

New or Interesting Hyphomycetes on Decaying Pine Litter from Czechoslovakia

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New or interesting *Hyphomycetes*  
on decaying pine litter  
from Czechoslovakia

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Keywords

*Hyphomycetes*, *Coelomycetes*, New genera, New species, Decaying pine litter, Decaying pine trash, Czechoslovakia, England

Abstract

Twenty three species of *Hyphomycetes* new to Czechoslovakia are listed with comments and illustrations. Seven are new to science—*Blastophorum pini*, *Bloxamia bohemica*, *Junctospora pulchra*, *Linodochium formosum*, *Phaeostalagmus peregrinus*, *Sporidesmium doliiiforme*, *Xiambola mirabilis*—and of these, two are the types of new genera (*Junctospora* and *Xiambola*). The new species and genera are described, illustrated and discussed. Anamorphs of *Mytilidion gemmigenum* FÜCKEL and *Pseudohelotium pineti* (BATSCH ex FR.) FÜCKEL in *Taeniolella* and *Linodochium*, respectively are reported. Collections of these fungi from Britain are also cited. Data on morphology, ecology and distribution of those species occurring in both Britain and Czechoslovakia are compared.

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During autumn 1979, in the first intensive study of pine hyphomycetes from Czechoslovakia, we collected microfungi on decaying pine needles, twigs and cones, and examined similar material in the herbarium of the National Museum, Praha (PRM). As a result, twenty-three species of hyphomycetes hitherto not recorded from Czechoslovakia were discovered. Seven are new to science and of these, two are the types of new genera. That so many new species were discovered in so short a time indicates how little is known about the complex fungal flora on decaying pine litter.

The following terms used in the notes presented below are defined: “needles” refers to secondary needles (the normal needles of a mature pine tree); “twigs” are

the parts of pine branches to which at least some needles were still attached at the time of collection; "cones" are female cones; "litter" refers to needles and cones which have, in old age, dehisced from their twigs and lie rotting on the ground, and "trash" refers to twigs (with needles and sometimes cones still attached) which have become detached from the tree and lie rotting (as, for example, is frequently seen after felling operations). The terms "litter" and "trash" refer to two ecological niches described for pine microfungi by MINTER and MILLAR (1980). Unless otherwise stated, all collections were made from *Pinus sylvestris* L.

The twenty-three species new for Czechoslovakia are listed below, with notes, descriptions and illustrations as appropriate. Where possible, data on morphology, ecology and distribution of the species occurring in Great Britain and Czechoslovakia are compared, and collections from Great Britain are cited.

**Acrogenospora** anamorph of **Farlowiella carmichaeliana** (BERK.) SACC., *Sylloge Fung.* 9: 1101, 1891.

Bohemia: montes Novohradské hory, in monte Lužnický vrch supra pagum Lužnice, ad lignum putr., 8. X. 1971, leg. M. SVRČEK et R. PODLAHOVÁ (PRM 802021, inter ascocarpos *Ascocorynes* sp.).

Britannia: Scotia, insula Rhum, prope vicum Kinloch, ad strobilum putr. deiect., 30. V. 1979, leg. D. W. M. (IMI 243789a); Scotia occidentalis, regio Morvern, prope vicum Lochaline, ad strobilum putr. deiect., 10. VI. 1979, leg. R. W. G. DENNIS (IMI 243788).

Common on dead wood and bark of coniferous and broadleaf trees in both Czechoslovakia and Britain, occasionally seen on litter cones. It has been collected from many scattered localities in Czechoslovakia (many specimens in the herbarium of the second author).

**Arthrobotrys oligospora** FRES., *Beitr. Mykol.*, pp. 18–19, 1850.

Bohemia: prope vicum Veltruby, haud procul ab oppido Kolín; ad strobilum putr. deie ct. 9. X. 1979, leg. D. W. M. (IMI 243664).

Britannia: Anglia borealis, prope oppidum Alnwick, ad strobilum putr. deiect., 26. XII. 1978, leg. D. W. M. (IMI 235264).

Several species of fungi which are predatory on nematode worms are observed occasionally on litter and trash, usually on cones. Of these, *A. oligospora* is the most commonly encountered. They probably derive no nutrient from the cones over which they grow.

**Blastophorum pini** MINTER et HOL.-JECH. sp. nov.

Fig. 1: 1a, 1b.

Coloniae effusae, pilosae, fuscae; mycelium vegetabile immersum vel superficiale, ex hyphis pallide brunneis, ramosis, septatis, anastomosantibus, laevibus, 2–4  $\mu$ m latis. Conidiophora mononemata, macronemata, erecta, recta, non ramosa, fusco-

**brunnea**, in apice pallidiora, laevia, septata,  $60-170 \times 4-6 \mu\text{m}$ , aliquando ad apicem attenuata, apice rumpentia et protrusionem fertilem per proliferationem formantia. Cellulae conidiogenae integratae, terminales, polyblasticae, laeves, apice inflatae, in parte inferiore plus minusve cylindricae, hyalinae,  $10-20 \times 4-5 \mu\text{m}$ ; per apicem fractum conidiophori proliferantes. Conidia elongato-cylindrica, vel non-nihil curvata, apice rotundata, plus minusve in basi truncata, aseptata, serius 1-3 (-5) septata, laevia, hyalina,  $10-20 (-24) \times 1.5-2.5 \mu\text{m}$ , postremo in septis se scindentia, ut forment catenas simplices arthroconidiorum aseptatorum,  $3-7 \times 1.5-2.5 \mu\text{m}$ .

Habitat ad strobilum putridum deiectum *Pini sylvestris*.

Holotypus: Bohemia, prope oppidum Třeboň; ad strobilum putr. deiect. *Pini sylvestris*, 5. III. 1961, leg. M. SVRČEK (IMI 243781 b).

Colonies effused, hairy, dark. Vegetative mycelium immersed or superficial, composed of pale brown, branched, septate, anastomosing, smooth hyphae,  $2-4 \mu\text{m}$  wide. Conidiophores mononematous, macronematous, erect, straight, unbranched, dark brown, paler at the apex, smooth, septate,  $60-170 \times 4-6 \mu\text{m}$ , sometimes tapered towards the apex, breaking open at the apex and each forming a fertile protrusion through the proliferation. Conidiogenous cells integrated, terminal, polyblastic, swollen at the apex, lower down more or less cylindrical, hyaline, smooth,  $10-20 \times 4-5 \mu\text{m}$ , proliferating through the broken apex of each conidiophore. Conidia elongated cylindrical, or slightly curved, rounded at the tip, more or less truncate at the base, aseptate, later 1-3 (-5) septate, hyaline, smooth,  $10-20 (-24) \times 1.5-2.5 \mu\text{m}$ , eventually splitting at the septa to form simple chains of aseptate arthroconidia,  $3-7 \times 1.5-2.5 \mu\text{m}$ .

Bohemia: prope oppidum Třeboň, ad strobilum putr. deiect., 5. III. 1961, leg. M. SVRČEK (PRM 616561, isotypus, inter ascocarpos *Peizizellae chioneae*).

Conidiogenous cells growing out of a broken conidiophore apex are occasionally seen in many species where regrowth is occurring after damage by, say, mite grazing. In *B. pini* described above, every conidiophore bears this feature, suggesting that in this species it is an essential feature of its growth. Among the few genera described with this feature *Pleurotheciopsis* SUTTON and *Blastophorum* MATSUSHIMA are somewhat similar to this species, though neither has secondary arthroconidia. In *Pleurotheciopsis* the conidia are catenate, whereas in *Blastophorum* they are produced singly. We therefore place our species in *Blastophorum* and emend the generic concept to include species whose single apical conidia fragment into simple chains of secondary arthroconidia.

### **Bloxamia bohemica** MINTER et HOL.-JECH. sp. nov.

Fig. 2: 1a, 1b.

Sporodochia superficialia, sparsa, elliptica vel forma et magnitudine variabilia, saepius confluentia, usque  $2000 \times 1000 \mu\text{m}$ . Statu udo pulvinata, mucosa, succinea vel aliquantum viridia; statu sicco brunnea vel nigro-brunnea, contracta, plana, corneola. Interdum statu sicco spora exsiccatae protrudunt ut columna minuta,

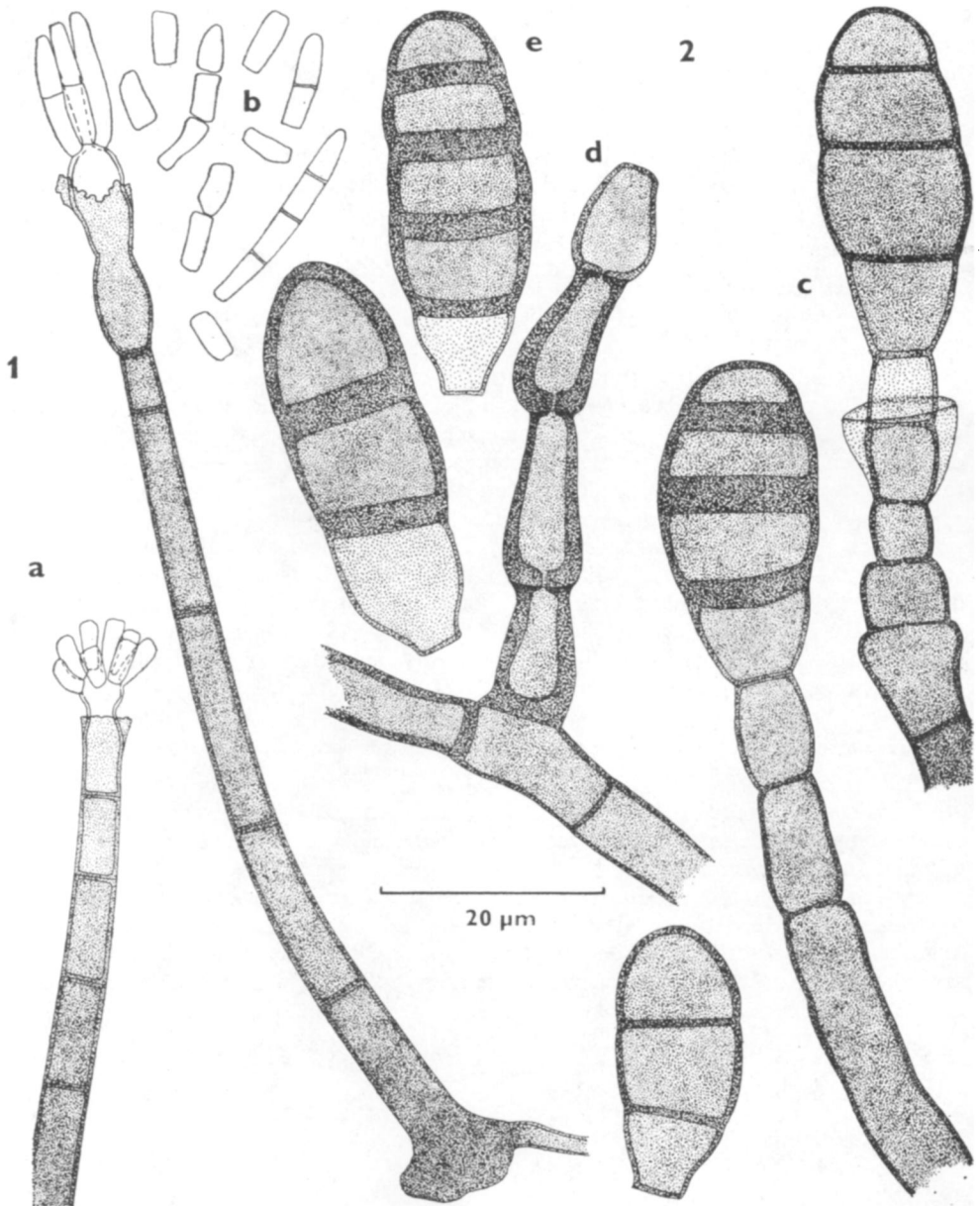


Fig. 1. 1. *Blastophorum pini* MINTER et HOL.-JECH.: a — two conidiophores showing broken apices; b — conidia. 2. *Sporidesmium doliviforme* MINTER et HOL.-JECH.: c — details of conidiophore apices, one with an intercalary cup; d — detail of conidiophore showing repeated percurrent proliferation through the conidiogenous cell apical septal pore; e — conidia. Del. D. W. MINTER

ad basim alba, in apice succinea, in parte inferiore longitudinaliter striata. Stroma basale sporochii (in sectione verticali) circa  $10\ \mu\text{m}$  altum, ex cellulis  $2\text{--}4\ \mu\text{m}$  diam. compositum. Stroma in parte inferiore brunneum, ad apicem pallidius et gradatim hyalinum. Conidiophora ad cellulas conidiogenas singulas restricta. Cellulae conidiogenae discretae, terminales, monophialidicae, determinatae, laeves et statim stipatae ex stromatis superficie exoriuntur; venter cylindricus, pallide brunneus vel hyalinus,  $8\text{--}11 \times 1.5\text{--}2\ \mu\text{m}$ , in collum brunneum, cylindricum, apice interdum aliquantum involutum,  $8\text{--}11 \times 1.5\ \mu\text{m}$ , attenuatus. Conidia endogena, catenata, hyalina, aseptata, laevia, cylindrica, saepe biguttulata,  $3\text{--}5.5 \times 1\ \mu\text{m}$ .

Habitat in acubus putridis *Pini sylvestris*.

Holotypus: Bohemia, prope oppidulum Dubá; in acubus putr. *Pini sylvestris*, 8. X. 1979, leg. D. W. M. (IMI 243651).

Sporodochia superficial, scattered, cushion shaped, elliptical or variable in shape and size, up to  $2000 \times 1000\ \mu\text{m}$ , often confluent, slimy and amber-coloured or greenish when wet; when dry either brown to blackish brown, contracted, flat and of a horny consistency, or sometimes with the dry spore mass protruding like a minute column, white at the base, but amber-coloured at the top, with vertical striations caused by the conidial chains. In vertical section, sporodochia with a basal stroma about  $10\ \mu\text{m}$  deep, composed of cells  $2\text{--}4\ \mu\text{m}$  diam., forming a textura angularis. The stroma brown lower down, becoming paler, eventually hyaline towards the top. In horizontal section the cells of the stroma seem to form a textura intricata. Conidiophores limited to single conidiogenous cells. Conidiogenous cells arising directly from the surface of the stroma, discrete, terminal, monophialidic, determinate, smooth, with a pale brown to hyaline, cylindrical venter,  $8\text{--}11 \times 1.5\text{--}2\ \mu\text{m}$ , tapering gradually into a brown, cylindrical collarette,  $8\text{--}11 \times 1.5\ \mu\text{m}$ , with the tip sometimes inrolled slightly. Conidia endogenous, catenate, cylindrical, hyaline, aseptate, smooth, often biguttulate,  $3\text{--}5.5 \times 1\ \mu\text{m}$ .

Bohemia: silva orient. a pago Doksy, in acubus putr., 8. X. 1979, leg. D. W. M. (IMI 243630); silva orient. ab oppidulo Říčany, in acubus putr., 6. XI. 1979, leg. V. H.-J. et D. W. M. (IMI 243745); silva orient. a vico Prameny, prope Mariánské Lázně, in acubus putr., 16. XI. 1979, leg. V. H.-J. et D. W. M. (IMI 243752).

Britannia: Scotia borealis, montes Cairngorms, prope domum venatorum Derry Lodge, in acubus putr., 12. IX. 1979, leg. D. W. M. (IMI 243883).

In the most recent monograph of *Bloxamia* (NAG RAJ and KENDRICK 1975) two species, *B. nilagirica* (SUBRAM.) NAG RAJ et KENDRICK and *B. truncata* BERK. et BROOME, are recognized. *Bloxamia nilagirica* is known only from India and cannot be confused with *B. bohémica* because it forms synnemata. The differences between *B. truncata* and *B. bohémica* are summarised in Table 1. *Bloxamia bohémica* appears to be common on litter and trash needles in autumn in Bohemia. It has been collected only once from Great Britain.

***Chalara affinis* SACC. et BERL., Atti Ist. Veneto Sci. 3: 741, 1885.**

Bohemia: montes Šumava, reservatio naturae Kvildská slat, sept.-occid. a pago Kvilda, in acubus putr., 19. X. 1979, leg. V. H.-J. et D. W. M. (PRM 821701); silva austr. ab oppidulo Horažďovice, in acubus putr., 19. X. 1979, leg. V. H.-J. et D. W. M. (PRM 821715).

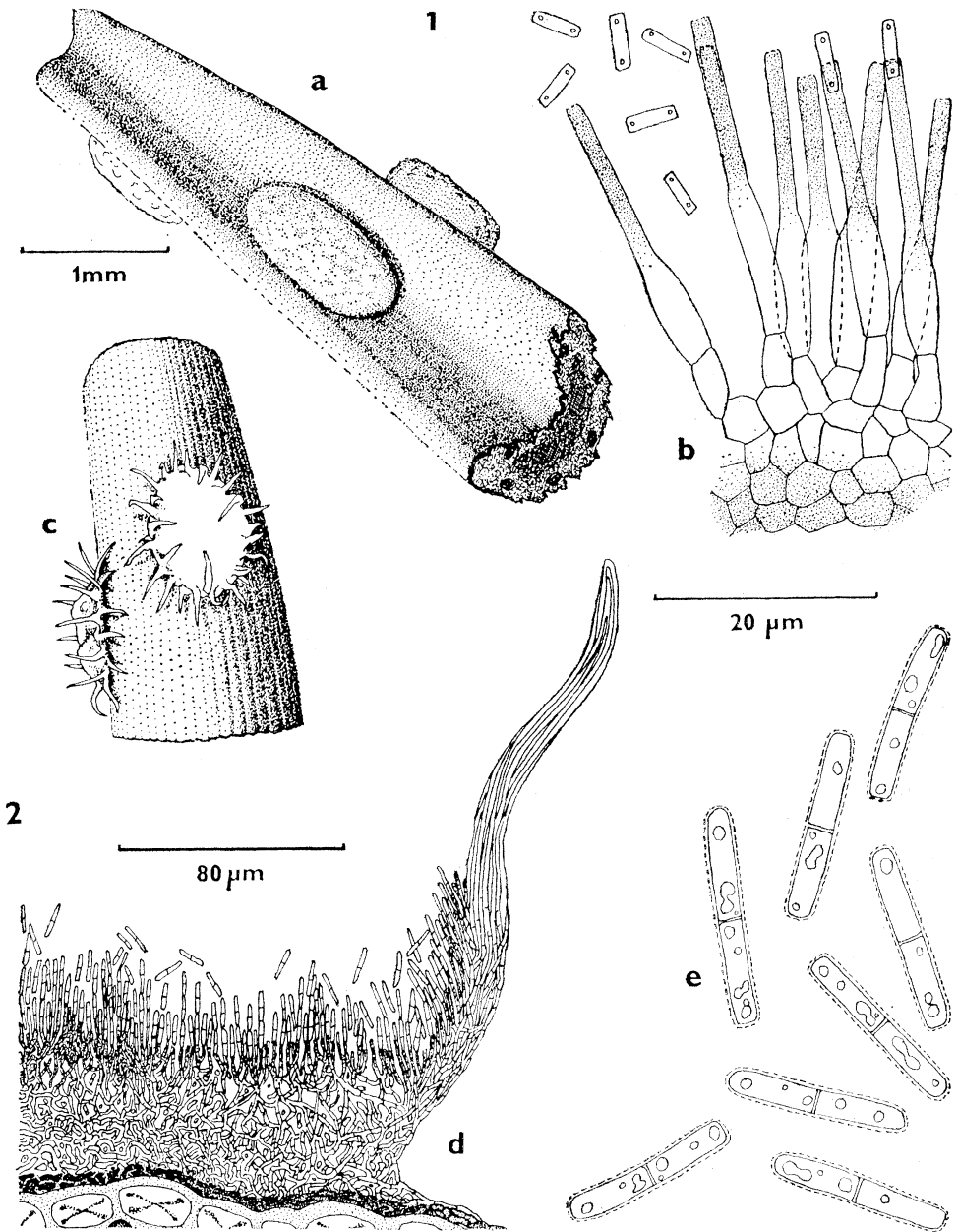


Fig. 2. 1. *Bloxamia bohemica* MINTER et HOL.-JECH.: a — general view of sporodochia on needle; b — conidiogenous cells and conidia. 2. *Ximbola mirabilis* MINTER et HOL.-JECH.: c — general view of conidiomata on needle; d — vertical section of conidioma; e — conidia.  
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Table 1. Comparison of *Bloxamia truncata* and *B. bohémica*

Characteristic	<i>B. truncata</i>	<i>B. bohémica</i>
Fructification and its size	sporodochium, 140–500 $\mu$ m diam.	sporodochium, up to 2000 $\times$ 1000 $\mu$ m
Conidiophores	septate	limited to single conidiogenous cells
Conidiogenous cells	cylindrical, 15–32 $\times$ 2–3 $\mu$ m, sometimes proliferating percurrently	cylindrical but tapering to a collarette, 16–22 $\times$ 1.5–2 $\mu$ m (including collarette, not proliferating percurrently)
Conidia	short-cylindrical to oblong, 2–4 (–7) $\times$ 1.5–2.5 $\mu$ m, mean length/width ratio = 1.5:1	cylindrical, 3–5.5 $\times$ 1 $\mu$ m, mean length/width ratio greater than 4:1

Britannia: montes Peak District, prope Ramshaw Rocks, haud procul ab oppidulo Leek, in acubus putr., 24. IX. 1978, leg. D. W. M. (IMI 232191); Anglia australis, regio Mamhead, haud procul ab urbe Exeter, in acubus putr., 1. IX. 1978, leg. P. KIRK et B. SPOONER (IMI 232196).

Occasional on trash needles, sometimes also on trash or litter cones; hitherto not reported from pines. At least ten different species of *Chalara* are known from decaying pines and they form an important part of the saprophytic hyphomycete flora on needles, twigs and cones. In spite of the excellent monograph on this genus now available (NAG RAJ and KENDRICK 1975), collections of *Chalara* are still frequently difficult to allocate satisfactorily to a correct species: it should be noted that some of the collections of *C. affinis* listed above, and of the two other *Chalara* species recorded here for Czechoslovakia, listed below, differed in minor details from the descriptions given by NAG RAJ and KENDRICK.

### *Chalara longipes* (PREUSS) COOKE, Grevillea 10: 50, 1881.

Bohemia: montes Šumava, reservatio naturae Zhřská slat, sept.-occid. a pago Kvilda, in acubus putr. *Pini mugo*, 19. X. 1979, leg. V. H.-J. et D. W. M. (IMI 243699).

Britannia: Scotia australis, silva austr. a pago Lockerbie, in acubus putr., 4. I. 1979, leg. D. W. M. (IMI 235304).

Apparently uncommon on studied substrata, hitherto known only from the type collection on needles of pine from Germany.

### *Chalara* anamorph of *Ceratocystis autographa* BAKSHI, An n. Bot., London, n.s., 15: 58, 1951.

Bohemia: montes Krkonoše, prope cacuminem montis Kotel, in acubus putr. *Pini mugo*, 4. XI. 1979, leg. D. W. M. (PRM 821723).

Britannia: Anglia orientalis, silva occid. ab oppidulo Brandon, prope Thetford, in acubus putr., 24. III. 1978, leg. D. W. M. (IMI 228416); Scotia borealis, montes Torridon, austr. a vico Shieldaig, in acubus putr., 25. VI. 1978, leg. D. W. M. (IMI 229725); Scotia, cultura ex cortice *Laricis deciduae* isol., 17. VI. 1948, leg. WILSON (IMI 20162, holotypus!).



This is the smallest species of *Chalara* recognized by NAG RAJ and KENDRICK (1975) and is distinguished by its size, constricted collarettes and conidia which are not quite cylindrical. Collections referable to this species are among the commonest *Chalaras* seen on pine needles, twigs and cones. These collections are slightly variable and it is possible that further study will reveal that they are an aggregation of taxa.

**Endophragmiella pinicola** (M. B. ELLIS) HUGHES, New Zealand Journ. Bot. 17:153, 1979.

Bohemia: prope vicum Veltruby, haud procul ab oppido Kolín, in acubus putr., 9. X. 1979, leg. D.W.M. (IMI 243661b, PRM 821691).

Britannia: Cambria australis, regio Glamorgan, in acubus putr. *Pini nigrae*, 15. IX. 1973, leg. J. P. ELLIS (IMI 180177, holotypus); Scotia occidentalis, insula Cannae, in acubus putr. *Pini nigrae*, 8. VIII. 1976, leg. S. M. FRANCIS (IMI 231798); montes Peak District, ad ripam lacus Ladybower, in acubus putr., 19. II. 1978, leg. D.W.M. (IMI 225829).

Very common on needles and twigs, less often cones of trash, less often litter, from Britain. Recorded only once from Bohemia, but doubtless also common there.

**Junctospora** MINTER et HOL.-JECH. gen. nov.

Etym. sec. conjunctionem sporarum cellulis intercalaribus.

Conidiophora mononemata, macronemata, simplicia vel sparse ramosa, septata, hyalina vel subhyalina. Cellulae conidiogenae terminales, monoblasticae, integratae, proliferantes. Conidia in catenis simplicibus, fusiformia, aseptata, hyalina vel non-nihil colorata, cum cellulis intercalaribus parvis.

Species typica: *Junctospora pulchra* MINTER et HOL.-JECH.

Conidiophores mononematous, macronematous, simple or sparingly branched, septate, hyaline or slightly pigmented. Conidiogenous cells terminal, monoblastic, integrated, proliferating percurrently. Conidia in simple chains, fusiform, aseptate, hyaline or slightly coloured, with small separating cells.

**Junctospora pulchra** MINTER et HOL.-JECH. sp. nov.

Fig. 3: a, b, c, d, e.

Coloniae effusae, byssoideae, olivaceae, cum mycelio vegetabili immerso vel superficiali, subhyalino, septato, anastomosanti, 4–5  $\mu\text{m}$  lato. Conidiophora mononemata, macronemata, subhyalina, simplicia vel sparse ad basim ramosa, recta, septata, laevia, crassitunicata, usque ad 350  $\mu\text{m}$  long., 3–5  $\mu\text{m}$  lat., sed in basi usque ad 8  $\mu\text{m}$  lat., ad apicem paulatim attenuata. Cellulae conidiogenae terminales, integratae, monoblasticae, per proliferationes percurrentes. Conidia in catenis simplicibus, hyalina, aseptata, late fusiformia, laevia, tenuitunicata, 14 – 25  $\times$  5 – 8  $\mu\text{m}$ , et inter se cum cellulis intercalaribus parvis postea deliquescentibus.

Habitat in acubus putridis *Pini sylvestris*.

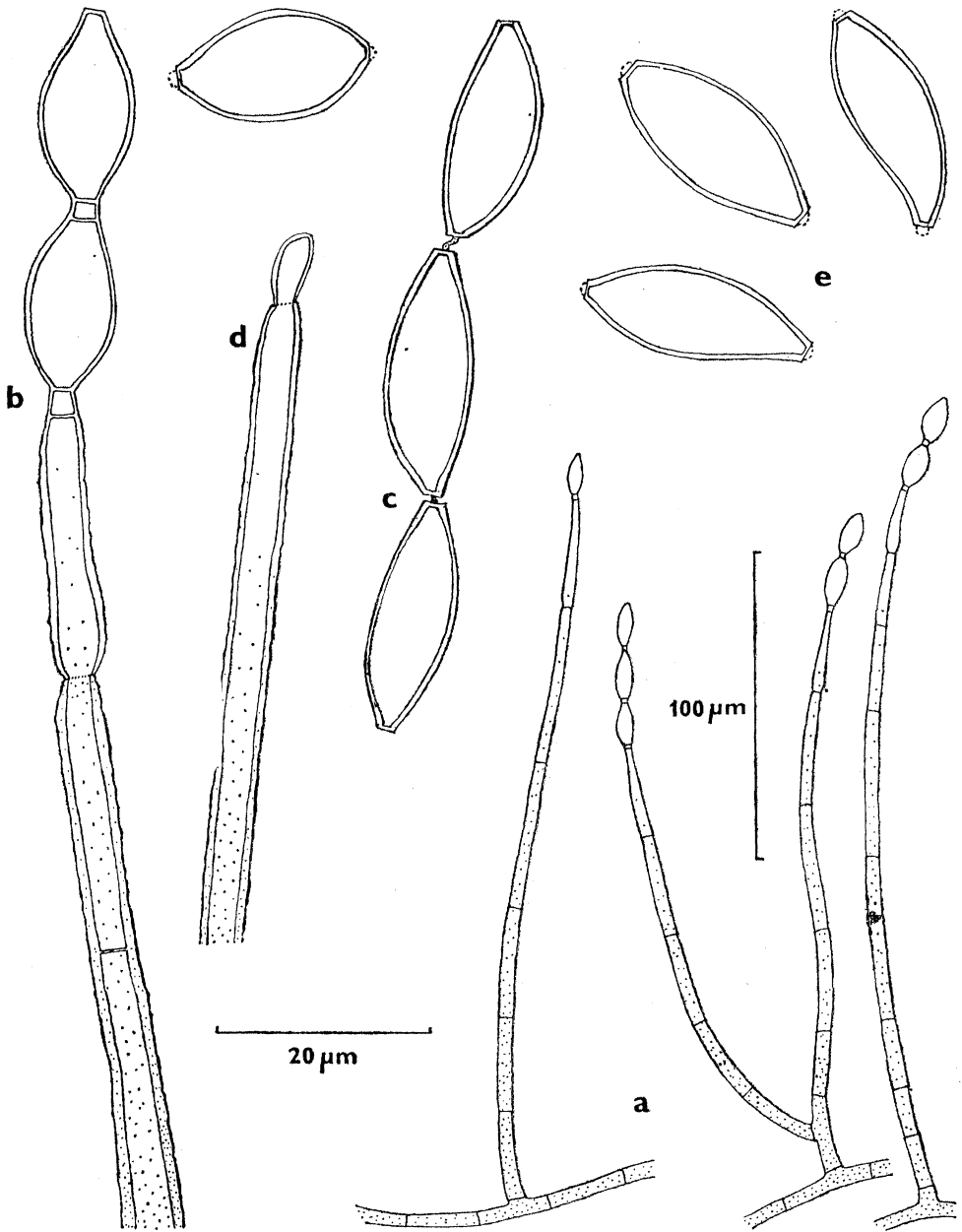


Fig. 3. *Junctospora pulchra* MINTER et HOL.-JECH.: a — general view of conidiophores; b — detail of conidiophore apex with conidial chain; c — conidial chain with deliquescent separating cells; d — conidiogenous cell proliferating percurrently; e — conidia.

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Holotypus: Bohemia, silva orient. a pago Krymlöv, merid.-orient. ab oppidulo Kostelec n. Čer. lesy, in acubus putr. *Pini sylvestris*, 6. XI. 1979, leg. V. H.-J. et D. W. M. (IMI 243573).

Colonies effused, cottony, somewhat olivaceous, with immersed or superficial, subhyaline, septate, anastomosing vegetative mycelium 4–5  $\mu\text{m}$  wide. Conidiophores mononematous, macronematous, subhyaline, simple or sparsely branched near the base, erect, septate, smooth, thick walled, up to 350  $\mu\text{m}$  long, 3–5  $\mu\text{m}$  wide, but up to 8  $\mu\text{m}$  wide at the base, gradually narrowed towards the tip. Conidiogenous cells terminal, integrated, monoblastic, proliferating percurrently. Conidia in simple chains, hyaline, aseptate, broadly fusiform, smooth, thin walled, 14–25  $\times$  5–8  $\mu\text{m}$ , having small intercalary separating cells with deliquescent walls which cannot be seen in dispersed conidia.

Bohemia: silva merid.-orient. ab oppidulo Kostelec n. Čer. lesy, in acubus putr., 6. XI. 1979, leg. V. H.-J. et D. W. M. (IMI 243724).

Britannia: Scotia centralis, ad ripam lacus Loch Lomond, in acubus putr., 22. VI. 1978, leg. D. W. M. (IMI 244536).

Uncommon on needles of trash in Britain and Czechoslovakia. Fungi producing conidia which secede by a separating cell are rather unusual, particularly when the conidia are produced in chains. Most of these genera produce arthrospores, and the conidial chains are branched, e.g. *Amblyosporium* FRES., *Sporendonema* DESM., and *Malbranchea* SACC. *Phialomyces* MISRA et TALBOT produces simple chains with separating cells, but they are phialidic. It appears that no genus producing such chains holoblastically has been described hitherto.

### ***Linodochium formosum* MINTER et HOL.-JECH. sp. nov.**

Fig. 4: a, b, c.

Sporodochia superficialia, sparsa, erecta, candelae flammae forma, vel obclavata, cymbiformia vel saepe apice attenuata, griseo-alba, laevia, nitentia, usque ad 170  $\times$  50  $\mu\text{m}$ ; stroma basale restrictum (25–40  $\mu\text{m}$  diam.), e cellulis hyalinis, tenuitunicatis, 5–7  $\times$  2–3  $\mu\text{m}$ , saepius in uno strato locatis compositum, e quibus conidiophora exoriuntur. Conidiophora semi-macronemata, ramosa, septata, hyalina, tenuitunicata, laevia, usque ad 20  $\times$  2–3  $\mu\text{m}$ . Cellulae conidiogenae discretae, terminales vel intercalares, hyalinae, tenuitunicatae, laeves. In apice, vel prope apicem, 1–3 conidia sympodialiter vel synchronose producuntur. Conidia hyalina, tenuitunicata, laevia, filiformia (in basi paulo latiora, ad apicem attenuata), aseptata vel 1–12 euseptata, guttulata, 80–140  $\times$  2–3  $\mu\text{m}$ .

Habitat in cortice putrido *Pini mugo*.

Holotypus: Bohemia, montes Šumava, reservatio naturae Kvildská slat, sept.-occid. a pago Kvilda; in cortice putr. *Pini mugo*, 19. X. 1979, leg. V. H.-J. et D. W. M. (IMI 243744).

Sporodochia superficial, scattered, erect, like a candle flame in shape, or obclavate, cymbiform or often with an attenuated apex, greyish white, smooth, shiny, up to 170  $\times$  50  $\mu\text{m}$  in size, each with a very restricted basal stroma, 25–40  $\mu\text{m}$  diam., composed of hyaline, thin-walled cells, 5–7  $\times$  2–3  $\mu\text{m}$ , usually in a single layer, from which the conidiophores arise. Conidiophores semi-macro-

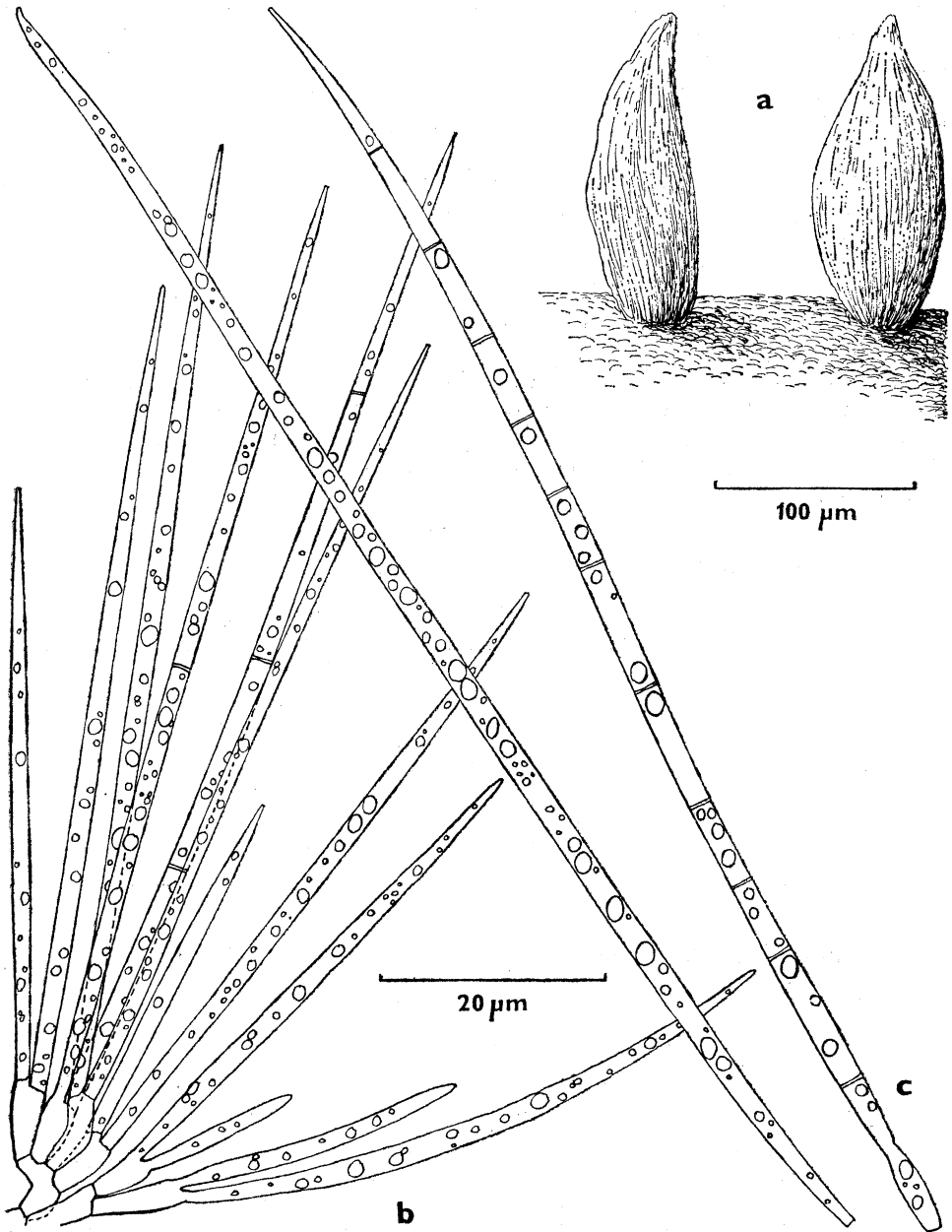


Fig. 4. *Linodochium formosum* MINTER et HOL.-JECH.: a — general view of sporodochia; b — conidiogenous cells and immature conidia; c — mature conidia.  
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nematous, branched, septate, hyaline, thin-walled, smooth, up to  $20 \times 2-3 \mu\text{m}$  in size. Conidiogenous cells discrete, terminal or intercalary, hyaline, thin-walled, smooth, producing 1-3 conidia sympodially or synchronously at or near the apex. Conidia hyaline, thin-walled, smooth, filiform (slightly wider at the base, tapering to the tip), aseptate or 1-12 euseptate, guttulate,  $80-140 \times 2-3 \mu\text{m}$ .

This fungus clearly belongs in one of those genera having cupulate sporodochia and lying intermediate between the *Hyphomycetes* and *Coelomycetes*, a little known group of genera well represented on pines. Some of these genera were recently revised by DYKO and SUTTON (1979), and of these, two—*Septopatella* PETRAK and *Linodochium* HÖHN.—produce holoblastic sympodial or synchronous conidia. *Septopatella* has well developed sporodochial walls and is thus not appropriate. We therefore place this species in *Linodochium*. Hitherto, *Linodochium* was a monotypic genus, the only species being *L. hyalinum* listed below. Table 2 compares *L. hyalinum* and *L. formosum*. The differences are such that it seems unlikely that the two species are related phylogenetically, but they are sufficiently similar morphologically to make erection of a new genus in this little known group unnecessary.

Table 2. Comparison of *Linodochium hyalinum* and *L. formosum*

Characteristic	<i>L. hyalinum</i>	<i>L. formosum</i>
Sporodochia: size	up to $1200 \mu\text{m}$ diam., $100 \mu\text{m}$ high	up to $50 \mu\text{m}$ diam., $170 \mu\text{m}$ high
shape	oval, flattened	erect, obclavate
colour	amber	greyish white
Conidia	2-4 septate, $36-88.5 \times 1-1.5 \mu\text{m}$	0-12 septate, $80-140 \times 2-3 \mu\text{m}$

***Linodochium* anamorph of *Pseudohelotium pineti* (BATSCH ex FR.) FÜCKEL, Symb. Mycol., p. 142, 1870.**

Syn.: *Linodochium hyalinum* (LIB.) HÖHN., Sitzungsber. Akad. Wiss. Wien 118: 1239, 1909.

Bohemia: Třeboň, prope Vlčí Luka, in acubus putr., 2. IV. 1961, leg. M. SVRČEK (PRM 615741, inter ascocarpos *Cenangii acicola*); silva Šmejalka prope Hrusice, in acubus putr., 10. V. 1958, leg. M. SVRČEK (PRM 617235, inter ascocarpos *Cenangii acicola*); prope Třeboň, in acubus putr., 15. IV. 1961, leg. M. SVRČEK (PRM 616571, inter ascocarpos *Phacidii* sp.).

Britannia: Anglia orientalis, silva occid. a Brandon, prope Thetford, in acubus putr., 24. III. 1978, leg. D. W. M. (IMI 229545); Scotia borealis, regio Lochaber, ad ripam lacus Loch Eil, in acubus putr., 30. V. 1979, leg. D. W. M. (IMI 241492); Scotia borealis, montes Torridon, austr. a vico Shieldaig, in acubus putr., 25. VI. 1978, leg. D. W. M. (IMI 229729).

Sporodochia of the *Linodochium* anamorph of *Pseudohelotium pineti* are common on whitened needles in trash, both in Czechoslovakia and Britain. It seems

that hitherto no teleomorph has been known for this species. The discomycete *P. pineti* is frequently seen in close association, and we consider it to be the teleomorph of *L. hyalinum*, since GREMMEN (1960) obtained cultures of *P. pineti* and described, without giving a name, an anamorph which corresponds exactly to *L. hyalinum*.

***Monodictys putredinis* (WALLR.) HUGHES**, Can. Journ. Bot. 36: 785, 1958.

Bohemia: silva orient. ab oppidulo Říčany; ad strobilum et ramulum putr. deiect., 6. XI. 1979, leg. V. H.-J. et D. W. M. (IMI 243713).

Very common on dead coniferous wood and bark in Czechoslovakia, but previously unreported. (Many other collections are in herbarium material collected by the second author from other substrata.) Not yet recorded on this substrate from Britain.

***Parasympodiella clarkii* SUTTON**, Trans. Brit. Mycol. Soc. 71: 167, 1978.

Bohemia: silva haud procul a vico Prameny, prope Mariánské Lázně, in acubus putr., 16. XI. 1979, leg. V. H.-J. et D. W. M. (PRM 821745); silva orient. a pago Krymlöv, merid.-orient. ab oppidulo Kostelec n. Čer. lesy, ad strobilum putr., 6. XI. 1979, leg. V. H.-J. et D. W. M. (PRM 821731); silva haud procul ab oppidulo Kostelec n. Čer. lesy, in acubus putr., 6. XI. 1979, leg. V. H.-J. et D. W. M. (PRM 821730).

Britannia: Anglia centralis, regio Warwickshire, in ramulo putr., 13. XI. 1975, leg. M. C. CLARK (IMI 198981, holotypus); Scotia, insula Rhum, prope vicum Kinloch, in acubus putr., VI. 1977, leg. D. W. M. (IMI 225356).

This species, recently described by SUTTON from a specimen growing on a myxomycete fruitbody on a pine twig, is now known to be a common inhabitant of needles, twigs and cones of pine trash throughout the year in Britain. It is often seen in association with *Sympodiella acicola* KENDRICK listed below. Collections from Czechoslovakia suggest that its occurrence here is similar. The cylindrical 3-septate conidia with one or both ends truncate are distinctive. This is the first report of this species outside Britain.

***Phaeostalagmus peregrinus* MINTER et HOL.-JECH**, sp. nov.

Fig. 5: 2b, 2c.

Hyphae repentes, pallide brunneae, 1.8–3 µm latae, crassitunicatae. Conidiophora mononemata, macronemata, recta, atrofusca, septata, 90–200 × 3–4 µm, in basi 5–8 µm lata, ad apicem 1–3 ramulis lateralibus instructa. Ramuli omnes ex regione subter quoddam septum axis principalis sub angulo acuto 30–45° nati, pallide brunnei, ad apicem aliquanto pallidiores, cum 1–2 cellulis conidiogenis in apice, vel cellulae conidiogenae solae, cellulis intercalariis absentibus. Cellulae conidiogenae discretatae, terminales, monophialidicae, determinatae, laeves, pallide brunneae vel subhyalinae et lageniformes; venter in collum angustum gradatim attenuatus, 16–27 × 3–4 (–4.5) µm, cum collare latiore, 2–2.5 µm alt., et in apice 2.5–3.5 µm lat. instructus. Conidia endogena, hyalina, aseptata, laevia,

ellipsoidea vel irregulariter clavata, apice rotundata, sed in basi angustiora et truncata, saepius biguttulata,  $4-8 \times 1-2.3 \mu\text{m}$ .

Habitat ad strobilum putridum deiectum *Pini sylvestris*.

Holotypus: Bohemia, silva orient. a pago Krymlöv, merid.-orient. ab oppidulo Kostelec n. Čer. lesy, ad strobilum putr. deiect., 6. XI. 1979, leg. V. H.-J. et D. W. M. (IMI 243575).

Conidiophores arising from pale brown, thick walled, repent hyphae  $1.8-3 \mu\text{m}$  wide, mononematous, macronematous, with a very dark, septate, upright main axis,  $90-200 \mu\text{m}$  long,  $3-4 \mu\text{m}$  wide in the middle part,  $5-8 \mu\text{m}$  at the swollen base, with 1-3 side branches near the apex. Each branch arises beneath a septum on the main axis, diverging at an acute angle of  $30-45^\circ$ . Branches pale brown, paler towards the apex, terminating in 1-2 conidiogenous cells, or composed solely of conidiogenous cells, without supporting cells. Conidiogenous cells discrete, terminal, monophialidic, determinate, smooth, pale brown or subhyaline and flask shaped, with a venter tapering into a long narrow neck,  $16-27 \times 3-4 (-4.5) \mu\text{m}$  in size, with a flared collarette,  $2-2.5 \mu\text{m}$  deep and  $2.5-3.5 \mu\text{m}$  wide at the apex. Conidia endogenous, hyaline, aseptate, smooth, ellipsoidal or irregularly clavate, rounded at the apex, narrowed and truncate at the base, usually biguttulate,  $4-8 \times 1-2.3 \mu\text{m}$ .

Britannia: Anglia orientalis, regio Suffolk, silva Tunstall, in nucibus vetustis *Castaneae sativae*, 4. XII. 1979, leg. M. B. ELLIS et J. P. ELLIS (IMI 243725).

This species clearly belongs in the recently described genus *Phaeostalagmus* W. GAMS (GAMS and HOLUBOVÁ-JECHOVÁ 1976). At present, three other species—*P. cyclosporus* (GROVE) W. GAMS, *P. novae-zelandiae* HUGHES (HUGHES 1978) and *P. tenuissimus* (CORDA) W. GAMS—are classified in this genus. The differences between the four species are summarised in Table 3.

Table 3. Comparison of *Phaeostalagmus cyclosporus*, *P. tenuissimus*, *P. novae-zelandiae* and *P. peregrinus*

Species	Phialides	Collarettes	Conidia
<i>P. cyclosporus</i>	$6-12 \times 1.7-2.5 \mu\text{m}$ , often finely warted	flared, $0.5-1 \mu\text{m}$ deep	$1.5-3 \times 1-2 \mu\text{m}$
<i>P. tenuissimus</i>	$10-13 \times 3-4 \mu\text{m}$ , smooth	flared, $0.5-1 \mu\text{m}$ deep	$2.5-4 \times 1.2-1.8 \mu\text{m}$
<i>P. novae-zelandiae</i>	$12.5-18 (-23) \times 2.5$ to $3.5 \mu\text{m}$ , smooth	inconspicuous	$5-7 \times 1.8-2 \mu\text{m}$ , ends rounded
<i>P. peregrinus</i>	$16-27 \times 3-4 (-4.5) \mu\text{m}$ , smooth	flared, $2-2.5 \mu\text{m}$ deep	$4-8 \times 1-2.3 \mu\text{m}$ , base truncate

### *Sphaeridium candidum* FÜCKEL, Symb. Mycol., p. 299, 1870.

Bohemia: silva austr. a pago Želizy, haud procul ab oppido Mělník, in acubus putr., 8. X. 1979, leg. D. W. M. (IMI 243640); silva austr. a castello Karlštejn, in acubus putr. *Pini nigrae*, 5. X. 1979, leg. D. W. M. (IMI 243595); Veltruby apud Kolín, ad ramulum putr.,

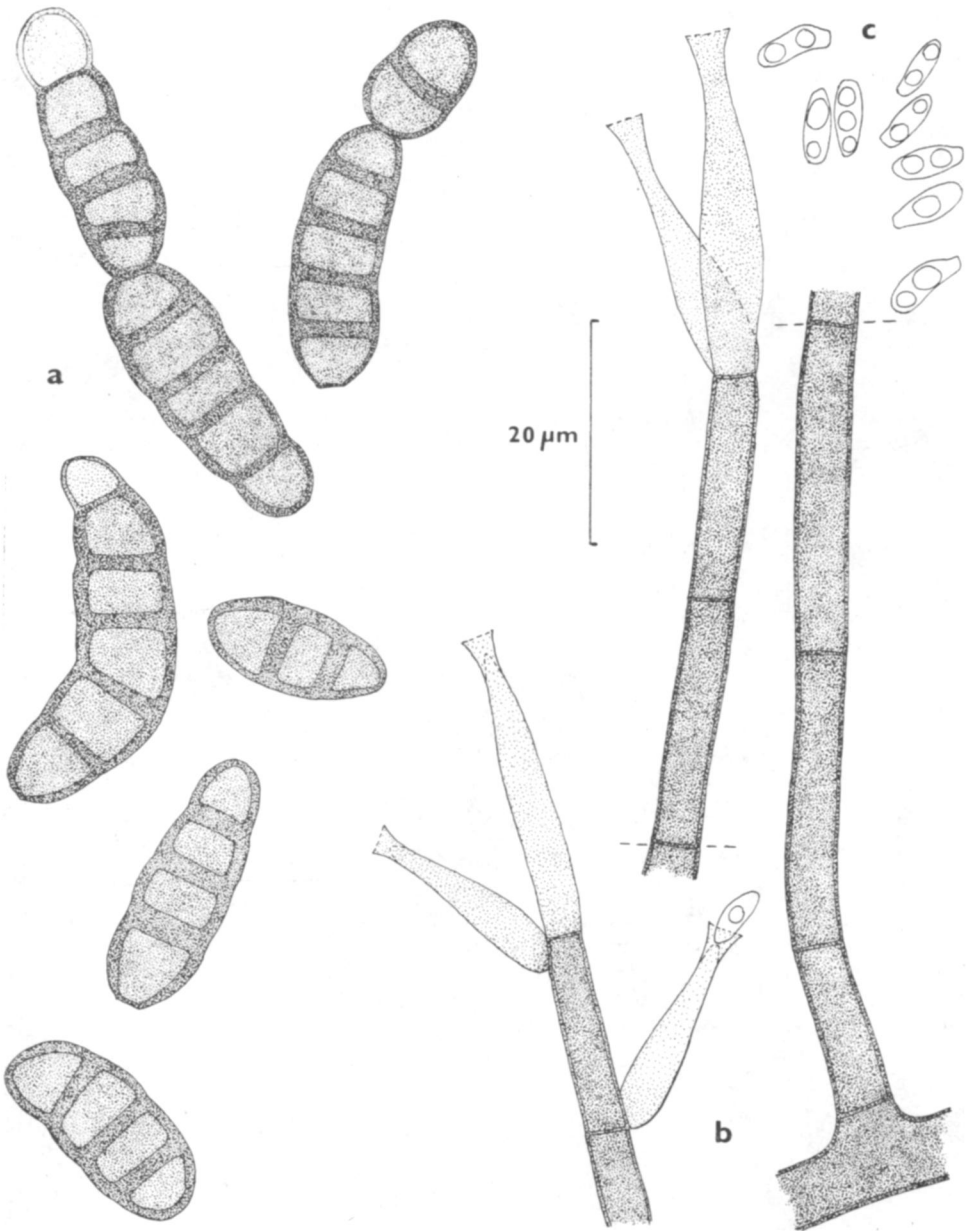


Fig. 5. 1. *Taeniolella* anamorph of *Mytilidion gemmigenum* FÜCKEL: a — conidia. 2. *Phaeostalagus peregrinus* MINTER et HOL.-JECH.: b — conidiophores; c — conidia.  
Del. D. W. MINTER



9. X. 1979, leg. D. W. M. (PRM 821696); silva austr. ab oppidulo Horáždovice, ad strobilum putr., 19. X. 1979, leg. D. W. M. (PRM 821714).

Britannia: Scotia, insula Rhum, prope vicum Kinloch, in acubus putr., 22. VII. 1951, leg. R. W. G. DENNIS (IMI 47680); Anglia australis, silva Clowes Wood, haud procul ab urbe Canterbury, ad strobilum putr., 28. I. 1978, leg. D. W. M. (IMI 225358).

Common in Czechoslovakia and Britain throughout the year on needles, twigs and cones of litter and trash. The synnemata appear as little, compact white balls, superficial on the substrate. The conidia are hyaline, aseptate, elliptical, in branched chains.

### *Sporidesmium doliiforme* MINTER et HOL.-JECH. sp. nov.

Fig. 1: 2c, 2d, 2e.

Coloniae effusae, nigrae, hirsutae, cum mycelio vegetabili submerso, pallide brunneo, septato, 1.5–3  $\mu\text{m}$  lato. Conidiophora mononemata, macronemata, recta, non ramosa, fuscobrunnea, sed in apice pallidiora, laevia, crassitunicata, septata, 50–200  $\times$  5–8  $\mu\text{m}$ , ad basim usque ad 13  $\mu\text{m}$  lat. Cellulae conidiogenae integratae, terminales, monoblasticae, cylindricae, lageniformes vel doliiformes, pallide brunneae, laeves, 9–20  $\times$  3.5–8  $\mu\text{m}$ , in apice conidia solitaria ferentes; interdum per proliferationes successivas axiales anguste obclavatas elongascentes, conidia addita formantes. Conidia elongato-ellipsoidea vel clavata, 2–5 septata, plerumque 3 septata, laevia, apice late rotundata, sed in basi angustiora et truncata, 3–4.8  $\mu\text{m}$  lat., brunnea vel fuscobrunnea, cum cellulis infimis pallidioribus, crassitunicata, (20.5–)25–38  $\times$  9.5–13(–16)  $\mu\text{m}$ .

Habitat ad strobilum putridum deiectum *Pini mugo*.

Holotypus: Bohemia, montes Šumava, reservatio naturae Zhůrská slat, sept.-occid. a pago Kvilda, ad strobilum putr. deiect. *Pini mugo*, 19. X. 1979, leg. V. H.-J. et D. W. M. (IMI 243742).

Colonies effused, black and hairy, with immersed, pale brown, septate vegetative mycelium, 1.5–3  $\mu\text{m}$  wide. Conidiophores mononematous, macronematous, erect, unbranched, dark brown but paler at the apex, smooth, thick walled, septate, 50–200  $\times$  5–8  $\mu\text{m}$ , up to 13  $\mu\text{m}$  wide at the base. Conidiogenous cells integrated, terminal, monoblastic, cylindrical, flask or barrel shaped, pale brown, smooth, 9–20  $\times$  3.5–8  $\mu\text{m}$ , producing single conidia at the apices; after the first formed conidium has fallen, conidiogenous cells sometimes successively proliferate through the scar and form another conidium at the apex of the narrow, obclavate proliferation. Conidia elongate ellipsoid or clavate, 2–5 septate, usually 3 septate, smooth, broadly rounded at the apex, narrower and broad truncate at the base, 3–4.8  $\mu\text{m}$  wide, brown or dark brown, the basal cell being somewhat paler, thick walled, (20.5–)25–38  $\times$  9.5–13(–16)  $\mu\text{m}$ . Sometimes aborted conidia form cups around the proliferations of the conidiogenous cells.

Britannia: Scotia borealis, regio Lochaber, silva prope Corpach, ad strobilum putr. deiect., 30. V. 1979, leg. D. W. M. (IMI 242606).

Additional material examined. Finlandia: regio Uusimaa, silva prope Sipoo, ad strobilum putr. deiect., 24. VIII. 1979, leg. D. L. HAWKSWORTH (IMI 242607).

Until recently this species would have been classified in *Endophragmia* DUVERNOY et MAIRE on account of the occasional cups around the proliferating conidiogenous cells. HUGHES (1979) has shown that *Endophragmia* DUVERNOY et MAIRE 1920 is a nomen dubium, and has transferred most species to *Endophragmiella* SUTTON, redefining that genus as producing conidia which secede by rhexolysis and proliferating by percurrent growth of the cell directly below the last conidiogenous cell. The species described here does not have this characteristic and is therefore better placed in *Sporidesmium* LINK ex FR., a genus with several species having proliferations of the conidiogenous cell similar to that in *S. dolii*forme. From all other species of *Sporidesmium*, *S. dolii*forme is distinct mainly by the shape and size of its conidia.

**Symptodiella acicola** KENDRICK, Trans. Brit. Mycol. Soc. 41: 519–521, 1958.

Bohemia: silva austr. ab oppidulo Horažďovice, ad strobilum putr., 19. X. 1979, leg. V. H.-J. et D. W. M. (PRM 821718); silva orient. ab oppidulo Říčany; in acubus putr., 6. XI. 1979, leg. V. H.-J. et D. W. M. (PRM 821738, IMI 243715b); silva orient. a pago Krymlöv, merid.-orient. ab oppidulo Kostelec n. Čer. lesy, ad strobilum putr., 6. XI. 1979, leg. V. H.-J. et D. W. M. (PRM 821731); silva Zelená Bouda, prope oppidum Brandýs n. Lab., in acubus putr., 9. X. 1979, leg. D. W. M. (PRM 821687); silva orient. a pago Doksy, in acubus putr., 8. X. 1979, leg. D. W. M. (PRM 821657, IMI 243627d).

Britannia: regio Cheshire, silva Delamere, in acubus putr., 1956, leg. W. B. KENDRICK (IMI 69967, holotypus); Scotia, insula Rhum, prope vicum Kinloch, in acubus putr., VI. 1977, leg. D. W. M. (IMI 225357).

One of the commonest hyphomycetes on needles, twigs and cones of litter and trash, both in Czechoslovakia and Britain. The conidia are unusual among pinicolous species in being slightly wider at each end than in the centre.

**Taeniolella** anamorph of *Mytilidion gemmigenum* FÜCKEL, Symb. Mycol., p. 299, 1870.

Fig. 5: 1a.

Colonies effused, dark brown to black, with immersed and superficial, branched, septate, anastomosing, pale brown to brown, smooth or verruculose vegetative mycelium, 2–3.5  $\mu\text{m}$  wide. Conidiophores mononematous, semi-macronematous, usually short and unbranched, dark rusty brown, smooth to slightly verruculose, thick walled, septate, up to 20  $\mu\text{m}$  long, 5–7  $\mu\text{m}$  wide. Conidiogenous cells monoblastic, integrated, terminal, determinate. Conidia in short or long simple acropetal chains, straight or flexuous, cylindrical to elongate ellipsoidal, rounded to truncate at both ends, 1–5 septate, dark rusty brown, thick walled, smooth or occasionally verruculose, 15–27  $\times$  6–9  $\mu\text{m}$ . Ascocarps loosely scattered among colonies of the conidial stage.

Bohemia: Hrusice, ad corticem putr. deiect., 10. V. 1958, leg. M. SVRČEK (PRM 617308).

Members of the subfamily *Lophioideae* (*Hysteriales*) produce irregularly shaped, brown, multiseptate conidia from poorly developed conidiophores as anamorphs. SUTTON (1970) described *Peyronelia* stages of *Glyphium leptothecium* (EARLE)

SUTTON and *G. schizosporum* (MAIRE) ZOGG. Similarly a conidial stage of *Mytilidion scolecosporum* LOHMAN, very similar to that of *M. gemmigenum*, has been classified as *Septonema toruloideum* COOKE et ELLIS (DAOM 38778, DAOM 34384) or *S. obscurum* BERK. et CURT. (DAOM 34206, DAOM 38707). No conidial stage appears to have been reported hitherto for *M. gemmigenum*, a common species on conifer wood. We consider the genus *Septonema* to be inappropriate, and place this anamorph in *Taeniolella*.

**Thysanophora penicillioides** (ROUM.) KENDRICK, Can. Journ. Bot. 39: 820, 1961.

Bohemia: silva austr. ab oppidulo Horažďovice, in acubus putr. 19. X. 1979, leg. V. H.-J. et D. W. M. (PRM 821716); silva Zelená Bouda, prope oppidum Brandýs n. Lab., in acubus putr., 9. X. 1979, leg. D. W. M. (IMI 243671); prope oppidulum Dubá, in acubus putr., 8. X. 1979, leg. D. W. M. (IMI 243659a).

Britannia: Anglia orientalis, haud procul ab oppido Peterborough, in acubus putr., 1. X. 1978, leg. D. W. M. (IMI 232808); Anglia australis, reservatio naturae Slapton Ley, in acubus putr., 1. XI. 1973, leg. D. L. HAWKSWORTH (IMI 230368).

In Czechoslovakia, as in Britain, this species occurs occasionally on needles of pine litter and trash, but is more common on needles of *Picea*, particularly in the autumn. The clusters of conidiophores are often associated with small grey sclerotial balls which could be mistaken for immature perithecia if not examined carefully.

**Trichoderma longibrachiatum** RIFAI, Mycol. Papers, Kew, No. 116: 42, 1969.

Bohemia: silva Zelená Bouda, prope oppidum Brandýs n. Lab., ad strobilum putr. deiect., 9. X. 1979, leg. D. W. M. (IMI 243675).

Several species of *Trichoderma* are found on decaying pine remains, the commonest being *T. viride* PERS. ex S. F. GRAY and *T. polysporum* (LINK ex PERS.) RIFAI. *Trichoderma longibrachiatum*, distinguished by its smooth, greenish, somewhat larger (to 7  $\mu$ m long) elliptical conidia on uncrowded, irregularly arranged phialides, appears not to have been recorded previously from pines.

**Trimmatostroma scutellare** (BERK. et BROOME) M. B. ELLIS, More Dematiaceous Hyphomycetes, p. 28, 1976.

Bohemia: montes Šumava, reservatio naturae Zhůřská slat, sept.-occid. a pago Kvilda, in ramulo putr., 19. X. 1979, leg. V. H.-J. et D. W. M. (PRM 821705, IMI 243696); silva austr. ab oppido Mariánské Lázně, in ramulo putr., 16. XI. 1979, leg. V. H.-J. et D. W. M. (PRM 821743); Veltruby haud procul Kolín, in ramulo putr., 9. X. 1979, leg. D. W. M. (PRM 821693); montes Krkonoše, prope cacumen montis Kotel, ad strobilum *Pini mugo*, 4. XI. 1979, leg. D. W. M. (PRM 821726).

Britannia: Scotia borealis, regio Aberdeenshire, prope oppidulum Tarland, ad strobilum putr., 18. II. 1977, leg. D. W. M. (IMI 224842); Scotia, insula Rhum, prope vicum Kinloch, ad strobilum putr., 4. VI. 1977, leg. D. W. M. (IMI 225388).

The black, shiny sporodochia of this species are frequently seen, throughout the year, erumpent from twigs and cone scales, usually near the stalk of the cone, on pine trash in Czechoslovakia and Britain. The spores, which often resemble

a clenched fist, are unlike those of any other species. In Britain, *T. scutellare* is also found on *Larix* and *Abies*. Doubtless a careful search would reveal that in Czechoslovakia it colonises these substrates, too.

**Troposporella monospora** (KENDRICK) M. B. ELLIS, *More Dematiaceous Hyphomycetes*, p. 47, 1976.

Bohemia: montes Šumava, reservatio naturae Zhůřská slat, sept.-occid. a pago Kvilda, in acubus putr., 19. X. 1979, leg. V. H.-J. et D. W. M. (IMI 243697, PRM 821708); montes Krkonoše, prope cacumen montis Kotel, in acubus putr. *Pini mugo*, 4. XI. 1979, leg. D. W. M. (PRM 821724).

Britannia: regio Cheshire, in acubus putr., IX. 1957, leg. W. B. KENDRICK (IMI 71429, holotypus); Scotia borealis, regio Morayshire, silva Culbin, in acubus putr., 23. III. 1977, leg. D. W. M. (IMI 224352); Scotia, insula Rhum, prope domum Kilmory, in acubus putr., 20. VI. 1976, leg. J. A. LOVE (IMI 206722a); Anglia australis, silva haud procul ab urbe Canterbury, in acubus putr., 28. I. 1978, leg. D. W. M. (IMI 225381).

Common in Britain on needles, twigs and cones of litter and trash. Collections from Czechoslovakia only on needles from trash, but probably common on the other substrates here, too. The systematic position of this species is problematic. It is probably not congeneric with what is commonly thought to be *T. fusoma* KARST., the type of the genus. But the type material of *T. fusoma* appears to be lost. *Helicoma* CORDA, the genus in which our species was originally placed is not appropriate either. It is possible that a new genus will have to be created for this species eventually.

*Xiambola* MINTER et HOL.-JECH. gen. nov.

Etym. e *Blozamia*, anagr.

Conidiomata calyciformia, superficialia, sessilia, in margine a setis radiantibus circumducta. Setae e hyphis compluribus crassitunicatis compositae, cum parietibus gelatinosis. Conidiomata e stratis duobus composita; stratum basale, 1–2 cellulae alt., e hyphis brunneis, stratum superius e cellulis hyalinis vel minime coloratis, uterque cum textura laxa intricata. Conidiophora macronemata, non ramosa, hyalina, laevia. Cellulae conidiogenae integratae, terminales, arthroconidia formantes. Conidia cylindrica, hyalina, 1–septata, laevia, catenata et parum mucosa.

Species typica: *Xiambola mirabilis* MINTER et HOL.-JECH.

Conidiomata cupulate, superficial, sessile, surrounded by hairs radiating from the conidioma circumference helping to anchor it to the substrate; the hairs composed of several thick and gelatinous walled hyphae fusing together. The conidiomata composed of a thin basal plate (1–2 cells deep), of brown hyphae above which is a layer of hyaline or slightly pigmented hyphae both forming a lax textura intricata; on each side the conidiomata have walls composed of thick walled hyphae from which the setae arise. Conidiophores macronematous, unbranched, hyaline, smooth. Conidiogenous cells integrated, terminal, forming arthroconidia. Conidia cylindric, hyaline, 1 – septate, smooth, catenate and slightly gelatinous.

***Xiambola mirabilis* MINTER et HOL.-JECH. sp. nov.**

Fig. 2: 2c, 2d, 2e.

Conidiomata calyciformia, superficialia, sessilia, circularia, elliptica vel irregularia, usque ad 1.2 mm diam., griseo-brunnea vel ochracea, gelatinosa, nitentia, a setis e circuitione radiantibus circumducta. Stratum basale 1–2 cellulas alt., e hyphis crassitunicatis, brunneis, septatis, anastomosantibus, 2–3  $\mu\text{m}$  lat., texturam intricatam formantibus compositum. Muri conidiomatum e hyphis crassitunicatis, gelatinosis, texturam porrectam formantibus nati. Setae rectae vel reflexae, 50–200  $\mu\text{m}$  long., in basi usque ad 30  $\mu\text{m}$  lat., in apice hebeti attenuatae, 6–10  $\mu\text{m}$  lat., e compluribus hyphis aseptatis, hyalinis, crassitunicatis, gelatinosis, ad se fusis compositae. Stratum superius ad 75  $\mu\text{m}$  alt., e hyphis gelatinosis, septatis, hyalinis vel vix coloratis, 1.5–2  $\mu\text{m}$  lat., texturam laxe intricatam formantibus, ex qua conidiophora exoriuntur. Conidiophora macronemata, non ramosa, hyalina, laevia, dense adpressa. Cellulae conidiogenae integratae, terminales, hyalinae, laeves, arthroconidia formantes. Conidia in catenis simplicibus, hyalina, 1 – septata, tenuitunicata, cylindrica, laevia, aliquando minute guttulata, 15–20  $\times$  2–2.5  $\mu\text{m}$ , in mucro usque ad 0.5  $\mu\text{m}$  lat. involuta.

Habitat in acubus putridis deiectis *Pini sylvestris*.

Holotypus: Bohemia, silva prope vicum Nižbor, haud procul ab oppido Beroun, in acubus putr., 27. X. 1979, leg. D. W. M. (IMI 243636).

Conidiomata cupulate, superficial, sessile, circular, elliptical or irregular in shape, up to 1.2 mm diam., grey brown or ochraceous, gelatinous, shiny, surrounded by hairs radiating from the circumference. The basal plate 1–2 cells deep, composed of thick walled, brown, septate, anastomosing hyphae 2–3  $\mu\text{m}$  wide, forming a lax textura intricata. The walls of the conidioma contain thick walled, gelatinous hyphae forming a textura porrecta from which the hairs arise. Hairs 50–200  $\mu\text{m}$  long, up to 30  $\mu\text{m}$  wide at the base, tapering to a blunt apex 6–10  $\mu\text{m}$  wide, composed of several aseptate, hyaline, thick walled, gelatinous hyphae fused together, erect or reflexed. Above the basal plate there is another layer up to 75  $\mu\text{m}$  deep, composed of gelatinous, septate, hyaline or slightly brown hyphae 1.5–2  $\mu\text{m}$  wide, forming a lax textura intricata from which the conidiophores arise. Conidiophores macronematous, unbranched, hyaline, smooth, tightly packed together. Conidiogenous cells integrated, terminal, hyaline, smooth, producing arthroconidia. Conidia in simple chains, hyaline, 1 – septate, thin walled, cylindric, smooth, sometimes minutely guttulate, 15–20  $\times$  2–2.5  $\mu\text{m}$ , enveloped in mucus up to 0.5  $\mu\text{m}$  wide.

Bohemia: silva austr. ab oppido Mariánské Lázně, in acubus putr., 16. XI. 1979, leg. V. H.-J. et D. W. M. (IMI 243588).

The fructification of the fungus described above is in its shape and morphological structure quite intermediate between the typical acervulus and the typical sporodochium. The term conidioma which was recently proposed by B. KENDRICK and T. R. NAG RAJ (1979: vol. 1, p. 51) for all specialized, multi-hyphal, conidium-bearing structures (embracing acervuli, pycnidia, sporodochia, synnemata and all intermediate forms) is adopted here. This fungus is distinctive in that its

fructification develops superficially on the host substrate, however, with a prosenchymatous layer under the conidiogenous layer of conidioma, surrounded by distinct walls with hairs. This genus clearly belongs in a position intermediate between the *Hyphomycetes* and the *Coelomycetes*. On pines these intermediate genera are well represented (e.g. *Bloxamia* BERK. et BROOME, *Cenangiomycetes* DYKO et SUTTON, *Fujimycetes* MINTER et CAINE, *Lemalis* FR., *Linodochium* HÖHN., *Patellina* SPEG., *Pseudocenangium* KARST., *Septopateella* PETRAK) but none of these has conidiomata surrounded by hairs. *Xiambola* seems to be quite close to *Septotrullula* HÖHN. in many aspects, but this also lacks the hairs. *Xiambola mirabilis* has been collected twice from Bohemia, but has not been recorded from Britain.

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#### SUMMARY

During autumn 1979 a special attention was directed to collection and study of hyphomycetes occurring on decaying pine needles, twigs and cones in Czechoslovakia, mostly in Bohemia, and to examination of similar herbarium material in PRM.

The study resulted in the finding of 23 species of hyphomycetes not recorded from Czechoslovakia before. Some of them are common species in Czechoslovakia occurring frequently on dead wood and bark of coniferous and broadleaf trees; such as: *Acrogenospora* anamorph of *Farlowiella carmichaeliana* (BERK.) SACC., *Arthrobotrys oligospora* FRES., *Monodictys putredinis* (WALLR.) HUGHES, *Taeniolella* anamorph of *Mytilidion gemmigenum* FÜCKEL, *Thysanophora penicillioides* (ROUM.) KENDRICK, *Trichoderma longibrachiatum* RIFAI, *Trimmatostroma scutellare* (BERK. et BROOME) M. B. ELLIS. Several collected species are characteristic fungi on decayed pine needles, cones and twigs in Britain, and it seems that they are common also in Czechoslovakia, such as *Chulara* anamorph of *Ceratocystis autographa* BAKSHI, *Endophragmiella pinicola* (M. B. ELLIS) HUGHES, *Linodochium hyalinum* (LIB.) HÖHN., *Parasymphodiella clarkii* SUTTON, *Sphaeridium candidum* FÜCKEL, *Symphodiella acicola* KENDRICK, and *Troposporella monospora* (KENDRICK) M. B. ELLIS.

Seven further species are new, two of them being type of new genera.

*Blastophorum pini* MINTER et HOL.-JECH. known only from one specimen, is a distinct species with its conidiogenous cells always growing out of a broken conidiophore apex and with single apical conidia which fragment into simple chains of secondary arthroconidia.

*Bloxamia bohemica* MINTER et HOL.-JECH., seems to be not uncommon on pine needles in Bohemia, and is characteristic by the size of sporodochium, aseptate conidiophores limited to single conidiogenous cells and by the size of conidia.

Distinguishing features of *B. bohémica* and closely related species *B. truncata* BERK. et BROOME are compared.

*Junctospora pulchra* MINTER et HOL.-JECH. is a single species of the new monotypic genus *Junctospora* MINTER et HOL.-JECH. It is distinct in having conidia produced holoblastically in chains including small intercalary separating cells with deliquescent walls.

*Linodochium formosum* MINTER et HOL.-JECH. is one of the intermediate species between the *Hyphomycetes* and the *Coelomycetes*. Its difference from *L. hyalinum* (LIB.) HÖHN. is determined.

*Phaeostalagmus peregrinus* MINTER et HOL.-JECH. is the fourth species of the recently described genus *Phaeostalagmus* W. GAMS; differences between all its species are given.

*Sporidesmium doliiforme* MINTER et HOL.-JECH. is distinguished from the all known species of this genus by the size of conidia which are elongate ellipsoid to clavate, 2–5 septate; they can abort and form cups around the proliferating conidiogenous cells. The latter character suggests the genus *Endophragmiella* SUTTON, however, *S. doliiforme* has a different character of producing conidia and of proliferation of conidiogenous cells.

*Xiambola mirabilis* MINTER et HOL.-JECH. is a species of a monotypical new genus *Xiambola* MINTER et HOL.-JECH. which is intermediate between the *Hyphomycetes* and the *Coelomycetes*. It is closely related to *Septotrullula* HÖHN., but differs mainly in having the hairs around its fructifications.

For the first time *Linodochium hyalinum* (LIB.) HÖHN. as the anamorph of *Pseudohelotium pineti* (BATSCH ex FR.) FÜCKEL has been recorded. Also the anamorph of *Mytilidion gemmigenum* FÜCKEL has been classified and reported in *Taeniolella* HUGHES for the first time.

All species of *Chalara* — *C. affinis* SACC. et BERL., *C. longipes* (PREUSS) COOKE and *Chalara* anamorph of *Ceratocystis autographa* BAKSHI collected on pine needles in Czechoslovakia have been found to differ in minute morphological details from the descriptions given in the recent monograph of this genus.

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