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New and Unusual Ascomycetes from the Western United States

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Abstract. – *Coccomyces mertensianae, Melittosporiella macrospora, Nanostictis pseudocyphellariae,* and *Hysteropatella oregana* are described as new. The new patellariaceous genus *Lecanidiella* is described, together with the new species *L. contortae.*

Introduction

The Pacific Northwest is an area of exceptional interest to the collector of fungi. Because mycological reconnaissance has never been as thorough in western North America as it has been in Europe or eastern North America, many of the fungi encountered prove to be new. Others are rare in Europe but common in the American West where the landscape is much less affected by pollution and habitat destruction.

The fungi described belowe were collected on various substrates, primarily standing dead branches and wood in Oregon. The species are systematically arranged.

Description of Species

Rhytismatales, Hypodermataceae

1. ***Coccomyces*** de NOTARIS, Giorn. Bot. Ital. 2(7–8): 14 & 38 (1847)

Coccomyces mertensianae SHERW., sp. nov. – Fig. 1

Ascocarpi primo immersi, dein erumpentes, irregulariter orbiculati, 0.2–0.5 mm diam., per lacinias irregulariter aperientes. Margo superior stromatica 30–40 µm crassa, ex hyphis brunneis constata, extus carbonacea. Periphysoidea nulla. Paraphyses filiformes, circinatae, achromae. Asci 100–200 × 10–12 µm, clavati, pedicellati, in iodo non caerulescentes, sporis tenuiter clavatis, continuis, in tunica gelatinosa inclusis, 19–25 × 2.5–3.0 µm. Pycnidia ignota. In ramis emortuis *Tsugae mertensianae,* Oregon, USA. – Holotypus: BPI, on *Tsuga mertensiana,* Waldo Lake, Oregon, 12 September 1979, leg. SHERWOOD & PIKE. Isotypus: OSC 44812.

Ascocarps at first immersed, becoming erumpent, circular or somewhat elongate, dull black, 0.2–0.5 mm diam., without a preformed dehiscence mechanism, cracking open irregularly to expose the cream colored hymenium. Covering stroma 30–40 µm thick,

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externally opaque and carbonaceous, internally composed of interwoven hyphae 3 µm in diameter imbedded in a brown gelatinous matrix. – Periphysoids absent. – Subhymenium colorless, ca. 50 µm thick. – Paraphyses numerous, filiform, septate, colorless, circinate at the apex. – Asci uniformly thin-walled, clavate, stalked, J-, 8-spored. – Ascospores narrowly clavate, unicellular, surrounded by a thin mucilaginous sheath, 19–25 × 2.5–3.0 µm.

On dead corticate twigs of *Tsuga mertensiana* still attached to the tree, Oregon, USA.

In some cases the ascocarps are associated with hypertrophy of the host twigs, suggesting that *C. mertensianae,* like the closely related *C. heterophyllae,* is a mild parasite. *Coccomyces mertensianae* differs from *C. heterophyllae* in having spores twice as broad; the ascocarps are nearly identical. It is conceivable that only one species is involved. The hosts are, however, more different than their taxonomic proximity would suggest. *Tsuga mertensiana* is an alpine species with smooth bark; *T. heterophylla* a species of lower elevations and more mesic habitats whose outer bark is rough and corky even on relatively young branches. It is my impression from studying other species of *Coccomyces* (SHERWOOD, 1980) that host specificity in these fungi is determined as much by habitat and texture of the host as it is by host phylogeny.

Coccomyces mertensianae is the unnamed species on *T. mertensiana* alluded to in the discussion of *C. heterophyllae* by SHERWOOD (1980).

Coccomyces heterophyllae FUNK, Canad. J. Bot. 45: 2263 (1967) 1968

This species, previously reported only from coastal British Columbia (FUNK, 1967), also occurs in Oregon, where it has been collected on branches of *Tsuga heterophylla* in Linn County. It was found at an elevation of 1200 feet in the foothills of the Cascades, suggesting that *C. heterophyllae* is not restricted to coastal areas as was previously thought, although it may be commoner there.

Specimen examined. – Town Line Road, between Marcola and Brownsville, Linn County, Oregon, 20 May 1984, leg. SHERWOOD-PIKE (Herb. SHERWOOD).

Rhytismatales, family uncertain

2. ***Melittosporiella*** v. HÖHNEL, Ann. Mycol. 16: 211 (1918)

The ascocarps of *Melittosporiella* and *Melittosporium* CORDA resemble the much commoner genus *Propolomyces* SHERW., a factor which may account for their being so seldom collected and for their

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ommission in standard treatments of discomycetous fungi. *Melittosporium propolidioides* (REHM) REHM is comparatively common on decorticate conifer wood in exposed high elevation sites in Oregon, and the *Melittosporiella* described below was abundant on juniper wood in semidesert areas east of the Cascade mountains.

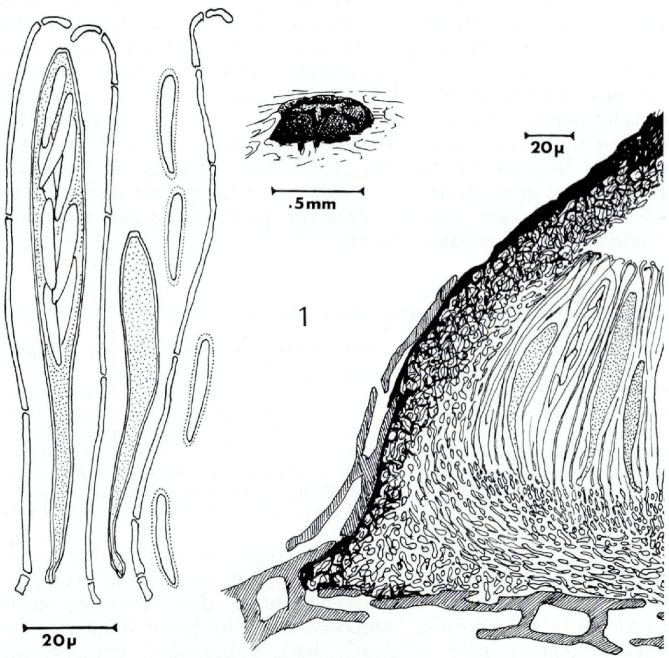

Fig. 1: *Coccomyces mertensianae*. Asci, paraphyses, ascospores, habit sketch of ascocarp, and cross section of ascocarp. Drawn from the holotype.

In an earlier treatment of these two genera (SHERWOOD, 1977) I assigned *Melittosporium* to the Hysteriales and *Melittosporiella* to the Ostropales. Having examined additional better-preserved specimens of both genera I am now inclined to believe that they, together with *Propolomyces* and *Propolidium* SACC., form a natural taxonomic unit whose affinities at the family level and above are obscure. These genera all have large, somewhat thick-walled J- asci with a slightly thickened apex and J- pore. The asci look vaguely

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bitunicate but do not have a functional bitunicate discharge mechanism. The spores are large and rather thick-walled. They are nonseptate in *Propolomyces,* transversely septate in *Propolidium* and *Melittosporiella,* and muriform in *Melittosporium.* The ascocarps are immersed, discoid, relatively large, somewhat elongate, and have a weakly developed stromatic covering layer lined with periphysoids. Generally the paraphyses branch apically to form an epithecium. In *Melittosporium* they anastomose and thus could be interpreted as pseudoparaphyses. Anamorphs are unknown. All four genera occur on bark and decorticated wood in exposed habitats. The propoloid fungi merit further study; they may well represent a distinct family. I have tentatively placed them in the Rhytismatales because the development of the ascocarp is reminiscent of *Coccomyces* and because of the inamyloid asci. Derivation from the Lecanidiales or Hysteriales through loss of the bitunicate discharge mechanism is also possible. ERIKSSON (1981) suggested a similar origin for the Cryptomycetaceae.

Melittosporiella macrospora SHERW., sp. nov. – Fig. 2

Ascocarpi primo immersi, non erumpentes, orbiculati vel elongati, 0.5–3.0 × 0.5–1.5 mm diam., per lacinias irregulariter aperientes, disco virido-atro. Margo superior stromatica 15–20 µm crassa, hyalina, non carbonacea. Periphysiodea 10–15 ×× 1.5 µm, non ramosa. Asci cylindrici, haud pedicellati, ad apice leniter incrassati, in iodo non caerulescentes, 70–80 × 15–16.5 µm, 8-spori; sporis oblongis, hyalinis, in tunica gelatinosa non inclusis, 22–27 × 6.5–7.5 µm. Paraphyses filiformes, septatae, apice non incrassatae, 70–85 × 1.0 µm. In ramis decorticatis *Juniperi* et *Salici,* Oregon, USA. Holotypus: BPI, on wood of *Juniperus occidentalis,* milepost 4 on road 330 S. of Paisley, Lake County, Oregon, USA, leg. SHERWOOD-PIKE, 9 June 1984. Isotypus: Herb. SHERWOOD.

Ascocarps at first immersed, irregularly orbicular to more commonly elongate, 0.5–3.0 × 0.5–1.5 mm diam., opening irregularly by teeth to expose the greenish-black disc. Covering layer 15–20 µm thick, colorless, composed of a thin layer of interwoven slender hyphae lined internally with unbranched periphysoids 10–15 × 1.5 µm. – Asci cylindrical, short-pedicellate, unitunicate, somewhat thick-walled when young, at maturity with a slightly thickened apex pierced by a nonrefractive median pore, J-, 8-spored, 70–80 × 15–16.5 µm. – Ascospores oblong, hyaline, 22–27 × 6.5–7.5 µm. – Paraphyses filiform, septate, the apices unenlarged, occasionally branched, 70–85 × 1.0 µm, the tips embedded in a brown amorphous epithecium. – Hymenial gel J-.

On dead wood of *Juniperus* and *Salix* in semidesert areas, common in Lake County, Oregon. The species is very similar to the European *M. pulchella* v. HÖHNEL, which however, has spores 15–18 × 4.5–5 µm.

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Additional specimens seen: BPI, on dead twigs and branches of *Salix* sp., m. p. 4 of rd. 330 S. of Paisley, Lake County, Oregon, SHERWOOD-PIKE, 9 June 1984; BPI, Little Bear Creek, Fremont National Forest, Lake County, Oregon, SHERWOOD-PIKE, 8 June 1984.

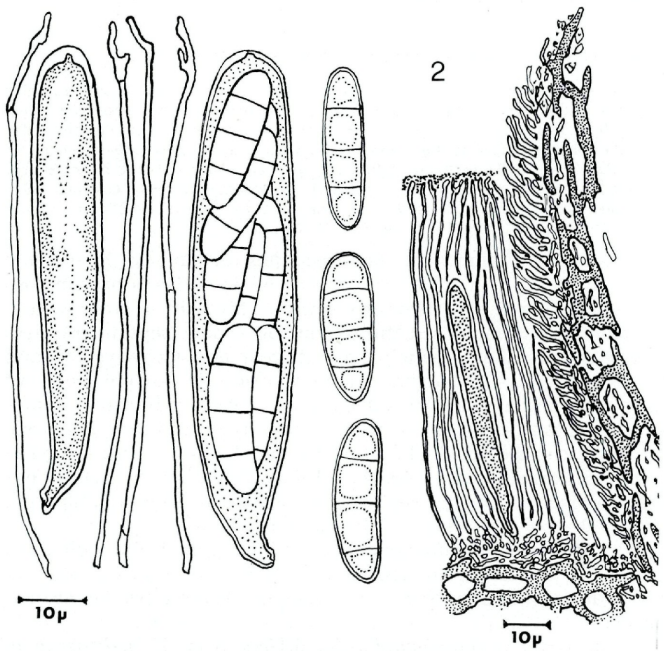

Fig. 2: *Melittosporiella macrospora*. Asci, paraphyses, ascospores, and cross section of ascocarp. Drawn from the holotype.

Ostropales, Stictidaceae

3. ***Nanostictis*** M. S. CHRISTIANSEN, Bot. Tidskr. 51: 59 (1954)

The genus *Nanostictis* was erected for a *Stictis*-like discomycete occurring on thalli of *Peltigera* in Denmark. SHERWOOD (1977) accepted the genus as valid and Ostropalean, pointing out the similarity to *Cryptodiscus* CORDA. Both *Cryptodiscus* and *Nanostictis* differ from *Stictis* in lacking a marginal crystalline layer; they also typi-

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cally have smaller ascocarps and spores which may be long and multiseptate but do not approach the extreme filiform types characteristic of *Stictis*. The discovery of another scolecospored *Cryptodiscus*-like discomycete on a cyanophycophilous lichen strengthens the case for recognizing *Nanostictis* as a distinct genus. Most *Cryptodiscus* species occur on wood and have few-septate oblong spores.

Nanostictis pseudocyphellariae SHERW., sp. nov. – Fig. 3

Ascocarpi primum immersi, profunde cupulati, 0.2–0.4 mm diam., margine integro, pallido, disco pallide ochraceo. Margo in sectione transversali 50–75 µm crassus, hypharum pariete 0.5 µm diam. Stratum crystallinum nullum. Periphysoidea nulla. Paraphyses filiformes, simplices, 85 × 0.8 µm, achromae, in iodo non caerulescentes. Asci 70–80 × 7.5 (–10) µm, cylindrici, apice ad 2.5 µm crassi, 8-spori. Sporae 40–48 × 2.5–3.0 µm, 5–7 septatae. In thallis *Pseudocyphellariae,* Oregon, USA. Holotypus: BPI, on *Pseudocyphellaria,* Clear Lake, ca. 4 mi. N. of Florence, Lane County, Oregon, winter 1981–82, leg. SHERWOOD.

Apothecia immersed, not becoming erumpent, 0.2–0.4 mm diam., colorless, at first closed, opening by an entire pore to expose the deeply sunken pale ochraceous disc. – Margin in cross section 50–75 µm thick, composed throughout of slender septate colorless hyphae 0.5 µm diam. widely spaced in a gel. Periphysoids and crystals absent. – Subhymenium colorless, 25–30 µm thick, of densely packed hyphae 0.5–1.0 µm diam. – Asci cylindrical, somewhat thick-walled when young, functionally unitunicate, 8-spored, the apical cap 2.5 µm thick, pierced by an J- pore. – Paraphyses simple, filiform, septate, less than 1.0 µm thick below, slightly enlarged above. – Ascospores long-cylindrical, 5–7 septate, tapering below, 40–48 × 2.5–3.0 µm. – Hymenial gel J-.

On thalli of *Pseudocyphellaria* sp., Oregon, USA. Colonized portions of the host are in poor condition but it is not clear whether this is due to the activities of the fungus. Discrete lesions are not formed.

Nanostictis pseudocyphellariae differs from *N. peltigerae* in having narrower marginal hyphae and broader spores.

Lecanidiales, Lecanidiaceae

4. ***Lecanidiella*** SHERW., gen. nov.

Ascomata apotheciis habitu similia, primo clausa demum autem irregulariter secedentia superficie ascomatis. Asci bitunicati (?), iodo non reagentes. Ascosporae hyalinae, septatae, in tunica gelatinosa non inclusae. Pseudoparaphyses filamentosae, ramificantes superque apices ascorum dense reticulatim anastamosante; paraphyses in epithecio brunneo. *Holmiella* simile, sed sporae hyalinae, multiseptatae.

Species holotypicus: *Lecanidiella contortae.*

Ascomata apothecioid, initially immersed and closed, becoming erumpent and opening by cracking the overlying stromatic tissue

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irregularly to form a dentate margin, circular or somewhat irregular in outline. – Margin pseudoparenchymatous, becoming entirely carbonaceous at maturity; periphysoids absent. – Pseudoparaphyses numerous, slender, much-branched and anastomosing api-

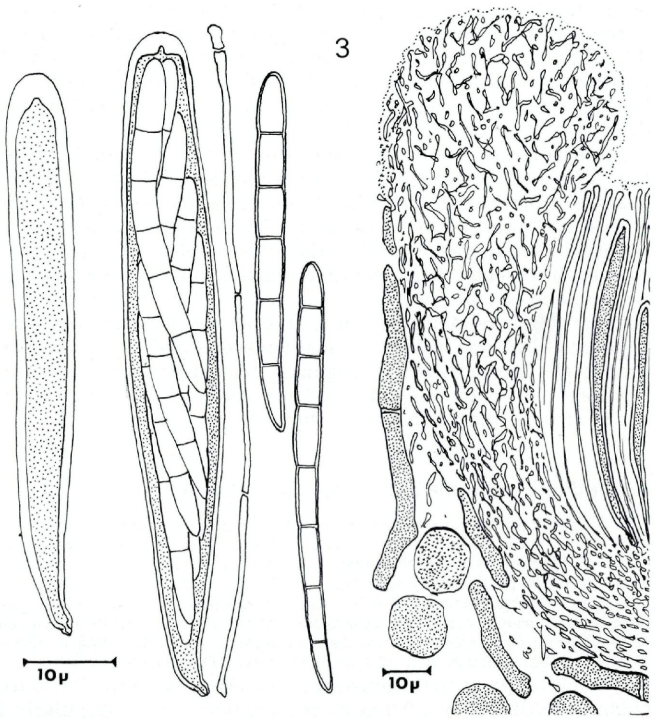

Fig. 3: *Nanostictis pseudocyphellariae*. Asci, paraphyses, spores, and cross section of ascocarp. Drawn from the holotype.

cally, imbedded in a brown epithecium. – Hymenial gel J-. – Asci bitunicate (?), cylindric-clavate, 8-spored. – Ascospores hyaline, transversely septate, not sheathed. – Anamorph unknown.

Lecanidiella is based on a corticolous fungus from the mountainous regions of western North America whose aspect in the field is that of a bark-inhabiting *Coccomyces*. The asci, however, are thick-walled when young and bitunicate in appearance. No definite

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bitunicate discharge mechanism was observed in microscopic mounts; it is possible that the species is not functionally bitunicate. The sequence of development is like that reported by PIROZYNSKI & REID (1966) and PETRINI & al. (1979) for *Holmiella sabina* (de NOT.) PETRINI & al. In both *Lecanidiella* and *Holmiella* the ascocarps develop as closed pseudoparenchymatous bodies which crack open irregularly to expose the developing hymenium. The two genera differ in spore characters. *Lecanidion,* the only available genus for saprophytic bitunicate Discomycetes with transversely multiseptate hyaline spores, has an entire margin and disc exposed early in development.

Lecanidiella also exibits some characters of *Melittosporiella,* but differs in lacking marginal periphysoids. The interthecial hyphae in *Melittosporiella* also have free ends, whereas the ends branch and anastomose in *Lecanidiella.* Both genera have nondescript thick-walled asci which could be interpreted as either unitunicate or bitunicate. It is possible that the distinctions between *Lecanidiella* and *Melittosporiella* are not profound and that they are actually closely related even though the observed morphology would appear to place one in the Loculoascomycetes and one in the Euascomycetes. *Lecanidiella* is recognized here in part because it may represent a genuine intermediate between the bitunicate Lecanidiaceae and the propoloid fungi.

Lecanidiella contortae SHERW., sp. nov. – Fig. 4

Ascocarpi primo immersi, dein erumpentes, irregulariter orbiculati, 0.5–1.0 mm diam., per lacinias irregulariter aperientes. Margo superior stromatica 40–50 µm crassa, carbonacea, atra, periphysoidea nulla. Asci 120–135 × 17–19 µm, cylindrici-clavati, breviter pedicellati, 8-spori; sporis oblongis, 3-septatis, hyalinis, in tunica gelatinosa non inclusis, 20–27 × 5–7.5 µm. Pseudoparaphyses filiformes, apice ramosae, brunneae. In corticis *Pini contortae,* Oregon, USA. Holotypus: BPI, on bark of *Pinus contorta,* barren area near Santiam Summit, Linn Co., Oregon, elev. ca. 4500 ft., leg. SHERWOOD & PIKE, 12 June 1983. Isotypi: OSC 44808; DAVFP.

Ascocarps at first immersed, then erumpent, circular to irregular in outline, 0.5–1.0 mm diam., cracking open irregularly by means of teeth to expose the dark pruinose hymenium. – Margin dentate, carbonaceous, black, in cross section 40–50 µm thick, initially composed of small-celled dark pseudopyrenchyma but becoming entirely black and carbonized with age; periphysoids absent. – Asci 128–135 × 17–19 µm, cylindric-clavate, thick-walled when young, the apex barely thickened at maturity, with a nonrefractive J- median pore. – Ascospores 8, oblong, hyaline, 3-septate, not sheathed, 20–27 × 7.5 µm. – Pseudoparaphyses filiform, branched and anastomosing above, imbedded in a dark brown epithecium. Hymenial gel J-. – Anamorph unknown.

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On bark of *Pinus contorta*, Oregon, USA. The ascocarps were numerous on dead flaking outer bark of living trees on the lower portion of the trunk which is covered for several months of the year by a deep winter snowpack.

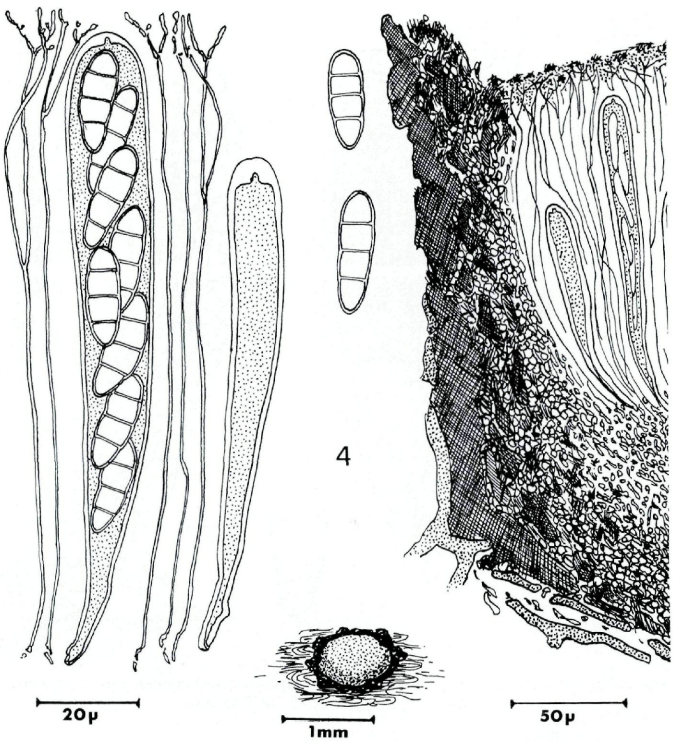

Fig. 4: *Lecanidiella contortae*. Asci, pseudoparaphyses, ascospores, habit sketch, and cross section of ascocarp. Drawn from the holotype.

5. ***Hysteropatella*** REHM in Rabenh., Krypt.-Fl. ed. 2, 1(3): 367 (1896)

Hysteropatella oregana SHERW. & BARR, sp. nov. Fig. 5

Apothecia gregaria, sessilia, atra, disco plano et marginato, 0.5–1.2 mm diam. Margo 25 µm lata, ex cellulis atro-brunneis pseudoparenchymatis constata, non

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carbonacea. Asci cylindrici, haud pedicellati, bitunicati, 110–120 × 20–28 µm, 8-spori; sporae oblongae, brunneae, 3-septatae, ad septa haud constrictae, 27–32 × 10.5–12 µm. Pseudoparaphyses filiformes, ramosae, septatae, in iodo non caerulescentes; epithecio brunneo. In ramis decorticatis *Artemisiae* et *Purshiae*, Oregon, USA. Holotypus: BPI, on *Artemisia tridentata*, Picture Rock Pass, Lake County, Oregon, leg. SHERWOOD-PIKE, 7 June 1984. Isotypus: OSC 44810.

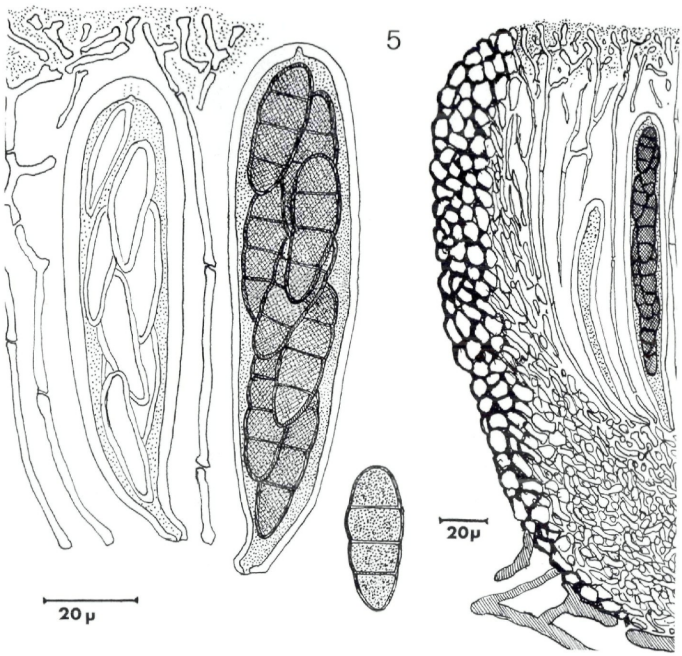

Fig. 5: *Hysteropatella oregana*. Asci, pseudoparaphyses, ascospores, and cross section of ascocarp. Drawn from the holotype.

Apothecia gregarious, nearly superficial with the base inserted in the substrate, circular or somewhat compressed with the grain of the substrate, black, the disc plane with a raised margin, 0.5–1.2 mm diam. – Margin in cross section 25 µm thick, of large isodiametric pseudoparenchymatous cells 7–10 µm in diameter, not gelatinous or carbonized. – Subhymenium thick, of tightly packed hyaline to pale brown hyphae 3–5 µm in diameter. – Asci bitunicate, cylindrical, thick-walled when young, I-, the apical pore with a

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faint nasse apicale, 8-spored, 110–120 × 20–28 µm. – Ascospores ovoid, slightly constricted at the median septum, 3-septate, brown, the contents granular, 27–32 × 10.5–12 µm. – Pseudoparaphyses septate, 1–1.5 µm thick, much branched and anastomosing above and imbedded in a brown amorphous matrix to form an epithecium. Hymenial gel J-.

On decorticate branches of desert shrubs *(Artemisia* and *Purshia),* Oregon, USA. Sprecimens of this fungus were sent to Margaret BARR, who determined it as an undescribed species of *Hysteropatella.* Other species in this genus have much smaller ascospores.

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References

ERIKSSON, O. (1981). The families of bitunicate ascomycetes. – Opera Botanica 60: 1–120.

FUNK, A. (1967). *Coccomyces heterophyllae* n. sp., a hypodermataceous fungus from the periderm of western hemlock. – Canad. J. Bot. 45: 2263–2267.

PETRINI, O., G. J. SAMUELS & E. MÜLLER (1979). *Holmiella sabina* (de NOT.) comb. nov. (syn. *Eutryblidiella sabina*) and its *Corniculariella*-like anamorph, an endophyte of *Juniperus* species. – Rep. Swiss Botanical Soc. 89: 80–91.

PIROZYNSKI, K. A. & REID, J. (1966). Studies on the Patellariaceae. I. *Eutryblidiella sabina* (de NOT.) v. HÖHN. – Canad. J. Bot. 44: 655–662.

SHERWOOD, M. A. (1977). The Ostropalean fungi. – Mycotaxon 5: 1–277.

— (1980). Taxonomic studies in the Phacidiales: The genus *Coccomyces* (Rhytismataceae). – Occ. Pap. Farlow Herbarium 15: 1–120.

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