VĚRA HOLUBOVÁ-JECHOVÁ

Botanical Institute, Czechoslovak Academy of Sciences,
252 43 Průhonice near Praha

# Lignicolous *Hyphomycetes* from Czechoslovakia
## 4. *Menispora*

Abstract

A generic description is given of the genus *Menispora* PERS. and four Czechoslovak species assigned to this genus are described and illustrated: *Menispora caesia* PREUSS, *M. ciliata* CORDA, *M. glauca* PERS. and *M. tortuosa* CORDA. The perfect state of *M. glauca* PERS. was collected for the first time and is described as a new species *Chaetosphaeria glauca* HOL.-JECH. *Chaetosphaeria pulviscula* (CURR.) BOOTH, the perfect state of *M. caesia* PREUSS was also collected only once and is here described again. A key is provided for the Czechoslovak species of *Menispora* PERS.

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## *Menispora* PERSOON

Nomen: *Menispora* PERS., Mycol. Europ. 1: 32, 1822.
Typus: *Menispora glauca* (LINK) ex PERS.
Syn.: *Camptosporium* LINK in EHRENB., Sylvae Mycol. Berol., p. 11, 1818 (nomen nudum); LINK ex SPRENGEL, Linné Syst. Veget. 4: 381 et 553, 1827 (nomen illegitimum).
*Menispora* PERS. subg. *Eriomene* SACC., Sylloge Fung. 4: 326, 1886.
? *Ciliofusarium* ROSTRUP, Bot. Tidsskr. 18: 77, 1892.
*Erionema* R. MAIRE, Ann. Mycol. 4: 329, 1906 (nomen invalidum).
*Eriomenella* PEYRONEL, Nuovo Giorn. Bot. Ital., N.S. 25: 447, 1918; Bull. Soc. Mycol. Fr. 35: 180–181, 1919.
*Eriomene* (SACC.) CLEMENTS et SHEAR, Genera of Fungi, p. 393, 1931.
Status perfectus: *Chaetosphaeria* L. TUL. et C. TUL., Selecta Fung. Carp. 2: 252, 1863.

Colonies single or effuse, sparse or dense, thin and sparsely hairy or velvety to cottony, composed of crowded conidiophores with sterile prolongations or with sterile setae arising independently from basal hyphae. Colour of colonies greyish to greyish brown, olive-brown to dark grey-brown. Basal hyphae pale brown to brown, branched, septate, immersed in the substratum and superficial. Conidiophores are erect, unbranched or branched, dark brown, septate, mostly terminated by

whip-like sterile prolongations. Phialides are borne on stalks, singly or in groups, terminally and laterally on the conidiophores. Phialides are cylindrical, hyaline to subhyaline, one-celled, sometimes straight but usually slightly or sharply curved at the apex. The narrowed fertile ends are more or less tubular; collarettes are inconspicuous. Conidia (phialospores) hyaline, cylindrical or tapered toward the ends, curved, one-celled or 3-septate, terminally or subterminally setulate or non-setulate, slimy, and accumulated in colourless compact masses.

At the present time, perfect states are known for only two species.

Species of this genus are saprophytic and occur mainly on rotten wood and the inner surface of bark of fallen decayed trunks, branches and stumps.

Six species of this genus have been recognized and redescribed most recently by TUBAKI (1958) and HUGHES et KENDRICK (1963, 1968). Only four species have been collected in Czechoslovakia. A seventh species of *Menispora* was newly found in the Netherlands (HOLUBOVÁ-JECHOVÁ 1973).

## Key to the species of genus *Menispora* in Czechoslovakia

1a) Phialospores 3-septate, with a setula at each end; conidiophores with long twisted setoid extensions . . . . . 2
1b) Phialospores non-septate, with a setula at each end or non-setulate; conidiophores with long straight or slightly sinuous setoid extensions or sterile brown setae arise separately . . 3
2a) Phialide stalks simple; the phialides usually solitary, strongly recurved at the apex *M. glauca*
2b) Phialide stalks 2 or 3 times branched; the phialides in clusters, rarely curved at the apex . . . . . *M. tortuosa*
3a) Conidiophores mainly unbranched, with long sterile prolongations; phialides sharply curved at the apex; phialospores with a setula at each end . . . . . *M. ciliata*
3b) Conidiophores branched, sterile long setae arising separately and scattered among conidiophores; phialides straight or slightly curved at the apex; phialospores non-setulate *M. caesia*

The genus *Menispora* was proposed by PERSOON (1822) for the species *Menispora glauca* (LINK) ex PERS. The diagnosis lacks some diacritic characters but the existence of the original specimen (LINK's in PERSOON's herbarium), which was studied by HUGHES and KENDRICK (1963), makes it possible to know his original concept of the genus and of its type species *Menispora glauca* (LINK) ex PERS.

LINK proposed (in EHRENBERG 1818) the genus *Camptosporium* LINK for this fungus, but LINK's genus is not only an invalidly published name of the pre-Friesian period, but also a "nomen nudum", a name without a diagnosis, as is the specific name *Camptosporium glaucum* LINK. The genus was validly published as late as 1827 by SPRENGEL but it was an "illegitimate name" when published because of the existence of an earlier validly published name, PERSOON's *Menispora*.

In 1892 ROSTRUP proposed the generic name *Ciliofusarium* ROSTR. for the single species *Ciliofusarium umbrosum* ROSTR. From his diagnosis it seems likely that he studied a species of the genus *Menispora*, but it is not possible to assign his species either to *M. glauca* or to *M. tortuosa*, both of which produce 3-septate, setulate phialospores of similar dimensions. The type specimen of ROSTRUP's species was not preserved (HUGHES et KENDRICK 1963).

PEYRONEL described *Eriomenella tortuosa* (FRES.) PEYR. as the species of his new genus *Eriomenella* PEYR. in 1918 and again in 1919 as *E. tortuosa* (CORDA) PEYR. In his article of 1919, PEYRONEL did not make any reference to his earlier work. In the

first publication it seems he made an error in citing the author of the basionym. PEYRONEL (1919) published and illustrated in detail the fungus which certainly represents *Menispora glauca* under the name *E. tortuosa*. PEYRONEL (1919) distinguished the genus *Eriomenella* from PERSOON's genus *Menispora* with septate conidia that have setulae at each end. The genus *Eriomene* (SACC.) MAIRE is distinguished by non-septate but setulate conidia; PEYRONEL classified *E. ciliata* (CORDA) MAIRE (= *Menispora ciliata* CORDA) in this genus. PEYRONEL included only species with non-septate and non-setulate conidia in the genus *Menispora* PERS. PEYRONEL's division of the *Menispora* species into three genera — *Menispora* PERS., *Eriomene* (SACC.) MAIRE and *Eriomenella* PEYR. was not accepted; all species have the same morphological characteristics of conidiophores, phialides, the same development of conidia—phialospores. The presence of septae and setulae on the conidia is the diacritical character suitable for classification of the species. The genus *Eriomenella* PEYR. is identical with *Menispora* PERS. The genus *Eriomene* (SACC.) MAIRE, as redescribed PEYRONEL (1919) was not really described by MAIRE; the later author only proposed a new combination *Erionema ciliata* (CORDA) MAIRE (= *Menispora ciliata* CORDA) and again described and illustrated this species. MAIRE did not describe a new genus but only referred to SACCARDO (Sylloge Fung., 4: 326, 1886) who proposed *Eriomene* SACC. as a subgenus of the genus *Menispora* for three species including *Menispora ciliata* CORDA. MAIRE made an orthographical error when citing "*Erionema*" instead of *Eriomene* (SACC.) MAIRE. The generic name *Erionema* MAIRE is "nomen invalidum". CLEMENTS et SHEAR (1931) raised SACCARDO's subgenus to generic rank and validly published it as *Eriomene* (SACC.) CLEMENTS et SHEAR.

**Menispora glauca** (LINK) ex PERS., Mycol. Europ. 1: 32, 1822

Syn.: *Camptosporium glaucum* LINK in EHRENB., Sylvae Mycol. Berol., p. 11, 1818 (nomen nudum).
*Camptosporium glaucum* (LINK ex PERS.) SPRENGEL, in Linné Syst. Veget. 4: 553, 1827 (nomen illegitimum); DUBY, Bot. Gallicum 2: 928, 1830.
*Psilonia glauca* (LINK ex PERS.) FR., Syst. Mycol. 3: 450, 1832.
*Fusisporium glaucum* (LINK ex PERS.) WALLR., Fl. Crypt. German. 2: 284, 1833.
? *Menispora olivacea* PREUSS, in Sturm, Deutschl. Fl., Abt. 3/29—30: 91—92, 1851.
*Menispora libertiana* SACC. et ROUM., Rev. Mycol. 6: 37, 1884; cit. sec. SACC., Sylloge Fung. 4: 327, 1886.
*Menispora libertiana* SACC. var. *Freseniana* SACC., Sylloge Fung. 4: 327, 1886.
? *Ciliofusarium umbrosum* ROSTRUP, Bot. Tidsskr. 18: 77, 1892.
*Eriomenella tortuosa* (CORDA) PEYRON. sensu PEYRONEL, Nuovo Giorn. Bot. Ital., N.S. 25: 447, 1918 [ut *E. tortuosa* (FRES.) PEYR.]; Bull. Soc. Mycol. Fr. 35: 180—181, 1919 [ut *E. tortuosa* (CORDA) PEYR.] (non quoad basion.).
Perfect state: *Chaetosphaeria glauca* HOL.-JECH. spec. nova

Colonies minute to effuse, cushion-like, velvety to cottony, easily separable from the substratum, greyish to blue-grey when sporulating, dark grey-brown when old. Basal hyphae branched, pale to brown, 2—3.5 µm wide, septate, superficial and immersed in the substrate. Conidiophores are erect, crowded, mostly unbranched, sometimes branched in the lower parts, dark brown, septate, smooth, 370—670 µm long, 3—4.5 (—5.5) µm wide near the base. The main fertile conidiophores are terminated by sterile whip-like twisted extensions which taper to a rounded apex up to

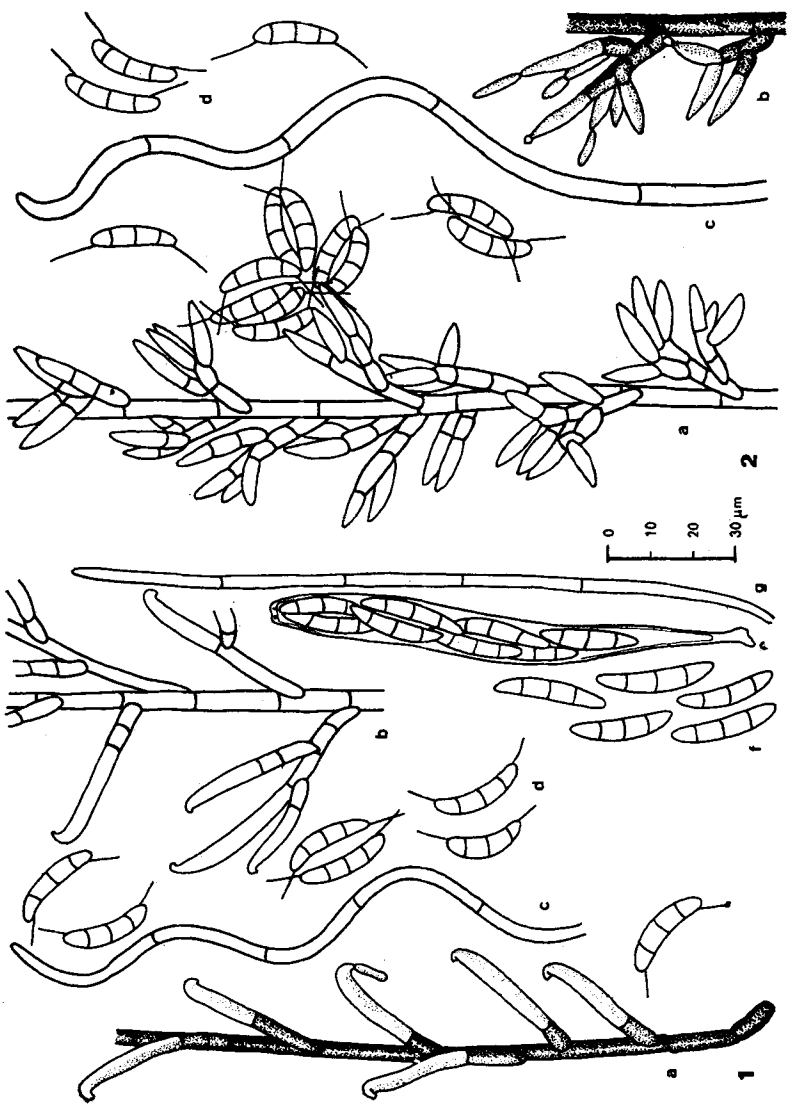


Fig. 1. 1. *Menispora glauca* PERS. with perfect state *Chaetosphaeria glauca* HOL.-JECH.: a, b—part of conidiophore with phialides, c—distal end of sterile extension of conidiophore, d—phialospores, e—ascus, f—ascospores, g—paraphysis.
2. *Menispora tortuosa* CORDA: a, b—part of conidiophore with phialides, c—distal end of sterile extension of conidiophore, d—phialospores. Del.: V. HOLUBOVÁ-JECHOVÁ

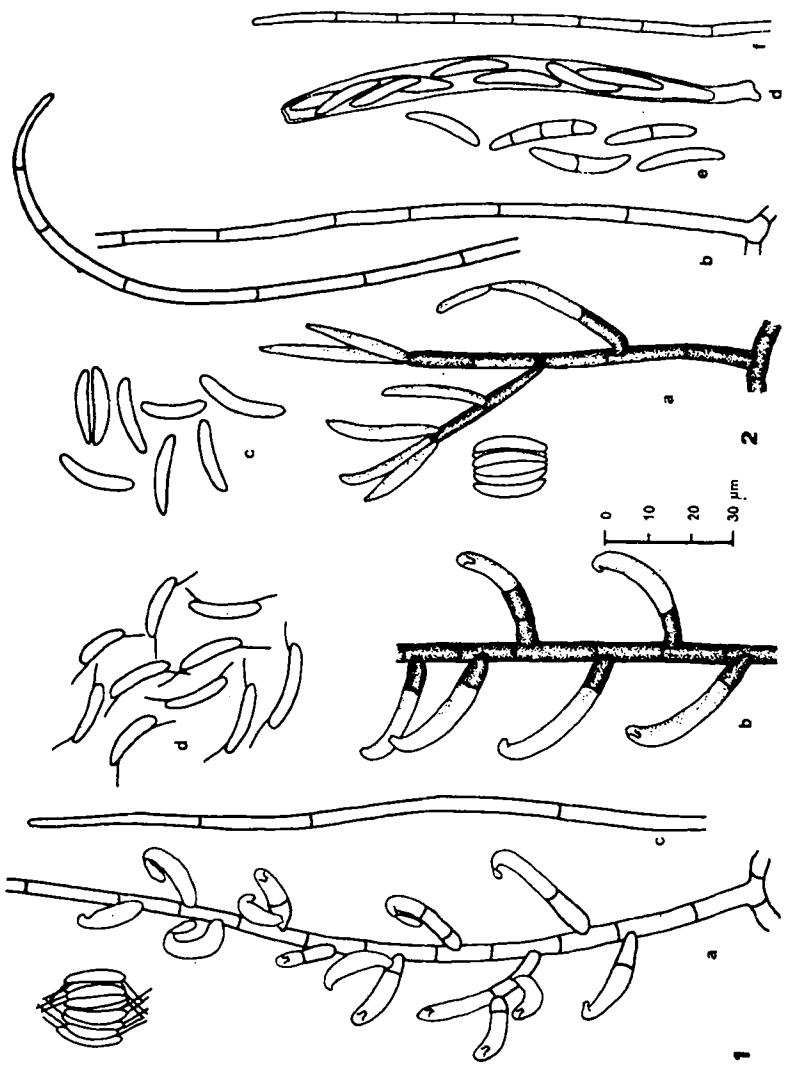


Fig. 2. 1. *Menispora ciliata* CORDA: a, b – part of conidiophore with phialides, c – distal end of sterile extension of conidiophore, d – phialospores.
2. *Menispora caesia* PREUSS with perfect state *Chaetosphaeria pulvinula* (CURR.) BOOTH: a – conidiophore with phialides, b – sterile seta, c – phialospores, d – ascus, e – ascospores, f – paraphysis.
Del.: V. HOLUBOVÁ-JECHOVÁ

2—2.5 μm wide. Phialides develop singly and terminally on 1- to 3-celled stalks. These stalks appear singly close below the septa on the lower third to one-half of the main conidiophore. The stalks of phialides are simple, rarely branched, pale brown, 6—25 μm long, 3—4.5 μm wide, pressed closely against the main conidiophore and growing toward the apex. Phialides are one-celled, cylindrical to oval, hyaline, 6—35 μm long and 3—5.5 μm wide; they are parallel to the main conidiophore or branch or diverge at an acute angle; they are narrowed at the apex and gently curve away, hook-like, from the main conidiophore with an open end which is downwardly directed to the base of the phialide. Phialospores are hyaline, cylindrical, with slightly tapered and rounded ends, curved, 3-septate at maturity, 17—24 (—27) μm long and (3.7—) 4—5 μm wide. A single straight or gently curved setula, (2.5—) 6—11 μm long and about 0.3 μm wide, develops at each end on the concave side of the phialospore. Phialospores are gathered in slimy compact colourless clusters near the open end of each phialide; they separate only in water.

Perfect state

*Chaetosphaeria glauca* HOL.-JECH. spec. nova

Perithecia superficialia, sessilia, dispersa, sine subiculo, atrobrunnea, haud setosa, globosa vel subglobosa, 270—370 (—440) μm lata, 240—350 (—430) μm alta, cum papilla 30—60 μm alta et 80—155 μm lata. Cellulae strati superficialis crasse tunicatae obscure brunneae, cellulae strati interni tenuiter tunicatae, pallidae. Ostiola rotundata, periphyses desunt. Paraphyses simplices, persistentes, crasse tunicatae, 100—155 μm longae, 1.8—3.5 μm crassae, septatae, filamentosae. Asci octospori, unitunicati, subcylindracei, (100—) 115—150 μm longi, 8.7—11.5 μm lati, stipite angusto 10—14 × 2.5—3.8 μm. Ascosporae ellipsoideae vel fusiformes, rectae vel leviter curvatae, 21—29 μm longae et 4—5.5 (—6.2) μm latae, crasse parietales, 3-septatae, hyalinae, laeves.

Habitat in codice *Quercus petraeae*, sub cortice in latere interiori, inter conidiophora *Menisporae glaucae*.

Typus: Czechoslovakia, Bohemia centralis: in silvis Jevanské lesy dictis apud piscinam Vyžlovský rybník dictam, apud pagum Vyžlovka, prope oppidulum Říčany; sub cortice codicis *Quercus petraeae*, una cum *Menispora glauca*, 9. V. 1967, leg. V. JECHOVÁ (PR 714763).

Perithecia are scattered, superficial, sessile, without a subicle, dark brown, non-setose, globose to subglobose, 270—370 (—440) μm wide, 240—350 (—430) μm high, with a short papilla 30—60 μm high and 80—155 μm wide. Outer cells of wall are thick-walled and dark-brown; inner cells are thin-walled and pale. The ostiole is circular; periphyses are lacking. Paraphyses are simple, persistent, thin-walled, 100—155 μm long, 1.8—3.5 μm wide, septate, filiform. Asci are numerous, unitunicate, subcylindrical, (100—) 115—150 μm long, 8.7—11.5 μm wide, with a short stalk 10—14 μm long and 2.5—3.8 μm wide and contain 8 biseriate ascospores. Ascospores are ellipsoidal to spindelform, straight or slightly curvate, 21—29 μm long and 4—5.5 (—6.2) μm wide, thin-walled, 3-septate, hyaline, smooth, mostly with one prominent guttule in each cell.

*Chaetosphaeria glauca* HOL.-JECH., found together with *Menispora glauca* PERS., was collected three times. In addition to the type collection, the author made one

collection from the bark of trunks of *Quercus petraea* (MATT.) LIEBL. in a forest of the Úpořský potok valley near Skryje in central Bohemia (22. X. 1964), and a second collection on branches of *Fagus sylvatica* L. in the Bílé Karpaty (White Carpathian Mountains) (cca 660 m) in south-eastern Moravia (27. VII. 1970).

It is known that species of *Chaetosphaeria* TUL. have conidial states belonging to the imperfect genera *Catenularia* GROVE, *Chloridium* LINK, *Codinaea* MAIRE, *Menispora* PERS., *Zanclospora* HUGHES et KENDRICK. etc. The important distinguishing characters of species of the genus *Chaetosphaeria* TUL. are the shape, colour and size of ascospores, the number of septa and the shape of perithecia. The majority of species have ascospores shorter than 20 μm, thus differing from the new species *C. glauca* HOL.-JECH. whose ascospores are 21—29 μm long. Only *C. cupulifera* (BERK. et BR.) SACC. has ascospores 15—28 × 4—5 μm; however, at full maturity they are 4—5-septate and its recognized conidial state is *Catenularia cuneiformis* (RICHON) MASON (BOOTH 1958). *Chaetosphaeria pulviscula* (CURR.) BOOTH, the perfect state of *Menispora caesia* PREUSS, has ascospores 19—23 μm long and rather narrow (3—3.5 μm wide) and only 1-septate. *C. phaeostroma* (DURIEU et MONT.) FUCK has longer and wider ascospores (27—42 μm long and 7—9 μm wide), 4-celled with brown middle cells; its conidial state is unknown (MUNK 1957).

## Results of cultivation

*Menispora glauca* was cultivated on agar nutrient media. Colonies on malt agar grow slowly; they are more or less circular, umbonate in the centre and furrowed, thin to velvety, whitish-grey to grey, with irregular immersed margins; the reverse side is grey to dark-grey. Sporulation on nutrient agar media was not observed; only vegetative mycelia were produced. When the fungus is recultivated on sterile rotten wood, the fungus grows very restrictedly and slowly but produces conidiophores and sporulates. The perfect state was never observed in culture.

## Distribution

The occurrence of *Menispora glauca* in Czechoslovakia is frequent and abundant throughout the entire vegetation period. The species grows on rotten wood, mainly on the inner side of bark of decayed trunks, stumps and branches of deciduous trees. The fungus was collected on the following hosts: *Alnus glutinosa* (L.) GAERTN., *Betula verrucosa* EHRH., *Carpinus betulus* L., *Fagus sylvatica* L., *Fraxinus excelsior* L., *Pyrus communis* L., *Quercus cerris* L., *Q. petraea* (MATT.) LIEBL., *Q. rubra* L., *Salix caprea* L., *Sorbus aucuparia* L., *Ulmus carpinifolia* GLED.

The fungus was collected in Czechoslovakia for the first time by CORDA, namely in the Lobkowitz garden in Prague in 1844 (CORDA in Herb. PR as *Menispora glauca*).

The occurrence of this species was recorded several times in Europe — Scotland, England, Sweden, Belgium, Germany (G.D.R., G.F.R.), Poland, Czechoslovakia, Italy (BRESADOLA 1903, CORDA in Herb., EHRENBERG 1818, FUCKEL 1870, HUGHES et KENDRICK 1963, LINDAU 1907, LINK 1824, PERSOON 1822, PEYRONEL 1919, SACCARDO 1886, WALLROTH 1833) and in the North America — Canada (British Columbia, Vancouver Island) and U.S.A. (state New York) (HUGHES et KENDRICK 1963).

## Material seen from Czechoslovakia

Bohemia: 1. Praha, in horto "Lobkovická zahrada" dicto (Lobkowitz Garden), 1844, leg. CORDA (PR 627270). — 2. Montes Brdské Hřebeny prope pagum Dobřichovice; in ramis iacent. *Fagi sylvaticae*, 1. IV. 1956, leg. M. SVRČEK. — 3. Řevnice, in valle rivuli "Moklický potok" dicti; ad ramum iacent. *Fagi sylvaticae*, 24. XI. 1957, leg. M. SVRČEK (PR 611497). — 4. In silvis "Dřevíč" dictis sept.-occid. versus a pago Nižbor prope oppidum Beroun; ad truncum emort. putr. *Quercus petraeae*, ad corticem et ad lignum, 17. X. 1965, leg. V.J. — 5. In loco "Týřovické skály" dicto apud pagum Týřovice prope oppidum Rakovník; ad truncum et ad ramum emort. deiect. *Fagi sylvaticae*, 26. IV. 1966, et *Quercus petraeae* sub cortice, 28. IX. 1967, 28. X. 1970, 7. V. 1971, leg. V.H.-J. — 6. In silvis "Kouřimecké polesí" dictis ad domum venatoriam Jelenec apud pagum Týřovice prope oppidum Rakovník; ad truncum putr. deiect. *Quercus petraeae*, 28. IX. 1967, leg. V.J. — 7. In valle rivuli "Úpořský potok" dicti apud vicum Skryje prope oppidum Rakovník; ad corticem trunci et rami emort. deiect. *Quercus petraeae*, 22. X. 1964, cum *Chaetosphaeria glauca*, leg. V.J.; ad truncum putr. deiect. *Fraxini excelsioris*, 7. V. 1971, leg. V.H.-J. — 8. In silvis "Jevanské lesy" dictis ad piscinam "Vyžlovský rybník" dictam apud pagum Vyžlovka prope oppidulum Říčany; sub cortice codicis *Quercus petraeae*, 9. V. 1967, leg. V.J., cum statu perfecto *Chaetosphaeria glauca*, Typus (PR 714763). — 9. In monte "Studený vrch" prope oppidulum Stříbrná Skalice; ad truncum putr. deiect. *Carpini betuli* et *Fagi sylvaticae*, 12. XI. 1963, leg. V.J. et ad truncum putr. deiect. *Fagi sylvaticae* et *Betulae verrucosae*, 19. X. 1965, leg. V.J. — 10. In valle rivuli "Křešický potok" dicti prope pagum Poříčko nad Sázavou haud procul ab oppidulo Rataje; ad ramum emort. putr. *Alni glutinosae* et *Salicis capreae*, 21. XI. 1963 et ad truncum putr. *Carpini betuli*, 5. V. 1965, leg. V.J. — 11. In monte Fialník sept.-orient. versus a pago Vlastějovice prope oppidulum Zruč n. Sáz.; ad truncum deiect. putr. *Betulae verrucosae*, 9. X. 1967, leg. V.J. — 12. In silvis "polesí Květov" dictis prope pagum Květov haud procul ab oppidulo Milevsko; ad truncum emort. deiect. *Fagi sylvaticae*, 13. X. 1966, leg. V.J. — 13. Montes Šumava, ad lacum "Čertovo jezero" dictum prope oppidum Železná Ruda; ad corticem trunci putr. *Fagi sylvaticae*, 18. IX. 1964, leg. V.J. — 14. Montes "Slepičí hory", in pago Klení; ad ligna *Pyri communis*, 17. V. 1962, leg. M. SVRČEK (PR560480). — 15. In monte Zvon apud pagum Pleš prope oppidulum Bělá nad Radb. haud procul ab oppido Tachov; ad truncum emort. putr. *Ulmi carpinifoliae*, 16. IX. 1964, leg. V.J. — 16. In monte Přimda apud oppidum Tachov; ad corticem trunci putr. *Fagi sylvaticae*, 14. IX. 1964, leg. V.J. — 17. In silva virginea "Diana" dicta apud pagum Přimda prope oppidum Tachov; ad truncum putr. iacent. *Fagi sylvaticae* sub cortice, 28. X. 1970, leg. V.H.-J. — 18. Montes Šumava, in valle rivi Vydra dicti inter domos "Čeňkova pila" et "Turnérská chata" dictas; ad truncum putr. deiect. *Fagi sylvaticae*, 25. IX. 1968, leg. V.H.-J. — 19. In silvis Kersko dictis apud pagum Poříčany prope oppidum Nymburk; ad truncum deiect. putr. *Quercus rubrae* et *Betulae verrucosae*, sub cortice, 8. X. 1967, leg. V.J. — 20. In silvis vallis rivuli "Bočský potok" dicti apud locum "Na Křižovatce" prope pagum Boč haud procul ab oppido Klášterec n. Ohří; ad truncum putr. deiect. *Fagi sylvaticae*, 4. VII. 1972, leg. V.H.-J. — 21. In margine silvae apud pagum Ferdinandov prope oppidum Liberec; ad ramum deiect. putr. *Fagi sylvaticae*, 6. VIII. 1965, leg. V.J. — 22. In valle rivuli "Malý Sloupský potok" ("Malý Štolpich") dicti apud pagum Ferdinandov prope oppidum Liberec; ad truncum emort. deiect. *Fagi sylvaticae* et ad ramum putr. deiect. *Betulae verrucosae*, 3. VIII. 1965, leg. V.J. — 23. In marginibus silvarum inter vicos Hejnice et Bílý Potok pod Smrkem prope oppidum Liberec; ad ramum deiect. putr. *Fagi sylvaticae*, 5. VIII. 1965, leg. V.J. — 24. Montes Jizerské hory, in monte Smrk; ad truncum emort. deiect. *Fagi sylvaticae*, 2. VIII. 1965, leg. V.J. — 25. In monte Bukovec apud pagum Jizerka prope oppidum Liberec; ad truncum et ad ramum emort. deiect. *Fagi sylvaticae*, 4. VIII. 1965, leg. V.J. — 26. Montes Orlické hory, in silvis declivis occident. montis Vrchmezí (1085 m s.m.) merid-orient. versus a pago Olešnice; ad truncum putr. deiect. *Fagi sylvaticae*, 17. VII. 1969, leg. V.H.-J. — 27. Montes Orlické hory, inter montes Malá Deštná et Velká Deštná; ad truncum emort. deiect. *Fagi sylvaticae* sub cortice, 20. VII. 1969, leg. V.H.-J.

Moravia: 1. In silvis sept. versus a pago Černá Voda prope oppidum Javorník; ad ramum putr. deiect. *Betulae verrucosae*, 12. VIII. 1971, leg. V.H.-J. — 2. Montes Rychlebské hory, in silvis convallis rivuli "Stříbrný potok" dicti merid.-occid. versus a pago Žulová prope oppidum Javorník; ad ramum et truncum putr. deiect. *Fagi sylvaticae*, 10. VIII. 1971, leg. V.H.-J. — 3. Montes Rychlebské hoľy, in silvis convallis rivuli "Bučínský potok" dicti merid.-occid. versus a pago Žulová prope oppidum Javorník; ad truncum putr. deiect. *Fagi sylvaticae*, 10. VIII. 1971,

leg. V.H.-J.—4. Montes Hrubý Jeseník, in silvis ad locum "U Kříže" dictum inter vicos Bělá p. Pradědem et Vidly; ad ramum putr. deiect. *Fagi sylvaticae*, 8. VIII. 1971, leg. V.H.-J.—5. Montes Hrubý Jeseník, prope locum "Červenohorské sedlo" dictum (1000 m s.m.) in declivi montis "Červená hora"; ad ramum et truncum putr. iacent. *Fagi sylvaticae*, 11. VIII. 1971, leg. V.H.-J.—6. Montes Hrubý Jeseník, in silvis convallis rivuli Hučivá Desná dicti apud pagum Kouty n. Desnou; ad ramum putr. deiect. *Alni glutinosae* et *Fagi sylvaticae*, 6. VIII. 1971, leg. V.H.-J.—7. Montes Hrubý Jeseník, in silvis "Divoký důl" dictis (reservatio naturae) merid.-occid. versus a monte Praděd; ad ramum et truncum putr. iacent. *Fagi sylvaticae* et *Sorbi aucupariae*, 7. VIII. 1971, leg. V.H.-J.—8. Montes Hrubý Jeseník, in silva virginea "Bučina" dicta in declivibus supra casam venatoriam "Františkova myslivna" dictam apud pagum Kouty n. Desnou; ad ramum et truncum putr. iacent. *Fagi sylvaticae*, 4. VIII. 1971, leg. V.H.-J.—9. Montes Hrubý Jeseník, in silvis declivis sept.-occid. montis Mravenečník prope pagum Loučná n. Desnou; ad ramum putr. deiect. *Fagi sylvaticae*, 3. VIII. 1971, leg. V.H.-J.—10. In silva "Bučina" dicta apud pagum Šilhéřovice prope oppidum Opava; ad truncum emort. putr. *Fagi sylvaticae*, 24. VIII. 1966, leg. V.J.—11. In silva virginea "Mionší" dicta apud pagum Horní Lomná prope oppidum Jablunkov; ad truncum putr. deiect. *Fagi sylvaticae*, 23. VIII. 1966, leg. V.J.—12. In silva cacuminis montis Nořičí apud oppidulum Frenštát pod Radhoštěm; ad corticem trunci emort. putr. *Fagi sylvaticae*, 19. VIII. 1966, leg. V.J.—13. In silva virginea in monte Cáb prope oppidum Vsetín; ad truncum deiect. putr. *Fagi sylvaticae*, 16. VIII. 1966, leg. V.J.—14. Montes Bílé Karpaty, apud viam ad montem Velká Javořina cca 1 km merid.-orient. versus a domo "Kamenná bouda" (cca 660 m s.m.) dicta; ad ramum putr. deiect. *Fagi sylvaticae*, 27. VII. 1970, cum *Chaetosphaeria glauca*, leg. V.H.-J.

Slovakia: 1. Prope oppidum Bánovce n. Bebravou, in silvis jugi inter montes Holý vrch (688 m s.m.) et Jankov vršok, orient. a pago Uhrovec; ad ramum putr. iacent. *Fagi sylvaticae*, 3. VI. 1970, leg. V.H.-J.—2. Montes Malá Fatra, in scaturigine ad fontem (1150 m s.m.) in declivi orient. sub jugo Medziholie (1185 m s.m.) dicto merid. versus a monte Velký Rozsutec (1606 m s.m.); ad truncum putr. iacent. *Fagi sylvaticae*, 21. IX. 1971, leg. V.H.-J.—3. Montes Martinské Hole, in silvis (1150 m s.m.) declivis merid.-orient. montis Kalužná (1271 m s.m.) apud domum "Chata na Martinských holích" dictam prope oppidum Martin; ad truncum putr. deiect. *Fagi sylvaticae*, 17. IX. 1971, leg. V.H.-J.—4. Montes Chočské pohorie prope oppidum Ružomberok, in declivi sept.-occid. montis Ostré (1066 m s.m.) dicti sept.-orient. versus a pago Švošov; ad ramum putr. deiect. *Fagi sylvaticae*, 10. VI. 1970, leg. V.H.-J.—5. Montes Chočské pohorie prope oppidum Ružomberok, in silvis montis Havran sept.-orient. versus a pago Lubochňa; ad ramum putr. deiect. *Fagi sylvaticae*, 10. VI. 1970, leg. V.J. —6. Montes Velká Fatra, locis graminosis orient. versus a cacumine montis Ostredok (1591 m s.m.); ad ramum putr. iacent. *Fagi sylvaticae*, 11. VIII. 1969, leg. V.H.-J.—7. In silvis partis supremae (860 m s.m.) convallis Harmanecká dolina ad jugum Malý Štúrec (890 m s.m.) prope oppidum Banská Bystrica; ad truncum putr. deiect. *Fagi sylvaticae*, 10. VIII. 1969, leg. V.H.-J.—8. Montes Velká Fatra prope oppidum Banská Bystrica, in declivi merid.-orient. montis Smrekovica dicti sept.-occid. versus a villa "Králova Studňa" dicta; ad truncum putr. deiect. *Fagi sylvaticae*, 11. VIII. 1969, leg. V.H.-J.—9. In colle Pustý Hrad prope oppidum Zvolen; ad ramum deiect. putr. *Quercus cerris*, 12. X. 1956, leg. Z. POUZAR.—10. Montes Vtáčnik, in silvis declivis montis Magurka prope vicum Prochoť apud oppidum Žiar n. Hronom; ad truncum putr. deiect. *Fagi sylvaticae*, 18. IX. 1971, leg. V.H.-J.—11. Montes Vtáčnik, in silvis montis Homolka (1293 m s.m.), prope oppidum Žiar n. Hronom; ad truncum putr. deiect. *Fagi sylvaticae* et ad corticem iacent. *Fagi sylvaticae*, 18. IX. 1971, leg. V.H.-J.—12. Montes Vtáčnik, in silvis (cca 1100 m s.m.) declivis merid.-orient. montis Vtáčnik (1346 m s.m.) prope locum "Voda" dictum, septentr. a pago Kľak; ad truncum putr. deiect. *Fagi sylvaticae*, 18. IX. 1971, leg. V.H.-J.—13. Ad rivum Krupinica dictum in convalle inter oppidum Krupina et stationem viae ferreae Babiná, sept.-occid. versus a colle Kňazova hora; ad ramum putr. deiect. *Quercus petraeae*, 10. VIII. 1969, leg. V.H.-J.—14. Montes Čerchovské pohorie, in monte Minčol (1055 m s.m.); ad corticem trunci emort. iacent. *Fagi sylvaticae*, 11. VIII. 1972, leg. V.H.-J.—15. In monte Malý Milič apud pagum Slanec prope oppidum Trebišov; ad truncum putr. deiect. *Fagi sylvaticae*, 17. VII. 1964, leg. V.J.—16. Montes Vihorlat, in silvis merid.-occid. sub monte Veža super lacu Morské Oko apud pagum Remetské Hámre; ad corticem trunci emort. iacent. *Fagi sylvaticae*, 10. VIII. 1972, leg. V.H.-J.

## Discussion

The characters of *Menispora glauca* colonies vary with age: young colonies are lower, thin to velvety, and slight coloured—pale grey or blue-grey during the sporulating period, while old colonies are thick, dense, cottony, and dark brown-grey. It was also observed that the number of phialides vary with the length of conidiophores. This variability is in correlation with the moisture of the substratum.

The presence of conidia without setulae was observed in some specimens. Septa of young phialospores were observed only with difficulty; it was necessary to stain the object with methylen blue or cotton blue. Mature and old phialospores sometimes occurred without setulae. Phialospores without setulae were often observed on colonies of *M. glauca* covered with some other *Hyphomycetes*. The presence of such atypical phialospores was never more than 50 %.

The perfect state of *Menispora glauca* was studied for the first time: it is described as the new species *Chaetosphaeria glauca* HOL.-JECH. The perithecia occur scattered among the conidiophores of old colonies and were found on three specimens of this fungus. The relationship of these states was not proved by cultivation, but after the study of three specimens it appears that the described *Chaetosphaeria glauca* HOL.-JECH. is the perfect state of the common fungus *Menispora glauca* PERS.

PERSOON (1822) described the genus *Menispora* with the species *M. glauca* PERS. His diagnosis, however, lacks any mention of septae and setulae of the conidia. FRIES (1832) considered PERSOON's genus to be identical to *Psilonia* FR. and included *Menispora glauca* PERS. as *Psilonia glauca* (PERS.) FR. Neither PERSOON nor FRIES mentioned setulae and septa of the conidia. (*Psilonia* FR. is a guite uncertain genus now.) HUGHES (1958), most recently with KENDRICK (1963), studied PERSOON's original collections and found the fungus to have all the essential characters of *M. glauca* which they had redescribed from European and North American materials.

CORDA (1838) also redescribed and illustrated *Menispora glauca* in his Icones Fungorum (2: 12, Fig. 54) with non-septate and non-setulate conidia. From his description it is difficult to conclude whether CORDA really described *Menispora glauca* PERS. From his illustration, it seems that he was dealing with *M. caesia* PREUSS or *M. ciliata* CORDA; however, he overlooked the setulae at the ends of conidia. HÖHNEL (1907) believed CORDA's description of *M. glauca* PERS. to be based on quite a new and different fungus and included it in the genus *Acrotheca* FUCK., as *A. glauca* (CORDA) HÖHN., with hyaline, non-septate and non-setulate conidia, 24—28 × × 4 μm. HÖHNEL's taxon must be cited as *A. glauca* HÖHN. because CORDA did not describe a new species (see Code article no. 48, LANJOUW et al. 1966); HÖHNEL's taxon should better be regarded as a new species typified by one of CORDA's specimens labelled *M. glauca*.

In addition to *Acrotheca glauca* HÖHN., HÖHNEL (1907) cited the species *M. glauca* PERS. with non-setulate conidia 16—18 × 4 μm. HUGHES et KENDRICK (1963) studied HÖHNEL'S collections preserved in Farlow Herbarium and found that he collected *Menispora caesia* PREUSS.

The present author studied one of CORDA'S specimens labelled *Menispora glauca* PERS. collected in Lobkowitz garden in Prague 1844, which is preserved in the Herbarium of the National Museum in Prague (PR 627270). The fungus is indeed *Menispora glauca* and has 3-septate and setulate phialospores.

*Menispora olivacea* PREUSS is probably also identical with *M. glauca*. PREUSS's description and illustration of the species is very similar to that of *M. glauca*; however, septae and setulae of the conidia are not noted.

ROSTRUP'S species *Ciliofusarium umbrosum* ROSTR. (1892), which belongs to the genus *Menispora* PERS., is either *M. glauca* PERS. or *M. tortuosa* CORDA. Both have 3-septate setulate conidia very similar in size to that of ROSTRUP'S species. ROSTRUP'S description does not include the structure of the phialides which is an important distinguishing characteristic of both species. LIND (1913) (cit. sec. HUGHES et KENDRICK 1963) identified *Ciliofusarium umbrosum* ROSTR. with *M. libertiana* SACC. et ROUM., i.e. with a species which is identical to *M. glauca* PERS.

PEYRONEL (1919) identified his species *Eriomenella tortuosa* (CORDA) PEYR. with species *M. tortuosa* CORDA, although PEYRONEL'S description and excellent detailed illustration indicate *M. glauca*. PEYRONEL based his study of the species on FRESENIUS description of the taxon *Menispora tortuosa*, which is, however, identical to *M. glauca* PERS. and not to *Menispora*

*tortuosa* CORDA. In his publication of 1919, PEYRONEL did not mention "*Eriomenella tortuosa* (FRES.) PEYRONEL" of the 1918 publication, so it would seem likely that the citation from the earlier year is rightly regarded as an erorr. However, according to the rules of nomenclature, PEYRONEL's combination *Eriomenella tortuosa* (CORDA) PEYR. belongs to the species *Menispora tortuosa* CORDA.

PEYRONEL also identified his species with the taxa: *Menispora libertiana* SACC. et ROUM., *Menispora libertiana* var. *Freseniana* SACC. and *Menispora obtusa* SACC. et BERL. Nevertheless *Menispora libertiana* SACC. et ROUM. is identical with *Menispora glauca* PERS. HUGHES et KENDRICK (1963) studied the original collections cited by SACCARDO and ROUMEGUÈRE and chose one of these as a lectotype. SACCARDO's variety is based on FRESENIUS' description and illustration of *M. glauca* PERS. which SACCARDO labelled erroneously in his herbarium as *M. tortuosa* CORDA (HUGHES et KENDRICK 1963). *Menispora obtusa* SACC. et BERL. which SACCARDO identified in 1886 with *M. libertiana* SACC. et ROUM. is identical with *M. tortuosa* CORDA as found HUGHES et KENDRICK (1963) when examined the type collection.

**Menispora tortuosa** CORDA, Icon. Fung. 3: 8, 1839

Syn: *Menispora obtusa* SACC. et BERL., Atti Ist. Veneto Sci., 6, 3: 741, 1855; cit. sec. SACC., Sylloge Fung. 4: 327, 1886.

*Eriomenella tortuosa* (CORDA) PEYR., Nuovo Giorn. Bot. Ital., N.S. 25: 447, 1918 [ut *E. turtuosa* (FRES.) PEYR.]; Bull. Soc. Mycol. Fr. 35: 180—181, 1919 [ut *E. tortuosa* (CORDA) PEYR.] (quad basion.; non sensu PEYRONEL).

Colonies effuse, velvety, pale grey to dark grey-brown. Basal hyphae branched, brown, superficial and immersed in the substratum. Conidiophores erect, crowded, mostly simple, sometimes branched in their lower parts, 400 — 450 µm long [after HUGHES et KENDRICK (1963) up to 750 µm] and 4—5.5 µm wide near the base, dark-brown, septate, smooth. The main fertile conidiophores are terminated by sterile, twisted, whip-like extensions which taper to a rounded apex, up to 3—3.7 µm wide. Phialides in groups of two or four develop terminally on simple, short, 2- to 3-celled stalks; the stalks may be shortly branched 2 or 3 times. The stalks develop closely below successive septa in the lower part of the conidiophore and the phialides are upwardly directed. Phialides are cylindric-oval, hyaline, straight, 12—20 (—30) µm long and 3.5—5.5 µm wide; at the apex they are narrowed, slightly apiculate and terminate in a small opening. Phialospores are hyaline, cylindrical, slightly curved, rounded at each end, 3-septate at maturity, 17.5—22.5 µm long and 3.8—4.5 µm wide. A straight setula, up to 10 µm long and 0.3 µm wide, is formed on the concave side of each end of the phialospore. Phialospores are gathered in slimy, colourless, compact clusters.

## Distribution

*Menispora tortuosa* was described for the first time in Czechoslovakia by CORDA (1839) on the inner side of bark of *Betula verrucosa* in the Lobkowitz garden at Prague. Since that time, this fungus has never been collected in Czechoslovakia. Probably it is a rare species in this region.

HUGHES et KENDRICK (1963) collected this species on the wood and bark of several deciduous trees (*Acer, Betula, Fagus, Populus, Quercus*) in western North America and Europe. They recorded the occurrence of this species in Canada (Ontario, Quebec) and U.S.A. (Massachusetts, Ohio, Connecticut, New York, Iowa, Illinois). LINDAU (1907, 1910) reported this species in Germany, Czechoslovakia,

Switzerland, and Austria, but his statement may not be reliable because some mycologists have confused *M. tortuosa* CORDA with *M. glauca* PERS. e.g. CORDA in his Herbarium, FRESENIUS (1850), PEYRONEL (1918 and 1919), etc.

### Material examined

Czechoslovakia: Praha, Lobkowitz Garten, 1838, leg. CORDA (Holotypus ! PR 515150; ad corticem *Betulae verrucosae*).

U.S.A.: Massachusetts, Sharon; November 1911, leg. A.P.D. PIGUET (PR 627273, ut *Menispora tortuosa* FRES. *Menispora Libertiana* CDA; ed. in Reliquiae Farlowianae no. 182).

The author has also studied another of CORDA's authenticated collections of this species preserved in the Herbarium of the National Museum in Prague (PR 627269) and labelled as *Menispora glauca*.

**Menispora ciliata** CORDA, Icon. Fung. 1: 16, 1837

Syn.: *Erionema ciliata* (CORDA) R. MAIRE, Ann. Mycol. 4: 329, 1906 (nomen invalidum).
*Eriomene ciliata* (CORDA) CLEMENTS et SHEAR, Genera of Fungi, p. 393, 1931 (hic false SACCARDO ut auctor combinationis citatur).

Colonies minute to effuse, cushion-like, velvety to cottony, easily separable from the substratum, greyish to greyish-olive-brown. Basal hyphae branched, pale brown to brown, septate, 2—3.5 µm wide, superficial and also immersed in the substratum. Conidiophores are erect, crowded, simple or sometimes branched in their lower parts, dark brown, septate, smooth; 340—830 µm long, 3.5—4.5 µm wide near the base. Fertile conidiophores are terminated by sterile, straight, whip-like extensions, subhyaline which taper to a rounded apex up to 1.5—2.7 µm wide; the sterile extensions are not twisted as in *M. glauca* and *M. tortuosa*, but rather are straight or only very slightly sinuous. Phialides develop simply and terminally on 1- or 3-celled stalks which occur singly and often unilaterally below the septa on the lower part of the conidiophores, i.e. on the lower third to one-half of the main stalk. Phialide stalks are simple, rarely branched, pale brown, 9—22 µm long and 4.5 µm wide; they grow at an angle of about 60° from the main conidiophore. Phialides are one-celled, cylindrical to oval, hyaline, 11—27 µm long and 4.5 bis 6.5 µm wide, narrowing towards the apex and sharply curved towards the main conidiophore so that the open end is directed downward to the base of the phialide. Phialospores are hyaline, cylindrical, subcylindrical, curved, tapered, more or less pointed at the basal end and rounded at the distal end, non-septate, mostly guttulate, 13—19 (—22) µm long and 2.5—3.5 (—4) µm wide. A single, straight or slightly curved setula, 6—11 µm long and about 0.3 µm wide, appears subterminally on the concave side of the phialospores. Phialospores accumulate in slimy, compact, colourless clusters near the open end of each phialide and are separable only in water.

### Results of cultivation

The fungus was cultivated on agar nutrient media. Colonies on malt agar grow restrictedly; they are more or less circular, with irregular margins, umbonate in the centre, white, whitish-grey to dark-grey, thin, velvety, mostly with conspicuously

coloured concentric zones; the reverse side is dark-grey or on some media, milky. The fungus grows very slowly, on malt agar attaining a diameter of about 18 mm in 20 days at 20 °C. On other examined agar media under the same conditions it grows more slowly; on potato-dextrose agar it reaches a diameter of about 14 mm and on Czapek-Dox agar only 6.5 mm. The best growth was achieved at a temperature of 22 °C; at 28 °C there was no growth at all.

Sporulation on different nutrient media was also examined; however, it was found that the fungus does not sporulate on agar media; nor do conidiophores or chlamydospores develop. Only vegetative mycelia, hyaline to brown-coloured, are produced. When the fungus was cultivated on filter paper with added nutrient solution according to BILAJ (BILAJ 1955) abundant sporulation was recorded; conidia developed on typical conidiophores and mycelial conidia were also produced. When the fungus from malt agar, potato dextrose agar or other media was recultivated on sterile rotten wood, colonies similar to those found in nature were produced.

## Distribution

*M. ciliata* CORDA occurs abundantly in Czechoslovakia during the whole vegetation period. It is found mainly on the inner side of bark of fallen decayed trunks, stumps and branches of deciduous trees. The species was collected on the following hosts: *Acer campestre* L., *Alnus glutinosa* (L.) GAERTN., *Betula verrucosa* EHRH., *Carpinus betulus* L., *Crataegus* sp., *Fagus sylvatica* L., *Fraxinus* sp,. *F. angustifolia* VAHL, *Populus nigra* L., *Quercus petraea* (MATT.)LIEBL., *Q. robur* L., *Tilia cordata* MILL., *Ulmus* sp.; it was also collected once on the decayed stem of a herb (*Tanacetum vulgare* L.).

The fungus was collected for the first time by A. C. CORDA on the bark of *Betula* near Liberec in 1837; later in 1955 S. J. HUGHES also collected this fungus in this region (Kunratice near Liberec, 11. V. 1955) on *Picea abies*. So far it is the only specimen of this fungus collected on spruce wood (HUGHES et KENDRICK 1963).

The distribution area of this species comprises Europe, where it is known in Scotland, England, Belgium, Denmark, Germany (G.D.R. and G.F.R.), Czechoslovakia, Austria, France and Italy, and North America, where it occurs in Canada (Quebec, Ontario, British Columbia) and U.S.A. (Massachusetts, Missouri, New York), and New Zealand (CORDA 1837, HUGHES et KENDRICK 1963, 1968, LINDAU 1907, MAIRE 1906).

## Material seen from Czechoslovakia

Bohemia: 1. In silvis apud pagum Malá Chuchle prope urbem Praha; ad corticem codicis et ad truncum putr. iacent. *Quercus petraeae*, 10. XI. 1963 et 16. IV. 1967, leg. V.J.—2. Apud pagum Hlásná Třebáň prope oppidum Beroun, in silva "Políčko" dicta; in cavitate codicis putridi *Quercus*, in pagina inferiore corticis, 3. IV. 1960, leg. M. SVRČEK (PR 611495, 611496).—3. In silvis apud pagum Karlštejn, prope oppidum Beroun; ad ramum deiect. putr., 9. IX. 1956, leg. M. SVRČEK.—4. In silvis "Dřevíč" dictis sept.-occid. a pago Nižbor prope oppidum Beroun; and corticem codicis *Quercus petraeae*, 31. X. 1956, leg. O. FASSATIOVÁ (PRC). —5. In silvis "Kouřimecké polesí" dictis ad domum venatoriam Jelenec apud pagum Týřovice prope oppidum Rakovník; ad truncum putr. deiect. *Quercus petraeae*, 28. IX. 1967, leg. V.J.—6. In loco "Týřovické skály" dicto apud pagum Týřovice prope oppidum Rakovník; ad truncum putr.

*Carpini betuli* et *Quercus petraeae*, 26. IV. 1966 et 28. VII. 1966, leg. V.J.; ad ligna *Quercus petraeae*, 14. XI. 1970, leg. F. KOTLABA.—7. In pago Březina prope oppidum Rokycany; *Fagus*, ad ramulos, leg. CORDA (PR 515151).—8. In silva virginea "Diana" dicta apud pagum Přimda prope oppidum Tachov; ad truncum putr. deiect. *Tiliae cordatae*, 28. X. 1970, leg. V.H.-J.—9. In pago Smržov prope oppidulum Lomnice nad Luž., apud piscinam "Dvořiště" dictam; ad ramos putridos *Crataegi* sp., 30. V. 1960, leg. M. SVRČEK (PR 611488).—10. In silva "Vidrholec" dicta apud pagum Klánovice prope urbem Praha; ad ramum deiect. putr. *Quercus petraeae*, 4. VII. 1965, leg. V.J.—11. In silvis "Kersko" dictis apud pagum Poříčany prope oppidum Nymburk; ad corticem codicis *Betulae verrucosae* et truncum putr. deiect. *Quercus petraeae*, 8. X. 1967, leg. V.J.—12. In silva "Chobot" dicta orient. versus a pago Kostelní Hlavno prope oppidum Stará Boleslav; ad ramum putr. deiect. *Quercus petraeae*, 27. VIII. 1972, leg. V.H.-J.—13. Apud pagum Libiš prope oppidum Mělník, in silva madida "Černínovsko" dicta; ad ramum putr. deiect. *Fraxini* sp., 4. VI. 1955, leg. Z. MORAVEC (PRC).—14. In silva madida "Úpor" dicta apud oppidum Mělník; ad truncum putr. deiect. *Quercus roboris* et *Ulmi* sp., 21. VIII. 1964, leg. V.J.; ad ramum putr. deiect. *Quercus roboris* et *Populi nigrae*, 21. X. 1971, leg. V.H.-J.—15. In horto publico castellano "Veltruský park" dicto apud oppidulum Veltrusy; ad ramum putr. iacent. *Alni glutinosae*, 21. X. 1971, leg. V.H.-J.—16. In silvis ad rivum Ohře merid. et merid.-occid. a pago Doksany, haud procul ab oppido Terezín; ad ramum deiect. *Quercus roboris*, 21. V. 1968, leg. V.J.—17. Apud oppidum Liberec (Reichenberg); leg. CORDA (PR 155579—neotypus!).—18. In marginibus silvarum inter vicos Bílý Potok pod Smrkem et Hejnice prope oppidum Liberec; ad corticem trunci emort. putr. *Betulae verrucosae*, 5. VIII. 1965, leg. V.J.—19. Apud vicum Hely prope vicum Kyjov, haud procul ab oppidulo Krásná Lípa; ad caules putridos *Tanaceti vulgaris* putr., 27. VII. 1961, leg. M. SVRČEK (PR).

Moravia: 1. In silvis sept. versus a pago Černá Voda prope oppidum Javorník; ad ramum putr. deiect. *Betulae verrucosae*, 12. VIII. 1971, leg. V.H.-J.—2. Montes Hostýnské vrchy, in silva virginea montis Černava, in declivi orient. (cca 650 m s.m.) apud domum Tesák dictam; ad cupulam emort. iacent. *Fagi sylvaticae*, 26. VII. 1970, leg. V.H.-J.—3. In silva "Království" dicta merid. versus a pago Grygov prope oppidum Olomouc; ad ramum putr. deiect. *Betulae verrucosae* et *Quercus roboris*, 14. IX. 1972, leg. V.H.-J.—4. In silva "Žebračka" dicta sept.-orient. versus ab oppido Přerov; ad ramum putr. deiect. *Quercus roboris*, 14. IX. 1972, leg. V.H.-J.—5. In silva madida "Horní les" dicta occid. versus a pago Chropyně sept.-orient. versus ab oppidulo Kojetín prope Přerov; ad truncum putr. diect. *Fraxini angustifoliae* et *Quercus roboris*, 12. IX. 1971, leg. V.H.-J.—6. In silva "Zámeček" dicta merid.-orient. ab oppido Kroměříž; ad ramum putr. iacent. *Aceris campestris* et *Quercus roboris*, 13. IX. 1972, leg. V.H.-J.—7. In silva "Hoja" dicta apud vicum Božice prope oppidum Znojmo; ad ramum putr. iacent. *Carpini betuli* et *Quercus petraeae*, 29. VIII. 1971, leg. V.H.-J.—8. In silva virginea madida "Lanžhotský prales" dicta prope pagum Lanžhot apud oppidum Břeclav; ad truncum emort. putr. *Quercus roboris* sub cortice, 18. V. 1966, leg. V.J.

Slovakia: 1. In reservatione "Dúbrava" dicta (silva) in declivi merid. convallis orient. versus a pago Ponická Huta prope oppidum Banská Bystrica; ad ramum putr. deiect. *Quercus petraeae*, 20. IX. 1971, leg. V.H.-J.—2. In colle "Bukový vrch" prope pagum Silická Jablonica apud oppidum Rožňava; ad truncum iacent. putr. *Quercus petraeae*, 26. VI. 1965, leg. V.J.—3. In silvis sept.-occid. declivium orient. versus a pago Ruská Nová Ves prope oppidum Prešov; ad ramum putr. deiect. *Quercus petraeae*, 16. VIII. 1972, leg. V.H.-J.—4. In monte Malé Brdo prope pagum Herľany, apud oppidum Košice; ad truncum deiect. putr. *Quercus petraeae*, 18. VII. 1964, leg. V.J.—5. In monte Vakovec apud pagum Zemplín prope oppidum Trebišov; ad codicem putr. *Quercus petraeae*, 24. VI. 1965, leg. V.J.

## Discussion

*Menispora ciliata* was described by CORDA (1837) from the bark of *Betula* in neighbourhood near the town Liberec (Reichenberg). However, the only specimen collected by CORDA in the Liberec area and preserved in the Herbarium of the National Museum in Prague (PR 155579) is not a holotype; this specimen did not provide the basis for CORDA's diagnosis. According to his original study, the type collection was made on the bark of *Betula*; the substratum of CORDA's specimen preserved in the herbarium consists of rotten wood of a deciduous tree and no remnant

of *Betula* bark is present. Since this specimen appears to be the true *M. ciliata* it was chosen as a neotype by the present author.

The name *Erionema ciliata* (CORDA) R. MAIRE, cited in the synonymy, is a "nomen invalidum" as MAIRE included this species in the genus which was not validly published by him.

**Menispora caesia** PREUSS, Linnaea 24: 119, 1851

Perfect state: *Chaetosphaeria pulviscula* (CURR.) BOOTH

Colonies minute to effuse, irregular, thin, hairy to velvety, greyish, whitish-grey when sporulating, composed of conidiophores and scattered sterile setae. Basal hyphae branched, septate, superficial, dark brown, 2.5—3 μm wide and immersed, pale brown, 1.5—2 μm wide. Conidiophores are erect, single or crowded, branched, with 2 or 3 lateral (mostly unilateral) side branches diverging about 30—45° from the main stalk; brown, paler towards the apex, smooth, septate, 90—150 μm long, 3.5—4 (—5) μm wide near the base. The branches are themselves branched one or two times and terminate in phialides; the lowest branches are longest and the uppermost shortest. The main conidiophores are sometimes enlarged into sterile whip-like prolongations which are straight or twisted; however conidiophores usually lack these terminal sterile extensions. Solitary phialides develop at the end of the main conidiophore and on its lateral branches. Phialides are one-celled, cylindrical to oval, hyaline, straight, 18—39 (—43) μm long and 3—4.5 μm wide, narrowing towards the apex, slightly curved towards the conidiophore, and terminating in an open end. Sterile setae arise independently from basal hyphae and are scattered among conidiophores; they are unbranched, septate, brown and paler towards the apex, straight or twisted whip-like, 150—600 μm long and 3.5—4 μm wide at the base, tapering gradualy to 1.5 μm wide at the rounded subhyaline apex. Phialospores are hyaline, cylindrical to oval, slightly curved, tapered and rounded at the distal end and more tapered at the basal end, non-septate, (14.7—) 15.5—18 (—21) μm long and 2.7—3.7 μm wide, without setulae. Phialospores are gathered around the apex of phialides in slimy colourless clusters.

Perfect state

*Chaetosphaeria pulviscula* (CURR.) BOOTH, Mycol. Papers 68: 10, 1957

Syn: *Sphaeria pulviscula* CURR., Trans. Linn. Soc. Lond. 22: 320, 1859.
*Zignoella pulviscula* (CURR.) SACC., Michelia 1: 346, 1878.
*Psilosphaeria pulviscula* (CURR.) STEVENSON, Mycol. Scotica, p. 387, 1879.

Perithecia scattered, superficial, sessile, without a subicle, dark brown, globose to subglobose, 180—280 μm wide, 185—310 μm high, with an ostiole at the apex of a short papilla, 18—35 μm high and 60—96 μm wide. Outer cells of the wall are thick-walled and dark brown; inner cells are thin-walled and pale. The ostiole is circular and without periphyses. Paraphyses are simple, persistent, thin-walled, 70—110 μm long, 1.8—2.5 (—3) μm wide, septate, and filiform. There are numerous asci which are unitunicate, subcylindrical to clavate, 90—115 μm long and 7—8.5 μm wide, with a short stalk 7—17 μm long and 3—4 μm wide and contain 8 biseriate ascospores. Ascospores are ellipsoid to spindel-form, straight or slightly curved,

19—23 (—25) μm long and 3—3.5 (—4) μm wide, thin-walled, 1-septate (when mature, up to 3-septate), hyaline, smooth, mostly guttulate.

*Chaetosphaeria pulviscula* (CURR.) BOOTH, found together with *Menispora caesia* PREUSS, was collected only three times in central and eastern Slovakia.

## Distribution

*Menispora caesia* PREUSS occurs abundatly in Czechoslovakia. The habitat is the same as that of other species of this genus: rotten wood and bark of decayed trunks, stumps and branches. *M. caesia* was found on the following hosts: *Acer pseudoplatanus* L., *Aesculus hippocastanum* L., *Betula verrucosa* EHRH., *Carpinus betulus* L., *Fagus sylvatica* L., *Fraxinus angustifolia* VAHL, *F. excelsior* L., *Quercus petraea* (MATT.)LIEBL., *Q. robur* L., *Robinia pseudoacacia* L., *Populus alba* L.

This species has been reported several times in: Europe — England, Germany, Czechoslovakia, Austria, Italy; and in North America — Canada (British Columbia) and U.S.A. (Oregon) (LINDAU 1907, HUGHES et KENDRICK 1963).

## Material seen from Czechoslovakia

Bohemia: 1. In silvis "Jevanské lesy" dictis ad piscinam Vyžlovský rybník dictam apud pagum Vyžlovka prope oppidulum Říčany; ad codicem *Carpini betuli*, 9. V. 1967, leg. V.J.—2. In monte Studený vrch dicto prope oppidulum Stříbrná Skalice, ad truncum putr. deiect. *Carpini betuli* et *Fagi sylvaticae*, 12. XI. 1963, 6. VII. 1964, leg. V.J.—3. Apud pagum Karlštejn prope oppidum Beroun; ad radicem codicis *Quercus* (in terra), 17. IV. 1960, leg. M. SVRČEK.—4. In silvis "Kódské polesí" dictis apud vicum Tetín prope oppidum Beroun; ad codicem *Betulae verrucosae*, 24. IX. 1967, leg. V.J.—5. In silvis "Dřevíč" dictis sept.-occid. versus a pago Nižbor prope oppidum Beroun; ad truncum deiect. putr. *Quercus petraeae* sub cortice, 17. X. 1965, leg. V.J.—6. In loco "Týřovické skály" dicto prope vicum Týřovice apud oppidum Rakovník; ad truncum et ad ramum deiect. putr. *Fagi sylvaticae*, 26. IV. 1966, 28. IX. 1967 et *Quercus petraeae*, 28. VII. 1966, leg. V.J.—7. In silvis "Kouřimecké polesí" dictis apud domum venatoriam "Jelenec" dictam prope vicum Karlova Ves apud oppidum Rakovník; ad truncum putr. deiect. *Fagi sylvaticae* et *Quercus petraeae*, 28. IX. 1967, leg. V.J.—8. In monte Zvon apud pagum Pleš prope Bělá nad Radb. prope oppidum Tachov; ad truncum emort. putr. *Fagi sylvaticae*, 16. IX. 1964, leg. V.J.—9. In silva virginea "Diana" dicta apud pagum Přimda prope oppidum Tachov; ad truncum iacent. putr. *Fagi sylvaticae*, 15. IX. 1964, 28. X. 1970, leg. V.H.-J.—10. Montes Šumava, in silva virginea "Boubínský prales" dicta prope vicum Zátoň apud oppidum Vimperk; ad truncum putr. deiect. *Fagi sylvaticae*, 26. IX. 1968, leg. V.H.-J.—11. Montes Novohradské hory, in silva virginea "Žofínský prales" dicta prope pagum Pivonice; ad truncum putr. iacent. *Fagi sylvaticae*, 29. VI. 1971, leg. V.H.-J.—12. In silva orient. versus a pago Hlavenec apud oppidum Stará Boleslav; ad corticem *Betulae verrucosae*, 27. VIII. 1972, leg. V.H.-J.—13. In silva madida "Úpor" dicta apud oppidum Mělník; ad ramum deiect. putr. *Fraxini excelsioris*, 21. VIII. 1964, 21. X. 1971; ad ramum putr. iacent. *Quercus roboris*, 21. X. 1971, leg. V.H.-J.—14. In silvis ad flumen Ohře merid. et merid.-occid. versus a pago Doksany, haud procul ab oppido Terezín; ad codicem *Fraxini excelsioris*, 21. IV. 1968, leg. V.J.—15. Apud oppidum Liberec; ad lignum putr., leg. CORDA (PR 627269 ut *Menispora glauca*).—16. In margine silvae apud vicum Ferdinandov prope pagum Raspenava haud procul ab oppido Liberec; ad ramum emort. putr. *Fagi sylvaticae*, 6. VIII. 1965, leg. V.J.—17. Montes Jizerské hory, in summo et clivo montis Smrk; ad truncum deiect. emort. *Fagi sylvaticae*, 2. VIII. 1965, leg. V.J.—18. In monte Bukovec prope vicum Jizerka haud procul ab oppido Liberec; ad truncum emort. deiect. *Fagi sylvaticae*, 4. VIII. 1965, leg. V.J.

Moravia: 1. In silvis sept. versus a pago Černá Voda prope oppidum Javorník; ad codicem putr. et ad ramum putr. deiect. *Betulae verrucosae*, 12. VIII. 1971, leg. V.H.-J.—2. Montes Rychlebské hory, in silvis convallis rivuli "Stříbrný potok" dicti merid.-occid. versus a pago Žulová prope oppidum Javorník; ad truncum putr. deiect. *Fagi sylvaticae*, 10. VIII. 1971, leg. V.

H.-J.—3. Montes Rychlebské hory, in silvis convallis rivuli "Bučínský potok" dicti merid.-occid. versus a pago Žulová prope oppidum Javorník; ad truncum putr. diect. *Fagi sylvaticae*, 10. VIII. 1971, leg. V.H.-J.—4. Montes Rychlebské hory, in silvis convallis rivuli "Ztracený potok" dicti apud vicum Vápenná prope oppidum Jeseník; ad truncum et ramum putr. deiect. *Fagi sylvaticae*, 9. VIII. 1971, leg. V.H.-J.—5. Montes Hrubý Jeseník, in silva virginea "Bučina" dicta in declivibus supra casam venatoriam "Františkova myslivna" dictam prope pagum Kouty n. Desnou; ad truncum putr. deiect. *Fagi sylvaticae*, 4. VIII. 1971, leg. V.H.-J.—6. Montes Hrubý Jeseník, in silvis declivis sept.-occid. montis Mravenečník prope pagum Loučná n. Desnou; ad truncum putr. deiect. *Fagi sylvaticae*, 3. VIII. 1971, leg. V.H.-J.—7. In silva "Bučina" dicta prope Šilhéřovice apud oppidum Opava; ad truncum emort. deiect. *Fagi sylvaticae*, 24. VIII. 1966, leg. V.J.—8. In oppido Karviná 2, in horto publico "Park Z. Nejedlého" dicto; ad corticem trunci emort. *Aesculi hippocastani*, 22. VIII. 1966, leg. V.J.—9. In silva virginea "Mionší" prope pagum Horní Lomná apud oppidum Jablunkov; ad truncum putr. iacent. *Fagi sylvaticae* sub cortice, 23. VIII. 1966, leg. V.J.—10. In silva cacuminis montis Noříčí apud oppidulum Frenštát pod Radhoštěm; sub cortice trunci emortui *Fagi sylvaticae*, 19. VIII. 1966, leg. V.J.—11. Montes Vsetínské vrchy, in silva virginea montis Cáb prope oppidum Vsetín; ad truncum putr. deiect. *Fagi sylvaticae*, 16. VIII. 1966, leg. V.J.—12. Montes Hostýnské vrchy, in silva virginea mixta "Černava" prope pagum Rajnochovice apud oppidum Vsetín; ad truncum putr. iacent. *Fagi sylvaticae*, 17. VIII. 1966, leg. V.J.—13. Montes Bílé Karpaty, in silva virginea montis Velká Javořina cca 880 m s.m.; ad truncum putr. deiect. *Fagi sylvaticae* et *Aceris pseudoplatani*, 27. VII. 1970, leg. V.H.-J.—14. In silva madida "Horní les" dicta occid. a pago Chropyně sept.-orient. versus ab oppidulo Kojetín prope Přerov; ad truncum putr. *Quercus roboris*, 12. IX. 1971, leg. V.H.-J.—15. In silvis inter rivulos Rusava et Mojena dictos prope pagum Tlumačov apud oppidum Kroměříž; ad ramum putr. deiect. *Fraxini angustifoliae* et *Quercus roboris*, 13. IX. 1972, leg. V.H.-J.—16. In silva "Hoja" dicta apud vicum Božice prope oppidum Znojmo; ad truncum putr. deiect. *Betulae verrucosae* et ad ramum et truncum putr. iacent. *Carpini betuli*, 29. VIII. 1971, leg. V.H.-J.—17. In silva madida sept. versus a pago Dyjákovice prope oppidum Znojmo; ad ramum putr. iacent. *Populi albae*, 29. VIII. 1971, leg. V.H.-J.—18. In silva virginea madida sept. versus a pago Dolní Věstonice et merid.-occid. versus a pago Strachotín prope oppidum Hustopeče; ad ramum putr. deiect. *Quercus roboris*, 30. VIII. 1971, leg. V.H.-J.—19. In silva madida "Horní les" dicta apud vicum Ivaň prope oppidum Hustopeče; ad ramum putr. iacent. *Quercus roboris*, 30. VIII. 1971, leg. V.H.-J.—20. In silva madida "Skařina" dicta prope pagum Mikulčice; ad ramum putr. deiect. *Fraxini angustifoliae*, 28. VIII. 1971, leg. V.H.-J.—21. In silva virginea madida "Prales Soutok" dicta apud locum Ruské domy dictum prope pagum Lanžhot apud oppidum Břeclav; ad truncum deiect. putr. *Carpini betuli*, 4. VI. 1964, leg. V.J.—22. In silva virginea madida "Lanžhotský prales" dicta prope pagum Lanžhot apud oppidum Břeclav; ad truncum emort. deiect. *Carpini betuli* et *Quercus roboris* sub cortice, 18. V. 1966, et *Quercus roboris*, 28. VII. 1970, leg. V.H.-J.

Slovakia: 1. Montes Biele Karpaty, declive merid.-orient. montis Veľká Javorina cca 870 m s.m.; ad ramum et ad cupulas putr. iacent. *Fagi sylvaticae*, 27. VII. 1970, leg. V.H.-J.—2. Montes Malé Karpaty, in monte Vysoká prope pagum Kuchyňa; ad ramum deiect. putr. *Fagi sylvaticae*, 29. VI. 1965, leg. V.J.—3. Montes Martinské hole, in silvis (1150 m s.m.) declivis merid.-orient. montis Kalužná (1271 m s.m.) apud domum "Chata na Martinských holích" dictam prope oppidum Martin; ad truncum putr. deiect. *Fagi sylvaticae*, 17. IX. 1971, leg. V.H.-J.—4. Montes Martinské hole, in silvis in declivibus orient. convallis rivuli occid. versus a pago Priekopa prope oppidum Martin; ad truncum putr. deiect. *Fagi sylvaticae*, 17. IX. 1971, leg. V.H.-J.—5. In silvis partis supremae (860 m s.m.) convallis Harmanecká dolina dictae ad jugum Malý Štúrec (890 m s.m.) prope oppidum Banská Bystrica; ad truncum putr. deiect. *Fagi sylvaticae*, 10. VIII. 1969, leg. V.H.-J.—6. Montes Veľká Fatra prope oppidum Banská Bystrica, in declivi merid.-orient. montis Smrekovica sept.-occid. versus a villa Králova Studňa dicta; ad truncum putr. *Fagi sylvaticae*, 11. VIII. 1969, leg. V.H.-J.—7. Montes Vtáčnik, in silvis declivis montis Magurka prope vicum Prochoť; ad truncum putr. deiect. *Fagi sylvaticae*, 18. IX. 1971, leg. V.H.-J.—8. Montes Vtáčnik, in cacumine montis Vtáčnik (1346 m s.m.); ad truncum putr. deiect. *Fagi sylvaticae*, 18. IX. 1971, cum statu perfecto *Chaetosphaeria pulviscula*, leg. V.H.-J.—9. Montes Vtáčnik, in silvis (cca 1250 m s. m.) declivis merid.-orient. montis Vtáčnik (1346 m s.m.), sept. versus a pago Kľak; ad truncum putr. deiect. *Fagi sylvaticae*, 18. IX. 1971, leg. V.H.-J.—10. Montes Vtáčnik, in silvis (cca 1100 m s.m.) declivis merid.-orient. montis Vtáčnik (1346 m s.m.) prope locum "Voda" dictum sept. versus a pago Kľak; ad truncum putr. deiect. *Fagi sylvaticae*,

18. IX. 1971, leg. V.H.-J.—11. Montes Vtáčnik, in silvis declivis merid.-orient. montis Vtáčnik (1346 m s.m.) prope locum "Ivanov salaš" dictum sept. versus a pago Kľak; ad truncum putr. deiect. *Fagi sylvaticae*, 18. IX. 1971, leg. V.H.-J.—12. Montes Čerchovské pohorie, in monte Minčol (1055 m s.m.); ad truncum et ramum putr. deiect. *Fagi sylvaticae*, 11.VIII. 1972, leg. V.H.-J.—13. Montes Čerchovské pohorie, in declivi sept.-orient. montis Minčol apud vicum Livovská Huta; ad truncum putr. deiect. *Fagi sylvaticae*, 11. VIII. 1972, leg. V.H.-J.—14. Montes Čerchovské pohorie, in monte Čerchov (1053 m s.m.); ad truncum putr. deiect. *Fagi sylvaticae*, 13. VIII. 1972, leg. V.H.-J.—15. Montes Čerchovské pohorie, in summo montis (in cota 1032 m s.m.) inter montes Čerchov (1053 m s.m.) et Javorina (1101 m s.m.); ad truncum putr. deiect. *Fagi sylvaticae*, 13. VIII. 1972, leg. V.H.-J.—16. Montes Čerchovské pohorie, in monte Bukový vrch (1010 m s.m.) ad ramum et truncum putr. deiect. *Fagi sylvaticae*, 13. VIII. 1972, leg. V.H.-J.—17. Montes Nízke Beskydy, in monte Magura (902 m s.m.) prope vicum Stebník apud oppidulum Zborov; ad ramum putr. deiect. *Fagi sylvaticae*, 12. VIII. 1972, leg. V.H.-J.—18. Montes Nízke Beskydy, in declivi merid. montis Magura apud pagum Bardejovské Kúpele prope oppidum Bardejov; ad truncum putr. deiect. *Fagi sylvaticae*, 12. VIII. 1972, cum statu perfecto *Chaetosphaeria pulviscula*, leg. V.H.-J.—19. Montes Nízke Beskydy, in declivi orient. montis Magura apud popidulum Zborov; ad truncum putr. deiect. *Fagi sylvaticae*, 12. VIII. 1972 leg. V.H.-J.—20. In declivi occid. montis Jedlina sub arce "Zborovský hrad" dicta merid.-occid. ab oppidulo Zborov; ad truncum putr. deiect. *Carpini betuli* et *Quercus roboris*, 9. VIII. 1972, leg. V.H.-J.—21. In silva "Dranec" dicta prope pagum Niž. Komárnik apud oppidum Bardejov; ad truncum putr. deiect. *Fagi sylvaticae*, 22. VII. 1964, leg. V.J.—22. In silvis sept.-occid. clivorum orient. versus a pago Ruská Nová Ves prope oppidum Prešov; ad truncum et ramum putr. iacent. *Fagi sylvaticae*, 16. VIII. 1972, leg. V. H.-J.—23. In monte Šimonka prope pagum Zlatá Baňa apud oppidum Prešov; ad truncum emort. putr. *Aceris pseudoplatani* et *Fagi sylvaticae*, 19. VII. 1964, leg. V.J.—24. In monte Malé Brdo prope oppidulum Herľany apud oppidum Košice; ad truncum deiect. putr. *Quercus petraeae*, 18. VII. 1964, leg. V.J.—25. In monte Malý Milič prope pagum Slanec apud oppidum Trebišov; ad truncum putr. *Quercus petraeae*, 17. VII. 1964, leg. V.J.—26. In silvis circum punctum altitudinis 318 m s.m. sept. versus a vico Ruský Kazimír prope oppidum Vranov; ad truncum putr. deiect. *Quercus petraeae*, 14. VIII. 1972, cum statu perfecto *Chaetosphaeria pulviscula*, leg. V.H.-J.—27. Sub monte Rabia skala apud domum venatoriam "Beskyd" dictam prope pagum Nová Sedlica apud oppidum Humenné; ad truncum et ad ramum deiect. putr. *Fagi sylvaticae*, 16. VII. 1964, leg. V.J.—28. Montes Vihorlat, in silvis sept.-orient. a lacusculo Malé Morské Oko, apud lacum Morské Oko prope pagum Remetské Hámre; ad truncum putr. deiect. *Fagi sylvaticae*, 15. VIII. 1972, leg. V.H.-J.—29. Montes Vihorlat, in silvis merid.-occid. sub monte Veža super lacu Morské Oko apud pagum Remetské Hámre; ad truncum putr. deiect. *Fagi sylvaticae*, 10. VIII. 1972, leg. V.H.-J.—30. In colle Ivaň apud pagum Veľ. Kamenec prope oppidum Kráľ. Chlmec; ad ramum deiect. putr. *Robiniae pseudoacaciae*, 23. VI. 1965, leg. V.J.—31. In silva "Dravčí sek" dicta prope vicum Boťany apud oppidum Kráľ. Chlmec; ad ramum deiect. putr. *Quercus petraeae*, 22. VI. 1965, leg. V.J.

## Discussion

The species occurs most often in its conidial state. The author found ascocarps of the perfect state scattered among the conidiophores of old colonies only three times. The perfect state probably occurs when the colonies of the imperfect state are old or dead. Unfavourable conditions of the environment may also provide an impetus for the development of the perfect state. One of the specimens of *Menispora caesia* containing the perfect state *Chaetosphaeria pulviscula* was collected on a mountain at 1346 m s.m. (Vtáčnik) in mid-September, a time when the temperature falls to about zero (0 °C) and snow and ice was present. The connection between the two states has not been proved by cultivation because isolation and cultivation of this fungus has been unsuccessful. HUGHES et KENDRICK (1963) made no mention of collecting or studying the perithecial state. Only BOOTH (1958) noted that colonies of the imperfect state appear earlier than perithecia and that perithecia may develop among conidiophores or apart from them after the latter have ceased to produce conidia and have become effete.

SUMMARY

The genus *Menispora* PERS. has been critically reviewed by HUGHES et KENDRICK (1963, 1968) and seven species are known up to this time. Four species have been collected in Czechoslovakia: three species occur abundantly. Only *Menispora tortuosa* CORDA seems to be rare in this region, as it si known only from CORDA's original specimen.

The species of *Menispora* are very easily distinguished. *Menispora glauca* PERS. and *M. tortuosa* CORDA have 3-septate, setulate conidia: the latter has branched phialide stalks and the phialides appear in groups; the former has simple phialides. *Menispora caesia* PREUSS and *M. ciliata* CORDA have non-septate conidia: the latter has phialospores with setulae at each end and curved phialides; the former has non-setulate phialospores and straight phialides.

Examination of the plentiful material leads us to conclude that the species concerned clearly differ by their ecological preferences. *M. glauca* is abundant in woods of the beech zone, from hilly country to the mountains, and in inversion sites of stream valleys. It has never been recorded in lowland river-side forests. The latter habitat is preferred by *M. ciliata* which is entirely absent in the higher altitudes. *M. caesia* occupies a wide range of habitats from river-side forests to mountains.

Perfect states of only two species of *Menispora* have been recorded. *Chaetosphaeria pulviscula* (CURR.) BOOTH and *Menispora caesia* PREUSS, its *Menispora* state, were collected together only three times. The perfect state of *Menispora glauca* PERS. has been found also only three times and is described as a new species *Chaetosphaeria glauca* HOL.-JECH.

LITERATURE CITED

BILAJ, V. I. (1955): Fuzarii. Biologija i sistěmatika. — Kijev.

BOOTH, C. (1958): The genera *Chaetosphaeria* and *Thaxteria* in Britain. — The Naturalist, London, (1958, July—September): 83—90.

BRESADOLA, J. (1903): Fungi polonici a cl. viro B. Eichler lecti. — Ann. Mycol., Berlin, 1: 97—132.

CLEMENTS, F. E. et SHEAR, C. L. (1931): The genera of fungi. — New York.

CORDA, A. C. J. (1837 et 1838): Icones Fungorum hucusque cornitorum. Abbildungen von Pilzen und Schwaemmen. Prag. — 1 (1837); 2 (1838).

EHRENBERG, C. G. (1818): Sylvae Mycologicae Berolinenses. — Berlin, (non vidi).

FRESENIUS, G. (1850): Beiträge zur Mykologie. Heft 1. — Frankfurt, (non vidi).

FUCKEL, L. (1870): Symbolae Mycologicae. — Jahrb. Nassauischen Ver. Naturk., Wiesbaden, 23—24: 1—459.

HÖHNEL, F. VON (1907): Fragmente zur Mykologie. III. — Sitzungsbe.. Akad. Wiss. Wien, 116: 83—162.

HOLUBOVÁ-JECHOVÁ, V. (1973): Lignicolous *Hyphomycetes* from the Netherlands. — Proc. Kon. Nederl. Akad. Wet., ser. C, Amsterdam, 76: 297—302.

HUGHES, S. J. (1958): Revisiones Hyphomycetum aliquot cum appendice de nominibus rejiciendis. — Canad. Journ. Bot., Ottawa, 36: 727—836.

HUGHES, S. J. et KENDRICK, W. B. (1963): Microfungi. IX. *Menispora* PERSOON. — Canad. Journ. Bot., Ottawa, 41: 693—718.

HUGHES, S. J. et KENDRICK, W. B. (1968): New Zealand Fungi 12. *Menispora, Codinaea, Menisporopsis*. — New Zealand Journ. Bot., Wellington, 6: 323—375.

LANJOUW, J. et al. [ed.] (1966): International code of botanical nomenclature. — Regnum Veget., Utrecht, 46: 1—402.

LINDAU, G. (1907 et 1910): Fungi imperfecti: *Hyphomycetes*. — In: RABENHORST's Kryptogam. Fl. Deutschl., Abt. 8 (1907), Abt. 9 (1910). — Leipzig.
LINK, H. F. (1824): *Hyphomycetes*. — In: WILLDENOW: Linné Spec. Plant., Ed. 4, 6/1, Berolini.
MAIRE, R. (1906): Notes mycologiques. — Ann. Mycol., Berlin, 4: 329—335.
MUNK, A. (1957): Danish *Pyrenomycetes*. — Dansk. Bot. Arkiv, Copenhagen, 17: 1—491.
PERSOON, C. H. (1822): Mycologia Europaea. 1. — Erlangen.
PEYRONEL, M. B. (1918): Micromiceti di val Germanasca. — Nuovo Giorn. Bot. Ital., Firenze, 25: 405—468, (non vidi).
PEYRONEL, M. B. (1919): Un Hyphomycete singulier: *Eriomenella tortuosa* (CORDA) PEYRONEL. — Bull. Soc. Mycol. Fr., Paris, 35: 165—182.
ROSTRUP, E. (1892): Mykologiske Meddelelser. Spredte Iagttagelser fra Aarene 1889—1891.—Bot. Tidsskr., København, 18: 65—78.
SACCARDO, P. A. (1886): Sylloge Fungorum. Vol. 4. — Patavia.
TUBAKI, K. (1958): Studies on the *Hyphomycetes* V. Leaf and stem group with a discussion of the classification of *Hyphomycetes* and their perfect stages. — Journ. Hattori Bot. Lab., Migazaki, 20: 142—244.
WALLROTH, K. F. W. (1833): Flora Cryptogamica Germaniae. Vol. 2. — Nürenberg.

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