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# Some operculate Discomycetes (Pezizales) from Iceland

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ABSTRACT: On an excursion to Iceland in 1984 60 specimens of operculate discomycetes from 20 localities were collected. In the material 31 taxa have been identified, of which 18 species are new records for the island. 12 collections have been referred to genus only. Among these are three species, viz. *Boudiera* sp., *Cheilymenia* sp. (HFG 84,20) and *Helvella* sp., believed to be new to science. Due to the limited material available taxonomic recognition must await further studies in arctic and subarctic Pezizales.

In August 1984 Steen A. Elborne and the author had the opportunity to collect fungi in Iceland. The main purpose of the excursion was collection of myxomycetes, but whenever time allowed other groups of fungi were gathered as well. S.A. Elborne concentrated on the Agaricales, the author on the Pezizales. 60 collections of operculate discomycetes were secured. These are reported on below. A number of the species encountered are well known from the area. Most collections however, represent new records.

Only few papers deal specifically with Pezizales in Iceland (e.g. HALLGRÍMSSON 1968, 1982). Some Icelandic material has been included in monographic treatments of various groups (e.g. van BRUMMELEN 1967, DISSING 1966, HARMAJA 1979), but on the whole, knowledge on occurrence and distribution of these fungi in Iceland is still rather incomplete. The present study is an attempt to broaden a little this scanty knowledge. An actual check-list to the flora of operculate discomycetes is beyond the scope of the work. For a list of references to Icelandic mycological literature the reader is referred to HALLGRÍMSSON (1979) and for a historical survey to LARSEN (1932).

## MATERIAL AND METHODS

A total of 60 collections from 20 localities have been studied. Notes on macroscopical characters, including colour, were made in the field from fresh material. Microscopical characters have been examined on dried material soaked in water. Spore measurements are made in lactic acid with cottonblue (CB). Colour codes refer to KORNERUP and WANSCHER (1974). All cited material is deposited in the Botanical Museum, Copenhagen (C).

## LOCALITIES

The localities from which material has been collected are shown on the map, fig. 1. In the list the localities are arranged clock-wise around the island according to custom.

1 Aug. 1st 1984, Gullbringusýsla, Reykjavík, Sundahöfn, 64° 10'N 21°53'W, 20 m alt.
2 Aug. 2nd 1984, Gullbringusýsla, Reykjavík, Laugardalur, at Grensásvegur, 64°08'N 21°53'W, 20 m alt.
3 Aug. 18th 1984, Borgarfjarðarsýsla, Borgarfjörður, Hafnarskógur, 64°30'N 21°58'W, 5-10 m alt.
4 Aug. 19th 1984, Borgarfjarðarsýsla, Bæjarsveit, ca. 2 km W of Steðji, at road 50, 64°34'N 21°31'W, 50 m alt.
5 Aug. 22nd 1984, Borgarfjarðarsýsla, Kaldidalur, SE-slope of Mt. Ok, at road F35, 64°32'N 20°48'W, 750 m alt.
6 Aug. 21st 1984, Borgarfjarðarsýsla, Húsafellsskógur, N of Húsafell at the camping ground, 64°42'N 20°55'W, 100 m alt.
7 Aug. 19th 1984, Borgarfjarðarsýsla, Húsafellsskógur, S of Svartá at Mt. Tunga, 64°43'N 20°52'W, 200 m alt.
8 Aug. 21st 1984, Mýrasýsla, Húsafellsskógur, S-slope of Mt. Tunga, 64°43'N 20°52'W, 350 m alt.
9 Aug. 20th 1984, Mýrasýsla, Hallkelstaðaheiði, between Kolsstaðir and Hallkelstaðir, 64°44'N 20°55'W, 200-250 m alt.
10 Aug. 17th 1984, Mýrasýsla, Hreðavatn, slope W of the lake, 64°46'N 21°36'W, 100-150 m alt.
11 Aug. 16th 1984, A.-Húnavatnssýsla, Bólstaðarhlíð, at road 1, S of point 466, 65°24'N 19°45'W, 400 m alt.
12 Aug. 15th 1984, S.-Þingeyjarsýsla, Vaðlaheiði, at road 1, S of point 613, 65°48'N 18°00'W, 550 m alt.
13 Aug. 15th 1984, S.-Þingeyjarsýsla, Vaglaskógur, 65°43'N 17° 53'W, 150-200 m alt.
14 Aug. 13th 1984, S.-Þingeyjarsýsla, Mývatn, Hlíðarkambur NE of the lake, 65°38'N 16°54'W, 280-300 m alt.
15 Aug. 8th-10th 1984, S.-Múlasýsla, Hallormsstaðarskógur, 65° 05'N 14°45'W, 50-100 m alt.
16 Aug. 3rd-4th 1984, A.-Skaftafellssýsla, Skaftafell Nat. Park, 64°01'N 17°00'W, 100-300 m alt.
17 Aug. 26th 1984, Rangárvallasýsla, Merkurhraun, forest near the abandoned farm Merkihvoll, S of road 26, 64°02'N 19°53'W, 150 m alt.
18 Aug. 24th 1984, Árnessýsla, Biskupstungur, W-slope of Mt. Bjarnarfell, 64°19'N 20°23'W, 350-450 m alt.
19 Aug. 24th 1984, Árnessýsla, Biskupstungur, ca. 2 km N of Torfastaðir, at road 355, 64°11'N 21°30'W, 120 m alt.
20 Aug. 23th 1984, Árnessýsla, Hveragerði, Mt. Tindar, 64°01'N 21°14'W, 250 m alt.

## LIST OF SPECIES

*ASCOBOLUS CARBONARIUS* Karst.
Material studied: Loc. 2: HFG 84,19, on burnt place in grassland.
New to Iceland.

*BOUDIERA DENNISII* Diss. & Siv.
Material studied: Loc. 11: HFG 84,62, on moist, silty soil among *Eriophorum* sp.
This specimen conforms well to the description given by DISSING (1976) except for the paraphyses which are slightly more

slender in the apical part, up to 10 µm broad as opposed to 10-14 µm in the Norwegian type material.

Among the species of *Boudiera* with spinulose spores *B. dennisii* is characterized by spores 20-24 µm in diam. with delicate, truncate or acute spines less than 3 µm long.

Besides in Norway the species has been collected in Greenland (DISSING pers. comm.). The Icelandic find fits naturally into this pattern of distribution.

New to Iceland.

*BOUDIERA* sp.

Material studied: Loc. 15: HFG 84,47, Aug. 10th 1984, among mosses on silty soil in a ditch.

The present species seems to be undescribed. However, since specific variation in this genus is still badly known, a formal description must await further finds.

Fruitbodies turbinate to pulvinate, up to 4 mm in diam., margin indistinct, solitary or in small groups. Hymenium violet brown. Outside greyish with yellowish tint, glabrous. Outer excipulum of textura angularis, cells more or less isodiametric, 18-50 µm in diam., outermost cells slightly elongated and paral-

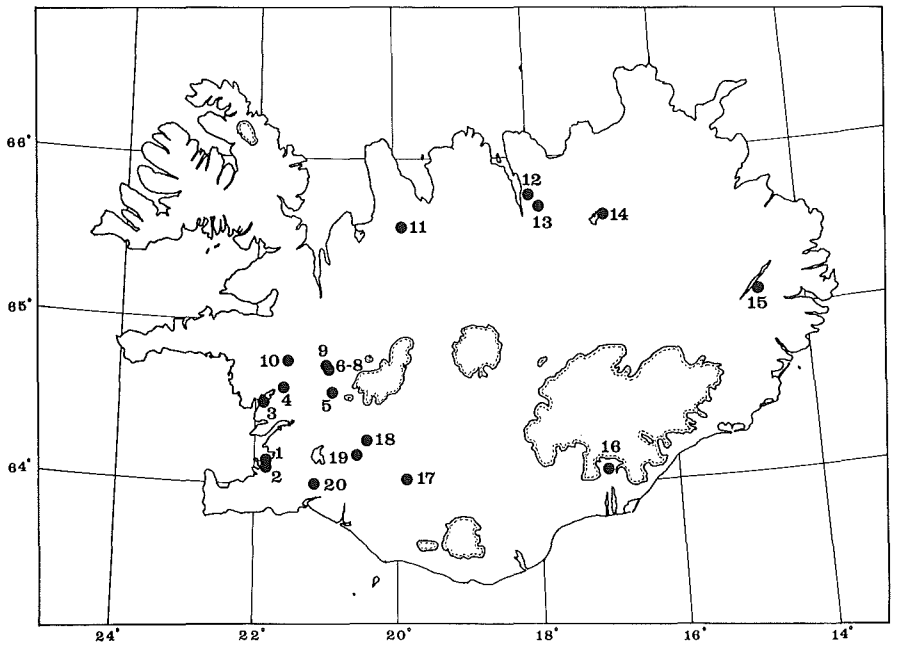


Fig. 1. Map of Iceland showing the localities where operculate discomycetes have been collected for this study.

lel perpendicular to surface. Medullary excipulum of textura intricata with cells 5-7 µm broad. Subhymenium poorly developed. Asci cylindrical, 325-435 x 30-42 µm, 8-spored, entire ascus J+ blue. Spores uniseriate, globose, hyaline to pale yellowish, with one large guttule in rehydrated material, 23-27 µm in diam. exclusive of ornamentation which consists of up to 3 µm long spines, 1-2 µm broad at base, mostly blunt but some pointed and slightly curved spines often occur (fig. 2), in heated CB spores with de Bary bubbles. Paraphyses straight, 4 µm broad, gradually expanding into a clavate apex up to 9 µm broad, septate, in apical part with brownish contents which stain almost black in CB.

The genus *Boudiera* was studied by DISSING and SCHUMACHER (1979). Among the species recognized by them, the present specimen is probably most closely related to *B. dennisii*, from which it differs by the more slender paraphyses and slightly larger spores with longer and more prominent spines.

*CHEILYMENIA* sp. 1

Material studied: Loc. 2: HFG 84,20, on burnt ground.

Fruitbodies convex, appearing pulvinate, up to 7 mm in diam., sessile on a constricted base. Hymenium bright reddish orange (more saturated than 7A8). Outside paler, with scattered pale brownish hairs of two types. Marginal hairs unbranched, up to 175 x 10 µm, hairs on lower surface simple or stellate with two to six rays, up to 170 x 12 µm. All hairs septate, tapering,

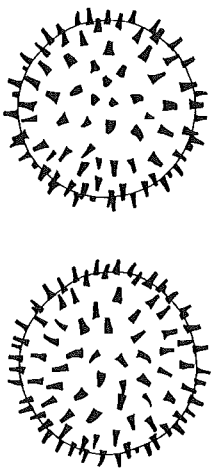


Fig. 2. *Boudiera* sp. Spores. HFG 84,47.


Fig. 3. *Cheilymenia* sp. 1. Spores. HFG 84,20.

with rounded apices, originating in outer excipulum, simple hairs often forked at base. Excipulum two-layered, outer layer 125-160 µm thick, of textura angularis to textura globosa, with cells up to 50 µm in diam., often elongated perpendicular to surface, outermost cells with rather thick walls which stain deeply in CB. Medullary excipulum 370-400 µm thick, of densely packed, irregular cells with hyphal elements 3-5 µm broad. Asci cylindrical, 175-225 x 10-11 µm, 8-spored, J-. Spores obliquely uniseriate, ellipsoid, hyaline, without guttules in rehydrated material, 14-16 x 8-10 µm, with fine warts which are often elongated to comma-shaped, rarely confluent, less than 0.5 µm high (fig. 3). Loosening of the epispore in CB has not been observed. Paraphyses filiform, 2 µm broad, with clavate apices up to 11 µm broad, septate.

By the reddish orange hymenium and the pale brownish hairs this species, in the field, strongly suggests a species of *Scutellinia*. The combination of characters: stellate hairs, excipular structure and eguttulate spores, however, clearly places it in *Cheilymenia*. It seems to be close to *C. crucipila* (Cooke & Phill.) Le Gal, but differs in a less conspicuous tomentum, broader ectal excipulum, and spores with an epispore that does not loosen in CB. Moreover apothecia were constantly convexly deflexed, and they were growing on burnt ground, a habitat which is rarely connected with species of *Cheilymenia*. With only one collection available, it is difficult to evaluate the importance of these characters.

*CHEILYMENIA* sp. 2.

Material studied: Loc. 11: HFG 84,63, on dung of horse.

In DENISON (1964) this specimen keys to *C. theleboloides* (Alb. & Schw. ex Fr.) Boud., but in several features it differs from that species. The most notable difference is in the tomentum of dense, pale brownish, superficial hairs, up to 600 µm long and 25 µm broad and with the basal cell usually somewhat dilated. Asci and spores are smaller than reported by Denison, and the epispore does not separate from the spore-wall in CB.

*GEOPORA ARENICOLA* (Lév.) Kers

Material studied: Loc. 15: HFG 84,36, Aug. 8th 1984, on naked, silty soil along small stream.

*G. arenicola* is here used in the broad sense of KERS (1974), that is including *Sepultaria arenosa* (Fuck.) Boud. The species has not been published from Iceland, but is mentioned in a list of Icelandic Pezizales prepared by HALLGRÍMSSON (1982).

*HELVELLA ELASTICA* Fr.

Material studied: Loc. 10: HFG 84,65, on naked, silty gravel; Loc. 15: HFG 84,32, Aug. 8th 1984, in moss along small stream.

*H. elastica* is closely related to *H. albella* Quél. which has been reported from Iceland (DISSING 1966). *H. elastica* is a somewhat larger species. The apothecium is broader, pale brownish and more irregularly shaped than in *H. albella*.

New to Iceland.

*HELVELLA HYPERBOREA* Harmaja

Material studied: Loc. 15: HFG 84,29, Aug. 8th 1984, in moss along small stream.

*H. hyperborea* is a close relative of *H. costifera* Nannf. From the treatment of the two species by HARMAJA (1979) the distinction seems subtle and no single character distinguishes either taxon. The features on which determination of 84,29 rests are mainly hymenial colour and the structure of the ribs on the exterior of the cup. The present collection has been compared with and found identical with authentic material from Finland (Kuusamo, Liikasenvaara, Aug. 23rd 1978, leg. et det. H. Harmaja).

The distributions of the species do not overlap. *H. hyperborea* is a northern boreal to alpine species while *H. costifera* seems confined to lower boreal and nemoral areas in Fennoscandia.

Two Icelandic collections in C earlier published as *H. costifera* (Hveragerði, Selfjall, July 26th 1959, Lange 20) and *H. acetabulum* (Fr.) Quél. (Hveragerði, Mt. Tindar, Aug. 8th 1959, Lange 659) have been revised by Harmaja (1979) and both found to be *H. hyperborea*.

*HELVELLA LACUNOSA* Afz. ex Fr.

Material studied: Loc. 10: HFG 84,64, on naked, silty soil, leg. S.A.E.; Loc. 11: HFG 84,60, in deep moss in tussock; Loc. 14: HFG 84,49, among mosses in *Betula tortuosa* thicket on lava ground; Loc. 15: HFG 84,30, Aug. 8th 1984, in moss along small stream; Loc. 16: HFG 84,23, Aug. 3rd 1984, among mosses and grass in *Betula* copse; Loc. 17: HFG 84,92, among mosses on gravel in *Betula* wood, leg. S.A.E.

Several earlier reports, the first of which is probably that of König (in Zoëga) from 1772 (as *H. atra*).

*HELVELLA NIGRICANS* Pers.

Material studied: Loc. 9: HFG 84,74, among grass spp., leg. S.A. E. & H.F.G.

As a consequense of the adoption of a common starting point for fungal nomenclature, the correct name of the fungus formerly known as *H. atra* Holmsk. ex Fr. is now *H. nigricans*.

*H. atra* was described by König (in ZOËGA 1772) from an Icelandic collection which was depicted in Flora Danica. DISSING (1964) showed that this figure represents an arctic form of *H. lacunosa*. The first, and only, report of *H. nigricans* from Iceland therefore appears to be by ROSTRUP (1903) based on a collection by Stefánsson from Möðruvellir.

*HELVELLA PHILONOTIS* Diss.

Material studied: Loc. 20: HFG 84,86, in moss on water-soaked, silty soil and in volcanic ashes, leg. S.A.E. & H.F.G.

The present material was collected during a short visit on the type locality. *H. philonotis* was described by DISSING (1964) based on a collection of M. Lange from 1959. Now, 25 years later, a very large population of the species is still found on the locality.

*HELVELLA PHLEBOPHORA* Pat. & Doass.

Material studied: Loc. 9: HFG 84,73, on naked, silty soil; Loc. 15: HFG 84,31, Aug. 8th 1984, in moss along small stream.

*H. phlebophora* is a small species close to *H. lacunosa*. It is distinguished by the pileus, which has a permanently free margin and prominent ribs on the outside. The Icelandic specimens are slightly larger, total height up to 4 cm, and has slightly larger

spores than given by DISSING (1966). In spore-size they agree well with the American material reported by WEBER (1972), but the concept of this author involves an even larger fungus.

New to Iceland.

*HELVELLA RIVULARIS* Diss. & Siv.

Material studied: Loc. 8: HFG 84,78, among mosses on silty soil, leg S.A.E.

*H. rivularis* was described from northern Norway. Besides, the species is known from Finland and Greenland (DISSING & SIVERTSEN 1980) and from Poland and Switzerland (DISSING pers. comm.).

New to Iceland.

*HELVELLA* sp.

Material studied: Loc. 3: HFG 84,66, in deep moss under *Betula tortuosa*; Loc. 17: HFG 84,91, among mosses on gravel in *Betula* wood, leg. S.A.E.

Total height of fruitbodies 1.5-9 cm (fig. 4). Pileus cup-shaped, 1.1-3 cm broad, up to 1.5 cm deep, regular to somewhat laterally compressed, margin even, often splitting with age. Hymenium greyish brown (5D4-5E4 in 84,66, towards 6E5 in 84,91). Outside paler, pubescent to finely villose. Stipe 0.8-7.5 cm high, terete, 2-5 mm broad at base, 2-3 mm at apex, pale greyish brown becoming whitish to yellowish white at base, pubescent to finely villose. Excipular structure not examined. Asci cylindrical (230-)280-300 x 10-12 µm, 8-spored. Spores uniseriate, ellipsoid, 14-19 x 9-11 µm, hyaline, in rehydrated material with one large guttule, smooth, some spores with conspicuous pustules (fig. 5). Paraphyses filiform, 2-4 µm broad, apices clavately expanded, up to 8 µm broad, occasionally slightly curved, in rehydrated material with pale greyish brown, diffuse pigments, which stain deeply in CB.

Although the two specimens show some differences in hymenial colour and tomentum, they are believed to represent the same taxon. Clearly, they belong in sect. Macropodes, but do not seem

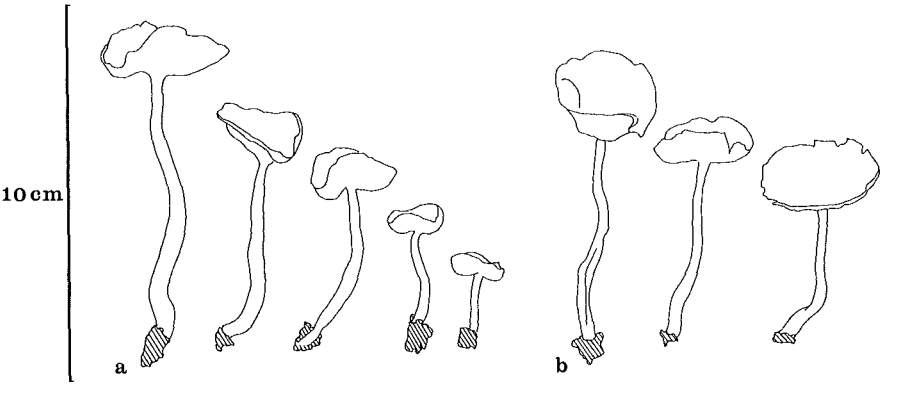


Fig. 4. *Helvella* sp. Outline of fruit bodies, from field sketches. a) HFG 84,91, b) HFG 84,66.

to fit into any of the species described in this group. The closest relatives are probably *H. macropus* (Fr.) Karst. and *H. pallidula* Weber. From the former the Icelandic material differs in the typical "*Helvella*-type" of spores. *H. macropus* has fusoid to subfusoid spores with fine warts, a unique feature in this genus. The latter differs in the lack of any localized pigment (WEBER 1972) and seems to be a less robust species.

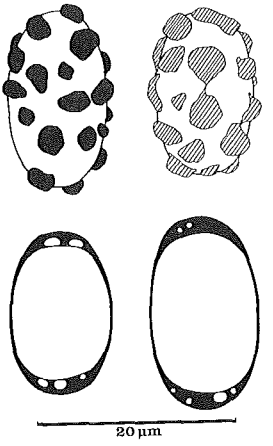


Fig. 5. *Helvella* sp. Spores. Above pustulate spores in surface view. Below normal, smooth spores in optical section. Stained in CB. HFG 84,66.

As noted above some spores have pustules on the surface. Weber (l.c.) shortly discussed this type of ornamentation and concluded that it is a permanent quality of a spore, although of very irregular occurrence, even within a single apothecium. In the present specimens the proportion of spores with this ornamentation was very low when the material was soaked in water for only a short time, that is overnight or less. Material left in water for three to four days surprisingly showed a much larger number of these spores. Only spores discharged from asci were pustulate. This observation suggests that pustulation may be a less constant quality of the spore.

*IODOPHANUS* cf. *TESTACEUS* (Fr.) Korf

Material studied: Loc. 2: HFG 84,21, on burnt place.

Although essentially identical in microscopical characters with *I. testaceus* sensu KIMBROUGH et al. (1969), the general appearance and ecology leave some doubt as to the identity of this collection. In the field the apothecia were greyish red (9B5), discoid to pulvinate, up to 2.5 mm in diam. Upon drying the colour changed towards brick red. A pyrophilous habit for *I. testaceus* is not mentioned by Kimbroguh et al., but in Denmark it is occasionally found on burnt ground.

*LAMPROSPORA OVALISPORA* (Svrček & Kub.) Eckbl.

Material studied: Loc. 2: HFG 84,18, on naked soil in roadside; Loc. 3: HFG 84,67, on naked, silty soil in wheeltrack, leg. S.A.E.; Loc. 11: HFG 84,61, on moist, naked, silty soil; Loc. 12: HFG 84,57, among mosses on silty soil in ditch; Loc. 18: HFG 84,88, among mosses on moist, silty soil, leg. S.A.E.

*L. ovalispora* is distinguished from *L. crec'hqueraultii* (Crouan) Boud., of which it was formerly regarded a variety, by the broadly ellipsoid to subglobose spores as opposed to the perfectly globose spores of the latter.

In Norway *L. ovalispora* turned out to be far the most common species of the two (ECKBLAD 1967) and this may well be the case in Iceland, too.

The species seems not to be recorded from Iceland before, but *Plicariella modesta* (Karst.) Lindau reported by LARSEN (1932) and *Barlaea modesta* Karst. from Glerá near Akureyri (ROSTRUP 1903) may actually be *L. ovalispora*. As no material is left, this assumption cannot be confirmed. A specimen in C (Skagafjörður, Aug. 4th 1876, leg. Grønlund) labelled *Peziza asperior* Nyl. and published by GRØNLUND himself (1879) turned out to be *L. ovalispora*.

*LASIOBOLUS DIVERSISPORUS* (Fuck.) Sacc.

Material studied: Loc. 9: HFG 84,72, on dung of sheep.

Only one species of *Lasiobolus*, viz. *L. ciliatus* (Pers.) Boud., has been published from Iceland (as *L. equinus* (Müll.) Karst., ROSTRUP 1903). However, a number of other coprophilous Pezizales are reported, and a reexamination of the material on which these reports rest, no doubt will reveal more species of *Lasiobolus*.

*NEOTTIELLA RUTILANS* (Fr.) Dennis

Material studied: Loc. 1: HFG 84,15, in *Polytrichum* sp. on moist slope; Loc. 4: HFG 84,70, in *Polytrichum* sp. on silty, organic soil; Loc. 19: HFG 84,87, in *Polytrichum* sp. on organic soil in ditch.

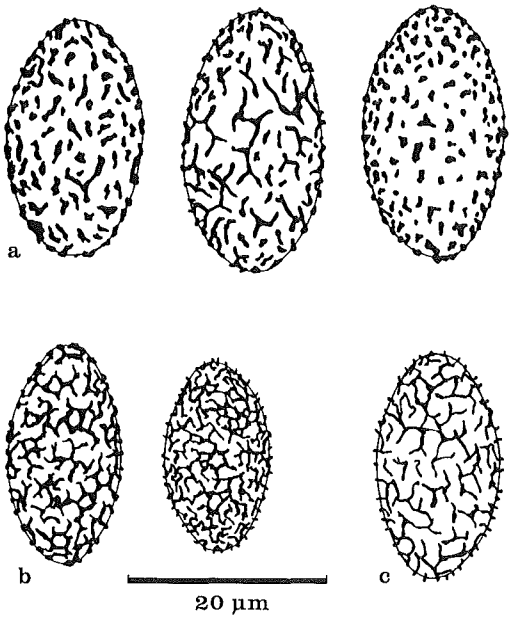


Fig. 6. *Neottiella rutilans*. Spores. a) HFG 84,87. b) HFG 84,70, c) HFG 84,15.

These collections are referred to *N. rutilans* with some hesitation. Variation in spore size and ornamentation as well as in tomentum is rather large. As to spore size, there seems to be some disagreement among different authors. MAAS GEESTERANUS (1969) gives (20-) 22-29.5 x (12.5-) 13.4-16.7 µm for Dutch material while RIFAI (1968), based on British collections, gives 20-24.5 (-27) x 11.8-13.6 µm. The Icelandic specimens range from 19-22 x 11-12 µm (HFG 84,70) to 24-26 x 13-16 µm (HFG 84,87). Ornamentation varies from a fragmentary reticulum to rather irregular, but distinctly isolated warts (fig. 6). HFG 84,87 is densely covered on the outside and on margin with white hairs up to 500 µm long, while the two first cited collections have only few, scattered, short hairs.

Two separate taxa may be present in the material, HFG 84,15 and 84,70 representing a small-spored species almost devoid of hairs and HFG 84,87 a densely hairy species with larger spores. Apothecial diam. and ornamentation of spores seem to some degree correlated with the other characters. 84,15 and 84,70 attain a max. diam. of 6-8 mm and have spores with fragmentary reticulum. 84,87 is slightly larger, up to 10 mm in diam., and with a spore-ornamentation of warts, often elongated and confluent. However, for the moment I prefer to regard the three collections as representing extremes within one variable species.

The Icelandic material was collected on artificially created habitats. 84,15 is from a roadside slope destabilized by seeping water, new soil being constantly exposed. 84,70 and 84,87 are both from soil thrown up from an adjacent ditch or from the sides of the ditch itself. In all cases fruitbodies were growing in or very close to a *Polytrichum* species. The latter type of habitat is extremely widespread in the west and southwest of Iceland, indicating that *N. rutilans* may be common in the area.

Not previously reported from Iceland.

*PACHYELLA BABINGTONII* (Berk. & Br.) Boud.

Material studied: Loc. 15: HFG 84,40, Aug. 9th 1984, on rotten, water-soaked branch of *Betula tortuosa* in stream.

Until the paper on the psilopezioid fungi by PHISTER (1973) delimitation of the genera *Pachyella* and *Psilopezia* was rather obscure. The report by LARSEN (1932) of *Psilopezia aquatica* (Lam. ex Fr.) Rehm (sub nom. *Humaria aquatica* (Lam. et DC.) Rehm) therefore left some doubt as to the identity of his fungus. PFISTER (1972) considered *Humaria aquatica* a nomen dubium. Examination of Larsen's material (Möðruvellir, Ó. Davíðsson leg.) revealed a collection which probably represents a species of Peziza, characterized by a J+ reaction limited to a ring below the operculum and perfectly ellipsoid, smooth spores.

New to Iceland.

*PARASCUTELLINIA CARNEO-SANGUINEA* (Fuck.) T.Schum.

Material studied: Loc. 15: HFG 84,34, Aug. 8th 1984, on moist, silty soil along small stream.

A species readily recognized in the field by the *Scutellinia*-like habit and the deep wine-red hymenium. SCHUMACHER (1979) notes that the spores are smooth (seen in CB at 1000x magnification). The spores of the Icelandic material are almost smooth to very delicately warted.

New to Iceland.

*PEZIZA ECHINOSPORA* Karst.

Material studied: Loc. 2: HFG 84,22, on burnt place; Loc. 6: HFG 84,75, on burnt ground.

New to Iceland.

*PEZIZA* sp. 1

Material studied: Loc. 15: HFG 84,39, Aug. 9th 1984, on naked, silty sand in small stream; HFG 84,42, Aug. 9th 1984, on moist, naked, silty soil.

Fruitbodies shallowly cupulate, expanding with age, often irregular, 1.3-4.5 cm in diam., margin distinct, sessile to very

shortly stipitate, solitary or up to three apothecia in a group. Hymenium yellowish brown (6E5-6E6), in 84,39 with a faint olive tint. Outside concolorous, pruinose, near margin furfuraceous. Excipular structure not examined. Asci cylindrical, in 84,39 they are 225-240 x 13-15 µm, in 84,42 285-335 x 13-15 µm, 8-spored, J+ blue in apical ring. Spores obliquely uniseriate, ellipsoid, hyaline to very pale yellowish, without guttules in rehydrated material, 17-18 x 9-10 µm in both collections, smooth. Paraphyses filiform, 2-4 µm broad, with clavate apices up to 8 µm broad, almost hyaline, septate.

The two collections were found along the same small stream less than 50 m from each other. The apothecia of 84,39 attained about the double size of 84,42 and as noted, the size of asci also differs. As both collections are rather scarce, they are treated as representing one taxon here. They belong to the group of soil inhabiting, smooth-spored, brownish Pezizas centrering around *P. repanda* Pers., a group that is strongly in need of a revision.

*PEZIZA* sp. 2

Material studied: Loc. 3: HFG 84,68, on naked, silty soil in eroded spots in grass-land; Loc. 7: HFG 84,71, on naked silty soil along river, leg S.A.E.; Loc. 13: HFG 84,55, on clayey soil in forest-track, leg. S.A.E.; Loc. 15: HFG 84,37, Aug. 8th 1984, on silty soil along small stream; HFG 84,45, Aug. 10th 1984, on naked, silty soil.

Fruitbodies discoid to cupulate and then often expanding with

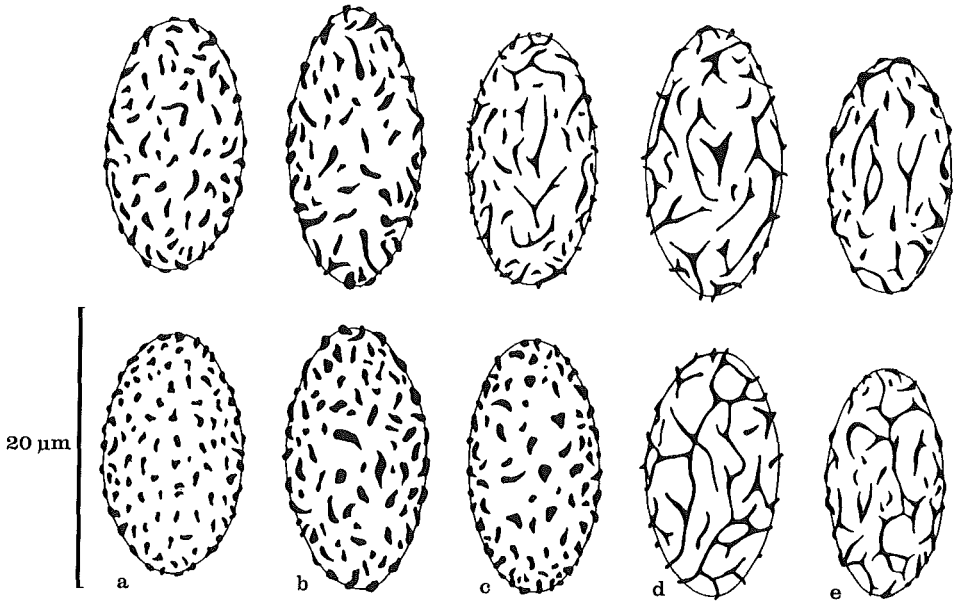


Fig. 7. *Peziza* sp. 2. Spores. a) HFG 84,37, b) HFG 84,45, c) HFG 84,71, d) HFG 84,68, e) HFG 84,55.

age, up to 18 mm in diam. and less than 10 mm deep when cup-shaped, margin distinct, sessile on a constricted base, solitary or in small groups. Hymenium deep brownish violet to almost black. Outside concolorous or paler, sometimes more whitish towards base, pruinose to furfuraceous. Excipular structure not examined. Asci cylindrical, 285-420 x 12-20 µm, 8-spored (in 84,45 several asci with 1-6 abortive spores), J+ blue at apex. Spores obliquely uniseriate, ellipsoid, hyaline to very pale yellowish, with one or two, often confluent, guttules in rehydrated material, 13-22 x 8-13 µm, ornamentation very variable, from low irregular warts, often elongated and more or less comma-shaped, to low crests forming an incomplete, open reticulum (fig. 7). Paraphyses straight, 3-5 µm broad, gradually expanded into clavate apices up to 8 µm broad, in apical part with diffuse yellowish pigments, apices embedded in yellowish brown matrix.

The present material shows a certatin degree of heterogeneity, in particular concerning general habit and spore size and ornamentation. HFG 84,37 and 84,45, both from Hallormsstaður, are discoid to shallowly cupulate, up to 18 mm in diam. and have spores 18-22 x 8-13 µm with mostly isolated and often elongated warts. HFG 84,55 and 84,68 are cupulate to deeply cupulate, up to 16 mm in diam. Spores are slightly smaller, 13-19 x 7-10 µm and with an ornamentation of low crests, often forming an incomplete net. HFG 84,71 seems to take an intermediate position. Whether this variation is induced by differences in ecology or actually reflects two distinct taxa, is not known. The scarce material in mind, I prefer to treat it as a single taxon.

From Norway SCHUMACHER (1979) reported collections, that, judging from the description, may very well be conspecific with the Icelandic fungi. Schumacher interprets his material as representing an alpine form of *Peziza limnaea* Maas G. and bases his opinion partly on Norwegian material determined by Maas Geesteranus. This interpretation, however, makes *P. limnaea* an extremely variable species and is strongly in conflict with the concept of the species, as it is expressed by e.g. BREITENBACH & KRÄNZLIN (1981).

*PULVINULA CONVEXELLA* (Karst.) Pfister

Material studied: Loc. 15: HFG 84,35, Aug. 8th 1984, on naked, silty soil along small stream; Loc. 16: HFG 84,24, Aug. 4th 1984, on naked soil along small stream in *Betula* wood.

The relation between *P. convexella* and *P. constellatio* (Berk. & Br.) Boud. is not very clear. PFISTER (1976) synonymized the two taxa under *P. convexella* (Karst.) Pfister. SCHUMACHER (1979) reluctantly followed this disposition, but did distinguish two "types" based on differences in apothecial size and colour and in ecology. Microscopically they are alike. DISSING (in prep.) recognizes two taxa, however, in an interpretation opposite that of Schumacher. Until the dispute has been settled, I prefer to follow the broad concept of Pfister and use the name *P. convexella*, which has priority according to the nomenclatural rules.

HFG 84,35 has apothecia up to 2 mm in diam., orange to dull orange (6A7-6C7). It grows solitary or in small groups on very fine textured, fairly rich soil. HFG 84,24 is larger, up to 6 mm in diam., of a delicate pinkish orange colour (7A7), and grows on a slightly coarser textured soil. Both collections were found along small streams on sheltered sites in *Betula tortuosa* wood.

*OCTOSPORA HUMOSA* (Fr.) Dennis
Material studied: Loc. 1: HFG 84,14, among *Polytrichum* sp. and other mosses on moist slope.
New to Iceland.

*SCUTELLINIA ARENOSA* (Vel.) Le Gal
Material studied: Loc. 12: HFG 84,56, among mosses on silty soil in ditch.
*S. arenosa* is closely related to *S. subhirtella* Svrček and *S. umbrarum* (Fr.) Lamb. It differs from both in having broadly ellipsoid spores, 19-21 x 16-17.5 µm in HFG 84,56, and short, pale hairs as compared to spores less than 15.5 µm broad (SVRČEK 1971) and longer and darker hairs of the other species.
New to Iceland.

*SCUTELLINIA MACROSPORA* (Svrček) Le Gal
Material studied: Loc. 5: HFG 84,82 and 84,83, in moss on silty, organic soil; Loc. 17: HFG 84,90, among mosses on gravelly soil in *Betula* wood.
The collections from Kaldidalur are typical. HFG 84,90 is deviating and is referred to this species with some reservation. The deviating characters are: apothecial size, 84,90 being up to 20 mm in diam., which is more than the double of any report seen by the author, and secondly the apothecial margin has a fringe of short, obtuse, brown hair-like cells through which the ordinary hairs protrude. I am unable to decide the taxonomic value of these differences. In all other respects, particularly in spore characters, the collection agrees with *S. macrospora*.
The closely related *S. cejpii* (Vél.) Svrček was recently published from Iceland (HOLM & HOLM 1984).
New to Iceland.

*SCUTELLINIA SCUTELLATA* (Fr.) Lambotte
Material studied: Loc. 15: HFG 84,38, Aug. 8th 1984, on rotten wood and silty soil along small stream.
Several older reports (see e.g. LARSEN 1932) as well as many more recent collections in AMNH (HALLGRÍMSSON 1982) indicate that *S. scutellata* probably is quite common in Iceland.

*SCUTELLINIA SUBHIRTELLA* Svrček
Material studied: Loc. 2: HFG 84,17, on soil in roadside; Loc. 6: HFG 84,76, among grass and mosses on organic soil along river; Loc. 11: HFG 84,58, on silty soil among mosses and *Eriophorum* sp.; HFG 84,59, on naked, silty soil in moss sp.; Loc. 15: 84,41, Aug. 9th 1984, on silty soil along small stream; HFG 84,44, Aug. 10th 1984, on rotten wood of *Betula* and on silty soil; HFG 84,46, Aug. 10th 1984, on naked, silty soil.
Not previously reported from Iceland.

*SCUTELLINIA TRECHISPORA* (Berk. & Br.) Lambotte
Material studied: Loc. 16: HFG 84,25, Aug. 4th 1984, on rotten wood and soil along stream.
*S. trechispora* was reported by LARSEN (1932) (sub nom. *Sphaerospora trechispora* (Berkely et Broome) Saccardo) and two finds were cited. One is from Egilsstaðir, found by Larsen himself, and another from Skagafjörður, collected by Grönlund. Of the former nothing seems to be left. The latter, which is kept in C,

has been examined. The collection is in rather bad condition, heavily attacked by insects. However, in the remnants of an apothecium and in pellets of feces numerous spores were found, which no doubt belong to *Lamprospora ovalispora*. A collection in AMNH (HALLGRÍMSSON 1982) has not been examined.

*TRICHOPHAEA WOOLHOPEIA* (Cooke & Phill.) Boud.
Material studied: Loc. 15: HFG 84,33, Aug. 8th 1984, among mosses and on naked, moist, silty sand along small stream.
New to Iceland.

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