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Fungi of the Kilimanjaro — II
Octospora kilimanjarensis sp. nov., a new species of the section Neottiellae (Discomycetes, Pezizales)

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Moravec J. (1997): Fungi of the the Kilimanjaro — II. Octospora kilimanjarensis sp. nov., a new species of the section Neottiellae (Discomycetes, Pezizales).– Czech Mycol. 49: 149–161

Octospora kilimanjarensis sp. nov. is described from a rain forest of the Kilimanjaro, Tanzania. The taxonomy is discussed and *Octospora kilimanjarensis* is placed in the section *Neottiellae* Caillet et Moyene of the bryophilous genus *Octospora* Hedwig. The new species is compared with other four related species of the section, *Octospora* albocincta (Berk. et Curt. ap. Berk.) Caillet et Moyne, *Octospora rutilans* (Fr.) Dennis et Itzerott, *Octospora vivida* (Nylander) Dennis et Itzerott and *Octospora aplanodictyon* (Kobayasi) J. Moravec based on *Aleuria aplanodictyon* Kobayasi. The latter is here reported for the first time from Central Europe (Czech Republic). Features of the new species are illustrated by line drawings and SEM photomicrographs. Ascospore ornamentation of the other species treated here has also been studied and line drawings of their ascospores accompany the paper.

Key words: *Octospora kilimanjarensis* sp. nov., *Octospora* sect. Neottiellae, Discomycetes, taxonomy.

Moravec J. (1997): Houby Kilimandžára — II. *Octospora kilimanjarensis* sp. nov., nový druh sekce *Neottiellae* (Discomycetes, Pezizales).– Czech Mycol. 49: 149–161

Octospora kilimanjarensis sp. nov. je popsána z deštného pralesa Kilimandžára v Tanzánii. Nový druh je zařazen do sekce *Neottiellae* Caillet et Moyne rodu *Octospora* Hedwig. Její taxonomie je diskutována a *O. kilimanjarensis* je srovnávána s ostatními čtyřmi příbuznými druhy této sekce — *Octospora albocincta* (Berk. et Curt. ap. Berk.) Caillet et Moyne, *Octospora rutilans* (Fr.) Dennis et Itzerott, *Octospora vivida* (Nylander) Dennis et Itzerott a *Octospora aplanodictyon* (Kobayasi) J. Moravec. Posledně jmenovaná je zde poprvé uvedena z České republiky a tím poprvé i ze střední Evropy. Charakteristické znaky nového druhu jsou detailně vyobrazeny perokresbou a SEM mikrofotografiemi askospor; ornamentika ostatních zde uvedených druhů byla rovněž studována a perokresby askospor doplňují článek.

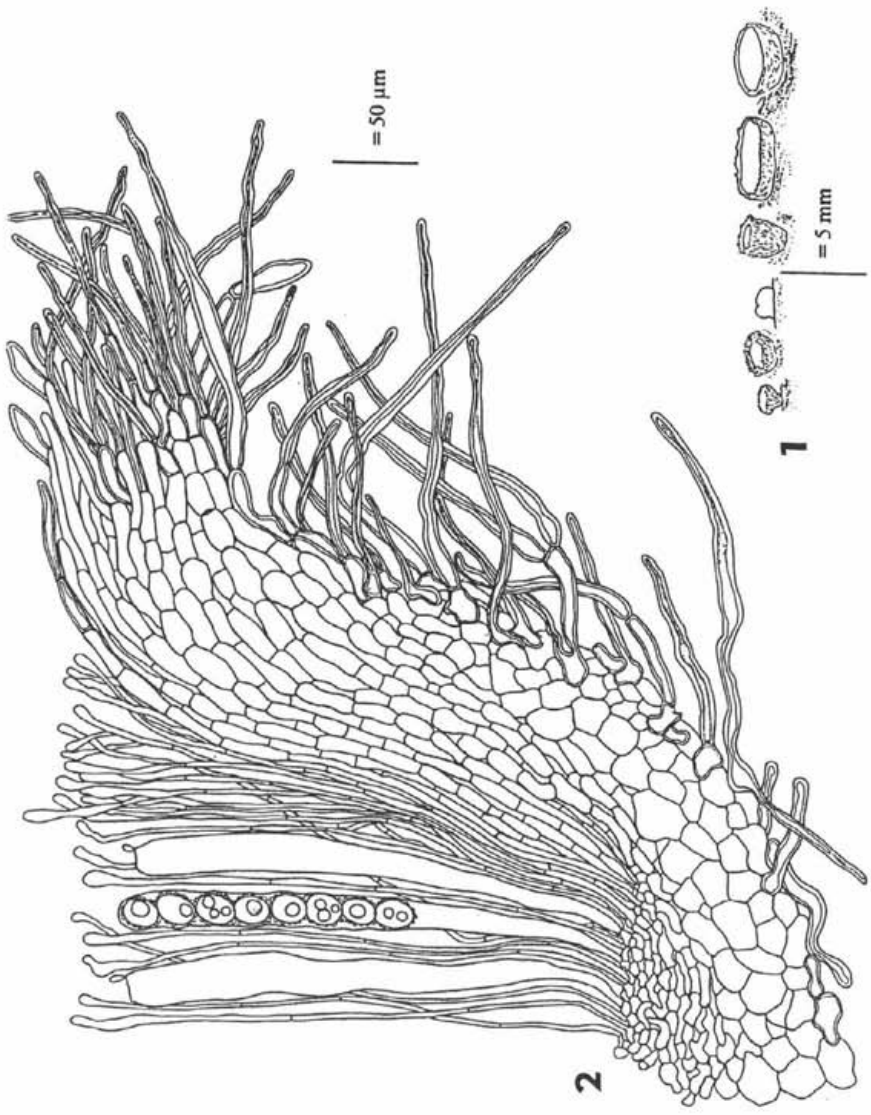
The present paper links up freely with the previously published first part of the contribution on discomycetes found in the mountainous area of the Kilimanjaro (J. Moravec 1978). During the author's second visit to the area in December 1995 mostly inoperculate discomycetes and several species of *Scutellinia* were found. One bryophilous discomycete collected on a path through a mountainous rain forest in the direction of Mandara Hut (2,700 m) is described as a new taxon here:

Octospora kilimanjarensis J. Moravec sp. nov.

Apothecia 1.5–4.5 (–7) mm diam., primum subglobosa, convexa vel doliiformia, sessilia vel raro substipitata, usque leniter patellaria, hymenio vivide aurantiaco vel ochraceo-aurantiaco, extus pallida, subtiliter albo-tomentosa vel subglabra, margineque dentato-fibrilloso, albo-fimbriato vel breviter fimbriato. Excipulum externum e textura subgloboso-angulari, margineque hyphis et pseudopilis hyalinis 70–220 (–300) × 6–12 μm, apicibus obtusis, usque 4.5 μm crassis, crasse tunicatis (parietibus 1–1.5–3 μm crassis). Excipulum internum (medulla) e textura epidermoidea vix intricata. Subhymenium textura pseudoangulari-intricata. Asci 290–350 × 18–26 (–30) μm, cylindracei, deorsum sensim attenuati, crasse tunicati, operculati, octospori, non amyloidei. Ascosporae late rotundato ellipsoideae vel late ellipsoideae, (18-) 19–22 (25.5) × 13.5–16.5 (–18.5) μm (ornamento excluso), plerumque 20.5 × 15.5 μm, guttula unica vel guttulis binis vel multis instructae, verrucis magnis donatae, vel irregulariter crasse reticulatae vel subreticulatae. Paraphyses filiformes, 2–3.5 μm diam., sparse septatae, rectae, apice sensim vel clavato-incrassatae (4–9.5 μm), substantia luteola impletae.

Habitat: Africa orientalis, mons Kilimanjaro, Tanzania borealis, ad terram inter muscos (*Pogonatum* sp., *Fissidens* sp., *Pleuridium* sp. et protonema), ad viam in silva virginea apud locum Mandara, 16. XII. 1995 leg. Jiří Moravec — holotypus in herbario mycologico Musei Brunensis (BRNM) et duplicatum (isotypus) in herbario privato J. Moravecii asservantur.

Apothecia 1.5–4.5 (–7) mm diam., sessile to less often substipitate, first subglobose, then barrel-shaped to shallowly cupulate, hymenium light orange or orange-ochraceous, outer surface pale, minutely covered with white adpressed hairs or almost glabrous, with a fibrillate-dentate fringed or inconspicuously fimbriate margin. Excipulum textura globulosa-angularis composed of globose or elongated to polygonal thick-walled cells; the cells measure 15–30–40 μm in diam and are strongly cyanophilic in the outermost layer, in the marginal part they are passing into articulate hyphae and cells from which hyaline, thick-walled, non-septate hairs originate in the outermost marginal part. Hairs (pseudopili) hyaline, 70–220 (–300) × 6–12 μm (up to 12 μm in their medial part), straight or flexuous or undulate, thick-walled (the walls in the lower parts 1–1.5 μm



Figs 1–2. *Octospora kilimanjarensis* sp. nov. **1.** Apothecia; **2.** Section of the marginal part of the apothecium. Holotype (BRNM).

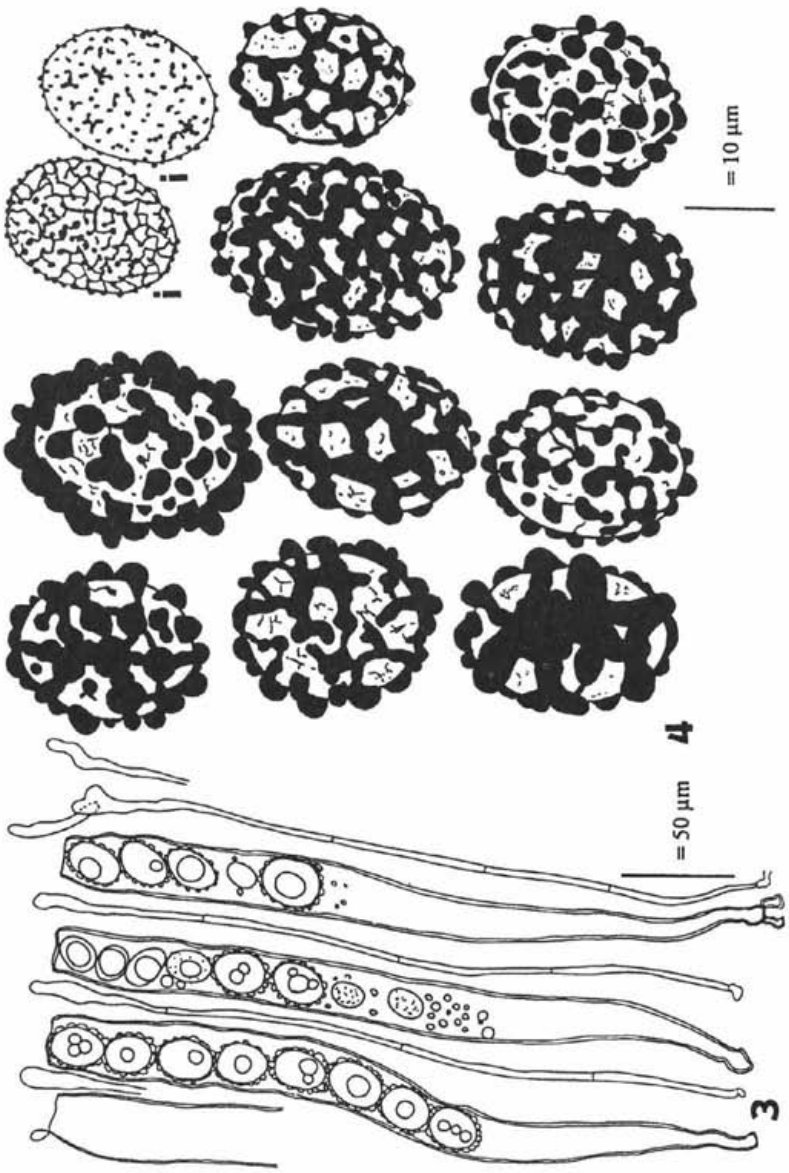
thick but conspicuously thicker in their upper parts where the walls are 2–3 μm thick and often connected (so the cyanophilic interspace is very thin), tapering into a narrow (usually 4.5 μm diam.) obtuse apex, originating from the elongate-bulbous cells with thinner walls. Medullary excipulum clearly differentiated, composed of an atypical textura epidermoidea of mostly elongated cells running horizontally and somewhat simulating an atypical textura subintricata.

Subhymenium thin but well differentiated as composed of smaller (3–6 μm diam.), strongly cyanophilic, inflated, hypha-like or almost angular cells. Asci cylindrical, 290–350 × 18–26 (–30) μm, thick-walled, gradually constricted towards the mostly simple truncate base, mostly eight-spored, non amyloid, operculate. Ascospores subglobose-ellipsoid to broadly ellipsoid, (18-) 19–22 (–25.5) × 13.5–16.5 (–18.5) μm (ornamentation excluded), mostly 20.5 × 15.5 μm (but the size of ascospores which were developed in asci containing a reduced number of ascospores may occasionally reach up to 25.5 × 18.5 μm), containing one large or rarely two or more smaller oil globules, possessing a perisporium mostly densely covered by cyanophilic, very large subglobose pustules or by wide ribs which form an irregular, mostly incomplete thick reticulum or a mixture of warts and ribs; the pustules and ribs measure 1.5–3.5 (–4.5) μm in diam. (but they may be thickened up to 7 μm) and in the optical section of the ascospores they are 1.5–2.6 (–3) μm high. The warts and ribs are usually so robust (and thus densely arranged) that the space in between them is very narrow or the mashes of the thick reticulum are very small. Paraphyses filiform, 2— 3.5 μm diam., sparsely septate, straight, usually enlarged up to 9.5 μm at their clavate or undulate and rarely branched tips, with a yellowish content.

Habitat : East Africa, Northern Tanzania, Mt Kilimanjaro, on soil among moss (*Pogonatum* sp., *Fissidens* sp., *Pleuridium* sp., or on almost bare soil with protonemata of a moss, on the path to Mandara Hut (2600 m) in a virgin rain forest, 16. XII. 1995 leg. Jiří Moravec — holotype BRNM (Mycological herbarium of the Moravian Museum, Brno, Czech Republic), isotype herbarium J. Moravec (J. Mor.).

O. kilimanjarensis is closely related to several other species of the section *Neottiellae* Caillet et Moyne (1987b), especially to *Octospora rutilans* (Fr.) Dennis et Itzerott and to *Octospora albocincta* (Berk.et Curt. ap. Berk.) Caillet et Moyne [= *Octospora catharinaea* (Mc Lennan et Halsey) Caillet et Moyne] but also to *Octospora vivida* (Nylander) Dennis et Itzerott and *O. aphanodictyon* (Kobayasi) J. Mor. All these species have been commonly treated under the generic names *Neottiella* (Cooke) Sacc. or *Leucoscypha* Boud. em. Rifai (1968). The hairs of the new species are very similar to those of *O. rutilans* but the ascospore ornamentation is much coarser. *O. albocincta* differs particularly by the ellipsoid to subfusoidal ascospores measuring 17–25 × 11–14 μm and bearing a perisporium which is covered by smaller warts and thinner crests mostly forming an almost regular reticulum.

Benkert (1987, 1994) identified *Neottiella catharinaea* Mc Lennan et Halsey in Proc. R. Soc. Victoria 49: 56, 1936 with *O. albocincta*. However, the former was characterized by Rifai (1968) as a well founded species (as *Leucoscypha catharinaea* (Mc Lennan et Halsey) Rifai; and he and also Caillet and Moyne (1987a, 1987b) kept these two taxa separated on the basis of different ascospore shape and



Figs 3–4. *Octospora kilimanjarensis* sp. nov. **3.** Asci and paraphyses; **4.** Ascospores under oil immersion + CB. Holotype (BRNM). (i = immature ascospores)

ornamentation. Therefore, I have examined the collection of *N. catharinaea* from the type locality (Australia: Victoria, Hilton Rd., Ferny Creek, Dandenong Ranges, epiphytic on the moss *Atrichum ligulatum* (syn. *Catharinaea muelleri*) 24. VIII. 1945 leg. J. H. Willis (comm. G. Beaton 110), herb. K (M): 38652, which

was examined and illustrated by Rifai (1968) under the generic name *Leucoscypha*. I have found that although the ascospore ornamentation of the collection of *N. catharinaea* is coarser and more irregular than those of *O. albocincta* as illustrated by Rifai (1968), Pant and Tewari (1977) (under *Leucoscypha*) and Benkert (1994) (under *Neottiella*), there is a clear and conspicuous difference between the ascospore shape and ornamentation of *N. catharinaea* and those of *O. kilimanjarensis*. I have found the size of the ascospores of the Australian collection (those normally developed in the prevalent eight-spored asci) to be 20–26 × 10.5–13.5 μm [several anomalous ascospores which developed in asci with a reduced number (2–4) reached up to 29 × 15 μm] and found their shape, in accordance with Rifai's description and illustration, to be ellipsoid to fusoid-ellipsoid to fusoidal, and the ascospore ornamentation much finer than that of *O. kilimanjarensis*. A great number of ascospores of *N. catharinaea* possess almost regular and a considerably fine reticulum whilst other ascospores bear irregular ribs, crests, and enlarged warts. However, the ribs, crests, and warts are 0.5–2 (–2.5) μm in diam. and 0.5 —1.5 (–1.8) μm high and thus do not reach the huge size of those on the ascospores of *O. kilimanjarensis*. Moreover, the space in between the warts and ribs is much larger or the mashes of the reticulum are much broader than the narrow space and mashes in the huge ascospore ornamentation in *O. kilimanjarensis* (compare figs. 4 and 7).

I have also examined a collection of *O. albocincta* from Germany: Potsdam, on *Atrichum undulatum*, 24. X. 1987 leg. Dieter Benkert (BHU, J. Mor.). The ascospores of the collection are usually ellipsoid and slightly or more conspicuously constricted towards their poles, 18–22.5 (–24) × 10.5–13 (–14) μm, and the perisporium is mostly almost regularly reticulated, a certain number of ascospores bears a very fine irregular reticulum similar to that on the ascospores of *O. rutilans*. A certain number of ascospores, however, possess isolated ribs and warts of the same shape and arrangement as those on the ascospores of the collection of *O. catharinaea* treated above. Although the warts and ribs are finer (0.5–1.3 (–1.7) μm in diam. and 0.4–0,8–1.4 μm high) than those on ascospores of *O. catharinaea*, the type of ornamentation is the same on most ascospores in both species.

The ascospore ornamentation of all these species is obviously developed in a similar way. The immature ascospores are covered by fine warts or fine crests. They may persist as the only warts at spore maturity in *O. vivida*, or crests and ribs of the variable shaped reticulum in *O. rutilans* and also, though in a very fine version, in *O. aphanodictyon*, or may develop either to huge warts or ribs of the very variably shaped thick reticulum in *O. kilimanjarensis* and more rarely and much finer in *O. albocincta*.

Regarding *Octospora aphanodictyon* comb. nov. (basionym: *Aleuria aphanodictyon* Kobayasi, Ann. Rep. Inst. Fermentation Osaka, 3: 39, 1967) [= *Neottiella*

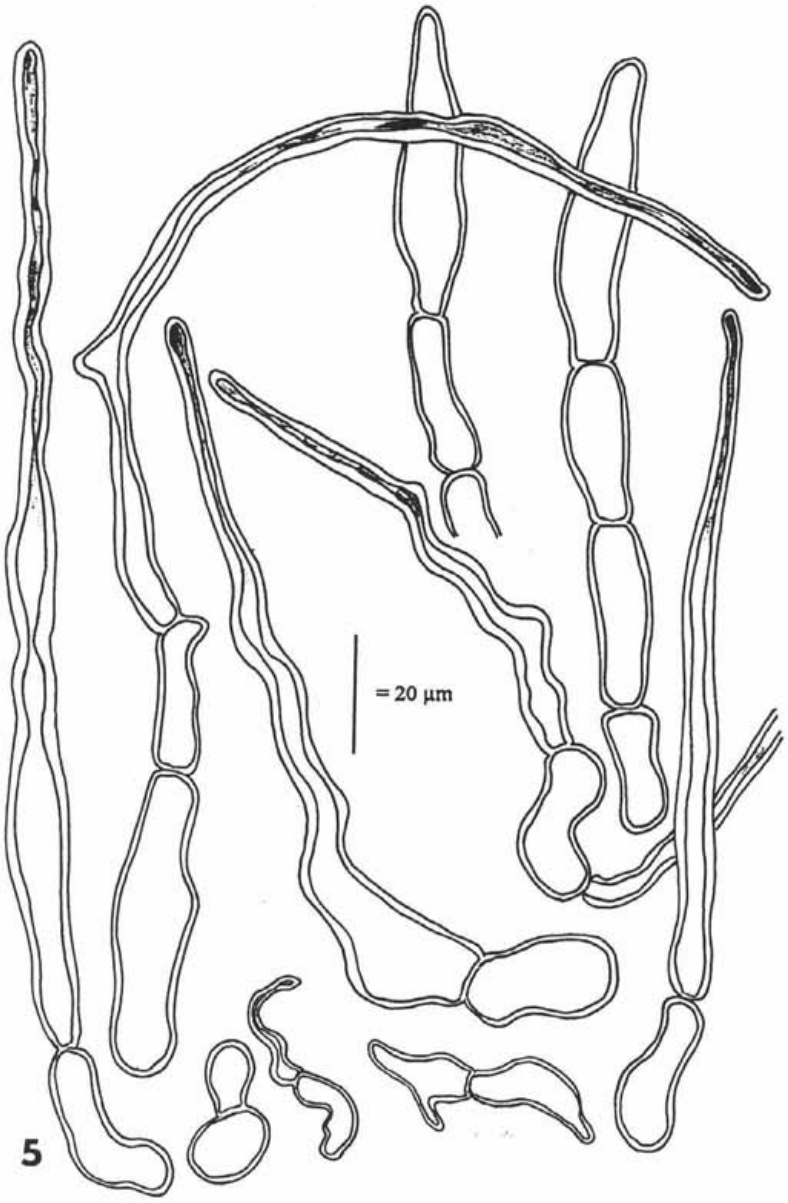


Fig 5. *Octospora kilimanjarensis* sp. nov. Hairs (pseudopili). Note strongly cyanophilic pigment. Holotype (BRNM).

aphanodictyon (Kobayasi) Dissing, Korf et Sivertsen in Dissing and Sivertsen, Mycotaxon 16: 458, 1983, = *Leucoscypha borealis* Eckblad, Nytt. Mag. Bot. 15: 52–53, 1968, = *Octospora borealis* (Eckblad) Caillet et Moyne, Bull. Soc. Myc. Fr. 103 (3): 218, 1987], the recombination into the genus *Octospora* formally made here is in accordance with the concept of the genus *Octospora* by Dennis and Itzerott (1973). The examined collection [Czech Republic: Moravia, Blatiny near Sněžné na Moravě, Českomoravská vrchovina (Bohemian-Moravian Heights), c. 600 m, on soil among moss and needles in spruce forest, 17. IX. 1987 leg. Jiří Moravec (J. Mor.)] represents the first collection in Central Europe. The find is surprising as the fungus was reported only from Norway, Greenland and Alaska (Kobayasi 1967, Eckblad 1968, Dissing and Sivertsen 1983).

Besides the much coarser ascospore ornamentation and the different shape and size of the ascospores discussed above, also the hairs of *O. kilimanjarensis* are shorter and not so copious and densely interwoven as those in *O. albocincta* of which the apothecial margin is formed by compact fascicles of densely interwoven and much longer (up to 450 μm) hairs. Moreover, the asci and paraphyses of *O. kilimanjarensis* are wider. Also the habitat seems to be different. Whilst *O. albocincta* was usually found growing often epiphytically in the leaf axils of living moss of the genus *Atrichum*, apothecia of *O. kilimanjarensis* and other species of the section grow on soil among other species of mosses. All 25 apothecia of the type collection of *O. kilimanjarensis* were found on soil among moss (*Pogonatum, Fissidens* and *Pleuridium*) but none was seen growing directly on the moss. The other three species are confined to *Polytrichum* and *Oligotrichum*.

The bryophilous habitat of these four related species was discussed in detail by Benkert (1994) who provided a key to their identification (under *Neottiella*) and SEM photomicrographs of their ascospores.

Regarding the systematic position of these species, I follow Dennis and Itzerott (1973), Itzerott (1974), and Caillet and Moyne (1987a, 1987b) and keep them in the genus *Octospora* Hedw. as members of the section *Neottiellae* Caillet and Moyne (1987 b). In this broader concept first presented by Dennis and Itzerott (1973), the genus includes also those species treated here which previously were and still are commonly classified in *Neottiella* or *Leucoscypha* p. p.

I fully agree with the reasons and discussion given by Dennis and Itzerott (1973), as I can confirm their arguments from my experience. The reason that these species have been treated under the generic name *Neottiella* [in the narrower concept which covers only the species treated here — e.g. Dissing and Sivertsen (1983), Benkert (1994)], or *Leucoscypha* [which in the wider sense covers also species possessing a pure white hymenium, with the type *Leucoscypha leucotricha* (Alb. et Schw.: Fr.) Boud. and also species of *Rhodoscypha* Dissing et Sivertsen — e.g. Harmaja (1977), Svrček (1981) and others], lies especially in the fact that they differ from other species of *Octospora* by the thick-walled apothecial hairs.

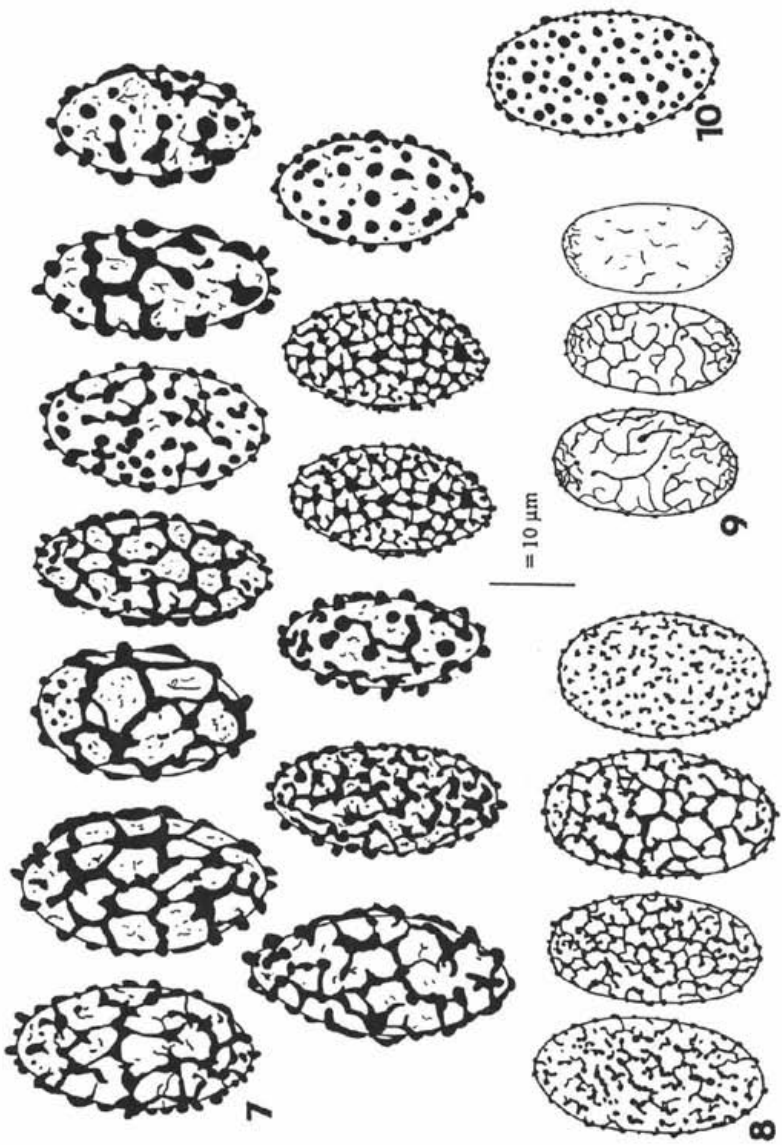
However, apothecia of all species of *Octospora* possess a fimbriate white margin of white anchoring hyphae, forming often dentate fringes; in several other species these may also be considered simple hairs although they have mostly thinner walls. In fact, the excipulum of *O. leucoloma* Hedw. and *Octospora humosa* (Fr.) Dennis consists of a similar structure as it is in the species of the section *Neottiellae*, including simple (though shorter and thin-walled) hairs. In *O. kilimanjarensis* and *O. albocincta* but also in *O. humosa*, *O. leucoloma* and some other species the ectal excipulum may simulate rather a pseudoparenchymatic layer (except the outermost hypha-like elements) consisting of globose to polygonal cells than a tissue of a textura intricata as commonly stated. Caillet and Moyne (1987a) made groups on the basis of the excipular structure, but how complicated this may be is seen in the examples of *O. axillaris* (Nees.:Fr.) Moser and *O. leucoloma* which the cited authors treated in a group where both the ectal and medullary layer are "prosenchymatous". However, their microphotograph Pl. II. fig. 2 and 3 shows clearly angular cells in the excipulum which is in accordance with my examination. The problem is also that it is difficult to name tissue in usual terms and these authors help themselves with expressions like "textura intricata globuleuse" etc. Similarly, it is difficult also to define the medullary structure when it may also simulate subglobose cells or is rather of a textura epidermoidea than intricata or "subintricata" as in *O. kilimanjarensis*. The presence of angular cells in both the ectal (except the overlaying anchoric hyphae) and medullary excipulum is more or less conspicuous in several other species as well, e. g. *Octospora libussae* Svrček et Kubička, *Octospora rustica* (Velen.) J. Moravec, *Octospora tetraspora* (Fuck.) Korf and others. Therefore, as in many other genera of Pezizales , the excipular structure itself cannot justify the generic delimitations or, as also other features may not correlate, it is even difficult to use such subjective features for groups at infrageneric level. Moreover, apothecia of *Octospora hetieri* (Boud.) Dennis et Itzerott have a pseudoparenchymatic excipulum and thick-walled, almost "typical" pointed (but hyaline) hairs whilst other features of this species, including the smooth ascospores, are characteristic of *Octospora*. *Octospora grimmiae* Dennis et Itzerott possesses a truly horizontally running textura intricata and similar apothecial hairs as those present in species of the section *Neottiellae*. The presence of apothecial hairs does not correlate with the ascospore character, as for instance the mentioned *O. hetieri* has smooth ascospores whilst apothecia of several other species possessing ornamented ascospores may be either hairy (those of the section *Neottiellae*) or hairless [*Octospora melina* (Velen.) Dennis et Itzerott, *Octospora meslini* (Le Gal) Svrček et Kubička, *Octospora phagospora* (Flag. et Lort.) Dennis et Itzerott and others]. A more detailed discussion also covering the history of the taxonomy based on this subjective distinction when the type species of *Octospora*, *O. leucoloma*, was placed into *Neottiella* whilst both *O. rutilans* and *O. humosa* in *Humaria*

(= *Octospora*), is given by Dissing and Itzerott (1973). Thus, we can only speculate whether the species of the section *Neottiellae* deserve a more isolated position — as a subgenus.

The result is also supported by the bryophilous habitat of all the species of the genus which was described in detail by Dennis and Itzerott (1973) and Caillet and Moyne (1987a). Many species grow often in leaf axils of different species of mosses which are often specific for individual *Octospora* species usually infecting the protonemata and causing rhizoid galls. The host-parasite interface has been studied by Döbbeler and Itzerott (1981) and Döbbeler (1979) who also keep all the bryophilous species in the wide concept of the genus *Octospora*.

On the other hand, species of the genus *Leucoscypha* [which accepted here in the narrow sense does not include the species with coloured apothecia containing carotenoid pigments, placed here into *Octospora* section *Neottiellae* (= *Neottiella*)], differ in important features, especially the habitat, as they are not confined to moss. The generic lectotype species *L. leucotricha* has been collected on bare acid soil, on decaying wood and twigs (only occasionally and probably secondarily within moss), and all collections of *Leucoscypha virginea* Rifai come from decaying wood. Also the pure white hymenium possessing no carotenes and the long, hyaline, almost pointed stiff setae combined with the fusoid ascospores containing four guttules indicate that *Leucoscypha* is a well separated genus. The carminophilic nuclei of the spores and other cells which were found in *L. leucotricha* as well as in *Leucoscypha rutilans* = *Octospora rutilans* lead Harmaja (1977) to keep the genus *Leucoscypha* in the wide concept previously formally proposed by Rifai (1968) by his emendation and adopted by Korf (1972) in which also the species with coloured apothecia here treated in the section *Neottiellae* of *Octospora* are included. It is not clear how valuable the feature (carminophilic reaction) is for the generic delimitation, and, if carminophilic nuclei could also be found in other species of *Octospora*. Dissing and Sivertsen (1983) keep the genus *Leucoscypha* separated for those species having a white hymenium and not being associated with moss and, moreover, founded a new non-bryophilous genus *Rhodoscypha* Dissing et Sivertsen based on *Peziza ovilla* Peck. This classification is acceptable, and I agree that also the genus *Inermisia* Rifai is well separated. These authors, however, recognize *Neottiella* as the independent genus for species treated here in the section *Neottiellae* of *Octospora*.

At this occasion, I wish to note that *Leucoscypha pallida* (Spooner) Brummelen (1995) has in my opinion nothing to do with the species of the genus *Leucoscypha*. Brummelen (1995) was obviously not aware of the fact that this fungus, based on *Svrcekomyces pallidus* Spooner (1987), was previously transferred to the genus *Sowerbyella* as *Sowerbyella pallida* (Spooner) J. Moravec (1985b). The genus *Sowerbyella* (see also the key in J. Moravec 1988) well matches Spooner's fungus due to the large stipitate apothecia, which do not possess a fringed margin but



Figs 7–10. Ascospores under oil immersion + CB. **7.** *Octospora albocincta* (Berk. et Curt. ap. Berk.) Caillet et Moyne [collection of *Neottiella catharinaea* Mc Lennan et Halsey (Beaton 110, K (M) 38652]; **8.** *Octospora rutilans* (Fr.) Dennis et Itzerott., Czech Republic, Bohemia Mt. Krkonoše, Petrovy kameny 1. IX. 1986 leg. A. Vágner (J. Mor.); **9.** *O. aphanodictyon* (Kobayasi) J. Mor., Czech Republic: Moravia, Blatiny near Sněžné na Moravě, 17. IX. 1987 leg. Jiří Moravec (J. Mor.); **10.** *Octospora vivida* (Nylander) Dennis et Itzerott., Czech Republic, Bohemia, Mladá Boleslav, Radouč 2. XI. 1995 leg. R. Knížek (J. Mor.).

an entire and blunt one, excipular structure possessing no hairs but only thin-walled hyphae overlaying a typically parenchymatous zone of globose cells like in all other species of *Sowerbyella* and never in *Leucoscypha* (including "*Neottiella*"), the hymenium fading to dirty white with brownish patches, and the ascospores bearing warts or spine-like ribs which are conspicuously enlarged and protruding

at the ascospore poles — a typical feature of *Sowerbyella* as well as the same origin and development of the ornamentation on immature ascospores (compare the drawings in J. Moravec 1985a and 1985b). The ascospores are rather similar to those of *Sowerbyella polaripustulata* J. Moravec (1985a).

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REFERENCES

BENKERT D. (1987): Neottiella atrichi (= N. catharinaea) in Europa. – Beiträge zur Kenntnis der Pilze Mitteleuropas 3: 407–411.

BENKERT D. (1994): Beiträge zur Kenntnis bryophiler Pezizales-Arten. 2. Die Identität von Peziza albo-cincta Berk. & Curt. – Beiträge zur Kenntnis der Pilze Mitteleuropas 9: 131–138.

BRUMMELEN J. VAN (1995): A world-monograph of the genus Pseudombrophila (Pezizales, Ascomycotina). – Libri Botanici 14: 1–117. IHW-Verlag.

CAILLAND M. and MOYNE G. (1987a): Contribution à l'étude du genre Octospora Hedw. ex S. F. Gray (Pezizales) Espèces à spores elliptiques ou fusiformes. – Bull. Soc. Mycol. Fr. 103 (3): 179–226.

CAILLAND M. and MOYNE G. (1987b): Contribution à l'étude du genre Octospora Hedw. ex S. F. Gray (Pezizales). Écologie et morfologie. – Bull. Soc. Mycol. Fr. 103 (4): 277–304.

DENNIS R. W. G. and ITZEROT H. (1973): Octospora and Inermisia in Western Europe. – Kew Bull. 28: 5–23.

DISSING H. and SIVERTSEN S. (1983): Operculate discomycetes from Rana (Norway) 5. Rhodoscypha gen. nov. and Rhodotarzetta gen. nov. – Mycotaxon, Ithaca, 16: 441–460.

DÖBBELER P. (1979): Untersuchungen an moosparasitischen Pezizales aus der Verwandtschaft von Octospora. – Nova Hedwigia, Braunschweig, 31 (4): 817–864.

DÖBBELER P. and ITZEROTT H. (1981): Zur Biologie von Octospora libussae und O. humosa, zwei im Moosprotonema wachsenden Pezizales. – Nova Hedwigia, Braunschweig, 34: 127–136.

ECKBLAD F. E. (1968): The genera of the operculate Discomycetes. – Nytt. Mag. Bot. 15: 1–191.

HARMAJA H. (1977): Leucoscypha ovilla n. comb., a species new to Europe, found in northern Finland. – Karstenia 17: 73–76.

ITZEROTT H. (1974): Scheibenpilze in Moosen. – Microcosmos 293–297. Stuttgart.

KOBAYASI Y. and al. (1967): Mycological studies of the Alaskan Arctic. – Ann. Rep. Inst. Fermentation, Osaka, 3: 1–13

KORF R. P. (1972): Synoptic key to the genera of the Pezizales. – Mycologia 64: 937–994.

MORAVEC J. (1978): Fungi of Kilimanjaro – I. Discomycetes, Pezizales. – Čes. Mykol., Praha, 32: 70–78.

MORAVEC J. (1985a): A taxonomic revision of the genus Sowerbyella Nannfeldt (Discomycetes, Pezizales). – Mycotaxon, Ithaca, 23: 483–496.

MORAVEC J. (1985b): A taxonomic revision within the genus Sowebyella. – Mycol. Helvet. 1 (6): 427–442.

MORAVEC J. (1988): A key to the species of Sowerbyella (Discomycetes, Pezizales). – Čes. Mykol., Praha, 42: 193–199, tab. VII-X.

PANT D. C. and TEWARI V. P. (1977): Observations on two species of Leucoscypha. – Trans. Brit. Mycol. Soc. 68 (3): 439–441.

RIFAI M. A. (1968): The Australasian Pezizales in the herbarium of the Royal Botanic Gardens Kew. – Verh. Koninkl. Nederl. Akad. Wetensch., Nat. 57 (3): 1–295.

SVRČEK M. (1981): Katalog operkulátních diskomycetů (Pezizales) Československa I. (A – N). – List of Operculate discomycetes (Pezizales) recorded from Czechoslovakia I. (A – N). – Čes. Mykol., Praha, 35 (1): 1–24.

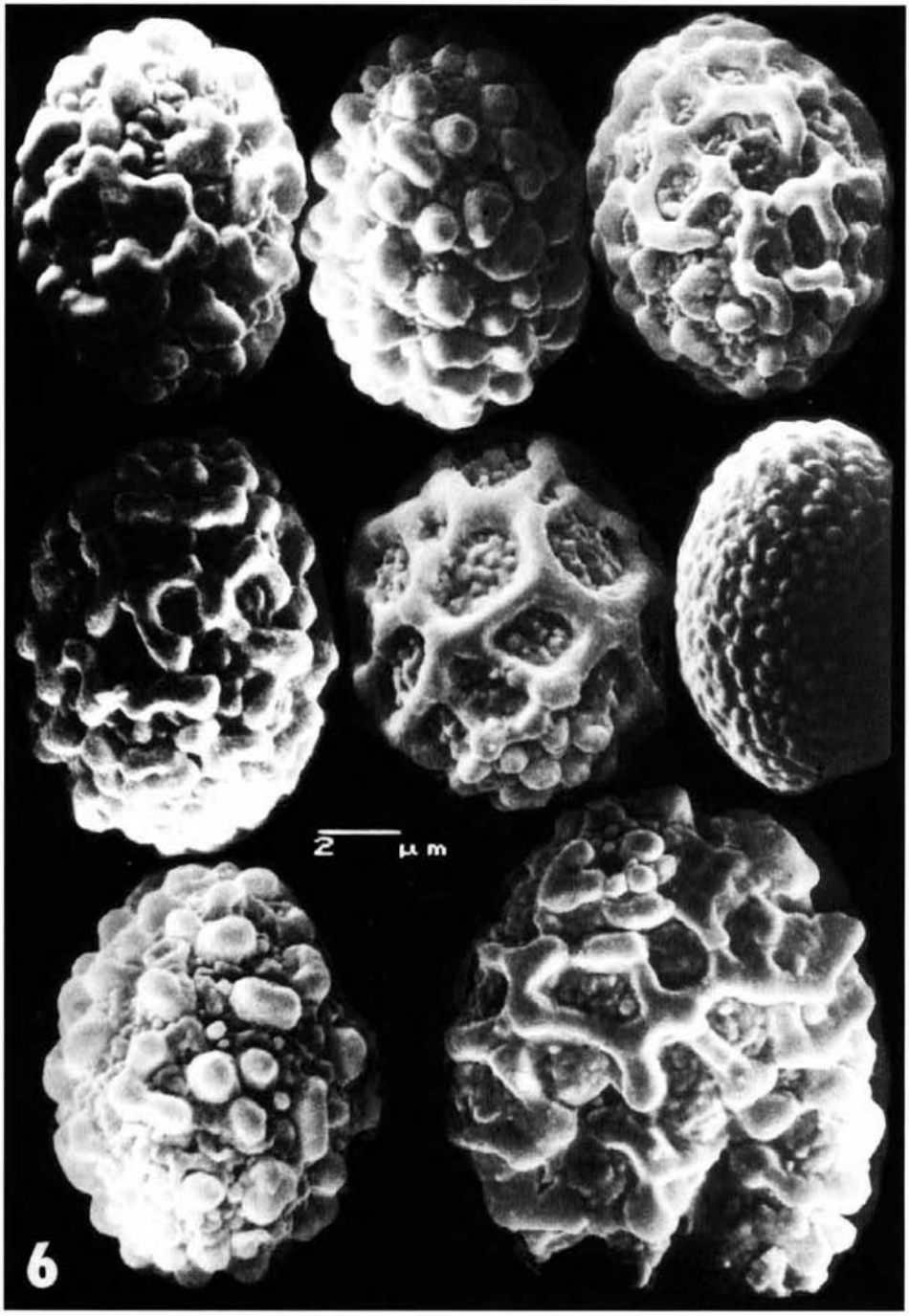

Fig 6. *Octospora kilimanjarensis* sp. nov. SEM photomicrographs of ascospores.

CZECH MYCOL. 49 (3–4), 1997

Fungi described by and in honor of Carl Kalchbrenner 1. Additions and corrections. 2. Eponymy

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Lizoň P. (1997): Fungi described by and in honor of Carl Kalchbrenner. 1. Additions and corrections. 2. Eponymy.– Czech Mycol. 49: 163–167

Additions and corrections to the list of Kalchbrenner's new taxa (Čes. Mykol. 46: 315–327, 1992) are supplemented by eponymy, a list of taxa named in his honor.

Key words: Kalchbrenner, fungi, list of new taxa, corrections, additions. Kalchbrenner's eponymy.

Lizoň P. (1997): Houby popsané C. Kalchbrennerem a houby popsané na jeho počest. 1. Doplňky a upřesnění. 2. Eponymie.– Czech Mycol. 49: 163–167

Seznam Kalchbrennerem uveřejněných nových taxonů hub (Čes. Mykol. 46: 315–327, 1992) je doplněn o nová data. Připojen je seznam taxonů pojmenovaných na Kalchbrennerovou počest.

Additions and corrections to the list of Kalchbrenner's new taxa[1])[2])

Agaricus (Mycena) cinereo-cyaneus Kalchbr.

Omitted in the previous list. Probably a nomen nudum. Cited by von Mueller (1880: 120) but no description by Kalchbrenner found.

Agaricus megalotheles Kalchbr.

Published in 1883d, not in 1883c as reported previously.

Agaricus vulpecula Kalchbr.

First published in Fries (1874: 83), not in Kalchbrenner (1877: 61) as reported previously.

"Ateroma" vermicosum Kalchbr.

Generic name misspelled in the previous list. Correct to "*Asteroma*."

Cladoderris australis Kalchbr. in Thüm. (1878b: 442)

Omitted in the previous list.

Corticium murinum Kalchbr. in Thüm. (1880a: no. 1504)

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[1]) "Previous list" and "previously" refers to Lizoň's paper Fungi described by Carl Kalchbrenner (Česká Mykol. 46: 315–327, 1992).

[2]) Journal abbrevitations follow Botanico-Periodicum-Huntianum (1968) and abbreviations of books are as proposed in Taxonomic Literature by Stafleu & Cowan (1976–1988) and Stafleu and Mennega (1992-)

Omitted in the previous list. Later homonym of *Corticium murinum* Berk. & Broome (J. Linn. Soc., Botany, 14: 70, 1873). New name: *Hymenochaete kalchbrenneri* Massee (J. Linn. Soc., Botany, 27: 116, 1890).

Geaster mammosus var. *galericulatus* Kalchbr.
Published in 1863b, not in 1862 as reported previously.

Helotium purpuratum Kalchbr. in Thüm. (1880b: no. 1614)
Omitted in the previous list.

Helotium scutellatum Kalchbr. & Cooke in Anon. (1891: 72)
Omitted in the previous list.

Hydnangium tasmanicum Kalchbr. in Cooke (1892: 247)
Omitted in the previous list.

Hygrophorus (Hygrocybe) lewellinae Kalchbr. (1883c: 105)
Omitted in the previous list.

Isaria granulosa Kalchbr.
Omitted in the previous list. Probably a nomen nudum. Cited by von Mueller (1880: 119) but no description by Kalchbrenner found.

Laschia cinerescens Kalchbr.
First published in von Thümen (1878b: 442), not in Cooke (1882a) as reported previously.

Marasmius minutissimus "F. Muell. & Kalchbr."
Incorrectly cited by Cooke, (1880c, 1892) even Kalchbrenner ascribed the name solely to F. von Mueller. Correct author's citation to " F. Muell. in Kalchbr."

Omphalophallus "retustus" Kalchbr.
Epithet misspelled in the previous list. Correct to "*retusus*."

Polyporus armitii Kalchbr.
First published in von Mueller (1879: 80) with Kalchbrenner as a publishing author and not in Müll. & Kalchbr. in Cooke (1882a: 94) as reported previously.

Polyporus birretum Kalchbr. (1876a: 114)
Omitted in the previous list.

Polyporus (Pleuropus) cognatus Kalchbr.
Omitted in the previous list. Probably a nomem nudum. Cited by Cooke, (1880c), but no description by Kalchbrenner found.

Polyporus cupreo-nitens Kalchbr. in Thüm. (1880c: no. 1702)
Omitted in the previous list.

Polyporus dispar Kalchbr.
First published in von Thümen (1878b: 441), not in Cooke (1882a) as reported previously.

Polyporus eucalypti Kalchbr. in Thüm. (1875a: 73)
Omitted in the previous list.

Polyporus hololeucus Kalchbr. (1876a: 114)
Omitted in the previous list.

Puccinia helichrysi Kalchbr. & Cooke (1880b:21)
Later homonym of *Puccinia helichrysi* Rabenh. (Deutschl. Krypt.-Fl. 1:26, 1844). New name: *Puccinia kalchbrenneri* De Toni in Sacc. (Syll. Fung. 7: 645, 1888).

Trametes peckii Kalchbr. in Peck (1881: 274)
Omitted in the previous list.

Kalchbrenner's eponymy
Taxa dedicated to Carl Kalchbrenner

Kalchbrennera Berk. (Gard. Chron., n. s. 5: 785, 1876)

Kalchbrenneria Schulzer (Öster. Bot. Z. 28: 394, 1878)

Clavaria kalchbrenneri F. Muell. in Kalchbr. (1883c: 105)

Clavaria kalchbrenneri Sacc. (Syll. Fung. 6: 710–711, 1887)
New name for *Clavaria dichotoma* Kalchbr. (1882a: 105), a later homonym of *Clavaria dichotoma* Godey in Gillet (Champ. France, Hymenom., p. 766, 1878).

Corticium kalchbrenneri Sacc. (Syll. Fung. 6: 619, 1887)
New name for *Corticium miniatum* Kalchbr. (1865a: 229), a later homonym of *Corticium miniatum* Berk. (London J. Bot. 4: 60, 1845) [non *Corticium miniatum* Cooke, 1880].

Geaster kalchbrenneri Hazsl. (Verh. Zool. Bot. Ges. Wien 26: 220, 1876)
≡ *Geastrum cryptorhynchum* var. *kalchbrenneri* (Hazsl.) Hazsl.

Gloeosporium kalchbrenneri Rabenh. in Kalchbr. (1868a: 22)

Hymenochaete kalchbrenneri Massee (J. Linn. Soc., Botany, 27: 116, 1890)
Cunningham (Trans. Roy. Soc. New Zeal. 85(1): 51, 1957) has stated that type specimen (at K) belongs to *Lloydiella vinosa* [= *Peniophora v.* (Berk.) Massee]. For notes see *Corticium murinum* above.

Hypoxylon kalchbrenneri Sacc. (Syll. Fung. 1: 364, 1882)
New name for *Hypoxylon placenta* Kalchbr., a later homonym of *Hypoxylon placenta* (Link) Sacc. (Sylloge Fung. 1: 369, 1882).

Inocybe kalchbrenneri Hazsl. (Commentarius in icones selectas Hymenomycetum Hungariae, Pestini 1873 editas. Eperjes 1884) The species name is based on *Inocybe plumosa* Bolt. unamed var. in Kalchbrenner's Icones Selectae Hymenomycetum Hungariae, Vol. 3 pl. 22, fig. 2, 1875 as "Differt aliquantulum a typo,

statura minore, colore valde obscuro et stipitae laxe floccoso, vix squamoso." This name was cited by Heim (*Inocybe* p. 395, 1931) as "in Kalchbr., Ic., t. 22, f. 2, 1877 [sic!]" but it was described by Hazslinszky in 1884.

Lycoperdon kalchbrenneri De Toni in Sacc. (Syll. Fung. 7: 109, 1888)

New name for *Lycoperdon marginatum* Kalchbr. in Kalchbr & Thum. (1880: 140), a later homonym of *Lycoperdon marginatum* Vittad. (Monogr. Lycoperd. p. 41, 1842) [non *Lycoperdon marginatum* Moris & de Not., 1839].

Melanoleuca kalchbrenneri Sing.

This new name for *Agaricus dehiscens* Kalchbr. in Roumeg. (1882: 95), a homonym of *Agaricus dehiscens* Viv. (Fung. Italia p. 58, pl. 59, ? 1837), appeared in Singer's Agaricales (2nd Ed., 1962) but I was not able to locate the original publication where the name was erected. According to the Code of Botanical Nomenclature (Art. 58.3) it was not necessary to replace Kalchbrenner's name because *Melanoleuca dehiscens* [Kalchbr.] Singer (Lloydia 5: 122, 1942) was validly published.

Nectriella kalchbrenneri Fuckel (Jahrb. Nass. Ver. Naturk. 23–24: 177, 1869)

Omphalia kalchbrenneri Bres. (Fungi Trident. p. 32, 1881)

Physarum kalchbrenneri Massee (Monogr. Myxogastr. p. 297, 1892)

Polyporus kalchbrenneri Fr. (Hymenomyc. eur. p. 531, 1874) New name for *Polyporus scutiger* Kalchbr. (1868: 259) a later homonym of *Polyporus scutiger* Fr. (Elench. fung. 1: 73, 1828).

Puccinia kalchbrenneri De Toni in Sacc. (Syll. Fung. 7: 645, 1888)

New name for *Puccinia helichrysi* Kalchbr. & Cooke (1880b:21), a later homonym of *Puccinia helichrysi* Rabenh. (Deutschl. Krypt.-Fl. 1:26, 1844).

Puccinia kalchbrenneriana De Toni in Sacc. (Syll. Fung. 7: 661, 1888)

New name for *Puccinia ornithogali* Kalchbr. in Kalchbr, & Cooke (1880b: 21), a later homonym of *Puccinia ornithogali* Hazsl. (Ertek. Termeszettud. Kor. 9(5): 12–13, 1879)

Septoria kalchbrenneri Sacc. (Syll. Fung. 3: 515, 1884)

New name for *Septoria euphorbiae* Kalchbr. (1865b: 158) a later homonym of *Septoria euphorbiae* (Lasch) Desm. (Cryp. Fr. no. 2191, 1851) [non *Septoria euphorbiae* Gupin in Roum., 1879].

Stereum kalchbrenneri Sacc. (Syll. Fung. 6: 568, 1888)

New name for *Stereum amoenum* Kalchbr. in Thum. (1867b: 424), a later homonym of *Stereum amoenum* (Lév.) Sacc. (Syll. Fung. 6: 580, 1888).

Stereum kalchbrenneri Massee (J. Linn. Soc. Bot. 27: 182, 1890)

This is a later homonym of Saccardo's name.

Stilbum kalchbrenneri Sacc. (Syll. Fung. 4: 570, 1886)

New name for *Sphaerostilbe rosea* Kalchbr. in Kalchbr. & Cooke (1880b: 26), which would have became a later homonym of *Stilbum roseum* Schwein. (Trans. Amer. Philos. Soc., ser. 2, 4(2): 284, 1832) on transfer to *Stilbum*.

Trametes kalchbrenneri Fr. in Kalchbr. (1868: 264)

ADDITIONS TO THE BIBLIOGRAPHY

(for other cited publications refer to the bibliography in the previous paper)

REFERENCES

ANONYMUS (1865): C. Kalchbrenner, A Szepesi gombák jegyzéke (Verzeichniss der Zipser Schwämme) in den Mittheilungen der ungarischen Akademie der Wissenschaften zu Pest, 3. Band. 1865. (Mathematikai és Természettudományi Közlemények.) – Hedwigia 4: 117–121. [Review of Kalchbrenner's paper with repeated descriptions of some new taxa. Authored probably by L. Rabenhorst]

ANONYMUS (1891): Omitted diagnoses. – Grevillea 19: 71–75.

COOKE M. C. (1880c): Fungi Australiani, imprimis e collectionibus a reverendo J. M. Berkeley pervisis. In: Mueller F. von, Supplementum ad volumen undecimum Fragmentorum phytographiae Australiae, indices plantarum acotyledonarum complectens, p. 75–104, Melbourne.

COOKE M. C. (1892): Handbook of Australian fungi. p. [i]-xxxii, 1–457, pl. 1–36, London.

KALCHBRENNER C. (1876b): Zwei neue Pilzgattungen. – Hedwigia 15: 115–116. [correct the pagination in the previous bibliography]

MUELLER F. von (1879): Fragmenta phytographiae Australiae, Vol. 11(15): 59–80, Melbourne.

MUELLER F. von (1880): Additamenta pro supplemento voluminis undecimi. In: Mueller F. von, Supplementum ad volumen undecimum Fragmentorum phytographiae Australiae, indices plantarum acotyledonarum complectens, p. 105–121, Melbourne.

PECK C. H. (1881): New species of fungi. – Bot. Gaz. 6: 274–277.

THÜMEN F. von (1878b): Symbolae ad floram mycologicam Australiae. – Flora, ser. n., 36: 440–444. [Thümen's Mycotheca universalis. Cent.13 is cited as "Thum. (1878)" in the previous list]

THÜMEN F. von (1880a): Mycotheca universalis. Cent.16, no. 1501–1600, Klosterneuburg.

THÜMEN F. von (1880b): Mycotheca universalis. Cent.17, no. 1601–1700, Klosterneuburg.

THÜMEN F. von (1880c): Mycotheca universalis. Cent.18, no. 1701–1800, Klosterneuburg.

THÜMEN F. von (1881): Diagnosen zu Thumen's "Mycotheca universalis." – Flora 64: 237–239.

CZECH MYCOL. 49 (3–4), 1997

Common polypores (Polyporales s.l.) collected on uncommon hosts

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Kotlaba F. (1997): Common polypores (Polyporales s.l.) collected on uncommon hosts. – Czech Mycol. 49: 169–188

43 common or some more frequent polypores are listed together with their most common and, on the other hand, uncommon hosts in Europe, some of which are very curious.

Key words: Polyporales, common species, uncommon hosts, Czech and Slovak Republics, European countries

Kotlaba F. (1997): Obyčejné choroše (Polyporales s.l.) sbírané na neobyčejných hostitelích.– Czech Mycol. 49: 169–188

Je uvedeno 43 obyčejných nebo více méně obyčejných druhů chorošů zaznamenaných v Evropě na nejčastějších a na druhé straně na neobvyklých hostitelích, z nichž jsou někteří velmi kuriózní.

INTRODUCTION

During nearly a half century of continuous study of wood-inhabiting polypores, the author accumulated considerable data also on their hosts. With regard to the territory of the former Czechoslovakia, the hosts for polypores are summarized in the author's book (Kotlaba 1984). During the recent thirteen years, the author has continued his research of the polypores with especial regard to their hosts and has found several rather common polypores on rather uncommon trees and shrubs, chiefly in the Czech and Slovak Republics but some also elsewhere in Europe (especially in the former Yugoslavia), where there have also been earlier collections.

This paper mainly comprises the author's own collections of polypores as his attention was always focused also especially on the precise identification of the host species, in many cases in co-operation with some dendrologists — which,unfortunately, is not the case with all mycologists so that the hosts of wood-inhabiting fungi are often given incorrectly or remain identified only to genera (see e.g. Ryvarden and Gilbertson 1993, 1994), although various polypore species can often grow only on certain species of a particular genus. Some collections by other mycologists or collectors — when the identification of polypores as well as their host species is trustworthy — are also included in this paper; primarily my colleagues Dr. Z. Pouzar (Praha), M. Kučera (Průhonice), Dr. J. Paclt (Bratislava) but also several others.

The rather uncommon or, more precisely, unusual hosts of common polypores are only rarely indigenous trees or shrubs, but most often they are plants of foreign origin (American, Asian etc.) — and, if indigenous, then those which are mostly planted along the streets, in gardens, parks etc. The hosts of common polypores cited here from the Czech and/or Slovak Republics are new for these countries (some of them, however, are probably unknown also for several European countries), whilst the remainder are from other countries. Uncommon hosts are considered to be those species of trees and shrubs not mentioned in Kotlaba (1984), where the most frequented as well as unique hosts for the polypores in the former Czechoslovakia are given. However, when there were more than 15 hosts, the names of those infrequently occurring on common hosts were (unfortunately) omitted from the list of Latin names of hosts (when the list terminated in "etc.").

Common polypores collected on the uncommon (unusual) hosts listed below are mostly documented in herbaria but most of them remain unpublished. Only a very few of them have been already published, often only in Czech but a few in English or German and, for this reason, these collections are cited only as very short references.

Almost all collections of common polypores on the uncommon hosts mentioned in this list are deposited in the herbaria of the Mycological Department of the National Museum in Prague = Praha (PRM),and the Slovak National Museum in Bratislava (BRA), the Slovak Republic, whilst some are in the herbarium of the district museum in Litoměřice (LIT), N Bohemia (Czech Republic). A very few collections were only seen by the author as dried (v.s.) or living specimens (v.v.) but are not preserved in any herbaria.

This paper deals only with hosts identified to their species and not solely to genera, although these also exist and are new for some listed species of polypores. The polypore species in this list are arranged alphabetically, with the Czech Republic abbreviated to CR, the Slovak Republic to SR, and the author, as the collector and/or identifier, by his initials F. K.

LIST OF COMMON POLYPORES ON UNCOMMON HOSTS

Aurantioporus fissilis (Berk. et Curt.) Jahn

Apple trees (*Malus domestica*) and poplars (*Populus* sp.div.), chiefly aspen (*P.tremula)* in Europe are mostly attacked by this common polypore, whereas on other trees (*Quercus* sp.div., *Acer* sp.div. etc .*)* it occurs rather rarely. As perhaps new hosts, it has been collected exceptionally on *Aesculus hippocastanum* and *Sorbus aucuparia*: "Komenského sady", a park in Ostrava, c. 230 m alt., NE Silesia, CR, on the felled trunk of *Aesculus hippocastanum*, 29. VIII.1991, l. J. Lederer, d. F. K. et Z. Pouzar (PRM 873901, as *A.fissilis* f. *alborubescens*).— Near Rohrschach

close to St. Gallen (near the shore of Lake Constance — Bodensee), c.400 m alt., Switzerland; on the living trunk of *Sorbus aucuparia*, 3. IX.1991, l.et d. F. K. (PRM 873143).

Fig 1. *Bjerkandera adusta* on a dying thin trunk of *Ailanthus altissima*. Černošice near Praha, Czech Republic, 31. VIII. 1996.
Photo F. Kotlaba

Bjerkandera adusta (Willd.:Fr.) P. Karst.

This very common species grows on a great range of hosts but most often on beech (*Fagus*), hornbeam (*Carpinus betulus*), oaks (*Quercus* sp.div.), birches (*Betula* sp.div.) and, less frequently, on many others. However, the following, rather special and probably unpublished hosts for Europe are *Acacia retinodes, Ailanthus altissima, Fraxinus americana, Cotoneaster wardii*, *Populus alba* and *Sophora japonica*: *Acacia retinodes*, Greece — see Kotlaba and Klán (1994).— "Štefánikova ul.", a street in Nitra, c.150 m alt., SW Slovakia, SR, on a wounded living branch of *Ailanthus altissima*, 9. IX.1994, l. J. Paclt, d. F. K. et Z. Pouzar (PRM 885233).— Černošice SSW of Praha, railway station, 220 m alt., C Bohemia, CR, on a dying thin trunk of *A. altissima*, 31. VIII.1996, l.et d. F. K. (PRM 889191) . — Granada, on the main road to Murcia, NE of the town, c.820 m alt., Spain, on a wounded living trunk of *Ailanthus altissima*, 28. IV.1992, l.et d. F. K. (PRM 876315).- "Průhonice Park" near Praha, c.290 m alt., C Bohemia, CR, on a small stump of *Cotoneaster wardii*, 2. XI.1982, l. Z. Němec, d. F. K. (v.v.). — *Populus alba* and *Sophora japonica*, Bulgaria — see Kuthan and Kotlaba (1988).

Bjerkandera fumosa (Pers.: Fr.) P. Karst.

Host trees of this rather common polypore are most often various species of willow (*Salix* sp.div.), rarely some other trees or shrubs. It has been collected in the Czech Republic exceptionally on two species of elm — *Ulmus glabra* and *U. laevis*: Krupice near Chomutov, c.480 m alt., NW Bohemia, CR, on a dead trunk of *Ulmus glabra (= U.montana)*, 20. IX.1977, l. J. Lorber, d. F. K.(PRM 813457).— "Průhonice Park" in Průhonice near Praha, c. 290 m alt., C Bohemia, CR, on a stump of *Ulmus laevis (= U. effusa)*, 29. X.1970 (PRM 868893) and 13. XI.1970 (PRM 870237), l.et d. F. K.

Daedaleopsis confragosa (Bolt.: Fr.) Schroet.

Willows (*Salix* sp.div.), birches (*Betula* sp.div.), beech (*Fagus sylvatica*), alders (*Alnus* sp.div.) and ash (*Fraxinus excelsior*) are the most frequent hosts of this very common polypore in Europe, but it is perhaps unknown on two cultivated species of hazel, viz. *Corylus chinensis* and *C.colurna*, as well as on the indigenous *Sorbus austriaca*: "Průhonice Park" (the part known as "U zlatého bažanta") in Průhonice near Praha, 300 m alt., C Bohemia, CR , on a dead branch of *Corylus chinensis*, 26. VIII.1992, l. M. Kučera, d. F. K. (PRM 876413); ib. ("Obora"), 320 m alt., on a dead branch of *Corylus colurna*, 31. III.1992, l.et d. F. K. (PRM 877817).— "Tomášovský výhľad" above the Hornád river near Čingov close to Spiš. N. Ves, E Slovakia, c. 500 m alt., on a dead trunk of *Sorbus austriaca*, 1. X.1986, l.et d. F. K. (PRM 842298).

Datronia mollis (Sommerf.) Donk

This polypore grows in Europe most often on beech (*Fagus sylvatica*), less frequently on maples (*Acer* sp.div.), poplars (*Populus* sp.div.), hornbeam (*Carpinus betulus*) and other trees, but *Salix alba* and *Sorbus aria* are probably new hosts: Žiar n. Hr. near Zvolen, c. 230 m alt., C Slovakia, SR, on a living branch of *Salix alba* cv.'Tristis', 5. XI.1989, l. J. Gáper, d. F. K. (BRA).— "Rokoš", the part above Uhrovské Podhradie near Bánovce n. Bebr., c.750 m alt., W Slovakia, SR, on a dead branch of *Sorbus aria*, 18. X.1988, l.et d. F. K. (PRM 866445).

Fomes fomentarius (L.: Fr.) Fr.

Chiefly beech (*Fagus sylvatica*), then birches (*Betula* sp.div.), maples (*Acer* sp.div.), oaks (*Quercus* sp.div.), walnut (*Juglans regia*) , some species of limes (*Tilia* sp.div.) and hornbeam *(Carpinus betulus)* are parasitized by this very common polypore in Europe, rarely some other trees; on *Padus avium* and *Tilia*

tomentosa it is perhaps not yet reported elsewhere: Bulgaria — see Kuthan and Kotlaba 1981, 1988.

Fomitopsis pinicola (Sw.: Fr.) P. Karst.

Hosts of this very common polypore are very numerous; initially, on spruce (*Picea abies*), then fir (*Abies alba*), birches (*Betula* sp.div.), pines (*Pinus* sp.div.), the wild cherry (*Cerasus avium*), alders (*Alnus* sp.div.) and rarely very many others; on the Mediterranean holm oak, *Quercus ilex*, and the temperate willow *Salix silesiaca* it has probably not been previously published: "Massif des Cédres", Lubéron Mountains near Avignon, c.670 m alt., France; on a dead branch of *Quercus ilex*, 25. VIII.1994, l. P. Voženílek, d. F. K.et Z. Pouzar (PRM 885218).- "Stužica" near Nová Sedlica close to Snina, c.750 m alt., E Slovakia, SR, on a small dead branch of *Salix silesiaca*, 22. X.1887, l.et d. F. K. (PRM 853335).

Ganoderma adspersum (Schulz.) Donk

This fungus prefers trees of foreign origin, mostly oaks (*Quercus* sp.div.) and limes (*Tilia* sp.div.), whereas on many others it is much more rare. On perhaps new hosts in Europe, it has been collected on *Abies homolepis*, *Acer platanoides, Amygdalus communis, Broussonetia papyrifera, Celtis australis*, *Cercis siliquastrum, Cerasus avium, Elaeagnus angustifolia, Fraxinus angustifolia, Laurus nobilis, Ligustrum lucidum, Populus alba, Prunus domestica, Sophora japonica*, *Spiraea van-houttei* and *Ulmus laevis*: Bishops Court N of Kirk Michael, Isle of Man, 34 m alt., Great Britain, at the base of a living trunk of *Abies homolepis*, 25. IX.1976, l. W. P. K. Findlay et F. K., d. F. K.(PRM 803072).— "Královská zahrada" (close to "Belveder"), a park in Praha 1-Hradčany, 290 m alt., on the base of a dying trunk of *Acer platanoides*, 10. VI.1996, l.et d. F. K. (PRM 888183).— Kotor near Budva, Montenegro, 10 m alt., on a stump of *Celtis australis,* 26. V.1976, l.et d. F. K. (PRM 872039).— *Amygdalus communis, Elaeagnus angustifolia, Fraxinus angustifolia*, *Populus alba*, *Sophora japonica* and *Ulmus laevis*, Bulgaria — see Kuthan and Kotlaba (1988).- "Terazije" in Beograd, c. 110 m alt., Serbia, on a living trunk of *Broussonetia papyrifera*, 18. VI.1968, l.et d. F. K. (PRM 709928); ib. ("Kalemegdan", c. 90 m alt.), the same host, 16. VIII.1972, l.et d. F. K. (PRM 871976); ib. (Botanic Garden of the University, c. 100 m alt.), the same host, 17. VIII. 1972, l.et d. F. K. (PRM 871995).— Lanžhot near Břeclav, 170 m alt., SE Moravia, CR, on the base of a living trunk of *Cerasus avium*, 16. VIII.1967, l.et d. F. K. et Z. Pouzar (PRM 709925). — Near Churchtown W of Ramsey, Isle of Man, 30 m alt., Great Britain, on the base of a living trunk of *Cerasus avium*, 29. IX.1976, l.et d. F. K. (PRM 709925). — Filip-Jakov near Zadar, 4 m alt., Croatia, on a stump of *Laurus nobilis*, at the edge of the old town, 21. VIII.1980, l.et d.

F. K. (PRM 838631). — *Ligustrum lucidum*, Greece — see Kotlaba and Klán (1994).— On the roadside near Tuchoměřice close to Praha 6-Přední Kopanina, 330 m alt., C Bohemia, CR, on a stump of *Prunus domestica*, 10. I.1996, l.et d. F. K. (PRM 886850).- Botanic Garden of the Charles University in Praha 2-Nové Město, 200 m alt., C Bohemia, CR, at the base of a living shrub of *Spiraea van-houttei*, 4. I.1996, l.et d. F. K. (PRM 886775).

Ganoderma carnosum Pat.

Firs (*Abies* sp.div.) are the most frequent hosts of this polypore in C Europe; it grows rarely on many other trees and shrubs. As probably new, unpublished hosts in Europe are *Abies nordmanniana, Acer rubrum, Fraxinus excelsior* and *Taxus baccata*: The castle park of Reinhardsbrunn NW of Gotha, c. 350 m alt., Germany, on the base of *Abies nordmanniana*, 14. X.1989, l. F. Gröger, d. F. K. et Z. Pouzar (PRM 868560). — "Průhonice Park" (close to "Faustův dub") in Průhonice near Praha, 290 m alt., C Bohemia, CR, on the roots of a living *Acer rubrum*, 6. VII.1983, l.et d. F. K. (PRM 831201); ib. (part near "Červené buky"), on a stump of *Fraxinus excelsior*, 17. VIII.1983, l.et d. F. K. (PRM 831598); ib. (below "Labeška" lake), on a stump of *Taxus baccata*, VIII.1992, l. L. Čamrdová et A. Skramušská, d. F. K. (PRM 876480).

Fig 2. *Ganoderma lipsiense* on the base of a dying *Viburnum fragrans*. St. Gallen, Switzerland, 9. IX.1991.
Photo F. Kotlaba

Ganoderma lipsiense (Batsch) Atk.

This very common fungus grows on a great range of hosts, most often on beech (*Fagus sylvatica*), hornbeam (*Carpinus betulus*), alder (*Alnus glutinosa*), wild

cherry (*Cerasus avium*), oaks (*Quercus* sp.div.), sycamore (*Acer pseudoplatanus*) etc., but on *Cydonia oblonga, Frangula alnus, Fraxinus americana, Spiraea vanhouttei* and *Viburnum fragrans*, it has probably not been previously published: "Nad Bořislavkou", a street in Praha 6-Dejvice, 240 m alt., C Bohemia, CR, on the base of a living trunk of *Cydonia oblonga*, 5. V.1988, l.et d. F. K. (PRM 863662).— "Soběslavská blata" peat bog near Soběslav close to Tábor, 420 m alt., S Bohemia, CR, on a dead branch of *Frangula alnus*, 23. V.1987, l.et d. F. K. (PRM 852297).— "Průhonice Park" (area between "Alpinum" and "Gloriet") in Průhonice, 290 m alt., C Bohemia, on a stump of *Fraxinus americana*, 15. IX.1983, l. V. Svačina, d. F. K.(PRM 831597).— In the park in front of the students' college "Hvězda", Praha 6-Břevnov, 360 m alt., C Bohemia, CR, on a small stump of *Spiraea vanhouttei*, 12. VII.1995, l.et d. F. K. (PRM 885211).— Achslenstrasse (in front of house no.30), St. Gallen-Krontal, c. 630 m alt., Switzerland, on the base of a dying shrub, *Viburnum fragrans*, 9. IX.1991, l.et d. F. K.(PRM 873106).

Ganoderma lucidum (Curt.: Fr.) P. Karst.

Oaks (*Quercus* sp.div.) are the most frequent hosts of this rather common species in the warmer parts of Europe, whereas others are much more rare; on *Acer saccharinum* and *Robinia pseudoacacia*, it was probably not been previously known: "Průhonice Park" (part close to "Faustův dub") in Průhonice near Praha, 290 m alt., C Bohemia, CR, on dying roots of *Acer saccharinum*, 15. IX. 1992, l.et d. F. K. (PRM 876451; Kotlaba 1995); ib., 5. IX.1995, l. V. Jelínek, d. F. K. (PRM 885201).— *Robinia pseudoacacia*, Bulgaria — see Kuthan and Kotlaba (1988).

Ganoderma resinaceum Boud. in Pat.

This rather common fungus mostly attacks oaks (*Quercus* sp. div.) in the warmer parts of Europe and is rare on other trees; on *Celtis australis, C. occidentalis, Fraxinus angustifolia, Gleditsia triacanthos, Morus nigra, Populus nigra* and *Quercus frainetto*, it has probably not been previously collected: *Celtis australis, Fraxinus angustifolia, Morus nigra, Populus nigra* and *Quercus frainetto*, Bulgaria — see Kuthan and Kotlaba (1981).- "Nám. Slobody", a square in Bratislava, c.210 m alt.,SW Slovakia, SR, on a living trunk of *Celtis occidentalis*, 24. VII. 1988 (PRM 867314) and 4. VIII.1991 (PRM 873051), both l. J. Paclt, both d. F. K.et Z. Pouzar.- "Trenčianska ul.", a street in Bratislava, 210 m alt., SW Slovakia, SR, on the base of a living trunk of *Gleditsia triacanthos*, 2. X.1994, l. J. Paclt, d. F. K.et Z. Pouzar (PRM 885246).

Gloeophyllum abietinum (Bull.: Fr.) P. Karst.

This rather common polypore occurs in Europe mostly on spruce (*Picea abies*) or fir (*Abies alba*) and rarely on other hosts (including some broad-leaved trees)

but on cypress (*Cupressus sempervirens)* and *Pinus halepensis*, it has probably not been previously known: *Cupressus sempervirens,* Greece — see Kotlaba and Klán (1994). — Duraševići near Tivat, c. 10 m alt., Montenegro, on a stump of *Cupressus sempervirens*, 27. V.1976, l.et d. F. K.(PRM 872047). — Makarska near Split, c. 20 m alt., Croatia, on a stump of *Pinus halepensis*, 13. VII.1968, l.et d. F. K (PRM 872061).

Gloeophyllum sepiarium (Wulf.: Fr.) P. Karst.

Spruce (*Picea abies*), then pines (*Pinus* sp.div.) and fir (*Abies alba*) are the most frequent trees of this very common polypore in Europe (on deciduous trees it is very rare); on cultivated *Picea omorica*, it has perhaps not been previously published: "Průhonice Park" (part below "Alpinum") in Průhonice near Praha, 290 m alt., C Bohemia, CR, on the base of a living trunk of cultivated *Picea omorica*, 30. I.1983, l. Z. Němec, d. F. K.(PRM 830535).

Hapalopilus rutilans (Pers.: Fr.) P. Karst.

This very common polypore in Europe grows most often on oaks (*Quercus* sp.div.), then on whitebeams (*Sorbus* sp.div.), birches (*Betula* sp.div.), beech (*Fagus sylvatica*), hornbeam (*Carpinus betulus*) and fir (*Abies alba*), whereas, on some others, it is rather rare; it seems that *Corylus avellana*, *Cotoneaster multiflora* and *Quercus pubescens* are new hosts for it: "Opolenec" near Sudslavice close to Vimperk, 600 m alt., S Bohemia, CR, on a small dead trunk of *Corylus avellana*, 2. IX.1990, l.et d. F. K. (PRM 872144).— "Průhonice Park" (the part known as "Zámecká vyhlídka") in Průhonice near Praha, 300 m alt., C Bohemia, CR, on a dying branch of *Cotoneaster multiflorus*, 15. IX.1992, l.et d. F. K. (PRM 876448).- *Quercus pubescens*, Bulgaria — see Kuthan and Kotlaba (1988).

Heterobasidion annosus (Fr.) Bref.

Conifers (mostly *Picea abies, Pinus* sp.div. and *Abies alba*) are parasitized by this very common polypore in Europe and gatherings on broad-leaved trees or shrubs are rather rare. As special hosts, are noted here *Betula pendula, Fraxinus excelsior* and *Ligustrum vulgare*: "Kotrbatá skála" between Hořejany and Vrančice near Milín close to Příbram, 500 m alt., C Bohemia, CR, on a fallen trunk of *Betula pendula,* 2. I.1987, l. E. Lippert, d. F. K. (PRM 854501). — Chomutov (in a park), c.330 m alt., NW Bohemia, CR, on the base of a living trunk of *Fraxinus excelsior*, 22. I.1987, l.et d. J. Lorber (herb. LIT). — The Botič brook valley below Průhonice (in the vicinity of the highway bridge) near Praha, 280 m alt., C Bohemia, CR, on the bottom of an uprooted stump of *Fraxinus excelsior,* 12. XII.1995, l.et d.

F. K. (PRM 886056).— "Bradda Glen" NW of Port Erin, Isle of Man, 60 m alt., Great Britain, on the base of a living shrub of *Ligustrum vulgare*, 26. IX.1976, l.et d. F. K. (PRM 803050).

Inonotus cuticularis (Bull.: Fr.) P. Karst.

This rather common fungus parasitizes in Europe primarily beech (*Fagus sylvatica*), then oaks (*Quercus* sp.div.) and maples (*Acer* sp.div.), whereas, on some others, it occurs only rarely; on *Aesculus hippocastanum* it has perhaps not been previously published: "Štefánikova ul.", a street in Nitra, c.150 m alt., SW Slovakia, SR, *Aesculus hippocastanum,* 9. IX.1994, l. J. Paclt, d. F. K.et Z. Pouzar (PRM 885241).

Fig 3. *Inonotus hastifer* on a dead standing trunk of *Carpinus betulus*. SSW of Debrník near Vlastiboř close to Soběslav, Czech Republic, 11. IX. 1996.
Photo F. Kotlaba

Inonotus hastifer Pouzar

This rather common species in some areas of higher elevations in C Europe occurs exclusively on beech (*Fagus sylvatica*); *Carpinus betulus* is most probably a new, unknown host: In the brook valley SSW of Debrník near Vlastiboř close to Soběslav, c. 440 m alt., S Bohemia, CR, on a dead standing trunk of *Carpinus betulus*, 11. X.1996, l. F. K., d. F. K. et Z. Pouzar (PRM 889577).

Inonotus hispidus (Bull.: Fr.) P. Karst.

Malus domestica, *Juglans regia, Fraxinus* sp.div. and *Morus* sp.div., very rarely are some other trees hosts of this very common parasitic fungus in Europa;

on *Ostrya carpinifolia* it has probably not been previously collected in Europe: Bulgaria — see Kuthan and Kotlaba (1981).

Fig 4. *Inonotus radiatus* on a living trunk of *Taxus baccata*. "Průhonice Park" (close to "Malý zámek"), Czech Republic, 11. I. 1989. Photo F. Kotlaba

Fig 5. *Inonotus radiatus* (old specimens) on a dying trunk of *Rhododendron* cv.'Cunningham's White'. "Průhonice Park" (near "Hluboká cesta"), Czech Republic, 18. 6. 1996. Photo F. Kotlaba

Inonotus radiatus (Sow.: Fr.) P. Karst.

The main hosts of this very common species in Europe are alders (*Alnus* sp.div.), less frequently hornbeam (*Carpinus betulus*) and hazel (*Corylus avellana*), rarely also other trees and shrubs; *Acanthopanax henryi, Acer saccharinum, Rhododendron* cv. 'Cunningham's White',*Salix cinerea, Sambucus racemosa* and *Taxus baccata* are evidently new, previously unpublished hosts: "Průhonice Park" (the part known as "Podzámecká louka") in Průhonice near Praha, 290 m alt., C Bohemia, CR, on a dying branch of *Acanthopanax henryi*, 4. X.1994, l.et d. F. K.(PRM 883226); ib. (close to "Faustův dub"), on a dead branch of *Acer saccharinum*, 12. I.1993, l.et d. F. K.(PRM 876949); ib. (the part known as "Jedlová stráň"), on a living branch of *Rhododendron* cv.'Cunningham's White',10. X.1985, l. V. Polcová, d. F. K.(PRM 837982); ib. (above the part known as "Hluboká cesta"), on a dying trunk of the same host, 18. VI.1996, l.et d.

F. K. (PRM). -- "Zadní Bártovky" between Debrník and Nedvědice near Soběslav close to Tábor, 480 m alt., S Bohemia, CR, on a dead trunk of *Salix cinerea*, 20. IX.1991,l.et d. F. K.(PRM 873368).— In the brook valley below Výškovice SE of Mariánské Lázně, c.700 m alt., W Bohemia, CR, on a dead branch of *Sambucus racemosa*, 20. X.1994, l.et d. F. K. (PRM 885231).— "Průhonice Park" (close to "Malý zámek") in Průhonice near Praha, 300 m alt., C Bohemia, CR, on the base of a rather thin living trunk of *Taxus baccata*, 11. I.1989 (PRM 866439; Kotlaba 1989), 29. XI.1994 (PRM 882596), and 5. XI.1996 (PRM 8899591) l.et d. F. K..

Ischnoderma resinosum (Fr.) P. Karst.

This locally common polypore occurs in some places of C and SE Europe mainly on beech (*Fagus sylvatica*) and very rarely on other trees; *Fraxinus excelsior, Ulmus glabra* and *U.minor* are perhaps new hosts for it: "Cigánka" near Muráň close to Rožňava, c.850 m alt., C Slovakia, SR, on a fallen trunk of *Fraxinus excelsior*, 11. X.1989, l.et d. Z. Pouzar (PRM 868661).- "Palotská jedlina" near Palota close to Medzilaborce, c.600 m alt., NE Slovakia, SR, on a fallen trunk of *Ulmus glabra* (= *U. montana*), 27. X.1987, l. J. Terray, d. Z. Pouzar (PRM 868964).— "Ranšpurk" near Lanžhot close to Břeclav, 155 m alt., SE Moravia, CR, on a fallen trunk of *Ulmus minor*, 29. X.1987, l.et d. Z. Pouzar (PRM 868953).

Laetiporus sulphureus (Bull.: Fr.) Murrill

This very common polypore attacks, in Europe, a large range of trees, chiefly oaks (*Quercus* sp.div.), then wild cherry (*Cerasus avium*), willows (*Salix* sp.div.) and pears (*Pyrus communis*), more rarely many other trees and shrubs; *Eucalyptus camaldulensis, Fraxinus angustifolia, F. ornus, Juglans regia, Morus alba* and *Salix cinerea* seem to be not previously published hosts: *Eucalyptus camaldulensis*,Greece — see Kotlaba and Klán (1994). — "Skaly" in the Kováčovské kopce hills between Kamenica n. Hr.and Kováčov near Štúrovo, c.280 m alt., S Slovakia, SR, on a dying trunk of *Fraxinus ornus*, 21. VII.1981, l.et d. F. K. (v.v.). — "Partizanska ul.", a street in Lviv (Lvov) near Kijiv (Kiev = Kyjev), c. 320 m alt., Ukraine, on a stump of *Fraxinus pubescens (=F. pennsylvanica)*, 4. VI.1989, l.et d. F. K. (PRM 867346). — "Mokré louky" close to Třeboň near České Budějovice, 425 m alt., S Bohemia, CR, on a living trunk of *Salix cinerea*, 10. VII.1979, l.et d. L.et J. Kubička (PRM 822074).

Meripilus giganteus (Pers.: Fr.) P. Karst.

Chiefly beech (*Fagus sylvatica*), rarely are oaks (*Quercus* sp.div.) and *Aesculus hippocastanum* attacked by this rather common polypore in Europe , whereas, on

many others, it occurs very infrequently; *Robinia pseudoacacia* is most probably a new host: "Domažlická ul.", a street in Praha 3-Žižkov, 250 m alt., C Bohemia, CR, on the base of a living trunk of *Robinia pseudoacacia*, 10. X.1995, l. A. Příhoda, d. F. K. et Z. Pouzar (PRM 886094).- "Strabišov" near Kožušice close to Bučovice, c.350 m alt., C Moravia, CR, *Robinia pseudoacacia*, 12. VII.1980, l. V. Pluhař, d. F. K. (v.s.)

Oxyporus populinus (Schum.: Fr.) Donk

This very common polypore occurs in Europe chiefly on maples (*Acer* sp.div.), beech (*Fagus sylvatica*) and horse-chestnut (*Aesculus hippocastanum*), with others rather rarely; on *Sambucus nigra* it has probably not been noted: The brook valley of Goldach below Bleiche near Trogen close to St. Gallen, c. 750 m alt., Switzerland, on a dying trunk of *Sambucus nigra*, 10. X.1995, l.et d. F. K. (PRM 886083).

Phellinus contiguus (Pers.: Fr.) Pat.

Oaks (*Quercus* sp.div.) and false acacia (*Robinia pseudoacacia*), more rarely many other trees and shrubs are hosts of this rather common fungus in Europe; *Cerasus sieboldii, Cotinus coggygria, Gleditsia horrida, Lonicera tatarica, Padus avium, Sambusus nigra* and *Sorbus intermedia* seem to be new, unpublished hosts: "Sv. Otilie", a cemetery in České Budějovice, 385 m alt., S Bohemia, CR, on a living trunk of *Cerasus sieboldii* (= *Prunus pseudocerasus*), 8. II.1955, l.et d. F. K. (PRM 516505). — "Podzámecká zahrada", a park in Kroměříž near Olomouc, 190 m alt., C Moravia, CR, on a dead branch of *Cotinus coggygria*, 12. XII.1955, l. H. Zavřel, d. M. Svrček (PRM 619595). — The castle park in Lednice near Břeclav, 170 m alt., S Moravia, CR, on a dead branch of *Gleditsia horrida*, 11. X.1982, l. J. Paclt, d. F. K. (PRM 829208).— "Stromovka" (= "Královská obora"), the park in Praha 7-Holešovice, 180 m alt., on the bark of *Lonicera tatarica*, 12. X.1936, l. J. Herink, d. A. Pilát (PRM 31306); ib.,on a trunk of the same host, 15. IX.1937, l.et d. J. Herink (PRM 808098).— The park "Chotkovy sady" (near the house "Bílkova vila") in Praha 1-Hradčany, 280 m alt., C Bohemia, CR, on a dead branch of *Lonicera tatarica*, 29. XII.1954, l.et d. F. K. (PRM 818437). — " V horkách" S of Záluží u Vlastiboře near Soběslav, 430 m alt., S Bohemia, CR, on a fallen branch of *Padus avium* (= *Prunus padus*), 7. IX.1996, l.et d. F. K. (PRM). — "Údlické doubí" near Údlice close to Chomutov, 350 m alt., NW Bohemia, CR, on a dead trunk of *Sambucus nigra*, 29. VIII.1986, l. J. Lorber, d. F. K. (LIT). —"Divoká Šárka" in Praha 6-Vokovice, 280 m alt., C Bohemia, CR, *Sambucus nigra*, 13. V.1993, l.et d. M. Svrček (PRM 879757). — "Štěpánská ul.", a street in Praha 2-Nové Město (near the church), 220 m alt., C Bohemia, CR, on a wounded living trunk of *Sorbus intermedia*, 25. VIII.1968, l.et d. F. K. (PRM 658123).

Phellinus igniarius (L.: Fr.) Quél. (s.l.)

This very common fungus occurs on a great range of hosts in Europe but most often on willows (*Salix* sp.div.), then apple trees (*Malus domestica*), whitebeam (*Sorbus aucuparia*), alders (*Alnus* sp.div.) etc., whereas on very many others it grows rather rarely. As perhaps new hosts, it has been collected on *Sambucus racemosa* and *Viburnum tomentosum* cv.'Mariesii': Churáňov near Stachy close to Strakonice, c.950 m alt., S Bohemia, CR, on a dead branch of *Sambucus racemosa*, 20. VI.1981, l.et d. F. K. (PRM 825597).- "Průhonice Park" (below the pond "Podemlejnský rybník" ="Podkarasák") in Průhonice near Praha, 285 m alt., C Bohemia, CR, on a dead thin trunk of *Viburnum tomentosum* cv.'Mariesii', 5. V.1989, l.et d. F. K. (PRM 867331).

Phellinus pini (Brot.: Fr.) A. Ames

Various species of pines, chiefly *Pinus sylvestris* and *P.rotundata* (in S Europe mostly *P.halepensis*) are attacked by this rather common parasitic fungus in Europe,rarely some others; on *Pinus strobus*, however, it has been collected quite exceptionally:"Soběslavská (Borkovická) blata" (the part known as "Džungle") near Soběslav close to Tábor, 420 m alt.,S Bohemia,CR, on a fallen trunk of a cultivated *Pinus strobus*, 4. VI.1994, l.et d. F. K. (PRM 888157).

Phellinus punctatus (Fr.) Pilát

Willows (*Salix* sp.div.) and hazel (*Corylus avellana*) are the main hosts of this very common species in Europe, whereas on many other trees and shrubs it occurs only occasionally; special hosts are *Carpinus betulus, C.orientalis, Citrus aurantium, Nerium oleander, Olea europaea, Ostrya carpinifolia, Pistacia terebinthus, Punica granatum, Spartium junceum, Syringa vulgaris, Tamarix gallica* and *Tilia tomentosa*: *Carpinus betulus, C.orientalis, Tamarix gallica* and *Tilia tomentosa,* Bulgaria — see Kuthan and Kotlaba (1988).— Hercegnovi near Dubrovnik, 60 m alt., Croatia, on a living trunk of *Citrus aurantium* (PRM 872005) and on a thin dead trunk of *Nerium oleander* (PRM 872010), 1. VI.1976, l.et d. F. K.— *Olea europaea*, Greece — see Kotlaba and Klán (1994).— Near the village Veliko Brdo close to Makarska, c. 290 m alt., Croatia, on a living trunk of *Olea europaea*, 15. VII.1968, l. F. K., d. F. K. et Z. Pouzar, 1992 (PRM 876846). — Petrovac near Budva, c. 15 m alt., Montenegro, on a living branch of *Olea europaea,* 24. VIII.1980, l.et d. F. K. (PRM 838651); ib., in a wood above the harbour, c. 30 m alt., on a dead branch of *Spartium junceum*, 23. VIII.1980, l.et d. F. K. (PRM 838653).— Duraševići near Tivat, c. 100 m alt., Montenegro, on a living trunk of *Olea europaea*, 27. V.1976, l. F. K., d. F. K. et Z. Pouzar, 1992 (PRM 876854); Greece, the same host — see Kotlaba and Klán (1994). — Near Starigrad close to

Zadar, 5 m alt., Croatia, on a dead branch of *Pistacia terebinthus*, 11. VII.1968, l. F. K., det. F. K. et Z. Pouzar, 1996 (PRM 872055). — Troica near Kotor close to Budva, c. 220 m alt., Montenegro, on a dead trunk of *Punica granatum*, 28. V.1976, l.et d. F. K.(PRM 872006).— Jarošov n. Než. near Jindřichův Hradec (in a private garden), 480 m alt., S Bohemia, CR, on a living trunk of *Syringa vulgaris*, 12. VII.1992, l.et d. F. K. (PRM 876335).— Starigrad near Zadar, c. 5 m alt., Croatia, on a stump of *Tamarix gallica*, 10. VII.1968, l. F. K., d. F. K. et Z. Pouzar, 1992 (PRM 876828).

Fig 6. *Phellinus robustus* on a living trunk of *Rhododendron* cv.'Cunningham's White'."Průhonice Park" (the part known as "Zámecká vyhlídka"), Czech Republic, 14. V. 1996. Photo F. Kotlaba

Phellinus robustus (P. Karst.) Bourd. et Galz.

This very common fungus parasitizes in Europe chiefly oaks (*Quercus* sp.div.) and rarely other deciduous trees; as special hosts, it has been collected on *Gleditsia triacanthos* and *Rhododendron* cv.'Cunningham's White': Kotor near Dubrovnik,10 m alt., Montenegro, on a dead trunk of *Gleditsia triacanthos,* 28. V.1976, l.et d. F. K. (PRM). — "Průhonice Park" (the part known as

"Zámecká vyhlídka") near Praha, 300 m alt.,C Bohemia,CR, on a living trunk of *Rhododendron* cv .'Cunningham's White', 14. V.1996, l. F. K., d. F. K.et Z. Pouzar (PRM 888178).

Phellinus torulosus (Pers.) Bourd. et Galz.

Oaks (*Quercus* sp.div.) and then false acacia (*Robinia pseudoacacia*) are the most frequented hosts of this rather common fungus in the warmer parts of Europe but, exceptionally, also very many other trees or shrubs (see Kotlaba 1975). *Amygdalus communis, Arbutus andrachne, Cerasus mahaleb, Crataegus media, Cupressus sempervirens* and *Myrtus communis* are perhaps less known or unknown hosts for it: *Amygdalus communis, Carpinus orientalis, Cerasus mahaleb* etc.— see Kotlaba 1975, Bulgaria, see Kuthan and Kotlaba (1981, 1988). — Kantara, c. 600 m alt., Cyprus, on a dead branch of *Arbutus andrachne*, 11. XII.1990, l.et d. H. Forstinger (PRM 871142).— "Pod kostelem", a street in Praha 6-Střešovice, 340 m alt., C Bohemia, CR, on a stump of *Crataegus media*, 30. V.1996, l.et d. F. K. (PRM 888154).— A park in Tivat near Kotor, c. 10 m alt., Montenegro, on a stump of *Cupressus sempervirens*, 1. VI.1976, l.et d. F. K.(PRM 871998). — Petrovac near Budva, 15 m alt., Montenegro, on the base of a living *Myrtus communis*, 20. VIII.1980, l.et d. F. K.(PRM 838636).

Phellinus tuberculosus (Baumg.) Niemelä

This very common fungus attacks in Europe chiefly various cultivated species of the genus *Prunus* (of the wild species mostly *Prunus spinosa*), whereas on other trees and shrubs it occurs rather rarely; on *Prunus cerasifera* var. *atropurpurea* and *Syringa vulgaris* it has probably not been reported: On the main street in Čop near Užhorod, 105 m alt., Ukraine, on a dying trunk of *Prunus cerasifera* var. *atropurpurea*, 1. VI.1989, l.et d. F. K. (PRM 867337). — Tittwiesengasse, a street close to the main railway station in Chur, 600 m alt., Switzerland, on a living branch of *Prunus cerasifera* var. *atropurpurea*, 7. X.1995, l.et d. F. K. (PRM 886964). — In the park on "Zavadilova ul.", a street in Praha 6-Dejvice, 260 m alt., on a living trunk of *Prunus cerasifera* var. *atropurpurea*, 12. VI.1996, l.et d. F. K. (PRM 888181).

Physisporinus sanguinolentus (Alb. et Schw.: Fr.) Pilát

This rather common polypore occurs most often in Europe on spruce(*Picea abies*),rather rarely on many other substrata; on the fungus *Phellinus punctatus* and the trees *Pseudotsuga menziesii* it has probably previously not been published: "Zadní Bártovky" between Debrník and Nedvědice near Soběslav close to Tábor,

480 m alt., S Bohemia, CR, on an old carpophore of *Phellinus punctatus* (growing on a dead trunk of *Salix cinerea*), 20. IX.1991, l.et d. F. K.(PRM 873067).— "Arboretum VŠZ Křtiny" between Jedovnice and Křtiny near Blansko close to Brno, 470 m alt., C Moravia, CR, on a stump of *Pseudotsuga menziesii*, 30. VIII.1989, l. P. Vampola, d. F. K.et Z. Pouzar (PRM 869590).

Polyporus brumalis (Pers.): Fr.

Beech (*Fagus sylvatica*) and birches *(Betula* sp.div.), rather rarely are very many other trees or shrubs hosts of this rather common polypore in Europe; on *Sorbus aucuparia*, it has been noted probably for the first time: "Bílá skála" near Rejdice at Kořenov, 950 m, NE Bohemia, CR, on a dead trunk of *Sorbus aucuparia*, 17. IX.1993, l. V. Štětková, d. Z. Pouzar (PRM 878778).

Polyporus squamosus (Huds.): Fr.

The hosts most frequented by this very common polypore in Europe are beech (*Fagus sylvatica),* maples *(Acer* sp. div.) and walnut (*Juglans regia*), rarely very many other trees and shrubs; *Koelreuteria paniculata* and *Salix cinerea* are most probably new hosts: "Balbínova ul.", a street in Praha 2-Vinohrady, 230 m alt., C Bohemia, CR, on a living trunk of *Koelreuteria paniculata*, beginning 1991 and later, l. et d. Z. Hruška (v.v.). — "Soběslavská (Borkovická) blata" (the part known as "Džungle") near Soběslav close to Tábor, 420 m alt., S Bohemia, CR, on a dying thin trunk of *Salix cinerea*, 16. V.1992, l.et d. F. K. (PRM 876393).

Polyporus varius (Pers.): Fr.

This common polypore grows frequently in Europe on beech (*Fagus sylvatica*), then oaks (*Quercus* sp.div.) and limes (*Tilia* sp.div.), whereas it is rare on many other trees and shrubs; from *Corylus avellana, Salix alba* and *Sorbus aria*, it has perhaps not been previously published: In the valley "Kozluka 2" between "Gorski baraka" and "Taljana" near Vlas close to Slnčev Briag, c. 30 m alt., Bulgaria, on a dead branch of *Corylus avellana*, 6. IX.1984, l.et d. F. K. (PRM 836118).— *Salix alba*, Bulgaria — see Kuthan and Kotlaba (1988). — "Rokoš", the part above Uhrovské Podhradie near Bánovce n. Bebr., c. 750 m alt., W Slovakia, SR, on a dead trunk of *Sorbus aria*, 18. X.1988, l.et d. F. K. (PRM 866433).

Postia stiptica (Pers.: Fr.) Jülich

The hosts most frequented by this very common polypore in Europe are spruce (*Picea abies*), pines (*Pinus* sp.div.),less often beech (*Fagus sylvatica*) and rarely

some other trees and shrubs; *Betula pendula* and *Pseudotsuga menziesii* are most probably new hosts: "Homolka" near Hor. Štěpanice close to Jilemice, 660 m alt., N Bohemia, CR, on a dead trunk of *Betula pendula*, 21. X.1995, l.et d. F. K. (PRM 886014).— "Hvězda"near Vlastiboř close to Železný Brod, c.450 m alt., N Bohemia,CR, on a dead trunk of *Pseudotsuga menziesii*, 18. IV.1987, l. V. Samek, d. F. K. (PRM 852293).— One of the parks of the hospital "Bulovka" (near the pulmonary pavilion) in Praha 8-Libeň, 250 m alt., C Bohemia, CR, on a stump of *P. menziesii*, 1. IX.1996, l.et d. F. K. (PRM). — "Průhonice park!" (the part known as "U zlatého bažanta") in Průhonice near Praha, 300 m alt., C Bohemia, CR, on a stump of *Pseudotsuga menziesii*, 21. XI.1986, l. V. Polcová, d. F. K. (PRM 842600).

Pycnoporus cinnabarinus (Jacq.: Fr.) P. Karst.

This rather common polypore occurs frequently on beech (*Fagus sylvatica*),wild cherry (*Cerasus avium*), whitebeams (*Sorbus* sp.div.) and birches (*Betula* sp.div.), whereas, on many others, it is uncommon, rare or very rare; the collection on *Cercis silquastrum* is quite exceptional: Bulgaria — see Kuthan and Kotlaba (1988).

Schizopora radula (Pers.: Fr.) Hallenb.

Very many trees and shrubs are hosts of this very common fungus in Europe (*Carpinus betulus, Fagus sylvatica, Salix* sp.div.and many others), but on *Aesculus hippocastanum, Catalpa erubescens, C. speciosa, Cerasus serrulata* and *Cladrastis lutea* it has probably not been previously published: "Železničná ul.", a street in Komárno near Hurbanovo, 115 m alt., SW Slovakia, SR, on a dead branch in the crown of a living *Aesculus hippocastanum*, 21. X.1989, l. J. Gáper, d. F. K.et Z. Pouzar (BRA).— "Nitranská ul." (cemetery) a street in Hlohovec, c. 155 m alt., SW Slovakia, SR, on a living trunk of *Catalpa erubescens*, 8. X.1996, l. J. Paclt, d. F. K. et Z. Pouzar (PRM 889595).— "Ul.29.augusta", a street in Handlová near Prievidza, 430 m alt., C Slovakia,SR, on dead wood of a living *Catalpa speciosa*, 17. VIII.1991, l. J. Paclt, d. F. K. et Z. Pouzar (PRM 873055).— "Anička", the park in Košice, 220 m alt., E Slovakia, SR, in a cavity within the base of a living trunk of *Cerasus serrulata*, 28. X.1989, l. J. Gáper, d. F. K. (BRA).— Botanic Garden of the Charles University in Praha, 200 m alt., C Bohemia, CR, on dead wood of the living trunk of *Cladrastis lutea*, 16. IX.1992, l. J. Hedvábná et F. K., d. F. K. et Z. Pouzar (PRM 876452).

Trametes gallica (Fr.) Fr.

This rather common polypore grows in Europe most often on ashes (*Fraxinus* sp.div.) and oaks (*Quercus* sp.div.), rarely on some other trees; *Nerium oleander*,

Platanus acerifolia and *Ulmus hollandica* seem to be previously unpublished hosts of this species: Vaduz, 455 m alt., Liechtenstein, on a wounded living branch of *Nerium oleander*, growing in a plant-pot, 4. IX.1993, l. J. Štěpánek, d. F. K. (PRM 878718).— Avignon, 25 m alt., France, on a dying trunk of *Platanus acerifolia*, 21. VIII.1994, l.et d. F. K. (PRM 886027).— "Průhonice Park" (the part below "Alpinum") in Průhonice near Praha, 290 m alt., C Bohemia, CR, on a stump of *Ulmus hollandica*, 3. X.1984, l. et d. F. K. (PRM 836369).

Trametes gibbosa (Pers.: Fr.) Fr.

Beech (*Fagus sylvatica*), then hornbeam (*Carpinus betulus*) and rarely several other trees are hosts of this common polypore in Europe;it has been collected on *Ailanthus altissima* and *Salix sepulcralis*, which are perhaps previously unknown hosts: "Mařík ova ul.", a street in Praha 6-Veleslavín, 360 m alt., C Bohemia, CR, on a wounded living trunk of *Ailanthus altissima*, 8. VIII.1990, l.et d. F. K. (PRM 871450).— A park in Praha 7-Klárov, 200 m alt., C Bohemia, CR, on a stump of *Salix sepulcralis*, 13. III.1994, l. et d. Z. Pouzar (PRM 880006).

Trametes unicolor (Bull.: Fr.) Pilát

This very common polypore parasitizes in Europe mostly maples (*Acer* sp.div.), beech (*Fagus sylvatica*), hornbeam (*Carpinus betulus*), then oaks (*Quercus* sp. div.), *Aesculus hippocastanum* and rarely several other trees; *Celtis occidentalis, Paliurus spina-christi* and *Tilia tomentosa* are perhaps a new hosts for this species: The castle park in Bernolákovo near Bratislava, 125 m alt., SW Slovakia, SR, on a wounded living trunk of *Celtis occidentalis,* 28. XI.1992, l. J. Paclt,d. F. K. (PRM 876877).— Near Vel. Paklenica close to Zadar, c. 10 m alt., Croatia, on a thin dead trunk of *Paliurus spina-christi* (= *P. aculeatus*), 28. VIII.1966, l. et d. F. K. (PRM 872011).— Cetinje near Podgorica (formerly Titograd), Montenegro, on a dead branch of *Tilia tomentosa* (=*T. argentea*), 26. V.1976, l. et d. F. K. (PRM 872032).

Trametes versicolor (L.: Fr.) Pilát

This very common polypore is probably able to grow on all kinds of trees and shrubs and, in Europe, it occurs most often on beech (*Fagus sylvatica*), oaks (*Quercus* sp.div.), birches (*Betula* sp.div.), hornbeam (*Carpinus betulus*) and, less frequently, on others (including some conifers); from *Acacia retinodes, Cerasus serrulata, Crataegus media, Cupressus sempervirens, Gleditsia triacanthos, Lonicera deflexicalyx, Pseudotsuga menziesii* and *Sorbopyrus auricularis* f. *bulbiformis* it has perhaps previously not been noted: *Acacia retinodes*, Greece — see Kotlaba

and Klán (1994).— Čop near Užhorod (railway station forecourt), 105 m alt., Ukraine, on a dead branch of *Cerasus serrulata*, 1. VI.1989, l.et d. F. K. (PRM 867343).— St. Gallen, Rohrschacher Str., 600 m alt., Switzerland, on a dying trunk of *Crataegus media*, 19. IX.1991, l.et d. F. K. (PRM 873140).— "Plaža Pržna" near Radovići close to Tivat, c. 5 m alt., Montenegro, on a felled branch of *Cupressus sempervirens*, 1. VI. 1976, l.et d. F. K. (PRM 872033).- Odoljen near Kotor close to Budva, 120 m alt., Montenegro, on a dead branch of *Cupressus sempervirens*, 28. V. 1976, l. et d. F. K. (PRM).— Kotor near Budva, 10 m alt., Montenegro, on a dead trunk of *Gleditsia triacanthos*, 28. V.1976, l.et d. F. K. (PRM).— "Průhonice Park" (area below "Alpinum") in Průhonice near Praha, 285 m alt., C Bohemia, CR, on a dead branch of *Lonicera deflexicalyx*, 7. XI.1977, l. M. Kučera, d. F. K. (PRM 813486); ib. (part above "Alpinum", 300 m alt.), on a stump of *Pseudotsuga menziesii*, 6. II.1989, l.et d. F. K.(PRM); ib.(Chotobuz, 320 m alt.), on the base of a dying trunk of *Sorbopyrus auricularis* f. *bulbiformis*, 20. IX.1979, l. M. Kučera, d. F. K. (PRM 821409).

Trichaptum abietinum (Pers.: Fr.) Ryv.

Spruce (*Picea abies)*, pines (*Pinus* sp.div.), then fir (*Abies alba*), whilst rarely are some other trees known in Europe as being most frequented by this very common polypore; *Alnus incana* is most probably a new host for this species: "Ranská bahna" near Nové Ransko at Chotěboř, 550 m alt., E Bohemia, CR, on a fallen trunk of *Alnus incana*, 18. X.1986, l.et d. F. K. et Z. Pouzar (PRM 842577).

CONCLUSIONS

These are certainly not all of the known uncommon or unusual hosts of common polypores, as they could most probably be supplemented by several other mycologists from various European countries, but the author's knowledge of this interesting subject prompts him to write this paper in the hope that it could be useful for some polyporologists as well as plant pathologists.

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REFERENCES

KOTLABA F. (1975): Geographical distribution and ecology of the polypore Phellinus torulosus (Pers.ex Pers.) Bourd.et Galz. with special regard to Czechoslovakia. – Čes. Mykol., Praha, 29: 5–24, tab. 1–2.

KOTLABA F. (1984): Zeměpisné rozšíření a ekologie chorošů (Polyporales s.l.) v Československu. – 195 p., Praha.

KOTLABA F. (1989): Choroš rezavec lesknavý na tisu. – Zprav. Ochr. Přír. Okr. Praha-západ 10: 35–36.

KOTLABA F. (1994): Vzácné choroše (Polyporales s.l.) okresu Praha-západ. – Zprav. Ochr. Přír. Okr. Praha-západ 14–15: 11–16.

KOTLABA F. (1995): Další dva vzácné choroše v okresu Praha-západ. – Zprav. Ochr. Přír. Okr. Praha-západ 16: 13–14.

KOTLABA F. and KLÁN J. (1994): Handful of Aphyllophorales collected in Greece. – Czech Mycol. 47: 199–206.

KUTHAN J. and KOTLABA F. (1981): Makromyzeten des Nationalparkes Ropotamo in Bulgarien. – Sborn. Nár. Muz. Praha, ser. natur., 37b: 77–136, tab. 1–8.

KUTHAN J. and KOTLABA F. (1988): Makromyzeten der bulgarischen Schwarzmeerküste und einiger Orte im Landesinnern Bulgariens. – Sborn. Nár. Muz. Praha 44B: 137–243, tab. 1–16.

RYVARDEN L. and GILBERTSON R. L. (1993, 1994): European polypores. – Synopsis fung.7, 743 p., Fungiflora, Oslo.

CZECH MYCOL. 49 (3–4), 1997

Further localities of Phellinus cavicola in Europe

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Kotlaba F. and Pouzar Z. (1997): Further localities of Phellinus cavicola in Europe.– Czech Mycol. 49: 189–192

Twelve new localities of *Phellinus cavicola* in Europe are published: two from England (recent collections published as *Phellinus umbrinellus*) and ten from France (old collections published mostly as resupinate forms of *Xanthochrous ribis*). *Acer campestre* has been ascertained as new host trees for *Phellinus cavicola*.

Key words: *Phellinus cavicola*, polypore, localities in England and France

Kotlaba F. a Pouzar Z. (1997): Další lokality ohňovce dutinového v Evropě. – Czech Mycol. 49: 189–192

Dvanáct nových lokalit ohňovce dutinového bylo zjištěno v Evropě: dvě v Anglii (současné sběry pod jménem Phellinus umbrinellus) a deset ve Francii (staré sběry publikované většinou jako rozlité formy Xanthochrous ribis). Javor babyka byl zjištěn jako nová hostitelská dřevina druhu *Phellinus cavicola*.

Two years ago, we published a new species of *Phellinus*, viz. *Phellinus cavicola* Kotl. et Pouzar 1995, from two localities in Europe, one in the Czech Republic and one in Bulgaria (see Kotlaba and Pouzar 1995).

Simultaneously, Ryvarden (1994), Spooner (1994) and Ainsworth (1996) published two collections of a *Phellinus*, identified as *Phellinus umbrinellus* (Bres.) Herr. et M. Bond. in M. Bond. et Herr. from England. From the descriptions and photographs, we formed an impression that these collections could rather be *Phellinus cavicola*. After having this material on loan for revision from L. Ryvarden, we found that we could safely exclude *Phellinus umbrinellus* due to the different sizes of the pores, as the spores. The material studied completely agrees with our collections of *Phellinus cavicola*.

L. Ryvarden kindly allowed us to separate one fragment from the richer collection for the herbarium of the Mycological Department of the National Museum in Prague (Praha; PRM): England, county of Middlesex, Windsor park; on a fallen trunk of *Fagus sylvatica*, 31. III.1995, leg. L. A. Ainsworth and E. E. Green, det. F. Kotlaba and Z. Pouzar, 1996 (PRM 888167 — spores 5–5.5 × 4–5 μm). Both English collections represent not cavicolous carpophores but those growing in an external position on the host trees.

P. Vampola, with whom we made in 1995 a large gathering of *Phellinus cavicola* in the type locality in Průhonice Park near Praha for his exsiccate collection, later expressed an idea that some of the resupinate forms of *Xanthochrous ribis* described by Bourdot et Galzin may well be identical with our fungus. This was confirmed when we received on loan the herbarium material for revision from the Bourdot Collection preserved in the Muséum National d'Histoire naturelle in Paris (PC). Fourteen collections from 10 localities were found by us to agree with *Phellinus cavicola*. All were collected by A. Galzin in the Département Aveyron in Southern France.

The majority of the French specimens were from oaks, but one was on *Acer campestre* with another one on *Fagus sylvatica*. Some carpophores grew in cavities but a substantial number were on the external part of the host trees, e.g. on the wood or bark of fallen trees or on roots. According to our present experience with richer material, it follows that, in spite of its name, *Phellinus cavicola* can readily form carpophores on external parts of trees, standing or fallen (trunks, branches, stumps or roots). So we can currently count 14 localities of *Phellinus cavicola* in western, central and southern Europe, i. e. in Great Britain, France, Czech Republic and Bulgaria.

The spore size of *Phellinus cavicola* measured for the Czech and Bulgarian collections (see Kotlaba and Pouzar 1995) was (4.5–)4.7–5.5 x (3.8–)4–4.5 μm but, after measuring richer French material, we amended it slightly to (4–)4.7–5.5(–5.9) × (3–)3.5–4.5(–5) μm. The main difference between *Phellinus cavicola* Kotl. et Pouzar and *Phellinus ribis* (Schum.: Fr.) P. Karst. = *Phylloporia ribis* (Schum.: Fr.) Ryv. appeared not only in a slightly smaller spore size in *Phellinus ribis* — *P. cavicola* (4–)4.7–5.5(–5.9) × (3–)3.5–4.5(–5) μm, *Phellinus ribis*, according to our measurements,(3–)3.5–4(–4.2) × (2.3–)2.5–3(–3.5) μm — but also in the different breadth of skeletal hyphae of the context (taken from the part closely above the tubes — a character which also enables us to identify sterile specimens): the context skeletal hyphae of *Phellinus cavicola* are (2.5–)3–4(–4.7) μm whereas they are (3–)4–5(–6) μm wide in *Phellinus ribis*.

The following collections from France (herb. PC) were identified as *Phellinus cavicola* in our revision made during August and September 1996:

Le Larzac, 9. V.1908, à l'intérieur d'une vieille souche de hêtre, herb. H. Bourdot no. 5638, herb. A. Galzin no. 3260 ut *Xanthochrous versatilis* f. *suffocata* (holotype of *Xanthochrous ribis* f. *fagi* Bourd. et Galz. 1925). — Vignoles, dept. Aveyron, 16. VII.1912, sur chêne, leg. A. Galzin no. 11551, herb. H. Bourdot 27330; ibidem, sur chêne, 16. VII.1912, leg. A. Galzin no. 11552, herb. H. Bourdot no. 27329; ibidem, sur chêne, 16. VII.1912, leg. A. Galzin no. 11552, herb. H. Bourdot no. 27329; ibidem, sur chêne, support vertical, 11. V.1919, leg. A. Galzin no. 24671, herb. H. Bourdot no. 26946, ut *Xanthochrous ribis* var. *quercus* (lectotype of *Xanthochrous ribis* f. *quercus* Bourd. et Galz. 1925); ibidem, sur chêne,

16. VII.1912, leg. A. Galzin no. 11553, herb. H. Bourdot no. 27331. — Belmont, dept. Aveyron, 20. I.1906, sous les racines d'une vieux chène, leg. A. Galzin no. 1604, herb. H. Bourdot no. 5458; ibidem, sur chène, 20. II.1905, leg. A. Galzin no. 5488. — St. Germin, dept. Aveyron, sur chène, 13. VI.1909, leg. A. Galzin no. 7194, herb. H. Bourdot no. 5456. — Ségonzac, dept. Aveyron, sub radicibus *Quercus*, II.1905, leg. A. Galzin (sine no.), herb. H. Bourdot no. 3966. — Boutazan, dept. Aveyron, sur chène, 1. X.1914, leg. A. Galzin no. 16332, herb. H. Bourdot no. 27335; ibidem, sur chène, II.1918, leg. A. Galzin no. 24524, herb. H. Bourdot no. 26552. — Boutes, dept. Aveyron, sur chène (souche mort, position vertical), 17. VIII.1913, leg. A. Galzin no. 13615, herb. H. Bourdot no. 27334. — La Chaparède, dept. Aveyron, sur chène, 5. XII.1905, leg. A. Galzin no. 1456, herb. H. Bourdot no. 5457. — Bétirac, dept. Aveyron, sur chène (écorce), 21. III.1913, leg. A. Galzin no. 12733, herb. H. Bourdot no. 27332. — Maynobo, dept. Aveyron, sur *Acer campestris*, 12. II.1912, leg. A. Galzin no. 10875, herb. H. Bourdot no. 27851, ut *X. versatilis* (holotype of *Xanthochrous ribis* f. *aceris* Bourd. et Galz. 1925).

Two of the French collections borrowed from the Bourdot's herbarium in herb. PC were identified as not belonging to *Phellinus cavicola*, with one being *Phellinus torulosus* whilst the other was *Phellinus ribis*:

Trabellis, dept. Aveyron, 25. IV.1913, sur chène creux, à l'intérieur, leg. A. Galzin no. 13034, herb. H. Bourdot no. 27333, ut *Xanthochrous versatilis*: revid. *Phellinus torulosus* (Pers.) Bourd. et Galz. — St. Estève, dept. Aveyron, 6. I.1910, leg. A. Galzin no. 9108, herb. H. Bourdot no. 27328, ut *Xanthochrous versatilis*: revid. *Phellinus ribis* (Schum.: Fr.) P. Karst.

On this occasion, we designated the types of the three forms of *Xanthochrous ribis* described by Bourdot et Galzin (1925). These are *Xanthochrous ribis* f. *quercus* Bourd.et Galz. 1925 (Vignole, herb. H. Bourdot no. 29946 — lectotype), *Xanthochrous ribis* f. *fagi* Bourd. et Galz. 1925 (Larzac, herb. H. Bourdot no. 5638 — holotype) and *Xanthochrous ribis* f. *aceris* Bourd. et Galz. 1925 (Maynobo, herb. H. Bourdot no. 27851 — holotype). All types agree perfectly with original diagnoses; in the case of the lectotype we selected from number of collections on oak the specimen, which, written on its label in Bourdot's hand, beares the name *Xanthochrous ribis* v. *quercus*.

Most of the collections were determined by Bourdot as *Xanthochrous versatilis* Quél.; however, this name is a synonym of *Phellinus ribis* (Schum.: Fr.) P. Karst.

The material of *Phellinus cavicola* from the type locality in Průhonice Park collected on 9.11.1995 was included by P. Vampola in his series Polyporales exsiccati Čechoslovaciae in 1997 under the number 165.

REFERENCES

AINSWORTH L. A. (1996): 74: Phellinus umbrinellus. — Mycologist, London, 10: 37.
BOURDOT A. and GALZIN H. (1925): Hyménomycètes de France (XI. Porés). — Bull. Soc. Mycol. France 41: 98–255 (new formes of Xanthochrous ribis on the page 207).
KOTLABA F. and POUZAR Z. (1995): Phellinus cavicola, a new xanthochroic setae-less polypore with coloured spores. — Czech Mycol., Praha, 48: 155–159.
RYVARDEN L. (1994): Phellinus umbrinellus — new for Europe. — Mycologist, London, 8: 6.
SPOONER B. M. (1994): 108. Phellinus umbrinellus. — Mycologist, London, 10: 6.

CZECH MYCOL. 49 (3–4), 1997

New records of Pyrenomycetes from the Czech Republic I

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Réblová M. and Svrček M. (1997): New records of Pyrenomycetes from the Czech Republic I.– Czech Mycol. 49: 193–206

A list of 10 lignicolous, herbaceous and coprophilous Pyrenomycetes, *Antennularia salisburgensis* (Niessl) Höhn., *Cryptodiaporthe aesculi* (Fuckel) Petrak, *Enchnoa subcorticalis* (Peck) Barr, *Gnomonia comari* P. Karst., *Kirschsteiniothelia aethiops* (Berk. et Curtis) Hawksw., *Kriegeriella mirabilis* Höhn., *Massaria pyri* Otth, *Nitschkia cupularis* (Fr.: Fr.) P. Karst., *Pleophragmia leporum* Fuckel and *Valsaria foedans* (P. Karst.) Sacc., collected in the Czech Republic for the first time is presented. All of them occur rarely and the lignicolous species *Enchnoa subcorticalis* so far known only from North America was collected in Europe for the first time. Descriptions, illustrations and taxonomical and ecological notes are added. The systematic position of these species is arranged according to the system suggested by Eriksson and Hawksworth (1993).

Key words: new records, lignicolous, herbaceous and coprophilous Pyrenomycetes, Czech Republic.

Réblová M. a Svrček M. (1997): Nové nálezy pyrenomycetů pro Českou republiku I.– Czech Mycol. 49: 193–206

Je předložen seznam 10 dřevních, bylinných a koprofilních pyrenomycetů, *Antennularia salisburgensis* (Niessl) Höhn., *Cryptodiaporthe aesculi* (Fuckel) Petrak, *Enchnoa subcorticalis* (Peck) Barr, *Gnomonia comari* P. Karst., *Kirschsteiniothelia aethiops* (Berk. et Curtis) Hawksw., *Kriegeriella mirabilis* Höhn., *Massaria pyri* Otth, *Nitschkia cupularis* (Fr.: Fr.) P. Karst., *Pleophragmia leporum* Fuckel a *Valsaria foedans* (P. Karst.) Sacc., které byly poprvé sbírány v České republice. Všechny druhy se vyskytují zřídka a druh *Enchnoa subcorticalis* dosud uváděný pouze ze Severní Ameriky byl poprvé sbírán také v Evropě. Seznam je doplněn popisy, ilustracemi a taxonomickými a ekologickými poznámkami. Zařazení jednotlivých druhů do systému je podle Erikssona a Hawkswortha (1993).

THE LIST OF THE SPECIES

Abbreviations: M. R. = Martina Réblová, M. S. = Mirko Svrček.

Antennularia salisburgensis (Niessl) Höhn., Öster. Bot. Zeitschr. 63: 233, 1913.
Fig 1 a.

Syn.: *Gibbera salisburgensis* Niessl, Hedwigia 26: 33, 1887.
≡ *Eriosphaeria salisburgensis* (Niessl) Neger, Ber. Deutsch. Bot. Ges. 19: 471, 1901.

≡ *Coleroa salisburgensis* (Niessl) Höhn., Sitz. K. Akad. Wiss. Wien, math.—nat. Kl. 116: 115, 1907.

= *Chaetomium pusillum* Strauss, Deutschl.-Fl. 3: 3, 1853 [non Fries 1829].

= *Gibbera straussii* Zahlbruckner, Ann. Naturhist. Mus. Wien 18: 355, 1903.

Specimen examined: West Bohemia: Slavkovský les, Mt. Vlčí kámen (880 m a.s.l.) near Mariánské Lázně; on living and withering leaves of *Erica carnea*, 27. VII.1949, leg. et det. M. S. (PRM).

For full description see Petrak (1947).

Notes: According to the Bohemian find the species forms superficial, black ascomata 150–200 μm wide on a brown hyphal mat on withering leaves, covered with pointed, thick-walled, almost black coloured setae up to 160 × 6–7 μm. Ascospores 18–22 × 5.5–6 μm, pale brown, oblong clavate, two celled with the septum slightly above the middle.

The genus *Antennularia* Reichenbach (Consp. Reg. Veg. Trent. 1: 5, 1828) differs from the genus *Gibbera* Fr. (Summa Veg. Scand. p. 402, 1849) in the presence of a superficial hyphal mat. According to Müller and Arx (1962) 12 species are known, in Europe only 5, all exclusively on leaves of Ericaceae (*Erica* spp., *Arctostaphylos* and *Rhododendron*) and Rosaceae (*Rosa pendulina*). Some of them were revised and fully described by Petrak (1947). *Antennularia salisburgensis* is the only species of this genus so far known in Bohemia.

Habitat: The fungus occurs on withering lower leaves of *Erica* spp. (mostly on *Erica carnea*).

Anamorph: still unknown.

Known hosts: *Erica carnea, E. tetralix*.

Distribution: Europe: Austria, Czech Republic, Great Britain. (The collections of *A. salisburgensis* on *Erica tetralix* from Great Britain have slightly larger ascospores (18–23 × 6–8 μm) according to Dennis (1978) but agree in the 4-spored asci typical of *A. salisburgensis*.)

Systematic position: Venturiaceae E. Müller et Arx ex Barr, Dothideales Lindau.

Cryptodiaporthe aesculi (Fuckel) Petrak, Ann. Mycol. 19: 118, 1921. Fig 2 a.

Syn.: *Cryptospora aesculi* Fuckel, Symb. Mycol. p.193, 1870.

Specimen examined: Southern Bohemia: site called "Malý Chuchelec" near Kaplice; on fallen branch of *Aesculus hippocastanum*, 17. V. 1974, leg. R. Podlahová, det. M. S. (M–87).

For full description and synonymy refer to Müller and Arx (1962).

Notes: *Cryptodiaporthe aesculi* has clavate asci, 75 × 12 μm, rounded above with a distinct refractive apical ring and cylindric to fusiform ascospores, 20–24 × 4–6 μm, narrowly rounded at the ends, 2-celled and hardly constricted at the septum. According to data from the literature (Wehmeyer 1933, Munk 1957) a minute hyaline appendage was seen at each end of the ascospores in fresh material. We did not observe this character on our specimen. The minute hyaline appendages, a very subtile structure, are distinct predominantly in young ascospores, but as they mature appendages disappear.

Habitat: *Cryptodiaporthe aesculi* rarely grows on dead branches and twigs, especially on scars left after leaves have fallen off. The anamorph occurs in winter, the teleomorph in spring on the same parts of twigs as its anamorph.

Anamorph: *Diplodina aesculi* (Sacc.) Sutton (Sutton 1980).

Known host: *Aesculus hippocastanum.*

Distribution: Europe: Czech Republic, Denmark, Germany, Great Britain, Netherlands; temperate North America.

Systematic position: Valsaceae Tul. et C. Tul., Diaporthales Nannf.

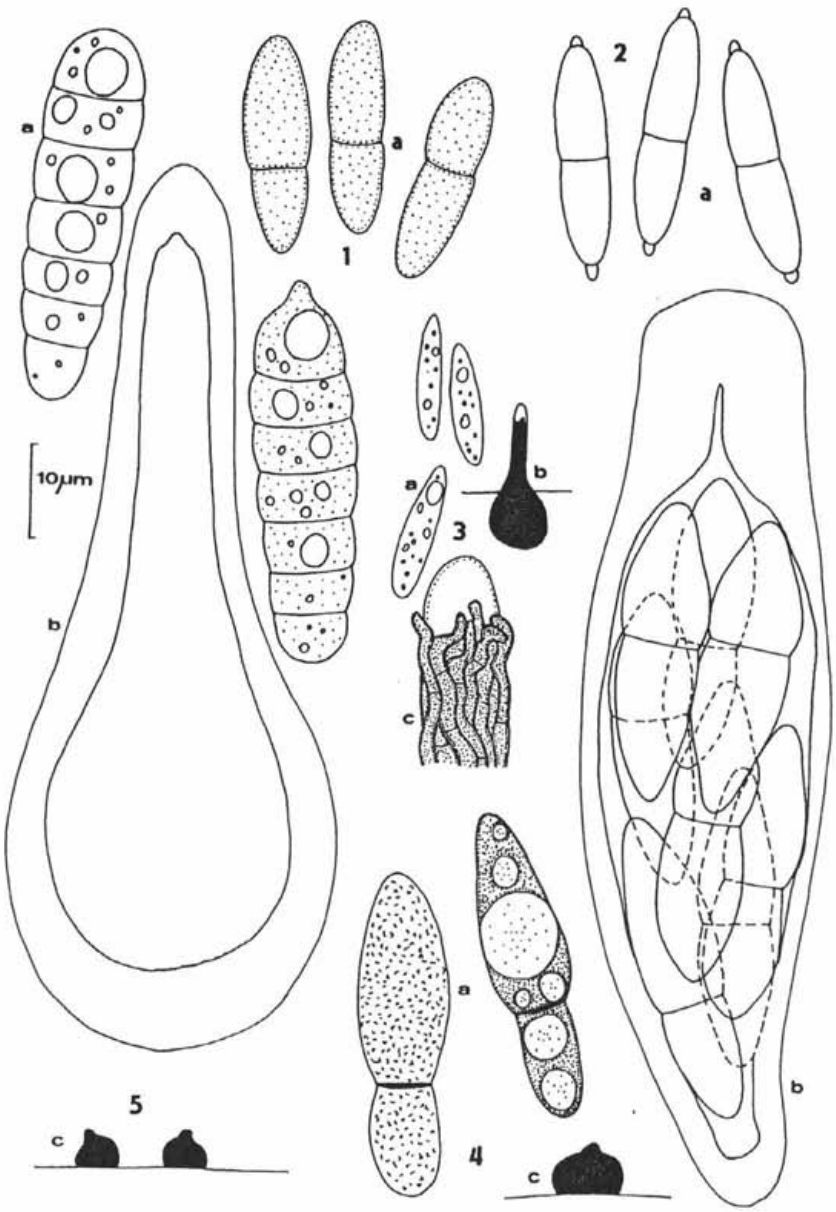
Enchnoa subcorticalis (Peck) Barr, Rhodora 71: 198, 1969. Fig 6 a–c.

Syn.: *Sphaeria subcorticalis* Peck, New York State Mus. Rep. 28: 77–78, 1876.
≡ *Trichosphaeria subcorticalis* (Peck) Sacc., Syll. Fung. 1: 454, 1882.

Specimen examined: Central Bohemia: Ruda near Rakovník, woodland "Leontýn, Druhý luh"; on bark of fallen branch of *Quercus petraea*, 29. XI. 1992, leg. et det. M. R. (Herb. M. R.).

Notes: Ascomata are scattered beneath the periderm of the host, subglobose with wide base, collapsing when dry, 700–1330 μm wide, surrounded by a subiculum; hyphae dark brown to black, unbranched, septate, thick-walled, 4.5–5.5 μm wide. Asci unitunicate, 8-spored, of two sizes: 1) 90–136 (30–50 pars sporifera) × 10–20 μm, clavate, thick-walled, flattened above, long-stipitate, stipe strongly developed, apical ring not visible; 2) 25.4–28.4 × 4–4.8 μm, cylindrical, thin-walled, rounded above, short-stipitate, apical ring not visible. Ascospores similar in both types of asci, 7.2–9.6 × 2–2.4 μm, irregularly clustered in the upper part of the larger asci and biseriate in the smaller asci, greenish-hyaline, cylindric to allantoid, rounded at the ends, 1-celled or with pseudoseptum, with several oil drops. (The description is based on the Bohemian find.)

The species of the genus *Enchnoa* Fr. are still little known and are because of their inconspicuous appearance seldom collected. *Enchnoa subcorticalis* can easily be distinguished from other species of the genus *Enchnoa* by the dimensions of its ascospores and the asci of two sizes. Bigelow and Barr (1969) recorded the



Figs 1–5. 1. *Antennularia salisburgensis* (Niessl) Höhn.: a-ascospores. **2.** *Cryptodiaporthe aesculi* (Fuckel) Petrak: a-ascospores. **3.** *Gnomonia comari* P. Karst.: a-spores, b-ascoma immersed in the substrate, c-superficial hyphae of the beak. **4.** *Kirschsteiniothelia aethiops* (Berk. et Broome) Hawksw.: a-ascospores, one spore with several oil drops and the second one with superficial ornamentation, b-ascus with ascospores, c-ascoma. **5.** *Kriegeriella mirabilis* Höhn.: a-ascospores, b-empty ascus, c-ascomata.

Del.: M. Réblová

larger asci sized 55–100 (44–55 pars sporifera) × 10–16.5 μm, but in the Bohemian collection the asci were larger. The dimensions of the ascospores and the smaller asci coincide with the data of Bigelow and Barr (1969).

So far, several species of the genus *Enchnoa* Fr. have been described, e.g. *E. alniella* P. Karst., *E. floccosa* (Fr.) P. Karst., *E. friesii* Fuckel, *E. glis* (Berk. et Broome) Fuckel, *E. infernalis* (Fr.) Fuckel, *E. lanata* Fr., *E. mucida* Starb. and *E. subcorticalis* (Peck) Barr. Further investigations will reveal their correct taxonomic position, how many of the described species are distinct species of the genus *Enchnoa* and how many are synonyms. It is obvious from a few data from the literature (Fuckel 1870, Winter 1887, Munk 1957, Barr 1985) and from the fact that members of *Enchnoa* are collected less often than other species of the order Calosphaeriales and some of them are known from the original description only, that this genus requires a critical revision.

Habitat: The ascomata of the genus *Enchnoa* develop beneath the periderm of their host tree and are usually associated with other Pyrenomycetes. Munk (1957) recorded *E. infernalis* on dead branches of *Quercus* associated with *Diatrype stigma* (Hoffm.: Fr.) Fr., *Valsa intermedia* Nitschke and *Lopadostoma gastrinum* (Fr.) Trav. Barr (1969, 1985) reported *E. subcorticalis* from old branches of *Carpinus* and *Quercus* among remnants of stromatic Pyrenomycetes. In the material from the Czech Republic the ascomata of *E. subcorticalis* on fallen branches grew among the stromata of *Diatrypella quercina* (Pers.: Fr.) Cooke.

Anamorph: still unknown.

Known hosts: *Carpinus caroliniana, Quercus petraea, Quercus* sp.

Distribution: Europe: Czech Republic; North America: USA (Louisiana, Massachusetts, New York, Ontario). Recently, the species was found in Europe for the first time.

Systematic position: Calosphaeriaceae Munk, Calosphaeriales Barr.

Gnomonia comari P. Karst., Bidr. Kann. Finnlands Nat. och Folk 23: 22, 1873. Fig 3 a–c.

Syn.: *Gnomonia occulta* Kirschstein, Verh. bot. Ver. Prov. Brandenb. 48: 58, 1906.

Specimen examined: Central Bohemia: Praha-Zadní Kopanina, valley "Radotínské údolí", meadows near mill "Taslerův mlýn"; on decayed leaves of *Potentilla anserina*, 10. IX. 1991, leg. et det. M. S. (PRM).

For full description and synonymy refer to Monod (1983).

Notes: The material collected on *Potentilla anserina* in Bohemia had ascomata of about 200 μm wide, immersed in the tissue of dead leaves, subglobose, black,

long-beaked, with a straight bristle-like beak, 200–250 μm long and 35–50 μm thick, erumpent from the underside of the leaves. The superficial hyphae of the beak were 2.5–4 μm wide, black-brown, septate, flexuose at their apices. Peridium was composed of rather thin-walled, dark blackish-brown, angulose cells up to 12 μm in diam. Asci 30–35 × 6-8 μm, 8-spored, thin-walled; ascospores 10–12 × 2.5–3 μm, lying parallel in the ascus, narrowly fusiform, with several guttules, hyaline.

This is the only collection of this *Gnomonia* known in Bohemia with certainty.

Habitat: On dead leaves, petioles and stems of herbaceous Rosaceae.

Anamorph: *Zythia fragariae* Laibach (causes Leaf Blotch diseases of *Fragaria* and *Geum*, fide Dennis 1978) and *Sporonema* sp. (fide Monod 1983).

Known hosts: In Europe mostly on *Potentilla* (*Comarum*) *palustre*, in Bohemia so far only on *Potentilla anserina*.

Distribution: Europe: Czech Republic, Denmark, Finland, Great Britain, Sweden; North America: U. S. A.; New Zealand.

Systematic position: Valsaceae Tul. et C. Tul., Diaporthales Nannf.

Kirschsteiniothelia aethiops (Berk. et M. A. Curtis) Hawksw., Bot. Jour. Linn. Soc. 91: 182, 1985. Fig 4 a–c.

Syn.: *Sphaeria aethiops* Berk. et M. A. Curtis, Grevillea 32: 143, 1876.
= *Kirschsteiniella applanata* (Fr.) Petrak, Ann. Mycol. 21: 331, 1923. auct.angl.
= *Microthelia incrustans* (Ellis et Everh.) Corlett et S. Hughes, New Zeal. Jour. Bot. 16: 360, 1978.

Specimens examined: Central Bohemia: Svatý Jan pod Skalou near Karlštejn, site called "Propadlé vody"; on dead hard wood of fallen branch of *Carpinus betulus*, 4. VI. 1976, leg. et det. M. S. (PRM); Karlštejn; on rotten wood of *Carpinus betulus*, 31. VIII. 1980, leg. et det. M. S. (PRM) — Moravia: Podhoří near Hranice na Moravě; on dead wood of *Fagus sylvatica*, III. 1914, leg. et det. F. Petrak, Flora Bohem. et Morav. exs., No. 1040, (PRM 650818, PRM 650819) — Central Slovakia: Slovenské rudohoří Mts., Muráňská planina, valley Hrdzavá dolina near Muráň; on decorticated wood of *Carpinus betulus*, 18. IX. 1995, leg. et det. M. R. (Herb. M. R.); Slovenské rudohoří Mts., Muráňská planina, nature reserve Poludnica near Muráň; on decorticated wood of *Fagus sylvatica*, 22. IX. 1995, leg. et det. M. R. (Herb. M. R.);

For full description and further synonyms refer to Hawksworth (1985).

Notes: The species is well characterized by the superficial, subconical, carbonaceous, black ascomata with broad base and prominent papilla, thick-walled asci and inequally 1-septate ascospores. In our collections the ascomata were 300–500 μm wide, asci 100–120 × 15–19 μm large, 1 to 4 spored, interthecial filaments

hyaline, 1–1.5 μm wide, branched, numerous. Ascospores 28–30(–32) × 8–10(–13) μm large, ellipsoidal, more pointed above, constricted at the septum, the upper cell wider than the lower, blakish-brown, with large oil drops and several small ones, thick-walled (0.5–1 μm), the wall under oil immersion minutely punctate or with short longitudinal flexuous lines.

The ascomata grew together with its anamorph, consisting of joined conidia up to 250 × 12–16 μm, 4–5-septate, thick-walled, dark brown. The collection from Karlštejn as well as that from Moravia correspond to this.

The species, recorded also as *Amphisphaeria applanata* does not seem to be rare but is probably easily overlooked.

Habitat: Exclusively on hard wood of various deciduous trees and shrubs.

Anamorph: *Dendryphiopsis atra* (Corda) S. Hughes, (Hughes 1953).

Known hosts: *Alnus, Carpinus, Corylus, Fagus, Populus, Quercus.*

Distribution: temperate regions of Europe: Czech Republic, Denmark, Germany, Great Britain, Poland, Slovak Republic, Sweden; North America.

Systematic position: Pleosporaceae Nitschke, Dothideales Lindau.

Kriegeriella mirabilis Höhn., Ann. Mycol. 16: 39, 1918. Fig 5 a–c.

Syn.: = *Extrawettsteinina pinastri* Barr, Contr. Univ. Mich. Herb. 9: 538, 1972.

Specimen examined: Central Bohemia: Brdské hřebeny Mts., Dobřichovice, on the slopes of Mt. Červená hlína (467 m a.s.l.); on fallen needles of *Pinus sylvestris* (associated with apothecia of *Desmazierella acicola* Lib.), 5. V.1991, leg. et det. M. S. (PRM).

For description refer to Barr (1972).

Notes: Ascomata are 100–150 μm wide, superficial, hemisphaerical to conical on a flat broad base, black, smooth, with a distinctly acute apical papilla sometimes somewhat curved. The ascomatal wall consists of dark greyish-brown coloured cells radiating from the small ostiolum. Asci few (6–8 per ascoma), saccate or broadly lageniform, 8-spored, 65–110 × 35–42 μm, strongly thick-walled. Ascospores 25–34 × 8–10 μm, oblong, cylindric, straight or curved, 4–6-septate, pluriguttulate, slightly constricted at the thin septa, the upper cell obtuse, the basal cell often larger, hyaline, at maturity pale grey. (The description is based on the Bohemian find.)

The genus *Kriegeriella* Höhn. includes two species, *K. mirabilis* Höhn. (type of the genus) and *K. minuta* (Barr) von Arx et Müller (on needles of *Juniperus communis*).

Habitat: In Bohemia this species was found on fallen decaying needles of *Pinus sylvestris*, lying on mossy ground overgrown with scarse tufts of the grass

Avenella flexuosa (=*Deschampsia flexuosa*), in a mixed wood of *Pinus sylvestris* and *Picea abies*. In PRM, there are three specimens collected and identified by D. W. Minter in Bohemia on needles of *Pinus nigra* and *Pinus sylvestris* associated with *Urceolella trichodea* (Phill. et Plowr.) Dennis and *Verticicladium trifidum* Preuss as new records for Czechoslovakia (Minter 1981). According to Minter (1981) the fungus occurs probably commonly, usually on trash needles and twigs, rarely on trash cones. Ellis and Ellis (1985) recorded *Kriegeriella mirabilis* also on *Pinus nigra* var. *maritima* in Great Britain. From Austria it was described on *Pinus nigra* (Höhnel 1918).

Anamorph: still unknown.

Known hosts: *Pinus nigra* (incl. var. *maritima*), *P. sylvestris, P. strobus*.

Distribution: Europe: Austria, Czech Republic, Germany, Great Britain, Sweden; North America: U. S. A. (Massachusetts).

Systematic position: Pleosporaceae Nitschke, Dothideales Lindau.

Massaria pyri Otth in L. R. Tul. et C. Tul., Sel. Fung. Carpol. 2: 237, 1863.
Fig 8 a–b.

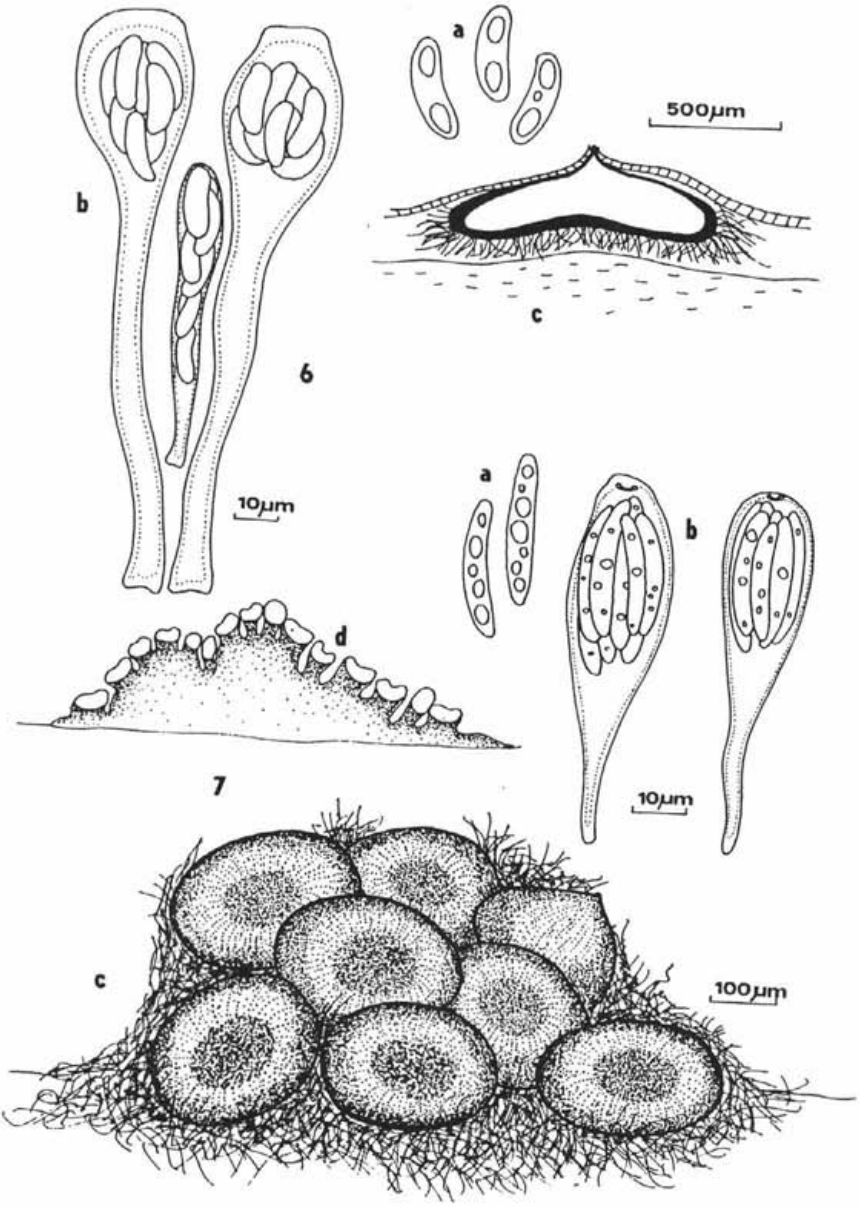
Syn.: *Cladosphaeria pyri* Otth, Mitteil. Naturf. Ges. Bern 1868: 51, 1869.
≡ *Massaria inquinans* (Tode: Fr.) De Not. forma *pyri* (Otth) Jaczewski, Bull. Herb. Boissier 2: 680, 1894.
= *Pseudovalsa occulta* Ellis, Proc. Acad. Sci. Phil. 1895: 27, 1895.
≡ *Aglaospora occulta* (Ellis) Farlow, Bibl. Index North Amer. Fungi 1(1): 166, 1905.
= *Massaria pruni* Wehmeyer, Univ. Michigan Stud. Sci., Ser. 14: 131, 1941.
Synonymy is provided according to Shoemaker and Leclair (1975).

Specimen examined: Central Bohemia: Praha-Zadní Kopanina, valley "Radotínské údolí"; on dead branches of *Pyrus communis*, 25. III.1953, leg. et det. M. S. (PRM).

For detailed description see Munk (1957) and Barr (1979).

Notes: *Massaria pyri* is very similar to *M. inquinans* (Tode: Fr.) De Not. which occurs on *Acer campestre* and *A. pseudoplatanus* and differs in the larger size of the ascospores: 80–90(100) × 18–23(30) μm. In our collection the ascospores of *Massaria pyri* were 60–78 × 17–21 μm large, fusiform, at first 2-celled and at maturity predominantly 4-celled, slightly constricted at the middle septum and surrounded by a large gelatinous sheath.

According to Winter (1887) *M. pyri* is regarded as a less known and doubtful species.



Figs 6–7. 6. *Enchnoa subcorticalis* (Peck) Barr: a-ascospores, b-asci of two sizes with ascospores, c-habit sketch of ascoma. **7.** *Nitschkia cupularis* (Fr.: Fr.) P. Karst.: a-ascospores, b-asci with ascospores, c-group of ascomata sitting on the subiculum, d-vertical section of ascomata and subiculum.

Del.: M. Réblová

Habitat: *M. pyri* occurs rarely on fallen limbs and branches or on dead branches still connected with their parent tree.

Anamorph: Unknown.

Known hosts: *Pyrus communis, Malus sylvestris, Prunus.*

Distribution: Europe: Czech Republic, France, Germany; North America: Canada (Ontario), U. S. A. (New Jersey, New York).

Systematic position: Massariaceae Nitschke, Pyrenulales Fink ex Hawksw. et Eriksson.

Nitschkia cupularis (Fr.: Fr.) P. Karst., Mycol. Fennica 2: 81, 1873. Fig 7 a–d.

Syn.: *Sphaeria cupularis* Fr.: Fr., Syst. Mycol. 2: 416, 1823.

Specimen examined: Central Bohemia: Týřovice near Rakovník, nature reserve "Týřovické skály", in the valley between Mt. Roudný (524 m a.s.l.) and Mt. Vysoký (510 m a.s.l.); on fallen trunk of *Fagus sylvatica*, 16. XI.1991, leg. et det. M. R. (Herb. M. R.).

For description and further synonyms refer to Nannfeldt (1975).

Notes: In our collection the ascomata were superficial, gregarious in clusters or forming dark crusts on bark or decorticated wood, subglobose with distinct papilla, collapsing inwards when dry, 300–500 μm wide, black, surface finely roughened, seated on a blackish subiculum, hyphae septate, branched. Asci unitunicate, 24–40 pars sporifera × 8–9.6 μm, clavate, thin-walled, short stipitate, rounded at the apex, ascospores irregularly clustered in the upper part of the ascus, apical ring visible as two refractive bodies. Ascospores 12.8–14 × 2–2.4 μm, hyaline, cylindric to allantoid, rounded at the ends, 1-celled, with several oil drops.

N. cupularis is closely related to *N. grevillei* (Rehm) Nannf. which differs by smaller ascospores: 6–9 × 1.5–2.5 μ. The species *Acanthonitschkia tristis* (Pers.: Fr.) Nannf. is also similar but differs in having smaller ascospores and asci and setose ascomata.

Habitat: The members of the genus *Nitschkia* Otth in Tul. et C. Tul. occur especially on bark and rotten wood of trees and shrubs and are often associated with other Pyrenomycetes (Winter 1887, Nannfeldt 1975, Ellis and Ellis 1985), e.g. *N. brevispina* (Munk) Nannf., *N. collapsa* (Romell) Chenant., *N. confertula* (Schw.) Nannf., *N. cupularis* (Fr.: Fr.) P. Karst., *N. exilis* (Alb. & Schw.) Fuckel and *N. grevillei* (Rehm) Nannf. Some species live parasitically on other Pyrenomycetes: *N. grevillei* on *Peroneutypa heteracantha* and *N. parasitans* (Schw.) Nannf. on *Nectria cinnabarina.*

N. cupularis occurs and grows very seldom on bark and wood of many deciduous trees, especially in near-natural forests.

Anamorph: According to Fuckel (1870) *Fusarium* sp. is regarded as the anamorph of *N. cupularis*. Karsten (1885) also mentioned *Phoma fuckelii* Sacc. as the anamorph. Both of these connections have not yet been confirmed in culture.

Known hosts: *Acer pseudoplatanus*, *Aesculus hippocastanum*, *Carpinus betulus*, *Fagus sylvatica*, *Padus*, *Prunus mahaleb*, *Ribes*, *Rubus*, *Sambucus*, *Syringa*, *Tilia*, *Ulmus*.

Distribution: Europe: Austria, Czech Republic, France, Germany, Great Britain, Poland, Sweden. *Nitschkia cupularis* is likely to occur in North America but has not yet been reported.

Systematic position: Nitschkiaceae (Fitzp.) Nannf., Sordariales Chad. ex Hawksw. et Eriksson.

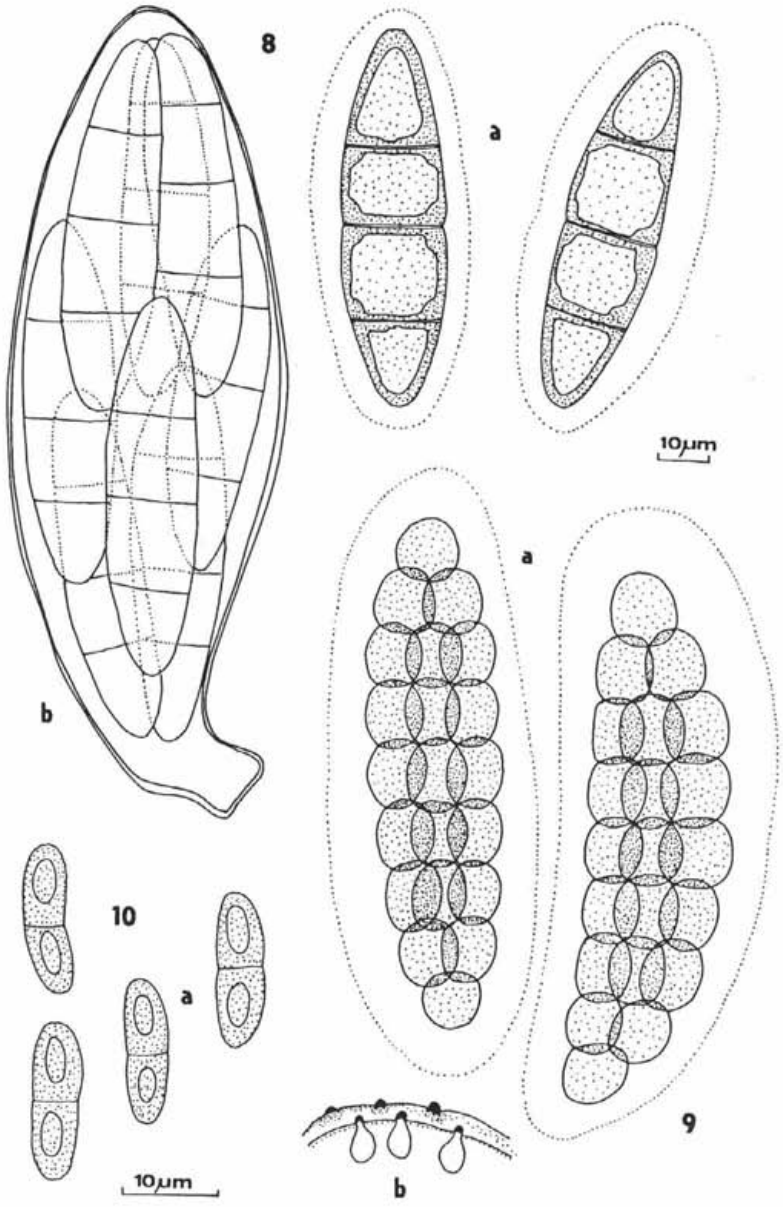
Pleophragmia leporum Fuckel, Symb. Mycol. p. 243, 1870. Fig. 9 a–b.

Specimens examined: Central Bohemia: Brdské hřebeny Mts., Dobřichovice, in the ravine "Buková rokle"; on old dung of *Capreolus capreolus*, 5. V.1995, leg. et det. M. S. (PRM). — Germany: Sachsen, Königstein; on dung (of *Capreolus* ?), very rare, 27. IV.1883, leg. et det. W. Krieger (Fungi saxonici Exsic. No. 34, PRC).

For description see Winter (1887).

Notes: The find from Dobřichovice had scattered ascomata, entirely immersed in the substrate, relatively large (800–1000 μm wide), black and smooth, only the tip of the neck protruding. Asci incomplete (damaged), 18 μm broad, oblong to cylindrical. Ascospores 45–50 × 10–13 μm, oblong, mostly slightly curved with 9 transverse and 2 longitudinal septa, strongly constricted, the individual cells broadly ellipsoidal or subglobose, sometimes angled, umber-brown or almost black, enclosed in a hyaline gelatinous sheath, 5–6 μm thick.

Our collection is the first one in Bohemia known with certainty. The find of A. Bayer (1924) from Jáchymov (Krušné hory Mts.) cultivated in April 1919 on only one piece of older hare dung should be revised. *Pleophragmia leporum* seems to be a very rare pyrenomycete, originally described by Fuckel (1870) according to only one find on rotten hare dung and edited in the set of exsiccata Fungi rhenani No. 2272. The genus is well characterized by dictyoseptate brown coloured ascospores composed of several rows of cells. Von Arx and Müller (1975) synonymized this genus with *Sporormia* De Not. but we do not accept this opinion. Krieger's specimen revised by M. Svrček possessed bitunicate asci, thick-walled (2–2.5 μm) and 20–22 μm broad and oblong ascospores 40–45 × 9–10.5 μm, 9-septate, very dark brown or almost black with one longitudinal septum. Another species in Europe is *Pleophragmia ontariensis* Cain (1934) recorded from Sweden (Eriksson 1992) and France (Breton 1965). *Pleophragmia pleospora* Kirschstein, found on roe-deer dung in Germany, the description of which we know from Migula's work (1913)



Figs 8–10. 8. *Massaria pyri* Otth: a-ascospores, b-ascus with ascospores. **9.** *Pleophragmia leporum* Fuckel: a-ascospores, b-vertical section of ascomata and substrate. **10.** *Valsaria foedans* (P. Karst.) Sacc.: a-ascospores.

Del.: M. Réblová

only, differs in its hairy ascomata and probably does not belong to *Pleophragmia* Fuckel.

Habitat: The fungus occurs on older dung of herbivorous animals lying on the ground in woods.

Anamorph: Still unknown.

Substrate: Dung of *Lepus europaeus* and *Capreolus capreolus*.

Distribution: Europe: Czech Republic, Germany.

Systematic position: Sporormiaceae Munk, Dothideales Lindau.

Valsaria foedans (P. Karst.) Sacc., Syll. Fung. 1: 748, 1882. Fig 10 a.

Syn.: *Phaeosperma foedans* P. Karst., Myc. Fenn. 2: 55, 1873.

Specimen examined: Central Bohemia: Čeřenice, valley of the brook Křešický potok; on fallen branch of *Alnus glutinosa*, 18. X. 1968, leg. et det. M. S. (PRM).

For full description refer to Munk (1957).

Notes: *Valsaria foedans*, a stromatic pyrenomycetous species, is characterized by ascomata immersed in the bark and parallel and densely crowded ostioles protruding the periderm of the host and ascospores 11.0–14.0 × 3.5–4.5 μm large. (According to the Bohemian find.) *Valsaria durissima* (Fuckel) Sacc. is closely related but differs in occurrence on decorticated branches of *Alnus glutinosa* and the size of the ascospores (16 × 8 μm).

Habitat: *Valsaria foedans* very seldom occurs on the bark of dead branches of *Alnus* sp. in autumn.

Anamorph: still unknown.

Known hosts: *Alnus glutinosa, Alnus incana.*

Distribution: Europe: Czech Republic, Denmark, Germany, Great Britain, Poland.

Systematic position: Diaporthales Nannf. inc. sed.

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The authors wish to thank curators of Herbaria PRC and PRM in Prague for the loans of herbarium specimens.

REFERENCES

BARR M. E. (1979): On the Massariaceae in North America. – Mycotaxon 9: 17–37.

BARR M. E. (1985): Notes on the Calosphaeriales. – Mycologia 77: 549–565.

BAYER A. (1924): Monografická studie středoevropských druhů čeledi Sordariaceae. – Práce Mor. Přírod. Spol. 1/3: 1–185.

BIGELOW H. E. and BARR M. E. (1969): Contribution to the fungus flora of northeastern North America. V. – Rhodora 71: 177–203.

BRETON A. (1965): Champignons coprophiles des départementes du Lot, du Puy-de-Dôme et du Finistére. – Bull. Soc. Mycol. Fr. 81: 607–622.

CAIN R. F. (1934): Studies of coprophilous Sphaeriales in Ontario.— Univ. Toronto Stud., Biol. Ser. 38: 1–126.

CANNON P. F., HAWKSWORTH D. L. and SHERWOOD-PIKE M. A. (1985): The British Ascomycotina. – 302 p., Kew.

DENNIS R. W. G. (1978): British Ascomycetes. – 585 p., Vaduz.

ELLIS M. B. (1976): More dematiaceous hyphomycetes. – 507 p., Kew.

ELLIS M. B. and ELLIS J. P. (1985): Microfungi on land plants. An identification handbook. – 818 p., London and Sydney.

ERIKSSON O. E. and HAWKSWORTH D. L. (1993): Outline of the Ascomycetes. – Systema Ascomycetum 12: 51–257.

FUCKEL L. (1870): Symbolae mycologicae. – Jahrb. Nass. Ver. Naturkde. 23–24: 1–459.

HAWKSWORTH D. L. (1985): Kirshsteiniothelia, a new genus for the Microthelia incrustans-group (Dothideales). – Bot. Jour. Linn. Soc. 91: 181–202.

HÖHNEL F. (1918): – Mycologishe Fragmente. – Ann. Mycol. 16: 35–174.

HUGHES S. J. (1953): Fungi from Gold Coast II. – Mycol. Pap. 50: 1–104.

KARSTEN P. A. (1879): Symbolae ad Mycologiam fennicam . – Medd. Soc. Fauna et Fl. fenn. 5: 15–46.

KARSTEN P. A. (1885): Revisio monographica atque synopsis. Ascomycetum in Fennia hucusqve detectorum. – Acta Soc. Fauna et Fl. fenn. 2: 5–174.

KARSTEN P. A. (1888): Symbolae ad Mycologiam fennicam. – Medd. Soc. Fauna et Fl. fenn. 16: 1–13.

MIGULA W. (1913): Ascomycetes. Kryptogamen-Flora Deutschl., Öster. und Schweiz. Band 3. Pilze 3. Abt.1–2. – In: Thome's Krypt.-Fl. Deutschl., Öster. und Schweiz 10/2: 1–1404. Gera.

MINTER D. W. (1981): Microfungi on needles, twigs and cones of pines in Czechoslovakia. – Čes. Mykol. 35(2): 90–101.

MONOD M. (1983): Monographie taxonomique des Gnomoniaceae. – Sydowia Beih. 9: 1–315.

MUNK A. (1957): Danish Pyrenomycetes. A preliminary flora. – Dansk Bot. Ark. 17(1): 1–491.

MÜLLER E. and VON ARX J. A. (1962): Die Gattungen der didymosporen Pyrenomyceten. – Beitr. Krypt.-Fl. Schweiz 11(2): 1–922.

NANNFELDT J. A. (1975): Stray studies in the Coronophorales 4–8.— Svensk Bot. Tidskr. 69: 289–335.

PETRAK F. (1947): Über Gibbera Fr. und verwandte Gattungen. – Sydowia 1: 169–201.

SHOEMAKER R. A. and LECLAIR P. M. (1975): Type studies of Massaria from the Wehmeyer collection. – Canad. Jour. Bot. 53: 1568–1598.

SIVANESAN A. (1984): The bitunicate Ascomycetes and their anamorphs. – 701 p., Vaduz.

SUTTON B. C. (1980): The Coelomycetes. – 645 p., Kew.

VON ARX J. A. and MÜLLER E. (1975): Die Gattungen der amerosporen Pyrenomyceten. – Beitr. Krypt.-Fl. Schweiz 11(1): 1–434.

WEHMEYER L. E. (1933): The genus Diaporthe Nitschke and its segregates. – Univ. Mich. Stud. Scient., Ser. 9: 1–349.

WINTER G. (1887): Ascomyceten: Gymnoasceen und Pyrenomyceten. – In: Rabenhorst's Kryptogamen-Flora Deutschl., Öster. und Schweiz. Band. 2, 1/2: 1–928, Leipzig.

CZECH MYCOL. 49 (3–4), 1997

New records of Pyrenomycetes from the Czech and Slovak Republics II
Some rare and interesting species of the orders Dothideales and Sordariales

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Réblová M. and Svrček M. (1997): New records of Pyrenomycetes from the Czech and Slovak Republics II. Some rare and interesting species of the orders Dothideales and Sordariales.– Czech Mycol. 49: 207–227

The paper deals with 12 lignicolous species of Pyrenomycetes; *Actidium hysterioides* Fr., *Actidium nitidum* (Cooke et Ellis) Zogg, *Capronia borealis* M. E. Barr, *Capronia chlorospora* (Ellis et Everh.) M. E. Barr, *Cercophora caudata* (Currey) Lundq., *Farlowiella carmichaelina* (Berk.) Sacc., *Gloniopsis curvata* (Fr.) Sacc., *Mytilinidion rhenanum* Fuckel, *Pseudotrichia mutabilis* (Pers.: Fr.) Wehm., *Rebentischia massalongii* (Mont.) Sacc., *Trematosphaeria fissa* (Fuckel) Winter and *Trematosphaeria morthieri* Fuckel, most of which are reported from the Czech and Slovak Republics for the first time. Species are listed with localities, descriptions, illustrations and taxonomical and ecological notes. Most of them occur rarely in both countries or have very interesting habitats. *Capronia borealis* and *Capronia chlorospora*, so far known only from the temperate zone of North America, are reported from Europe for the first time. The systematic position of these species is arranged according to Eriksson and Hawksworth (1993).

Key words: New records, lignicolous Pyrenomycetes, Dothideales, Sordariales, Czech and Slovak Republics.

Réblová M. and Svrček M. (1997): Nové nálezy pyrenomycetů pro Českou a Slovenskou republiku II. Některé zajímavé a vzácně se vyskytující druhy z řádů Dothideales a Sordariales.– Czech Mycol. 49: 207–227

Příspěvek pojednává o 12 dřevních pyrenomycetech, *Actidium hysterioides* Fr., *Actidium nitidum* (Cooke et Ellis) Zogg, *Capronia borealis* M. E. Barr, *Capronia chlorospora* (Ellis et Everh.) M. E. Barr, *Cercophora caudata* (Currey) Lundq., *Farlowiella carmichaelina* (Berk.) Sacc., *Gloniopsis curvata* (Fr.: Fr.) Sacc., *Mytilinidion rhenanum* Fuckel, *Pseudotrichia mutabilis* (Pers.: Fr.) Wehm., *Rebentischia massalongii* (Mont.) Sacc., *Trematosphaeria fissa* (Fuckel) Winter a *Trematosphaeria morthieri* Fuckel, z nichž většina je uvedena poprvé pro Českou a Slovenskou republiku. Lokality druhů jsou doplněny krátkým popisem, taxonomickými a ekologickými poznámkami a vyobrazením podle studovaného materiálu. Jde o druhy vesměs vzácnější, ekologicky a zeměpisným rozšířením zajímavé. *Capronia borealis* a *Capronia chlorospora*, dosud známé pouze ze Severní Ameriky, byly poprvé sbírány také v Evropě. Zařazení jednotlivých druhů vychází ze členění navrženého Erikssonem a Hawksworthem (1993).

INTRODUCTION

The present paper is based on material collected by the authors in woodland and near-natural forests in the Czech Republic (Bohemia and Moravia) and Slovak

Republic. Specimens collected by F. Petrak, R. Podlahová and J. Velenovský deposited in the Mycological Herbarium of the National Museum in Prague (PRM) are also included. Species recorded here were collected on wood and bark of deciduous and coniferous trees. Two species, *Capronia borealis* and *Capronia chlorospora*, were collected in Europe for the first time, while the species *Actidium hysterioides, Farlowiella carmichaelina, Trematosphaeria fissa* and *Trematosphaeria morthieri* have not yet been reported from North America. Most species are rare and some have interesting habitats. For instance, the ascomata of the lignicolous species of *Actidium* and *Mytilinidion* are located on specific sites of the host coniferous trees (the inner side of peeling bark, wood beneath peeling bark and on cut sections of trunks and stumps) which are rich in resin. The content of resin in the host tissues obviously plays an important role in the occurrence of these species, which have not been reported from deciduous trees.

The geographical distribution of the species cited below is provided according to Barr (1980, 1987, 1990, 1991) and Farr et al. (1989) for North America, Teng (1996) for China and according to Saccardo (1883), Winter (1887), Hilitzer (1929), Zogg (1960, 1962), Lundqvist (1972), Dennis (1978), Sivanesan (1984), Eriksson (1992) and Krieglsteiner (1993) for Europe.

LIST OF THE SPECIES

Actidium hysterioides Fr., Syst. Mycol. 2: 596, 1823.
Figs 1 a–b.

Specimens examined: Central Bohemia: Brdské hřebeny Mts., Dobřichovice; on the inner side of peeling bark at the base of a dead standing trunk of *Picea abies*, 5. V. 1991, leg. et det. M. Svrček (PRM). — Northern Bohemia: Jizerské hory Mts., Karlov near Josefův Důl; on bark of a stump of *Picea abies*, 19. III. 1972, leg. et det. M. Svrček (PRM). — Southern Bohemia: Šumava Mts., Černý Kříž near Volary; on peeling bark of a stump of *Picea abies*, 12. IX. 1995, leg. et det. M. Réblová (Herb. M. Réblová 722/95). — Southern Bohemia: Šumava Mts., Mlynářská slať peat-bog near Modrava; on bark of a stump of *Picea abies*, 19. VI. 1995, leg. et det. M. Réblová (Herb. M. Réblová 668/95). — Central Slovakia: Slovenské Rudohoří Mts., Muráňská planina, nature reserve Cigánka near Muráň, on the slopes of Mt. Cigánka (935 m a.s.l.); on peeling bark of a stump of *Picea abies*, 18. IX. 1995, leg. et det. M. Réblová (Herb. M. Réblová 836/95).

Habitat: *A. hysterioides* is rare on bare wood and the inner side of peeling bark of stumps and was collected in localities with remnants of scree woodlands and near-climax spruce-forests in Bohemia and Slovakia. The fungus has not yet been reported from North America.

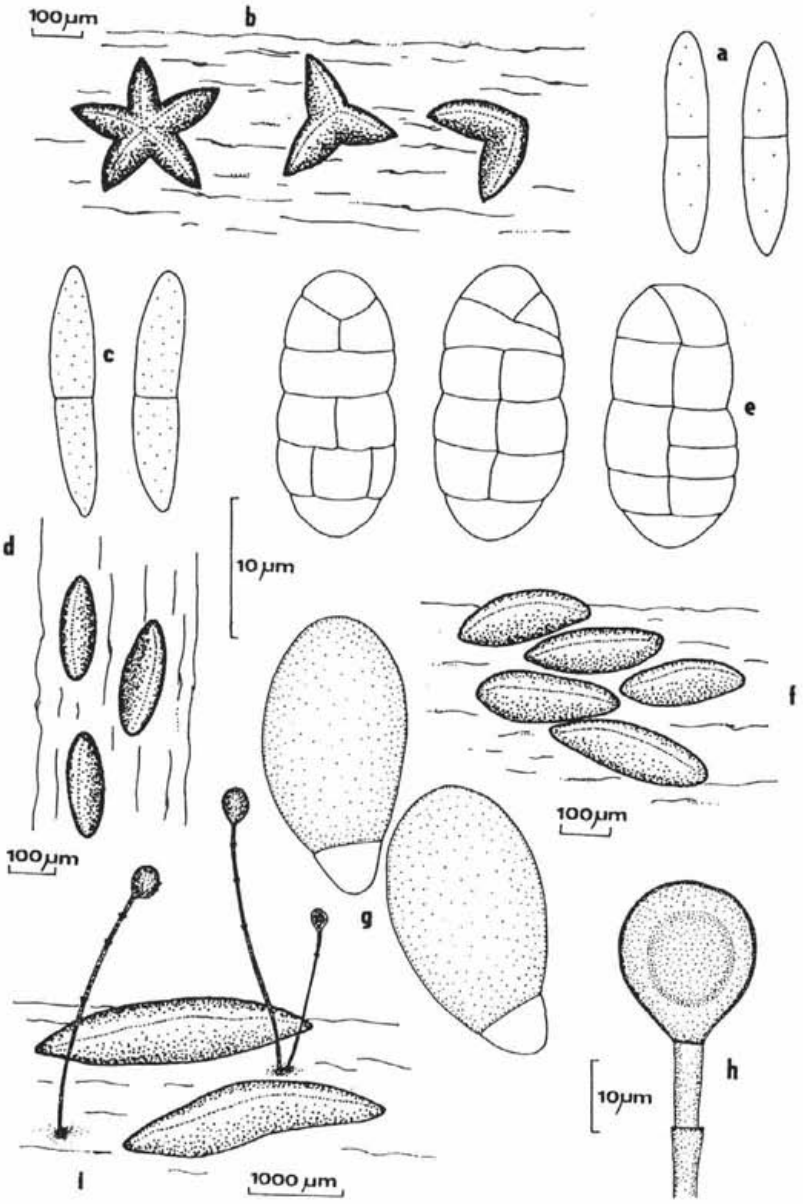


Fig 1. a–b: *Actidium hysterioides* Fr. (Herb. M. Réblová 668/95), a: ascospores, b: habit sketch of ascomata; **c–d:** *Actidium nitidum* (Cooke et Ellis) Zogg (Herb. M. Réblová 675/95), c: ascospores, d: habit sketch of ascomata; **e–f:** *Gloniopsis curvata* (Fr.: Fr.) Sacc. (Herb. M. Réblová 823/95), e: ascospores, f: habit sketch of ascomata; **g–i:** *Farlowiella carmichaelina* (Berk.) Sacc. (Herb. M. Réblová 826/95), g: ascospores, h: conidium attached to conidiophore of *Acrogenospora* sp. anamorph, i: habit sketch of ascomata and conidiophores.

Del.: M. Réblová

Anamorph: unknown.

Known hosts: *Picea abies* and *Pinus sylvestris* (Dennis 1978).

Distribution: Europe: Czech Republic, Germany, Great Britain, Slovak Republic, Sweden, Switzerland.

Systematic position: Mytilinidiaceae Kirschstein, Dothideales Lindau.

For description see Zogg (1960).

Notes: This species is easily recognized by its star-shaped, superficial, black ascomata, usually with 3 or 5 equal arms but occasionally simple and unbranched, opening by a longitudinal slit. Asci 41.5–48.3 × 4.5–5 μm large; ascospores 11–16 × 2–3 μm, fusiform, two-celled, yellowish.

The records of the fungus from the Czech and Slovak Republics are published for the first time.

Actidium nitidum (Cooke et Ellis) Zogg, Beitr. Krypt.–Fl. Schweiz 11(3): 122, 1962.
Figs 1 c–d.

Syn.: *Glonium nitidum* Ellis ex Cooke et Ellis, Grevillea 8: 13, 1879.

≡ *Bulliardella nitida* (Ellis) Lohman, Pap. Mich. Acad. Sci. 23: 159, 1938.

Specimen examined: South-western Bohemia: Šumava Mts., Roklanský forest near Modrava; on peeling bark of a trunk of *Picea abies*, 20. VI. 1995, leg. et det. M. Réblová (Herb. M. Réblová 675/95).

Habitat: *A. nitidum* is closely related to *A. hysterioides* but differs by the almost ellipsoid shape of the ascomata and the somewhat larger size of the asci and ascospores. Both species are very rare, occurring principally on the inner side of peeling bark of decayed trunks and stumps. In these habitats they grow under specific microclimatic conditions on substrata with a relatively high moisture content and protected from desiccating winds. Both *Actidium* species are often overlooked for their inconspicuous appearance in the field. According to Dennis (1978) the fungus also occurs on dead needles of conifers, especially of *Juniperus*. The Bohemian find also included the following associated fungi: *Ceratostomella rostrata* (Fr.) Sacc., *Diplococcium spicatum* Grove and *Sporidesmium larvatum* Cooke et Ellis.

Anamorph: unknown.

Known hosts: *Cupressus thyoides* (Ellis and Everhart 1892) and *Juniperus* sp. (Farr et al. 1989) in North America; *Juniperus communis* in Europe (Dennis 1978, Zogg 1962) and *Picea abies* in Bohemia.

Distribution: Europe: Czech Republic, Great Britain, Sweden, Switzerland; North America: U. S. A. (New Jersey, Washington).

Systematic position: Mytilinidiaceae Kirschstein, Dothideales Lindau.

For detailed description and further synonyms see Zogg (1960).

Notes: In the Bohemian specimens ascomata were shortly ellipsoid, black, 150–200 μm long; asci 67.5–82.5 × 3.7–4.3 μm large; ascospores (13.7)15–17.5 × 1.3–2.5 μm, narrowly cylindric to fusiform, two-celled, yellowish to pale brown and slightly constricted.

This is the only collection of *A. nitidum* known with certainty from the Czech and Slovak Republics.

Capronia borealis M. E. Barr, Mycotaxon 41: 424, 1991.
Figs 2 g, 4, 5.

Specimen examined: Central Bohemia: valley of the brook Klíčava near Nové Strašecí; on branch of *Carpinus betulus*, 10. VIII. 1996, leg. et det. M. Réblová (Herb. M. Réblová 830/96).

Habitat: On strongly rotten wood.

Anamorph: unknown.

Known hosts: *Cassiope mertensiana, Taxus canadensis* and *Vaccinium angustifolium* in temperate North America (Barr 1991) and *Carpinus betulus* in Bohemia.

Distribution: Recently the species was found in Europe for the first time.

Europe: Czech Republic; North America: U. S. A. (Michigan), Canada (British Columbia).

Systematic position: Herpotrichiellaceae Munk, Dothideales Lindau.

For detailed description see Barr (1991).

Notes: According to the Bohemian find the species forms globose, minutely papillate ascomata, occurring solitary or in small groups, 150–170(200) μm wide, base surrounded by a brown mycelium, hyphae septate, branched, 2.1–2.9 μm wide; peridia dark greyish to dark brown, bearing darker thick-walled protruding cells on the surface. Asci 57.5–69.3 x (14.7)15.7–17.8 μm, thick-walled, saccate; ascospores 16.8–20 × 4.8–5.2 μm, fusiform, 3–4-septate, olivaceous brown, slightly constricted at the septa.

Capronia borealis reported from North America (Barr 1991) differs slightly in possessing globose ascomata, collapsing when dry, ascospores of somewhat larger size (10)15–27.5 × (3.5)4.5–6 μm and usually (1–3-) 5-septate, seldom with one longitudinal septum in the middle cell, not constricted. In the examined material ascospores were always observed without longitudinal septa. A similar case of the presence or absence of longitudinal septa is known also from *Capronia pilosella* (P. Karsten) E. Müll. et al. Some collections contain ascospores with transverse septa only, others have ascospores with one longitudinal septum in one of the middle cells.

This is the only record of *C. borealis* from the Czech and Slovak Republics.

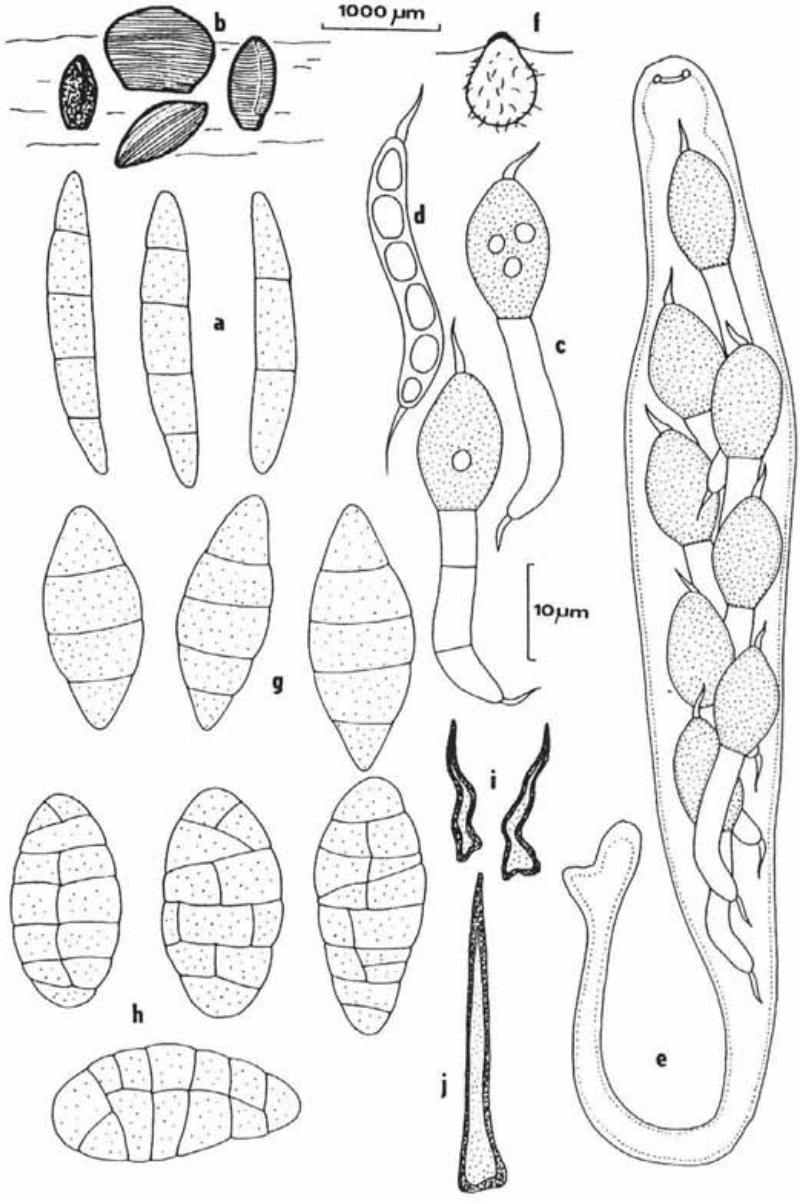


Fig 2. a–b: *Mytilinidion rhenanum* Fuckel (Herb. M. Réblová 796/95), a: ascospores, b: habit sketch of ascomata; **c–f:** *Cercophora caudata* (Currey) Lundq. (Herb. M. Réblová 686/95), c: mature ascospores, d: immature ascospores, e: ascus with ascospores, f: habit sketch of ascoma; g: *Capronia borealis* M. E. Barr (Herb. M. Réblová 830/96), g: ascospores; **h–j:** *Capronia chlorospora* (Ellis et Everh.) M. E. Barr (Herb. M. Réblová 828/96), h: ascospores, i: shorter flexuous setae, j: longer setae.

Del.: M. Réblová

Capronia chlorospora (Ellis et Everh.) M. E. Barr, Mycotaxon 41: 426, 1991. Figs 2 h–j, 6–9.

Syn.: *Teichospora chlorospora* Ellis et Everh., North Amer. Pyrenomyc. p. 219, 1892.

≡ *Pleosphaeria chlorospora* (Ellis et Everh.) Sacc., Syll. Fung. 11: 347, 1895.

Specimen examined: Central Bohemia: valley of the brook Klíčava near Nové Strašecí; on branch of *Carpinus betulus*, 10. VIII. 1996, leg et det. M. Réblová (Herb. M. Réblová 828/96).

Habitat: On rotten wood often beneath peeling bark. Barr (1991) mentioned its occasional occurrence on other ascomycetes.

Anamorph: unknown.

Known hosts: *Acer saccharum, Ailanthus, Lemaireocereus thurberi* and on old *Hypoxylon* sp. on *Fagus* in North America (Barr 1991) and *Carpinus betulus* in Bohemia.

Distribution: Recently the species was found in Europe for the first time.

Europe: Czech Republic; North America: U. S. A. (Arizona, Massachusetts, New Jersey, Ohio, Vermont).

Systematic position: Herpotrichiellaceae Munk, Dothideales Lindau.

For detailed description see Barr (1991).

Notes: The Bohemian find contained scattered globose ascomata, 200–220 μm wide and 250–275 μm high, covered with setae, especially in the upper half. Setae usually of two sizes: (a) 7.3–12.6 μm long and 3.1–4.2 μm wide at base, acute and irregularly flexuous, surrounding the ostiolar region; (b) 30.4–52.5 μm long and 4.2–5.2 μm wide at base, acute, straight, covering the upper part of the ascoma except for the ostiolar region. Asci 44.1–52.5 × 17.8–19 μm, thick-walled, saccate, interthecial filaments lacking; ascospores (14.7)15.7–17.9(20.1) × (5.2)6.3–7.3 μm, broadly ellipsoid to fusiform, pale olivaceous brown, with 5 to 7(8) transverse septa and 1(2) longitudinal septum in the middle cells, constricted at each septum.

Ascospores have been observed being somewhat variable in shape (Figs. 6–7). Most of ascomata of the Bohemian find had both types of setae on the surface of the peridium, but on the other hand, the shorter setae were lacking on several ascomata. The ring of short setae around the ostiolar opening of *C. chlorospora* resembles that of *Capronia coronata* Samuels and *C. pilosella* (P. Karsten) E. Müll. et al., which differ in the 4-celled and smaller ascospores, (10)11.5–13.5(15.5) × (2)3.6–4.7(5) μm large, for the former and in the 4-celled ascospores, 12–16 × 4–6 μm large, for the latter (Müller et al. 1987). *Capronia minima* (Ellis et Everh.) M. E. Barr is related but has smaller ascospores, (9)10–15.5 × 4.5–7.5 μm large, and collapsing ascomata bearing short setae or protruding cells (Barr 1991).

This is the only record of *C. chlorospora* from the Czech and Slovak Republics.

Cercophora caudata (Currey) Lundq., Symb. Bot. Upsal. 20: 92, 1972.
Figs 2 c–f.

Syn.: *Sphaeria caudata* Currey, Trans. Linn. Soc. London 22: 320, 1859.
≡ *Sordaria caudata* (Currey) Saccardo, Syll. Fung. 1: 236, 1882.
= *Sordaria lignicola* Fuckel, Symb. Mycol., Nachtr. 1: 326, 1871.
≡ *Cercophora lignicola* (Fuckel) Richon, C. R. Ass. Franc. Av. Sci. 9: 156, 1881.
≡ *Bombardia lignicola* (Fuckel) Kirschstein, Krypt. - Fl. Mark Brandenb. 7: 186, 1911.
≡ *Lasiosordaria lignicola* (Fuckel) Chenantais, Bull. Soc. Mycol. France 35: 78, 1919.

Specimens examined: Central Bohemia: nature reserve Kohoutov near Jablečno; on wood of a fallen trunk of *Fagus sylvatica*, 28. IX. 1988, leg. et det. M. Svrček (PRM); Brdské hřebeny Mts., Dobřichovice, site called U obrázku; on wood of a fallen branch of *Carpinus betulus*, 21. VIII. 1984, leg. et det. M. Svrček (PRM); Český Kras, Srbsko near Karlštejn, valley of the river Bubovický potok; on saturated wood of a broad-leaved tree, 10. VI. 1967, leg. et det. M. Svrček (PRM). — Northern Bohemia: Jizerské hory Mts., Ferdinandov near Hejnice; on rotten and wet wood of a stump of *Fagus sylvatica*, 29. VIII. 1959, leg. et det. M. Svrček (PRM). — Southern Bohemia: Daleké Popelice near Kaplice, on the slopes of Mt. Kozí hřbet (731 m a.s.l.); on decorticated wood of *Betula verrucosa*, 9. X. 1971, leg. et det. R. Podlahová (PRM 731572, 731573). — Southern Moravia: Roztrhánky near Hodonín; on decorticated branch of *Quercus petraea*, 18. VI. 1995, leg. et det. M. Réblová (Herb. M. Réblová 686/95).

Habitat: *Cercophora caudata* is a rare species, occurring exclusively on strongly rotten wood of many deciduous trees.

Anamorph: unknown.

Known hosts: *Acer, Alnus, Betula verrucosa, Carpinus betulus, Corylus avellana, Fagus sylvatica, Prunus, Quercus petraea, Salix, Ulmus* in temperate regions of Europe and North America (Podlahová 1974, Farr et al. 1989).

Distribution: Europe: Austria, Belgium, Czech Republic, Denmark, France, Germany, Great Britain, Hungary, Netherlands, Sweden; North America: U. S. A. (New York).

Systematic position: Lasiosphaeriaceae Ces. et De Not., Sordariales Chad. ex Hawksw. et Eriksson.

For detailed description and further synonyms refer to Lundqvist (1972).

Notes: The ascomata were entirely imumersed in wood, with erumpent small papilla only, pyriform, 250–400 μm wide and 400–650 μm high, with brown hairs scattered over the surface of the peridia. Asci 120–150 p. sp. × 15–18(20) μm, cylindric-clavate; ascospores 40–52 × 4–5.5 μm, at first hyaline,

cylindric, resembling those of *Lasiosphaeria*, at maturity two-celled, the upper part turning dark brown and becoming ellipsoid, at the end with a hyaline appendage 5–9 μm long, the basal part remaining hyaline, cylindric, often curved, occasionally with 1–2 septa, with hyaline appendage 11–15 μm long.

C. caudata is easily distinguished from other species of *Cercophora* Fuckel by the total immersed ascomata. Lignicolous species of this genus have superficial ascomata or their base slightly immersed; in contrast, ascomata of coprophilous species are more commonly immersed. Lundqvist (1972) mentioned *C. caudata* as being closely related to the coprophilous species *C. anisura* Lundq., *C. mirabilis* Fuckel and to the lignicolous *C. natalita* (Speg.) Lundq. recorded from Argentina on wood of *Pircunia dioica*, which differs in its conspicuous hyaline appendages up to 55 μm long.

These are the first published records of *C. caudata* from the Czech and Slovak Republics.

Farlowiella carmichaelina (Berk.) Sacc., Syll. Fung. 9: 1101, 1891.
Figs 1 g–i.

Syn.: *Hysterium carmichaelinum* Berk., English Flora 2: 294, 1836.

Specimen examined: Central Slovakia: Slovenské Rudohoří Mts., Muráňská planina, Hrdzavá valley ; on trunk of *Fagus sylvatica*, 21. IX. 1995, leg. et det. M. Réblová (Herb. M. Réblová 826/95).

Habitat: *F. carmichaelina* occurs rarely on the bark and decorticated wood of deciduous trees. On the material from Slovakia the fungus was associated with a *Acrogenospora* sp. anamorph and ascomata of *Lasiosphaeria spermoides* (Hoffm.: Fr.) Ces. et De Not. and *Chaetosphaeria pulviscula* (Currey) C. Booth.

Anamorph: *Acrogenospora* sp. (Mason 1941) is cosmopolitan, occurring on several species of shrubs and trees.

Known hosts: *Alnus, Betula, Corylus, Cytisus, Fagus, Fraxinus, Larix, Pinus, Prunus, Quercus, Sorbus* and *Taxus* (Ellis and Ellis 1985). Sivanesan (1984) reported it on undetermined rotten wood from New Zealand. On *Fagus sylvatica* in the Slovak Republic.

Distribution: Europe: Belgium, Germany, Great Britain, Slovak Republic, Switzerland; New Zealand.

Systematic position: Hysteriaceae Dumortier, Dothideales Lindau.

For full description and synonymy refer to Müller and von Arx (1962).

Notes: The specimens contained superficial, ellipsoid ascomata, about 3 mm long, opening by a longitudinal slit above; asci 87–92 × 16–17 μm and ascospores 18.4–20.7 × 7–9.2 μm, ovoid, brown, with minute hyaline basal cell.

Bisby and Hughes (1952) reported nine finds of *F. carmichaelina* with somewhat larger ascospores (18–27 × 7–12 μm) from Great Britain and considered the

species widespread but uncommon in this area. *F. australis* Dennis reported from Tristan da Cunha has smaller ascospores (13–15 × 6–7.5 μm) and the hyaline basal cell is smaller than that of *F. carmichaelina* (Sivanesan 1984).

During the revision of the type material of the species *Rimula faginea* Velen. (Central Bohemia: Jevany; on rotten wood of *Fagus sylvatica*, IX. 1933, leg. et det. J. Velenovský, PRM; see Velenovský 1934: 38) the second author found that the genus *Rimula* Velen. is identical with *Farlowiella* Sacc. and *Rimula faginea* agrees well with *Farlowiella repanda* (Blox.) Sacc. in all morphological characters. The latter species was identified by some authors (Zogg 1962, Cannon et al. 1985) with *F. carmichaelina*. *F. repanda* should be considered a separate species with significantly smaller ascospores; this assumption was also confirmed by the size of the ascospores of *Rimula faginea* (14–18 × 5.5–7.5 μm).

This is the only record of *F. carmichaelina* from the Czech and Slovak Republics.

Gloniopsis curvata (Fr.) Sacc., Syll. Fung. 2: 775, 1883.
Figs 1 e–f.

Syn.: *Hysterium elongatum β curvatum* Fr., Elenchus Fung. 2: 138, 1828.
Hysterium curvatum (Fr.) Duby, Bot. Gall. 2: 718, 1830.
Hysterographium curvatum (Fr.) Rehm, Rabenhorst's Krypt.–Fl., ed. 2, Vol. 1/3: 17, 1887.
= *Hysterium naviculare* Wallr., Fl. Cr. Ger. 2: 441, 1833.

Specimens examined: Central Bohemia: Průhonice, site called Gloriet; on fallen branch of *Swida sanguinea*, 10. VI. 1954, leg. et det. M. Svrček (PRM); Brdské hřebeny Mts., Řevnice, west of Mt. Babka (505 m a.s.l.); on wood of a dead trunk of *Rosa* sp., 26. III. 1950, leg. et det. M. Svrček (PRM). — Southern Bohemia: Kaplice, valley of the river Malše; on wood of a fallen trunk of *Fagus sylvatica*, 31. VII. 1970, leg. et det. M. Svrček (PRM). — Central Slovakia: Slovenské Rudohoří Mts., Muráňská planina, nature reserve Poludnica near Muráň; on fallen trunk of *Quercus petraea* 22. IX. 1995, leg. et det. M. Réblová (Herb. M. Réblová 823/95); ibidem, on fallen branch of *Fagus sylvatica* (Herb. M. Réblová 832/95); ibidem, on fallen branch of *Acer pseudoplatanus* (Herb. M. Réblová 849/95); ibidem, nature reserve Cigánka near Muráň, on the slopes of Mt. Cigánka (935 m a.s.l.); on fallen branch of *Fraxinus excelsior*, 18. IX. 1995, leg. et det. M. Réblová (Herb. M. Réblová 837/95). — Poland: Plaska near Augustow, nature reserve Perkuć; on dead trunk of *Betula verrucosa*, 8. IX. 1974, leg. V. Holubová-Jechová, det. M. Svrček (PRM 802989).

Habitat: The fungus occurs on bark and hard decorticated wood of twigs, branches and trunks of many deciduous trees and shrubs.

Anamorph: unknown.

Known hosts: *Campsis, Pieris, Quercus* and *Smilax* in North America (Farr et al. 1989); *Cerasus, Ilex, Prunus spinosa, Rhododendron ponticum, Rosa, Rubus* and *Quercus* (Hilitzer 1929) and *Rosa, Rubus* and *Prunus* (Saccardo 1883) in Europe. According to the examined specimens also on *Acer pseudoplatanus, Fagus sylvatica, Fraxinus excelsior, Quercus petraea, Rosa sp.* and *Swida sanguinea* in the Czech and Slovak Republics and on *Betula verrucosa* in Poland.

Distribution: cosmopolitan; Europe: Czech Republic, France, Germany, Italy, Poland, Slovak Republic, Switzerland; Africa: Algeria; North America; China.

Systematic position: Hysteriaceae Dumortier, Dothideales Lindau.

For description and full synonymy see Hilitzer (1929), Zogg (1962) and Farr et al. (1989).

Notes: The ascomata were superficial, elongated, slightly flexuous, opening by a longitudinal slit, 300–600 μm long and about 250 μm wide; asci 89.2–110 × 11.5–15. 2 μm, cylindric-clavate, interthecial filaments branching and anastomosing; ascospores 14.7–20 × 9.4–10.5 μm, broadly elliptic, hyaline to subhyaline, the upper part wider than the basal one, with 3 to 4 transverse septa and one longitudinal septum in the middle cells, strongly constricted at the middle septum.

The closely related *Gloniopsis praelonga* (Schweinitz) Zogg known from different plant species, is distinguished by its larger ascospores (20–32 × 9–12 μm) with 5–7 transverse septa and several longitudinal ones (Dennis 1978).

Barr (1987) accepted five genera within Hysteriaceae Dumortier including *Gloniopsis*, but she did not include the genera *Farlowiella* and *Gloniella* as they have not yet been reported from temperate North America. The Hysteriaceae are clearly differentiated from the Mytilinidiaceae Kirschstein (Barr 1987) in particular by the shortly ellipsoid (*Farlowiella*) to elongate (*Gloniopsis, Glonium*) ascomata, opening by a longitudinal slit above and the firm, somewhat thick peridium composed of pseudoparenchymatous cells. The Mytilinidiaceae possess dolabrate or cochleate (*Mytilinidion*) and sometimes star-shape (*Actidium*) ascomata, brittle, carbonaceous peridia, composed of prosenchymatous cells or cephalothecioid plates.

These are the first published records of *G. curvata* from both the Czech and Slovak Republics.

Mytilinidion rhenanum Fuckel, Symb. Myc. p. 298, 1870.
Figs 2 a–b.

Syn.: *Mytilinidion karstenii* Sacc., Syll. Fung. 2: 763, 1883.

Specimens examined: Central Bohemia: Kosoř near Praha; on wood of a stump of *Pinus sylvestris*, 14. III. 1954, leg. et det. M. Svrček (PRM); Brdské hřebeny Mts., Halouny; on resinuous exudations on wood at the base of a dead standing trunk of *Pinus sylvestris*, 6. VI. 1954, leg. et det. M. Svrček (PRM); valley of

the brook Klíčava near Nové Strašecí; on bark of a stump of *Pinus sylvestris*, 26. IV. 1995, leg. et det. M. Réblová (Herb. M. Réblová 796/95); Hrusice near Mnichovice; on wood of *Picea abies*, II. 1928, leg. et det. J. Velenovský (PRM 147733, PRM 152319); ibidem, on wood of *Pinus sylvestris*, II. 1928, leg. et det. J. Velenovský (PRM 152318); ibidem, on wood of *Abies alba*, 1. XII. 1928, VI. 1929 and 3. VI. 1931, leg. et det. J. Velenovský (PRM 152314, PRM 152316 and PRM 152317); Třemblaty near Mnichovice; on wood of a stump of *Pinus sylvestris*, 25. III. 1929, leg. et det. J. Velenovský (PRM 152320). — Northern Bohemia: Zahrádky near Česká Lípa, Mt. Kraví hora (378 m a.s.l.); on bark and hard resinuous wood in the cavity of a very old stump of *Picea abies*, 10. IV. 1950, leg. et det. M. Svrček (PRM). — Southern Bohemia: Šumava Mts., on the slopes of Mt. Černý les (1007 m a.s.l.) near Volary; on bark of a stump of *Picea abies*, 6. V. 1995, leg. et det. M. Réblová (Herb. M. Réblová 585/95); Šumava Mts., on the slopes of Mt. Ždánidla (1308 m a.s.l.) near Prášily; on peeling bark of a stump of *Picea abies*, 20. VI. 1995, leg. et det. M. Réblová (Herb. M. Réblová 660/95); Chýnovská doubrava near Tábor; on the inner side of the bark and on wood of a mossy stump of *Picea abies*, 29. VIII. 1949, leg. et det. M. Svrček (PRM); Borotín near Tábor, Mt. Šetkův vrch (564 m a.s.l.); on resinuous exudations in the cavity of a stump of *Pinus sylvestris*, 21. VIII. 1950, leg. et det. M. Svrček (PRM). — Central Slovakia: Slovenské Rudohoří Mts., Muráňská planina, nature reserve Cigánka, on the slopes of Mt. Cigánka (935 m a.s.l.) near Muráň; on peeling bark of a stump of *Pinus sylvestris*, 22. IX. 1995, leg. et det. M. Réblová (Herb. M. Réblová 835/95). — Poland: nature reserve Perkuć near Augustow; on stump of *Pinus sylvestris*, 8. IX. 1974, leg. V. Holubová-Jechová, det. M. Réblová (Herb. M. Réblová 570/95).

Habitat: *M. rhenanum* was collected on bark, decorticated wood beneath peeling bark and, similar to *Actidium*, on the inner side of peeling bark of trunks and stumps of conifers. Sivanesan (1984) mentioned the fungus also from needles. According to the number of specimens listed above seems to be this species common but good knowledge of its habitat is required for its successful collection (the same applies for *Actidium* species and some other fungi with an inconspicuous appearance). Bisby (1941) considered *M. rhenanum* a rarely collected fungus in Great Britain.

Anamorph: *Septonema* sp. (Lohman 1933). The anamorph was not observed in the examined material.

Known hosts: *Picea abies* and *Pinus sylvestris* in both Europe and North America (Sivanesan 1984, Farr et al. 1989).

Distribution: Europe: Czech Republic, Germany, Great Britain, Italy, Poland, Slovak Republic, Sweden; North America: U. S. A. (Georgia).

Systematic position: Mytilinidiaceae Kirschstein, Dothideales Lindau.

For full description refer to Sivanesan (1984).

Notes: According to the examined material the species forms superficial ascomata, which are upright, cochleate, usually longitudinally furrowed, 600–1000 μm long, opening by a longitudinal slit along the upper edge. Asci 155.7–163.2(181) × 6.7–8.7 μm and ascospores 30–37.5 × 3.7–5.4 μm, fusiform, brown, 3–4-septate, slightly constricted at the septa.

Three other species of *Mytilinidion* Duby occur on *Pinus* and *Picea* wood and bark. *M. gemmigenum* Fuckel, occurring also on cones, and described from the bark of *Larix* (Fuckel 1870), is closely related but differs in having ascospores 7-septate, 30–40 × 5–7 μm large. *M. scolecosporium* Lohman has ascospores somewhat larger (40–50 × 2–2.5 μm), usually with 5 to 7 transverse septa. *M. mytilinellum* (Fr.) Zogg has smaller 1–3-septate ascospores (17–25 × 2.5–3 μm) and occurs on leaves and cones of *Pinus* (Ellis and Ellis 1985).

Hilitzer (1929) regarded *M. rhenanum* as a synonym of *M. aggregatum* Duby. His specimen was slightly different from both species; it had some characters similar to those of the former and others typical of the latter. He assumed his specimen being intermediate between both of them and confirmed the identity of both species.

These are the first published records of *M. rhenanum* from the Czech and Slovak Republics.

Pseudotrichia mutabilis (Pers.: Fr.) Wehmeyer, Fungi New Brunswick, Nova Scotia Prince Edward Island, 35 (footnote), 1950.
Figs 3 a–c.

Syn.: *Sphaeria (Villosae) mutabilis* Pers.: Fr., Syst. Mycol. 2: 447, 1823.

Specimens examined: Central Bohemia: valley of the river Svinařský potok near Zadní Třebáň; on stump of *Carpinus betulus*, 12. IV. 1959, leg. et det. M. Svrček (PRM); valley of the river Žloukava near Nižbor; on stump of *Carpinus betulus*, 21. VI. 1972, leg. et det. M. Svrček (PRM). — Northern Bohemia: České středohoří Mts., Mt. Milešovka (837 m a.s.l.); on stump of *Fraxinus excelsior*, 19. VI. 1954, leg. et det. M. Svrček (PRM); on the slopes of Mt. Lipská hora (656 m a.s.l.) near Lipá; on rotten wood of a fallen trunk of *Populus tremula*, 24. X. 1956, leg. et det. M. Svrček (PRM). — Central Moravia: Chřiby Mts., Buchlov; on stump of *Carpinus betulus*, 23. VIII. 1962, leg. et det. M. Svrček (PRM). — Central Slovakia: Slovenské Rudohoří Mts., Muráňská planina, nature reserve Cigánka, on the slopes of Mt. Cigánka (935 m a.s.l.) near Muráň; on rotten wood of *Fagus sylvatica*, 22. IX. 1995, leg. et det. M. Réblová (Herb. M. Réblová 810/95).

Habitat: *P. mutabilis* seems to be widespread over the temperate zone of Europe and North America on wood of deciduous trees, but it has seldom been collected (Barr 1984, 1990). The bright hyphal layer often disappears in old ascomata and its absence makes identification more difficult. From Sweden (Eriksson 1992) the

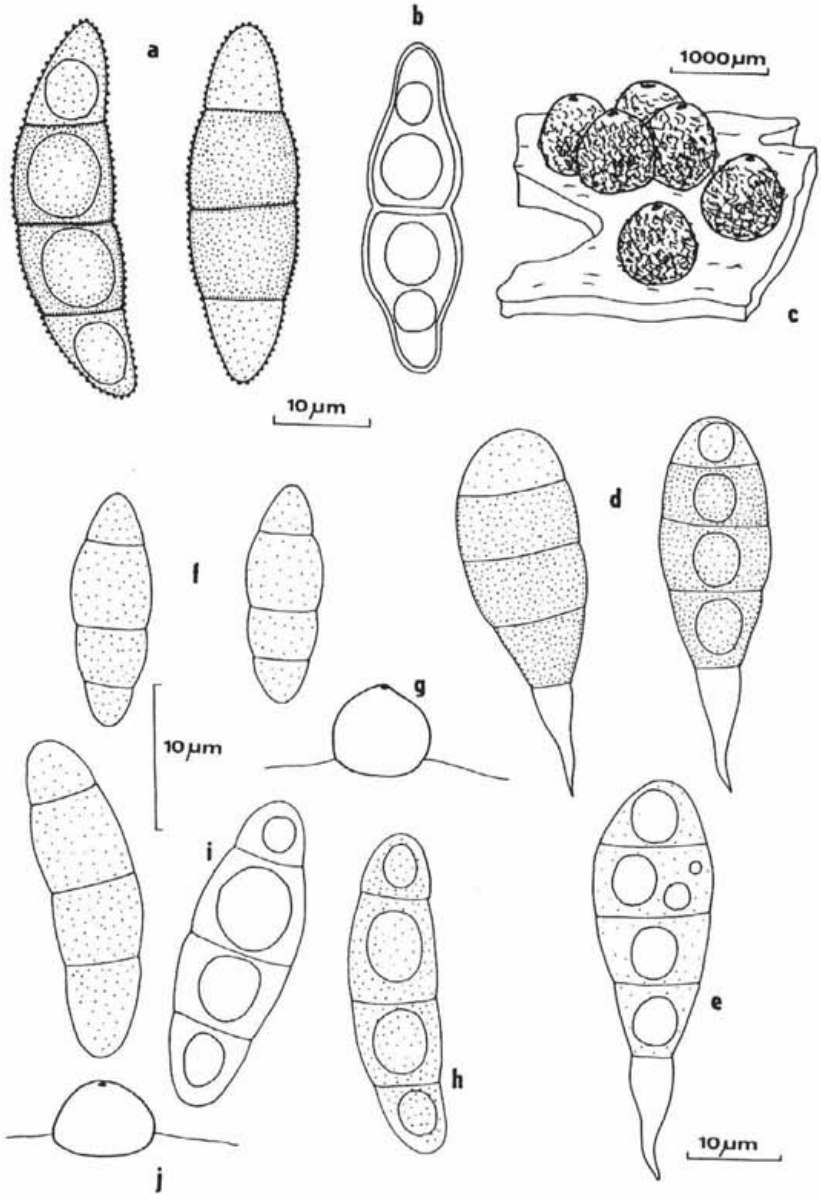


Fig 3. a–c: *Pseudotrichia mutabilis* (Pers.: Fr.) Wehmeyer (Herb. M. Réblová 810/95), a: mature ascospores, b: immature ascospores, c: habit sketch of ascomata; **d–e:** *Rebentischia massalongii* (Mont.) Sacc. (Herb. M. Réblová 841/96), d: mature ascospores, e: immature ascospores; **f–g:** *Trematosphaeria fissa* (Fuckel) Winter (Herb. M. Réblová 753/95), f: ascospores, g: ascoma; **h–j:** *Trematosphaeria morthieri* Fuckel (Herb. M. Réblová 811/95), h: mature ascospores, i: immature ascospores, j: ascoma.

Del.: M. Réblová

fungus is reported from old stromata of various Pyrenomycetes and on wood with hyphae of other fungi. Petrak (1921) collected it on old stromata of *Diatrypella aspera* and *Diatrypella tocciaeana*.

Anamorph: unknown.

Known hosts: Barr (1990) listed its occurrence on *Acer rubrum, A. saccharum, A. spicatum, Crataegus, Populus tremuloides, Rhus typhina* and *Ulmus americana* in North America. In Europe, it occurs on *Carpinus betulus, Fraxinus excelsior* (Svrček 1954), *Corylus avellana* and *Fagus sylvatica* (Petrak 1921) and *Quercus* (Winter 1887).

Distribution: Europe: Austria, Czech Republic, Germany, Slovak Republic, Sweden; North America: Canada (Ontario), U. S. A. (Arizona, Illinois, Maine, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Vermont, Wisconsin).

Systematic position: Melanommataceae Winter, Dothideales Lindau.

For full description and synonymy refer to Petrak (1921, 1940) and Barr (1984).

Notes: The fungus is well characterized by erumpent superficial, subglobose ascomata (450)500–600 μm wide, covered with short, bright yellowish to orange hairs except for the glabrous papilla; asci 101–126 p. sp. (142.6–180) × 20.7–23 μm, clavate, stipitate, interthecial filaments filiform, branching, anastomosing; ascospores 36.8–39.1 × 7.5–9.2 μm, fusiform, 3-septate, constricted, straight or slightly curved, mature ascospores finely verrucose with a gelatinous sheath.

Petrak (1921) undertook a comprehensive survey of this species and created the new genus *Khekia* Petrak for it with *K. ambigua* (Pass.) Petr. as the type species of the genus. He collected it on *Corylus* and *Fagus* near Hranice na Moravě (in 1912), and edited it in his collection of exsiccatae Flora Bohemiae et Moraviae exsiccata under number 132 as *Calospora ambigua* Pass. (det. by H. Rehm). In a second paper Petrak (1940) focused on the nomenclature of the species.

Barr (1984) distinguished *P. mutabilis* as the only North American species typical of the temperate zone. Three other species, *P. mamillata* M. E. Barr with ascospores much like those of *P. mutabilis,P. pachnostoma* (Berk. et Curtis in Cooke) M. E. Barr (Barr 1984) and *P. guatopoensis* S. M. Huhndorf (Huhndorf 1994), are known from Venezuela.

Members of the genus *Pseudotrichia* Kirschstein (Barr 1984) have globose to ovoid ascomata covered with a bright hyphal layer (except for a black papilla), which also forms a basal subiculum on the substrate. The genus *Herpotrichia* Fuckel from the Lophiostomataceae Nitschke bears some resemblance to *Pseudotrichia*, especially in the appearance of the ascomata covered with a bright tomentose layer, but differs in the characteristics of the peridium, composed of rows of small pseudoparenchymatous cells, and in hamathecium morphology, with pseudoparaphyses numerous, narrowly cellular, forming a sheet-like layer above the asci (Barr 1987). The peridium of *Pseudotrichia* is composed of rows of

compressed cells and the hamathecium consists of trabeculate pseudoparaphyses. *Byssosphaeria* Cooke of the Melanommataceae Winter accommodates a group of fungi separated from *Herpotrichia* (Barr 1984) but closely related to *Pseudotrichia*.

These are the first published records of *P. mutabilis* from the Czech and Slovak Republics.

Rebentischia massalongii (Mont.) Sacc., Nuovo Giorn. Bot. Ital. 8: 12, 1876. Figs 3 d–e.

Syn.: *Sphaeria massalongii* Mont., Syll. Gen. Sp. Crypt. p. 237, 1856.

Rebentischia pomiformis P. Karsten, Fungi Fenn. Exsic. No. 881, 1869. Mycol. Fenn. 2: 97, 1873.

Specimens examined: Central Bohemia: valley of the brook Klíčava near Nové Strašecí; on bark of *Sambucus nigra*, 17. VIII. 1996, leg. et det. M. Réblová (Herb. M. Réblová 841/96). — Southern Bohemia: Kaplice; on bare wood of a living trunk of *Tilia* sp., 26. IX. 1971, leg. R. Podlahová, det. M. Svrček (PRM).

Habitat: *R. massalongii* occurs rarely, usually with erumpent superficial ascomata in bark and wood of conifers and deciduous trees and shrubs. In the Bohemian samples the ascomata were scattered on bark around old canker mark on living branches of *Sambucus nigra* and on bare pieces of wood of *Tilia* sp. cultivated in a moist chamber culture.

Anamorph: unknown.

Known hosts: *Abies balsamea, Acer pensylvanicum, Ilex verticillata, Robinia pseudoacacia* and *Ulmus americana* in North America (Barr 1980); *Amygdalus* (Berlese 1890), *Acer platanoides* (Karsten 1873) and *Salix* (Barr 1980) in Europe. The Bohemian finds on *Sambucus nigra* and *Tilia* sp.

Distribution: Europe: Austria, Czech Republic, Finland, Germany, Sweden, Switzerland; North America: U. S. A. (Maine, Massachusetts).

Systematic position: Tubeufiaceae M. E. Barr, Dothideales Lindau.

For full description refer to Müller (1950) and Barr (1980).

Notes: The ascomata were found solitary, partially immersed in the periderm of the host, subglobose, 300–400 μm wide. Asci (80.5)87.4–96.6 × 16.1–17.8 μm, clavate and ascospores 29.4–35.7 × (6.3)7.3–8.4 μm, 4-(5)-septate, narrowly obovoid, brown, apical cell faintly pigmented, basal cell hyaline with hyaline setiform base 10.5–12.6 μm long.

The species was also observed on wood in a moist chamber culture. The wood was cut from a living trunk of *Tilia* sp. (26. IX. 1971) and put in the moist chamber culture one year later (6. X. 1972). The mature ascomata were observed three weeks after.

R. unicaudata (Berk. et Broome) Sacc. is closely related but differs in having smaller ascospores 17–25(30) × 4–6(7.5) μm large and occurs on suffrutescent

stems and branches of shrubs and vines (Barr 1980) and has not yet been confirmed for the Czech and Slovak Republics.

Barr (1980) accepted two species in *Rebentischia* P. Karsten within the Tubeufiaceae M. E. Barr, *R. massalongii* (the type of the genus) and *R. unicaudata*. The genus is well distinguished from most other taxa of the family by its ascospores being 4–5-septate, narrowly obovoid and at first subhyaline, at maturity the main body of the spore turns brown-violaceous with a hyaline setiform appendage in the bottom part.

These are the first published records of *R. massalongii* from the Czech and Slovak Republics.

Trematosphaeria fissa (Fuckel) Winter, in Rabenh. Krypt.-Flora Deutschl., Öster. und der Schweiz 1(2): 269, 1887.
Figs 3 f–g.

Syn.: *Melanomma fissa* Fuckel, Symb. Mycol., Nachtr. 2: 30, 1874.

Exsiccata: Petrak, Flora Bohemiae et Moraviae exsiccata, Lfg. 38, No. 1893; Nejdek near Hranice na Moravě; on fallen branch, 17. VIII. 1923, leg. et det. F. Petrak (PRM 481296).

Specimens examined: (exept for the exsiccata cited above): Central Bohemia: valley of the brook Klíčava, near Zbečno; on decayed wood of a fallen branch of *Tilia* sp., 10. IX. 1948, leg. et det. M. Svrček (PRM). — Central Slovakia: Slovenské Rudohoří Mts., Muráňská planina, nature reserve Cigánka, on the slopes of Mt. Cigánka (935 m a.s.l.) near Muráň; on rotten wood of *Acer pseudoplatanus*, 19. IX. 1995, leg. et det. M. Réblová (Herb. M. Réblová 753/95).

Habitat: Occasionally on rotten wood of branches of deciduous trees.

Anamorph: Fuckel (1874) described a fungus which he considered an anamorph. According to his observations the conidiomata were superficial, subglobose to flattened, punctiform, about 1 μm wide, black, scattered among ascomata; conidia clavate-pyriform, septate, brown with a subhyaline basal cell, 38–44 × 12–14 μm. No conidiomata were observed associated with ascomata in the examined material.

Known hosts: *Ulmus campestris* (Winter 1887); according to the examined species on *Acer pseudoplatanus* and *Tilia* sp. in Bohemia and Slovakia.

Distribution: Europe: Czech Republic, Germany, Slovak Republic.

Systematic position: Melanommataceae Winter, Dothideales Lindau.

For full description refer to Winter (1887).

Notes: The ascomata were partially immersed in wood and later almost superficial, subglobose with a small papilla, base applanate, 300–400 μm wide; asci 75–90 (53.7–60 p. sp.) × 7.5–8.7 μm, cylindric-clavate, stipitate; ascospores 12.5–15.1 × 3.1–3.7 μm, oblong to fusiform, 3-septate, constricted at the septa, at first hyaline, at maturity turning brown.

Boise (1985) recognized three North American and one tropical species of *Trematosphaeria* Fuckel. Cannon et al. (1985) listed another eight species known from Great Britain. *T. pertusa* (Pers.: Fr.) Fuckel, the only species mentioned from both North America and Europe, was also collected in the Slovak Republic (Herb. M. Réblová 709/95).

T. fissa is an easily recognized species with relatively small ascospores compared to other species of *Trematosphaeria* Fuckel, which usually have ascospores more than 20 mm long (Winter 1887, Boise 1985).

Trematosphaeria morthieri Fuckel, Symb. Mycol., Nachtr. 1: 306, 1872.
Figs 3 h–j.

Syn.: *Zignoella morthieri* (Fuckel) Sacc., Syll. Fung. 2: 222, 1883.

= *Trematosphaeria picastra* (Fr.) Fuckel, Symb. Mycol. p. 162, 1870 sensu Fuckel, [non *Sphaeria picastra* Fr., Syst. Mycol. 2: 463, 1823.].

Specimen examined: Central Slovakia: Slovenské Rudohoří Mts, Muráňská planina, between Muráň and chalet Maretkina, at edge of forest; on bare and dried out wood of a root of *Fagus sylvatica*, 27. VII. 1947, leg. et det. M. Svrček (PRM); ibidem, nature reserve Cigánka, on the slopes of Mt. Cigánka (935 m a.s.l.) near Muráň; on bare and dried out wood of a root of *Fagus sylvatica*, 19. IX. 1995, leg. et det. M. Réblová (Herb. M. Réblová 811/95).

Habitat: The fungus occurs rarely. Winter (1887) and Fuckel (1870) reported it from decayed roots of conifers, the recent collections are from the roots of a broad-leaved tree.

Anamorph: unknown.

Known hosts: conifers, *Fagus sylvatica*.

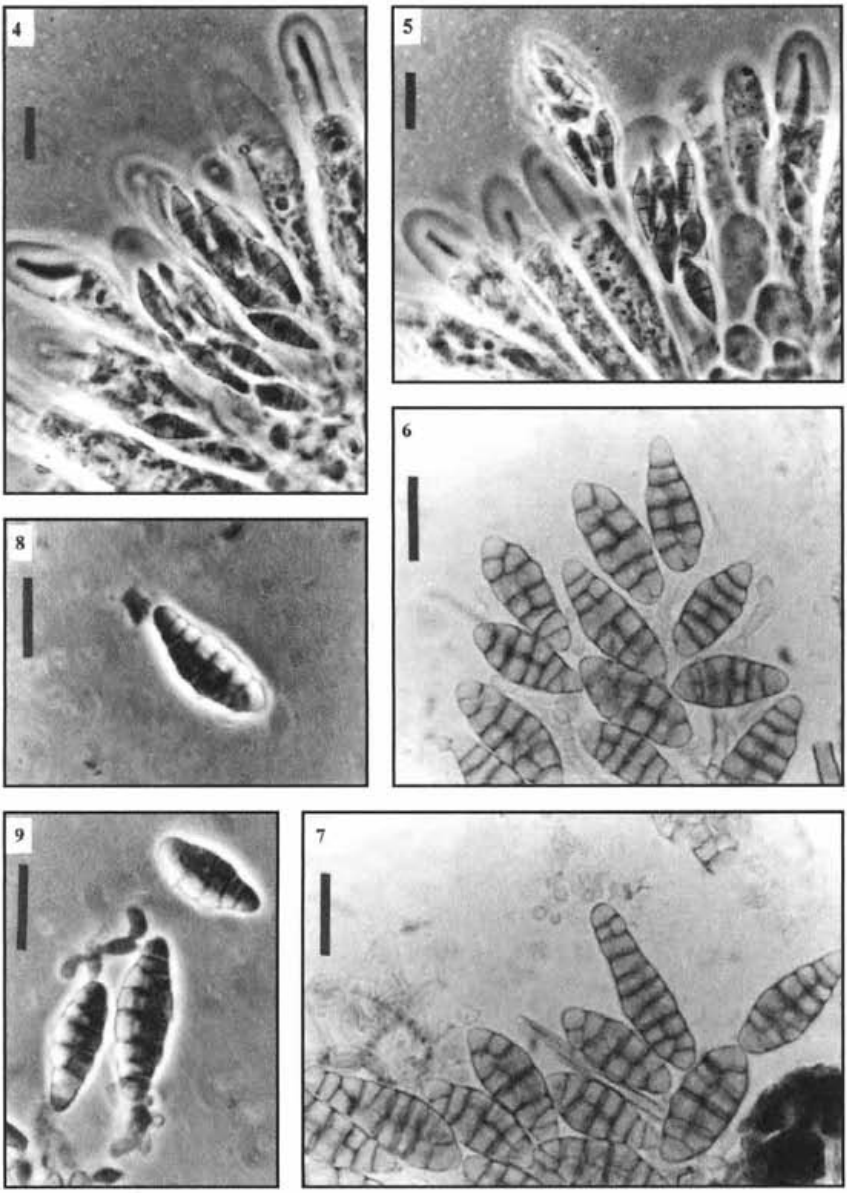
Distribution: Europe: Germany, Slovak Republic.

Systematic position: Melanommataceae Winter, Dothideales Lindau.

For full description see Winter (1887).

Notes: Ascomata partially immersed in decorticated wood, without a distinct papilla, 300–400 μm wide; asci 85.2–96.6 × 12.6–13.6 μm, clavate, interthecial filaments septate, branched, 1.5 μm wide; ascospores 22–25.2 × 5.2–6.3 μm, oblong to fusiform, at first hyaline, at maturity turning pale brown, four-celled, the upper middle cell is wider.

Winter (1887) mentioned asci somewhat smaller (75–85 × 15–16 μm) and, likewise Fuckel (1870) in his original description, hyaline ascospores. Both authors probably observed immature ascospores which remain hyaline for a long time. The find from Slovakia also contained hyaline ascospores and only several of them were observed mature and brown. No further data on this species are available in the literature.



Figs 4–9. 4–5: *Capronia borealis* M. E. Barr (Herb. M. Réblová 830/96), 4–5: immature and mature asci with ascospores in hymenium (in phase contrast), scale = 10 μm; **6–9:** *Capronia chlorospora* (Ellis et Everh.) M. E. Barr (Herb. M. Réblová 828/96), 6: ascospores, 7: ascospores, 8: ascospore (in phase contrast), 9: germinating ascospores (phase conrast), scale = 10 μm.
Photo: M. Réblová

These are the first published records of *T. morthieri* from the Czech and Slovak Republics.

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REFERENCES

BARR M. E. (1980): On the family Tubeufiaceae (Pleosporales). – Mycotaxon 12: 137–167.
BARR M. E. (1984): Herpotrichia and its segregates. – Mycotaxon 20: 1–38.
BARR M. E. (1987): Prodromus to class Loculoascomycetes. – Amherst, MA,168 pp.
BARR M. E. (1990): Melanommatales (Loculoascomycetes). – North American Flora, Ser. 2 (13): 1–129.
BARR M. E. (1991): Notes on and additions to North American members of the Herpotrichiellaceae. – Mycotaxon 41: 419–436.
BERLESE N. A. (1890): Icones Fungorum I. Pyrenomycetes. – Patavii, 243 pp., 184 tab. (reimpr. 1968)
BISBY G. R. (1941): British species of Hysterium, Gloniopsis, Dichaena and Mytilidion. – Trans. Brit. Mycol. Soc. 25: 9–141.
BISBY G. R. and HUGHES S. J. (1952): Summary of the British Hysteriales. – Trans. Brit. Mycol. Soc. 35: 304–307.
BOISE J. (1985): An amended description of Trematosphaeria. – Mycologia 77: 230–237.
CANNON P. F., HAWKSWORTH D. L. and SHERWOOD-PIKE M. A. (1985): The British Ascomycotina. An annotated checklist. – Kew, 302 pp.
DENNIS R. W. G. (1978): British Ascomycetes. – Vaduz, 585 pp.
ELLIS J. B. and EVERHART B. M. (1892): North American Pyrenomycetes. – Newfield, 793 pp. (reimpr. 1966)
ELLIS M. B. and ELLIS J. P. (1985): Microfungi on land plants. An identification handbook. – London and Sydney, 818 pp.
ERIKSSON O. E. and HAWKSWORTH D. L. (1993): Outline of the Ascomycetes – 1993. – Systema Ascomycetum 12: 51–257.
ERIKSSON O. E. (1992): The non-lichenized pyrenomycetes of Sweden. – 208 pp., Lund.
FARR D. F., BILLS G. F., CHAMURIS G. P. and ROSSMAN A. Y. (1989): Fungi on plants and plant products in the United States. – Minnesota,1252 pp.
FUCKEL L. (1870): Symbolae Mycologicae. – Jahrb. Nassauischen Vereins Naturk. 23–24: 1–459.
FUCKEL L. (1874): Symbolae Mycologicae, 2. Nachtrag. – Jahrb. Nassauischen Vereins Naturk. 27–28: 1–99.
HILITZER A. (1929): Monografická studie o českých druzích řádu Hysteriales a o sypavkách jimi působených. – Praha, 162 pp.
HUHNDORF S. M. (1994): Neotropical Ascomycetes 4. Pseudotrichia guatopoensis, a new species from Venezuela, with a key to species in the genus. – Mycologia 86: 134–137.
KARSTEN P. A. (1873): Mycologia Fennica 2. Pyrenomycetes. – Bidr. Känn. Finl. Nat. Folk 23: 1–252.
KRIEGLSTEINER G. J. (1993): Verbreitungsatlas der Grosspilze Deutschlands (West). Band 2: Schlauchpilze. – Stuttgart, 596 pp.
LOHMAN M. L. (1933): Hysteriaceae: life histories of certain species. – Pap. Mich. Acad. Sci. Arts et Letters 17: 229–288 (1932).
LUNDQVIST (1972): Nordic Sordariaceae s. lat. – Symb. Bot. Upsal. 20(1): 1–374.
MASON R. W. (1941): Annotated account of fungi received at the Imperial Mycological Institute List 2. – Mycol. Pap. 5: 101–144.
MÜLLER E. (1950): Die schweizerischen Arten der Gattung Leptosphaeria und ihrer Verwandten. – Sydowia 4: 185–319.

MÜLLER E. and VON ARX J. A. (1962): Die Gattungen der didymosporen Pyrenomyceten. – Beitr. Krypt.-Fl. Schweiz 11(2): 1–922.
MÜLLER E., PETRINI O., FISHER P. J., SAMUELS G. J. and ROSSMAN A. Y. (1987): Taxonomy and anamorphs of the Herpotrichiellaceae with notes on generic synonymy. – Trans. Brit. Mycol. Soc. 88: 63–74.
PETRAK F. (1921): Mykologische Beiträge 1. Khekia, eine neue Gattung der Lophiostomataceen. – Hedwigia 52: 282–284.
PETRAK F. (1940): Mykologische Notizen 13. No. 877. ber die Gattung Pseudotrichia Kirschst. – Ann. Mycol. 38: 181–267.
PODLAHOVÁ R. (1974): Lignikolní zástupci čeledi Lasiosphaeriaceae (Fuck.) Nannf. I, II. – 320 pp., ms. [Kand. dis. práce; depon. in: Knihovna kat. bot. Př. fak. Univ. Karlovy, Praha].
SACCARDO P. A. (1883): Sylloge Fungorum 2. – Patavii, 813 pp.
SIVANESAN A. (1984): The bitunicate Ascomycetes and their anamorphs. – Vaduz, 701 pp.
SVRČEK M. (1953): Mykoflóra údolí potoka Klíčavy na Křivoklátsku. – Čas. Nár. Mus. 120: 204–215.
SVRČEK M. (1954): První příspěvek k mykoflóře rezervace Milešovka v Českém středohoří. – Ochrana přírody 9: 109–112.
TENG S. C. (1996): Fungi of China. – Ithaca, 586 pp.
WINTER G. (1885): Die Pilze, Ascomyceten: Gymnoasceen und Pyrenomyceten. – In: Rabenhorst's Kryptogamen-Flora Deutschl., Öster. und der Schweiz, Band 2, 1(2): 1–928, Leipzig.
ZOGG H. (1960): Über die Gattungen Actidium Fr. und Bulliardella (Sacc.) Paoli. – Ber. Schweiz. Bot. Ges. 70: 195– 205.
ZOGG H. (1962): Die Hysteriaceae s. str. und Lophiaceae. – Beitr. Kryptogamenfl. Schweiz 11(3): 1–190.

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Dichotomomyces cejpii — some characteristics of strains isolated from soil in the Slovak Republic

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Piecková E. and Jesenská Z. (1997): Dichotomomyces cejpii (Miľko)Scott — some characteristics of strains isolated from soil in the Slovak Republic. – Czech Mycol. 49: 229–237

The growth rate of vegetative hyphae of colonies of 22 *Dichotomomyces cejpii* (Miľko) Scott strains was determined on Sabouraud agar, on Sabouraud agar with 2 and 4 % NaCl, on Sabouraud agar with pH 4–11 and on a medium with 1 % peptone and 4–30 % saccharose. *Dichotomomyces cejpii* strains are a new member of heat resistant fungi. In our experiments hyphal growth was limited only on Sabouraud agar with 4% NaCl. Chloroform-extractable metabolites which stopped the mobility of tracheal cilia of l day old chick *in vitro* were produced by eighteen (58.5%) out of 31 *Dichotomomyces cejpii* strains in the mycelium and by 26 (83%) in the medium. One strain (No. 2268) had ciliostatic activity comparable with the activity of important known mycotoxins.

Key words: *Dichotomomyces cejpii*, microfungi, hyphal analysis, soil, heat-resistance, mycotoxin.

Piecková E. a Jesenská Z. (1997): Dichotomomyces cejpii (Miľko) Scott — niektoré vlastnosti kmeňov izolovaných zo zeminy v Slovenskej republike. – Czech Mycol. 49: 229–237

Stanovila sa rýchlosť rastu vegetatívnych hýf kolónií 22 kmeňov *Dichotomomyces cejpii* (Miľko) Scott na Sabouraudovom agare (IMUNA), na Sabouraudovom agare s 2 a 4 % NaCl, na Sabouraudovom agare s pH 4, 8, 9, 10, 11 a na médiu s 1 % peptónu a 4–30 % sacharózy pri teplote 25 a 37 °C. Kmene *Dichotomomyces cejpii* patria do skupiny termorezistentných húb. Rast hýf bol v našich pokusoch obmedzený iba na Sabouraudovom agare so 4 % NaCl. Osemnásť (58,5%) z 31 kmeňov *Dichotomomyces cejpii* produkovalo v mycéliu a 26 (83%) do média chloroformom extrahovateľné metabolity, ktoré zastavovali pohyb riasiniek priedušnice 1-dňových kurčiat in vitro. Jeden z kmeňov (č. 2268) mal ciliostatickú aktivitu porovnateľnú s aktivitou dôležitých známych mykotoxínov.

INTRODUCTION

A description of the strains of *Dichotomomyces cejpii* (Miľko) Scott — strains isolated from fruit in Moldavia near Tiraspol (former USSR), from soil in Kyoto (Japan) and from soil from The Hague and Copenhagen and in Varanasi, India — was represented in the year 1970 (Scott 1970). We isolated many strains of *Dichotomomyces cejpii* during our investigation of the ecology of heat-resistant fungi in soil (Jesenská et al. 1992, 1993, Piecková et al. 1994).

The first strain from our isolated cultures (CCM 8085) was identified as *Dichotomomyces cejpii* by Dr. L. Marvanová, CSc., Brno, Czech Republic.

The aim of our work was to study some characteristics of *Dichotomomyces cejpii* strains, especially the effect of Sabouraud agar, Sabouraud agar with adjusted pH, and Sabouraud agar with incorporated NaCl and sucrose, at 25 and 37 °C on vegetative hyphal growth of colonies, and the ciliostatic activity of their metabolites resembling to mycotoxins.

MATERIAL AND METHODS

The strains of *Dichotomomyces cejpii* were isolated from soil samples after heating at 70 °C/60 min. in Sabouraud agar (IMUNA) with Rose Bengal. The samples were taken from a garden, fields and forests in Bratislava and from a garden in Poprad, Slovak Republic. These strains were isolated from 18.8 % out of 32 (100 %) soil samples ($\times_{max} = 5$ colony forming units (CFU)/10g) in our previous study of the ecology of heat-resistant fungi (Jesenská et al. 1992). The investigated strains (22) were inoculated in the centre of the surface of 15 ml of Sabouraud agar (IMUNA) (pH 5.5–6.3), Sabouraud agar (IMUNA) with incorporated NaCl (2, 4 %), Sabouraud agar (IMUNA) with adjusted pH (4, 8, 9, 10, 11), and of agar (2 %) with peptone (1 %) and sucrose p.a. (4, 8, 16, 25, 30) in Petri dishes (ϕ 9 cm) and incubated at 25 and 37 °C. The colony diameter was measured at the 3rd, 4th or 5th day (t_1) (the first measure of the colonies was adapted according to the colony size) and once again at the 5th, 6th or 7th day (t_2). The growth rate of the vegetative hyphae of the colony in mm/24 hrs was calculated ($t_2 - t_1$: $4 = \times$ mm/24 hrs).

Thirty one isolated *Dichotomomyces cejpii* strains from soil grew after the isolation and identification for 14 days on Sabouraud agar (IMUNA) slants in tubes at 25 °C. One of these strains was a strain requested and deposited as *Dichotomomyces cejpii* ATCC 96464 at the American Type Cultures Collection. The culture of each strain growing in three tubes was scratched into a 200 ml liquid medium with yeast extract (2 %) and sucrose (10 %) in 500 ml Erlenmayer flasks and cultivated as a stationary culture at 25 °C. After 10 days of growth the culture fluid and the culture biomass, separately, were extracted twice with 200 ml of chloroform. The extracts were dried with anhydrous $Na_2\ SO_4$ and the chloroform was evaporated in a water bath. The extracts dissolved in dimethyl sulfoxide were added to the culture medium (20 mg/l) with tracheal rings of one-day-old chicks as was described by Jesenská and Bernát (1994). The ciliostatic activity of the extracts was observed after 24, 48 and 72 hours.

The morphology of *Dichotomomyces cejpii* colonies (strain No. 2314) after 15 days of growing at 25 and 37 ° C was observed on malt (MALT) and Sabouraud agar (SAB) [IMUNA]), potato dextrose agar (PDA) [DIFCO]) and on Czapek yeast autolysate agar — CYA (Pitt 1979). Micromorphology was documented by photos made with an OLYMPUS photomicrocamera.

Table 1. Growth rate (mm/24 h) of vegetative hyphae of colonies of 22 *Dichotomomyces cejpii* strains on Sabouraud agar (S) and on Sabouraud agar with NaCl (2 % and 4 % NaCl — SNaCl) at 25 and 37 °C.

Incubation temperature		Medium		
		S	SNaCl	
			2 % NaCl	4 % NaCl
		Growth rate in mm/24 h		
25 °C	abs. ($\overline{x}$)	3.8	3.9	1.5
	rel. (%)	100.0	102	39
	x_{min}	2.7	3.0	0
	x_{max}	4.7	4.7	3.7
37 °C	abs. ($\overline{x}$)	4.6	4.1	0.8
	rel. (%)	100.0	89	17
	x_{min}	2.7	2.7	0
	x_{max}	6.5	5.7	2.2

Table 2. Growth rate (mm/24h) of vegetative hyphae of colonies of 22 *Dichotomomyces cejpii* strains on Sabouraud agar with processed pH (4, 8, 9, 10, 11 — SpH) at 25 and 37 °C. For growth rate on Sabouraud agar (100 %) see **Table 1.**

Incubation temperature		SpH				
		pH 4	pH 8	pH 9	pH 10	pH 11
		Growth rate in mm/24 h				
25 °C	abs. ($\overline{x}$)	3.6	3.9	4.9	3.7	3.5
	rel.(%)	94	102	128	97	92
	x_{min}	2.7	3.0	3.0	2.0	2.0
	x_{max}	4.7	4.7	6.0	5.2	4.7
37 °C	abs. ($\overline{x}$)	4.2	3.9	4.7	3.7	3.4
	rel. (%)	91	84	102	80	73
	x_{min}	3.0	2.7	2.2	1.7	1.5
	x_{max}	6.0	5.5	6.2	5.2	5.7

Table 3. Growth rate (mm/24 h) of vegetative hyphae of colonies of 22 *Dichotomomyces cejpii* strains on agar with peptone (1 %) and sucrose (4, 8, 16, 25, and 30 % — APS) at 25 and 37 °C. For growth rate on Sabouraud agar (100 %) see **Table 1**.

Incubation temperature		APS (sucrose) 4 %	8 %	16 %	25 %	30 %
		Growth rate in mm/24 h				
25 °C	abs. ($\overline{x}$)	4.2	5.5	5.0	5.6	4.7
	rel. (%)	110	144	131	147	123
	x_{min}	3.2	4.0	4.2	4.5	2.7
	x_{max}	5.7	7.2	7.0	7.0	6.6
37 °C	abs. ($\overline{x}$)	3.5	5.1	5.5	6.0	4.5
	rel. (%)	76	110	115	130	97
	x_{min}	1.5	4.2	4.0	3.2	2.5
	x_{max}	5.0	6.7	7.5	7.7	7.0

Table 4. The effect of chloroform-extracts from the mycelium and from the growing medium of 31 *Dichotomomyces cejpii* strains on the respiratory cilia movement of 1 day old chicks *in vitro*.

Dichotomomyces cejpii Number of strains		Chloroform extracts mycelium			medium		
abs.	rel. in %	movement of cilia after hours					
		24	48	72	24	48	72
2	6.5	+	+	+	+	+	+
10[a]	32.2	+	+	+	+	+	—
1	3.2	+	+	+	+	—	—
3	9.7	+	+	—	+	+	+
11	35.4	+	+	—	+	+	—
2	6.5	+	+	—	+	—	—
1[b]	3.2	+	—	—	+	+	—
1[c]	3.2	+	—	—	+	—	—
Σ 31	100.0						
Strains with ciliostatic activity	abs.	—	2	16	—	4	22
	rel. (%)	—	6.5	52.0	—	13	70.0
		Σ 18 (58.5%)			Σ 26 (83.0%)		

Note [a]: 9 strains of *Dichotomomyces cejpii* and *Dichotomomyces cejpii* ATCC 96464
[b]: strain No. 2056
[c]: strain No. 2268

RESULTS

The average growth rate of vegetative hyphae of *Dichotomomyces cejpii* colonies in mm/24 hrs was:

— 3.8 (100 %) on Sabouraud agar,
— 3.9 (102 %) on Sabouraud agar with 2 % NaCl,
— 1.5 (39 %) on Sabouraud agar with 4 % NaCl,
— 3.6 (94 %) on Sabouraud agar with pH 4,
— 3.9 (102 %) with pH 8,
— 4.9 (128 %) with pH 9,
— 3.7 (97 %) with pH 10,
— 3.5 (92 %) with pH ll,
— 4.2 (110 %) on agar with peptone and 4 % sucrose,
— 5.5 (144 %) with peptone and 8 % sucrose,
— 5.0 (131 %) with peptone and 16 % sucrose,
— 5.6 (147 %) with peptone and 25 % sucrose
and 4.7 mm/24 hrs (123 %) with peptone and 30 % sucrose at 25 °C.

At 37 °C the average growth rate in mm/24 hrs was:
— 4.6 (100 %) on Sabouraud agar,
— 4.1 (89 %) on Sabouraud agar with 2 % NaCl,
— 0.8 (17 %) with 4 % NaCl,
— 4.2 (91 %) on Sabouraud agar with pH 4,
— 3.9 (84 %) with pH 8,
— 4.7 (102 %) with pH 9,
— 3.7 (80 %) with pH 10,
— 3.4 (76 %) with pH 11,
— 3.5 (76 %) on agar with peptone and 4 % sucrose,
— 5.1 (110 %) with peptone and 8 % sucrose,
— 5.5 (115 %) with peptone and 16 % sucrose,
— 6.0 (130 %) with peptone and 25 % sucrose
and 4.5 mm/24 hrs (97 %) with peptone and 30 % sucrose (Tab. 1, 2, 3).

Two (6.5 %) out of 31 *Dichotomomyces cejpii* strains in the mycelium and 4 (13 %) in the medium produced chloroform-extractable metabolites those stopped the movement of tracheal cilia *in vitro* after 48 hrs. Sixteen (52 %) strains in the mycelium and 22 (70 %) strains in the medium produced metabolites those stopped the mobility after 72 hrs. The most active were strains No. 2056 and 2268. Strain *Dichotomomyces cejpii* ATCC 96464 was not active in this experiment (Tab. 4).

The most visible difference of colony morphology was seen on SAB: the colonies there were very lanose. The temperatures 25 °C and 37 °C on SAB,

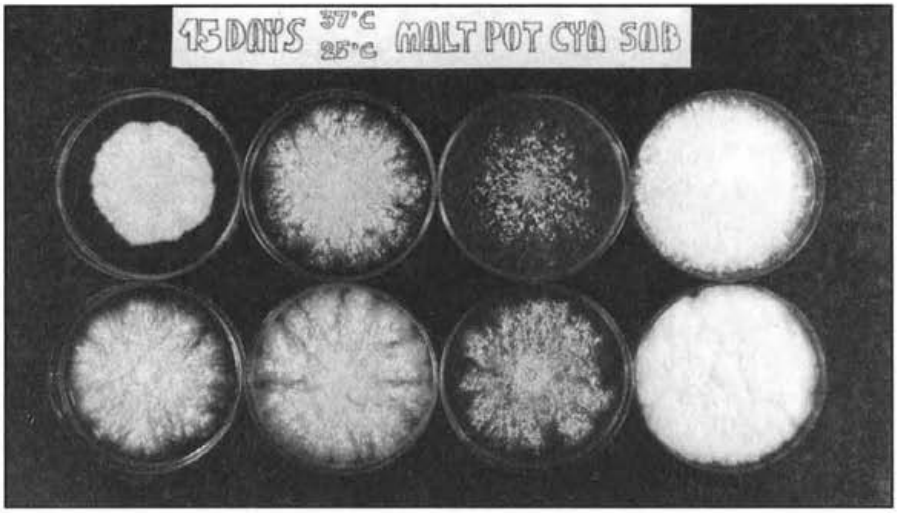

Fig 1. *Dichotomomyces cejpii* (Milko) Scott — colonies on malt agar (MALT), Sabouraud agar (SAB), potato dextrose agar (POT) and on Czapek yeast autolysate agar (CYA) after 15 days at 25 ° and 37 °C.

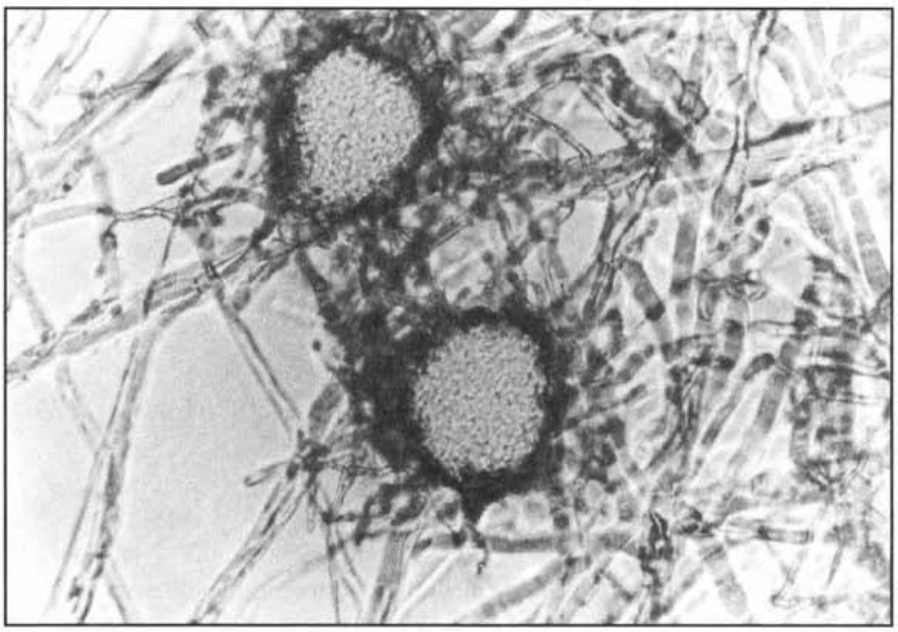

Fig 2. *Dichotomomyces cejpii* (Milko) Scott — sphaerical cleistothecia (× 40).

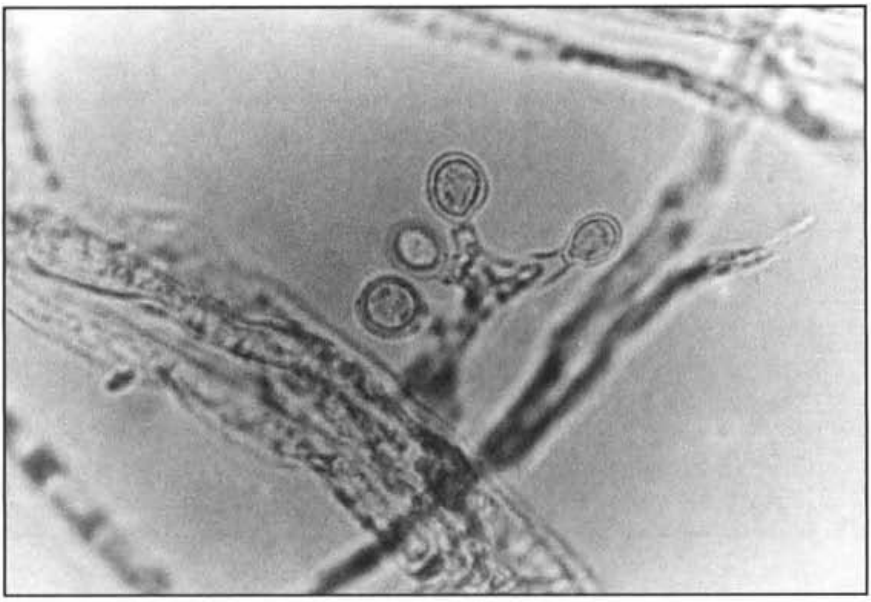

Fig 3. *Dichotomomyces cejpii* (Milko) Scott — conidiophore apice dichotomously branched with aleuriospores (× 1000).

Fig 4. *Dichotomomyces cejpii* (Milko) Scott — racquet hyphae (× 400).

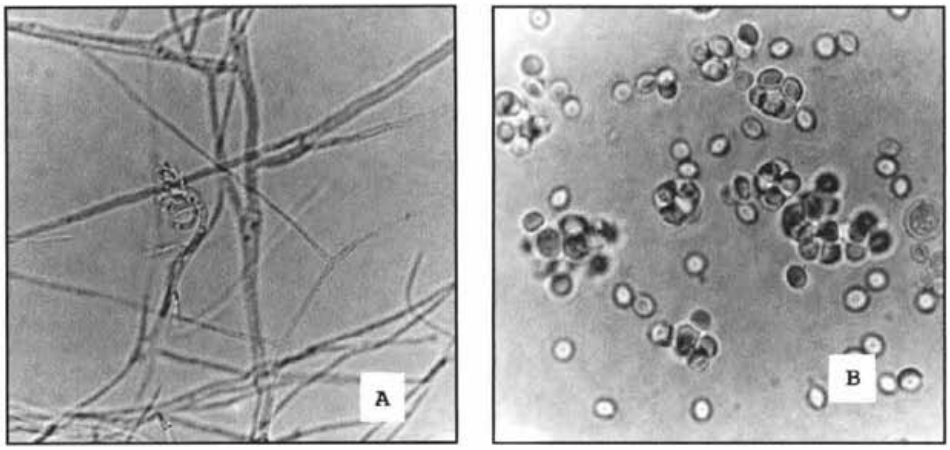

Fig 5. *Dichotomomyces cejpii* (Mifko) Scott — cleistothecial initials (A), asci, ascospores and one aleuriospore (B) (× 400).

PDA, CYA were without any effect on the morphology, a difference was found on MALT (Fig 1). Sphaerical cleistothecia surrounded by a hyphal network (Fig. 2) were visible to the naked eye on PDA and CYA (Fig. 1). The racquet cells, the conidiophore apices dichotomously branched with aleuriospores, hyaline and lenticular ascospores with two closely appressed thin equatorial ridges (Figs 3, 4, 5) and other structures, as were described by Scott (1970), were seen microscopically.

DISCUSSION

It was clear from our previous results that *Dichotomomyces cejpii* strains belong to the group of heat-resistant fungi, e. g. an arteficially prepared suspension of *Dichotomomyces cejpii* propagules *in vitro* survived the effect of a temperature of 70 °C for more than 300 min, and 80 °C for 8–10 min (dependent on number of CFU per 1 ml of the suspension). But they did not survive a temperature of 90 °C for 1 min (Piecková et al. 1994 and Jesenská and Piecková 1995). They need to be studied further, also because the strains of this genus were so rarely isolated (Scott 1970) and last not least because prof. Dr. Karel Cejp was a very well-known mycologist at Charles University in Prague, former Czechoslovakia.

Dichotomomyces cejpii var. *spinosus* strains were isolated from samples of brackish water sediments and is a dominant species from river sediments between fresh and marine water areas in Japan (Ueda 1980 a, b).

The vegetative hyphae of the colonies of *Dichotomomyces cejpii* strains, investigated by us, were able to grow in vitro at pH 4, 8, 9, 10 and 11, on a medium with 4–30 % sucrose, on a medium with 2 % NaCl at 25 and 37 °C, with a limitation on a medium with 4% NaCl. This means they are osmotolerant fungi. The activity of the metabolites of *Dichotomomyces cejpii* strain No. 2268 on the respiratory tract cilia movement of 1-day-old chicks was comparable with the activity of diacetoxyscirpenol, T-2 toxin, aflatoxin B_1, M_1, G_1, patulin and ochratoxin A (Jesenská and Bernát 1994). Our *Dichotomomyces cejpii* strains are also available for further study as ATCC 96464, CCM 8085, and from our laboratory.

Conclusion: *Dichotomomyces cejpii* strains were characterized in our previous papers as a new member of a heat-resistant fungi group. The present study was made to provide more details on the environmental requirements of these fungi, since no data concerning *Dichotomomyces cejpii* were available. It was shown that hyphae of *Dichotomomyces cejpii* colonies *in vitro* were tolerant of temperatures of 25 and 37 °C, sucrose (4% – 30%) and pH (pH 4 – pH 11). Hyphal extension was limited by 4 % NaCl in these experiments. Some strains were able to produce metabolites resembling mycotoxins, as was detected in the experiment with the ciliostatic activity of tracheal cilia of 1 day old chicks *in vitro*. These interesting metabolites need to be chemically characterized.

REFERENCES

JESENSKÁ Z., PIECKOVÁ E. and BERNÁT D. (1992): Heat resistant fungi in the soil. – Int. J. Food Microbiol. 16: 209–214.

JESENSKÁ Z., PIECKOVÁ E. and BERNÁT D. (1993): Heat resistance of fungi from soil. – Int. J. Food Microbiol. 19: 187–192.

JESENSKÁ Z. and BERNÁT D. (1994): Effect of mycotoxins on in vitro movement of tracheal cilia from one-day-old chickens. – Folia Microbiol. 34: 155–158.

PIECKOVÁ E., BERNÁT D. and JESENSKÁ Z. (1994): Heat resistant fungi isolated from soil. – Int. J. Food Microbiol. 22: 297–299.

JESENSKÁ Z. and PIECKOVÁ E. (1995): Heat-resistant fungi. – Czech Mycol. 48: 73–76.

PITT J. I. (1979): The genus Penicillium and its teleomorphic states Eupenicillium and Talaromyces. – Academic Press, 634 pp.

SCOTT D. B. (1970): Dichotomomyces cejpii (Mifko) comb. nov. – Trans. Br. Mycol. Soc. 55: 313–316.

UEDA S. (1980a): A mycofloral study on brackish water sediments in Nagasaki, Japan. – Trans. Mycol. Soc. Japan 21: 103–112.

UEDA S. (1980b): A mycofloral study on river sediments in Nagasaki, Japan. – Trans. Mycol. Soc. Japan 21: 495–504.

CZECH MYCOL. 49 (3–4), 1997

Rediscovery of Trichoglossum hirsutum in Slovakia

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Mráz P. (1997): Rediscovery of *Trichoglossum hirsutum* in Slovakia.– Czech Mycol. 49: 239–243

Trichoglossum hirsutum, reported as extinct/missing in the Red data list of the Slovak macrofungi, was recollected after 34 years. All available specimens were revised and variability of selected characters studied. Distribution map, based on voucher specimens and published data, was compiled.

Key words: Ascomycota, *Geoglossaceae*, *Trichoglossum*, distribution, Slovakia.

Mráz P. (1997): Znovuobjavenie *Trichoglossum hirsutum* na Slovensku.– Czech Mycol. 49: 239–243

Trichoglossum hirsutum, uvedené ako vyhynuté/nezvestné v Červenom zozname makromycétov Slovenska, bolo znovuobjavené po 34 rokoch. Revidoval sa dostupný dokladový materiál a študovala sa variabilita niektorých vlastností. Mapa rozšírenia zahŕňa všetky dostupné dáta.

Fungi are sensitive to the environmental changes and research on selected species of macrofungi has provided evidence of significant changes in the biodiversity of many taxonomic and trophic groups in Europe. Natural factors, such as ecological succession, and especially anthropogenic factors, such as destruction of natural habitats, transformation of landscape, air and soil pollution, etc., lead to the decline of diversity of all organisms, including fungi (Lizoň 1993).

One of the species listed as extinct/missing in the Red data list of the Slovak macrofugi (Lizoň 1995a, 1995b), *Trichoglossum hirsutum* (Pers.) Boud., was recollected in the mountains Volovské vrchy, East Slovakia, after 34 years. The collecting site is situated on the northern slope of the mountain Kojšovská hoľa below the village of Kojšov. A small group of ascocarps (Fig. 1) has grown in a peat-bog among *Sphagnum flexuosum*, together with *Homogyne alpina*, *Agrostis canina*, *Crepis paludosa*, *Trientalis europaea*, *Deschampsia caespitosa*, *Vacccinium myrtillus*, *V. vitis-idea*, *Potentilla erecta* and *Nardus stricta*.

The species was first reported from Slovakia by Endlicher (1830): "In salicis sabulosis lutosis insulae Bruckau. Vere et autumno frequens." [city of Bratislava, village of Petržalka, public park Park Janka Kráľa]. Hazslinszky's record (1881): "Szedtem a m. Tátra alján."[Collected in foothills of Vysoké Tatry Mts.] might

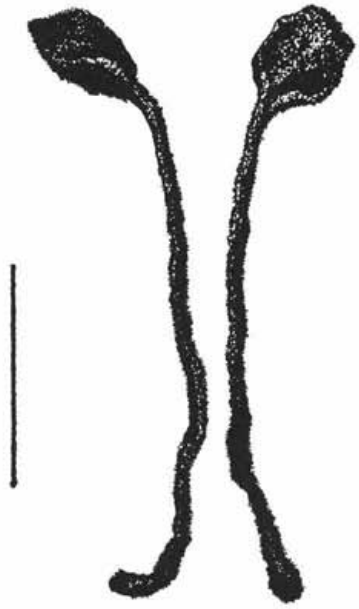

Fig. 1 *Trichoglossum hirsutum*: Eastern Slovakia, Volovské vrchy Mts., Kojšovská hoľa, 1994; BRA (bar = 1 cm; drawings by R. Mráz).

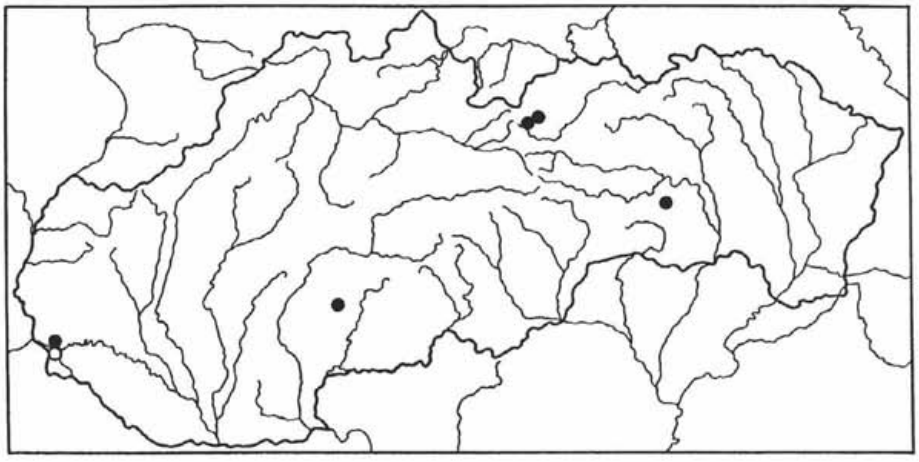

Fig 2. Distribution of *Trichoglossum hirsutum* in Slovakia: • herbarium specimens, ○ published data.

be based on his voucher specimen "Tatra. Roxer Wald". None of these collections have been confirmed in this century and some of those collecting sites no longer exist (for example, Bratislava — Petržalka is densely populated residential area now).

Trichoglossum hirsutum is quite a rare species even though it has world-wide distribution and occurs in almost all climatic zones. The species grows on rotten wood or soil and is associated with wet to marshy meadows, peat-bogs and moors, often in *Sphagnum* (Antonín et al. 1996). The species is listed as critically endangered species for Slovak and Czech Republics (Antonín et al. 1996) and Poland (Wojewoda and Lawrynowicz 1992), as endangered (threatened) for Austria (Krisai 1986), Finland (Anon. 1987), the Netherlands (Arnolds 1989) and Germany (Benkert 1992).

Trichoglossum hirsutum has scattered to gregarious, clavate to capitate, black or brownish black, erect, 1–8 cm long ascocarps; the ascogenous part is compressed, up to 2 cm long and 2–5 mm wide, and stipe is 2–3 mm diam. Brown setae are present both in the hymenium and on the stipe. Asci are clavate, 180–275 × 18–25 μm, 8-spored. Ascospores are 80–170 × 5–7 μm, usually 15-septate. Paraphyses are brown, cylindrical, straight or curved, somewhat enlarged at the top (Mains 1956). A few varieties and forms are described, distinguished mostly by spore size and septation. The genus *Trichoglossum* is closely related to *Geoglossum* and is separated by the presence of acuminate setae in hymenium and on the stipe.

In addition to the current collection five specimens from Slovakia were located in herbaria. All specimens were studied and measurements of spores taken (Tab. 1). According to the published data and/or search in herbaria no other species of *Trichoglossum*, known from other European countries, occur in Slovakia.

Specimens studied:

1. "Tatra. Roxer Wald." [Veľký les forest between villages Rakúsy and Kežmarské žľaby], F. Hazslinsky (BP 66115).
2. "Tátra", F. Hazslinsky (SLO).
3. "Prenčov. Kiepa, in loco graminoso.", 1891, A. Kmeť (BRA).
4. "Bratislava. Gebirgswald." [city of Bratislava: public park Horský park], 1927, K. Mergl (BRA).
5. "Vysoké Tatry. Starý Smokovec." [Vysoké Tatry Mts.: town of Starý Smokovec], 1960, A. Pilát (PRM 534008).
6. "Volovské vrchy, Kojšovská hoľa, rašelinisko na S strane, 1200 m n. m." [Volovské vrchy Mts.: Kojšovská hoľa ridge, peat-bog on the nothern slope, 1200 m a. s. l.], 14.9.1994, P. Mráz (BRA, PRM 887374).

Tab. 1. Variability of spore characters.: n — number of septa, l — length of the spore (μm), w — width of the spore (μm).

1. Prenčov			2. Tatra (BP)			3. Tátra (SLO)		
s	*l*	*w*	*s*	*l*	*w*	*s*	*l*	*w*
15	117	4.4	14	114	6.9	15	121	7.0
13	114	4.4	15	142	5.8	14	131	5.8
15	112	4.9	15	144	5.8	15	145	5.8
16	114	5.2	15	128	6.9	15	140	5.8
15	138	4.4	15	138	6.9	15	147	7.0
4. Bratislava			5. St. Smokovec			6. Koj. hoľa		
s	*l*	*w*	*s*	*l*	*w*	*s*	*l*	*w*
15	135	4.9	15	159	5.0	15	135	5.8
14	141	6.5	14	143	4.5	15	134	5.8
15	117	4.9	13	137	6.0	15	134	5.8
15	138	4.9	10	149	5.0	8	106	4.7
14	146	6.5	14	152	4.5	15	156	7.0

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REFERENCES

ANONYMUS (1987): Fungi and lichens. In: Rassi, P. et Vaisanen, R. (eds.), Threatened animals and plants in Finland, p. 35–39. Helsinki.

ANTONÍN, V. et al. (1996): Huby. In: Kotlaba F. (ed.), Červená kniha ohrozených a vzácnych rastlín a živocíchov SR a ČR. Vol. 4. Bratislava.

ARNOLDS, E. (1989): A preliminary Red Data List of macrofungi in the Netherlands. – Persoonia 14: 77–125.

BENKERT D. et al. (1992): Rote Liste der gefahrdeten Grosspilze in Deutschland. pp. 144, Eching.

CANNON P. F. et al. (1985): The British Ascomycotina. An annotated checklist. pp. viii + 302, Slough.

COOKE M. C. (1879): Mycographia seu Icones fungorum. 267 p., London.

ENDLICHER S. (1830): Flora Posoniensis, exhibenes plantas circa possonium sponte crescentes ... pp. 493, Posonii.

HAZSLINSKY F. (1881): Rendhagyó köggombák. – Ertek. Természettud. Kör. 11: 1–24.

KRISAI I. (1986): Rote Liste gefährdeter Großpilze Österreichs. In: Nikelfeld, H. et al. (ed.), Rote Listen gefährdeter Pflanzen Österreichs, 178–189, Wien.

LIZOŇ P. (1993): Decline of macrofungi in Europe: An overview. – Trans. Mycol. Soc. Rep. China, 8 (3–4): 21–48.

LIZOŇ P. (1995a): Threatened macrofungi in Slovakia. – Biologia, Bratislava, 50: 9–12.

LIZOŇ P. (1995b): Macrofungi reported as extinct/missing or threatened with extinction in European Red Data Lists. – Fungi Conserv. Newsl. (3): 3–4.

LUMNITZER S. (1791): Flora Posoniensis exhibens circa Posonium sponte crescentes. pp. viii + 557, Lipsiae.

MAINS E. B. (1956): North American species of Geoglossum and Trichoglossum. – Mycologia 46: 586–631.

NANNFELDT J. A. (1942): The Geoglossaceae of Sweden. – Ark. Bot. 30A(4): 1–67.

WOJEWODA W. and LAWRYNOWICZ M. (1992): Czerwona lista grzybów wielkoowocnikowych zagrozonych w Polsce. In: Zarzycki K. et al. (eds.) : Lista roslin zagrozonych w Polsce, p. 27–56, Kraków.

CZECH MYCOL. 49 (3–4), 1997

Book review

REDLIN S. C. AND CARRIS L. M., EDS.:

Endophytic fungi in grasses and woody plants. Systematics, ecology and evolution.

– 223 pp., APS Press, St. Paul, Minnesota, USA, 1996. — 49 US$ (the book is in the library of the Society).

This book is the result of papers presented at a discussion session organized by the APS mycology committee in St. Louis, Missouri on August 21, 1991. Interest in endophytic fungi has surged in recent years. Although these fungi are not fully understood, evidence suggests that they can offer significant benefits to their host plants including an increased resistance to disease and herbivory, and the stimulation of seed growth.

To create a framework for future research the book presents the most extensive set of information on endophytic fungi available from a single source. Covering endophytes occurring in the grasses and woody plants of North America, South America and Europe, these articles combine descriptions of endophytic relationships, definitions of major concepts and reports on recent studies. The authors examine a range of topics including differences between endophytic colonization and latent infection, manipulating endophytes to control disease, effects of pollution and other human activities on endophytic communities, evolutionary adaptations, host specificity; host-endophyte interactions, biochemistry, physiology, morphology, occurrence. A floristic and ecological treatment of fungal endophytes is added in some chapters. The book starts with the relatively non-specialized group of fungi associated with woody plants and moves to discussions on the more specialized group of clavicipitaceous and *Acremonium* — like endophytes associated with grasses. The final two chapters address the area of human intervention and endophytic communities: what are the effects of human activities on endophytes and conversely, can endophytes be manipulated to man's benefit? Two general groups of endophytic fungi are distinguished: those that are usually present in grasses, seed transmitted and classified in the order Clavicipitales or in the genus *Acremonium*, the other group consisting of a diverse assemblage of organisms that inhabit woody plants.

In grass hosts endophytic fungi may have benefical effects such as the modification of growth patterns or the amelioration of the plant's response to drought. Most often they do not cause injury to their hosts and some confer the plants resistance to injurious fungi, insects or nematodes. Several are of economic importance as they cause disease in plants. Identification of these fungi in grasses, ericaceous plants, conifers, broadleaved trees as well as tropical plants such as palms, orchids, aroids and bromeliads continues.

This book helps to answer at least some so far open questions and provide guidance for future research by listing fungal taxa common in various hosts and describing techniques used to isolate and identify endophytes in grasses and woody plants. Surveys of groups of fungi most frequently encountered, morphological and physiological aspects, co-evolution with hosts and adaptive strategies are included. Their adaption to various hosts means a challenge to study them because they may grow slowly in pure culture or sporulate with difficulty or both, resulting in problems with their identification.

For scientists, biotechnology companies, farmers, plant breeders and foresters, studying the relationship between endophytic fungi and their hosts may lead to new methods of fighting crop disease, the discovery of novel chemical compounds and clues to the impact of these fungi on biodiversity. There is considerable interest in the use of endophytes for biocontrol. This coincides with demands by the environmentally conscious public for sustainable agricultural systems.

Zdeněk Urban

CZECH MYCOL. 49 (3–4), 1997

Svatopluk Šebek (1926–1996) in memoriam

FRANTIŠEK KOTLABA and ZDENĚK POUZAR

The science of mycology in the Czech Republic has suffered serious losses in recent years from the death of several significant personalities. This sorrowful trend continued also in 1996 by the decease of the well-known mycologist and ethnographist Svatopluk Šebek. This loss is heavy for the Czech Scientific Society for Mycology because Svatopluk was, for over fifteen years, the man who actively organized the life of this Society.

Svatopluk Šebek, 14. 9. 1982.
Photo F. Kotlaba

Svatopluk Šebek was born on March 7, 1926, in the Central Bohemian town of Nymburk, NE of Praha (Prague), where he lived for his whole life and died there on July 17, 1996, of pulmonary cancer.

He studied in the Faculty of Sciences of the Charles University in 1946–1950. His first teacher was the lichenologist, Professor Jindřich Suza (1890–1951), who introduced him to phytogeography and Šebek followed this science for his whole life. His second teacher at the University was Professor Karel Cejp (1900–1979), under whom he studied mycology.

S. Šebek finished his university studies in 1950, defended his thesis on the taxonomy of the genus *Scleroderma* (Gasteromycetes) but left the University without achieving a degree because, for financial reasons, he accepted the position of secretary of the former Czechoslovak Academy of Agricultural Sciences (1950–1952). In 1956–1976, he was employed in the regional museum in Poděbrady (Central Bohemia), where he held the position of director in 1959–1974. He iniciated there many activities, especially in ethnography, the editing of some local periodicals, the foundation of the museum archives etc. For several years, he was also the president of the Union of the Czechoslovak Museums. In addition, he continued in his mycological studies and published a number of papers.

In the second half of the fifties, he participated in the elaboration of the gasteromycetes for the first volume of the Flora ČSR, where he worked out

the order Podaxales and the families Mycenastraceae and Sclerodermataceae. Additionally, S. Šebek was also interested in the family Boletaceae, the genus *Amanita*, the halucinogenic *Psilocybe* species and some other macromycetes.

In 1976–1990 (and for a shorter time later), he was active as the secretary of the former Czechoslovak Society for Mycology in Praha. In this position, he developed a number of new activities, e.g. the wide exchange of mycological publications, foundation of the section for protection of fungi and their environment, which was connected with a number of scientific meetings and the editing of several volumes of reports from this meetings, etc. Furthermore, he co-operated with Ing. Jan Kuthan in the editing of the Society's bulletin Mykologické listy (Mycological Leaves), where he published a number of contributions.

During his fruitful life, S. Šebek devoted himself to ethnomycology, botany, the biographies of some former mycologists (A. C. J. Corda, J. V. Krombholz, J. K. Zobel), iniciated the restoration of Krombholz's family tomb in the Prague cemetery at Olšanské hřbitovy, and tried to solve the problem of fungi as a part of nature protection. The detailed biography of S. Šebek up to 1985 has been published (in Czech) in Čes. Mykol. 40: 169–176, 1986.

Šebek projected his deep interest in phytogeography into all his mycological studies and he endeavoured to find new localities of the phytogeographically important macromycetes in our country. Regarding the protection of fungi, he participated as one of the authors in the Red Data Book of non-vascular plants of the Slovak and Czech Republics (blue algae and algae, fungi, lichens and bryophytes), where he wrote the family Amanitaceae and the gasteromycetous fungi.

Svatopluk Šebek was a man of high culture with interests also in philosophy, ethnography, archeology, botany, music and linguistics, which he projected into all his activities — and so he enriched indirectly also those people with whom he co-operated or was in contact.

SELECTED MYCOLOGICAL PAPERS OF S. ŠEBEK SINCE 1986

(except biographies of mycologists, reports on the activities of the Society etc. For a complete bibliography up to 1985, see Čes. Mykol. 40: 169–176).

1986

K ochraně hub a jejich prostředí na Karlštejnsku. – Mykol. Sborn., Praha, 63: 2–3.

Houby některých nelesních stanovišť ve středním Polabí (Pilze einiger nichtforstlicher Standorte in der mittleren Elbe-Tiefebene). – Mykol. Listy, Praha, append. ad no. 23: 7–13 (Kuthan J. (red.), Houby nelesních stanovišť ČSSR: Písky, stepi, černavy).

K ochraně hřibu příživného ve středním Polabí (Zum Schutz des Schmarotzer-Röhrlings in der Mittelelbeebene). – Mykol. Listy, Praha, no. 23: 13–14.
Hodnocení ohrožení čs. druhů rodu Amanita na základě jejich mykososiekologického indexu (Die Bedrohungverwertung von tschechoslowakischen Arten der Gattung Amanita auf Grund von dem mykososiekologischen Index).– Mykol. Listy, Praha, no. 25: 15–18.

1987

Mezinárodní spolupráce mykologů v ochraně hub. – Nika, Praha, 8: 148–149.
Nález prášivky bažinné v severních Čechách (Neuer Fund von Bovista paludosa Lév. in Nordböhmen). – Mykol. Listy, Praha, no. 26: 4–5.
Mapování ohrožených druhů hub (Die Kartierung von bedrohten Pilzarten in der Tschechoslowakei). – Mykol. Listy, Praha, no. 26: 18–20.
Náš příspěvek k ochraně hub v minulých deseti letech. – Mykol. Listy, Praha, 27: 1–4.
Muchomůrka pošvatá s prstenem (Grauer-Scheidenstreifling (Amanita vaginata) mit Manschette). – Mykol. Listy, Praha, no. 29: 2–4.
Ochrana hub u nás a v sousedních zemích (Aktuelles Naturschutzstreben (Pilze) in der ČSSR und in einigen benachbarten Staaten). – Mykol. Sborn., Praha 64: 2–5.
Přehled evropských druhů bedel rodu Macrolepiota Sing. (European species of the genus Macrolepiota Singer). – Mykol. Sborn., Praha, 64: 5–11.
Ochrana hub v Polsku a SSSR (The ways of preservation of endangered fungal species in Poland and the USSR). – Mykol. Sborn., Praha, 64: 52–55.
Ochrana hub ve Švýcarsku a Liechtensteinsku (The ways of preservation of endangered fungal species in Swiss and Liechtenstein). – Mykol. Sborn., Praha, 64: 145–147.
Ochrana hub a československá státní norma"Čerstvé jedlé houby" (ČSN 46 3195) z roku 1985 (Protection of fungi and the Czechoslovak state regulation "Fresh edible fungi" from the year 1985). – In: Kotlaba F., Semerdžieva M. et Šebek S. (red.), Houby z hlediska ochrany přírody a zdraví člověka, p. 16, Praha.

1988

Liška obecná. – Nika, Praha, 9: 32–33.
Naše penízovky (plamenečky) – Flammulina P. Karst. – Mykol. Sborn., Praha, 65: 41–44.
Poznámky k našim kotrčům – Sparassis Fr. spec. div. – Mykol. Sborn., Praha, 65: 87–89.
Kotlaba F., Šebek S.: Je možné chránit houby? – Haló Sobota, Praha, 27 (9.7.1988): 5.

1989

Význačné druhy hub v teplomilných doubravách. – Polabská Příř., Nymburk, 2: 5–7.
Poznámky k našim kotrčům – Sparassis Fr. spec. div. – 2. část. – Mykol. Sborn., Praha, 66: 67–68.
Silibinin – nový lék proti otravám muchomůrkou zelenou. – Mykol. Listy, Praha, no. 34: 18–19.
Ochrana psammofytní mykoflóry ve stř. Polabí. – Mykol. Listy, Praha, no. 36: 19–20.
Zoocecidie na plodnicích lesklokorky ploské (Ganoderma applanatum) v Praze (Zitzengallen an den Fruchtkörpern des Flachen Lackporling (Ganoderma applanatum) in Prag). – Mykol. Listy, Praha, no. 36: 23–25.
Výzkum a ochrana hub v přírodních rezervacích. – Mykol. Listy, Praha, no. 36: 26–27.
Houby na dřevinách a sídlištní zeleň v Nymburce (Die Pilze an Laubbäumen in der inneren Stadt Nymburk). – Mykol. Listy, Praha, no. 37: 9–12.
Další lokality lesklokorky ploské se zoocecidiemi. – Mykol. Listy, Praha, no. 38: 20.
K mapování ohrožených druhů hub v ČSSR – I. – Mykol. Listy, Praha, no. 38: 22–24.
Rozšíření některých našich ohrožených muchomůrek: Amanita solitaria, A. strobiliformis a A. friabilis. – In: Kotlaba F. et Šebek S. (red.), Aktuální rozšíření některých druhů řas, mechů, lišejníků a hub, p. 22–23, Praha.
Současné rozšíření některých vzácnějších gasteromycetů: Mutinus caninus, Endoptychum agaricoides a Montagnea arenaria. – In: Kotlaba F. et Šebek S. (red.), Aktuální rozšíření některých druhů řas, mechů, lišejníků a hub, p. 43–44, Praha.
Seznam druhů čs. gasteromycetů. – In: Kotlaba F. et Šebek S. (red.), Aktuální rozšíření některých druhů řas, mechů, lišejníků a hub, p. 45–51, Praha.

Nové lokality lesklokorky ploské se zoocecidiemi. – Mykol. Listy, Praha, no. 41: 12 et 17.
Příspěvek k poznání mykoflóry státní přírodní rezervace Hrabanovská černava u Lysé nad Labem (Contribution to the knowledge of mycoflora of the State Nature Reserve of Hrabanovská černava Fen near Lysá nad Labem). – Bohem. Centr., Praha, 36: 26–27.

1990

Houby v SPR Hrabanovská černava u Lysé n. L. – Polabská Přír., Nymburk, 3: 4–7.
Mykoflóra společenstev skalních stepí jižně od Peček (okr. Kolín, Středočeský kraj) (Mycoflora of rock-steppe communities south of Pečky (Kolín district, region of C. Bohemia). – Bohem. Centr., Praha, 19: 23–40.
Příspěvek k mykofloristické charakteristice teplomilných doubrav u Mcel (okr. Nymburk) (Zur mykofloristischen Charakteristik von thermophilen Eichenwälder bei Mcely (Kreis Nymburk)). – In: Kuthan J. et Kotlaba F. (red.), Výzkum a ochrana hub v přírodních rezervacích – I., p. 40–46, Praha.
Trusovka tečkovaná – mizející houba evropské mykoflóry? – Mykol. Sborn., Praha, 67: 88–92.

1992

Mykoflóra slatinných luk ve středním Polabí. – Mykol. Sborn., Praha, 69: 87–89.
Polabské lanýže. – Mykol. Sborn., Praha, 69: 137–138.

1993

Muchomůrka šedoblanitá – Amanita submembranacea (Bon) Gröger. – Mykol. Sborn., Praha, 70: 14–18.
Mřížovka červená – Clathrus ruber Mich.: Pers. – ve středoevropské mykoflóře. – Mykol. Sborn., Praha, 70: 101–103.
Význačné druhy hub v lužních lesích středního Polabí. – Polabskou Přír., Poděbrady, 1993, 4: 8–14.

1994

Houby v okolí starého labského ramene u Sadské. – Polabská Přír., Poděbrady, 5: 1–4.
Muchomůrka hnědoježatá – Amanita brunneoconulus Bas et Gröger. – Mykol. Sborn., Praha, 71: 14–16.
Houbařský motiv také v italské heraldice. – Mykol. Sborn., Praha, 71: 30–31.
Další nález květnatce Archerova – Clathrus archeri (Berk.) Drink v severních Čechách. – Mykol. Sborn., Praha, 71:61.
Otrava hřibem satanem v Nymburce v r. 1946. – Mykol. Sborn., Praha, 71: 65.
Mykoatropinová otrava v Petrovicích u Sedlčan v r. 1973. – Mykol. Sborn., Praha, 71: 94–95.
Několik poznámek k našim nálezům hřibu sametového Boletus fragilipes C. Martin sensu Pouzar. – Mykol. Sborn., Praha, 71: 118–120.

1995

Přehled snah o mykofloristický výzkum našeho území a o vydání české mykoflóry. – Mykol. Sborn., Praha, 72: 1–3, 49–51, 81–83 et 113–114.
Známe dobře ohnivec šarlatový – Sarcoscypha coccinea (Scop.: Fr.) Lamb. s.l.? – Mykol. Sborn., Praha, 72: 56–58.
Muchomůrka Eliášova – Amanita eliae Quél. na Nymbursku. – Mykol. Sborn., Praha, 72: 90–91.
Amanitaceae, Gasteromycetes (excl. Chamonixia). – In: Kotlaba F. (red.), Červená kniha 4: 82–85 et 109–119, Bratislava.

Book review

JOSEPH ROTEM:

The genus Alternaria. Biology, Epidemiology and Pathogenicity.

– 326 pp., 44 figs., APS Press, St. Paul, Minnesota, USA, 1994. — 99 US$ (the book is in the library of the Society).

In this monograph biological and environmental processes are discussed of one of the most studied and most distributed groups of fungi causing damage to various diseases of our economic as well as wild vascular plants. It is surprising that up to now 3.532 papers referring to various *Alternaria* species have been published. These papers were devoted to damage caused by *Alternaria* species on 2.283 host plants belonging mostly to Solanaceae, Brassicaceae, Cucurbitaceae, cotton, wheat, tobacco, sunflower etc. In total 4.192 papers concerning *Alternaria* pathogenes and diseases were published on specific topics like occurrence, resistance, epidemiology, taxonomy, seed pathology, post-harvest diseases in storage and shipping etc. The above mentioned numbers present the quantitative assessment of the economic importance of diseases and disorders caused by *Alternaria* sp. div. The book counts 12 chapters. First the taxonomy of the genus *Alternaria* and its infrageneric classification are discussed. What can be understood by formae speciales and strains including pathotypes, races and biotypes. Chapter 3 gives information on factors affecting susceptibility of various hosts to diseases caused by their specific *Alternaria* pathogens. Increased susceptibility was caused by starvation, drought, infestation by insects, wounds inflicted by non-specific agents and weakening due to production of excessive yield or advancing age. The concept of low-sugar diseases is also discussed. Chapters 4 and 5 describe sporulation and infection, respectively. In most *Alternaria* —host systems the sporulation cycle includes two wet nights with a dry day in between. *Alternaria* pathogens infect in a wide range of temperatures and overcome unfavourably dry conditions by infecting during several short periods of moisture rather than one long period. Chapter 6 turns again to the host and describes the physiological aspects of pathogenesis. Non-host-specific and host-specific toxins are described including their role in the evolution of pathogenic species. Also the action of defense mechanisms is described, such as saprophytic leaf microflora, phytoalexins etc. Information on the biochemistry of diseased plants is provided. Chapter 7 deals with the process of survival and overwintering. Data obtained in a laboratory can not be transferred to the field. The edaphic, biotic and weather conditions of overwintering in debris are discussed. Chapter 8 refers to phenomena of spore dispersal. The influence of weather on epidemics is discussed in Chapter 9. The following chapters are devoted to the possibilities of forecasting *Alternaria* disease and epidemics and methods to predict yield losses together with construction models ranging from simple criteria to sophisticated simulators. Problems of resistance and breeding are discussed in Chapter 12. The achievements of new breeding methods and selection with the use of cytoplasmic, somaclonal, radiological and toxicological techniques are also discusses. Chapter 13 compares the knowledge of four typical *Alternaria* pathogens on their respective hosts, viz. *A. solani* on potato and tomato, *A. macrospora* on cotton, *A. carthami* on sunflower and *A. triticina* on wheat.

A total of 40 pages of cited literature and index (11 p.) is added. The monograph will be useful not only for plant pathologists at universities and major plant pathological institutes but also in agricultural research institutes. Last but not least this book is important and useful for various mycologists interested in fungi taxonomy and systematics. The monograph is very inciting by searching for new views and ideas concerning the species concept and by evaluating species variability in all possible aspects.

Zdeněk Urban

Book review

UWE BRAUN:

The powdery mildews (Erysiphales) of Europe.

– 337 p., 112 figs., Gustav Fischer Verlag, Stuttgart, 1995. — 148 DM (the book is in the library of the Society).

This monograph of the European powdery mildews is based on the earlier world monograph of this group of biotrophic parasites by Braun (1987) — A monograph of the Erysiphales (powdery mildews), Beiheft zur Nova Hedwigia 89: 1–700. Since this book appeared ten years ago various important local mycofloras and papers on powdery mildews have been published. These have been taken into account in the preparation of the present book. The chapters in the general section contain short surveys of all aspects of the Erysiphales and have been taken partly from Braun (1987), partly rewritten. These concern morphology and anatomy of anamorphs and teleomorphs, ascocarp development, important criteria in taxonomy and delimitation of the order, position of the Erysiphales in the fungal classification, taxonomy and phylogeny, fossil powdery mildews and species concept. The special part includes, besides notes on the delimitation of Europe (mostly taken after Flora Europaea), abbreviations and exsiccata, special keys based on host families, keys to genera, detailed descriptions of all genera and species (including anamorphs) with keys to the species, full illustrations of all European species, a list of doubtful and excluded taxa, and references.

It is hoped that this book will be useful to mycologists, plant pathologists, parasitologists, horticulturalist researchers, agriculturalists, botanists and biologists interested in powdery mildews in pure and applied research.

The book was intended to become a part of the monumental series "Cryptogamic Flora of Europe" to be published by Fischer Verlag under the editorship of W. Jülich. Unfortunately for reasons of the editor's working on other subjects this valuable project will be not carried out.

Zdeněk Urban

Book review

Mills D., Kunoh H., Keen N. T. and Mayama S. eds.:

Molecular aspects of pathogenicity and resistance: requirement for signal transduction.

– 312 p., 12 halftones, 79 photographs, 67 drawings. — APS Press, St. Paul, Minnesota, USA, 1996–62 US$ (the book is in the library of the Society).

The book contains papers given at the seventh seminar of a series held from 1966 when a cooperative scientific programme between the US and Japan began to provide a regular forum to critically discuss and review the progress on molecular and physiological aspects of plant / pathogen interactions. This successful seminar series has been convened in approximately five-year intervals for three decades.

The seventh seminar was held September 24 through October 1, 1995, at Tsu-city, Mic Prefecture, Japan. The chapters of this volume reveal the significant progress in establishing cell signaling as an important component in host-pathogen interactions.

Besides two summarizing overviews concerning endeavour of the US-Japan seminar series about host-parasite interaction and cytological aspects to interactions mentioned, twenty contributions are gathered in the following five thematic groups: Fungal plant genic interactions; Signal transduction in fungal morphogenesis; Bacterial and fungal sensing of plant signals; Plant disease resistance genes in signal transduction pathways; Signaling in response to bacterial and fungal phytotoxins. In addition, 14 poster abstracts are reproduced.

The book will be very useful in all institutes and laboratories which are engaged in the theoretical but also the practical study of and research in plant pathology.

Zdeněk Urban

Book review

ERWIN D. C. AND RIBEIRO O. K.:

Phytophthora diseases worldwide.

– 592 p., 82 halftones, 62 color photographs, 52 drawings, 94 tables, APS Press, St. Paul, Minnesota, USA, 1996–180 US$ (the book is in the library of the Society).

One hundred fifty years after the Irish potato famine, it seems almost uncanny that the genus *Phytophthora* should be making headlines again. We have learned much about *Phytophthora* during the intervening 150 years, and this book provides an excellent summary of and guide to that literature. Chapters 1–7 describe generalities about the genus and provide useful hints for those who work with members of the genus. We found these chapters to be intriguing because of the new information we learned and because of the many challenges remaining. Chapters 8–66 are compilations of information about individual species. Each chapter provides specific information and the citations necessary to pursue specific questions. Although these chapters collate and summarize a vast body of information, it is still clear that there are many gaps in our knowledge about the genus. Thus, the book not only provides background and answers, it also provides challenges.

The evolutionary relationships of the genus have become increasingly clear during the past two decades, and these are well described in the first part of the book.

The genus *Phytophthora* is important in a variety of respects, and so is this book. The book provides useful information for those experienced and inexperienced. It also is a useful source of many facts and a tremendously useful guide to the literature of the genus. The book will serve as a valuable resource in the office and in the laboratory. It contains background information so that the beginner can gain an overview of the genus. It provides very practical information for those working with *Phytophthora*, and it challenges the specialist with unanswered questions.

Even the recent availability of molecular biology techniques does not entirely remove the barriers to successful investigation. Nonetheless, molecular biology has contributed to our understanding, and the many citations in this book clearly demonstrate that contribution and enhance the value of this volume.

Zdeněk Urban

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Figs. 1-13. Several members of the Czech Scientific Society for Mycology who participated in the Society's ceremonial meeting held in Prague on October 18, 1996 to commemorate the 50th anniversary of the founding of the Society and in the mycological trip to the Bohemian Karst on October 19. (More details could be found in the journal Mycologické Listy 60, 1997)

Photo by J. Holec, J. Klán

1 Left to right: Jaroslav Klán, Zdeněk Pouzar; **2** Mirko Svrček; **3** Left to right: Ladislav Hruška, Ludmila Marvanová, Rostislav Fellner, Alena Kubátová, ?, Josef Slavíček; **4** Front row left to right: Alois Černý, Mrs. Černá, Jaroslav Klán, Second row left to right: Rostislav Fellner, Josef Slavíček, Jaroslav Landa, Ludmila Marvanová, Josef Herink, Alena Kubátová, Bronislav Hlůza, František Kotlaba; **5** Jan Špaček; **6** František Kotlaba; **7** Pavel Lizoň.


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8 Left to right: Ludmila Marvanová, Libuše Kotilová, Jiří Baier, Zdeněk Urban; **9** Left to right: Ludmila Marvanová, Josef Herink, Jaroslav Landa, Alena Kubátová, Bronislav Hlůza, Jiří Hlaváček; **10** Left to right: Jiří Baier, Josef Šutara, Ladislav Hruška; **11** Left to right: Vladimír Antonín, Josef Šutara, Pavel Lizoň; **12** Left to right: Zdeněk Pouzar, Jiří Baier, Alena Kubátová, Rostislav Fellner, Mrs. Černá, Jaroslav Klán, Petr Hrouda, Alois Černý; **13** Left to right: Zdeněk Pouzar, František Kotlaba.

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References. References are to be listed in alphabetical order according to the surnames of the first authors. The bibliography should be written as follows:

Moravec J. (1984): Two new species of Coprobia and taxonomic remarks on the genera Cheilymenia and Coprobia (Discomycetes, Pezizales). – Čes. Mykol. 38: 146–155. (journal article)

Ryvarden L. (1978): The Polyporaceae of North Europe, Vol. 2. Inonotus-Tyromyces. – 507 p. Oslo. (book)

Tommerup I. C., Kuek C., and Malajczuk N. (1987): Ectomycorrhizal inoculum production and utilization in Australia. – In: Sylvia D. M., Hung L. L., and Graham J. H. (eds.), Proceedings of the 7th North American Conference on Mycorrhizae, p. 93–295, Gainesville.

The references *in text* should be Moravec (1984), or (Moravec 1984); or Kühner and Romagnesi (1974); When there are three or more authors use the form Tommerup et al. (1987).

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