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SPECIES OF EFFUSED APHYLLOPHORALES (BASIDIOMYCOTINA)

FROM THE SOUTHEASTERN UNITED STATES

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SUMMARY

Six new species of Corticiaceae are proposed, described and illustrated. They are Dendrothele bispora, Dendrothele subfusispora, Hyphoderma leoninum, Hyphoderma rimosum, Hypochnicium stratosum, and Peniophora sphaerocystidiata. In addition, Tubulicium capitatum, a new combination, and Stecchericium seriatum are also described and illustrated. Cultural characters are provided for four species.

KEYWORDS: Corticiaceae, Hericiaceae, cultures, wood decay fungi, systematics, new taxa, Aphyllophorales, Basidiomycotina.

INTRODUCTION

Our studies of lignicolous fungi in the southeastern United States revealed six new and two additional infrequently collected species. They are described and illustrated, with cultural characters given for several of the species. Materials and methods are those described in Burdsall and Nakasone (1981).

DESCRIPTION OF SPECIES

1. DENDROTHELE BISPORA Burds. et Nakas., sp. nov. Fig. 1

Species hyphis systematis dimiticis; hyphis skeletis subiculis brunneis afibulatis; hyphis generatoriis fibulatis hyalinis; basidiis bisterigmatibus; basidiosporis obovatis 11-13.5 x 6-7.5 μ m, a congeneribus diversa.

Holotypus: HHB 6762, on Taxodium distichum (L.) Rich., Hatchet Creek, Alachua County, Florida, leg. H. H. Burdsall, Jr., 27 VII 1972 (CFMR).

Basidiocarp annual, effuse in patches, coalescing into areas up to 6 x 2 cm, up to 0.2 mm thick, membranous, adherent; fertile areas

^{1/} Maintained at Madison, Wis., in cooperation with the University of Wisconsin.

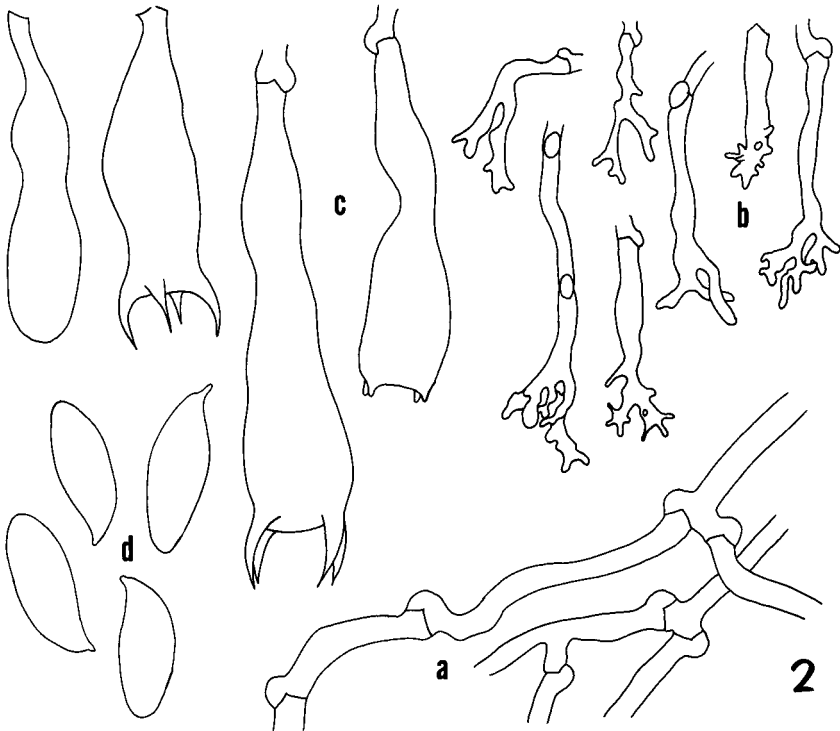
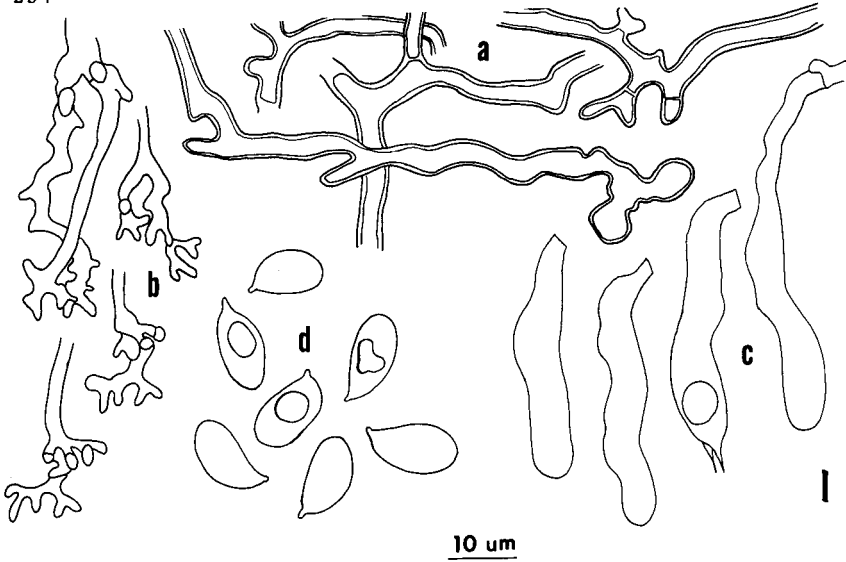


Fig. 1. *Dendrothele bispora* (HHB 6762, holotype): a. skeletal hyphae, b. dendrohyphidia, c. basidia, d. basidiospores. Fig. 2. *Dendrothele subfusispora* (HHB 6583, holotype): a. subhymenial hyphae, b. dendrohyphidia, c. basidia, d. basidiospores.

continuous, smooth, yellowish white (near 4A2) to orange grey (paler than 5B2); margin up to 2 mm broad, thinning, pubescent, irregular in outline, bicolored, olive on the inner portion and white on the edge; subiculum fibrous, olive-colored, about 200 μ m thick.

Hyphal system dimitic. Subiculum a textura intricata mainly of skeletal hyphae, 2.5-3.5(-4) μ m diam, thick-walled, brown, regularly to frequently branched, simple septate, smooth; generative hyphae difficult to observe, mainly located in the subhymenium, 2.5-3.5 μ m diam, thin-walled, hyaline, regularly branched, nodose septate at some septa, smooth or densely encrusted with hyaline crystals; subhymenium not apparent; cystidia lacking; dendrohyphidia profuse, forming an epithecium through which basidia protrude, 1.5-2.5 μ m diam, densely branched, thin-walled, surface densely encrusted with small hyaline crystals that often disperse when crushed in slide preparation; basidia clavate, 35 x 7-9 μ m, thin-walled, hyaline, nodose septate at base, 2-sterigmate, sterigmata up to 9 μ m long; basidiospores obovate, adaxially flattened, 11-13.5 x 6-7.5 μ m, hyaline, smooth, thin-walled, Melzer's -, acyanophilous.

Etymology: From bi (L., comp. = two) + spora (L., n. = spore), referring to the two-spored basidia found in this species.

Specimen examined: Holotype cited above.

Remarks: Dendrothele bispora is unique in this genus in that it possesses brown skeletal hyphae. It shares the bisterigmate condition with D. griseo-cana (Pers.) Bourd. et Galz. and D. commixta (Hoehn. et Litsch.) Erikss. et Ryv.

2. DENDROTHELE SUBFUSISPORA Burds. et Nakas., sp. nov. Fig. 2

Differt a species Dendrothele apseudocystidiis; basidiis 40-80 x 10-15 μ m; basidiosporis subfusiformibus; 18-24 x 6.5-9 μ m.

Holotypus: HHB 6583, on Ostrya virginiana (Mill.) K. Koch, Upper Sugar Foot Prairie, Alachua County, Florida, leg. H. H. Burdsall, Jr., 14 VII 1972 (CFMR).

Basidiocarp annual, broadly effuse, covering underside of small twigs and branches, up to 0.5 mm thick, membranous, adherent; fertile areas continuous, smooth, yellowish white (2A2); margin up to 1 mm broad, pubescent to farinaceous, irregular in outline, white.

Hyphal system monomitic. Abhymenial surface 10-20 μ m thick, a compact textura intricata, hyphae 2-3.5 μ m diam, thin-walled, hyaline, regularly branched, nodose septate, smooth; subiculum 40-60 μ m thick, a loose textura intricata, hyphae like those of abhymenial surface; subhymenium 20-40 μ m thick, a compact textura intricata, hyphae 2-3 μ m diam, thin-walled, hyaline, smooth, with frequent branching, nodose septate; cystidia lacking; dendrohyphidia cylindrical, densely branched at apex, 25-42 x 2.5-4.5 μ m, thin-walled, hyaline, smooth, protruding up to 10 μ m; basidia clavate, 40-80 x 10-15 μ m, hyaline, thin-walled, nodose septate at base, 4-sterigmate, sterigmata up to 12 μ m long, 3 μ m diam at base; basidiospores subfusiform to fusiform elliptical, 18-24 x 6.5-9 μ m, hyaline, thin-walled, smooth, Melzer's - or with possible slight amyloidity, acyanophilous.

Etymology: From sub (L., comp. = somewhat) + fusiformis (L., adj. = tapered toward both ends), referring to the shape of the basidiospores.

Specimen examined: Holotype cited above.

Remarks: The size and shape of its large subfusiform spores characterize D. subfusispora and prevent confusion with any of the other Dendrothele species.

3. HYPHODERMA LEONINUM Burds. et Nakas., sp. nov.

Fig. 3

Species area fecunda bublina; margine zonata (zona externa alba et interiora olivaceis); hyphis systematis dimiticis; cystidiis clavatis, 50-100 x 6-8 μ m, contentis refractis; structuris hymeniis similaribus dendrohyphidiis; basidiosporis anguste ellipsoideis, 5.5-7.5 x 2.5-3(-3.5) μ m congeneribus diversa.

Holotypus: HHB 4063, on bark of Acer sp., Rainbow Falls Trail, Great Smoky Mountains National Park, Sevier County, North Carolina, leg. H. H. Burdsall, Jr., 29 VI 1970 (CFMR).

Basidiocarp annual, broadly effuse, up to 0.5 mm thick, membranous, rather tough and fibrous, adherent, cracking slightly in older areas; fertile areas continuous, smooth, pale orange (near 5A3) to brownish orange (near 5C6); margin about 1 mm broad, fimbriate, thinning, irregular in outline, bicolored, inner band brownish orange (near 5C6) with outer edge white; subiculum fibrous, and concolorous with fertile area or slightly paler and somewhat layered.

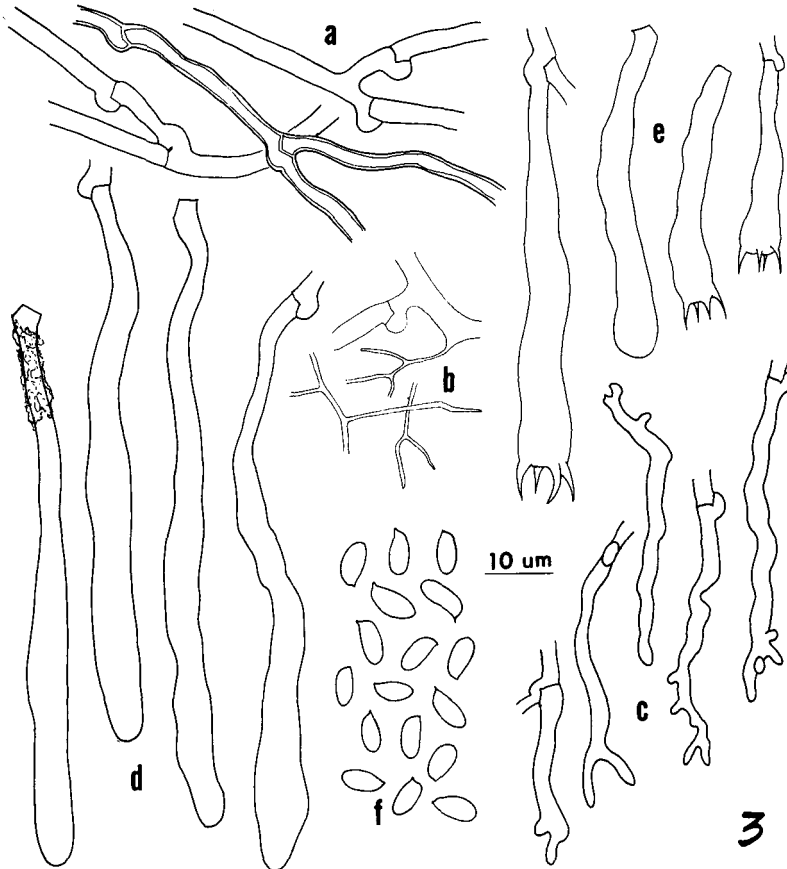


Fig. 3. Hyphoderma leoninum (HHB 4063, holotype): a. subicular hyphae, b. binding-type hyphae, c. dendrohyphidia-like structures, d. cystidia, e. basidia, f. basidiospores.

Hyphal system dimitic. Subiculum a textura intricata, hyphae 2-3 µm diam, firm-walled to thick-walled, hyaline, with frequent branching, nodose septate, surface smooth to irregularly encrusted with hyaline or pale yellow crystals, also with much branched, narrow, binding-type hyphae up to 1 mm diam, some lacking a lumen, hyaline, smooth, branched at nearly right angles; subhymenium a compact textura intricata, hyphae thin-walled, hyaline, 2-3 µm diam, smooth or occasionally encrusted with hyaline to pale yellow crystals, nodose septate, with frequent branching; cystidia arising in subhymenium but protruding through subsequent hymenia and appearing as pseudocystidia, clavate to nearly cylindrical or occasionally clavipedunculate, 50-100 x 6-8 µm, hyaline, thin-walled except near base where walls are sometimes thickened, nodose septate at base, contents densely staining in phloxine, unchanged in sulfuric benzaldehyde, aseptate, mostly embedded with only the apex extending above the basidia up to 10-15 µm; dendrohyphidia-like structures (possibly merely hyphae overgrowing the hymenium) with small apical digitate branching at apex, 30-50 x 2.5-3 µm, thin-walled, hyaline, smooth, nodose septate at base; basidia clavate, 30-40(-50) x 6-7.5 µm, hyaline, thin-walled, nodose septate at base, 4-sterigmate, sterigmata up to 6 µm long; basidiospores ellipsoid to narrowly ellipsoid, 5.5-7.5 x 2.5-3(-3.5) µm, hyaline, thin-walled, smooth, Melzer's -, acyanophilous.

Etymology: From leoninum (L., adj.), relating to lion, as in the color of its pelt.

Specimens examined: Holotype cited above. OHIO--W. B. Cooke 33049, on bark of rotted hardwood, Hamilton County (CFMR, MU).

Remarks: Hyphoderma leoninum is unique in possessing narrowly ellipsoid basidiospores and long, clavate cystidia with densely staining contents. In addition, the scattered, much branched binding-type hyphae occasionally seen are unique to H. leoninum. Also distinctive are its tan color and zonate margin.

Cultural description:

Growth characters: Growth on MEA (malt extract agar) moderate, 18-32 mm diam at 1 wk, 58-66 mm diam at 2 wk; mats white, appressed, thick, felty to woolly around inoculum, thinning out toward margins, becoming raised, woolly to cottony, tough, peels easily from agar at 2 and 4 wk, by 6 wk white, thick, thinning out toward margins, appressed, chamois-like in central part of mat, becoming slightly raised, woolly to felty, but finally appressed, subfelty in marginal zone; margins even, appressed; odor absent at 2 wk, faint, unpleasant at 4 wk; agar discoloration none; not fruiting by 6 wk. Oxidase reactions after 1 wk on GAA (gallic acid agar) and TAA (tannic acid agar) negative, stain, or strongly positive, growth none.

Microscopic characters: Advancing zone hyphae 2.5-5 µm diam, thin-walled, nodose septate, moderately branched. Submerged hyphae 1.5-6 µm diam, thin- to firm-walled, nodose septate, moderately branched. Aerial hyphae (a) 1-4 µm diam, thin-walled, nodose septate, moderately branched; (b) 0.5-1.5 µm diam, hyaline, thick-walled, aseptate, moderately to frequently branched. Cystidia globose to clavate, 6-9 µm diam, often stalked, up to 75 µm long, hyaline, thin-walled, terminal, scattered in aerial mat at 2 and 6 wk.

Culture studied: HHB 4063.

Key patterns: A-0-M-1-11-16, A-P-M-1-11-16.

Species code: 1.3.15.24.32.36.38.45-46.(53).54., 2.3.15.24.32.36.38.45-46.(53).54.

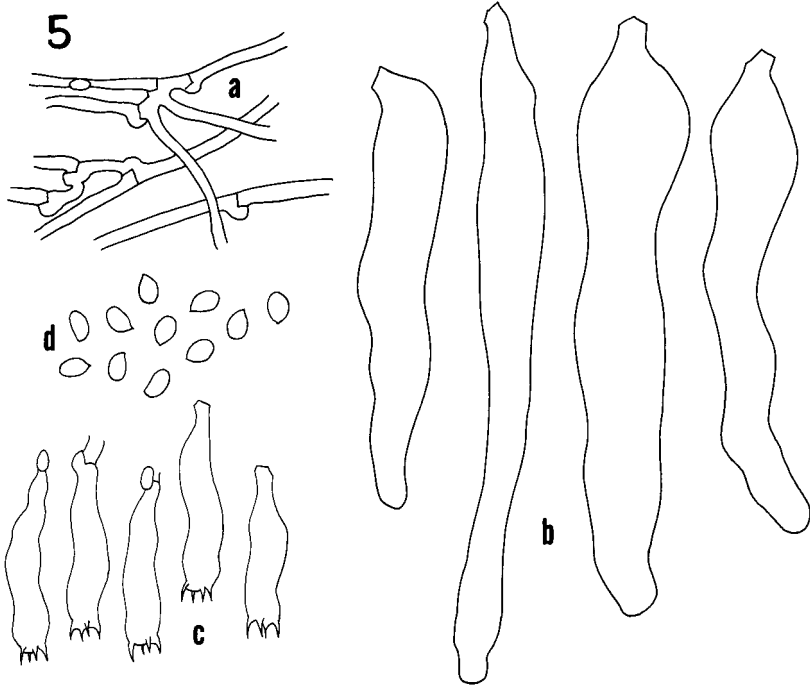
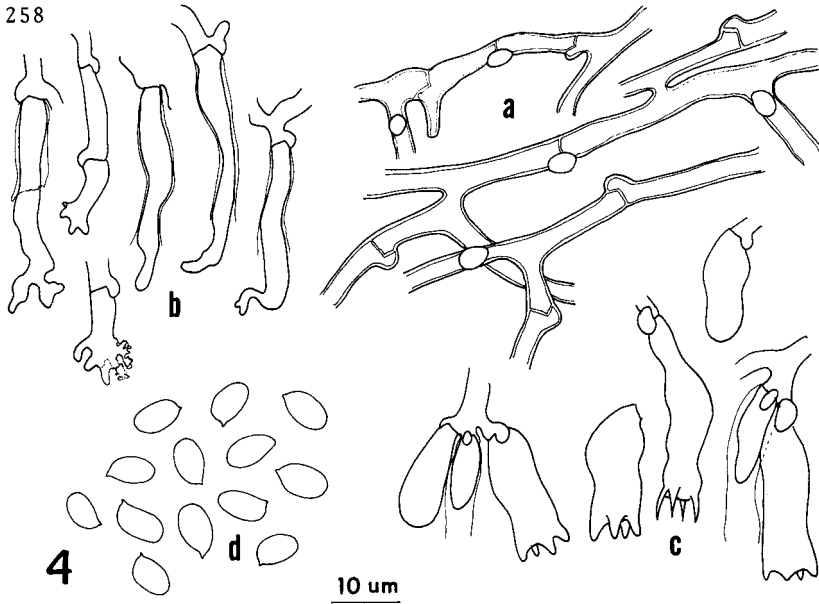


Fig. 4. *Hyphoderma rimosum* (HHB 6892, holotype): a. subicular hyphae, b. dendrohyphidia-like structures, c. basidia, d. basidiospores.
 Fig. 5. *Hypochnicium stratosum* (HHB 9736, holotype): a. subicular hyphae, b. cystidia, c. basidia, d. basidiospores.

4. HYPHODERMA RIMOSUM Burds. et Nakas., sp. nov. Figs. 4, 6-9

Species basidiocarpis rimosis; structurishymeniis similaribus dendrohyphidiis; basidiis breviclavatis sed parumbasis inflatis; basidiosporiæ ellipsoideis, 6.5-8 x 3.5-4 µm congeneribus diversa.

Holotypus: HHB 6892, on Liquidambar styraciflua L., behind Sears, U.S. Route 441, Gainesville, Alachua County, Florida, leg. H. H. Burdsall, Jr., 6 VII 1972 (CFMR).

Basidiocarp effuse, crustaceous, thin; fertile area greyish orange (5B3-5B4) to greyish yellow (near 4B3), densely cracked into small polygons less than 1 mm diam and exposing subiculum; subiculum thin, white, fibrous; margin poorly differentiated, very thin, white, fimbriate irregular in outline.

Hyphal system monomitic. Subiculum a compact textura intricata or sometimes with agglutinated hyphae, thin-walled to firm-walled, 2-4 µm diam, hyaline, sparsely or densely encrusted with hyaline crystals, nodose septate, with regular branching; subhymenium a compact textura intricata, hyphae 2.5-3.5 µm diam, thin-walled, much contorted, nodose septate, with frequent branching; dendrohyphidia-like structures variable, sometimes simple but often with contorted and branched apex, 2.5-4 µm diam at base, tapering to 1.5-2.5 µm diam at apex, smooth or encrusted with hyaline crystals at apex, nodose septate at base; basidia nearly cylindrical or more frequently with a probasidial swelling at base, (18-)21-27(-35) x 5.5-6.5(-9) µm, hyaline, thin-walled, nodose septate at base, 4-sterigmate, sterigmata up to 6 µm long; basidiospores ellipsoid with an adaxial flattening, 6.5-8 x 3.5-4 µm, hyaline, thin-walled, smooth, Melzer's -, acyanophilous.

Etymology: From rimosus (L., adj. = full of cracks), referring to the densely cracked hymenial surface.

Specimens examined: Florida--HHB 4836, on Quercus virginiana L., Highlands County; HHB 6892, holotype cited above; FP 104010, on fallen hardwood branch, Duvall County. Maryland--HHB 725, on Acer sp., Prince Georges County; FP 104399, on fallen hardwood branch, Talbot County. Mississippi--FP 103494, on fallen hardwood branch, Harrison County; HHB 8884, on Ilex vomitoria Ait., Stone County; HHB 8887, on Cornus florida L., Stone County; HHB 8895, on Lagerstroemia indica L., Harrison County.

Remarks: Hyphoderma rimosum is unique among Hyphoderma species in possessing densely cracked, crustaceous basidiocarps with the white subiculum exposed in the cracks. It is also distinctive microscopically in possessing dendrohyphidia-like structures sometimes encrusted in the apex and, in some specimens, pronounced probasidial swelling. Hyphoderma rimosum is associated with a white rot of dead and fallen hardwood branches. It appears to be restricted to the East Coast and the southeastern United States.

Cultural description:

Growth characters: Growth on MEA moderate, (45-)60-80 mm diam at 2 wk; mats white, zonate or not, around inoculum appressed to slightly raised, silky or woolly, becoming raised, silky to woolly toward margins, overall aspect of mat is that of numerous hyphal strands overlapping and intersecting, distinct near inoculum, but becoming blurred toward margins at 2 wk, by 6 wk mats firm, marginal areas appressed to raised, woolly to felty, usually forming short, aerial tufts of mycelium scattered over mat or against the petri plate sides, these tufts composed of a slender stalk that usually expands at the apex; margins even, dense, appressed to slightly raised; odor none;

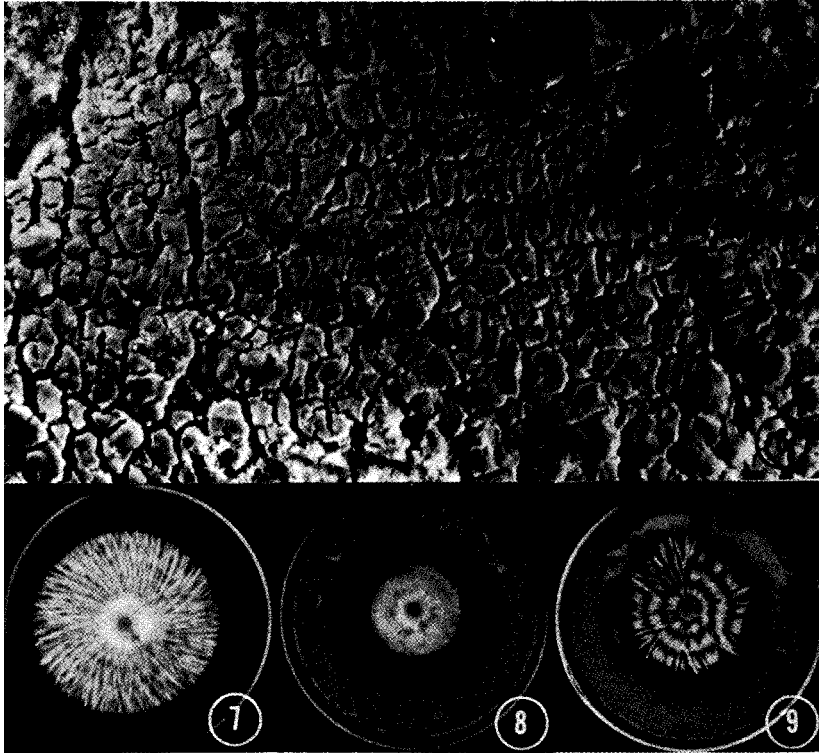
agar discoloration none; not fruiting by 6 wk. Oxidase reactions after 1 wk on GAA strong, mat 0-trace, on TAA strong, mat 12-24 mm diam.

Microscopic characters: Advancing zone hyphae 2-4 μm diam, thin-walled, nodose septate, sparingly branched. Submerged hyphae 1.5-5(-6) μm diam, thin- to firm-walled, nodose septate, moderately branched, in 2 wk-old cultures larger hyphae predominate, by 6 wk consisting primarily of richly branched hyphae 1.5 μm diam, thin- to firm-walled, nodose septate. Aerial hyphae similar to submerged hyphae except encrusted with tiny, hyaline crystals at 2 wk that sometimes develop into a crystalline sheath by 6 wk, and also with large, coarse crystals scattered in aerial mat.

Cultures studied: HHB 725, HHB 4836, HHB 6392, HHB 8884, HHB 8887, HHB 8895, FP 103494.

Keypattern: A-P-M-1-10-16A-P-M-1-10. Species code: 2.3.7.32.36.38.45-47.54.

Remarks: The outstanding feature of this fungus in culture is the texture of the mats on MEA and TAA. The TAA mat at 2 wk is (a) white, raised, cottony, with a few short cordons developing from



Figs. 6-9 Hyphoderma rimosum. Fig. 6. Basidiocarp surface (HHB 6892) X 5. Fig. 7. Two week-old culture mat, HHB 8887 on MEA. Fig. 8. Two week-old culture mat, HHB 8895 on TAA. Fig. 9. Two week-old culture mat, HHB 8884 on TAA.

inoculum, or (b) white to yellowish white (4B2), appressed, with numerous hyphal strands developing from inoculum and spreading out in fanlike pattern, occasionally developing short aerial tufts of mycelium. Although similar in culture to some species of Naematoloma, which develop yellow-brown mats on MEA, MEA mats of H. rimosum always remain white.

5. HYPOCHNICIUM STRATOSUM Burds. et Nakas., sp. nov. Fig. 5
 Basidiocarpis stratosis, crassis; cystidiis obclavatis, laevibus, 60-100 x 9-12(-20) μ m; basidiosporis ellipsoideis, 4-5.5 x 2.5-3.5 μ m.
 Holotypus: HHB 9736, on Fagus grandifolia Ehrh., Woodyard Hammock, Tall Timbers Research Station, Leon County, Florida, leg. H. H. Burdsall, Jr., 2 VIII 1977 (CFMR).

Basidiocarp annual, broadly effuse, up to 1 mm thick, crustaceous; fertile area yellowish white (near 3A2), smooth at first, becoming rimose in age, with subiculum showing through cracks; margin very narrow, fimbriate, white, irregular in outline; subiculum concolorous with fertile area, fibrous, appearing layered when viewed in longitudinal section.

Hyphal system monomitic. Subiculum very thin and difficult to observe, distinct hyphae found only at margin, hyphae 2-3 μ m diam, thin-walled, hyaline, smooth, nodose septate, frequently branched, with some very fine, much branched hyphae up to 1 μ m diam arising laterally from these hyphae, aseptate, smooth; subhymenium composing most of basidiocarp, up to 1 mm thick, both spores and cystidia embedded in the tissue, hyphae not distinguishable; cystidia arising in subhymenium but embedded by overgrowth of later-developed hymenia, obclavate to nearly cylindrical, 60-100 μ m long, 9-12 μ m wide near apex, swollen up to 20 μ m wide near basal septum, thin- to firm-walled, smooth, nodose septate at base, not reacting with sulfuric benzaldehyde, older cystidia sometimes with contents becoming brownish yellow and refractive, some protruding up to 20 μ m above basidia apices; basidia clavate but often with a median swelling, 24-30 x 5-5.5 μ m, hyaline, thin-walled, nodose septate at base, 4-sterigmate, sterigmata up to 3 μ m long; basidiospores ellipsoid, adaxially flattened, 4-5.5 x 2.5-3.5 μ m, hyaline or with a pale yellow tint, thick-walled, smooth, Melzer's -, acyanophilous.

Etymology: From stratosum (L., adj. = in layers), because of the layered appearance of the basidiocarp in cross section.

Specimen examined: Holotype cited above.

Remarks: The presence of thick-walled basidiospores is the primary character used in deciding on Hypochnicium as the generic placement for H. stratosum. The basidiocarp construction, the presence of the long flexuous cystidia, and the compact, thick fruiting body are reminiscent of the genus Gloeocystidiellum, but the nonamyloid basidiospores argue against that generic disposition.

6. PENIOPHORA SPHAEROCYSTIDIATA Burds. et Nakas., sp. nov. Figs. 10,13-14

Differt a species Peniophora dendrohyphidiis, pseudocystidiis sphaericis vel subsphaericis, inclusis, 40-50 μ m latis, parietibus crassis; basidiosporis ellipsoideis, 5-6.5(-8) x 3-3.5(-4) μ m.

Holotypus: HHB 8827, on Vaccinium sp., Harrison Experimental Forest, Road H 2, De Soto National Forest, Harrison County, Mississippi, leg. H. H. Burdsall, Jr., 26 III 1976 (CFMR).

Basidiocarp annual, effuse in small patches, coalescing and broadly effuse on smaller branches, up to 0.1 mm thick, crustaceous, adherent, with some cracking; fertile areas continuous, smooth, yellowish white (4A2) to greyish yellow (4B4); margin abrupt, white or concolorous with fertile area; subiculum compact, white, extremely thin.

Hyphal system monomitic. Subiculum a textura intricata, hyphae somewhat contorted, 2-4 μ m diam, firm-walled, hyaline, with frequent branching, nodose septate, smooth; subhymenium a textura intricata, hyphae thin-walled, 2-4 μ m diam, hyaline, smooth, nodose septate, with frequent branching; dendrohyphidia densely branched at apex, 25-30 x 3-5 μ m, thin-walled, hyaline, encrusted on fingerlike branches, nodose septate at base; pseudocystidia broadly ovoid to globose, 25-40 x 25-50 μ m, thick-walled (walls up to 3 μ m thick), smooth, embedded in subiculum nearly on the substrate surface, smooth, turning dark blue black in sulfuric benzaldehyde, cystidia subulate, 25-30 x 5-6 μ m, hyaline, thin-walled, smooth, protruding to just beyond basidia; basidia cylindrical with a basal or nearly basal swelling, 24-35 x 5-6 μ m, thin-walled, hyaline, nodose septate at base, 4-sterigmate, sterigmata up to 6 μ m long; basidiospores narrowly ovoid, adaxially depressed, 5-6.5(-8) x 3-3.5(-4) μ m, hyaline, thin-walled, smooth, Melzer's -, acyanophilous.

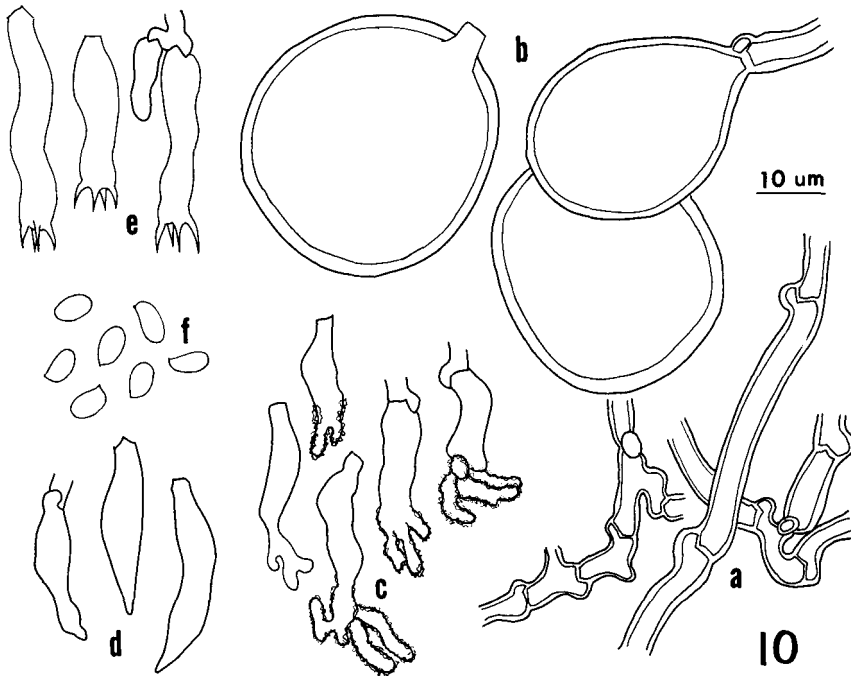


Fig. 10. Peniophora sphaerocystidiata (HHB 8827, holotype):
 a. subicular hyphae, b. pseudocystidia, c. dendrohyphidia,
 d. cystidia, e. basidia, f. basidiospores.

Specimen examined: Holotype cited above.

Remarks: Peniophora sphaerocystidiata is unique among the Peniophora species that possess dendrohyphidia in that it also possesses hymenial cystidia and large, ovoid to spherical pseudocystidia embedded in the subiculum.

Cultural description:

Growth characters: Growth on MEA moderately rapid, 53-59 mm diam at 1 wk, plates covered (90+ mm diam) at 2 wk; mats white, appressed, thin, subfelty around inoculum, becoming raised, moderately thick, cottony to woolly toward margins at 2 wk, by 4 and 6 wk white, appressed, thin, subfelty throughout, with scattered small or large patches of denser, tougher, felty mycelium, growing vigorously up plate sides, this mycelium white to brownish orange (near 5C6) or brown (6E5); margins even, raised; odor sweet, fruity at 2 and 4 wk; agar discoloration none at 2 wk, greyish orange (near 5B5) to brownish orange (near 5C6) at 4 and 6 wk; not fruiting by 6 wk. Oxidase reactions after 1 wk on GAA strong, mat trace-I4 mm diam, on TAA strong, mat 36-37 mm diam.

Microscopic characters: Advancing zone hyphae 3.5-6 μ m diam, thin-walled, long-celled, nodose septate, sparingly branched. Submerged hyphae 1-7 μ m diam, thin-walled, larger hyphae firm-walled, nodose septate, moderately branched. Aerial hyphae similar to submerged hyphae except hyphal segments heavily encrusted with hyaline crystals, by 4 wk hyphae of felty areas firm-walled to thick-walled, often agglutinated. Pseudocystidia variously shaped, globose to clavate or cylindrical, 2-10 μ m diam, hyaline, thin-walled, terminal or intercalary, filled with pale yellow, refractive, oil-like material, numerous in aerial mat at 2 and 6 wk.

Culture studied: HHB 8827.

Key pattern: A-P-I-1-10-14-16. Species code: 2.3.15.32.36.37.
(38).39.43.50.54.

7. STECCHERICIUM SERIATUM (Lloyd) Maas G., Fig. 11
Proc. K. Ned. Akad. Wetens. Ser. C 69:325. 1966.
= Steccherinum westii Murr., Bull. Torrey Bot. Cl. 67:276. 1940.
= Hydnum westii (Murr.) Murr., Bull. Torrey Bot. Cl. 67:281.
1940.

Basidiocarp annual, effuse to effuse-reflexed, reflexed portion up to 6 mm wide, imbricate, pileus surface villous to nearly glabrous in older areas, nearly white but with creamy tint; margin up to 1 mm thick; fertile area hydnaceous, greyish orange (5B3), teeth up to 2 mm long, slender, context up to 2 mm thick, nearly white with cream tint.

Hyphal system dimitic. Subiculum a textura intricata, generative hyphae 3-5.5 μ m diam, thick-walled, walls up to 1.5 μ m thick, hyaline, nodose septate, much branched, usually branching at or very near clamp connection, smooth, also with gloeopleurous hyphae widely scattered through context, thin- to thick-walled, with densely granular to globular contents, not staining in sulfuric benzaldehyde; tooth trama a textura porrecta, hyphae like those of subiculum but with hyphae mainly of the gloeopleurous type, up to 10 μ m wide, apices of these hyphae frequently turning and protruding into the hymenium, at tooth apex a profusion of hyphae 2-3 μ m broad, thin-walled, nodose septate; hymenium penetrated by numerous pseudocystidia from the gloeopleurous hyphal system, these up to 10 μ m diam, thin-walled, hyaline, irregularly swollen and constricted, sometimes with an apical bead, smooth, contents not reacting in sulfuric benzaldehyde; basidia clavate, 12-15(-20) x 3-4 μ m, hyaline, thin-walled, nodose septate at base,

4-sterigmate, sterigmata up to 3.5 μm long; basidiospores ellipsoid, 3-4 x 2-2.5 μm , with finely granulose surface, firm-walled, with slight yellowtint, amyloid, acyanophilous.

Specimens examined: Florida--HHB 9499, on Quercus sp., Tall Timbers Research Station, Leon County; F 8421, on hardwood, Hawthorne, and F 18006 (Holotype), on Quercus sp., Newnan's Lake, Alachua County, both as H. westii (FLAS).

Remarks: The characters of this species indicate its close relationship to the members of the genus Hericium. It possesses the thick-walled hyphae, a gloeopleurous hyphal system not reacting with sulfuric benzaldehyde, and the small, oval, amyloid, roughened basidiospores characteristic of that group. It belongs in the family Hericiaceae.

Maas Geesteranus and Lanquetin (1975) described Stecchericum seriatum in culture, reporting it to be tetrapolar. Our matings of singled-spored isolates of HHB 9499 confirmed those results:

$A_1B_1 = 1, 2, 3, 6, 8, 13, 19$; $A_2B_2 = 7, 16$; $A_1B_2 = 4, 9, 20$; $A_2B_1 = 5, 15, 18, 22$.

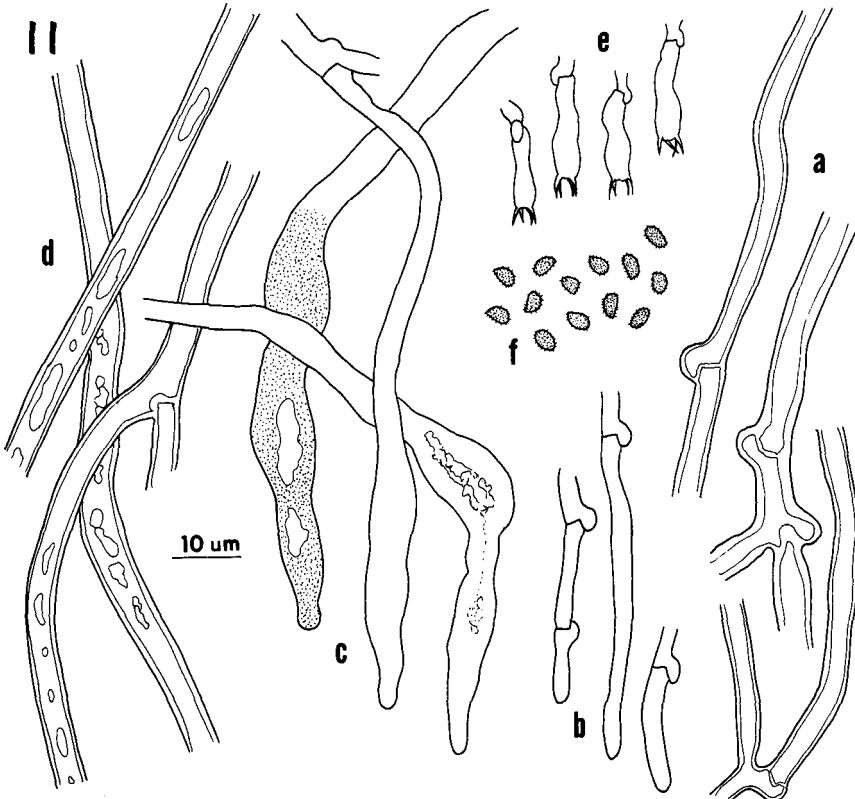


Fig. 11. Stecchericum seriatum (HHB 9499): a. subicular hyphae, b. hyphae from tooth apex, c. pseudocystidia, d. gloeopleurous hyphae, e. basidia, f. basidiospores.

8. TUBULICIUM CAPITATUM (D. P. Rogers et Boquiren)
 Burds. et Nakas., comb. nov. Figs. 12, 15-17

= Epithele capitata D. P. Rogers et Boquiren in Boquiren,
 Mycologia 63:942. 1971.

Basidiocarp annual, broadly effuse, up to 0.2 mm thick, pruinose to pubescent, adherent; fertile areas continuous, pubescent to hispid, yellowish white (4A2); margin up to 1 mm broad, very thin, pubescent, irregular in outline, concolorous with the fertile area; subiculum fibrous, concolorous with the fertile area, up to 100 μ m thick.

Hyphal system monomitic. Subiculum a textura intricata, hyphae indistinct, 2-2.5 μ m diam, thin-walled, hyaline, frequently branched, nodose septate, smooth; subhymenium indistinct, hyphae like those of subiculum; pseudocystidia scattered throughout the subiculum and sub-

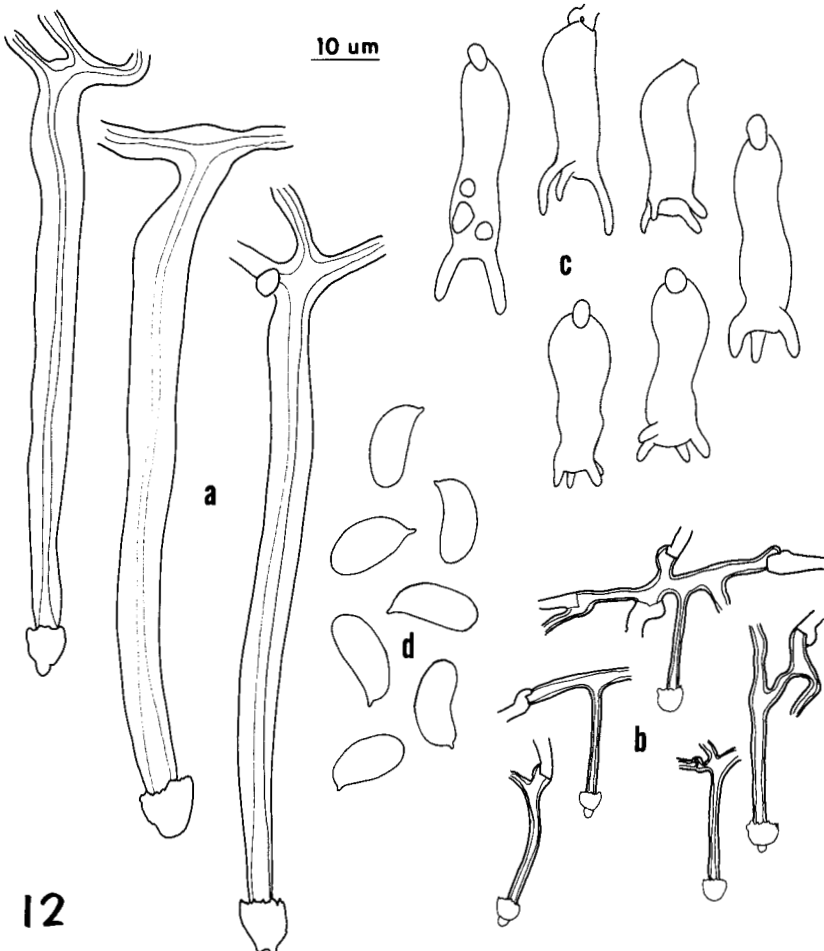
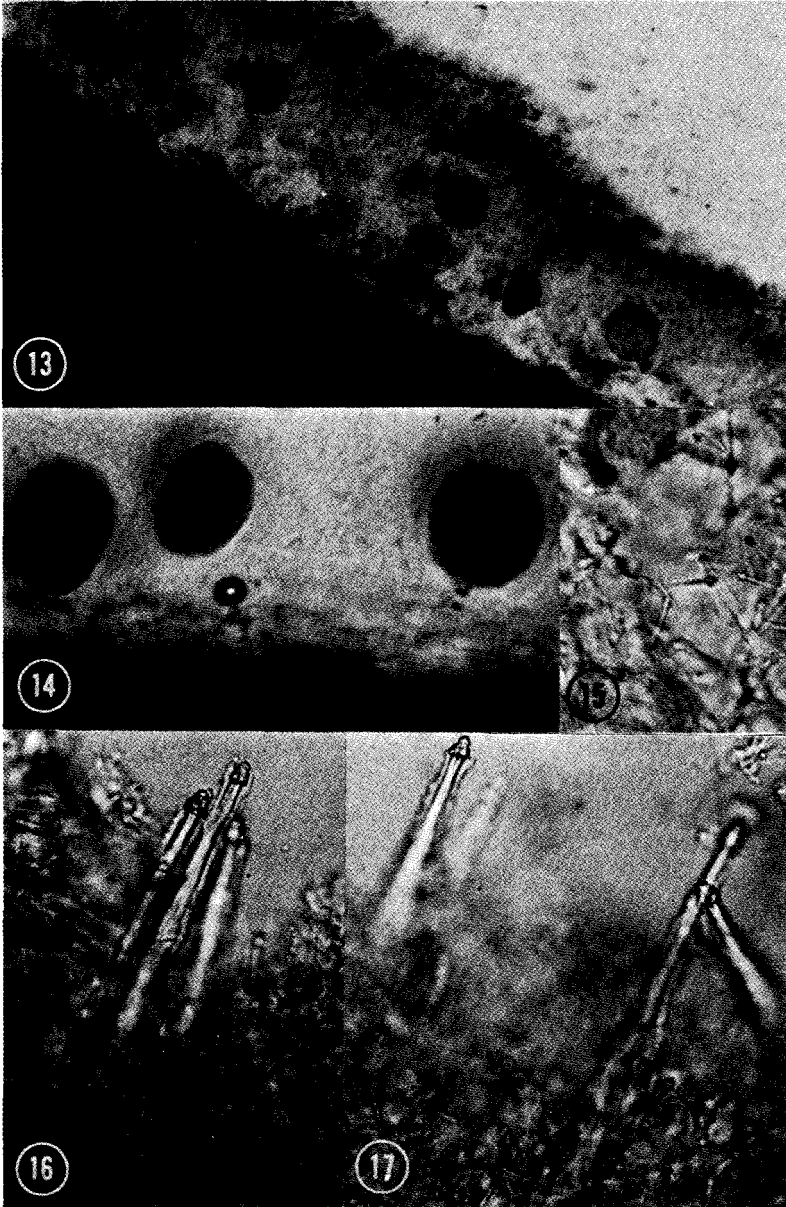


Fig. 12. Tubulicium capitatum (HHB 6714): a. large pseudocystidia, b. small pseudocystidia, c. basidia, d. basidiospores.



Figs. 13-17. Photomicrographs of Peniophora sphaerocystidiata (HHB 8827) and Tubulicium capitatum (HHB 6714).
Figs. 13-14. Peniophora sphaerocystidiata, sphaerocystidia in cross section mounted in sulfuric benzaldehyde. 13. X 200. 14. X 350.
Figs. 15-17. Tubulicium capitatum, capitately encrusted pseudocystidia of various sizes. X 350.

hymenium in no particular arrangement, cylindrical to nearly subulate, 18-120 x 1-9 μm , with a crystalline collar near the apex, the largest protruding through the hymenium, walls up to 4 μm thick, smooth, hyaline or yellow, with one or several roots, clamped at base, enveloped by several indistinct, hyaline hyphae, 1-2 μm diam; basidia utriform, constricted below apex and with a swollen base, 21-25(-30) x 5.5-8 μm , thin-walled, hyaline, nodose septate, 4-sterigmate, sterigmata digitate, up to 12 μm long; basidiospores narrowly ellipsoid to broadly allantoid, 11-13 x 5-6.5 μm , hyaline, thin-walled, smooth, Melzer's -, acyanophilous.

Specimens examined: Florida--R. Singer (F 832), on Phoenix canariensis Chaub., holotype of E. capitata, Dade County (ILL); HHB 6714, on Sabal palmetto (Walt.) Lodd. in J. A. et J. H. Schult., Marion County (CFMR).

Remarks: This report of T. capitatum is only the second collection we know of. When Rogers and Boquiren described the species (Boquiren 1971), they did not clearly specify that the capitate pseudocystidia vary so greatly in size and are distributed throughout the entire basidiocarp.

Tubulicium capitatum has pseudocystidia similar to those found in Tubulicrinus hamatus (Jacks.) Donk and Tubulicrinis corneri Jülich. However, the cystidia in Tubulicium capitatum do not dissolve in 10% KOH as they do in the Tubulicrinis species. There is also the possibility of confusing Tubulicium capitatum with Xenasma macrospora Liberta, but in the latter species the cystidia are at least twice as large and do not have the capitate encrustations found in the former.

The generic name Tubulicium Oberw. (1965) is a problem because of the nearly simultaneous publication of Tubulixenasma Parm. (1965). Tubulicium was published in June 1965, according to the front page of the journal. Tubulixenasma was published either in May 1965 (fide Index of Fungi 3(16):473. 1968), June 21, 1965 (Parmasto, 1968), or in July 1965, (fide Index of Fungi 3(20):568. 1970). We are accepting July 1965 as the publication date for Tubulixenasma. However, if Parmasto (1968) is correct in his citation (21 June 1965), and then Tubulixenasma must take priority.

Jülich (1981) erected the family Litschauerellaceae for Litschauerella Oberw. but excluded Tubulicium despite the fact that Jülich and Stalpers (1980) declared Litschauerella and Tubulicium to be synonymous. We support the latter contention and not the former. Unfortunately, Oberwinkler (1965) published no valid combinations when he proposed the generic name Tubulicium. All combinations lacked complete citation for the basionym. Jülich (1979) validated these combinations later.

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