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Sclerotiniaceae on sweet chestnut burrs in the northern 'old world'

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Palmer J. T. (1994): Sclerotiniaceae on sweet chestnut burrs in the northern 'old world'. Czech Mycol. 47: 101–138

Numerous collections by the author and 91 samples of old, fallen burrs of Castanea sativa Mill. received from 51 correspondents in Algeria and 21 countries in Europe, including the Canary Islands, Corsica and Madeira, produced the following Sclerotiniaceae: i.e. Botryotinia fuckeliana (de Bary) Whetzel, Ciboria americana Durand, Ciboria tenuistipes Schroet., Ciborinia bresadolae (Rick) J. T. Palmer, Lanzia echinophila (Bull: Fr.) Korf, L. luteovirescens (Rob. in Desmaz.) Dumont et Korf and Rutstroemia sydowiana (Rehm in Syd.) White as well as species of Ciboria, Ciborinia and Rutstroemia, which require further investigation. Hitherto, L. echinophila was the only sclerotinaceous species reported from this substrate in Europe. The samples ranged from single burrs to large packages with up to four species found in each. In addition, 44 further samples, nineteen of freshly burrs, produced no apothecia. Both C. americana and R. sydowiana have, however, been found in collections in national herbaria determined with a synonym of Lanzia echinophila.

Key words: Sclerotiniaceae, Castanea sativa, Europe, Algeria

Palmer J. T. (1994): Sclerotiniaceae na číškách kaštanovníku jedlého v severním „Starém světě". Czech Mycol. 47: 101–138

Jsou publikováni zástupci čeledi Sclerotiniaceae rostoucí na starých spadaných číškách kaštanovníku jedlého – Castanea sativa Mill. (91 vzorků) – Botryotinia fuckeliana (de Bary) Whetzel, Ciboria americana Durand, C. tenuistipes Schroet., Ciborinia bresadolae (Rick) J. T. Palmer, Lanzia echinophila (Bull: Fr.) Korf, L. luteovirescens (Rob. in Desmaz.) Dumont et Korf a Rutstroemia sydowiana (Rehm in Syd.) White a také další druhy rodů Ciboria, Ciborinia a Rutstroemia, které však vyžadují další studium. Sběry pocházejí od autora a 51 spolupracovníků z Alžírska a 21 zemí Evropy, včetně Kanárských ostrovů, Korsiky a Madeiry. Lanzia echinophila byla dosud jediným druhem čeledi Sclerotiniaceae, známým v Evropě z tohoto substrátu. Vzorky zahrnovaly od jedné číšky až k velkým souborům s až čtyřmi zjištěnými druhy v jednom vzorku. Dalších 44 vzorků, z toho 19 s čerstvě spadanými číškami nevytvořilo žádná apotecia. Ciboria americana a Rutstroemia sydowiana byly zjištěny ve sběrech v řadě národních herbářů, v položkách označených různými synonymními jmény vztahujícími se k Lanzia echinophila.

INTRODUCTION

The only species of the *Sclerotiniaceae* reported as occurring on burrs of *Castanea sativa* Miller (= *C. vesca* Gaertn.) in Europe prior to Palmer (1965) was *Lanzia echinophila* under its various combinations with *Ciboria, Hymenoscypha, Peziza, Phialea, Rutstroemia* and *Sclerotinia.* A single but quite different fungus, *Ciboria americana* Durand, which has also been treated in *Rutstroemia*, is known from North America but had not been collected for many years due to the virtual disappearance of the American Chestnut, *Castanea dentata* Borkh., caused by chestnut blight, *Endothia parasitica* (Murr.) And. et And. Whilst searching for *L. echinophila* on the 29th September, 1963, the writer collected overwintered *Castanea* burrs bearing brownish apothecia in Lyme Park, Disley, Cheshire, England. However, microscopic examination showed ellipsoid, instead of the typical allantoid spores of *L. echinophila* and the fungus was found to agree with a collection from Enfield Gorge, Ithaca, N. Y., U.S.A., where Durand had collected *C. americana*, which was confirmed by Professor R. P. Korf. Subsequent searches for *Lanzia echinophila* in Northwest England produced only *C. americana*. Therefore, as the writer had previously seen *L. echinophila* in Moccas Park near Hereford, from where collections by C. B. Plowright were distributed as *Ciboria echinophila* in Rehm's Ascomyceten # 606, he visited this locality on the 9th November, 1963, and collected both species on previous year's burrs.

During the "Dreiländertagung" of the Austrian, German and Swiss mycologists at Chur, Switzerland, in 1964, *C. americana* and *L. echinophila* were found on sweet chestnut burrs, together with *Rutstroemia sydowiana* (Rehm) White, a common species on stromatized petioles of *Castanea* and *Quercus* leaves, in Engelwald, Mädris near Mels on the 26th October (Palmer 1965). Subsequently, whilst on the way to the Deutsche Gesellschaft für Pilzkunde Tagung in Münster, Westphalia, further collections of these three species on chestnut burrs were made at Neustadt an der Weinstraße and Wiesbaden with *C. americana* being found in the Botanic Garden at Münster. Additional finds of *C. americana* and *R. sydowiana* were also made at Amersfoort and between Enschede and Hengelo in the Netherlands whilst returning to England, where *R. sydowiana* was collected on burrs in Regent's Park, London.

As it appeared that these three species could be widespread with *Ciboria americana* having a more northern distribution, correspondents were asked for samples of *Castanea* burrs, irrespective of whether or not apothecia were visible. This resulted in the receipt from 50 people of 130 samples from as far south as Algeria, Portugal in the west and Georgia in the east. 80 samples contained apothecia of one or more species of Sclerotiniaceae, including one with four. None were found in the remaining 40 collections, nineteen of which were clearly freshly fallen burrs with three (Austria, Belgium, England and Scotland) containing a few sclerotia, none of which were retained. In addition to the preceding, the writer has made numerous collections in Europe, including the Canary Islands, Greece, Ireland and Madeira, with the most northern being *C. americana* at ca 57°45′ N in Scotland.

Samples varied from single burrs to a large number with each being soaked in water on receipt for about half-an-hour. Each burr was then thoroughly dissected with all apothecia, varying from single to numerous, being removed and macroscopically separated into species when more than one were present. The various apothecia were packeted after microscopical study for preservation in the writer's herbarium, with duplicates distributed, where quantities permitted, to various institutes, chiefly CUP, K and NY, where Dr. K. P. Dumont was initially jointly concerned in the project. Fungi belonging to other groups were mainly passed to Dr. R. W. G. Dennis at K.

In addition to the actual burrs, apothecia of *C. americana* were often also found on the cuticles, frequently blackened or showing line stromatization, of immature, mostly empty chestnuts, which are abundant in the northern areas where the nuts rarely mature. Whilst mainly confined to burrs showing heavy stromatization, only a few collections of *L. echinophila* have been on chestnut cuticles with *R. sydowiana*, often on burrs with a heavy woolly growth or showing little apparent stromatization, with all three occurring on the stalks. All three species developed from the thick shell-like [matrical] layer of the burr, either within or externally, when the apothecia were often more robust and larger, and on the spines, when they were frequently minute but perfectly formed and mature. The occurrence of all three main species or very similar species fungi on acorns and cupules of *Quercus* spp. was reported by Galán (1985, 1991), Palmer (1968, 1993) and Palmer et Truszkowska (1969).

Botryotinia fuckeliana: During the course of this survey, luxurious developments of *Botrytis* conidiophores within freshly fallen burrs were often observed in the autumn with *Botryotinia* apothecia occasionally being collected in the first half of the year. A *Botrytis* anamorph was present with the teleomorphs collected from May to July, which were mostly passed to Professor G. L. Hennebert (Belgium), who was then monographing *Botryotinia* but from whom no decision has yet been received. The writer agrees with Korf et Hennebert (1993) that the recent proposal to introduce new terms for *anamorph* and *teleomorph*, which are now well-established and are used here, is superfluous.

Ciborinia sp.: Apothecia with either four- or eight-spored asci but no sign of a *Botrytis* anamorph were collected in England and Switzerland during the second half of the year whilst similar 4-spored apothecia were found on *Castanea* burrs in Potsdamer Forst, Potsdam, Germany, on 19, IX, 1971 by Dr. D. Benkert. They could comprise two separate species are still being investigated and Mr. W. Matheis (Switzerland) has proposed a joint project. Clark (1980) referred a collection of apothecia, apparently within *C. sativa* burrs bearing *Botrytis* conidiophores, from Newland Wood, Warwickshire, leg. 21, X, 1979, to *Sclerotinia fuckeliana* (de Bary) Fuckel, which may belong here.

Ciboria americana: Apothecia were both macro- and microscopically variable and could comprise more than one species with further study required. Although clearly widely distributed in Europe, its presence appears only to have been reported by Baral et Krieglsteiner (1985), Calonge (1970), Clarke (1980), Dennis (1968), Galán (1985, 1991), Matheis (1985a,b), Palmer (1965, 1970, 1993a) and Torre (1974). The description of the apothecia as whitish (*blanquecino*) and asci with four spores (*asco tetraspóricos*) in Romero de la Osa Mateos (1993) suggests the preceding 4-spored *Ciborinia*. The writer's collections of this species on burrs beneath *Castanea crenata* Sieb. et Zucc. and *C. mollisima* BL. in the Berlin-Dahlem Botanical Garden extends the range of chestnut species. Outside Europe and North America, *C. americana* appears to have only been reported on '*Castanea vulgaris*' from Nepal by Thind (1969), corrected to *Castanea sativa* with the new combination *Poculum americanum* (Dur.) Sharma et Thind in Thind, Sharma et Singh (1983) and two collections on *C. sativa* burrs as *Ciboria americana* from West Bengal, India, by Thind, Sharma et Singh (1983) but whose description and figure suggest some other species.

Ciboria tenuistipes: Described from leaves of *Rubus fruticosus* agg. in Poland but also known from other plant remains, with the synonym *Ciboriopsis bramleyi* Dennis, was the species transferred to *Moellerodiscus* by Dumont (1976), who cited collections J. T. P. 2452 and 2454 on *Castanea* burrs. The writer, however, finds few grounds for keeping *Ciboriopsis* and *Moellerodiscus* distinct from *Ciboria* and regards them as synonyms.

Lanzia echinophila: Widely known under its synonyms in the European literature, it appears to be known outside the European continent apart from Algeria (Palmer, 1968), Canary Islands (Bañares Baudet et Beltrán Tejera, 1987) and Madeira (Palmer, 1993a). The record as *Peziza* from Pennsylvania, U.S.A. in Schweinitz (1832) was suggested by Durand (1902), possibly belonging to *C. americana*.

Rutstroemia sydowiana: very common on leaf petioles, the only published references to *Castanea* burrs seem to be Baral et Krieglsteiner (1985), Kohn (1982), Matheis (1976), Palmer (1965, 1968, 1970) and Palmer et Truszkowska (1969).

Other taxa: Duplicates of collections made during 1963/4 were deposited in the personal herbarium of Professor Korf (R.P.K.) in Herb. CUP. They were studied mainly by Dr. Dumont, with three advised as underscribed taxa and given the following tentative epithets in *Rutstroemia*, in which the three main species were then being treated.

'algeriensis': R.P.K.3505 = J.T.P.4207 (Algeria), which the writer had also recognized.

'palmeri': R.P.K.3460et3190 = J.T.P.2559 (Germany), which the writer had determined as *C. americana* and, doubtfully, R.P.K.3439 = J.P.T.2654 (Shropshire, England), which he had considered to be *R. sydowiana*. Dr. Dumont failed to supply his reasons and the writer has not re-examined the duplicates. However, it is evident that, as more than one species can occur on a single burr and most collections comprised several burrs from the same locality, it cannot exclude that the duplicates may have contained other species as it was not practical to examine each apothecium microscopically.

'websteri': R.P.K.3501 = J.T.P.2618 (Yorkshire, England) and R.P.K.3500 = J.T.P.2626 (Durham, England), with apothecia and considered to be an '*Helotium* parasitic on sclerotia', were sent to Professor Korf with no material retained in the writer's herbarium.

In addition, the following were also treated under 'Other taxa':

Ciboria spp.: J.T.P.4409 (Greece),4511, 4524 and 4528 (Canary Islands), 4629 and 4648 (Madeira) and 4201 (Peninsular Portugal) with 4511, 4629 and 4649 closely resembling a similar, apparently underscribed species on *Eucalyptus* capsules and occasional twigs etc. in Southern Europe.

Rutstroemia spp.: J.T.P.3964 (France).

Finally and most unexpected were:

Ciborinia bresadolae: J.T.P.4769 (Sommerset, England). Described from oak cynipid galls and buds of *Quercus robur* L., the holotype of *Sclerotinia hirtella* Boud., which is a synonym, was, however, found on *Castanea* leaves and branchlets with further collections reported on oak and other tree debris (Palmer, 1991).

Lanzia luteovirescens: J.T.P.4048 (Cheshire, England). A common species on stromatized petioles of *Acer* spp., the collection comprised several apothecia distinctly attached to burr spines.

Although not previously recorded for Europe prior to 1965, apothecia of *C. americana* were found in the Kew Herbarium to have been collected, together with *L. echinophila*, and later determined, by Dr. D. A. Reid during the British Mycological Society's Day foray on 9, X, 1955 at Aldbury near Tring, Hertfordshire, but Hora (1956) made no mention of it in his report. During the writer's revision of exsiccati in various national herbaria, further apothecia were found in the following, clearly mixed collections determined as *Peziza, Rutstroemia* or *Sclerotinia echinophila*.

B: Herb. W. Kirschstein, *Sclerotinia echinophila* (Bull.), Rehm, Neustadt a. d. Weinstraße [Germany]. Auf den faulenden Kapseln von *Castanea sativa* Miller, Sept, 1942, K. Bäßler.

Revid. *L. echinophila* with two apothecia of *C. americana* on a single, immature chestnut and apothecia of *R. sydowiana* mainly on spines.

BM (now in K): Nr. Hereford [England] / Ex Herb. M. C. Cooke / *Peziza echinophila* Bull.

Revid. *L. echinophila* with one apothecium of *R. sydowiana*.

K: Sydow, Mycotheca germanica 2166, *Sclerotinia echinophila* (Bull), Rehm. Auf faulenden Fruchthüllen von *Castanea vesca*, Brandenburg; Baumschulen zu Tamsel [Germany], 26, 9, 1923, Leg. P. Vogel.

Revid. *L. echinophila* with two apothecia of *C. americana*.

L. № 954. 216-077, *Rutstroemia echinophila* (Bull. ex Fr.) v. Höhn. Leg. C. Bas, 7, 9, 1954, № 611, St. Odiliïnberg, Aarrwinkel [Netherlands], Op cupulae van *Castanea sativa*, det. M. G. (= R. A. Maas Geesteranus),

Revid. *L. echinophila* with two apothecia of *C. americana* and some sclerotia.

L. № 967. 125-021, *Rutstroemia echinophila*, Berkshire, Windsor Great Park, Cranbourne Park [England]. On *Castanea sativa*, Leg. D. A. Reid, 3, X, 1968.

Revid. *L. echinophila* with one apothecium of *C. americana* on a chestnut.

The main period for the collection of these fungi was from 1964 to 1966, after which burrs were only occasionally examined, especially in countries where these fungi have been little collected. However, as these further collections considerably extend the range of these species, it has been decided to include them in this publication.

Outside the preceding survey, Kohn (1982) described a very sparse collection on burrs from Tenerife, Canary Islands, as *Lanzia* sp. 137 whilst Professor Korf advised (pers. comm.) having collected on chestnut burrs a "*Rutstroemia*" in Japan which was distinct from the present species and a setose "*Rutstroemia*" from Georgia, U.S.A., which latter may be a *Torrendiella* sp. In addition, together with Professors

D. C. Pant and V. P. Tewari and Mr. V. P. Dubey of Benaras Hindu University, Varanasi, the writer recently collected a *Lambertella* sp. on *Castanea sativa* burrs in the Kumaon Hills of the northwestern Himalayas, India, which appears to be the first report of this genus on sweet chestnut burrs.

DISCUSSION

Although *Lanzia echinophila* was for many years considered to be the sole member of the *Sclerotiniacae* growing in Europe on the old, fallen burrs of *Castanea sativa*, this substrate has been found to be a fertile matrix for other members of this family, wherever the tree grows or is planted. Additionally, chestnuts also accommodate several species whereas they were previously believed only to support *Ciboria batschiana* (Zopf) Buchwald, which is much more common on acorns and is confined to the cotyledons, which it mummifies and is a parasite. When this investigation commenced in 1963, only *Ciboria americana* could be found on chestnut burrs and nuts in Nortwestern England. The writer therefore had to go south to find *L. echinophila*, which recent collections find to be equally common with *C. americana* in this district and may be due to climatic changes.

COLLECTIONS STUDIED

Collection numbers, which refer to the author's herbarium, Herb. J. T. P., are followed by B = burr, C = catkin, Ch = mature chestnut cuticle, M = mummified chestnut, N = immature empty chestnut, indicating position of apothecia or conidiophores on substrate or when loose, either amongst burr debris or adjacent. Collections or duplicates have been received for study or distributed to various individuals, R. Galán (R.G.), G. L. Hennebert (G.L.H.), R. P. Korf (R.P.K.), W. Matheis (W.M.) and J.-P. Priou (J.P.P.) or national herbaria including B, BM (now in K), CUP, DBN, GDAC, K, L, LG, MA, MADJ, MADM, PC, PRM and TFC Mic. Collections made during official forays are indicated by the abbreviations Barc. = V Reunion Conjunta de Micologia, Barcelona. Béarn = Societé Mycologique de Béarn, Béd. = Bédarieux meeting, B.M.S.C.F. = British Mycological Society Foray to Canary Islands, B.M.S.G.F. = B. M. S. Greek Foray, D.G.P.(M.) = Deutsche Gesellschaft für Pilzkunde (Mykologie) Tagung, D.L.T. = Drei Länder Tagung and S.M.F. = Societé Mycologique de France Session.

	Botryotinia cf. *fuckeliana*	*Ciborinia*	*Ciboria americana*	*Ciboria tenuistipes*	*Lanzia echinophila*	*Rutstroemia sydowiana*	Other taxa
ALGERIA							
BLIDA, 70 km from Algiers, l'Atlas de Blida, leg. L. Faurel 8,IX,64	—	—	2690B	—	2858BS + 10,X,65	—	*"Rutstroemia"* 4205B – parasitized et 4206B
AUSTRIA							
KÄRNTEN, Klagenfurt, Kreuzburg Botanic Gardens, leg. J. T. Palmer 24,IX,65	—	—	—	—	2894B	—	—
BELGIUM							
BRABANT, Heverlee, Bois d'Heverlee leg. J. T. P. et G. L. Hennebert, 29,IX,65	—	—	2868BN et 2978N	—	2876B	2875B	—
LIÈGE, Embourg leg. M. Hofinger per V. Demoulin, 16,IX,66	—	—	3345B	—	3346B	—	—
Modave leg. V. D. 24,IX,66	—	—	3102B	—	3101B	—	—
NAMUR, Leuze leg. J. T. P. et G. L. H. 28,IX,65	—	—	—	—	2888B	—	—
CROATIA							
ca 4 km from Petrinja, Cepeliš leg. M. Tortič, 19,X,65	—	—	—	—	2946B	—	—
Mostac near Petrinja leg. J. T. P. et M. T., 19,VIII,67	—	—	—	—	3862B et 3863N	—	—

	Botryotinia cf. *fuckeliana*	*Ciborinia*	*Ciboria americana*	*Ciboria tenuistipes*	*Lanzia echinophila*	*Rutstroemia sydowiana*	Other taxa
Zagreb, base of Medvednica, on Gračec leg. M. T., 19,X,65	—	—	—	—	2947B	—	—
leg. J. T. P. et M. T., 18,VIII,67	—	—	—	—	3295BS - 20,IX,67	—	—
leg. M. T., 8,IX,68	—	—	—	—	3566B	—	—
leg. J. T. P. et M. T., 13,IX,69	—	—	—	—	3546Ch et 3549B	—	—
Slopes of Medvednica leg. J. T. P. et M. T., 12,IX,69	—	—	3537B	—	3536B	3538B	—
Varoško Rebro leg. J. T. P. et M. T., 15,VIII,67	—	—	—	—	3271BS - +10–20,IX,67 et 3285Ch	3272B + 30,VIII,67	—
CZECH REPUBLIC							
Na Petřinách, Praha-Veleslavín, leg. F. Kotlaba, 17,X,64	—	—	—	—	—	2656S	—
Průhonice u Prahy, Botanical Garden, leg. F. K., 2,XI,65	—	—	—	—	—	2912B	—
Public gardens leg. F. K., 21,X,66	—	—	—	—	3108B	—	—
FRANCE including CORSICA							
ARIÈGE, Niaux leg. J. T. P. , 4,X,90	—	—	—	—	4591B	—	—
CALVADOS, Lisieux between Rouen and Alençon, leg. J. T. P., 6,IX,70	—	—	3836B et 3837N	—	3716B et 3835BN	—	—

	Botryotinia cf. *fuckeliana*	*Ciborinia*	*Ciboria americana*	*Ciboria tenuistipes*	*Lanzia echinophila*	*Rutstroemia sydowiana*	Other taxa
CORSE-DU-SUD, Forêt de Cotti, Chiavari, s. of Ajaccio leg. V. Demoulin, 18,X,72	—	—	—	—	3876B	—	—
V. D., 20,IX,83	—	—	—	—	4367B	—	—
CÔTES-DU-NORD, Dinon, Fontaine-des-Eaux leg. N. F. Palmer 5,VIII,65	—	—	—	—	2856B	2857B	—
Gouarec, leg. J. T. P. 5,IX,70	—	—	—	—	3887B	—	—
E. of Loudéac, Forêt de Loudéac leg. J. T. P. 5,IX,70	—	—	—	—	3710B	—	—
Quénécan, 3 km e. of Gouarec, leg. J. T. P. 5,IX,70	—	—	—	—	3709B	—	—
EURE, near Brionne leg. J. T. P. 6,IX,70	—	—	3838B 6,IX-14,XI,70	—	3717B	—	—
FINISTÈRE, near Concarneau, Kerleven leg. J. T. P. et H. G. Ward 4,IX,70	—	—	—	—	3689B et 3704BS	—	—
Coray, e. of Quimper leg. J. T. P. 5,IX,70	—	—	—	—	3707B	—	—
Pluguffan near Quimper airport leg. J. T. P. 5,IX,70	—	—	—	—	3705BS	—	—
Gorges de Poulanere, St. Gilles-Vieux-Marché leg. N. F. P. 8,VIII,65	—	—	—	—	—	2872B 2,X,65	—

	Botryotinia cf. *fuckeliana*	*Ciborinia*	*Ciboria americana*	*Ciboria tenuistipes*	*Lanzia echinophila*	*Rutstroemia sydowiana*	Other taxa
S.e. of Spézet, Montagnes Nomes, Rest-Menez leg. J. T. P. 5,IX,70	—	—	—	—	3708BS	—	—
Rouge, 6 km e. of Quimper, leg. J. T. P. 5,IX,70	—	—	—	—	3706BCh	—	—
HAUTE-CORSE, between Lumio and Lavatoggia leg. J. T. P. 9,XII,83	—	—	4067B	—	4066B	—	—
Sant Martino di Lota near Bastia, leg. V. D. 3,X,72	—	—	—	—	3873B	—	—
HAUTES-GARONNE, Gorges d'Héric leg. J. T. P. 21,X,81	—	—	3960B, 3961B et 3966B	—	3963B	—	"*Rutstroemia*" sp. 3964B
HAUTE-PYRÉNÉES, Vallée de Aspe, 2 km s. of Urdos leg. J. T. P. 7,X,86	—	—	4315BN	—	4314BS	—	—
HAUTE-SAVOIE, Armoy leg. J. T. P. (S. M. F.) 31,VIII,70	—	—	—	—	3670B	—	—
S.w. of Thonon-les-Bains, Forêt de Perrignier leg. J. T. P. (S. M. F.) 26,VIII,70	—	—	—	—	3646/7B et 3652B	3649B	—
Forét de Thonon leg. J. T. P. (S. M. F.) 1,IX,70	—	—	—	—	3677B + 14,X,70	3685B	—

	Botryotinia cf. *fuckeliana*	*Ciborinia*	*Ciboria americana*	*Ciboria tenuistipes*	*Lanzia echinophila*	*Rutstroemia sydowiana*	Other taxa
Between Noyer and Lyaud leg. J. T. P. (S. M. F.) 29,VIII,70	—	—	—	—	3667B et 3669B	—	—
Thonon-les-Bains, Moruel leg. J. T. P. (S. M. F.) 27,VIII,70	—	—	3655Ch	—	3654M et 3656B	—	—
HÉRAULT, Col de Fontfroide, leg. J. T. P. (Béd.) 16,X,81	—	—	3941BNS 3943N, 3945B et 3946BN	—	3942B, 3947, 3948Ch	—	—
Ft. Ecrivains Combattants, Combes leg. J. T. P. 19,X,81	—	—	3956B	3959B	3957B	3958B	—
Lodéve, Les Plânes leg. J. T. P. (Béd.) 18,X,81	—	—	3952B	—	3953B et 3954Ch	—	—
LOIRE-ATLANTIQUE, 2 km n. of Châteaubriant, La Grd. Rigne leg. J. T. P. et H. G. W. 3,IX,70	—	—	—	—	3695B	—	—
LOIRE-ET-CHER, Selles-sur-Cher between Bourges and Tours leg. J. T. P. et H. G. W. 2,IX,70	—	—	—	—	3832B	—	—
Vierzon between Bourges and Tours leg. J. T. P. et H. G. W. 2,IX,70	—	—	—	—	3690B et 3691Ch	—	—

	Botryotinia cf. *fuckeliana*	*Ciborinia*	*Ciboria americana*	*Ciboria tenuistipes*	*Lanzia echinophila*	*Rutstroemia sydowiana*	Other taxa
MAINE-ET-LOIRE, 3 km n. of La Roche and 11 km from Angers leg. J. T. P. et H. G. W. 3,IX,70	—	—	—	—	3692B	—	—
MANCHE, near Pontorson leg. J. T. P. 3,IX,70	—	—	—	—	3711BS et 3834Ch	—	—
MORBIHAN, Augan e. of Ploërmel, leg. J. T. P. et H. G. W. 3,IX,70	—	—	—	—	3702B	—	—
Belle Isle, Bangor, leg. J. P. Priou 12,X,90	—	—	—	—	J.P.P.9094B	—	—
Keruzeth Brigitte near Kerfontaine leg. J. T. P. 7,X,90	—	—	—	—	4607B	—	—
Tréfflean Kervenne leg. J. T. P. 7,X,90	—	—	—	—	4608B	—	—
6 km from Locminé, Châteaubriant leg. J. T. P. et H. G. W. 3,IX,70	—	—	—	—	3697B	—	—
La Gacilly, St. Jugon leg. J. T. P. et J. P. P. 6,X,90	—	—	—	—	4593Ch et 4596B	—	—
St. Just leg. J. T. P. et J. P. P. 7,X,90	—	—	—	—	4600B	—	—
Glénac, Sourdeac leg. J. T. P. et J. P. P. 7,X,90	—	—	—	—	4599B	—	—

	Botryotinia cf. *fuckeliana*	*Ciborinia*	*Ciboria americana*	*Ciboria tenuistipes*	*Lanzia echinophila*	*Rutstroemia sydowiana*	Other taxa
OISE, s. of Lassigny, ca 10 km from Belval leg. J. T. P. et H. G. W. 23,VIII,70	—	—	—	—	3643B 14,X–5,XI,70	—	—
Ormoy-Villiers, Bois de Roye leg. J. T. P. et H. G. W. 23,VIII,70	—	—	—	—	3644B	—	—
ORNE, ca. 5 km from Écouche, e. of Argentan leg. J. T. P. 6,IX,70	—	—	—	—	3714B +14–20,IX,70	—	—
2 km e. of Domfront leg. J. T. P. 6,IX,70	—	—	—	—	3712B	—	—
St. Launeuc leg. J. T. P. 6,IX,70	—	—	—	—	3715B	—	—
PYRÉNÉES-ATLANTIQUE, Cambe leg. P. Jovet Autumn 64	—	—	—	—	2700B	—	—
Larceveau leg. P. J. Autumn 64	—	—	—	—	2701B	—	—
Ca. 40 km from Pau, Bois de Chéraute leg. J. T. P. 4,X,86	—	—	—	—	4305/6B	—	—
Bizanos, Aressy (Béarn) leg. A. Grepin 5,X,86	—	—	—	—	4308BN et 4309B	—	—
Payrouse leg. J. T. P. 6,X,86	—	—	—	—	4312B et 4313BN	—	—

	Botryotinia cf. *fuckeliana*	*Ciborinia*	*Ciboria americana*	*Ciboria tenuistipes*	*Lanzia echinophila*	*Rutstroemia sydowiana*	Other taxa
SAÔNE-ET-LOIRE, La Valouse s. of Cluny, leg. J. T. P. et H. G. W. 2,IX,70	—	—	—	—	3686B	3687B	—
SOMME, Omiécourt between Péronne and Roye, leg. J. T. P. et H. G. W. 23,VIII,70	—	—	—	—	3642B-14,X,70	—	—
YVELINES, Forêt de St. Germain leg. V. Demoulin 25,IX,84	—	—	—	—	4368B	—	—
GEORGIA							
ADŽARSKAJA, Kobuleti, 45 km n.e. of Batumi, leg. M. N. Gvritišvili per B. P. Vassilkov 10,IX,65	—	—	—	—	2899B	—	—
ABKHAZIA, Okresposti near Sukhumi leg. M. N. G. per B. P. V. 20,IX,65	—	—	2901B	—	2900B	—	—
GERMANY							
BADEN-WURTTEMBOURG, Ettlingen leg. S. Philippi 9,XI,91	—	—	4720B	—	—	—	—
BAYERN, Katzenbach near Bad Kissingen, leg. I. Eisfelder X,64	—	—	—	—	—	2671B	—

	Botryotinia cf. *fuckeliana*	*Ciborinia*	*Ciboria americana*	*Ciboria tenuistipes*	*Lanzia echinophila*	*Rutstroemia sydowiana*	Other taxa
BERLIN, Berlin-Dahlem Botanical Garden leg. J. T. P. et A. Straus 29,VIII,66	—	—	3091BN *C. crenata*	—	—	—	—
	—	—	3092BN *C. mollisima*	—	—	—	—
	—	—	3093BNS *C. sativa*	—	—	—	—
	—	—	3094BN *C. dentata*	—	—	—	—
HESSE, Wiesbaden leg. J. T. P. 1,IX,64	—	—	2562B	—	2556B	2565B	—
RHEINLAND-PFALZ, Neustadt a. d. Weinstrasse, base of Wolfsburg Wolfsbrunnen leg. J. T. P. 1,IX,64	—	—	2555BN	—	—	2559B	—
Base of Wolfsburg Herz-Jesu-Kloster leg. J. T. P. 1,IX,64	—	—	—	—	2554BN	2569B	—
SACHSEN-ANHALT, Bad Harzburg leg. S. P. 18,X,91	—	—	4719B	—	—	—	—
Near Dessau, Park Lusium leg. H. Jage 12,X,64	—	—	—	—	—	2670B	—
Harbke leg. J. T. P. (D. G. P.) 16,X,91	—	—	4690B	—	4688B	4689B	—
WESTFALEN, Münster, Botanic Garden leg. J. T. P. (D. G. P.) 2,IX,64	—	—	2561BN	—	—	—	—

	Botryotinia cf. *fuckeliana*	*Ciborinia*	*Ciboria americana*	*Ciboria tenuistipes*	*Lanzia echinophila*	*Rutstroemia sydowiana*	Other taxa
GREECE							
MACEDONIA, Chalkidiki, Ágios Óros Athos, between Mon. Pantekrator and Karyes leg. J. T. P. (B. M. S. G. F.) 27,III,88	—	—	4425B 20,VII–23,IX,88	—	4426B 13,VIII,88	—	—
Mon. Philotheou leg. J. T. P. (B. M. S. G. F.) 26,III,88	—	—	—	—	4421B 2,VII–3,IX,88	—	—
THESSALIA, Káto Ólimbos, Skoteina leg. J. T. P. (B. M. S. G. F.) 23,III,88	—	—	4404B 26,VIII–23,IX,88 15,IX,89	—	—	—	—
Óros Óssa, Ariopriono leg. J. T. P. (B. M. S. G. F.) 24,III,88	—	—	4411N 20,VIII,88	—	4408B 4,VI–16,VIII,88	—	
	—	—	—	—	4410Ch 16et30,VIII,88	—	*Ciboria sp.* 4409B 4,IX,88
HUNGARY							
SOPRON, near Sopron leg. Z. Igmány per H. Kreisel X/XI,64	—	—	2702B	—	—	—	—
Near Sopron leg. Z. I. per S. Toth 10,X,64	—	—	2785B	—	2787B	2786B	—
2,XI,64	—	—	2788B	—	2789B	2790B	—
IRELAND							
DUBLIN, Dublin, Phoenix Park leg. J. T. P. 17,VI,65	—	—	2781B 22,VIII–24,X,65	2782C	—	—	—

	Botryotinia cf. *fuckeliana*	*Ciborinia*	*Ciboria americana*	*Ciboria tenuistipes*	*Lanzia echinophila*	*Rutstroemia sydowiana*	Other taxa
KERRY, Killarney, Franciscan Priory leg. J. T. P. 5,VI,69	—	—	—	—	3497BN 28,VII-13,X,69	—	—
LAOIS, Abbeyleix, Abbeyleix Gardens leg. J. T. P. 17,V,70	3602BT	—	—	3603B 24,VI-26,VII,70	3809BNS 14,IX-14,X,70	—	—
	3604T	3607L 8-sp.	—	3609C	3864B 14,IX-14,X,70	—	—
	—	—	—	3867C 6,VII,70	—	—	—
Stradbally, Brockley Park leg. J. T. P. 17,V,70	3610LT	—	—	—	3611BN 14,VII-8,XI,70	—	—
S. of Stradbally leg. J. T. P. 17,V,70	3612LT	—	3810BN 14,X,70	—	—	—	—
ITALY							
ALTO ADIGE, n. of Bolzano, Barbian leg. M. Gams per W. Gams 1,XI,65	—	—	—	—	2906B	—	—
PIEMONTE, near Torino, Torre Pellice leg. Beniamino Peyronel X,64	—	—	—	—	—	—	*Ciboria sp.* 4200B
leg. B. P. 27,VIII,65	—	—	2854B	—	2851B	—	—
TOSCANA, Lucca leg. A. Biraghi XI,64	—	—	—	—	2681B	—	—
Campione da Camaiore leg. A. B. VIII,65	—	—	—	—	2871BS	—	—
Pistoia leg. A. Biraghi XI,64	—	—	—	—	2691B	—	—

	Botryotinia cf. *fuckeliana*	*Ciborinia*	*Ciboria americana*	*Ciboria tenuistipes*	*Lanzia echinophila*	*Rutstroemia sydowiana*	Other taxa
VENETO, near Padova, Tramonte leg. C. Cappelletti 26,IX,64	—	—	—	—	2621B + 8,IX,65	2620B	—
MACEDONIA							
Near Gostivar leg. Cv. Hinkova 18,X,65	—	—	2918/9B	—	2916B	2917B	—
Vodno near Skopje leg. M. T. 25,X,66	—	—	—	—	3107B	—	—
NETHERLANDS							
GELDERLAND, Nijmegen, Duivelsberg leg. C. Bas per R. A. Geesteranus. 26,IX,56	—	—	—	—	1943B	—	—
Amersfoort, private garden leg. J. T. P. 5,IX,64	—	—	2564BNS	—	—	2563B	—
Wageningen Station "De Dorschkamp" leg. J. Gremmen 14,X,54	—	—	—	—	2745B	—	—
LIMBURG, Groesbeek, Philosophendal leg. R. A. M. G. 6,X,63	—	—	—	—	2219B	—	—
OVERIJSEL, between Enschede and Hengelo leg. J. T. P. 5,IX,64	—	—	—	—	—	2639B	—
ZUID-HOLLAND, Wassenaar, "Voor-Linden" leg. J. T. P. 1,X,65	—	—	2870BS	—	2869B	2880S	—

	Botryotinia cf. *fuckeliana*	*Ciborinia*	*Ciboria americana*	*Ciboria tenuistipes*	*Lanzia echinophila*	*Rutstroemia sydowiana*	Other taxa
POLAND							
WROCŁAW, Wroclaw, Botanic Gardens leg. J. T. P. 13,VIII,92	—	—	4721B 1,VIII-17,X,92	—	—	—	—
PORTUGAL including MADEIRA							
BEIRA ALTA, Santa Comba Dão leg. A. L. Branquinho d'Oliveira per M. T. Lucas 5,X,64	—	—	2637BS	—	—	—	*Ciboria sp.* 4201B
MADEIRA, Aguas Mansas, junction of Lev-a de Serra Faial and Lev-a do Pico leg. J. T. P. et R. Kautt 27,II,91	—	—	—	4648B 16,VI-21,IX,91	4647B 22,IX-5,XI,91 15,IX-17,X,92	—	—
Near Pico do Bodes leg. J. T. P. S. Fontinha, G. Freitas et R. K. 26,II,91	—	—	—	—	4642B 29,IX-21,X,91	—	—
W. of Landeiroes, between Murinhal and Marco leg. J. T. P. et R. K. 24,II,91	—	—	—	4629B 23,VI-5,XI,91 6,IV-5,VIII,92	4627B 24,XI,91 4628B 25,VII-26,X,91 15,IX,92	—	—
Jardim da Serra leg. J. T. P., S. F., G. F. et R. K. 26,II,91	—	—	—	—	4640B 18,VIII,91 15-26,IX,92 4641B 25,VIII-5,XI,91 15,IX-17,X,92		

	Botryotinia cf. *fuckeliana*	*Ciborinia*	*Ciboria americana*	*Ciboria tenuistipes*	*Lanzia echinophila*	*Rutstroemia sydowiana*	Other taxa
ROMANIA							
MARAMURES, Baia-Mare leg. G. Silaghi 12,XI,64 et 2709/10B	—	—	2708B +8,IX,65, 2709/10B	—	—	—	—
SLOVAKIA							
Štátna Gaštenica, Gýmeš leg. L. Marvanová, 15,III,65	—	—	—	—	2874B	2853B	—
Bratislava, near Hlinák, close to Pezinok, leg. F. K., 28,VI,65	—	—	2799B	—	2859B 8,IX,65	2842B 28,VIII,65	—
Žibrica near Kolíňany, leg. V. Řehořek per L. M., 1965	—	—	—	—	2886BS	2887B	—
SLOVENIA							
Bled, n.e. side of Blejsko Jezero leg. J. T. P. et M. T. 7,IX,69	—	—	—	—	3527B	—	—
SPAIN							
BARCELONA, Parque Nacional de Montseny leg. F. D. Calonge 24,X,71	—	—	—	—	3800B	—	—
Ermitage de Sta, Fé leg. J. T. P. 30,IX,90	—	—	4584B	—	4583B	—	—
Can Agustii, Olzinelles leg. X. LLimona per R. Galán 20,X,75	—	—	—	—	4169B	—	—

	Botryotinia cf. *fuckeliana*	*Ciborinia*	*Ciboria americana*	*Ciboria tenuistipes*	*Lanzia echinophila*	*Rutstroemia sydowiana*	Other taxa
GRANADA, Sierra Nevada, road to Seminario, Fuente Agrillo leg. R. G. 21,X,80	—	—	—	—	4168B	—	—
leg. J. T. P. et A. Ortega 11,XII,84	—	—	—	—	4135B	—	—
LUGO, Sierra de Meira, 4 km s. of Udan leg. J. T. P. 28,X,87	—	—	—	—	4637B 6,VIII-26,XII,88	—	—
MADRID, El Escorial, Fuente de la Reina leg. F. D. C. 7,IX,69	—	—	3561B +20,XI,69	—	—	—	—
10,X,71	—	—	—	—	3801B	—	—
NAVARRA, Etulain near Ostiz leg. J. T. P. et L. García Bona 10,X,86	—	—	—	—	4325BN	—	—
E. of Ezcurra leg. J. T. P. 11,X,86	—	—	—	—	4324BN	—	—
E. of Mugaire leg. J. T. P. 11,X,86	—	—	—	—	4324BN	—	—
OVIEDO, La Peña leg. J. T. P. 24,X,87	—	—	—	—	4374B	—	—
STA, CRUZ DE TENERIFE, Isla de la Gomera, Parque Nacional de Garajonay, La Laguna Grande leg. J. T. P. (B. M. S. C. F.) 11,I,90	4512BA	—	—	4511B? 11,I-20,XI,90	4535B 15,IV-26,XI,90 20,VI-30,X,91 21,V-30,IX,92	—	*Ciboria sp.* 4528S 18,III-15,IV,90

	Botryotinia cf. *fuckeliana*	*Ciborinia*	*Ciboria americana*	*Ciboria tenuistipes*	*Lanzia echinophila*	*Rutstroemia sydowiana*	Other taxa
Isla de Tenerife, above Acofa, Montaña Colorado leg. J. T. P. (B. M. S. C. F.) 17,I,90	—	—	4531B 8,IV-9,XI,90 (parasitized?)	—	4542B 30,VI-9,XI,90 +10,X,91	—	—
Between La Hacienda Perdido and El Berbedero near La Orotova leg. J. T. P. (B. M. S. C. F.) 19,I,90	—	—	—	—	4543B 3,VII-4,XI,90 15,IX-10,X,91	—	*Ciboria sp.* 4524B 6et28,III,90
SWITZERLAND							
GRAUBÜNDEN, Bergell, Soglio leg. E. Horak et M. Känel 18,IX,64	—	—	—	—	2589B	—	—
Malans, Schloss Bodmer leg. J. T. P. et K. Schwarz (D. L. T.) 30,VIII,64	—	—	—	—	2550B	—	—
ST. GALLEN, near Mels, Mädris, Engelwald leg. J. T. P. (D. L. T.) 26,VII,64	—	—	2542BN	—	2541BN	2546B	—
THURGAU, Bettwiesen leg. W. Mattheis 1,XI,69	—	3563B 4-sp.(some 5-sp.)	—	—	—	—	—
11,IX,70	—	4177B 8-sp.	4178N et 4183B	—	4180BN	3885B	—
No dates	—	3883B 4-sp.	—	—	—	—	—
	—	4179B 8-sp.	—	—	—	—	—

	Botryotinia cf. *fuckeliana*	*Ciborinia*	*Ciboria americana*	*Ciboria tenuistipes*	*Lanzia echinophila*	*Rutstroemia sydowiana*	Other taxa
TICINO, sw. of Bellinzona, Copera leg. E. H. et M. K. 15,X,64	—	—	—	—	2647B+8,IX,65	—	—
Ca 8 km s. of Lugano near Carona leg. J. Karman per R. A. Maas Geesteranus 15,IX,66	—	—	—	—	3167B	—	—
Near Chiasso leg. R. Hotz 31,VIII,64	—	—	—	—	2567B	—	—
Near Lugano leg. F. Casagrandi per E. Müller 25,IX,64	—	—	—	—	2605B	—	—
TURKEY							
ISTANBUL, Istanbul leg. H. Kayacik Autumn 64	—	—	2666BN 8,IX,65	—	2602B+8,IX,65	2603B	—
Autumn 65	—	—	—	—	2881BS 8,X,65	3110B 7,XI,65	—
UNITED KINGDOM – ENGLAND							
CHESHIRE, Alderley Edge leg. J. T. P. 12,X,63	2160BA	—	2159B	—	—	—	—
14,VI,64	2465BT	—	—	—	—	—	—
20,VI,64	2784BT	—	—	—	—	—	—
19,IX,64	2471BT	—	2570/1B	—	—	—	—
14,XI,64	—	—	2677BS	—	—	—	—
24,X,65	—	—	2890N	—	—	—	—

	Botryotinia cf. *fuckeliana*	*Ciborinia*	*Ciboria americana*	*Ciboria tenuistipes*	*Lanzia echinophila*	*Rutstroemia sydowiana*	Other taxa
Between Alderly Edge and Chelford 3,XI,63	2322BA	—	—	—	—	—	—
and Nether Alderley, leg. J. T. P. 12,X,63	—	—	2162BN	—	—	—	—
Brynlow leg. J. T. P. 12,X,63	2161BA	—	—	—	—	—	—
19,IX,64	—	—	2572BS	—	—	—	—
14,XI,64	—	—	2678B	—	—	—	—
Dean Green leg. J. T. P. 14,XI,64	—	—	2680B	—	—	—	—
Finlow Hill leg. J. T. P. 19,IX,64	—	—	2573BN et 2574B	—	—	2583B	—
Finlow House leg. J. T. P. 18,V,64	2438BNT	—	—	—	—	—	—
Nether Alderley leg. J. T. P. 3,XI,63	2323BA	—	—	—	—	—	—
Gatley Green leg. J. T. P. 12,X,63	—	—	2163B	—	—	—	—
14,XI,64	—	—	2679BS	—	—	—	—
Runcorn, Aston, Beckett's Wood leg. J. T. P. 26,XI,71	—	—	3766BS	—	—	—	—
30,IX,84	—	—	4097BN	—	4098B	4099B	—
8,V,90	—	4603B 8-sp. 12,X,90	—	—	—	4602B 12,X,90	—
Chapel Wood leg. J. T. P. 24,IX,83	—	—	4050B	—	—	—	*L. luteo-virescens* 4048B
Bollington, Whitley Green leg. J. T. P. 9,X,65	—	—	2879B	—	—	—	—
Bulkley, Peckforton Hills, Bulkley Hill leg. J. T. P. 21,X,84	—	—	—	—	4120B	—	—

	Botryotinia cf. *fuckeliana*	*Ciborinia*	*Ciboria americana*	*Ciboria tenuistipes*	*Lanzia echinophila*	*Rutstroemia sydowiana*	Other taxa
Congleton, Eaton Hall leg. J. T. P. 3,X,64	—	—	2607BN	—	—	—	—
Crewe, Doddington Park leg. J. T. P. 17,X,64	—	—	2635BN	—	2636B	—	—
Haslingdon, Slaughter Hill leg. J. T. P. 17,X,64	—	—	2634BNS	—	—	—	—
Delamere Forest, leg. J. T. P. 26,IX,64	—	2595B 8-sp.	2594BN, 2596BN,	—	—	—	—
		2597B 8-sp.	2598N et 2600B/01BN,	—	—	—	—
Hunger Hill leg. J. T. P. 1,X,63	2206BA	—	2205B	—	—	—	—
30,V,64	2451BT	—	—	—	—	—	—
Disley, Lyme Park leg. J. T. P. 28,IX,63	—	—	2136B et 2143BN	—	—	—	—
24,V,64	2448BT et 2450BT	—	—	—	—	—	—
Ellesmere Port, Hooton Park leg. J. T. P. 12,X,71	—	—	3762B	—	—	—	—
Frodsham, Newton Hall leg. J. T. P. 2,XI,63	2204BA	—	2203B	—	—	—	—
Knutsford, Tatton Park leg. J. T. P. 26,IX,64	—	—	2590/1BN et 2593BN	—	—	—	—
Near Macclesfield, Monks Heath leg. J. T. P. 8,X,66	—	3264B 4-sp.	—	—	—	—	—
		3265B et 3266B 8-sp.	3097BNS				

	Botryotinia cf. *fuckeliana*	*Ciborinia*	*Ciboria americana*	*Ciboria tenuistipes*	*Lanzia echinophila*	*Rutstroemia sydowiana*	Other taxa
S. of Norley leg. J. T. P. 23,IX,64	—	—	4086B	—	—	—	—
Oakmere, Abbey Arms Wood leg. J. T. P. 8,X,84	—	—	4111B	—	—	4112B	—
24,V,90	4541BT	—	—	—	—	—	—
Sutton Weaver leg. J. T. P. 22,IX,84	—	—	4081B	—	—	—	—
2,V,90	—	—	4605B 15,X,90	—	—	—	—
15,IV,90	4803BT 10,VI–7,VIII,93	—	—	—	—	—	—
Between Warrington and Newton-le-Willows leg. J. T. P. 8,X,90	—	—	4604B 15,X,90	—	—	—	—
DERBYSHIRE, Bakewell, Chatsworth Park, The Grotto leg. J. T. P. 26,X,63	2194BA	2411B 4-sp.	2190BN	2454C/5B	—	—	—
Chatsworth Park, Queen Mary's Bower leg. J. T. P. 26,X,63	2193BA	—	2188BN	—	—	—	—
Between Bakewell and Rowsley, n. of Haddon Hall, Manners Wood leg. J. T. P. 31,X,64	—	—	2663BN	—	—	—	—
Haddon Park leg. J. T. P. 4,IX,65	—	—	2850N	—	—	—	—
Old Glossop, Shire Hill leg. J. T. P. 24,X,65	—	—	2891N	—	—	—	—
DEVON, Branscombe leg. J. T. P. 17,XI,71	—	—	—	—	3767B	—	—

	Botryotinia cf. *fuckeliana*	*Ciborinia*	*Ciboria americana*	*Ciboria tenuistipes*	*Lanzia echinophila*	*Rutstroemia sydowiana*	Other taxa
Exeter, Stoke Wood leg. J. T. P. 17,XI,71	—	—	3844BS	—	—	—	—
DORSET, Blandford, Bryaston School leg. C. G. Carré X,64	—	—	—	—	2614B	—	—
DURHAM, Durham, Little High Wood leg. P. Watson 6,X,64	—		2613N	—	—	—	*"Rutstroemia"* sp. 2626B
GLOUCESTERSHIRE, Chipping Campden, Dover Hill leg. K. J. Koghill per B. C. Knight X,64	—	—	2632B	—	—	—	—
GREATER LONDON, London, Regents Park leg. J. T. P. 6,IX,64	—	—	—	—	—	2566B	—
GREATER MANCHESTER, Bowden, Dunham Park leg. J. T. P. 20,X,63	2179BA	—	2178BN	—	—	—	—
Bramhall, Bramall Hall leg. J. T. P. 27,X,63	2195BA	—	2192NS	—	—	—	—
23,V,64	2441BT et 2443BNST	—	—	2442B, 2444C et 2447B	—	—	—
31,V,64	2453BT	—	—	2452B CUP	—	—	—
21,VI,64	2471BT	2468B 8-sp. 2469C 4-sp.	—	2470B	—	—	—
12,VII,64	—	2486LC 4-sp.	2487B	2485B	—	—	—
26,VII,64	2499LT	2468B 8-sp.	—	—	—	2500S	—

	Botryotinia cf. *fuckeliana*	*Ciborinia*	*Ciboria americana*	*Ciboria tenuistipes*	*Lanzia echinophila*	*Rutstroemia sydowiana*	Other taxa
1,VIII,64	—	2501/2L 8-sp.	—	—	—	—	—
20,IX,64	—	—	2584B, 2585BS, 2586/7BN	—	—	—	—
21,XI,64	—	—	2689B	—	—	—	—
6,XII,64	—	—	2699B	—	—	—	—
1,VIII,65	—	—	2814B	—	—	—	—
13,XI,65	—	2903B 4-sp.	2904B/5B	3182C	—	—	—
23,IX,67	—	—	3290B	—	—	—	—
20,X,84	—	—	4114B	—	4116B	—	—
29,VI,93	4804BT 18,VII,93	4807B 4-sp. 29,VIII,93	4805B 9,VIII,93	—	4808B 29,VIII,93	4806B 9-30,VIII,93	—
Marple Bridge, Brabyn's Park leg. J. T. P. 1,XI,64	—	—	2664B	—	—	—	—
Romiley, Chadkirk Wood leg. J. T. P. 29,IX,63	—	—	2137BS	—	—	—	—
11,X,64	—	—	2630N	—	—	—	—
7,XI,65	—	—	—	—	2911B	—	—
Worsley leg. J. T. P. 1,V,65	2739BT	—	—	—	—	—	—
30,X,65	—	—	2902BS	—	—	—	—
HEREFORDSHIRE, Torrington, East Wood leg. B. C. K. 22,X,64	—	—	2660B	—	—	—	—
Hereford, Moccas Park, Deer Park leg. J. T. P. 9,XI,63	2224BA	—	2221N/2BN et 2223BS	—	2220B	—	—
Moccas Park, Court leg. J. T. P. 9,XI,63	—	—	2229N	—	—	—	—

	Botryotinia cf. *fuckeliana*	*Ciborinia*	*Ciboria americana*	*Ciboria tenuistipes*	*Lanzia echinophila*	*Rutstroemia sydowiana*	Other taxa
KENT, Beckenham, Ravensbourne, Beckenham Place Park, Summerhouse Hill leg. J. T. P. 19,XI,64	—	—	2687N	—	—	—	—
Frinsted leg. E. G. Keena per A. E. Apinis X,64	—	—	—	—	2672B	—	—
Maidstone, East Malling Research Station leg. M. Bennet per P. W. Talboys 15,X,64	—	—	2641B	—	—	2640B	—
Sevenoaks, Bessels Green, Montreal Park leg. H. G. Ward 15,X,70	—	—	—	—	4194B	—	—
Sevenoaks Weald, Hildenborough leg. A. Grasemann 16,X,64	—	—	2652BN	—	—	2646BNS	—
3 miles from Sussex border, Tunbridge Wells leg. 26,IX,64	—	—	—	—	—	2606B	—
LANCASHIRE, Chorley, Astley Park leg. J. T. P. 9,XI,65	—	—	2908B	—	—	—	—
Bolton, Egerton leg. J. T. P. 4,XI,63	2218BA	—	—	—	—	—	—
Rufford, Rufford Old Hall leg. J. T. P. 29,IX,84	—	—	4089B	—	4094B	—	—
10,X,84	—	—	2625BN et 2627/8BN	—	—	—	—
24,XII,64	—	—	2703BN	—	—	—	—

	Botryotinia cf. *fuckeliana*	*Ciborinia*	*Ciboria americana*	*Ciboria tenuistipes*	*Lanzia echinophila*	*Rutstroemia sydowiana*	Other taxa
LEICESTERSHIRE, near Loughborough, Quorndon leg. J. T. P. 9,X,69	—	—	3556BN	—	—	—	—
MERSEYSIDE, between Great Altcar and Downholland Cross leg. J. T. P. 3,XI,64	—	—	2667BS	—	—	—	—
Bidstone Hill leg. J. T. P. 29,X,63	2196BA	—	—	—	—	—	—
27,VI,64	2472BT ?	—	—	—	—	—	—
21,X,64	—	—	2642/3B	—	—	—	—
5,XI,64	—	—	2668B	—	—	—	—
Birkenhead, Arrowe Park leg. J. T. P. 12,IX,64	—	—	2568BN	—	—	—	—
Birkenhead Park leg. J. T. P. 1,XI,63	2202BA	—	—	—	—	—	—
Liverpool, Speke Hall, Stockton's Wood leg. J. T. P. 8,X,88	—	—	4457N	—	—	—	—
8,VI,90	4540LT	—	—	—	—	—	—
Liverpool, near Allerton Cemetery leg. J. T. P. 12,XI,64	—	—	2675B	—	—	—	—
Calderstones Park leg. J. T. P. 15,X,63	2168BA	—	—	—	—	—	—
17,X,63	2172BA	—	2171N	—	—	—	—
5,IX,63	—	—	2215NS	—	—	—	—
15,X,64	—	—	2631B	—	—	—	—
Sefton Park leg. J. T. P. 30,X,63	2201BA	—	2200B	—	—	—	—
6,XI,63	—	—	2216BN	—	—	—	—

	Botryotinia cf. *fuckeliana*	*Ciborinia*	*Ciboria americana*	*Ciboria tenuistipes*	*Lanzia echinophila*	*Rutstroemia sydowiana*	Other taxa
Prescot, Knowsley Park, Prescot Lodge leg. J. T. P. 7,XI,64	—	—	2674BN	—	—	—	—
W. of Bidston Hill leg. J. T. P. 27,VI,64	2472LT	—	—	—	—	—	—
NORFOLK, Snettisham, Ken Hill Wood leg. S. S. Bates IX,64	—	—	2588BN	—	—	—	—
Kings Lynn, Sandringham Woods leg. S. S. B. 6,X,64	—	—	2622BNS	—	—	—	—
Between Sandringham and Wolferton leg. S. S. B. 13,X,64	—	—	2645BN	—	—	2644B	—
NORTHUMBERLAND, Blanchlands Abbey grounds leg. J. T. P. 27,X,73	—	—	4216B	—	—	—	—
Coupland, 5 km n.w. of Wooler leg. J. T. P. 7,VI,71	—	3734L 8-sp.	3765BN 17-21,XI,71	3733C	—	—	—
NOTTINGHAMSHIRE. Nottingham, University campus leg. J. T. P. et J. S. Srivastavi 27,VII,91	—	4679B 8-sp. 25,VIII,91	—	—	—	—	—

	Botryotinia cf. *fuckeliana*	*Ciborinia*	*Ciboria americana*	*Ciboria tenuistipes*	*Lanzia echinophila*	*Rutstroemia sydowiana*	Other taxa
SHROPSHIRE, Church Stretton, Ragleth Wood leg. J. T. P. 27,X,64	—	2653LB 4-sp.	2654BN	—	—	2655BS	—
Newport, Gt. Chatwell, Woodcote Hall leg. W. E. Perry per B. C. K. X,64	—	—	2615BNS	—	—	—	—
Shrewsburry, Attingham Hall leg. J. A. Thompson 1,X,64	—	—	2604B—	—	—	—	—
Whitchurch, Old Woodhouse, Combermere leg. J. T. P. 21,IX,85	—	—	—	—	4229B	4238B 9,X,90	—
SOMERSET, Abbot's Leigh, Abbot's Pool leg. T. E. T. Bond 2,X,64	—	—	—	—	2609B	—	—
Abbot's Leigh, Ashton Court leg. T. E. T. B. 2,X,64	—	—	26010B	—	2611B	2612BS	—
Allerford Plantation, near Porlock leg. J. T. P. et H. G. Ward 20,III,93	—	—	4726B 15,IX,92	—	4732N 1,X,92	—	*Ciborinia bresadolae* 4796B 27,III,93
STAFFORDSHIRE, Patshull leg. S. R. Ardley per B. C. K. 4,XI,64	—	—	2673BNS	—	—	—	—
Wolverhampton, Tettenhall Wood leg. B. C. K. 13,X,64	—	—	2633BN	—	—	—	—

	Botryotinia cf. *fuckeliana*	*Ciborinia*	*Ciboria americana*	*Ciboria tenuistipes*	*Lanzia echinophila*	*Rutstroemia sydowiana*	Other taxa
SUFFOLK, Barnby, Barnby White House leg. J. T. P. 7,VIII,70	—	—	3639N 14,X,70	—	—	4199B 14,IX,70	—
Between Beccles and Lowestoft leg. J. T. P. 7,VIII,70	—	—	3641B 29,ix-14,X,70	—	—	—	—
Near Bury St. Edmunds, West Stow leg. W. Byford 3,X,65	—	—	2877B/8N	—	—	2907B 9,XI,65	—
Flatford, Dodnash Wood leg. J. Cowan 27,IX,64	—	2704B 4-sp.	2706B	—	2705BS	2707B	—
SURREY, Richmond, Richmond Park, White Lodge leg. J. T. P. 17,XI,64	—	2685B 4-sp.	2683BN	—	—	2684B	—
Richmond Hill entrance leg. J. T. P. 17,XI,64	—	—	2686B	—	—	—	—
SUSSEX, Hastings leg. D. M. Dring 1,IX,66	—	—	—	—	3109B	—	—
Near Tunbridge Well leg. A. G. 16,X,64	—	—	—	—	—	2606B	—
WORCESTER-SHIRE, Halesowen, Leasowes Park leg. J. T. P. 12,X,66	—	—	3028BN	—	—	—	—
Between Lenchford and Shrawley leg. B. C. K. 22,X,64	—	—	2661BN	—	—	2662S	—

	Botryotinia cf. *fuckeliana*	*Ciborinia*	*Ciboria americana*	*Ciboria tenuistipes*	*Lanzia echinophila*	*Rutstroemia sydowiana*	Other taxa
YORKSHIRE, n.w. of Ilkley, Bolton Abbey leg. J. T. P. 19,X,70	—	—	3718B	—	—	—	—
Near Knaresbrough, Scotton Wood leg. J. T. P. 19,IX,70	—	—	3719B 14,X,70	—	—	—	—
leeds, Middleton Park leg. J. T. P. 8,X,64	—	—	2608BN	—	—	—	—
Sheffield, Eccleshall Wood leg. J. Webster 4,X,64	—	2619B 4-sp.	2617B	—	—	2616B	"*Rutstroemia*" sp. 2618B
UNITED KINGDOM - SCOTLAND							
ANGUS, Glamis Castle leg. J. T. P. 22,VIII,68	—	—	3426B +10,X,70	—	—	—	—
ROSS et CROMARTY, Easter Ross, near Alness, Evanton leg. J. T. P. 9,VI,71	—	—	3763BN 17,XI,71	—	—	—	—
SELKIRKSHIRE, Galashiels, Boldside leg. J. T. P. 5,VIII,68	—	—	3431BN 10,X-28,XI,68 3432BN 21-30,X,68 3433BN 24,IX-7,XI,68	—	—	—	—

	Botryotinia cf. *fuckeliana*	*Ciborinia*	*Ciboria americana*	*Ciboria tenuistipes*	*Lanzia echinophila*	*Rutstroemia sydowiana*	Other taxa
UNITED KINGDOM – WALES							
CLWYD, Hawarden, Hawarden Castle leg. J. T. P. 24,X,64	—	—	2648B	—	—	—	—
Near railwey station leg. J. T. P. 24,X,64	—	—	2649B	—	—	—	—
Near Ruthin leg. J. T. P. 17,IX,68	—	—	3441B	—	—	4193B 24,IX,68	—
Wrexham, Coed-y-Glyn, Erddig Park leg. J. T. P. 24,X,64	—	—	2650B/1BN	—	—	—	—
GWENT, Wyndcliffe Wood near St. Arvans leg. J. T. P. 27,V,92	—	—	—	—	4725B 15,IX-17,X,92	—	—
GWYNEDD, Anglesey, Llanfairpwllgwyn-gyllgogerychwyrn-drobwllantysylio-gogoch leg. J. T. P. 13,X,73	—	—	4213B +14,X,73	—	—	—	—
Llandegai leg. J. T. P. 13,X,73	—	—	4214B	—	4214B	—	—
S. of Llanfairfechan leg. J. T. P. 7,X,73	—	—	3889B	—	—	—	—
POWYS, Llanthony, Banks of Afon Hondelu leg. R. K. Brummitt 12,X,64	—	—	2676BS	—	—	—	—

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REFERENCES

BAÑARES BAUDET, A. and BELTRÁN TEJERA, E. (1987): Adiciones a la Flora Micológica Canaria. V. – Acta VI Simp. Nac. Bot. Cript. 1987: 201–211.

BARAL H. O. and KRIEGLSTEINER G. J. (1985): Bausteine zu einer Askomyzeten – Flora der B. R. Deutschland. – Beih. Z. Mykol. 6: 1–160.

CALONGE F. D. (1970): Estudios sobre hongos. II. – An. Int. Bot. Ant. J. Cavanilles 27: 7–27.

CLARK M. C. (1980): A fungus flora of Warwickshire. – London, 272 pp.

DENNIS R. W. G. (1968): British Ascomycetes. – Lehre, I–XXXII, 455 pp.

DUMONT K. P. (1976): Sclerotiniaceae XI. On Moellerodiscus (= Ciboriopsis). – Mycologia 68: 233–267.

DURAND, E. J. (1902): Studies in North American Discomycetes. II. Some new or noteworthy species from central and western New York. – Bull. Torrey Bot. Cl. 29: 458–465.

ENGEL H. and HANFF B. (1992): Die Schmarotzerbecherlinge (Sclerotiniaceae) in Nordwestoberfranken. – Die Pilzflora Nordwestoberfranken 14/15: 79–118.

GALÁN R. (1985): Contribución al estudio del orden Helotiales (Ascomycotina) en España. – Thesis doctoral, Univ. Alcalá de Henares, Madrid, 387 pp.

GALÁN R. (1991): Estudios micólogicos en el Parque Natural de Monfragüe (Extremadura, España) V. Leotiales (= Helotiales auct.), Ascomycotina. – Cryptogam. Mycol. 12: 257–291.

HORA F. B. (1956): Autumn Day Forays, 1955. – Trans. Br. Mycol. Soc. 39: 398.

KOHN L. M. (1982): A preliminary discomycete flora of Macaronesia: Part 5, Sclerotiniaceae. – Mycotaxon 16: 1–34.

KORF R. P. and HENNEBERT, G. L. (1993): A disastrous decision to suppres the terms anamorph and teleomorph. – Mycotaxon 48: 539–542.

MATHEIS W. (1976): Beiträge zur Kenntnis der Discomycetenflora des Kantons Thurgau. II. Einige Discomyceten vom Barchetsee. – Mitt. Thurg. Naturf. Gesell. 41: 6–22.

MATHEIS W. (1985a): Discomyceten aus Süddeutschland. II. Raum Hornberg-Triberg (Mittlerer Schwarzwald). – Carolinea 43: 61–64.

MATHEIS W. (1985b): Beiträge zur Kenntnis der Discomycetenflora des Kantons Thurgau. VIII. Discomyceten des Bettwiesener Walder. – Mitt. Thurg. Naturf. Gesell. 46: 59–78.

PALMER J. T. (1965): Drei Arten von Rutstroemia auf alten Schalen der Edelkastanie. – Z. Pilzkunde 30: 51–55, 1964.

PALMER J. T. (1968): Sweet Chestnut Rutstroemias (Sclerotiniaceae) on an acorn and oak cupules, and Sclerotinia gregoriana n.sp. on deer-grass. (Investigations into the Sclerotiniaceae – II). – Acta Mycol., Warszawa 4: 225–239.

PALMER J. T. (1970): Additions to the Sclerotiniaceae of Ireland. Investigations into Sclerotiniaceae VII. – Ir. Nat. J. 16: 252–265.

PALMER J. T. (1992): The rehabilitation of Sclerotinia bresadolae. – Persoonia 14: 475–481.

PALMER J. T. (1993a): Nuevos hallazgos de Lanzia (Rutstroemia) echinophila y Rutstroemia sydowiana en Macaronesia. – Bellara 9: 109–114.

PALMER J. T. (1993b): Lanzia echinophilla and two further species of Sclerotiniaceae on oak cupules: a tale from the Vienna Woods. – Öst. Z. Pilzk. 2: 1–5.

PALMER J. T. and TRUSZKOWSKA W. (1969): A review of the Polish Sclerotiniaceae and some additional species. Investigations into the Sclerotiniaceae V. – Acta Mycol., Warszawa 5: 245–293.

ROMERO DE LA OSA MATEOS L. (1993): Contribución al estudio de los hongos de la Sierra de Aracena (Huelva). III. – Bol. Soc. Mic. Madrid 18: 135–143.

SCHWEINITZ L. D. VON (1832): Synopsis fungorum in Americi boreali degentium. – Trans. Amer. Phil. Soc. n.s. 4: 141–316.

THIND K. S. (1969): Inoperculate Discomycetes: Final technical report PL–480. – Cyclostyled. Panjab Univ., Chandigarh, 205 pp..

THIND K. S., SHARMA M. P. and SHARMA R. (1983): The Helotiales of India – XIX. – Bibl. Mycol. 91: 100–242.

THIND K. S., SHARMA M. P. and SINGH, H. (1983): The Nepal Helotiales – I. – Bibl. Mycol. 91: 265–279.

TORRE, M. DE LA (1974): Estudio sistemático, ecológico y corológico de Ascomycetes españoles. – Thesis doctoral, Univ., Complutense de Madrid. 199.

Arthonia pragensis spec. nov. (Ascomycetes, Arthoniales), a new lichenicolous fungus from the Czech Republic

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Horáková J. (1994): Arthonia pragensis spec. nov. (Ascomycetes, Arthoniales), a new lichenicolous fungus from the Czech Republic. Czech Mycol. 47: 139–143

Arthonia pragensis Horáková, a new lichenicolous fungus (Ascomycetes, Arthoniales) is described from xerothermic area growing on diabase rocks in Prague in the Czech Republic. This is also the first published report of a lichenicolous fungus from the territory of Prague.

Key words: Arthonia, lichenicolous fungi, Czech Republic, taxonomy

Horáková J. (1994): Arthonia pragensis spec. nov. (Ascomycetes, Arthoniales), nová lichenikolní houba z České republiky. Czech Mycol. 47: 139–143

Arthonia pragensis Horáková je nová lichenikolní houba (Ascomycetes, Arthoniales) popsaná z xerothermních diabasových skal v Praze v České republice. Jedná se o první publikovaný údaj lichenikolní houby na území Prahy.

INTRODUCTION

At present the genus *Arthonia* (Ascomycetes) includes 44 lichenicolous or parasitic species (incl. *Conida* and *Celidium*). This very rich group needs a new taxonomic revision, which should include the nature of the ascus structure. Only the recent research underline amyloidity of ascoapical structures in some lichenized and lichenicolous species of *Arthonia* (Coppins 1983, 1989; Triebel 1989; Alstrup et Hawksworth 1990) and it points out two different ascus types in this genus (Alstrup et Hawksworth 1990).

The species described below, collected once on sunny diabase rocks from xerothermic area in Prague at the elevation cca 310 m above sea level, belongs to those species of *Arthonia* having this aspect of amyloidity.

Arthonia pragensis Horáková spec. nov.

Fungus lichenicolus. Ascocarpia apothecia, conferte congregata vel continua, brunneoatra, aglomerationes subglobosae apothecioideae, sessiles, dispersae, 0,5–0,7 mm diam., apothecia solitaria 0,25–0,35 mm lata. Stratum epithecioideum bruneo-nigrum, 7–12 μm altum, K+ olivaceum, stratum ascigerum pallide fuscum, K+ flavoviridis, hypothecium brunneum, K+ rufum vel vinaceum. Paraphysoides

1,5 μm crassae, cohaerentes, septatae, ramosae et plus expresse versus partem superiorem anastomosantes, pallide fuscae, versus partem superiorem atrofuscae, apicibus capitatis usque ad 3 μm crassis. Asci 8-spori, fissitunicati, incolorati, late-obovati, 30–35×20–25 μm. Ascosporae 1-septatae, hyalinae, non curvatae, in septo constrictae, laeves, crasse tunicatae cum tunica ad 0,8 μm incrassata, 13–18,5 (–20)×5,5–8 μm magnae.

Holotypus: Bohemia centr., urbs Praha, in valle Dalejské údolí, in clivo meridionali insolato apud loco Arethusinová rokle dicto, in thallo crustaceo areolato fusco-viridi indefiniti, alt. 310 m s.m., 17.1. 1993, leg. J. Horáková, PRM 842917.

Apothecia formed in tuberculate clusters, blackbrown, mat, individual fruit-bodies well distinguishable only in the study under (light) microscope. Clusters dispersed, 0.5–0.7 mm diam., apothecia 0.25–0.35 mm diam. Epithecium very dark brown, 7–12 μm tall, hymenium pale brown, hypothecium brown.

Asci fissitunicate, mostly broadly obovate, thick-walled, with an internal apical beak, 30–35(–50)×20–25 μm, 8-spored. Ascospores hyaline, 1-septate, constricted at the septum, smooth-walled, wall 0.8 μm thick; cells unequal, the upper cell (according to order in ascus) subglobose or oblong-ovoid, the lower cell two times longer than broad, 13–18.5(–20)×5.5–8 μm.

Paraphysoids coherent, distinct in Cotton blue only, branched and anastomosing especially towards the apex, septate, somewhat constricted at the septa, subhyaline below, becoming pale to dark brown towards the apex (plasmatic pigmentation), 1.5 μm thick. Apices capitaly thickened to 3 μm diam. Pycnidia not found.

Reactions: K+: epithecium olive-green, hymenium yellow-green, hypothecium orange-red to vinaceus. I(Lugol)+: hymenium instantly pink-red, in a few days the colour of asci changes towards blue colour, the colouring of other parts of the hymenium being indistinct (wholly fades away). KI + blue hymenium, vegetative hyphae and amyloid ring around apex of asci, a content of asci and spores yellow to orange-red.

Arthonia pragensis is a lichenicolous, parasitic or parasymbiotic fungus. Direct influence resulting in damage of the host thallus was not observed. The hyphae cover closely the algal cells, but haustoria are not formed. Host thallus unidentified, sterile, brown-green, crustose, thin, areoles irregularly angular, almost adjacent, 0.2–0.4 mm diam., flat, uneven. The colour of the thallus may be caused by overcovering of colonies of some *Nostoc*. Host thallus with cocal green alga with a central chloroplast, individual cells 5–12.5 μm.

Lecidella carpathica s.l. is found in close vicinity of the infected thallus. The thalli are separated by a black-blue prothallus. *Lecidella carpathica* has a different type of irregularly shaped alga 11.5–20 μm in diam.

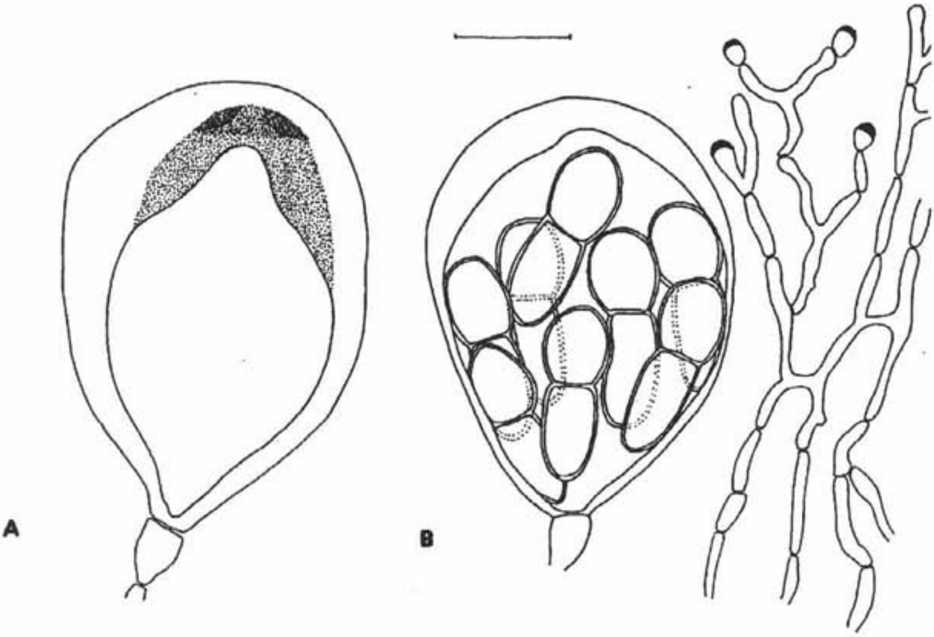

Fig. 1. *Arthonia pragensis*, holotype
A: Young ascus in Lugol's iodine. B: Mature ascus with ascospores and paraphysoids.
Scale 10 μm.

DISCUSSION

Arthonia pragensis differs from all lichenicolous species of the genus *Arthonia*, except *Arthonia cohabitans* Coppins and *Arthonia neglectula* Nyl., by orange-red to vinaceus reaction of hypothecium in KOH solution.

Arthonia neglectula has, in comparison with *Arthonia pragensis*, much smaller 8–10×3–3.5 μm spores, a coal-black epithecial layer and host spectrum of other genera viz. *Baeomyces carneus* Flörke, *Bacidia inundata* (Fr.) Körb. and *Amygdalaria panaeola* (Ach.) Hertel et Brodo (Triebel 1989: 224). *Arthonia cohabitans* Coppins, a commensalistic or weakly parasitic species on thallus of the corticolous *Arthothelium reagens* P. James, is characterized by somewhat shorter, but much narrower spores, 10.5–14×4–5 μm, with upper cell broader and longer than the lower one and in full maturity by brown colour and the warted spore-wall (Coppins 1989: 213). Both mentioned species have brown hypothecium with yellow-orange background.

The same size of spores and colour of hypothecium is present in *Arthonia peltigerae* Th. Fr. known from *Peltigera* and *Solorina* (Clauzade et al. 1989: 29).

The following lichenicolous *Arthonia* are recorded from the territory of the former

Czechoslovakia: *Arthonia epiphyscia* Nyl., *Arthonia fuscopurpurea* (Tul.) R. Sant. and *Arthonia intexta* Almq.

Arthonia epiphyscia Nyl. (Vězda 1970: 223, Clauzade et al. 1989: 29) has smaller ascospores 10–13×4–5 µm and different hosts (*Physcia, Phaeophyscia, Xanthoria*). *Arthonia fuscopurpurea* (Tul.) R. Sant. has hyaline hypothecium, poorly branched paraphyses, narrower asci 25–45×10–20 µm, ascospores 10–18×3–6 µm, is parasitic on *Peltigera* and *Solorina* and is a species occurring in mountains or high mountains. The last mentioned species, *Arthonia intexta* Almq., is parasitic in fruit-bodies of the genus *Lecidella*. Hertel (1969: 210, 1971) suggested that there is a complex of small species (microspecies), separated by e.g. number of septa and size of spores correlated with host species. *Arthonia intexta*, which infects *Lecidella carpathica* is characterized by small 2–3 celled spores, smaller than average spores size in species of the complex of *Arthonia intexta* (12.5–4.4 µm) on other hosts. At present *Arthonia intexta* is mentioned as a possible synonym of *Arthonia glaucomaria* (Nyl.) Nyl. (Clauzade et al. 1989: 30), a species found solely on *Lecanora rupicola* s.l. *Arthonia intexta* occurs in mountains or high mountains. The localities known in the former Czechoslovakia are in Slovac Republic near Prešov on the type specimen of *Lecidella carpathica* and in the High Tatra mountains in Skalné Vráta Mt. near Belá on the thallus of *Lecidella endolithea* Lynge.

In my own collection, *Lecidella carpathica* occurs together with the host thallus of *Arthonia pragensis* mentioned above. The similarity of clusters of apothecia of *Lecidella carpathica* with clusters of apothecia of *Arthonia pragensis* led originally to the erroneous hypothesis, that clusters of apothecia of *Arthonia pragensis* are really apothecia of *Lecidella carpathica* infected by *Arthonia intexta*. This hypothesis was soon abandoned due to disclosure of the structure of the host thallus mentioned above. Clusters of apothecia belong to the lichenicolous fungus only.

Because amyloidity of ascal apex structure was found in a number of species of the genus *Arthonia*, it was re-examined also in the type-specimen of *Arthonia oligospora* Vězda.

In *Arthonia oligospora* Vězda an evident ring structure was found in the ocular chamber, which is of the same shape as in asci of *Arthonia pragensis*. The fact that this structure exists in many species of lichenized and lichenicolous species of the genus *Arthonia* was documented with the KI reaction. Alstrup et Hawksworth (1990) demonstrated, that species exhibiting wine-red reaction with Lugol's solution are also positive blue in KI, what is in agreement with our observations on *Arthonia pragensis* and *Arthonia oligospora*.

When examining *Arthonia oligospora* there were observed some additional characters supplementing the type description of this species: olive-green to dark brown epithecium, dark brown to black hypothecium, broad clavate to obovate, 4–6 spored asci, all structures in sections of apothecia K–; hymenium I(Lugol)+

wine-red; KI hymeniun deep blue, inner part of asci in full maturity red-brown, ring structure blue, vegetative hyphes merely pale blue.

Examined specimen of *Arthonia oligospora* Vězda:

Bulgaria. Pontus, distr. Balchik: in vicinitate pagi Tuzla, 10 m s.m. In saxosis maritimis cretaceis. – 19.7. 1971., leg. A. Vězda, Lich. Sel. Exs. 1154, Isotypus, PRM 732089.

Acknowledgements

I wish to thank to Dr. V. Alstrup and Dr. Z. Pouzar for their critical reading of the manuscript and to Dr. Z. Pouzar I wish also to thank for his valuable comments during the preparation of this paper.

REFERENCES

ALSTRUP V. and HAWKSWORTH D.L. (1990): The lichenicolous fungi of Greenland. – Medd. Gronl., Biosc. 31: 1–90.

CLAUZADE G., DIEDRICH P. and ROUX C. (1989): Nelikenigintaj Fungoj Likenologaj. Ilustrita determinlibro. – Bull. Soc. Linn. Prov., Num. spec. 1: 1–142.

COPPINS B.J. (1983): A taxonomic study of the lichen genus Micarea in Europe. – Bull. Brit. Mus. – Nat. Hist. 11 (2): 17–214.

COPPINS B.J. (1989): Notes on the Arthoniaceae in the British Isles. – Lichenologist 21(3): 195–216.

HERTEL H. (1969): Arthonia intexta Almq., ein vielfach verkannter fruchtkörperloser Flechtenparasit. – Ber. Deutsch. Bot. Ges., 82: 209–220.

HERTEL H. (1971): Über holoarktische Krustenflechten aus den venezuelanischen Anden. – Willdenowia, 6: 225–272.

TRIEBEL D. (1989): Lecideicole Ascomyceten. Eine Revision der obligat lichenicolen Ascomyceten auf lecideoiden Flechten. – Bibliotheca Lichenologica 35, 278 pp., Berlin. Stuttgart.

VĚZDA A. (1970): Příspěvek k poznání lichenikolních hub v Československu III. – Čes. Mykol. 24(4): 220–229.

CZECH MYCOL. 47 (2), 1994

Potentiated effect of ethanol on Amanita phalloides poisoning

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Klán J., Zima T. and Baudišová D. (1994): Potentiated effect of ethanol on Amanita phalloides poisoning. Czech Mycol. 47: 145–150

Interaction of the effects of death cap and ethanol in rats was studied. Ethanol was found to have no protective effect during poisoning by Amanita phalloides. In contrast, it burdened hepatocytes with its own detoxification and made the absorption of the fungal toxins easier due to a changed membrane fluidity. Besides, ethanol was responsible for an increased damage to the cellular membranes by free radicals that originated in its metabolism. The potentiated effects of the two noxae is thus defined.

Our results suggest that the intoxication by A. phalloides parallelled by digestion of a small dose of an alcoholic drink will have a more serious course and worse prognosis.

Key words: Amanita phalloides, ethanol, poisoning

Klán J., Zima T. a Baudišová D. (1994): Intoxikace muchomůrkou zelenou (Amanita phalloides) a etanolem. Czech Mycol. 47: 145–150

Byla studována interakce mezi muchomůrkou zelenou a etanolem u laboratorních potkanů. Bylo zjištěno, že etanol nemá protektivní vliv při otravě Amanita phalloides, ale naopak zatěžuje hepatocyt svojí detoxikací, umožňuje lepší vstřebání toxinů houby v důsledku změněné fluidity membrán a také následně při poškození membrán volnými radikály, které se tvoří při jeho metabolismu. Dochází tedy k potenciaci účinků obou nox.

Intoxikace Amanita phalloides spolu i s relativně malou dávkou alkoholického nápoje dle našich výsledků bude mít těžší průběh s horší prognosou.

INTRODUCTION

The interaction of ethanol with coprine (N^5-/hydroxy-cyclopropyl/-L-glutamine), an efficient metabolite in *Coprinus atramentarius*, is well known in mycotoxicology. Coprine inhibits the enzyme aldehyde dehydrogenase (AlDH) that is oxidizing acetaldehyde formed by the ethanol pathway. The accumulation of acetaldehyde results in the antabuse effect accompanied by flush, palpitation, nausea, and vomiting (Hatfield 1975).

Floersheim and Bianchi (1984) and Floersheim (1992) reported a possible protective effect of ethanol during the intoxication by death cap (*Amanita phalloides*). The evidence was brought in experiments using laboratory mice.

The hypothesis concerning the interaction of ethanol in case of *Amanita phalloides* poisoning is different from the above mentioned opinion. Our experiments were conducted because of our doubts about the above-mentioned conclusions of the Swiss authors.

MATERIALS AND METHODS

The experiments were carried out on female rats (Wistar strain) having an average body weight of 200 g (12-h starvation, water ad libitum, Velaz standard food).

The extract from *Amanita phalloides* was prepared in the following way: an amount of 1 g of dried cap (mature fruit body) was heated to a temperature of 90°C in 20 ml of distilled water and extracted without shaking for 1 h at the room temperature in the dark. The extract was filtered and intraperitoneally applied to the rats at an amount of 1 or 1.5 ml per 200 g body weight. The concentration of toxins in the extract (1.5 ml) represented an LD_{50} dose. Ethanol was applied perorally at a concentration of 33 % by using a gastric tube 30 min before application of *A. phalloides*, the dose being 12.5 ml/kg (Table 1).

Tab. 1 – Experimental scheme (Group I, II – *A. phalloides* and ethanol, III,IV – *A. phalloides*, V – ethanol)

Group of exp. animals	Extract of A. phalloides ml/200g BW	Ethanol ml/kg
I	1,0	12,5
II	1,5	12,5
III	1,0	0
IV	1,5	0
V	0	12,5
Controls	0	0

The lethal effect was estimated a 5 hours after intoxication by *Amanita phalloides*. The liver for histological examination and serum were removed. The enzyme activities (alanine aminotransferase – ALT and aspartate aminotransferase – AST) were determined by spectrophotometric assay (Bio-La test, Lachema Brno). Malondialdehyde (MDA) was determined by spectrophotometric assay the modified Carbonneau's method (reaction with thiobarbituric acid) (Carbonneau et al. 1991). Histological preparations: liver was treated by fixation in the Bouin's liquid and subsequently stained with hematoxylin-eosin.

RESULTS

The mortality rate of the rats resulting from a combined intoxication with the extract of *A. phalloides* and ethanol is shown in Table 2. The death rate observed in the presence of ethanol was twofold as compared to a simple intoxication by the fungal toxins.

Tab. 2 – Mortality rate of rats after intoxication by the extract of *A. phalloides* (III, IV), ethanol (V), combined intoxication with the extract of *A. phalloides* and ethanol (I,II), controls (C).

Group (rat)	Extract A.ph. ml/200gBW	Ethanol ml/kgBW	N	Exitus	%
I	1,0	12,5	10	2	20
II	1,5	12,5	35	35	100
III	1,0	0	10	0	0
IV	1,5	0	35	19	54
V	0	12,5	5	0	0
C	0	0	5	0	0

The activities of aminotransferases (AST, ALT) and the concentration of malondialdehyde were determined only in the animals that survived (control group, group intoxicated only by the extract of *A. phalloides*). The results are summarized in Table 3.

Tab. 3 – Enzyme activities of AST and ALT and the level of MDA in rats after intoxication by the extract of *A. phalloides* (III, IV), ethanol (V), combined intoxication with the extract of *A. phalloides* and ethanol (I, II), controls (C).

Group (rat)	Extract ml/200gBW	Ethanol ml/kg	AST μkat/l	ALT μkat/l	MDA μmol/l
I	1,0	12,5	×	×	×
II	1,5	12,5	×	×	×
III	1,0	0	6,49*	1,64*	4,93
IV	1,5	0	6,65*	1,73*	5,07
V	0	12,5	3,02	0,34	4,39
C	0	0	2,63	0,36	4,19

* statistical significance $p < 0{,}05$ v.s. controls
× no measured (exitus of rats)

The results (Tab. 3) show a significant rise of the aminotransferase activities in the intoxicated rats by *A. phalloides*. The concentration of the total MDA in blood was not significantly increased in comparison with the control group.

The histological picture of the liver of rats intoxicated with *A. phalloides* and ethanol showed a complet steatosis accompanied by a dilatation of capillary blood vessels and necrotic regions. In the group which received the extract of *A. phalloides*, the steatosis was only slight developed. Areas of destruction were observable, characterized by fusion of the hepatocytes and activation of Kupffer cells.

Clearly, a potentiated effect of *A. phalloides* toxins by ethanol was observed in contrast to the protective effect described by Floersheim et Bianchi (1984).

DISCUSSION

The combination of the effects of ethanol and of the toxins of *A. phalloides* was studied by Floersheim and Bianchi (1984). They used laboratory mice known to be more sensitive to the toxins of *A. phalloides* than rats employed in our study. We have objections against the intraperitoneal application of ethanol used by the Swiss authors. The resulting level of ethanol in the organism is thus increased and, also, the corresponding kinetic and time distribution is different from perorally ethanol administration (Caballeria 1992, Wedel 1991). Metabolism of ethanol by the isoenzymes of alcohol dehydrogenase starts already in the stomach and, accordingly, the ethanol level is decreased before it first pass through liver (Lieber 1990). The ethanol diffuses by the concentration gradient. If ethanol is given perorally, as in our study, its maximal level in blood is reached between 30 and 90 min after administration (Mattila 1990).

Experiments have shown that the toxins of *A. phalloides* – amanitins and phalloidins, accumulate in liver where the amanitines block the function of the enzyme RNA polymerase II(B) and the phalloidins cause polymeration of the protein – actin (Faulstich et Münter 1986, Wieland et Faulstich 1991).

Ethanol is known to affect fluidity and permeability of the cellular membranes and, consequently, increase the penetration of many compounds into the cell (Tarashi et Rubin 1985). The metabolism of ethanol results in a formation of free radicals that cause lipid peroxidation (for instance the cellular membranes) and there are produce aldehydes (e.g. malondialdehyde – MDA, 4-hydroxy nonenal) with toxic effects (Nordmann et al. 1992). The activity of superoxide dismutase (SOD) in the liver and brain, and the liver glutathione peroxidase (GPx) are decreased by ethanol intake (Rouach et al. 1987, Tanner et al. 1986). The levels of glutathione and S-adenosyl-L-methionine are also decreased, which results in a damage of the structure and function of the cellular membranes (Lieber 1990). The cells consist of two antioxidant systems protected against free radical injury. First are the antioxidant enzymes (superoxide dismutase – SOD, glutathione peroxidase – GPx) and second the antioxidant substrates (ascorbic acid, retinol, carotenoids, tocopherols, thiols, bilirubin, etc.) (Halliwell 1991).

The damage to the cellular membranes together with the consequent better permeability for other compounds and the free radicals injury during ethanol metabolism suggest cumulative effects of the two noxae.

The Floersheim (1992) opinion, that SOD capable of scavenger the free radicals during *A. phalloides* poisoning with ethanol does not seem to be likely. Similarly, the possibility that ethanol could interfere with the penetration of the mushroom toxins into the hepatocytes either by blocking the receptors and/or the transport system or via the structural changes of the lipid membrane resulting in an inhibition of entry of the mushroom toxins into the cell is not very convincing.

The Swiss authors linked the clinical data on the higher death rate of children after *A. phalloides* intoxication, as compared to adults, with the possible protective effect of small doses of an alcoholic drink drunk by the adults (Floersheim et Biancki 1984). This explanation seems to be very improbable. We assume that the difference can be explained by a higher amount of the fungus eaten per the total body mass.

Consequently, potentiated effect of ethanol to *A. phalloides* poisoning should be observable by action of free radicals, burdnes the hepatocyte with ethanol detoxification, and a better absorption of the toxins as a result of the changes in cellular membranes due to ethanol and its metabolism. Thus, a phenomenon of potentiation of the toxic effect of *A. phalloides* toxins by ethanol was observed in contrast to the protective effect described by Floersheim et Bianchi (1984). *Amanita phalloides* poisoning with ethanol administration may be worse prognose by our results.

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References

Caballeria J. (1992): First-pass metabolism of ethanol: Its role as a determinant of blood alcohol levels after drinking.-Hepato-Gastroentrol., 39 (Suppl.I): 62–66.

Carbonneau M.A., Feuchant E., Sess D., Canioni P., Clerc M. (1991): Free and bound malondialdehyd measured as thiobarbituric acid adduct by HPLC in serum and plasma. – Clin. Chem. 37 (8): 1423–1429.

Faulstich H., Münter K. (1986): New aspects of phalloidin poisoning. – Klin. Wochenschr. 64 (Suppl. VII): 66–70.

Floersheim G.L., Bianchi L. (1984): Ethanol diminishes the toxicity of the mushroom Amanita phalloides. – Experientia 40: 1268–1270.

Floersheim G.L. (1992): Influence of etanol on toxicity of paraquat and Amanita phalloides. – Lancet 339: 437.

Halliwell B. (1991): Drug antioxidant effects. A basiss for drug Selection? – Drugs 42 (4): 569–605.

Hatfield G.M., Schaumberg J.P. (1975): Isolation and structural studies of coprine, the disulfiramlike constituent of Coprinus atramentarius. – Lloydia 38 (6): 489–497.

Lieber C.S. (1990): Interaction of alcohol and other drugs and nutrients. – Drugs 40 (Suppl. 3): 23–44.

MATTILA M.J. (1990): Alcohol and drug interactions. – Ann. Med. 22: 363–369.

NORDMANN R., RIBIERE C., ROUACH H. (1992): Implication of free radical mechanisms in ethanol-induced cellular injury. – Free Rad. Biol. Med. 122: 219–240.

ROUACH H., RIBIERE C., PARK M.K., SAFFAR C., NORDMANN R. (1987): Lipid peroxidation and brain mitochondrial damage induced by ethanol. – Bioelectrochem. Bioenerg. 18: 211–217.

TANNER A.R., BANTOCK I., HINKS L., LLOYD B., TURNER N.R., WRIGHT R. (1986): Depressed selenium and vitamin E levels in an alcoholic population. – Digest. Dis. Sci. 31 (12): 1307–1313.

TARASHI T.F., RUBIN E. (1985): Ethanol and Biological Membranes. Experimental Studies and Theoretical Considerations. In: Seitz H.K., Kommerell, B.: Alcohol Related Disease in Gastroenterology. Heidelberg, Springer 1985: 212–231.

WEDEL M., PIETERS J.E., PIKAAR N.A., OCKHUIZEN T. (1991): Application of a tree compartment model to a study of the effects of sex, alcohol dose and concentration, exercise and food consumption on the pharmacokinetics of ethanol in healthy volunteers. – Alcohol and Alcoholism 26 (3): 329–336.

WIELAND T., FAULSTICH H. (1991): Fifty years of amanitin. – Experientia 47: 1186–1193.

CZECH MYCOL. 47 (2), 1994

New records of micromycetes from Czech and Slovak Republics. III. Acremonium furcatum, Gonatobotryum parasiticum, Stachybotrys bisbyi, and Wardomyces inflatus

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Kubátová A. (1994): New records of micromycetes from Czech and Slovak Republics. III. Acremonium furcatum, Gonatobotryum parasiticum, Stachybotrys bisbyi, and Wardomyces inflatus. Czech Mycol. 47: 151–158

Four species of the lesser known filamentous microfungi (Deuteromycotina) are reported from Czech and Slovak Republics, which appear to be the first published records of these fungi for this area. Acremonium furcatum, Stachybotrys bisbyi and Wardomyces inflatus were isolated from soil, Gonatobotryum parasiticum was found on Trichoderma sp. on dead wood. Description and illustrations are given. The strains of the three former fungi are maintained in the Culture Collection of Fungi (CCF), Prague.

Key words: filamentous microfungi, Deuteromycotina, new records, Czech Republic, Slovak Republic

Kubátová A. (1994): Nové nálezy mikroskopických hub v České a Slovenské republice. III. Acremonium furcatum, Gonatobotryum parasiticum, Stachybotrys bisbyi a Wardomyces inflatus. Czech Mycol. 47: 151–158

Z půdy a ze dřeva byly izolovány další mikroskopické vláknité houby, jejichž nálezy v českých zemích ani na Slovensku nebyly dosud publikovány (Deuteromycotina: Acremonium furcatum, Gonatobotryum parasiticum, Stachybotrys bisbyi, Wardomyces inflatus). Je uvedena jejich charakteristika a vyobrazení. Čisté kultury těchto hub (kromě G. parasiticum, jež roste uspokojivě jen v přítomnosti hostitelské houby) jsou uchovávány ve Sbírce kultur hub (CCF) katedry botaniky přírodovědecké fakulty UK v Praze.

During a study of micromycetes in soil and other substrates in the past years some filamentous fungi were isolated, which were not yet published from Czech and Slovak Republics. The strains were isolated on soil extract agar with rose Bengal, streptomycin and LiCl. All fungi with exception of *Gonatobotryum parasiticum* can be found in Culture Collection of Fungi (CCF), Department of Botany, Charles University, Prague, Czech Republic. This paper is a continuation of two previous articles on new records of micromycetes from Czechoslovakia (Kubátová 1992, 1993).

Acremonium furcatum (F. et R. Moreau) ex W. Gams 1970

Syn.: *Cephalosporium furcatum* F. et R. Moreau 1941

The strain CCF 2806 was isolated from a beech forest soil, Bradlec hill, near Jičín, eastern Bohemia, elevation ca 500 m, in VII. 1991 by A. Kubátová as No. 98/91.

Description:

Colonies on maltextract agar after 10 days at 25°C ca 24 mm in diam., on potato-carrot agar growing somewhat faster, reaching ca 33 mm in diam., whitish, later pale buff, velutinous to funiculose. Reverse buff to pale brown. Hyphae hyaline, forming synnemata, bearing mono- or polyphialides (Fig. 1). Phialides 9–24 × 2–2.3 μm, often proliferating. Conidia one-celled, hyaline, ellipsoidal to short cylindrical, 3.1–4.0 × 1.8–2.0 μm. The fungus was identified according to Gams (1971).

Habitat and distribution:

Acremonium furcatum is after Domsch et al. (1980) very common in soils, decaying plant substrates, and is also known from moist walls. It has been reported from several European countries, from Nigeria, Turkey, India, Nepal, Hong Kong, and USA.

Biochemical characters:

Acremonium furcatum was found to inhibit the growth of *Chlorella pyrenoidosa* and is also known to be antagonistic to *Rhizoctonia solani*. It utilizes cellulose, carboxymethylcellulose and xylan (Domsch et al. 1980).

Wardomyces inflatus (Marchal) Hennebert 1968

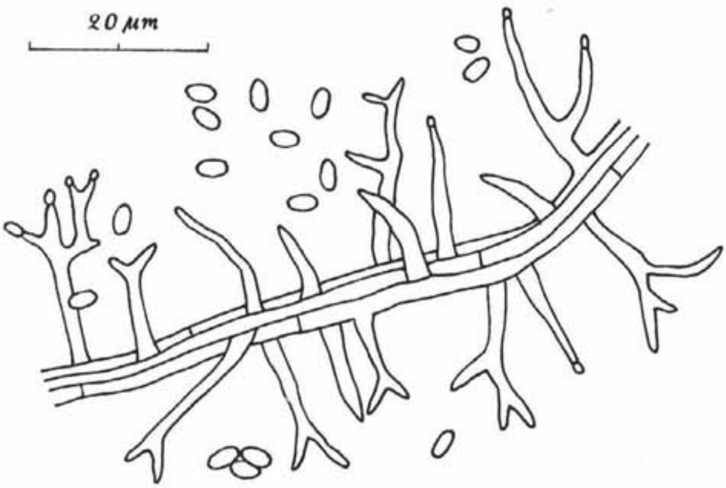
Syn.: *Trichosporium inflatum* Marchal 1895
Wardomyces hughesii Hennebert 1962

The strain CCF 2742 was isolated from meadow soil, Zázrivá near Dolný Kubín, northern Slovakia, elevation ca 860 m, in IX. 1991 by A. Kubátová as No. 108/91.

Description:

Colonies on oat, potato-carrot and corn agars after 10 days at 25°C ca 23–28 mm in diam., felted, grey, later becoming blackish, reverse grey. Conidiophores (Fig. 2) simple or branched, hyaline, with inflated ampulliform, clavate or subspherical conidiogenous cells, 4.5–6.2 × 2.3–3.1 μm. Conidia one-celled, smooth, blackish brown, ellipsoidal or oblong, truncate at the base, 6.2–7 × 3.1–3.8 μm. The fungus was identified according to Ellis (1971) and Hennebert (1968).

1



2

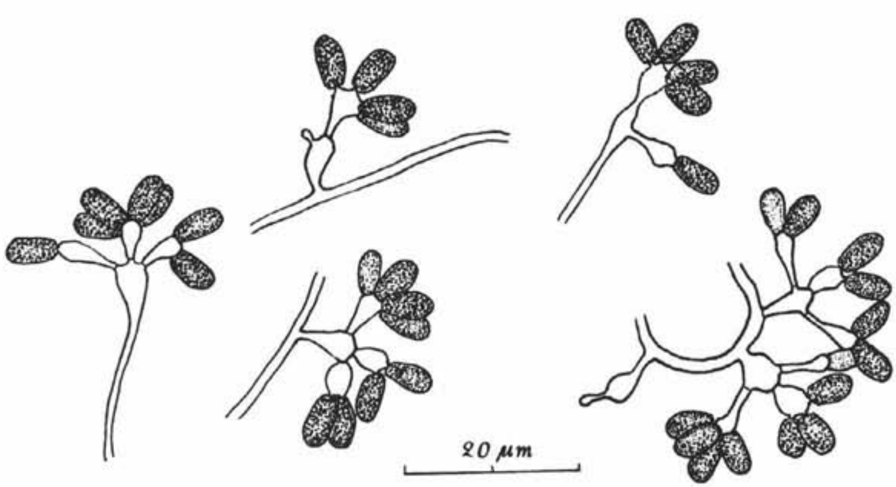


Fig. 1. *Acremonium furcatum* – strain CCF 2806 grown on maltextract agar, conidiophores with phialides and conidia. A. Kubátová del.

Fig. 2. *Wardomyces inflatus* – strain CCF 2742 grown on wort agar, conidiophores with phialides and conidia. A. Kubátová del.

Habitat and distribution:

Hennebert (1962) isolated this fungus from wood of *Acer* in Canada and from greenhouse soil in Belgium. He also listed records from pig dung in Belgium and from soil in Canada (Hennebert 1968). Dickinson (1964) found *W. inflatus* in salt marsh mud at Gibraltar Point. Ellis (1971) reported records from *Acer, Pteridium* and soils in Europe and North America.

Stachybotrys bisbyi (Srinivasan) Barron 1964

Syn.: *Stachybotrys elegans* (Pidopl.) W. Gams 1980
Hyalostachybotrys bisbyi Srinivasan 1958
Stachybotrys aurantia Barron 1962

The strain CCF 2730 was isolated from an arable soil, Loučeň near Mladá Boleslav, eastern Bohemia, elevation ca 220 m, in IV. 1991 by A. Kubátová as No. 61/91.

The strain CCF 2741 was isolated from a meadow soil, Zázrivá near Dolný Kubín, northern Slovakia, elevation ca 860 m, in IX. 1991 by A. Kubátová as No. 126/91.

Description:

Colonies on oat agar whitish, later salmon pink coloured, fast growing, reaching ca 70–75 mm after 10 days at 25 °C. After several transfers the ability of sporulations is decreasing (see also remarks of Jong and Davis 1976; Domsch et al. 1980). After Barron (1962) the fungus required biotin for normal growth. Conidiophores (Fig. 3) erect, usually unbranched, hyaline, sometimes rough-walled at the lover parts, attenuated toward the tip, 50–100 × 4–6 μm, with cluster of 4–7 phialides at the apex. Phialides subclavate, smooth-walled, 12.4–15.6 × 4.7–5.4 μm. Conidia one-celled, fusiform to ellipsoidal, hyaline, smooth-walled, guttulate, 11–17 × 7.8–9.3 μm, aggregated in slimy masses. The identification was made according to Jong and Davis (1976) and Domsch et al. (1980).

Habitat and distribution:

Jong and Davis (1976) and Domsch et al. (1980) listed numerous records from different types of soils, rhizosphere, roots and wood in Canada, Germany, Egypt, South Africa, Mozambique, India, Japan and Papua-New Guinea. *S. bisbyi* was isolated from soil in Poland also (Truszkowska and Kalinska 1979, Truszkowska and Laciowa 1986). Wang and Zabel (1990) reported its occurrence on wood in New York. Turhan (1990) demonstrated the ability of hyperparasitism of this fungus on *Rhizoctonia solani*. Cytochemical study of the mycoparasitic interaction was done by Benyagoub et al. (1992).

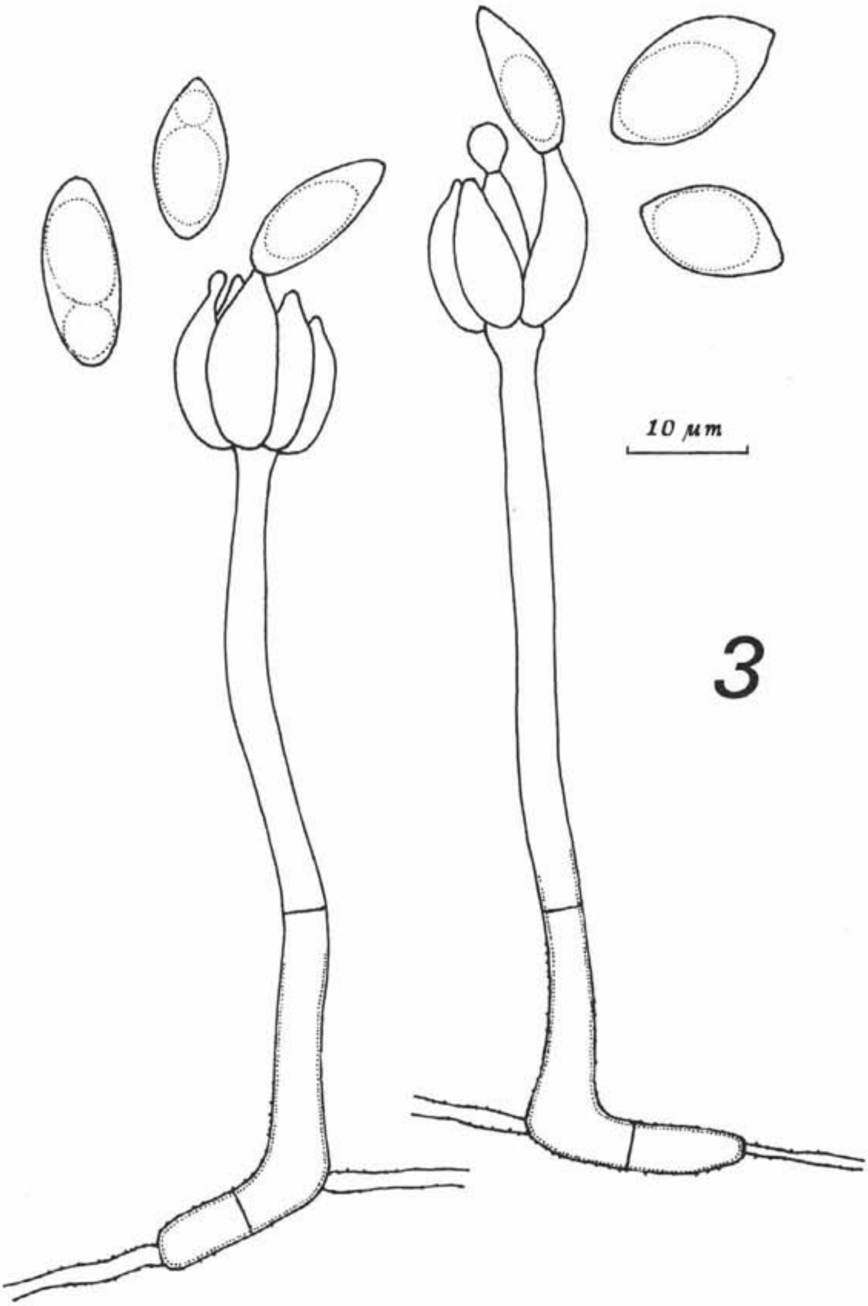


Fig. 3. *Stachybotrys bisbyi* – strain CCF 2741 grown on oat agar, conidiophores with conidia.
A. Kubátová del.

Gonatobotryum parasiticum (Thaxt.) Jane Walker et Minter 1981

Syn.: *Gonatorrhodiella parasitica* Thaxt. 1891
Nematogonum parasiticum (Thaxt.) Hughes 1953

This fungus was found on a *Trichoderma sp.* growing on a dead branch without a bark laying on the earth in mixed forest on left bank of an Oslava river, near Náměšť nad Oslavou, bellow the ruin of Lamberk, south Moravia, elevation ca 340 m, in VIII. 1991 by A. Kubátová as No. 106/91. The attempts to isolate the fungus in pure culture failed, the fungus was grown in laboratory conditions only in mixed culture (in this case with *Acremonium sp.* and *Trichoderma sp.*).

Description:

Colonies of *G. parasiticum* appeared on corn agar after 3–4 weeks, when *Trichoderma sp.* and *Acremonium sp.* covered the whole Petri dish. They are at first whitish, becoming orange with production of conidia. Conidiophores (Fig. 4) smooth, hyaline to pale brown, 7.8–11 μm thick, up to 1,5 mm long, with swollen conidiogenous cells of globose or ovoid form, 24–32 × 18–24 μm. Conidiogenous cells having large number of conidiogenous loci, on them conidia formed in chains of three. Conidia one-celled, hyaline to pale brown, less or more smooth, ellipsoidal, 7.8–12.4 × 6–7.8 μm. The strain was identified according to Walker and Minter (1981).

Habitat and distribution:

Gonatobotryum parasiticum is known as parasite on fungi. It has been recorded from *Ganoderma, Polyporus, Poria, Tremella, Trichoderma, Hypocrea* and *Hypomyces* from Europe and North America (after Walker and Minter 1981).

REFERENCES

BENYAGOUB M., CHAMBERLAND H. and JABAJI-HARE S.H. (1992): Cytochemical study of the mycoparasitic interaction of Stachybotrys elegans with Rhizoctonia solani. – Phytopathology 82(10): 1119.

DICKINSON C.H. (1964): The genus Wardomyces. – Trans. Brit. Mycol. Soc. 47(3): 321–325.

DOMSCH K.H., GAMS W. and ANDERSON T.-H. (1980): Compendium of soil fungi. Vol.1. – London etc., 859 pp.

ELLIS M.B. (1971): Dematiaceous Hyphomycetes. – Kew, 608 pp.

GAMS W. (1971): Cephalosporium-artige Schimmelpilze (Hyphomycetes). – Jena, 262 pp.

HENNEBERT G.L. (1962): Wardomyces and Asteromyces. – Can. J. Bot. 40: 1203–1216.

HENNEBERT G.L. (1968): Echinobotryum, Wardomyces and Mammaria. – Trans. Brit. Mycol. Soc. 51(5): 749–762.

JONG S. C. and DAVIS E. E. (1976): Contribution to the knowledge of Stachybotrys and Memnoniella in culture. – Mycotaxon 3(3): 409–485.

KUBÁTOVÁ A. (1992): New records of micromycetes from Czechoslovakia. I. – Čes. Mykol. 45(4)/1991: 155–163.

KUBÁTOVÁ A. (1993): New records of micromycetes from Czechoslovakia. II. Filobasidiella depauperata (Petch) Samson, Stalpers and Weijman. – Čes. Mykol. 46(1–2)/1992: 126–130.

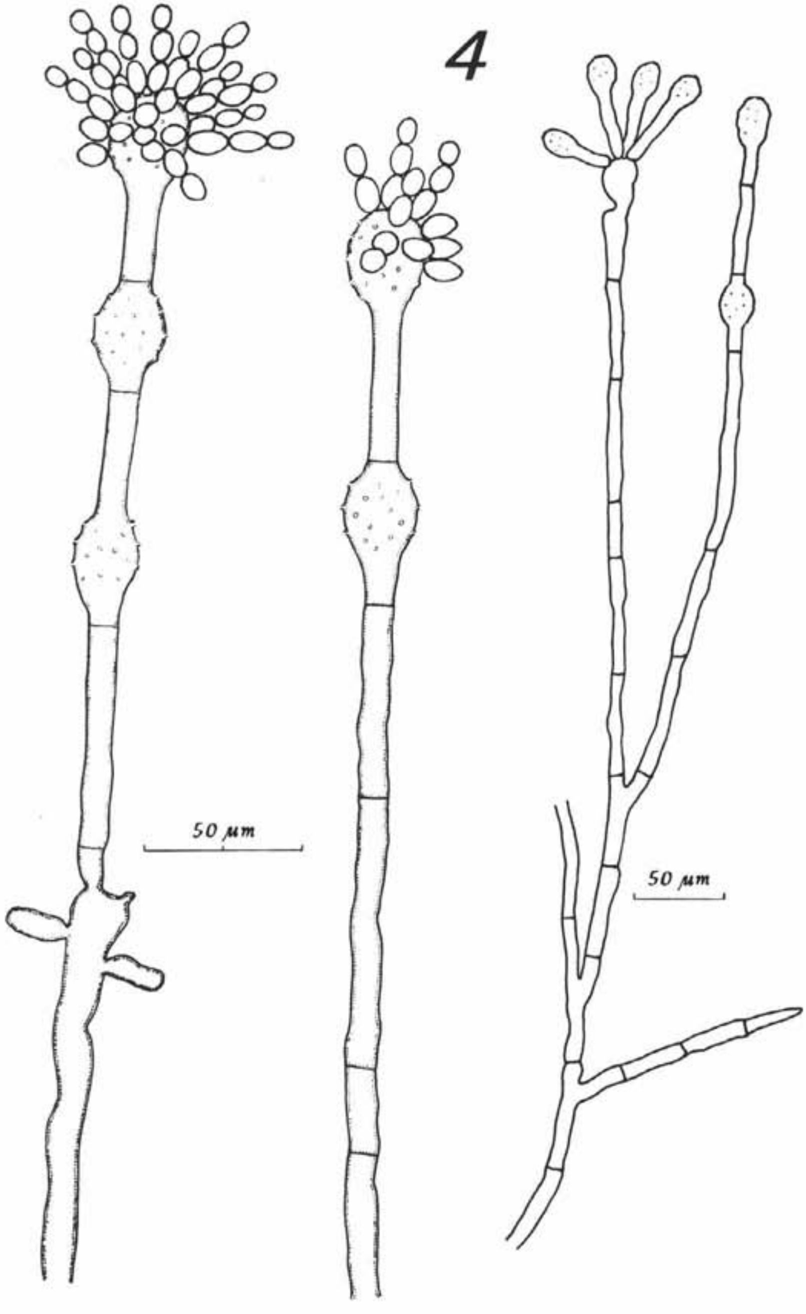


Fig. 4. *Gonatobotryum parasiticum* – strain AK 106/91 grown on CMA in mixed culture with *Acremonium sp.* and *Trichoderma sp.*, conidiophores with conidia. A. Kubátová del.

TRUSZKOWSKA W. and LACIOWA B. (1986): Wystepovanie Stachybotrys bisbyi (Srinivasan) Barron w glebie w Polsce. – Acta Mycol. 22(1): 95–97.
TRUSZKOWSKA W. and KALINSKA B. (1979): Zbiorowiska grzybów ksztaltujace sie w srodowisku koniczyny lakowej (Trifolium pratense L.) uprawianej na nizinach w czystym siewie lub z kupkówka pospolita (Dactylis glomerata L.). – Acta Mycol. 15: 61–73.
TURHAN G. (1990): Further hyperparasites of Rhizoctonia solani Kuehn. as promising candidates for biological control. – Z. Pflanzenkr. Pflanzenschutz 97(2): 208–215.
WALKER J. C. and MINTER D. W. (1981): Taxonomy of Nematogonum, Gonatobotrys, Gonatobotryum and Gonatorrhodiella. – Trans. Brit. Mycol. Soc. 77(2): 299–319.
WANG C.J.K. and ZABEL R.A. [eds.] (1990): Indentification manual for fungi from utility poles in the Eastern United States. – Rockville, 356 pp.

CZECH MYCOL. 47 (2), 1994

Two new localities of Inonotus rickii in Europe

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Kotlaba F. and Pouzar Z. (1994): New locality of Inonotus rickii in Europe. Czech Mycol. 47: 159–161

Budva in Montenegro and Iráklion in Crete are reported as new, and the third and fourth known localities of the rare polypore Inonotus rickii (Pat.) Reid in Europe. It was growing on the living trunks of Celtis australis L. and of Sambucus nigra L., which are new hosts for this polypore.

Key words: Polypores, Inonotus rickii, Celtis australis, Sambucus nigra, Montenegro, Crete

Kotlaba F. a Pouzar Z. (1994): Dvě nové lokality Inonotus rickii v Evropě. Czech Mycol. 47: 159–161

Jsou uvedeny dvě nové lokality vzácného choroše Inonotus rickii (Pat.) Reid z Budvy v Černé Hoře a z Iráklionu na Krétě, které jsou třetí a čtvrtou známou lokalitou v Evropě. Rostl na živém kmenu břestovce jižního – Celtis australis L. a bezu černého – Sambucus nigra L., což jsou nové hostitelské dřeviny pro tento choroš.

Inonotus rickii (Hymenochaetaceae) has a wide distribution in tropical and subtropical vegetation zones, predominantly outside of Europe. The only two European localities known are Catania and Palermo in Sicily, Italy (Intini 1988, Jaquenoud-Steinlin 1985, Jaquenoud 1987, Ryvarden and Gilbertson 1993).

On July 15, 1976, A. Černý (Brno, Czech Republic) collected the anamorphic state of some polypore at the base of a living trunk of *Celtis australis* L. near the Museum in the town of Budva at Kotor, Montenegro (one of the republics of Federal Yugoslavia). Part of this fungus we sent some years ago to M. Tortić (Zagreb, Croatia). She consulted A. David (Villeurbanne, France) regarding its identity, who suspected that it could be *Inonotus rickii*. The authors of this paper studied one fragment of Černý's collection, received from M. Tortić and it was agreed that it was really *Inonotus rickii* (Pat.) Reid. The exsiccate is preserved in the herbarium of the Mycological Department of the National Museum in Prague (PRM 876830).

The specimen reminded the first author of a collection which he made in the same locality as A. Černý, but about six weeks earlier (4. IV. 1976), and could be identical with *I. rickii*. Fortunatelly, this specimen was preserved as *Inonotus* sp. in the herbarium PRM under no. 872051 and, on the basis of this rather large material – anamorphic as well as teleomorphic – we were firmly able to establish its identity with *I. rickii*.

Whilst this paper was in press we were lucky to find, among unidentified exsiccates of macromycetes from Greece, collected by J. Klán (Prague), nice carpophores (anamorph) of *Inonotus rickii* (Pat.) Reid, which we are publishing here: Island of Crete, Greece, Iráklion (Eraklion), in a town park on the living trunk of *Sambucus nigra*, 14. VIII. 1975, leg. J. Klán, det. 6. 9. 1993 F. Kotlaba and Z. Pouzar (PRM 878625).

It is interesting that Klán's collection of *Inonotus rickii* from Crete in 1975 is the first in Europe because, in Montenegro, it was collected a year later (in 1976) and, in Sicily, as late as 1981 (see Jaquenoud-Steinlin 1985).

MICROFEATURES OF *Inonotus rickii* (PAT.) REID ACCORDING TO THE MATERIAL FROM BUDVA

Generative hyphae are 3.5–5 μm wide, thin-walled to slightly thick-walled (the wall up to 0.5 μm thick), hyaline or pale rusty-yellowish, sparsely branched, septate, clampless.

Tramal setae protrude obliquely from the hymonophore; they are very long, straight, in the distal part somewhat broader then in the basal part, with an acute tip, dark rusty-brown, very thick-walled, 200–430 $\times$ 4 μm (in the narrowest part) to 12 μm (in the broadest part).

Hymenial setae are very rare, subulate, acute, thick-walled, rusty-brown, short, about 15 $\times$ 5 μm.

Basidia were not seen as the hymenium had collapsed.

Basidiospores are broadly ellipsoid, with one side flattened, thick-walled, yellowish rusty-brown, with a distinctly lateral apiculus, inamyloid, indextrinoid and acyanophilous, 7–8(–9) $\times$ 5–6(6.5) μm.

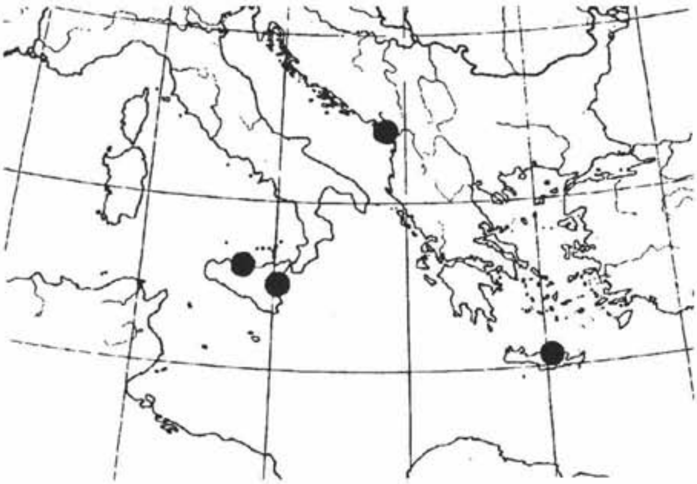
Chlamydospores are very thick-walled (up to 2 μm thick), yellowish rusty to dark rusty-brown, varying in shape, usually broadly ovoid, slightly citriform to almost globose, sometimes with remnants of hyphoid processus up to 15 $\times$ 4.5 μm on the base (rarely also on both poles) which is central and abruptly cut, 9.5–23 $\times$ 8.5–14 μm.

Both of the above-mentioned specimens of *Inonotus rickii* were collected at the base of living trunks of *Celtis australis* L. (*Ulmaceae*), on which tree this polypore does not previously appear to have been reported. Gilbertson and Ryvarden (1986) gave *Casuarina, Cercidium, Myrica* and *Quercus* as hosts of *I. rickii* in North America. As the earlier known host trees in Europe were *Parkinsonia* and *Schinus molle* (Sicily), *Celtis australis* from Budva (Montenegro) and *Sambucus nigra* from Iráklion (Crete), therefore appear to be new hosts for this remarkable polypore.

The locality of *Inonotus rickii* in Budva is now the most northern in Europe as it lies on about 42°45′ N whereas the locality in Iráklion 35°20′ is the southernmost occurrence, currently known, of this polypore in Europe.

All four European localities of *Inonotus rickii* are not (as with many other polypores) in natural forests, but are exclusively in human settlements on cultivated trees. The hitherto known distribution in Europe leads to the conclusion that this fungus has a markedly synanthropic character of distribution in Europe and that it has been introduced there from some tropical or subtropical country (perhaps from India).

Inonotus rickii bears features in all cases of a true parasite, at least in Europe.



Distribution map of *Inonotus rickii* (Pat.) Reid in Mediterranean Europe.

REFERENCES

GILBERTSON R. L., RYVARDEN L. (1986): North American polypores 1. – 433 p., Fungiflora, Oslo.

INTINI M. G. (1988): Contributo alla conoscenza dei fungi lingicoli italiani: Inonotus rickii (Pat.) Reid. – Micol. Ital. 17: 49–53.

JAQUENOUD – STEINLIN M. (1985): Inonotus rickii, un polypore nouveau pour la flore européenne. – Mycol. Helv. 1: 371–391.

JAQUENOUD M. (1987): Les cellules hyméniales d'Inonotus rickii trouvé en Europe. – Mycol. Helv. 2: 209–215.

RYVARDEN L. and GILBERTSON R. L. (1993): European polypores 1. – 387 p., Synopsis fungorum 6, Oslo.

CZECH MYCOL. 47 (2), 1994

Fructification and sporulation of Laetiporus sulphureus in the urban environment

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Gáper J. (1994): Fructification and sporulation of Laetiporus sulphureus in the urban environment. Czech Mycol. 47: 163–169

Basidiocarps of sulphur fungus Laetiporus sulphureus (Bull.: Fr.) Murrill were produced from May to October in 1–4 waves in three model towns of Nitra, Žilina and Zvolen in Slovakia during 1984–1986 and 1991–1992. Basidiospores were released in two main waves (May–June and August–September). The mean of measured values was 6.5×10^2 basidiospores discharged from 1 mm^2 of hymenophor in the course of 24 hours.

Key words: Laetiporus sulphureus, urban ecosystems, sporulation, fructification

Gáper J. (1994): Fruktifikácia a sporulácia Laetiporus sulphureus v mestskom prostredí. Czech Mycol. 47: 163–169

V priebehu rokov 1984–1986 a 1991–1992 sa sledovala fruktifikácia a uvoľňovanie bazídiospór trúdnika Leatiporus sulphureus (Bull.: Fr.) Murrill v Žiline, Nitre a vo Zvolene. Plodnice sa tvoria v 1–4 produkčných vlnách a bazídiospóry sa uvoľňujú v dvoch hlavných vlnách (máj–jún a august–september). Z 1 mm^2 hymenoforu sa za 24 hodín priemerne uvoľní 6.5×10^2 bazídiospór.

INTRODUCTION

Beside of the practical use of sporulation studies in plant protection (Gáper 1990), their theoretical contribution is also important for better knowledge of species ontogenesis (Ingold 1971). The data on sporulation are at the same time useful for taxonomic purposes, for it is possible to collect fruitbodies during the period of their pressumed spore production (Pouzar et Kotlaba, 1988). Last but not least the results of sporulation studies are a valuable contribution to the knowledge of allergy.

Only qualitative aspect of release of airborne basidiospores from the polypore fungus, *Laetiporus sulphureus* (Bull.: Fr.) Murrill was studied (Nuss 1986, Soukup 1987). Up to present time there are no data from the urban environment.

MATERIAL AND METHODS

Fructification and release of basidiospores from naturally produced basidiocarps of polypore fungus *Laetiporus sulphureus* (Bull.: Fr.) Murrill were observed in three towns of Žilina, Nitra and Zvolen during 1984–1986 and 1991–1992. Methods described by Gáper (1993) were used. Sporocarps samples were taken 1–4 times in a month from March to October. Basidiospores were counted in Burger chamber.

RESULTS

Fruitbody consistency of sulphur fungus *Laetiporus sulphureus* (Bull.: Fr.) Murrill is relatively soft and therefore its decomposition is enough quick. So, release of airborne basidiospores from these fruitbodies is much more shorter in relation to time than of those species with tougher sporocarps. And on the other hand, ripening of fruitbodies and duration of sporulation depends more on temperature and some other factors. Every observed year was different in the manifestation of sporulation. In spring 1984 old fruitbodies were collected in Žilina, but no spores fell out of them. In 1985 no new fruitbodies were produced and the rest of fruitbodies from the spring 1984 (they were the remnants from the year 1983) had been decomposed. Only in 1986, in mid-May a big wave of fruitbodies appeared (Fig. 1). They sporulated and fructificated till the beginning of July. During July a new wave of fruitbodies appeared and its spore liberation lasted approximately 4 weeks but simultaneously with the end of this wave another one appeared, however time of its sporulation was less intensive and shorter in that time. Fruitbodies of the second wave decomposed to the end of the season, while those of the last one remained and lasted till the next spring.

The year 1984 was not favourable for fructification of sulphur fungus in Žilina too. In 1985 at the end of September only one wave of fruitbodies appeared which sporulated not very markedly during cca two weeks. Sporulation was recorded only 25th of September (in total 92–888 spores were counted). In 1986 even 4 waves of fruitbodies appeared in Nitra; the last one at the beginning of September but that one did not sporulate (Fig. 2). As there were only small differences between individual waves, it was not always possible to determine exactly, which fruitbodies belonged to which wave and the sporulation of the younger wave could superimpose the older one. Fruitbodies from spring and summer waves, after having discharged the spores, decomposed during the vegetation period. Year 1991 was unfavourable for fructification in Zvolen. In spring from March to April only old sporocarps were estimated. No spores were counted. Maybe, they could not ripen for late fruitbody production in last year or they ripened and during the winter discharged their spores into the environment. In 1992 two fructification waves (in May–June and August–

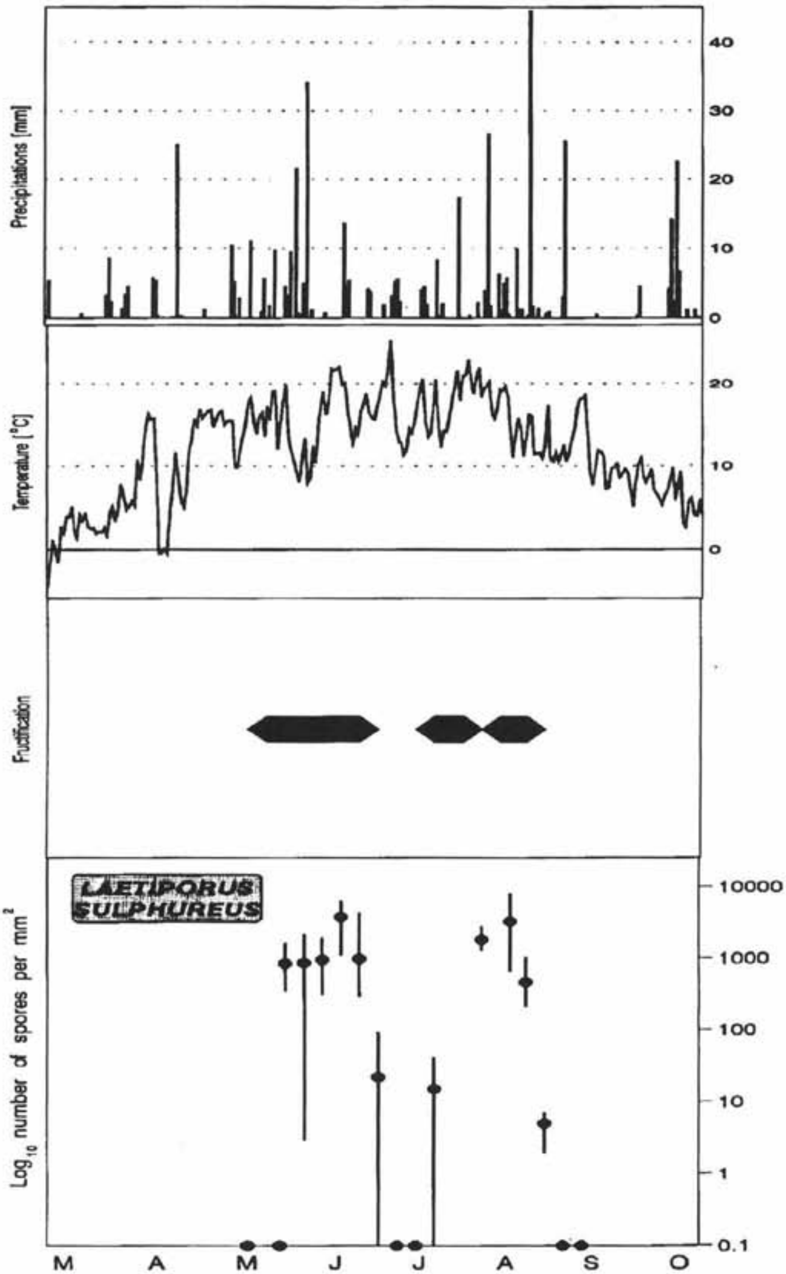


Fig. 1. Spore production and scheme of fructification of Laetiporus sulphureus with marked daily precipitation depths and with average day-time temperatures in the town of Žilina in 1986.

September) were recorded (Fig. 3). Basidospore liberation was very intensive at the end of both June and August.

The dependence on weather is enough unclear. Fig. 1. represents season 1986 in Žilina. Here intensive sporulation seems to be reached at even-tempered average day-time temperatures and smaller rainfall intensity in August. But similarly it seems that lower temperatures could this sporulation to induce. In the contradiction to this, an intensive sporulation was recorded in the same season in June at rising temperatures, but after heavy rains. The similar preconditions are valid for both Nitra and Zvolen (Figs. 2, 3). It is interesting that in Nitra the last wave of fruitbodies did not sporulate (Fig. 2) when the observation was done.

DISCUSSION

Laetiporus sulphureus (Bull.: Fr.) Murrill produces relatively a small amount of basidospores. It has 1–4 production waves but the sporulation lasts only for a short period of time. Of course, some basidospores, especially with vague outlines (most probably unmature ones) were agglutinated and it was impossible to count them. This phenomenon occurred in mature basidiospores too, but only occasionally. We therefore suppose that spores were discharged only from some tubes and that would point out to unequal liberation of spores from hymenophore of fruitbodies in some cases. And so even these at first sight purely theoretical problems show the many sideness and complications in the study of sporulation.

The example of sulphur fungus can confirm the opinion of Soukup (1987) that on year fruitbodies sporulate in favourable conditions already 1–3 weeks after fungal primordium creation. Similarly Nuss (1986) recorded spore liberation in May and June. As fruitbodies had been produced only during this period, Nuss (1986) could not gain information on this species sporulation during the later periods of the year.

In this paper samples taking method enabling the study of greater amounts of fruitbodies were used. Thus the deficiency proceeded from methods studying only a small number of fruitbodies was eliminated. The study of a sufficient number of fruitbodies made possible to give a pictures of spore liberation on the whole territory not only of an individual fruitbody.

Fruitbodies that liberate and do not liberate basidiospores in the same time period, grow in the urbanised landscape too. In such case urban and natural environments are closely connected when dealing with possible transfer of spores.

Acknowledgements.

I thank to Dr. F. Kotlaba and Dr. V. Šašek for critical comments on the first version of this paper.

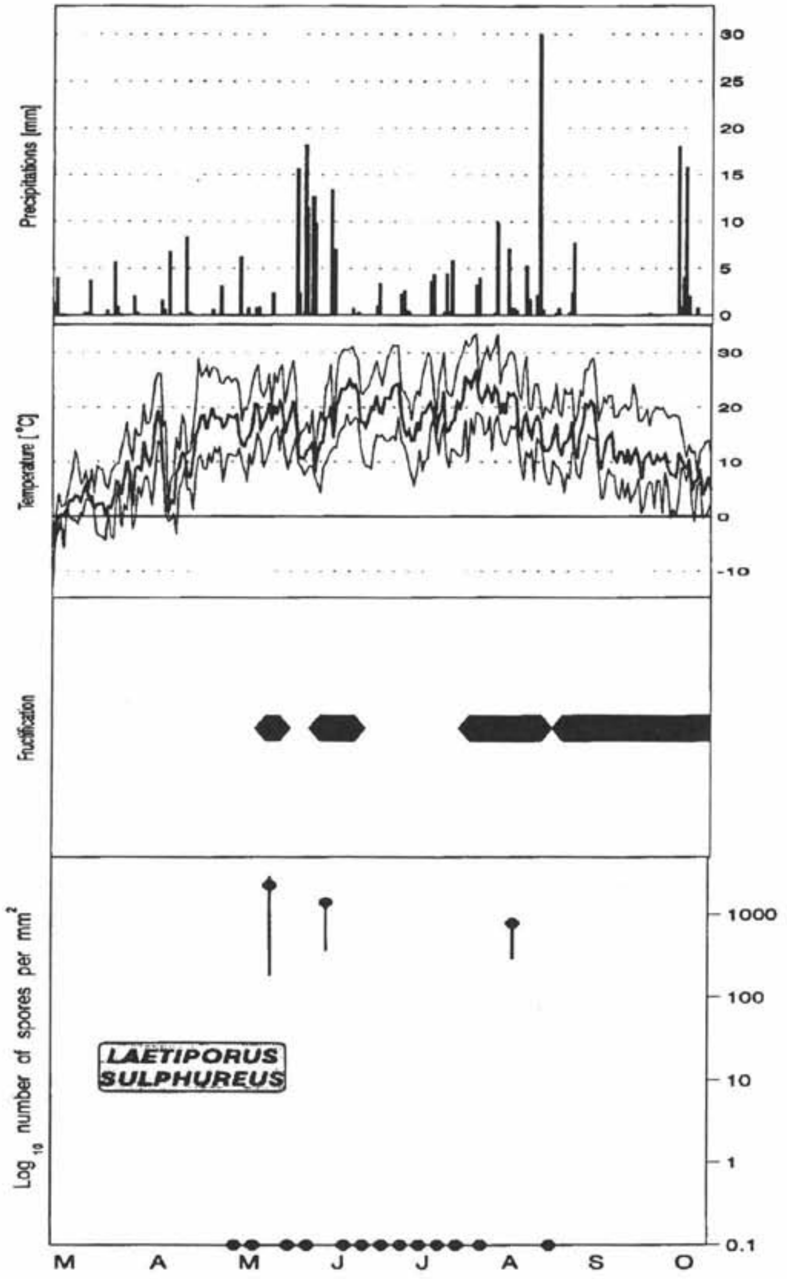


Fig. 2. Spore production and scheme of fructification of Laetiporus sulphureus with marked daily precipitation depths as well as with average day-time, minimum and maximum temperatures in the town of Nitra in 1986.

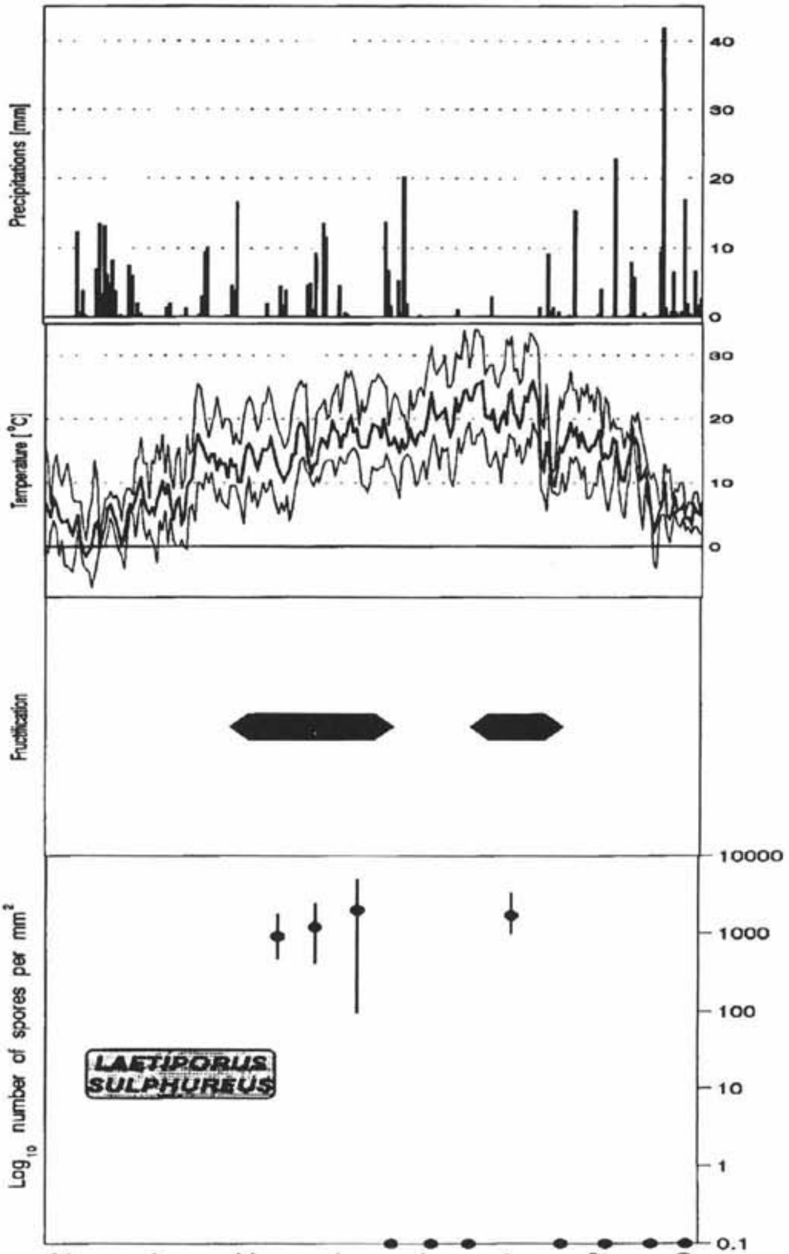


Fig. 3. Spore production and scheme of fructification of Laetiporus sulphureus with marked daily precipitation depths as well as with average day-time, minimum and maximum temperatures in the town of Zvolen in 1992.

REFERENCES

GÁPER J. (1990): Polypores in the urban area in Slovakia. – In: Reisinger A., Bresinsky A. (eds.), Abstracts of the Fourth International Mycological Congress, p. 121, Regensburg.
GÁPER J. (1993): Sporulation of polypores Phellinus igniarius and Trametes unicolor in the urban environment. – Biológia (Bratislava). In Press.
INGOLD C. T. (1971): Fungal spores. Their liberation and dispersal. Clarendon Press.
NUSS I. (1986): Zür Ökologie der Porlinge II. – Biblioth. Mykol. 105: 1–300.
POUZAR Z, KOTLABA F. (1988): Zür Ökologie der Porlinge II. Nuss, I. (Rev.). – Čes. Mykol. 42: 127.
SOUKUP F. (1987): A contribution to the knowledge of sporulation of some polypores II. – Lesnictví 33: 145–158.

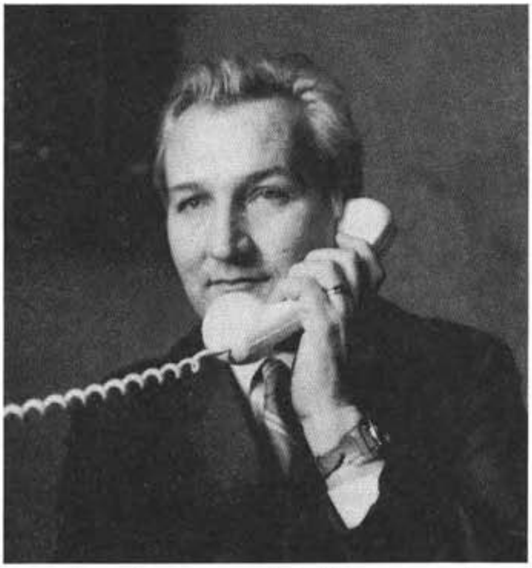
PROF. DR. ROLF SINGER

died on January 18, 1994 in Chicago (U.S.A.).

Born in Schliersee (Germany) June 23, 1906, studied botany in Munich and Vienna he worked in Austria, France, Spain, Russia, Argentina, Chile, Brasil and U.S.A. He was one of the leading mycologists of this century and contributed considerably to taxonomy and ecology of Agaricales.

Doc. RNDr. Vladimír Skalický has passed away...

The whole community of botanists and mycologists is only slowly getting aware of this fact. Somebody whose vitality and a rare talent for scientific, pedagogic, organizational and social activities was matter of course and whose private life was fully dedicated to rich professional activities, has gone. It could be said that his life did not belong to himself, because he was literally living for science, scientific organizations, students and all his collegues botanists and mycologists. The source of his creative force laid in his extraordinary ability to lucidly evaluate the quality of the hitherto reached knowledge in botany and in mycology, to follow up with his own conception and to keep a large and in the same time detailed view in these branches. Two of his significant personal qualities can be added, and that is integrity and total unselfishness. Doc. Skalický could be explicitly called the "Czech botanist of the second half of the 20th century".



Already much had been said in details about his rich creative activities in the Czech mycology (Česká mykologie 45: 54–58) and Preslia (Preslia 62: 265–274) in 1990 when he celebrated his 60th anniversary. All of us who had the chance to know him personally very well and were often in contact with him, cannot forget his incessant vigour, his interest in every problem, his smiling patience for our ignorance. It would be certainly useful, for younger colleagues and for the new generation of botanists, to record his style during consultations at the faculty, during lectures or excursions, the style which could be characterized as unique and unparalleled. We are well aware that a man of letters could have drawn a much better portrait of doc. Skalický. Nevertheless, we just feel bound to remember here some of his characteristic traits.

Working hours of doc. Skalický were absolutely unlimited, from early morning to late night time. Also Saturdays, Sundays and holidays were dedicated mainly to botany and mycology. When participating at different meetings, he managed not only to concentrate his attention to the theme treated, but he found the time to write down bibliographic data and other notes on his numberless little sheets.

His door was every day open for anybody who needed his advice and he was always ready to offer the maximum he was able. His lectures touched so many branches and contained so many details that they formed in fact an encyclopedical picture, sometimes only hardly accessible for his students. He often put his own scientific work aside to help those who needed his professional assistance and his kind advice. To knock at his door meant to obtain a lot of information that might sometimes seem to us excessive as we thought ourselves unable to grasp the problem in the proposed complexity. Vladimír's smile during explanation was nevertheless disarming, and it was necessary to share always his enthousiasm for the matter and to have a good dose of patience. After such busy days, it was natural for him to work and write late to the night, but it could be said that he wrote easily as he always had the theme thought over in advance. His excursions were quite an extraordinary experience: he was demonstrating botanic objects in the whole extent of accessible knowledge, he was deepening students' knowledge, as well as their view on nature in detail and in the whole. Many of us were taking part on his excursions to learn new things. There were places where nobody succeeded to find anything of interest, but he was always and everywhere finding number of interesting things and he managed even in a poor locality or in a dry period to pertinently characterize every place he was walking around. His knowledge in the field of systematics and floristics of vascular plats and cryptogamy were exceptional, and he was always adding ecologic, geographic and geologic notes. His numerous collections could only hardly be fully exploited, as several lifes would be needed for the task. He was also an excellent hiker, no terrain was a problem for him. The same could not be nevertheless said about many of his students that were sometimes literally run down.

These short notes might create an impression that his life was easy and without problems. It would however be misleading. He, too, lived difficult moments, because he was a very sensitive person. Family problems, health troubles and unfortunately also political persecutions in the past were not very beneficial for him. The only thing which could be possibly reproached to doc. Skalický was his habit to give too often preference to others which was very time and attention consuming, so that he did not find the time to write the textbook of general and systematic mycology, work to which he was more competent that anyone else. But he certainly would have done so if more time of creative work had been given to him.

Doc. RNDr. Vladimír Skalický, CSc., has undoubtedly left a profound and original trace in the Czech botany and his extraordinary knowledge, working vigour and his human disinterested profile merit to be made a respectful compliment.

O. Fassatiová and K. Prášil

INSTRUCTIONS TO AUTHORS

Preparation of manuscripts. Manuscripts are to be submitted in English, German or French. The text of the manuscript should be written on one side of white paper (A4, 210 × 297 mm) with broad margins (maximum 30 lines per pages). Each manuscript must include *an abstract* (in English) not exceeding 300 words and a maximum of five key words. The paper will be followed by an abstract in Czech (or Slovak). The journal is responsible, however, for the translation of abstract into Czech for foreign authors. Please send *two copies* of the typescript. The authors are asked to submit diskettes with *the accepted manuscripts* prepared on IBM-compatible personal computers.The files should be in ASCII under DOS. Both HD and DD/3.5″ and 5.25″ diskettes are acceptable.

Illustrations and tables. All tables, black and white photographs and figures (in black indian ink on separate sheet) combined with the legends should be self-explanatory. Legends to the figures must be typed on a separate sheet. Colour photographs can be accepted but the authors will be responsible for the costs. Any drawing or a photograph of microstructures should be provided with a scale. Any illustration should be submitted as *the original drawing and one clear* copy. Output from computer graphics programs produced on plotters or laser printers is quite acceptable. The dimension of any figure should not exceeded 180 × 260 mm in size. References to illustrative matter in the text should normally be parenthetical, e.g. ... spore sizes (Table 1) and ...
as shown in Fig. 2. ...

Nomenclature. Latin names should conform to the International Code of Botanical Nomenclature. New taxa must be substantiated by a Latin diagnosis including a reference to the public herbarium where the type specimen is deposited. The authors are asked to use only the acronyms listed in Index Herbariorum.

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. – Oslo, 507 pp. (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, pp. 93–295, Gainesville.

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

Manuscript evaluation. All manuscripts will be reviewed and the authors informed about the acceptance, rejection or necessary revisions within two months. If a manuscript is returned for revision, the authors should submit a revised version within three months.

Proof corrections. Proofs of the paper will be sent to authors together with the original manuscript. If not returned within three weeks, the proof correction will be carried out by the editor. The principal author will receive 30 reprints free of charge.

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