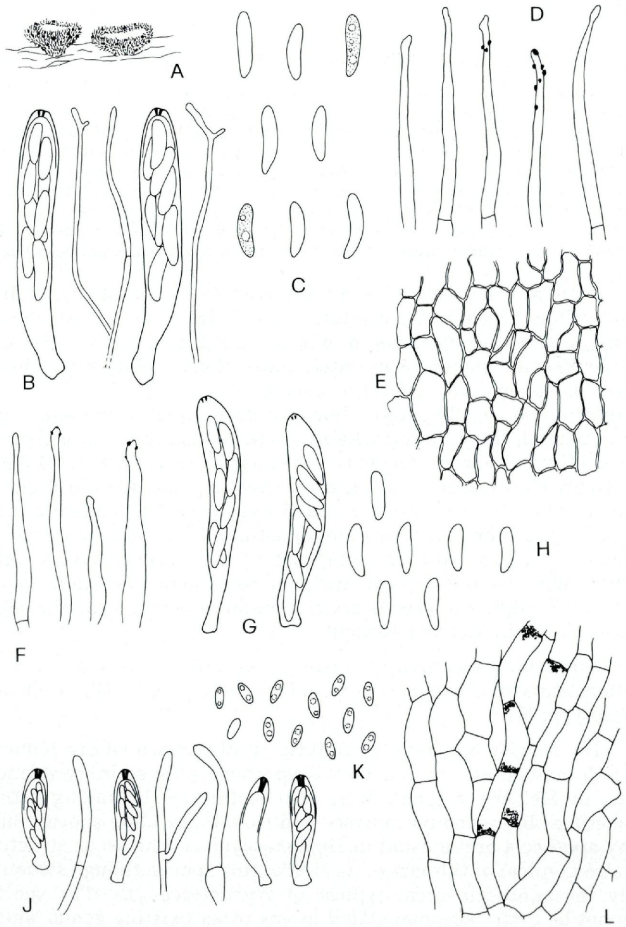

Fig. 3: *Hyaloscypha stevensoni.* – A–E (R. W. G. DENNIS, 8. 10. 1982): A. Apothecia, × 22. – B. Asci and paraphyses. – C. Ascospores. – D. Hairs. – E. Ectal cells. – F-H. (Holotype): F. Hairs. – G. Asci. – H. Ascospores. – *Hymenoscyphus perplexus:* J. Asci and paraphyses. – K. Ascospores. – L. Ectal cells, showing position of violaceous stain in Melzer's reagent. – All × 1000 unless stated.

with a hand-lens. The granules are soluble in 5% ammonia solution, and in Melzer's reagent coalesce into oily globules.

Hymenoscyphus perplexus SPOONER & DENNIS, sp. nov. – Fig. 3, J–L

Derivation: From Latin *perplexus*, confused or obscure, refering to the puzzling characters and uncertain generic position of the species.

Apothecia dispersa, minuta, stipitata, pallide lutea. Discus 300–350 µm diam., planus, emerginatus. Receptaculum discoideum, minute puberulum. Stipes ca. 200 µm altus, cylindricis, laevis. Asci 19–23 × ca. 4.5 µm, cylindrico-clavati, 8-spori, brevistipitati, apica truncato-rotundati, poro 2–3 µm alto, in Melzero valde caerulescente. Ascosporae 4–4.5 × 1.2–1.8 µm, anguste ovato-ellipsoideae, hyalinae, non-septatae, biguttulatae. Paraphyses 1.8–2.2 µm diam., interdum ramosae. Excipulum ectale e cellulis prismaticis, hyalinis, 10–16 × 3–6 µm, muris tenuibus sistens.

Apothecia scattered or loosely gregarious, minute, whitish or pale yellow throughout, stipitate, superficial. – Disc 300–350 µm diam., plano-concave, smooth, without a raised margin. – Receptacle discoid, smooth or minutely puberulent. – Stipe ca. 200 µm high, 70–90 µm diam., cylindric, smooth. – Asci 19–23 × ca. 4.5 µm, cylindric-clavate, 8-spored, short-stipitate, apex narrowed, truncate, conical, the pore remarkably deep, 2–3 µm long, strongly outlined blue in Melzer's reagent. – Ascospores 4–4.5 × 1.2–1.8 µm, narrowly ellipsoid or ovate-ellipsoid, hyaline, non-septate, biguttulate, irregularly biseriate. – Paraphyses cylindric, comparatively broad, 1.8–2.2 µm diam., hyaline, sometimes branched, sparsely septate. – Ectal excipulum composed of thin-walled, hyaline prismatic cells 10–16 × 3–6 µm, lying in rows at a low angle to the surface. A slight violaceous stain sometimes occurs near the septa when placed in Melzer's reagent.

Specimen examined. – Isle of Skye, Sleat, Coille Dalavil, on rotten trunk of *Pinus silvestris*, 8 Oct. 1982, leg. R. W. G. DENNIS (Holotype, K.).

The species has minute stipitate apothecia which are remarkable in having asci with a very deep apical pore staining strongly blue in Melzer's reagent. It is also distinctive in having broad, sometimes branched paraphyses and tiny, biguttulate spores. Such tiny apothecia are unusual in *Hymenoscyphus*. The ascus structure is also atypical of this genus, as are the tiny spores, though structurally the apothecia seem typical of *Hymenoscyphus*. The species cannot be better accommodated in any other existing genus, and is certainly out of place in *Pezizella, Antinoa* (= *Pezizella* sensu SVRČEK) and *Cudoniella*. It may in future prove possible to distinguish the species at generic level, though it is premature to establish a new genus until further study of this and related taxa has been undertaken.

There are several species which, from their descriptions, appear very similar to *H. perplexus*. Regrettably, type material of these has so far been unobtainable, but it seems likely that one of them may provide an earlier name for this species. Amongst these are *Cudoniella buissonii* GRÉLET, *C. viridula* GRÉLET, *Helotium vernum* VELEN., *H. mirabile* VELEN. and *H. juniperi* VELEN. All occur on rotten coniferous wood, have stipitate apothecia and tiny ascospores. However, in each case, the described characters differ in some respect from those of the present species. *Cudoniella buissonii* is described as having larger apothecia with a more convex disc, and the spores of *C. viridula* are described as budding. As described by *Velenovsky* (1934), *H. mirabile* also has larger apothecia, 1–1.5 mm diam., *H. vernum* and *H. juniperi* have eguttulate spores, and the latter has markedly puberulent apothecia. In the absence of type material, none of these names can be confidently applied to the species under consideration, and it is, therefore, described here so as to bring it to attention.

Parorbiliopsis SPOONER & DENNIS, gen. nov.

Derivation: From Greek *para*, similar to, and genus *Orbiliopsis*.

Apothecia superficialia, sessilia, typice albida, gregaria. Asci typice 8-spori, cylindrico-clavati, poro in Melzero non caerulescente. Ascosporae hyalinae, non-septatae. Paraphyses agglutinatae, hyalinae vel pallide brunneae, interdum ad apicem ramosae. Excipulum ectale e cellulis subangularibus, muris tenuibus sistens.

Apothecia superficial, sessile, typically whitish, gregarious. – Asci cylindric-clavate, typically 8-spored, pore not blue in Melzer's reagent. – Ascospores hyaline, non-septate. – Paraphyses agglutinated, hyaline or pale brown, sometimes branched near the apex. – Ectal excipulum composed of thin-walled, broad, subangular cells.

Species typica: *Parorbiliopsis minuta*

Parorbiliopsis minuta SPOONER & DENNIS, sp. nov. – Fig. 4, A–C

Apothecia minuta, 200–300 µm diam., gregaria, superficialia, sessilia, albida. Discus plano-concavus marginatus. Receptaculum patellarum, laevis. Asci 55–66 × 8–9.5 µm, 8-spori, cylindrico-clavati, poro in Melzero non caerulescente. Ascosporae 10–12 × 3.2–3.8 µm, hyalinae, ellipso-cylindricae, non-septatae, biguttulatae. Paraphyses cylindricae, obtusae, interdum prope apicem ramosae, 2.5–3 µm diam., agglutinatae, hyalinae vel pallide brunneae. Excipulum ectale 25–30 µm crassum, e cellulis subangularibus, saepe isodiametricis, 7–11 × 6–8 µm, muris tenuis sistentibus, serialis radialiter dispositis. Contextus ectale infirmis dextrinoide.

Apothecia minute, 200–300 µm diam., gregarious, superficial, sessile, whitish when fresh, becoming pale ochraceous when dry. – Disc plano-concave, smooth, marginate. – Receptacle patelliform, smooth. – Asci 55–66 × 8–9.5 µm, 8-spored, cylindric-clavate, narrowed below to a short stipe, apex narrowed, rounded, the

pore not blue in Melzer's reagent. – Ascospores 10–12 × 3.2–3.8 µm, hyaline, ellipso-cylindric, usually inequilateral, non-septate, containing 2 large guttules, biseriate or irregularly arranged in the ascus. – Paraphyses cylindric, obtuse, rather flexuous, sometimes branched near the apex, 2.5–3 µm diam., agglutinated, hyaline or apically pale brown. – Medullary excipulum a narrow layer 10–15 µm thick, hyaline, composed of thin-walled, septate hyphae 2–2.5 µm diam., lying parallel to the surface in the flanks and becoming interwoven at the centre of the receptacle. – Ectal excipulum 25–30 µm thick, narrowed towards the margin, composed of hyaline, thin-walled, broad, often isodiametric cells 7–11 × 6–8 µm, smaller towards the margin, and arranged in irregular, radial rows. Ectal tissue weakly dextrinoid.

Specimen examined. – Scotland, Moidart, Dorlin, on dead wood of *Quercus* sp., 7 Oct. 1984, leg. R. W. G. Dennis (Holotype, K).

The minute, white apothecia occur in groups on decorticated wood. They are developed amongst the conidiophores of a dematiaceous hyphomycete, though probably unconnected with it. The type collection is rather scanty, and not all apothecia are fully mature, but the characteres of the species are nevertheless clear. The structure of the ectal excipulum is similar to that of *Calycellina* but the dark basal ring characteristic of that genus is lacking, and the lignicolous habit is also atypical of *Calycellina*. In addition, the ascus pore does not stain blue in Melzer's reagent, and the receptacle is not puberulent from free hyphal tips as is typical of *Calycellina* (see Lowen & Dumont, 1984). In form, habit and structure of the apothecia the species is more akin to *Orbiliopsis* v. Höhnel (1926). This genus was placed into synonymy with *Phaeohelotium* by Dennis (1971) but the type species, *O. subcarnea* (Schumacher) v. Höhnel is unlike *Phaeohelotium* in having minute apothecia which lack the bright yellow colour of the type species *P. monticola* (Berk.) Dennis, and the genera are probably distinct. However, the present species differs from *O. subcarnea* in having asci in which the pore does not stain blue in Melzer's reagent even after pretreatment with 5% KOH, in having whitish rather than pink apothecia and branched as opposed to simple paraphyses. Whether these differences will prove significant is uncertain and a reassessment of the various related species is required. Should they not prove distinct, a new name must be introduced for *Orbiliopsis* v. Höhnel which is unavailable as a later homonym of *Orbiliopsis* Sydow (1924). It seems wise, therefore, to establish a new genus founded on the present species, the characters of which are clear. At least one of the species previously referred to *Phaeohelotium, P. extumescens* (Karsten) Dennis, seems to belong in *Parorbiliopsis* in having branched

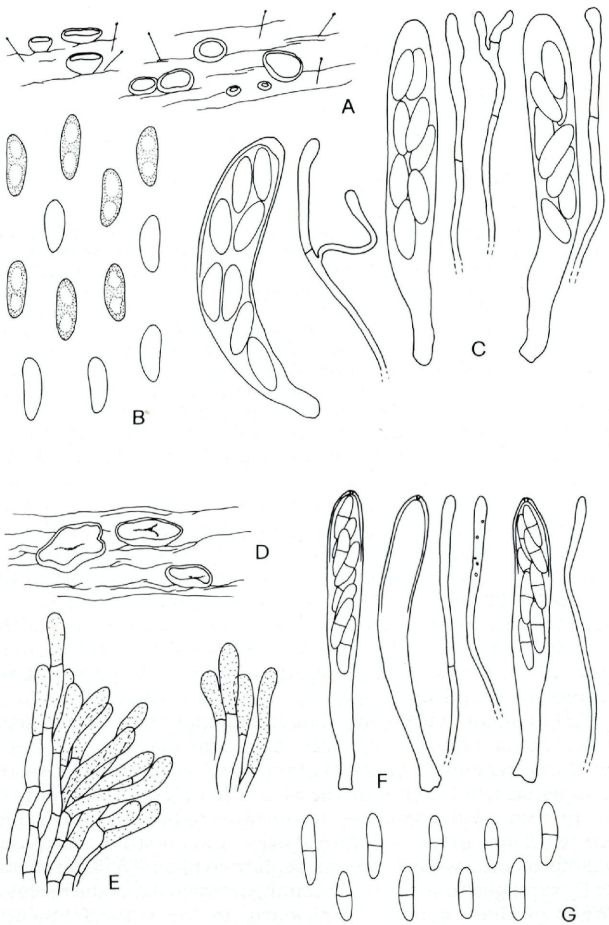

Fig. 4: *Parorbiliopsis minuta*. – A. Habit sketch, × 22. – B. Ascospores. – C. Asci and paraphyses. – *Pezizella pulcherrima:* D. Apothecia, × 25. – E. Ectal hyphae on upper receptacle, showing extent of pigmentation. – F. Asci and paraphyses. – G. Ascospores. – All × 1000 unless stated.

paraphyses and the ascus pore unstained in Melzer's reagent. The combination in this genus is, therefore, proposed:

Parorbiliopsis extumescens (KARSTEN) SPOONER & DENNIS, comb. nov.

Bas.: *Peziza extumescens* KARSTEN, Notiser ur Sällskapets pro Fauna et Flora Fennica Förhandlingar 10: 177 (1869).

Poculum myricae SPOONER & DENNIS, sp. nov. – Fig. 5

Derivation: From the host genus *Myrica*.

Stroma infirmum evolutum. Apothecia stipitata, infra corticem evoluta. Discus 1–2 mm diam., concavus, brunneus. Receptaculum cupulatum, cinereo-brunneum, laeve. Stipes 2–4 mm altum, cylindricum, atrobrunneum, tomentulosus, Asci 82–96 × 9–11 µm, 8-spori, cylindrico-clavati, apice conico-truncati, poro 3–5 µm alto, in Melzero caerulescente. Ascosporae 10–11.5 × 5–5.5 µm, hyalinae, obovoideo-reniformes, non-septatae, guttulatae. Paraphyses obtusae, 3–4 µm diam., ad apicem pigmentum granulosum, brunneum continentes. Excipulum medullare ex hyphis brunneis 3.5–5 µm diam., e muris plerumque granulatis sistens. Excipulum ectale 65–80 µm crassum, ex hyphis hyalinis, 2–2.5 µm diam., in matrice gelatinoso immersum, ad superficiem intricatum, brunneum, non gelatinosum sistens.

Stroma substratal, poorly developed and scarcely evident. – Apothecia scattered or gregarious, stipitate, developed beneath the bark. – Disc 1–2 mm diam., concave, brown or grey-brown, smooth, the margin irregularly incurved when dry. – Receptacle shallow cupulate, grey-brown, smooth or bearing a few small pustules. – Stipe 2–4 mm high, central, cylindric, slightly expanded at the base, dark brown, minutely tomentose, becoming smooth at the apex. – Asci 82–96 × 9–11 µm, 8-spored, cylindric-clavate, narrowed at the base to a stipe 3–4 µm diam., apex conico-truncate, the pore 3–5 µm deep, outlined blue in Melzer's reagent. – Ascospores hyaline, 10–11.5 × 5–5.5 µm, clavate-reniform, broadest above centre, broadly rounded at the ends, non-septate, containing 1 large and usually 1 small guttule, biseriate in the upper part of the ascus. – Paraphyses obtuse, cylindric, enlarged towards the apex, 3–4 µm diam., remotely septate, containing brown granular pigment in the upper part, not exceeding the asci. – Subhymenium narrow, poorly differentiated, composed of interwoven, brown, thin-walled hyphae c. 2 µm diam. – Medullary excipulum composed throughout of thin-walled, brown, septate hyphae 3.5–5 µm diam., vertically arranged in the stipe, becoming interwoven in the receptacle. Walls of these hyphae, particularly in the stipe, frequently granular from irregular deposition of pigment. – Ectal excipulum 65–80 µm thick, comprising an innermost layer of hyaline, septate hyphae 2–2.5 µm diam., lying at a low angle to the surface and immersed in a hyaline gel. Towards the surface these hyphae become brown-walled and form a non-gelatinous superficial layer scarcely

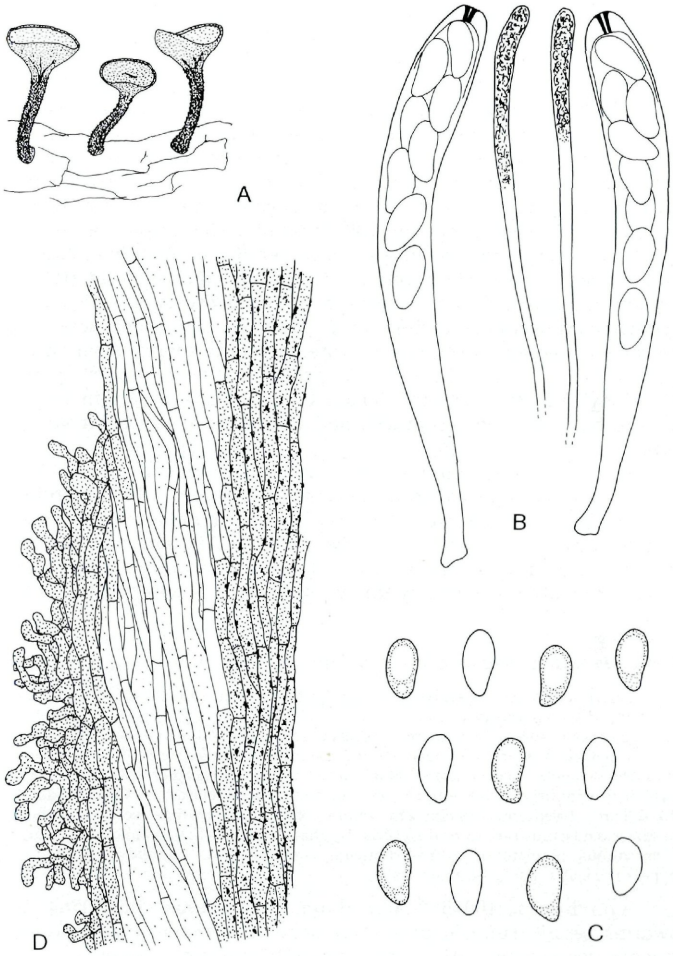

Fig. 5: *Poculum myricae*. – A. Apothecia, × 8. – B. Asci and paraphyses, × 1000. – C. Ascospores, × 1000. – D. Ectal excipulum, upper stipe, × 700.

evident on the receptacle but up to 30 µm thick on the stipe and there composed of interwoven hyphae with free tips.

Specimen examined. – Isle of Skye, Sleat, Ord Glen, on dead branch of *Myrica gale*, 2 Oct. 1982, leg. R. W. G. DENNIS (Holotype, K.).

Stromatic development in this species is scarcely evident, though a few dark intercellular hyphae in the upper layer of the host tissue may be observed in microtome sections. The presence in the medullary excipulum of pigmented hyphae with granulate walls is also indicative of Sclerotiniaceae, as is the form of the ascus with deep pore outlined blue in Melzer's reagent, and there can be no doubt that the species belongs in this family. The simple spores and gelatinised ectal excipulum are characteristic of *Poculum* VELEN., and indeed a very close relationship to *P. sydowianum* (REHM) DUMONT is suggested by the similar form of the ascospores. *Poculum sydowianum* occurs on petioles of *Quercus* spp. and is characterised by the obovoid-reniform, non-septate, guttulate spores. Apart from host, it differs from the present species in having larger spores 12–16 × 5–5.6 µm, asci 115–130 µm long, a dentate margin to the apothecium, striated receptacle, and in details of excipular structure.

We have been unable to trace any members of the Sclerotiniaceae reported from species of *Myrica* with the exception of *Ciboria bolaris* (BATSCH: FR.) FUCKEL and *Lambertella myricae* DENNIS & SPOONER. *Poculum myricae* is quite distinct on structure and spore characters from either of these and, as we have been unable to match it with any known species, it is described here as new.

Pezizella pulcherrima SPOONER & DENNIS, spec. nov. – Fig. 4, D–G

Derivation: From superlative of Latin *pulcher*, beautiful, referring to the appearance of the apothecia.

Apothecia 400–500 µm diam., gregaria, sessilia, in toto atro-rubella. Discus planus, marginatus, laevis. Receptaculum patellatum, laeve. Asci 54–57 × 6–7 µm, cylindrico-clavati, 8-spori, apice conici, poro in Melzero caerulescente. Ascosporae hyalinae, cylindricae vel elliptico-cylindricae, saepe leviter curvatae, 9–13 × 2.2–2.8 µm, 1-septatae. Excipulum ectale ex hyphis hyalinis septatis sistens, muris crassiusculus radialiter dispositis. Hyphae ectales 2–3.5(–4) µm diam., cellulis terminalibus pigmentum rubro-brunneum continentibus. Contextus basalis ex hyphis intricatis, muris brunneis sistens.

Apothecia 400–500 µm diam., gregarious, occurring in swarms, sessile, superficial. – Disc deep pink, plane or undulating, smooth, marginate. – Receptacle patelliform, smooth, concolorous with disc or more reddish in hue, slightly paler at the margin. – Asci 54–57 × 6–7 µm, cylindric-clavate, 8-spored, apex narrowed, usually conical, the small pore outlined blue in Melzer's reagent. –

Ascospores 9–13 × 2.2–2.8 µm, hyaline, cylindric or ellipso-cylindric, often inequilateral or slightly curved, centrally 1-septate, rounded at the ends, irregularly biseriate. – Paraphyses cylindric, obtuse, remotely septate, very slightly broader towards the apex, 1.5–2 µm diam. – Subhymenium not clearly differentiated. – Medullary excipulum composed of hyaline, interwoven, septate, thin-walled hyphae 2–3 µm diam. – Ectal excipulum composed of hyaline, radially arranged, septate hyphae with somewhat thickened walls, lying at a high angle to the surface at the base of the receptacle, curving round to lie at a low angle to the surface at the margin. Ectal hyphae 2–3.5(–4) µm diam., running out as obtuse, free tips at the surface, the terminal cell containing red-brown pigment which disappears when placed in Melzer's reagent. Basal tissue composed of brown-walled, interwoven hyphae.

Specimen examined. – Isle of Skye, Dunvegan, on decorticated wood of *Ulmus* sp., 21 Sept. 1984, leg. R. W. G. DENNIS (Holotype, K).

This is a most attractive species, having deep pink apothecia occurring in swarms on decorticated wood. The colour, in conjunction with size of the apothecia and spore characters, is diagnostic. Despite the intensity of the colour, pigment occurs only in the outermost cells of the excipular hyphae and in the paraphyses. It rapidly fades in Melzer's reagent. Such pigmentation is rare in Helotiales, other than Orbiliaceae, though shared by a few species such as *Pezizella rosella* VELEN., *P. clematidis* FAUTREY, and *Belonidium subcarneum* REHM. These are all quite distinct from the present species either in size of apothecia or in spore characters. Reddish apothecia may also develop on drying in *Eubelonis albosanguinea* v. HÖHNEL and *Cystopezizella conorum*, but apothecia of these species are initially whitish or pale buff and occur on wood or cones of conifers.

Pezizella pulcherrima has an ectal excipulum composed of radially arranged hyphae with somewhat thickened walls and the species clearly belongs in this genus as lectotypified by *P. vulgaris* (FR.) SACC. It differs structurally from *Cystopezizella* SVRČEK in which thin-walled ectal hyphae terminate as inflated, free tips.

Rodwayella SPOONER, gen. nov.

Apothecia minuta, sessilia, hyphis subiculiformibus circumdata. Receptaculum patellatum. Asci clavati, typice 8-spori, apice conico, poro in Melzero caerulescente. Ascosporae hyalinae, ellipso-fusoideae, laeves, 1-septatae. Paraphyses cylindricae, obtusae, septatae. Excipulum ectale hyalinum e seriebus parallelis hypharum septatarum sistens, cellulas parvas prismaticas efformans superficiei angulo parvo dispositas. Hyphae subiculares typice agglutinatae.

Species typica: *Helotium sessile* RODWAY.

The genus is introduced here with a brief latin diagnosis as it is typified by a Tasmanian species and is to be fully described in a forthcoming monograph of Australasian Helotiales. The genus is characterised by the structure and texture of the apothecia which are surrounded by a fringe of subiculum-like hyphae, by the septate, constricted ascospores and by the ascus shape. It seems likely to belong in tribe Arachnopezizoideae of Hyaloscyphaceae, as defined by KORF (1978), due to the presence of subicular hyphae. A recent collection on *Myrica* proves to be an undescribed species which falls within the concept of *Rodwayella.*

Rodwayella myricae SPOONER & DENNIS, spec. nov. – Fig. 6, A–F

Derivation: From host genus *Myrica*..

Apothecia discoidea, sessilia, superficialia. Discus 0.8–1.0 mm diam., planoconvexus, pallide bubalina. Receptaculum pallide bubalina, patellatum, reflexum, hyphis subiculiformibus circumdatum. Asci 80–95 × 10–12 µm, 8-spori, anguste clavati, apice conici, poro in Melzero caerulescente. Ascosporae 11–14 × 5–7 µm, hyalinae, late ellipso-fusoideae, 1-septatae, ad septum constrictae. Paraphyses obtusae, 2.5–3.5 µm diam. Excipulum medullare hyalinum, ex hyphis laxis intricatis efformatum. Excipulum ectale hyalinum, ex hyphis parallelis 2–3 µm diam., ad basim e cellulis parvis sistens.

Apothecia discoid, sessile, superficial, solitary or caespitose on bark. – Disc 0.8–1.0 mm diam., plano-convex, buff-coloured, smooth or slightly pruinose. – Receptacle patelliform, reflexed, centrally attached, paler than the disc, cream or pale buff, smooth, surrounded by a narrow fringe of subiculum-like hyphae. – Asci 80–95 × 10–12 µm, 8-spored, narrowly clavate, apex narrowed, conical, the pore rather broad, blue in Melzer's reagent. – Ascospores 11–14 × 5–7 µm, hyaline, broadly ellipsoid or ellipso-fusoid, 1-septate, constricted at the septum, irregularly biseriate. – Paraphyses cylindric, obtuse, slightly wider towards the apex, 2.5–3.5 µm diam., equal in length to the asci. – Medullary excipulum composed of very loosely interwoven, hyaline, septate, thin-walled hyphae 2–3 µm diam. – Ectal excipulum hyaline, composed at the margin and in the upper receptacle of parallel or slightly interwoven, septate, thin-walled hyphae 2–3 µm diam., lying at a very low angle to the surface; towards the base composed of small, globose or subangular, isodiametric cells 4–7 µm diam. in a layer ca. 35–40 µm thick, at the surface forming septate, subiculum-like hyphae 2–3 µm diam., becoming somewhat interwoven and running out onto the surface of the substrate. Similar hyphae arise elsewhere from the surface of the receptacle where this is reflexed onto the substrate.

Specimen examined. – Isle of Skye, Sleat, Ord Glen, on tip of dead twig of *Myrica gale,* 2 Oct. 1982, leg. R. W. G. DENNIS (Holotype, K).

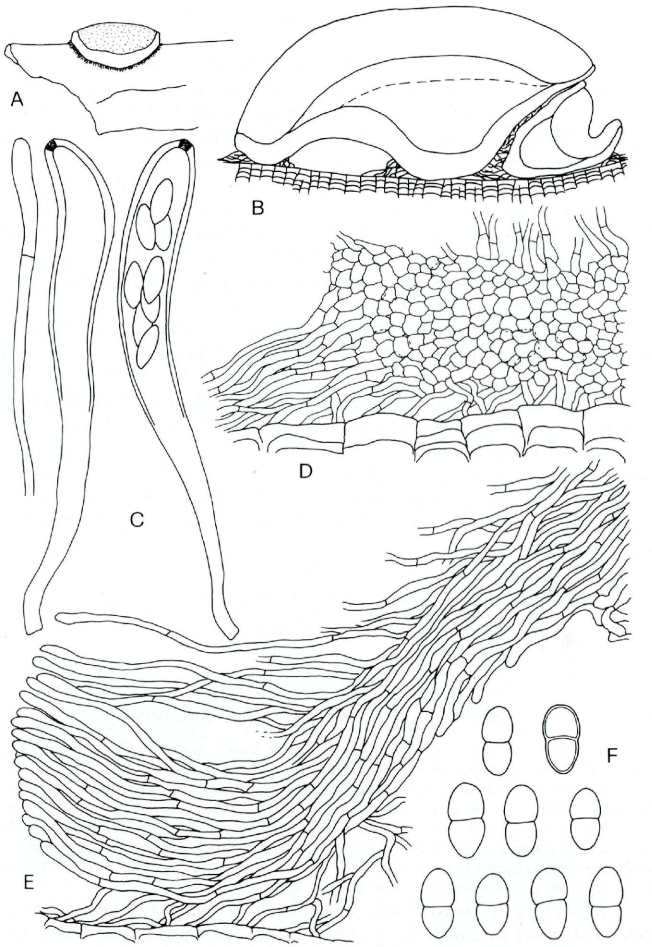

Fig. 6: *Rodwayella myricae*. – A. Apothecia, × 20. – B. Diagrammatic vertical section, × 100. – C. Asci and paraphyses, × 1000. – D. Ectal excipulum at base of receptacle, × 700. – E. Vertical section of margin, × 700. – F. Ascospores, × 1000.

The species is similar to the type of *Rodwayella* in the form and structure of the apothecia, and in the form of the asci and ascospores, the latter being distinctly constricted at the median or slightly sub-median septum. The hyphae of the medullary excipulum are sparse and loosely woven, and it is difficult to cut coherent microtome sections. The apothecia are centrally attached over a diameter of ca. 150 µm, and are thus less broadly attached than in the type species. The flanks of the receptacle are reflexed onto the substrate to give a convex disc and the appearence of a very broad attachment.

Few members of the Helotiales have been reported from species of *Myrica*.*Calycellina carolinensis* NAG RAJ & KENDRICK occurs on leaves of *M. cerifera* in USA and similarly has 1-septate spores and clavate asci. It is nevertheless quite distinct from the present species in structure, in possessing cylindrical marginal hairs, and in having much narrower, fusoid spores.

A modification of the typical structure of *Rodwayella* occurs in *Helotium citrinulum* KARSTEN (Fig. 7, A). This was combined in *Pezizella* by SACCARDO and in *Hymenoscyphus* by SCHROETER, but is clearly out of place in these genera. The medullary tissue is composed of loosely woven hyphae and the ectal layer of thinwalled, subangular cells, becoming hyphal at the margin. The apothecia are seated on a pad of agglutinated hyphae and the ascospores are 1-septate. Although the species occurs on herbaceous stems and grass culms, it shows affinity with *Rodwayella*, and the following combination is proposed:

Rodwayella citrinula (KARSTEN) SPOONER & DENNIS, comb. nov.

Bas.: *Helotium citrinulum* KARSTEN, Notiser ur Sällskapets pro Fauna et Flora Fennica Förhandlingar 11: 238 (1870).

Skyathea SPOONER & DENNIS, gen. nov.

Derivation: From Eilean Sgiathanach, the gaelic name of the island of Skye from which the type species was collected.

Apothecia gelatinosa, caespitosa, atra. Asci grandes, longistipitati, ad apicem rotundati, poro in Melzero non caerulescente. Ascosporae atrobrunneae, late fusoideae, non-septatae, laeves. Paraphyses cylindricae, obtusae. Excipulum medullare ex hyphis hyalinis intricatus sistens. Excipulum ectale duplex: stratum internum e cellulis prismaticis, muris tenuibus sistens, stratum externum ex hyphis intricatis, in matrice gelatinosae immersum sistens.

Apothecia gelatinous, caespitose, superficial, sessile, dark purple-brown or blackish. – Asci large, tapered at the base, apex rounded, pore not blue in Melzer's reagent, typically 8-spored. – Ascospores dark brown, broadly fusoid, smooth. – Paraphyses cylindric, obtuse. – Medullary excipulum composed of hyaline, interwoven hyphae. – Ectal excipulum duplex: inner layer of

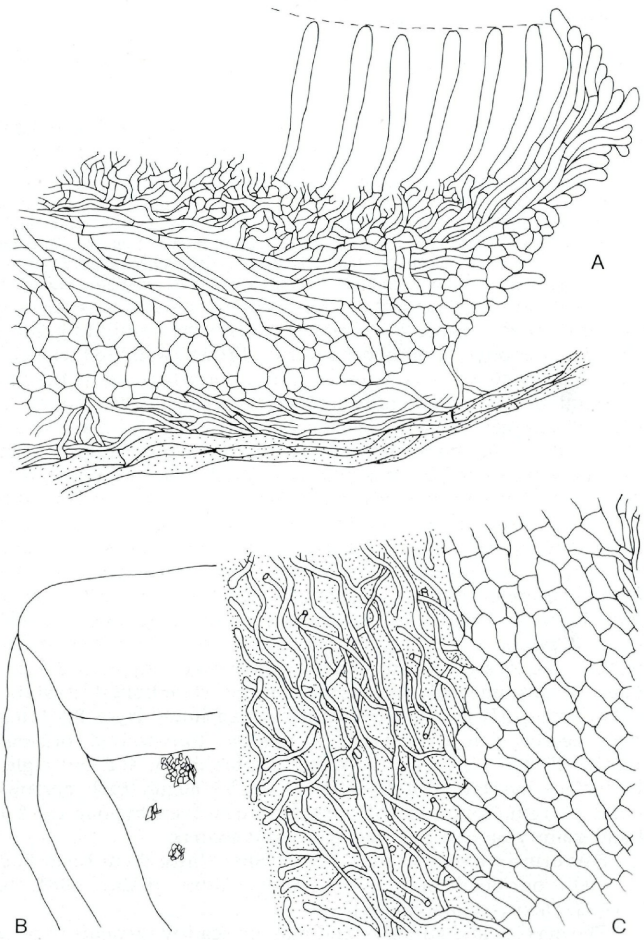

Fig. 7: *Rodwayella citrinula.* A. Vertical section of margin and upper receptacle, × 700. – *Skyathea hederae:* B. Diagrammatic vertical section of margin to show arrangement of tissues, × 120. – C. Ectal excipulum near margin, × 700.

thin-walled, prismatic cells, outer layer of interwoven hyphae immersed in a hyaline, gelatinous matrix.

Species typica: *Skyathea hederae*.

Skyathea hederae SPOONER & DENNIS, spec. nov. – Figs. 7, B–C; 8, A–C

Apothecia caespitosa, superficialia, turbinata vel discoidea. Discus 2–5 mm diam., concavus, undulatus, nigricans. Receptaculum laeve, atropurpureum. Asci 190–220 × 12–14.5 µm, cylindrici, ad basim attenuati, apice rotundati, poro in iodo non caerulescente. Ascosporae 18–25 × 8–11 µm, atrobrunneae, late fusoideae, non-septatae, interdum ad basim apiculatae, poroideae. Paraphyses cylindricae, obtusae, 3–4 µm diam. Subhymenium hyalinum, gelatinosum. Excipulum ectale duplex: Stratum internum 80–110 µm crassum, ad marginum angustatum, e cellulis prismaticis, muris tenuibus, 10–20 × 7–11 µm sistens, stratum externum 50–60 µm crassum, ex hyphis intricatis ca. 2 µm diam. in matrice hyalinae, gelatinosa immersum.

Apothecia gelatinous, caespitose, superficial, sessile, turbinate or discoid. – Disc 2–5 mm diam., concave, undulating, blackish. – Receptacle smooth, deep purple-brown, wrinkled when dry. – Asci 190–220 × 12–14.5 µm, cylindric, long-tapered at the base, apex rounded, pore not blue in Melzer's reagent, containing 2–8 fully developed brown spores at maturity. – Ascospores 18–25 × 8–11 µm, dark brown, broadly fusoid or ellipso-fusoid, sometimes narrowed to an apiculus at the lower end, non-septate, irregularly guttulate, smooth, wall 0.5–0.8 µm thick, very thin at the lower end, forming an indistinct germ pore. Ascospores uniseriate, 1-several frequently remaining hyaline and small, 9–14 × 4–6 µm. – Paraphyses cylindric, obtuse, broader towards the apex, 3.5–4 µm diam., hyaline or scarcely pigmented, equal to or slightly overtopping the asci. – Subhymenium composed of hyaline, vertically oriented hyphae with gelatinised walls. – Medullary excipulum hyaline, composed of thin-walled, interwoven hyphae 2.5–5 µm diam., with numerous pockets of hyaline, rhomboidal crystals. – Ectal excipulum duplex, comprising an inner layer 80–110 µm thick, narrowed to the margin, of hyaline, thin-walled, prismatic cells 10–20 × 7–11 µm, arranged in irregular chains at a low angle to the surface, overlain by a superficial layer 50–60 µm thick, narrowed to the margin, composed of narrow, interwoven hyphae ca. 2 µm diam., ramifying in a hyaline, gelatinous matrix.

Specimen examined. – Isle of Skye, burn from Loch Fada, ca. 100′, on dead branch of *Hedera helix*, 9 May 1984, leg. R. W. G. DENNIS (Holotype, K).

The species is distinctive and may be readily recognised by the large, dark, gelatinous apothecia, dark brown ascospores and large asci. The size and shape of the asci are remarkable for an inoperculate species, and reminiscent of a member of the Pezizales. However, dehisced asci have been observed, and they clearly open by a pore. It

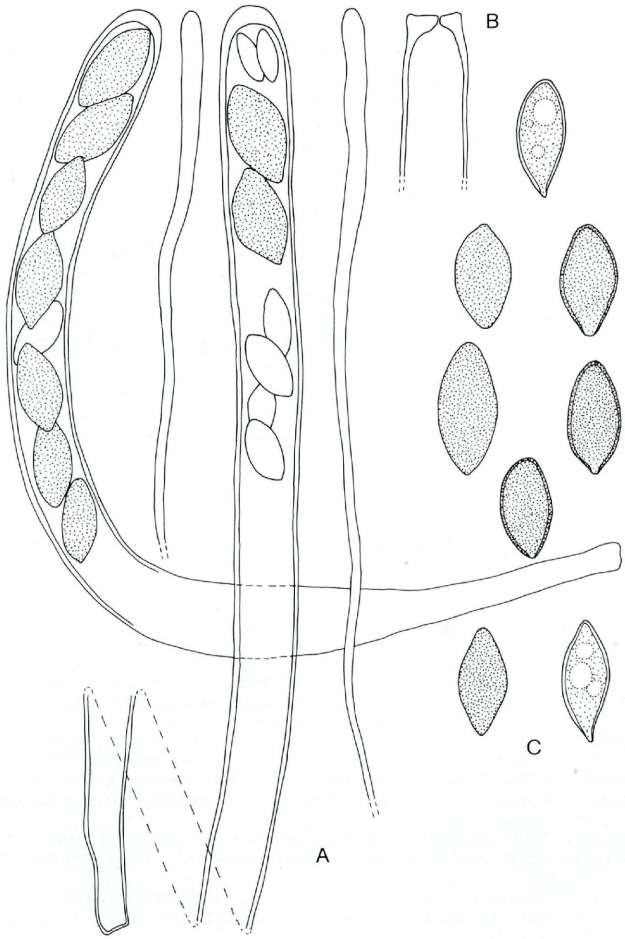

Fig. 8: *Skyathea hederae*. – A. Asci and paraphyses. – B. Apex of dehisced ascus. – C. Ascospores. – All × 1000.

seems remarkable that such a distinctive species should have remained overlooked, though the habit and colour of the apothecia may render them somewhat inconspicuous. Furthermore, there seems no appropriate genus to which the species may be referred.

The type collection consists of a group of 6 caespitose apothecia which arise from a gelatinous thallus on the bark. Their dark colour gives the appearance of Sclerotiniaceae, and the large, pigmented ascospores invite comparison with *Lambertella*. Several species of *Lambertella* have spores of a comparable size and shape, but that genus is structurally quite distinct. Within Sclerotiniaceae, gelatinous tissue occurs in a few genera such as *Poculum* and *Chloroscypha*, but the detailed structure and spore characters of these are very different. We have been unable to demonstrate the presence of a stroma, and it seems more likely that the genus should be assigned to the Leotiaceae. Gelatinised tissues are common in this family, and occur in conjunction with unicellular, brown spores in *Bulgaria* and *Bulgariella*, although detailed excipular structure in these genera is different. It is interesting, nevertheless, that development of an irregular number of brown, mature spores is also characteristic of *Bulgaria*. Turbinate apothecia having a similar, duplex ectal excipulum occur in *Neobulgaria*, but in that genus the medullary tissue is also gelatinised, and the ascospores are tiny and hyaline.

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