THE GENUS *PENIOPHORA* IN ILLINOIS

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ABSTRACT.—A biogeographic and taxonomic survey of thirty-two species of the genus *Peniophora* in Illinois was made. Twenty-four of these species represent new reports for Illinois. Reference is made to Illinois locations, and to states and countries where the species have been reported to occur. A new range extension for two species, *P. subulata* and *P. argillacea*, is noted.

INTRODUCTION

Members of the genus *Peniophora* are resupinate fungi belonging to the class Basidiomycetes, sub-class Homobasidiomycetes, series Hymenomycetes, order Polyporales, and family Corticiaceae. The genus *Peniophora* was segregated from the genus *Corticium* by M. C. Cooke (1879) to accommodate some of the species that possess in the hymenium projecting, sterile, hair-like structures called cystidia. Subsequent workers developed the generic concept that all cystidiate Corticiaceae belong to the genus *Peniophora*, and that all non-cystidiate members of the family belonged to the genus *Corticium*. The author has followed this concept of *Peniophora* in order to prevent confusion, although recent investigators such as Rogers (1943), Donk (1956, 1957), Eriksson (1950, 1958), and others have segregated *Peniophora* into several genera.

Most species of *Peniophora* are common and ubiquitous. Fruiting body formation takes place on decayed coniferous and deciduous wood or bark, and less often on leaves, conifer needles and cones, other fungi, lower plants, and soil. Seemingly, this genus is important in the decomposition of the above mentioned substrates.

The species of *Peniophora* vary considerably in color, in fact so much so that little value can be attached to it for taxonomic identification. The fruiting body of *Peniophora* is resupinate. It lies flat on the substrate, and in some species is somewhat reflexed at the margins. It may be widely effused or occur in small patches which may or may not coalesce. The surface of the fructification varies in appearance from smooth to tooth-like. It may be continuous or discontinuous, and with or without fissures. The margin usually exhibits a radial pattern of mycelial growth, often with occasional rhizomorphs, and may thin out, end abruptly, or reflex. The fungal body usually consists of three distinct layers, the hymenium, subhymenium, and subiculum. The hymenium is at the surface of the fungal body and is composed of structures of great importance in the identification of species. These structures are the basidia, cystidia, gloeocystidia, and cystidioles, with the lat-

ter two being absent in many of the species of *Peniophora*. Also of much taxonomic importance are the basidiospores that are borne on the sterigmata of the basidia.

The inconspicuous nature of this genus and the difficulties involved in studying the group have discouraged many investigators. Prior to this study, only eight species had been reported for Illinois. Collections made by the author, along with collections made by D. P. Rogers and A. E. Liberta, have contributed 24 additional species of *Peniophora* previously unreported for this State.

Methods

All descriptions of the 32 species of *Peniophora* in Illinois are based on Illinois material either collected by the author, or housed in the Farlow Herbarium, the Illinois State University Herbarium, or the personal herbarium of A. E. Liberta. These herbaria are abbreviated (RJH), (FH), (ISU), and (AEL) respectively. All measurements and microscopic descriptions were made with the compound light microscope at X1000. Microscopic details were taken from observations made with the dissecting microscope at X24.5. All microscopic preparations were made according to the procedure described by Slysh (1960). Colors of the fructifications that were matched with Maerz and Paul's *Dictionary of Color* (1950) have their first letters capitalized, and the location of the matching color is indicated in parenthesis following the color title. For example, Grey Stone (13A2) would mean that this color may be found in the *Dictionary of Color* on plate 13, column A, row 2. The majority of descriptive terms used can be found in Snell and Dick's *Glossary of Mycology* (1957). The abbreviation "Syn." indicates that all binomials here are synonymous with the species being described. Reference is also made to states and countries where the species have been reported to occur. The term "rare" indicates that the species was collected in only one region of Illinois, and the term "common" was applied to species collected in more than one area of the state.

A dichotomous key was constructed from the descriptions of all 32 species. The number before each species indicates the number of the descriptive paragraph and figure.

Figures were drawn from the Illinois material with the aid of a camera-lucida at X1000. A 10 micron scale has been drawn to indicate the relative size of the structures in the figures. One 10 micron scale per plate indicates that all figures on the plate pertain to that scale. When this is not the case, a scale is provided for each figure.

Key to the Species

1. Cystidial walls dissolving in 10% KOH 2
1. Cystidial walls not dissolving in 10% KOH 6
   2. Cystidia with a definite apical bulb; spores ellipsoid to broad-ellipsoid, (3-)3.5-5.5 x 2-3(-3.75)μ .....1. *P. accedens*
   2. Cystidia without a definite apical bulb; apex sometimes wider than stem, but not bulbous 3
3. Cystidial apex lance-like; stem narrowly conic; spores narrowly clyindric, (6-)6.5-8(-9) x 1.5-2(-2.5)μ ....2. *P. subulata*
3. Cystidial apex not lance-like, but either tubular or hooded 4
   4. Cystidial apex tubular, and not distinctly hooded; capillary lumen widening abruptly; spores cylindrical to suballantoid, (6.5-)7-9.5 x 1.5-2.2μ ..3. *P. gracillima*
   4. Cystidial apex slightly to prominently hooded 5
5. Cystidial apex only slightly hooded; spores cylindrical, and somewhat curved at apiculus end, 5-6.5(-7) x 2-2.5(-2.7)μ .....4. *P. pirina*
5. Cystidial apex prominently hooded; spores cylindrical, and often somewhat curved at apiculus end, (4.5-)5-7(-7.5) x (1.5-)2-2.5(-3)μ ....5. *P. calothrix*
   6. Spores echinulate, even in KOH, nonamyloid, 6-9 x 4.5-7.5μ ....6. *P. praeterita*
   6. Spores smooth 7
7. Cystidia septate 8
7. Cystidia nonseptate 12
   8. Cystidia of two general types: one cylindrical-capitate and unincrusted, the other acicular to subulate and incrusted; spores mainly oval, 3.5-6 x 2.5-3.5(-4)μ ....7. *P. pallidula*
   8. Cystidia of one type 9

9. Cystidia incrusted with large, coarse crystals 10
9. Cystidia finely incrusted or unincrusted 11
10. Hymenium light colored, cream to greyish-white, and minutely odontoid; cystidia 6-12μ wide; spores oblong-ellipsoid, 7.5-11.5 (-12) x 3-4.5μ ..... 8. *P. aspera*
10. Hymenium dark colored, tanish, and hirsute; cystidia (7-)9-13μ wide; spores cylindrical to oblong-ellipsoid, (6.5-)8.5-11(-12) x 3.5-4.5μ .... 32. *P. subtestacea*
11. Cystidia finely incrusted with hair-like crystals or unincrusted, and 3.5-5.5μ wide; spores broadly ellipsoid, 4-5(-6) x 2-3μ ..9. *P. byssoides*
11. Cystidia dolicately incrusted with granular crystals or unincrusted, (6-)7-9.5μ wide; spores oblong-ellipsoid to sub-ovate, 6-8(-9.5) x (3.5-)4-5μ ..... 31. *P. polonensis*
12. Gloeocystidia present 13
12. Gloeocystidia absent 19
13. Cystidia heavily incrusted 14
13. Cystidia mainly unincrusted and varying in shape; spores oblong-ellipsoid, 7.5-10(-12) x (3.5-)4-6μ ..... 10. *P. tenuis*
14. Majority of cystidia over 60μ long 15
14. Cystidia measuring under 60μ long 16
15. Cystidia 8.5-18μ wide; gloeocystidia rare; spores oblong-ellipsoid, 7.5-9.5 x 3.5-4.5μ ..... 11. *P. pubera*
15. Cystidia 8-12(-15)μ wide; gloeocystidia frequent; spores cylindrical, (9-)10-16.5 x (3-)3.5-4.5μ ..... 12. *P. mutata*
16. Gloeocystidia large, with the majority ranging from 40-125μ in length 17
16. Gloeocystidia smaller, with the majority under 40μ in length 18
17. Gloeocystidia up to 10μ wide; spores cylindrical, 9.5-15 x 3.5-4.5μ ..... 13. *P. heterocystidia*
17. Gloeocystidia up to 15μ wide; spores broadly cylindric to oblong-ellipsoid, 7-10(-12) x 2.5-4(-5)μ ..... 14. *P. incarnata*
18. Gloeocystidia numerous, broadly obpyriform, up to 20μ wide; spores suballantoid, 7-9 x 2-3μ ..... 15. *P. nuda*
18. Gloeocystidia rare, clavate, up to 10μ wide; spores cylindrical to suballantoid, 7-9(-10) x 2.5-3.5μ .....16. *P. violacea-livida*
19. Majority of cystidia heavily incrusted 20
19. Cystidia unincrusted or sparsely incrusted 36
20. Hymenial surface turning wine-red with the application of 3% KOH; spores ovoid to ellipsoid, (15-)20-25(-29) x 4-5(-6)μ ..... 17. *P. filamentosa*
20. Hymenial surface not turning wine-red with the application of 3% KOH 21
21. Hyphae simple-septate, with only an occasional clamp connection in some species 22
21. Hyphae strictly nodose-septate ...24
22. Hyphae heavily incrusted; spores broadly ellipsoid, 4.5-6.5 (-7) x (2.5-)3-4μ ..... 18. *P. coccineo-fulva*
22. Hyphae unincrusted or sparingly incrusted 23
23. Fruit body mainly light-colored; cystidia 4-8μ wide; spores oblong-ellipsoid, (4-)5-7 x 2.5-3(-4)μ ..... 19. *P. affinis*
23. Fruit body mainly dark-colored; cystidia 7-15μ wide; spores ellipsoid, 5-8 x 2.5-3.5(-4)μ ...20. *P. velutina*
24. Spores small, oblong-ellipsoid, 3.5-6.5(-7.5) x 2-3(-3.5)μ ..... 21. *P. ludoviciana*
24. Spores mainly over 6.5μ long.. 25
25. Cystidia large, broadly cylindrical to subclavate, up to 20μ wide; spores cylindrical, 8-12(-14) x 3-4.5(-5)μ .. .. 22. *P. guttulifera*
25. Cystidia small, mainly conical, up to 9μ wide; spores cylindrical to suballantoid, (6-)7-9(-10) x 2.5-3μ ..... 23. *P. cinerea*
26. Hyphae simple-septate, with only an occasional clamp connection in some species 27
26. Hyphae strictly nodose-septate 28
27. Cystidia up to 100μ in length, often slightly incrusted at the apex; hyphae not constricted at the septa; spores oblong-ellipsoid, (5-)5.5-8 x 2.5-4μ ..... 24. *P. cremea*
27. Cystidia under 65μ in length, unincrusted; hyphae constricted at the septa; spores broadly ellipsoid to oblong-ellipsoid, 4-6 x 2-3μ ..... 25. *P. burtii*

28. Spores narrow and mainly under 3μ in width 29
28. Spores 3μ or more in width ..30
29. Cystidia cylindrical-acuminate, sparingly incrusted with rectangular crystals; spores long-cylindrical to subfusiform, 10-16 x (1.2-)1.5-3μ .. ..26. *P. longispora*
29. Cystidia cylindrical-obtuse, unincrusted; spores narrowly cylindric, 6-9 x 1.5-2μ .....27. *P. subulatacea*
30. Cystidia large, up to 360μ in length; spores broad-fusiform, 9.5-15(-18) x 5-7.5(-8)μ ....28. *P. ochroleuca*
30. Cystidia smaller; spores under 10μ in length 31
31. Cystidia large, obclavate-undulate, over 75μ long; spores broad-ellipsoid to slightly subovate, 7.5-9.5(-10) x 4-5μ .....29. *P. argillacea*
31. Cystidia small, mainly cylindrical-capitate, up to 45μ long; spores broad-ellipsoid, (4-)6-7(-7.5) x 3-5μ .....30. *P. sambuci*

Description of the Species

In the following descriptions of species the reference to a figure in the citation pertains to the illustrations accompanying this text.

1. **Peniophora accedens** (Bourd. & Galz.) Wakef. & Pears., Brit. Mycol. Soc. Trans. 6:140. 1920. Figure 1.

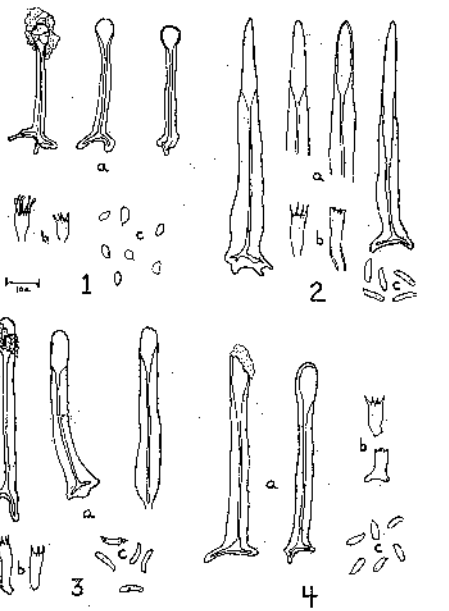
Syn.: *Peniophora glebulosa* ssp. *accedens* Bourd. & Galz., Bull. Soc. Myc. France, 28:386. 1913.

Fruit body resupinate, effused, adnate, membranous, with a very scant subiculum; surface discontinuous, pruinose, appearing minutely setose in side-view, with the swollen apices of the cystidia appearing as small water droplets; margin indeterminate; color ranging from Grey Stone (13A2) to Manila (12C5).

Hyphae hyaline, nodose-septate, often indistinct, naked, thin-walled, 1.5-2.5(-3)μ in diameter. Cystidia numerous, cylindrical, possessing a capillary lumen that widens into a thin-walled bulbous apex, apical bulb often surrounded by a mucilaginous crystalline material and measuring 5-7(-10.5)μ in diameter, rooted at the base, walls nonamyloid and dissolving in 10 per cent KOH, stem measuring 2.5-5(-6)μ in diameter, whole measuring (35-)40-65(-90)μ in length. Basidia short-clavate, with 4(-5) sterigmata, (7.5-)8-12(-17.5) x (3.5-)4-5μ. Spores ellipsoid to broad-ellipsoid, hyaline, smooth, nonamyloid, (3-)3.5-5.5 x 2-3 (-3.5)μ.

On decayed deciduous wood. Common in Illinois. Also known from British Columbia, Denmark, France, Ontario, Quebec, Sweden, Iowa, Massachusetts, Oregon, and Rhode Island.

Illinois material examined: Funk's Grove, McLean County, XI.24.1961, S. F. & A. E. Liberta 218 (ISU); XI.6.1962, A. E. Liberta 319 (ISU); East Bay Camp, Lake Bloomington, McLean County, X.24.1963, A. E. Liberta & R. J. Harris 5 (RJH), 449, 450 (ISU); west edge of Crab Orchard Lake, Carbondale, XI.23.1963, A. E. Liberta & R. J. Harris



Figures—1. *Peniophora accedens*. (a) Three cystidia, one with an incrusted apex; (b) Two basidia, one bearing young spores on the sterigmata; (c) Spores. 2. *Peniophora subulata*. (a) Four cystidia, two showing only the upper portion; (b) Two basidia, one with thickened basal walls; (c) Spores. 3. *Peniophora gracillima*. (a) Three cystidia, one with incrustation; (b) Two basidia; (c) Spores. 4. *Peniophora pirina*. (a) Two cystidia, one with an incrusted apex; (b) Two basidia; (c) Spores.

35 (RJH); Lowden Memorial Park, Oregon, VI.6.1964, E. J. Disselhorst & R. J. Harris 36, 37 (RJH).

P. accedens is separated from other members of *Peniophora* by means of the bulbous apex of the cystidia, rather uniformly narrow cystidial stem whose walls dissolve in 10 per cent KOH, and the short ellipsoid spores.

2. **Peniophora subulata** (Bourd. & Galz.) Donk, Mededel, Ned. Myc. Ver. 18-20:165. 1931. FIGURE 2.

Syn.: *Peniophora glebulosa* ssp. *subulata* Bourd. & Galz., Bull. Soc. Myc. Fr., 28:385. 1913.

Peniophora cretacea ssp. *subulata* (Bourd. & Galz.) Bourd & Galz., Hym. de Fr., p. 289. 1928.

Fruit body resupinate, widely effused, adnate, membranous to subwaxy; surface continuous, minutely tuberculate, hispid in profile; margin thinning, and arachnoid; color Oyster White (10B1) to between Ivory (10B2) and Straw (10F2).

Hyphae hyaline, nodose-septate, naked, thin to slightly thick-walled, 2-3μ in diameter. Cystidia numerous, narrowly conical, with capillary lumen of stem widening into a thin-walled lance-like apex (10-)15-20μ long, apices often incrusted with crystalline matter, rooted at the base, walls slightly amyloid and dissolving in 10 per cent KOH, (50-)60-80 x (5.5-)7-13(-15)μ. Basidia clavate, bearing four sterigmata, basal walls often thickened, 11-20 x (3-)4-4.5μ. Spores narrowly cylindrical, often slightly curved at the apiculus end, hyaline, smooth, nonamyloid, (6-)6.5-8(-9) x 1.5-2(-2.5)μ.

On decayed deciduous wood. Rare, and previously unreported for Illinois. Also known from British Columbia, Denmark, France, Gaspé Peninsula, Ontario, Sweden, New York, and Oregon.

Illinois material examined: White Pines State Park, Oregon, VI.6.1964, E. J. Disselhorst & R. J. Harris 561 (ISU), 57, 58, 59 (RJH).

P. subulata is closely related to *P. hirtella*, which has yet to be reported for Illinois. *P. hirtella*, however, has much narrower cystidia (4-7μ), and somewhat broader spores than does *P. subulata*.

3. **Peniophora gracillima** (Ellis & Everh. ex Rogers and Jackson) G. H. Cunn., Farlowia 1:317. 1943. FIGURE 3.

Syn.: *Peniophora glebulosa* sensu Bres., Burt, Missouri Bot. Gard. Ann. 12:282. 1926.

Fruit body resupinate, effused, adnate, membranous to subwaxy; surface often appearing somewhat merulioid, minutely granulose, and hispid in profile; margin thinning and pruinose; color ranging from Woodash (27A1) to various shades of grey, or from Sunset (10C4) to Sunlight (10H4).

Hyphae hyaline, nodose-septate, slightly thick-walled, naked, 2-3μ in diameter. Cystidia numerous, cylindrical-obtuse, possessing a capillary lumen which widens rather abruptly into a thin-walled, cylinder-like obtuse apex, apex measuring 9.5-18(-20) x (4.3-)5-8μ, stem (5.5-)7-9.5(-10)μ wide, whole measuring (55-)60-100(-170)μ in length, rooted at the base, walls amyloid and dissolving in 10 per cent KOH, often slightly incrusted with a crystalline mass. Basidia subclavate to clavate, 12-25(-30) x 4-4.5(-5)μ. Spores narrowly cylindrical to suballantoid, smooth, hyaline, nonamyloid, (6.5-)7-9.5 x 1.5-2(-2.2)μ.

On decayed deciduous wood. Rare, and previously unreported for Illinois. Also known from Australia, Austria, British Columbia, England, Italy, Manitoba, New Zealand, Ontario, Quebec, South Africa, Sweden, Colorado, Idaho, Maine, Montana, Nebraska, New Hampshire, New Jersey, New York, Oregon, Vermont, and Washington.

Illinois material examined: White Pines State Park, Oregon, VI.6.1964, E. J. Disselhorst & R. J. Harris 53 (RJH).

Several species of *Peniophora*, not yet reported for Illinois, closely resemble *P. gracillima*. The only real basis for separation of these species has been the manner in which the capillary lumen widens. In *P. gracillima* the capillary lumen widens rather abruptly; whereas in the other related species it widens gradually, or when widening abruptly the apex is stout, and more pronouncedly obtuse than in *P. gracillima*.

4. **Peniophora pirina** Bourd. & Galz., Bull. Soc. Mycol. Fr. 28:387. 1913. FIGURE 4.

Fruit body resupinate, effused, adnate, subwaxy; surface somewhat discontinuous, pruinose, hispid in profile; margin indeterminate to very thin; color Grey Stone (13A2) to Old Ivory (12C3) or Crash (12D3).

Hyphae hyaline, nodose-septate, amyloid, thick-walled, naked, 2.5-3.5(-4)μ in diameter. Cystidia subcylindrical-obtuse, possessing a capillary lumen that broadens at the apex giving a slight hooded appearance to the tip, apex often incrusted with crystalline matter and

measuring 10-25 x 5-7μ, somewhat broadened and rooted at the base, walls amyloid and collapsing in 10 per cent KOH, stem 4-6.5(-7.5)μ wide, whole measuring 50-85μ in length. Basidia subclavate to clavate, bearing four sterigmata, basal walls slightly thickened, 10-20(-25) x (4-)4.5-5μ. Spores cylindrical, slightly curved at apiculus end, hyaline, smooth, nonamyloid, 5-6.5(-7) x 2-2.5(-2.7)μ.

On decayed deciduous wood. Rare, and previously unreported for Illinois. Also known from France, Gaspé Peninsula and Ontario.

Illinois material examined: Shawnee National Forest, Carbondale, XI.23.1963, A. E. Liberta & R. J. Harris 54 (RJH).

P. pirina is so closely related to *P. calothrix* that one questions the validity of considering them as separate species. Weresub (1961) believes that the type specimens, at least, are distinct from one another. Probably the best separating feature is the degree of cystidial hooding. *P. pirina* has only slight hooding; whereas *P. calothrix* has very pronounced hooding.

5. **Peniophora calothrix** (Pat.) Rogers & Jacks., Farlowia 1:316. 1943. FIGURE 5.

Syn.: *Corticium calothrix* Pat., Cat. Rais. Pl. Cel. Tunisie, p. 59. 1897.

Peniophora glebulosa ssp. *pirina* Bourd. & Galz., Soc. Myc. Fr. Bul. 28:387. 1913.

Peniophora delectans Overh., Mycol. 26:513. 1934.

Fruit body resupinate, moderately to widely effused, adnate, membranous; surface discontinuous, hispid in profile, pruinose with the incrusted caps of cystidia giving a droplet appearance; margin indeterminate; color Whitish Grey (35A1) to Cement Grey (46A1).

Hyphae hyaline, nodose-septate, amyloid, naked, thick-walled, (1.5-)2.5-4(-5)μ in diameter. Cystidia occurring frequently, cylindrical-obtuse, possessing a capillary lumen which widens into a noticeable one sided hooded apex, usually incrusted at the apex, base slightly broader and rooted, walls amyloid and dissolving in 10 per cent KOH, 50-85(-125) x 5-7(-8.5)μ. Basidia stout, cylindrical to subclavate, basal walls often somewhat thickened, (8.5-)9.5-14(-17.5) x (3.75-)4.5-5(-5.5)μ. Spores cylindrical, smooth, nonamyloid, hyaline, sometimes slightly curved at the apiculus end, (4.5-)5-7(-7.5) x (1.5-)2-2.5(-3)μ.

On decayed deciduous wood. Rare, and previously unreported for Illinois. Also known from Denmark, France, Gaspé Peninsula, Ontario, Sweden, Tunisia, Iowa, New York, Oregon, and Tennessee.

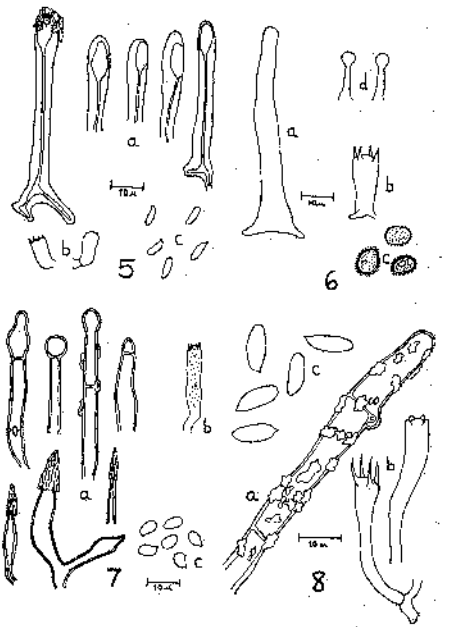
Illinois material examined: west edge of Crab Orchard Lake, near Carbondale, XI.23.1963, A. E. Liberta & R. J. Harris 560 (ISU), 55, 56 (RJH).

See the discussion under 4 *P. pirina*.

6. **Peniophora praeterita** Jacks., Canad. Jour. Res. 28(C):533. 1950. FIGURE 6.

Fruit body resupinate, effused, adnate, gelatinous; surface pruinose; margin very thin and finely pruinose; color Oyster White (10B1), or Marguerite Yellow (10C1) to Greyish (7A1).

Hyphae hyaline, nodose-septate, horizontal and close to the substrate, with thin gelatinized walls, very scant in the



FIGURES—5. *Peniophora calothrix*. (a) Five cystidia, three showing only the upper portion; (b) Two basidia; (c) Spores. 6. *Peniophora praeterita*. (a) Cystidium; (b) Basidium; (c) Spores, two with thickened walls; (d) Two cystidioles. 7. *Peniophora pallidula*. (a) Seven cystidial types, three with incrusted apices; (b) Basidium with granular contents; (c) Spores. 8. *Peniophora aspera* (a) Cystidium with sparse incrustation; (b) Two basidia; (c) Spores.

subiculum, 1.5-2.5μ in diameter. Cystidia few to frequent, subcylindrical, tapering slightly toward the obtuse apex, somewhat rooted at the base, naked, flexile, thin-walled, (48-)50-90(-92) x 6-10(-11)μ. Cystidioles rare, cylindrical-capitate, often rooted at the base, naked, thin-walled, (12-)14-20(-25) x 2.5-3(-5)μ, apical bulb 4-5μ in diameter, stem 2.5-3μ in diameter. Basidia stoutly subclavate, often rooted at the base, bearing 4-5 sterigmata, (15-)17-25 x 5-9μ. Spores mostly subglobose, but occasionally broadly ellipsoid, echinulate, ornamentation persisting in KOH, hyaline, nonamyloid, somewhat thick-walled, apiculate, 6-9 x 4.5-7.5μ.

On decayed deciduous wood. Common in Illinois. Also known from New Zealand, Ontario, and Connecticut.

Illinois material examined: Funk's Grove, McLean County, VII.10.1962, A. E. Liberta 320, 323, 324 (ISU); X.28.1963, R. J. Harris 30 (RJH); next to Mississippi River, Quincy, XI.9.1963, R. J. Harris 38 (RJH), 555 (ISU); Shawnee National Forest, Carbondale, XI.23.1963, A. E. Liberta & R. J. Harris 39 (RJH).

P. praeterita can be distinguished from other species by means of its nonamyloid echinulate spores, and persistent ornamentation in KOH.

7. **Peniophora pallidula** (Bres.) Bres. apud Bourd. & Galz., Soc. Myc. Fr. Bul. 28:390. 1913. FIGURE 7.

Syn.: *Gloeocystidium pallidulum* (Bres.) Höhn. & Litsch., Österr. Bot. Zeitschr. 58:471. 1908.

Peniophora alutaria Burt, Missouri Bot. Gard. Ann. 12:332. 1926.

Peniophora laminata Burt, Missouri Bot. Gard. Ann. 12:246. 1926.

(For further synonymy see Rogers and Jackson, 1943, p. 313.)

Fruit body resupinate, widely effused, adnate, submembranous; surface discontinuous, verruculose-pruinose; margin very thin and pruinose; color cream or Sand (13B2) to Miami Sand (13B3).

Hyphae hyaline, nodose-septate, scant in the subiculum, thin-walled, naked to slightly incrusted, 2-4μ in diameter. Cystidia many, of various shapes, ranging from acicular to subulate, to cylindrical-capitate; acicular to subulate type bearing a conical cap of crystals at the apex, somewhat thick-walled, sometimes branching and giving rise to another cystidia of either type, 17-40 x (2.5-)3-7μ; cylindrical-capitate type often septate, with or without a clamp connection at the septum, shape of the apex varying considerably, naked to slightly incrusted, slightly thick-walled, (20-)30-70(-100) x (3.5-)4-7μ. Gloeocystidia absent. Basidia subclavate, bearing 4 sterigmata, contents granulose, (10-)15-25 x (3-)3.5-4.5(-5)μ. Spores mainly oval, flattened on one side, slightly depressed near apiculus end, smooth, hyaline, nonamyloid, 3.5-6 x 2.5-3.5(-4)μ.

On decayed deciduous wood. Somewhat common but previously unreported for Illinois. Also known from Denmark, France, Ontario, Sweden, Michigan, New York, Pennsylvania, Tennessee, and Vermont.

Illinois material examined: Fox River, Charleston, V.23.1959, A. E. Liberta 15 (AEL); Funk's Grove, McLean County, V.4.1962, A. E. Liberta 273 (AEL); X.14.1961, A. E. Liberta 235 (ISU).

The various shapes of the cystidia, and the oval spores are the distinguishing features of this species.

8. **Peniophora aspera** (Pers.) Sacc., Fl. Ital. Crypt. Hymen., p. 1182. 1916. FIGURE 8.

Syn.: *Corticium setigerum* (Fries) Karst., Bidr. Känned. Finl. Nat. Folk. 37:143. 1882.

Odontia setigera (Fries) Miller, Mycol. 26:19. 1934.

Peniophora setigera (Fries) Höhn. and Litsch., Ann. Mycol. 4:289. 1906.

Thelephora aspera Pers., Mycol. Eur. 1:153. pl. (5), fig. (4). 1822.

(For further synonymy see Rogers and Jackson, 1943, p. 283.)

Fruit body resupinate, widely effused, adnate to somewhat separable depending on substrate, membranous; surface continuous, appearing minutely odontoid because of the projecting cystidia arising from wart-like bases of tissue, cracking in dry specimens, and revealing the white mycelial strands of the subiculum; margin thinning out, pruinose or sometimes arachnoid; color greyish white to Cream (9D2).

Hyphae hyaline, nodose-septate, somewhat thick-walled, naked or sometimes incrusted, loosely arranged in the subiculum to compact in the hymenium, 3-5(-6)μ in diameter. Cystidia few, cylindrical, septate, often having a clamp connection at the septum, sparsely incrusted with large coarse crystals, thick-walled, (60-)70-240 x 6-9(-12)μ. Gloeocystidia absent. Basidia subclavate, 22-

38(-40) x 5.5-7(-8)μ, bearing 4 sterigmata which become stout at the base, up to 6μ long. Spores oblong-elliptical, somewhat flattened on one side, some slightly curved, nonamyloid, smooth, apiculate, 7.5-11.5(-12) x 3-4.5μ.

On decayed deciduous wood. Common throughout Illinois. Also known from Australia, Denmark, Ukraine, New York, and Virginia.

Illinois material examined: Fox Ridge State Park, Charleston, X.5.1963, R. J. Harris 11 (RJH); East Bay Tree Farm, Lake Bloomington, McLean County, X.24.1963, A. E. Liberta & R. J. Harris 17 (RJH); next to Mississippi River, Quincy, XI.9.1963, R. J. Harris 19, 20 (RJH).

P. aspera can be readily distinguished from other species of *Peniophora* by means of its large septate cystidia, which are sparingly incrusted with large coarse crystals, and by its odontoid surface. *P. subtentacea* is similar to *P. aspera*, but differs in the color and appearance of the hymenial surface. (See Slysh, 1960, p. 48.)

9. **Peniophora byssoides** (Pers. ex. Fries) Bres. apud Brinkm., Westf. Prov. Ver. Jahresben. 26:130. 1898. FIGURE 9.

Syn.: *Thelephora byssoides* Pers. ex. Frios, Syst. Mycol. 1:452. 1821.

Corticium byssoideum (Pers. ex Fries) Fries, Hymen. Eur., p. 659. 1874.

Coniophora byssoideus (Pers. ex Fries) Karst., Bidr. Känned. Finl. Nat. Folk. 37:160. 1882.

Peniophora sordescens (Karst.) Sacc., Syll. Fung. 9:240. 1891.

Peniophora muscorum (Schroet.) Höhn., Ann. Mycol. 3:325. 1905.

(For further synonymy see Rogers and Jackson, p. 275. 1943.)

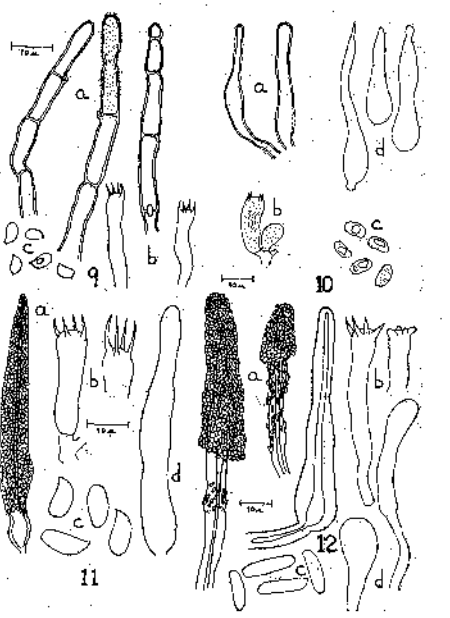
Fruit body resupinate, widely effused, adnate, submembranous; surface discontinuous, velutinate; margin thinning out and minutely granulose, greyish; color Cream (9D2) to Pinard Yellow (9J2).

Hyphae hyaline to faintly tinted, nodose-septate, rather loosely arranged, naked, thin-walled, 3-5μ in diameter. Cystidia occurring often, cylindrical, obtuse at the tip, narrowing towards the base, incrusted with minute hair-like crystals or not incrusted, tinted, septate, often constricted at the septa which may or may not bear clamp connections, thin to slightly thick-walled, 35-85(-140) x 3.5-5.5μ. Gloeocystidia absent. Basidia subclavate, 17-25 X 3-4.5(-6)μ, bearing 4 sterigmata. Spores broad-ellipsoid, smooth, hyaline or slightly tinted, nonamyloid, apiculate, 4-5(-6) x 2-3μ.

On decayed deciduous wood. Rare, and previously unreported for Illinois. Also known from Australia, Canada, Denmark, France, Great Britain, New Zealand, Sweden, West Indies, Iowa, Massachusetts, New York, Oregon, and Vermont.

Illinois material examined: East Bay Tree Farm, Lake Bloomington, McLean County, X.24.1963, A. E. Liberta & R. J. Harris 460 (ISU).

P. byssoides is easily recognized by its narrow, slightly tinted, septate cystidia. Other distinguishing cystidial characteristics are the constrictions oc-



FIGURES 9. *Peniophora byssoides*. (a) Three cystidia, one finely incrusted; (b) Two basidia; (c) Spores, one with an oil droplet. 10. *Peniophora tenuis*. (a) Two cystidia; (b) Basidium with both granular and resinous contents; (c) Spores, four with oil droplets and one granular; (d) Three gloeocystidia. 11. *Peniophora pubera*. (a) Incrusted cystidium; (b) Two basidia; (c) Spores; (d) Gloeocystidium. 12. *Peniophora mutata*. (a) Three cystidia, two incrusted and one naked; (b) Two basidia; (c) Spores; (d) Two gloeocystidia.

curring at many of the septa, and the often present hair-like incrusting crystals.

10. **Peniophora tenuis** (Pat.) Massee, Linn. Soc. Bot. Jour. 25:149. 1889. FIGURE 10.

Syn.: *Corticium tenue* Pat., Rev. Mycol. 7:152. 1885.

Peniophora praetermissa Karst., Bidr. Känned. Finl. Nat. Folk. 48:423. 1889.

Gloeocystidium tenue (Pat.) Höhn. & Litsch., Wiesner-Festschr. p. 70. 1908.

Peniophora pertenuis (Karst.) Burt, Missouri Bot. Gard. Ann. 12:315. 1926.

(For further synonymy see Rogers and Jackson, 1943, p. 322.)

Fruit body resupinate, widely effused, adnate, subwaxy; surface discontinuous, pruinose to mealy, somewhat hispid in profile; margin thinning, and minutely fibrillose; color greyish white (approaching 11A1).

Hyphae hyaline, nodose-septate, thin-walled, incrusted or naked, 2.5-4.5μ in diameter. Cystidia few to frequent, shape varying but mainly cylindrical with a slight bulge near the base, naked or rarely with some incrustation, thin to slightly thick-walled, (30-)40-60(-80) x 5-7(-8)μ. Gloeocystidia few to frequent, obclavate to subulate, flexuous, slender tips often collapsing, contents usually homogeneous, 30-75(-80) x (6-)7-12(-16)μ. Basidia broadly subclavate, contents granulose, 20-25(-30) x (6-)7-10μ. Spores oblong-ellipsoid, smooth, hyaline, nonamyloid, granulose or containing one or more large oil droplets, 7.5-10(-12) x (3.5-)4-6μ.

On decayed deciduous wood. Common, but previously unreported for Illinois. Also known from Austria, Bermuda, Canada, Denmark, Finland, France, Germany, Jamaica, Poland, South Africa, Sweden, District of Columbia, Idaho, Massachusetts, Montana, New Hampshire, New Jersey, Oregon, and Washington.

Illinois material examined: Funk's Grove, McLean County, V.17.1962, A. E. Liberta 265 (ISU); X.18.1962, A. E. Liberta 259, 263 (ISU); IV.28.1964, R. J. Harris 48 (RJH); Mississippi River area, Quincy, XI.9.1963, R. J. Harris 21, 49 (RJH).

P. tenuis is characterized by its rather large obclavate to subulate, flexuous gloeocystidia, and variously shaped cystidia.

11. **Peniophora pubera** (Fries) Sacc., Syll. Fung. 6:646. 1888. FIGURE 11.

Syn.: *Corticium puberum* (Fries) Fries, Epicr. Syst. Mycol., p. 562. 1838.

Hyphoderma puberum (Fries) Wallr., Fl. Krypt. Germ. 2:576. 1833.

Hypochnus puberus (Fries) Bon., Handb., p. 159. 1851.

Peniophora tenuissima Peck, New York State Mus. Bul. 157: 114. 1912.

(For further synonymy see Rogers & Jackson, 1943, p. 325.)

Fruit body resupinate, widely effused, adnate, sub-waxy; surface continuous, deeply cracking when dry, setulose; margin thinning out; color varying, from whitish to Cream (9D2-9F2), to Cinnamon (12E7).

Hyphae hyaline, nodose-septate, compact, thin-walled in the subhymenium to thick-walled basally, 3-5μ in diameter. Cystidia occurring frequently, conic to somewhat fusiform, heavily incrusted, (50-)55-125 x 8.5-16(-18)μ. Gloeocystidia rare, cylindrical and flexuous, (45-)50-80 x (5-)7.5-10μ. Basidia broad-cylindrical to subclavate, 20-30 x 5.5-9μ, bearing 4 sterigmata up to 6μ long. Spores oblong-elliptical, somewhat flattened on one side, very slightly curved, smooth, hyaline, nonamyloid, apiculate, 7.5-9.5 x 3.5-4.5μ.

On decayed deciduous wood. Very common throughout Illinois, but previously unreported. Also known from Australia, Austria, Canada, Denmark, France, Germany, Great Britain, Italy, Sweden, Alabama, District of Columbia, Florida, Idaho, Kentucky, Louisiana, Maryland, Massachusetts, Missouri, Montana, New Hampshire, New Jersey, New York, Oregon, Rhode Island, Virginia, Washington, and Wisconsin.

Illinois material examined: Funk's Grove, McLean County, IV.23.1962, A. E. Liberta 294 (ISU); V.12.1962, A. E. Liberta 302 (ISU); VI.23.1962, A. E. Liberta 246, 268 (ISU); west edge of Crab Orchard Lake, XI.23.1963, A. E. Liberta & R. J. Harris 2, 3 (RJH); White Pines State Park, Oregon, Illinois, VI.6.1964, E. J. Disselhorst & R. J. Harris 9 (RJH); next to Mississippi River, Quincy, Illinois, XI.9.1963, R. J. Harris 32 (RJH).

P. pubera is very similar microscopically to other members of the genus, but can be distinguished from them by its well developed setulose fructification, large cystidia, nodose-sep-

tate hyphae, and the presence of gloeocystidia. The rare gloeocystidia may easily be overlooked, and therefore a careful examination of the crushed mount is necessary.

12. **Peniophora mutata** (Peck) Höhn. & Litsch., K. Akad. Wiss. Wien Math.-Nat. Kl. Sitzungsb. 115, I:1580. 1906. FIGURE 12.

Syn.: *Peniophora Allescheri* (Bres.) Sacc. & Syd., Syll. Fung. 16:194. 1902.

Corticium mutatum Peck, New York State Mus. Rept. 43:69. 1890.

Peniophora cremea ssp. *Allescheri* (Bres.) Bourd. & Galz., Hymen. de France, p. 304. 1928.

(For further synonymy see Rogers and Jackson, 1943, p. 313).

Fruit body resupinate, widely effused, adnate, membranous and becoming subwaxy with age; surface continuous, finely pruinose, often sparingly tubercular, cracking and exposing the white mycelial strands of the subiculum, becoming slightly reflexed at the fissures; margin radiately fibrillose, often with brownish rhizomorphs, at times somewhat reflexed; color ranging from Vanilla (10C3) to Leghorn (10D3), from Corn Husk (10E6) to Mellow-glow (10I6), and from Spice-gold (13B12) to Pheasant (13L12).

Hyphae hyaline, nodose-septate, thin-walled, incrusted or not incrusted, 3-4.5μ in diameter. Cystidia rare to few, subcylindrical-obtuse to subconical, incrusted, walls thickened, mainly immersed, (30-)50-100(-120) x 8-12(-15)μ. Gloeocystidia frequent, varying in shape, but mostly cylindrical to clavate, (25-)40-80 x (7-)8.5-14μ. Basidia clavate, with 4 broad sterigmata, (30-)40-60(-70)μ. Spores cylindrical, somewhat flattened on one side, smooth, nonamyloid, hyaline, (9-)10-16.5 x (3-)3.5-4.5μ.

On decayed deciduous wood. Rare in Illinois. Also known from Austria, Canada, Denmark, France, Germany, Japan, Latvia, Sweden, West Indies, Alabama, Florida, Idaho, Indiana, Maine, Michigan, Minnesota, Missouri, New Hampshire, New Jersey, New York, Ohio, South Dakota, Vermont, Washington, and Wisconsin.

Illinois material examined: River Forest, X.1902, E. T. and S. A. Harper 631 (FH).

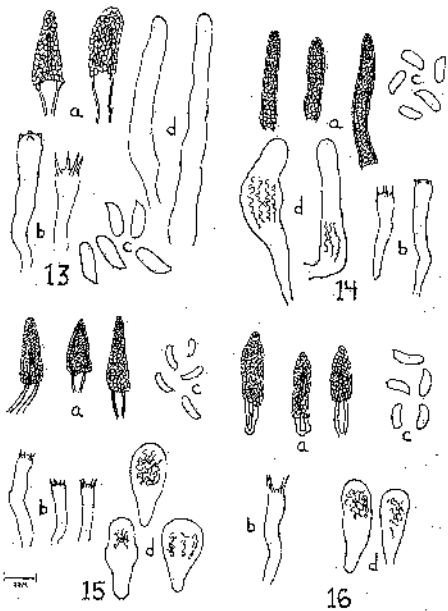
P. mutata is characterized by its large incrusted cystidia, cylindrical to subclavate gloeocystidia, large clavate basidia, and large cylindrical spores.

The gloeocystidia in this species are questionable. The possibility exists that the gloeocystidia are actually developing basidia. Further study is necessary so that the proper term can be attributed to these structures.

13. **Peniophora heterocystidia** Burt, Mo. Bot. Gard. Ann. 12:293. 1926. FIGURE 13.

Syn.: *Peniophora Kauffmanii* Burt, Mo. Bot. Gard. Ann. 12:296. 1926.

Fruit body resupinate, widely effused, adnate, membranous; surface cracking and exposing the whitish subiculum, becoming slightly reflexed at the fissures, pilose-granulose; margin thinning out, fibrillose, often appearing waxy-white; color Pearl Blush (12A5) or Cork (12B7).



FIGURES 13. *Peniophora heterocystidia*. (a) Two incrusted cystidia; (b) Two basidia; (c) Spores; (d) Two gloeocystidia. 14. *Peniophora incarnata*. (a) Three incrusted cystidia; (b) Two basidia; (c) Spores; (d) Two gloeocystidia with resinous contents. 15. *Peniophora nuda*. (a) Three incrusted cystidia; (b) Three basidia; (c) Spores. (d) Three gloeocystidia with resinous contents. 16. *Peniophora violaceo-livida*. (a) Three incrusted cystidia; (b) Basidium; (c) Spores; (d) Two gloeocystidia with resinous contents.

Hyphae hyaline, nodose-septate, naked to moderately incrusted, thin-walled, semi-compact in the subiculum, becoming compact in the hymenium, 3-5.5μ in diameter. Cystidia occurring frequently, heavily incrusted, conical at the incrusted portion and tapering at the unincrusted base, thick-walled, (25-)35-50 x (6-)8.5-10(-12)μ. Gloeocystidia abundant, cylindrical and tapering at the base, thin-walled, many projecting up to 60μ, (40-)55-125 x 6-8.5(-10)μ. Basidia subclavate, (20-)30-35(-45) x 6-8μ, bearing 4 sterigmata up to 6μ in length. Spores cylindrical, flattened on one side, slightly curved at the apiculus end, hyaline, smooth, nonamyloid, 9.5-14(-15) x 3.5-4.5μ.

On decayed deciduous wood. Common in Illinois. Also known from Canada, Mexico, Connecticut, District of Columbia, Indiana, Kentucky, Mississippi, Missouri, New Jersey, New York, Ohio, Pennsylvania, and Vermont.

Illinois material examined: Glencoe, E. T. & S. A. Harper 662, 646 (FH); Fox Ridge State Park, Charleston, X.5.1963, R. J. Harris 15 (RJH), 489 (ISU).

It is questionable whether or not the gloeocystidia of *P. heterocystidia* are true gloeocystidia or merely a second type of cystidium. Many of these gloeocystidia project up to 60μ, are non-resinous, and arise at the level of the hymenium, and therefore could justifiably be called cystidia. However, until further study is undertaken it is best to retain the term gloeocystidium for this structure.

P. heterocystidia can be distinguished from other species of *Peniophora* by its long, narrow, cylindrical gloeocystidia, rather short and broad incrusted cystidia, and large cylindrical spores.

14. **Peniophora incarnata** (Pers. ex Fries) Karst., Hedwigia 28:27. 1889. FIGURE 14.

Syn.: *Thelephora incarnata* Pers. ex Fries, Syst. Myc. 1:444. 1821.

Fruit body resupinate, effused, adnate, waxy; surface continuous, pruinose, cracking and revealing the white subiculum; margin thinning and becoming arachnoid; color approaching Maple (11E4) or Cinnamon Pink (5C10) to various shades of orange.

Hyphae hyaline, nodose-septate, compact, naked to sometimes slightly incrusted, thin to slightly thick-walled, 3-4(-4.5)μ in diameter. Cystidia few to frequent, cylindrical to narrowly conic, incrusted, mostly immersed, 23-50(-60) x (4-)7-12μ. Gloeocystidia occurring frequently, varying in shape from cylindrical to various inflated bladder-like forms, contents resinous, 25-60(-100) x 7-15μ. Basidia narrowly long-clavate, 25-40 x 5-7μ. Spores broadly cylindrical to oblong-ellipsoid, smooth, hyaline, nonamyloid, somewhat flattened on one side, curved at apiculus end, 7-10(-12) x 2.5-4(-5)μ.

On decayed deciduous wood. Rare, and previously unreported for Illinois. Also known from Australia, Austria, Denmark, England, Finland, France, Germany, Italy, Japan, Newfoundland, New Zealand, Ontario, South Africa, Sweden, Alabama, Alaska, Colorado, District of Columbia, Florida, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Missouri, New Hampshire, New Mexico, New York, Ohio, Pennsylvania, South Carolina, Vermont, West Virginia, and Wisconsin.

Illinois material examined: Embarrass River, near Charleston, IV.20.1960, D. D. McLain 200 (AEL).

The only Illinois specimen available for study appeared to be in an early growth stage. The cystidia and gloeocystidia were smaller than those measured by other mycologists.

P. incarnata may be separated from other species of *Peniophora* by means of its abundant, large cylindrical to bladder-like gloeocystidia, cylindrical to narrowly conic incrusted cystidia and often orange colored fruit body.

15. **Peniophora nuda** (Fries) Bres., I. R. Accad. Agiata Atti. III, 3:114. 1897. FIGURE 15.

Syn.: *Thelephora nuda* Fries, Syst. Myc. 1:447. 1821.

Fruit body resupinate, occurring in small patches, eventually coalescing and becoming effused, adnate, waxy; surface continuous, pruinose, cracking in older specimens; margin very thin, nearly indistinct, somewhat lighter in color, and faintly fibrillose; color ranging from Moonmist (12A2) to Grey Stone (13A2).

Hyphae brownish, compact, difficult to separate, nodose-septate, thin to slightly thick-walled, 3-5μ in diameter. Cystidia numerous, conical, thick-walled, heavily incrusted, immersed or projecting slightly, 15-35 x 5-7(-9)μ. Gloeocystidia occurring frequently, mostly broad-obpyriform, 20-40(-45) x (10-)11-20μ. Basidia subclavate, having 4 sterigmata, often projecting above the level of the hymenium, (20-)22-30 x 5-6μ. Spores suballantoid, smooth, hyaline, nonamyloid, 7-9 x 2-3μ.

On decayed deciduous wood. Rare, and previously unreported for Illinois. Also known from Finland, France, Germany, Japan, Ontario, Sweden, Alabama, Florida, Georgia, Louisiana, Maryland, New Jersey, New York, South Carolina, Texas, Vermont, and Virginia.

Illinois material examined: Funk's Grove, McLean County, X.28.1963, R. J. Harris 18 (RJH); River Forest, E. T. & S. A. Harper 676 (labeled *P. cinerea* in FH).

E. T. and S. A. Harper's collection #676 of *P. cinerea* from River Forest, Illinois is actually *P. nuda*. This can be verified by making a crushed mount of the material in sulfuric benzaldehyde, in which the gloeocystidia are readily apparent.

P. nuda closely resembles *P. cinerea* and *P. violaceo-livida*. It can be distinguished from these two by means of its frequent broad-obpyriform gloeocystidia.

16. **Peniophora violaceo-livida** (Sommerf.) Massee, Linn. Soc. Jour. Bot. 25:152. 1889. FIGURE 16.

Syn.: *Thelephora violaceo-livida* Sommerf., Suppl. Fl. Lapp., p. 283. 1826.

Corticium violaceo-lividum (Sommerf.) Fries, Epicr. 564. 1838.

Fruit body resupinate, widely effused, adnate, waxy; surface continuous, slightly tuberculate, pruinose, occasionally cracking; margin ending abruptly or very thin and pruinose; color Moonmist (12A2).

Hyphae with a brownish tint, nodose-septate, dense, slightly thick-walled, 3-4μ in diameter. Cystidia few to many, stoutly conical, heavily incrusted, thick-walled, immersed or projecting slightly, 15-30(-38) x (5)6-8(-10)μ. Gloeocystidia rare and easily overlooked, clavate, contents resinous, (15-)20-30 x (7-)8-10μ. Basidia cylindrical to subclavate, bearing 4 sterigmata, (20-)25-35 x 5-6μ. Spores cylindrical to suballantoid, smooth, hyaline, nonamyloid, 7-9(-10) x 2.5-3.5μ.

On decayed deciduous wood. Rare, and previously unreported for Illinois. Also known from Austria, Denmark, France, Italy, Lappland, Ontario, Sweden, District of Columbia, Louisiana, Maryland, Massachusetts, New Jersey, New York, and Vermont.

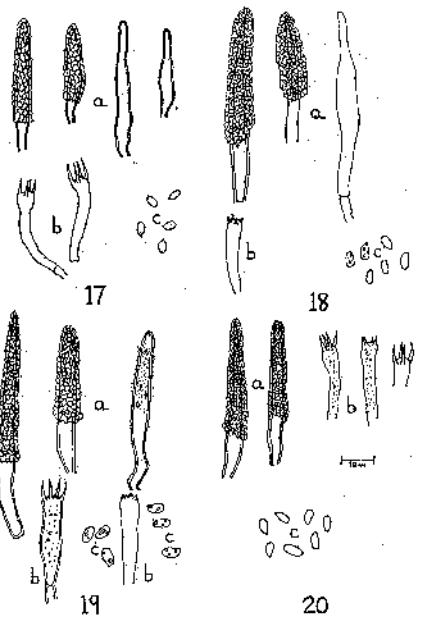
Illinois material examined: East Bay Tree Farm, Lake Bloomington, McLean County, X.24.1963, A. E. Liberta & R. J. Harris 61 (RJH).

P. violaceo-livida closely resembles *P. nuda* and *P. cinerea*. However *P. cinerea* lacks gloeocystidia, and *P. nuda* possesses more numerous broadly obpyriform gloeocystidia. A careful examination of *P. violaceo-livida* is required in order to distinguish the rare gloeocystidia.

17. **Peniophora filamentosa** (Berk. & Curt.) Burt in Coker, Elisha Mitchell Scientif. Soc. Jour. 36: 162. pl. 32, f. 5,6. 1921. FIGURE 17.

Syn.: *Corticium filamentosum* Berkeley & Curtis, Grevillea 1:178. 1873.

Peniophora unicolor Peck, N. Y. State Mus. Rept. 43:66. 1890.



FIGURES 17. *Peniophora filamentosa*. (a) Four cystidia, two incrusted and two naked; (b) Two basidia; (c) Spores. 18. *Peniophora coccineo-fulva*. (a) Three cystidia, two incrusted and one naked; (b) Basidium; (c) Spores, two with droppy contents. 19. *Peniophora affinis*. (a) Three cystidia, one partially incrusted; (b) Two basidia, one with droppy contents; (c) Spores with droppy contents. 20. *Peniophora velutina*. (a) Two incrusted cystidia; (b) Three basidia, two with droppy and granular contents; (c) Spores.

Corticium radicatum P. Hennings, Pilze Ostafrikas, 54. 1895.

Fruit body resupinate, widely effused, separable, pelliculose; surface continuous, pruinose, cracking, often flaking off and revealing the brownish layer of subhymenial hyphae, becoming vinaceous or wine-red with the application of KOH; margin consisting of compact, usually white, mycelial strands; color ranging from Sponge (14C5) to Airdale (14F6), to Citrine (14L6).

Hyphae tinted, mostly nodose-septate with occasional simple septa, incrusted in the subhymenium with golden brown mucilaginous crystals that dissolve in KOH, rather loosely arranged, whitish in the subiculum, rather thin-walled, (2.5-)3-5(-6)μ in diameter. Cystidia frequent, narrowly conic to subfusiform, incrusted with golden brown crystals that often dissolve in 3 per cent KOH leaving the cystidia naked, mostly immersed, when incrusted (28-)30-55 x (5-)6-10(-12)μ, when not incrusted the width ranges from 3.5-5μ. Basidia clavate, usually constricted near the apex, projecting above the hymenial level, bearing 4 sterigmata up to 7μ long, (15-)20-25(-29) x 4-5(-6)μ. Spores ovoid to ellipsoid, smooth, hyaline, nonamyloid, apiculate, 4-5.5 x (2-)2.5-3μ.

On decayed deciduous wood. Common in Illinois. Also known from Australia, Canada, Cuba, Denmark, France, Germany, Great Britain, Jamaica, Japan, Mexico, New Zealand, South Africa, Alabama, Arizona, Arkansas, Kentucky, Maryland, Michigan, Missouri, New Hampshire, New Jersey, New York, North Carolina, Ohio, and Vermont.

Illinois material examined: Riverside, E. T. & S. A. Harper 852 (FH); East Bay Tree Farm, Lake Bloomington, McLean County, X.24.1963, A. E. Liberta & R. J. Harris 29 (RJH).

The color reaction to KOH is the chief distinguishing characteristic of *P. filamentosa*. The pelliculose texture, the brown incrusted, narrowly conic to subfusiform cystidia, and ovoid to ellipsoid spores are also noteworthy characteristics of this species.

18. **Peniophora coccineo-fulva** (Schw.) Burt, Mo. Bot. Gard. Ann. 12:253. 1926. FIGURE 18.

Syn.: *Phlebia coccineo-fulva* Schw., Amer. Phil. Soc. Trans., II, 4: 165. 1832.

Peniophora rhodochrou Bres., Mycol. 17:70. 1925.

Fruit body resupinate, widely effused, somewhat separable, membranous to subwaxy; surface continuous, hirsute, often with scattered arachnoid areas; margin whitish, fibrillose, with frequent white rhizomorphs; color Burnous (9C4) or Flesh (11A2) to Blush (12A7), becoming somewhat Rust (6A12) colored with age.

Hyphae hyaline, simple-septate, heavily incrusted, somewhat thick-walled, (4-)4.5-10μ. Cystidia numerous, subconical to subfusiform, heavily incrusted, (50-)55-75(-100) x 9.5-13(-14)μ. Gloeocystidia absent. Basidia subclavate, bearing 4 sterigmata, 15-20 x 5-6(-8)μ. Spores broadly ellipsoid, 4.5-6.5(-7) x (2.5-)3-4μ.

On decayed deciduous wood. Rare, and previously unreported for Illinois. Also known from British Columbia, Finland, France, Germany, Mexico, New Brunswick, Ontario, Sweden, Alabama, Arizona, California, Colorado, Idaho, Maine, Maryland, Michigan, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Vermont, Virginia, and Wisconsin.

Illinois material examined: White Pines State Park, Oregon, VI.6.1964, E. J. Disselhorst & R. J. Harris 563 (ISU), 65 (RJH).

P. coccineo-fulva appears to be very closely related to *P. affinis* and *P. velutina*. It can be distinguished from the former by means of its wider cystidia and darker colored hymenium, and from the latter by means of its heavily incrusted hyphae.

19. **Peniophora affinis** Burt, Mo. Bot. Gard. Ann. 12:266. 1926. FIGURE 19.

Syn.: *Peniophora laevis* sensu Burt apud Peck, New York State Mus. Bul. 54:954, 1902.

Kneiffia laevis sensu Bres., Ann. Mycol. 1:100. 1903.

Peniophora laevis var. affinis (Burt) Litsch., Osterr. Bot. Zeitschr. 88:117. 1939.

(For further synonymy see Rogers and Jackson, 1943, p. 318.)

Fruit body resupinate, widely effused, somewhat separable, membranous; surface continuous, hirsute-pruinose, cracking and becoming somewhat waxy-fleshy with age; margin radiately fibrillose with many white to cream colored rhizomorphs, sometimes slightly reflexed and ending abruptly; color Cream (9D2) with a Capucine Buff (9E5) tint, less often Apricot (10F7), or between Golden Wheat (11D7) and Inca Gold (11J7).

Hyphae hyaline, simple-septate with occasional clamp connections, loosely arranged and easily distinguished in the

subiculum, becoming compact toward the hymenium, somewhat thick-walled, naked 3-6(-9)μ in diameter. Cystidia occurring frequently, somewhat narrowly conical when fully incrusted to subfusiform when naked or partly incrusted, thin to slightly thick-walled, projecting or immersed, (30-)40-85(-100) x (4-) 5.5-7.5(-8)μ. Gloeocystidia absent. Basidia subclavate to clavate, bearing 4 sterigmata, walls often somewhat thickened, contents often granular, (15-) 25-35(-42) x 4-6μ. Spores oblong-ellipsoid, somewhat flattened on one side, smooth, hyaline, nonamyloid, contents mostly with one or more large oil droplets, (4-)5-7 x 2.5-3(-4)μ.

On decayed deciduous wood. Common in Illinois. Also known from Australia, Austria, Denmark, France, Great Britain, Jamaica, Ontario, Quebec, Sweden, Ukraine, West Indies, Maine, Massachusetts, New Hampshire, New York, Oregon, Tennessee, Vermont, and Wisconsin.

Illinois material examined: Glencoe, E. T. & S. A. Harper 650, 820 (FH); Lowden Memorial Park, Oregon, VI.6.1964, E. J. Disselhorst & R. J. Harris 62, 63 (RJH), 562 (ISU).

P. affinis so closely resembles *P. velutina* that it becomes difficult to separate the two on microscopic differences alone. The lighter colored fruit body of *P. affinis* seems to be the only characteristic used to separate these species. Culture studies must be made to help determine the relationship between these two species.

20. **Peniophora velutina** (DC ex Fries) Cooke, Grevillea 8:21. 1879. FIGURE 20.

Syn.: *Thelephora velutina* DC., Fl. Franc. 6:33. 1815.

Fruit body resupinate, widely effused, somewhat separable, membranous; surface continuous, pruinose, somewhat hispid in profile, cracking with age; margin whitish, radiately fibrillose with frequent white rhizomorphs, sometimes slightly reflexed; color Tansan (12B6) to Aloma (13C7).

Hyphae hyaline, simple-septate, naked, thin to slightly thick-walled, (4-)5-8(-10)μ in diameter. Cystidia occurring frequently, subconical, heavily incrusted, slightly thick-walled, 50-85(-120) x 7-11 (-15)μ. Gloeocystidia absent. Basidia subclavate to clavate, bearing 4 sterigmata, 20-35(-40) x 5-7μ. Spores ellipsoid, somewhat flattened on one side, hyaline, nonamyloid, smooth, 5-8 x 2.5-3.5(-4)μ.

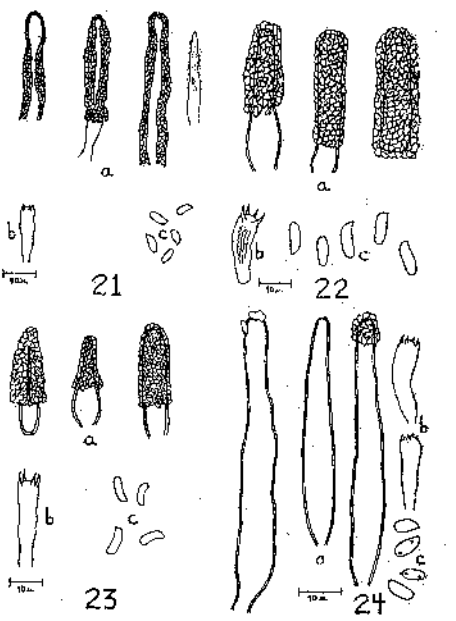
On decayed deciduous wood. Rare in Illinois. Also known from Austria, Canada, Denmark, France, New Zealand, Poland, Sweden, Alabama, Colorado, Idaho, Massachusetts, Michigan, Montana, New Hampshire, New Jersey, New Mexico, New York, Oregon, Pennsylvania, Tennessee, Vermont, Washington, and Wisconsin.

Illinois material examined: Lowden Memorial Park, Oregon VI.6.1964, E. J. Disselhorst & R. J. Harris 66 (RJH).

See discussion under *P. affinis* and *P. coccineo-fulva*.

21. **Peniophora ludoviciana** Burt, Mo. Bot. Gard. Ann. 12:244. 1926. FIGURE 21.

Syn.: *Peniophora flammea* Burt, Mo. Bot. Gard. Ann. 12:252. 1926.



FIGURES 21, *Peniophora ludoviciana*. (a) Four cystidia, one nearly naked; (b) Basidium; (c) Spores. 22. *Peniophora guttulifera*. (a) Three incrusted cystidia; (b) Basidium with resinous contents; (c) Spores. 23. *Peniophora cinerea*. (a) Three incrusted cystidia; (b) Basidium; (c) Spores. 24. *Peniophora cremea*. (a) Three cystidia, two with apical incrustation; (b) Two basidia; (c) Spores, two with small oil droplets.

Fruit body resupinate, widely effused, adnate, subwaxy; surface continuous, verrucose, pruinose, cracking when dry; margin somewhat thinning and whitish; color between Stag (14I27) and Gold (14K7) to Cinnamon Brown (14I10).

Hyphae hyaline, nodose-septate, compact, thin-walled, incrusted, 2-4.5μ in diameter. Cystidia moderate to frequent, mostly immersed, cylindrical-obtuse and heavily incrusted to subfusiform with slight or no incrustation, pseudo-lumen of incrusted cystidia often constricted near the middle, 20-55 x (5-)6.5-9μ. Gloeocystidia absent. Basidia subclavate, bearing 4 sterigmata, 14-20 x 4-4.5(-5)μ. Spores oblong-ellipsoid, flattened on one side, smooth, hyaline, nonamyloid, 3.5-6.5 (-7.5) x 2-3(-3.5)μ.

On decayed deciduous wood. Common, and previously unreported for Illinois. Also known from Bermuda, Canada, Cuba, Alabama, Florida, Louisiana, Michigan, and Texas.

Illinois material examined: west edge of Crab Orchard Lake, near Carbondale, XI.23.1963, A. E. Liberta & R. J. Harris 459 (ISU); next to Mississippi River, Quincy, XI.9.1963, R. J. Harris 27, 28, 43 (RJH).

This species is characterized by its verrucose fructification, constricted pseudo-lumen formed by the heavy incrustation of many of the cylindrical-obtuse cystidia, and short oblong-ellipsoid spores.

22. **Peniophora guttulifera** (Karst.), Sacc. Syll. Fung. 9:240. 1891. FIGURE 22.

Syn.: *Gloeocystidium guttuliferum* Karst., Finl. Nat. Folk Bidr. 48:430. 1889.

Fruit body resupinate, effused, adnate, subwaxy; surface continuous, pruinose, with projecting cystidia resembling upright blunt rice grains; margin indeterminate to often arachnoid; color approaching Maple (11E4), (11E3), or Yellowish (approaching 11F4).

Hyphae hyaline, nodose-septate, difficult to separate, smooth, thin-walled, (2-)2.5-5(-6)μ in diameter. Cystidia few to frequent, broadly cylindrical-obtuse to subclavate when incrusted, broadly subclavate to obclavate when incrustation is removed, slightly thick-walled, (40-)45-70(-90) x (8-)14-20μ. Gloeocystidia absent. Basidia subclavate, bearing 4 sterigmata, contents usually resinous, when young resembling gloeocystidia, 20-30(-35) x 5-7(-9.5)μ. Spores cylindrical, somewhat flattened on one side, smooth, nonamyloid, hyaline, often slightly curved, 8-12(-14) x 3-4.5(-5)μ.

On decayed deciduous wood. Rare, and previously unreported for Illinois. Also known from British Columbia, Denmark, France, Finland, Ontario, Sweden, Alabama, Louisiana, Maine, New Hampshire, New Jersey, Ohio, Oregon, and Vermont.

Illinois material examined: Trelease Woods, Urbana, X.15.1959, A. E. Liberta 173 (AEL).

The large, blunt, incrusted cystidia, along with the large cylindrical spores are distinctive of this species, and help to separate it from other members of *Peniophora*.

23. **Peniophora cinerea** (Fries) Cooke, Grevillea 8:20. 1879. FIGURE 23.

Syn.: *Thelephora cinerea* Fries, Syst. Myc. 1:453. 1821.

(For further synonymy see Burt, 1926, p. 348.)

Fruit body resupinate, at first in small patches which later coalesce and become widely effused, adnate, subwaxy to waxy; surface continuous, pruinose to minutely pilose; margin thin, ending rather abruptly to minutely fibrillose; color Sweetmeat (11C5) to Mauve Blush (12A3).

Hyphae with a brownish tint, nodose-septate, difficult to separate, slightly thick-walled, usually naked, 2.5-4μ in diameter. Cystidia numerous, ranging from obtuse-cylindrical to conical, heavily incrusted, thick-walled, mostly immersed, 15-28(-30) x 5.5-7.5(-9)μ. Gloeocystidia absent. Basidia subclavate, bearing 4 sterigmata, 20-30 x 5-6μ. Spores cylindrical to suballantoid, smooth, hyaline, nonamyloid, (6-)7-9(-10) x 2.5-3μ.

On decayed deciduous wood. Rare in Illinois. Also known from Africa, Australia, Austria, Cuba, Denmark, England, France, Germany, Italy, Jamaica, Japan, Mexico, Newfoundland, New Zealand, Ontario, Puerto Rico, Quebec, Sweden, and most areas of the United States.

Illinois material examined: River Forest, E. T. & S. A. Harper 757 (FH).

P. cinerea is often mistaken for *P. violaceo-livida* or *P. nuda*. The latter two may be separated from *P. cinerea* on the basis of their having gloeocystidia. A careful examination with sulfuric benzaldehyde is required in order to determine the presence or absence of gloeocystidia in specimens thought to be *P. cinerea*.

24. **Peniophora cremea** (Bres.) Sacc. & Syd., Syll. Fung. 16:195. 1902. FIGURE 24.

Syn.: *Corticium cremeum* Bres., Fungi Trident. 2:63. 1898.

Peniophora Eichleriana (Bres.) Bourd. & Galz., Soc. Mycol. Fr. Bul. 28:397. 1913.

Peniophora arachnoidea Burt, Mo. Bot. Gard. Ann. 12:220. 1926.

(For further synonymy see Rogers & Jackson, 1943, p. 314.)

Fruit body resupinate, widely effused, adnate, submembranous; surface continuous, sparsely cracking and exposing the shiny, white, loosely interwoven mycelial strands of the subiculum, minutely pilose, with some areas appearing crystalline because of many cystidia reflecting the light; margin narrow, arachnoid, and white; color between Leghorn (10D3) and Nankeen (10F3).

Hyphae hyaline, simple-septate, loosely arranged and frequently branching in the subiculum, becoming compact in the hymenium, thick-walled, incrusted with small crystals, 4.5-7μ in diameter. Cystidia numerous, cylindrical, tapering gradually into an obtuse or sometimes slightly attenuated apex, narrowing at the base, thin to slightly thick-walled, bearing coarse crystals at the apex, other cystidia finely incrusted or not incrusted, 45-80(-100) x (5-)6-8.5μ. Gloeocystidia absent. Basidia subclavate, slightly emergent, bearing 4 sterigmata, 15-25(-30) x 4.5-7μ. Spores oblong-ellipsoid, smooth, hyaline, nonamyloid, (5-)5.5-8 x 2.5-4μ.

On decayed deciduous wood. Previously unreported for Illinois. Also known from Australia, Austria, Canada, Denmark, England, France, Germany, Japan, New Zealand, Poland, South Africa, Sweden, Alabama, California, District of Columbia, Idaho, Louisiana, Massachusetts, Michigan, Montana, New Hampshire, New Jersey, New York, Oregon, Vermont, and Washington.

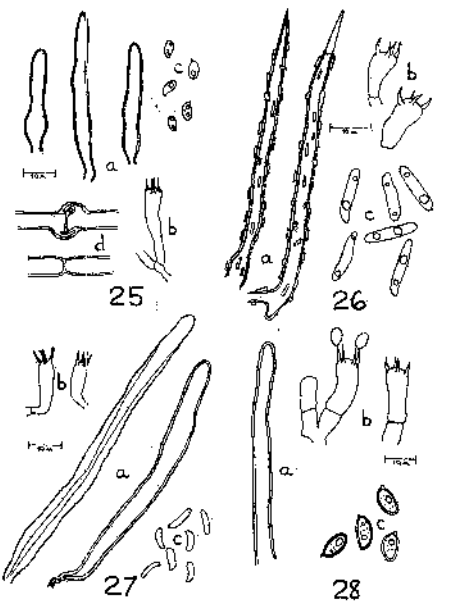
Illinois material examined: Fox Ridge State Park, Charleston, X.5.1963, R. J. Harris 488 (ISU), 13 (RJH).

P. cremea is characterized by its creamy fructification, cracking surface which exposes the white, loosely arranged, branching mycelial strands of the subiculum. The coarsely incrusted obtuse tips of the cylindrical cystidia, when present, are distinctive of this species.

25. **Peniophora burtii** Romell, Burt, Mo. Bot. Gard. Ann. 12:278. 1926. FIGURE 25.

Fruit body resupinate, widely effused, separable, pelliculose; surface continuous, minutely pilose, sometimes flaking away and revealing the large mycelial strands of the subiculum, cracking when dry; margin fibrillose to rhizomorphic, rhizomorphs usually yellow and connecting adjacent fructifications; color between Cream (9D2) and Pinard Yellow (9J2) to Leghorn (10D3).

Hyphae hyaline, simple-septate, with an occasional double clamp connection, often constricted at the septa, loosely



FIGURES 25. *Peniophora burtii*. (a) Three cystidia; (b) Basidium; (c) Spores with droppy contents; (d) Two sections of hyphae showing double clamp connection and constricted septum. 26. *Peniophora longispora*. (a) Two cystidia, one with outer sheath missing at the apex; (b) Two basidia; (c) Spores with two large oil droplets each. 27. *Peniophora subalutacea*. (a) Two cystidia showing variation in wall thickness; (b) Two basidia; (c) Spores. 28. *Peniophora ochroleuca*. (a) Cystidium; (b) Two basidia, one bearing two young basidiospores; (c) Spores with thickened walls and droppy contents.

arranged and somewhat incrusted in the subiculum, becoming compact toward the hymenium, thin to slightly thick-walled, 3-8(-10)μ in diameter. Cystidia rare to frequent, cylindrical-obtuse to subfusiform, hyaline, naked, slightly thick-walled, 30-65 x (3-)5-7μ. Basidia clavate, bearing 4 sterigmata, only slightly stained in KOH-phloxine, 20-30 x 4.5-6μ. Spores varying in shape from broadly ellipsoid to oblong-ellipsoid, somewhat flattened on one side, smooth, hyaline, nonamyloid, 4-6 x 2-3μ.

On decayed deciduous wood. Common, and previously unreported for Illinois. Also known from Alabama, Louisiana, Massachusetts, Michigan, Montana, New Jersey, New York, Ohio, Vermont, Virginia, and West Virginia.

Illinois material examined: Schiller Woods, Schiller Park, VIII.22.1964, R. J. Harris, Sr. & R. J. Harris, Jr. 556 (ISU), 40, 41 (RJH); East Bay Tree Farm, Lake Bloomington, McLean County, X.24.1963, A. E. Liberta & R. J. Harris 42 (RJH).

P. burtii is characterized by its simple-septate hyphae which are constricted at the septa, the yellow rhizomorphs, and the cylindrical-obtuse to subfusiform cystidia.

26. **Peniophora longispora** (Pat.) Höhn., Ann. Mycol. 3:325. 1905. FIGURE 26.

Syn.: *Hypochnus longisporus* Pat., Jour. de Bot. 8:221. 1894.

Kneiffia longispora (Pat.) Bres., Ann. Mycol. 1:105. 1903.

Peniophora asperipilata Burt, Mo. Bot. Gard. Ann. 12:230. 1926.

Fruit body resupinate, widely effused, separable, floccose; surface discontinuous, pubescent to pilose; margin somewhat thinning; color mainly Whitish Grey (11A1), less often Cream (9D2) or approaching Polo Tan (13C6).

Hyphae hyaline, nodose-septate, loosely arranged, thin to slightly thick-walled, somewhat incrusted with small crystals or not incrusted, 2-3.5μ in diameter. Cystidia occurring frequently, cylindrical, usually tapering into a pointed apex, often broken at the tip, sparsely incrusted with rectangular to anvil shaped crystals, covered by an outer sheath which often breaks away revealing the inner, thin-walled cystidium, (40-)50-90 x 2.5-4.5(-5)μ. Gloeocystidia absent. Basidia short-clavate, 13-20(-30) x 4.5-6(-8)μ, bearing 4 sterigmata up to 5μ long. Spores long cylindrical to subfusiform, usually with two large oil droplets, smooth, hyaline, nonamyloid, sometimes crooked at the apiculus end, 10-16 x (1.2-)1.5-3μ.

On decayed deciduous wood. Very common throughout Illinois. Also known from Africa, Australia, Austria, Cuba, Denmark, England, France, Grenada, Jamaica, New Zealand, Ontario, Poland, Sweden, West Indies, Florida, Idaho, Louisiana, Maine, Montana, New York, and Washington.

Illinois material examined: Funk's Grove, McLean County, VI.23.1962, A. E. Liberta 247, 254 (ISU); IX.21.1963, A. E. Liberta & R. J. Harris 8 (RJH); west edge of Crab Orchard Lake, XI.23.1963, A. E. Liberta & R. J. Harris 4, 33 (RJH); White Pines State Park, Oregon, VI.6.1964, E. J. Disselhorst & R. J. Harris 34 (RJH).

This species is well characterized by the long, taporing cylindrical cystidia, sparsely incrusted with rectangular crystals, and the long cylindrical to subfusiform spores.

27. **Peniophora subalutacea** (Karst.) Höehn. and Litsch., K. Akad. Wiss. Wien Math.-Nat. Kl. Sitzungsb. 115(Abt. 1):1601. 1906. FIGURE 27.

Syn.: *Corticium subalutaceum* Karst., Soc. Faun. Fl. Fenn. Medd. 9:65. 1883.

Fruit body resupinate, effused, adnate, membranous; surface discontinuous and often appearing somewhat porous, reticulate, hirsute in profile; margin indeterminate to very thin; color yellowish tan to approximately Yellow Stone (12K6).

Hyphae hyaline, nodose-septate, loosely interwoven, thin to slightly thick-walled in the subiculum, naked, 2-3μ in diameter. Cystidia occurring frequently, cylindrical-obtuse, sharply tapering near the base, naked, thick-walled, walls thickest at the base and thinning toward the apex, 55-125 x 5.5-8μ. Basidia cylindrical to subclavate, often distorted in KOH mount, 12.5-20 x 3.5-5.5(-6)μ, bearing 4 sterigmata up to 7μ long. Spores narrowly cylindric, smooth, hyaline, nonamyloid, usually slightly curved at the apiculus end, sterigmata often adhering to the apiculus of the free spore, 6-9 x 1.5-2μ.

On decayed deciduous wood. Common, and previously unreported for Illinois. Also known from Austria, British Columbia, Denmark, England, Finland, France, New Zealand, Ontario, Poland, Sweden, Alabama, Idaho, Louisiana,

Maryland, New Jersey, New York, and Washington.

Illinois material examined: Fox River area, Charleston, V.23.1959, A. E. Liberta 6 (AEL); west edge of Crab Orchard Lake, Carbondale, XI.23.1963, A. E. Liberta & R. J. Harris 559 (ISU), 50, 51 (RJH).

The cystidial walls of *P. subalutacea* appear to vary in the collections studied. One collection showed the walls of the cystidia to be very thick; whereas in another collection the walls were only slightly thickened. Weresub (1961) lists several variations and subspecies for *P. subalutacea*, which may account for the difference noted.

28. **Peniophora ochroleuca** (Bres.) Höhn. & Litsch., Ak. Wiss. Wien, Math.-Nat. Kl., Sitzungsb. 117, I:1107. 1908. FIGURE 28.

Syn.: *Coniophora ochroleuca* Bres. apud Brinkm., Westf. Prov-Ver. Jahresber. 26:130. 1898.
Coniophorella ochroleuca (Bres.) Brinkm., Westf. Prov.-Ver. Jahresber. 44:41. 1916.
Peniophora fusispora sensu Höhn. & Litsch., Ann. Myc. 4:289. 1906.

Fruit body resupinate, in small patches which are connected by mycelial strands, separable, submembranous; surface discontinuous, hypochnoid; margin indeterminate; color whitish or between Cream (9D2) and Yellowish (9H3).

Hyphae hyaline, nodose-septate, with much branching, somewhat thick-walled, usually with many short segments, naked, (4.5-)5-10(-12)μ in diameter. Cystidia cylindrical, tapering slightly into an obtuse apex, walls thick in the stem and thinning somewhat toward the tip, naked, 57-300(-360) x (6-)8-10.5(-12)μ. Gloeocystidia absent. Basidia broadly subclavate, bearing 4 sterigmata, (18-)22-35(-48) x 7-9(-10)μ. Spores broadly fusiform, smooth, hyaline to slightly tinted, thick-walled, apiculate, contents granulose, nonamyloid, 9.5-15(-18) x (4-)5-7.5(-8)μ.

On decayed deciduous wood. Rare, and previously unreported for Illinois. Also known from Canada, France, Germany, Massachusetts, and Oregon.

Illinois material examined: Funk's Grove, McLean County, IX.21.1963, A. E. Liberta 476 (ISU).

P. ochroleuca is distinguished from other species of *Peniophora* by its hypochnoid fructification, large thick-walled cystidia, and large broad-fusiform spores.

29. **Peniophora argillacea** Bres., Fung. Trid. 2:63. 1898. FIGURE 29.

Fruit body resupinate, moderately effused, adnate, submembranous; surface discontinuous, appearing pilose due to the projecting cystidia; margin indeterminate to slightly thin-pruinose; color Moonmist (12A2) to Tansan (12B6).

Hyphae hyaline, nodose-septate, usually short-celled with segments sometimes swollen, thin-walled, naked or with scant incrustation, 3-6.5μ in diameter. Cystidia occurring frequently, more or less obclavate-undulate, naked, thin-walled, 80-120 x (9-)10-16μ. Basidia subclavate, constricted near the apex, bearing 4 sterigmata, contents resinous, (12-)15-25 x 5.5-6.5(-10)μ. Spores broad-ellipsoid to slightly suboval, flattened on one side, often curved at the apiculus end, smooth, hyaline, nonamyloid, 7.5-9.5(-10) x 4-5μ.

Growing with *Platygloea peniophorae* on decayed deciduous wood. Rare, and previously unreported for Illinois. Also known from Austria, Canada, Denmark, France, Sweden, Michigan, and Wisconsin.

Illinois material examined: White Pines State Park, Oregon, VI.6.1964, E. J. Disselhorst & R. J. Harris 52 (RJH).

P. argillacea is easily recognized microscopically by its long, obclavate-undulate cystidia. It is also found to be growing with or on another species of fungus. In the only Illinois collection available, *P. argillacea* was nearly obscured by *Platygloea peniophorae*.

30. **Peniophora sambuci** (Pers.) Burt, Mo. Bot. Gard. Ann. 12:233. 1926. FIGURE 30.

Syn.: *Thelephora Sambuci* Pers., Mycol. Eur. 1:152. 1822.
Corticium Sambuci (Pers.) Fries, Epicr. Syst. Mycol. p. 565. 1838.
Corticium cretaceum (Fries) Cooke ex Sacc., Syll. Fung. 11:128. 1895.
Peniophora Thujae Burt, Mo. Bot. Gard. Ann. 12:236. 1926.
(For further synonymy see Rogers and Jackson, 1943, p. 325.)

Fruit body resupinate, widely effused, somewhat separable, submembranous; surface faintly discontinuous, pruinose to farinose, with some areas thick-arachnoid, rarely cracking; margin thinning out and arachnoid; color white to drying Oyster White (10B1).

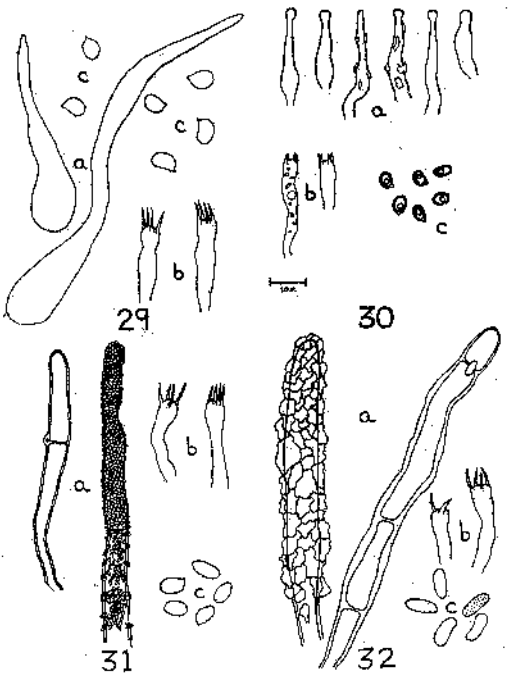
Hyphae hyaline, nodose-septate, naked or sometimes incrusted, with frequent swollen areas, slightly thick-walled, 2.5-

4.5μ in diameter. Cystidia cylindrical-capitate or somewhat tibiiform to subfusiform, thin-walled, mostly naked, occasionally somewhat incrusted, 30-40 (-45) x (3-)3.5-5.5μ. Basidia narrowly clavate, bearing 4 sterigmata, contents droppy, (15-)19-31 x 4.5-5(-6)μ. Spores broadly ellipsoid to occasionally subglobose, hyaline, smooth, nonamyloid, somewhat thick-walled, almost always with one large oil droplet, (4-)6-7(-7,5) x 3-5μ.

On decayed deciduous wood. Common, but previously unreported for Illinois. Also known from Australia, Austria, Belgium, Canada, Denmark, England, France, Germany, Italy, Mexico, New Zealand, Sweden, Ukraine, California, Kansas, Louisiana, Maine, Massachusetts, Michigan, Missouri, New Hampshire, New Jersey, New York, Pennsylvania, Vermont, and Washington.

Illinois material examined: Mississippi River area, Quincy, XI.9.1963, R. J. Harris 491 (ISU), 24 (RJH); Funk's Grove, McLean County, X.28.1963, R. J. Harris 22, 23 (RJH), 490 (ISU).

P. sambuci is easily distinguished from other species of *Peniophora* by means of its somewhat tibiiform cystidia, and somewhat thick-walled, broadly ellipsoid spores containing one large oil droplet.



FIGURES 29. *Peniophora argillacea.* (a) Two cystidia; (b) Two basidia; (c) Spores. 30. *Peniophora sambuci.* (a) Six cystidia, two sparsely incrusted; (b) Two basidia, one with droppy contents; (c) Spores with somewhat thickened walls and a single oil droplet. 31. *Peniophora polonensis.* (a) Two cystidia, one naked and one incrusted; (b) Two basidia; (c) Spores. 32. *Peniophora subtestacea.* (a) Two cystidia, one incrusted and one naked; (b) Two basidia; (c) Spores, one with granular contents.

31. **Peniophora polonensis** (Bres.) Höhn. & Litsch., Ann. Mycol. 4:292. 1906. FIGURE 31.

Syn.: *Kneiffia polonensis* Bres., Ann. Mycol. 1:103. 1903.

Peniophora canadensis Burt, Missouri Bot. Gard. 12:260. 1926.

Fruit body resupinate, effused, separable from the substrate, floccose; surface discontinuous, somewhat hypochnoid, hispid in profile; margin arachnoid; color Yellowish (9G2, 9H2, 9G3, 9H3).

Hyphae hyaline, nodose-septate, thin-walled, naked, 4-5(-6)μ in diameter. Cystidia occurring frequently, long-cylindrical, delicately incrusted to little or no incrustation, thin-walled, septate, often with constrictions and clamp connections at the septa, tapering toward the base, (75-)85-200(-250) x (6-)7-9.5μ. Gloeocystidia absent. Basidia cylindrical to subclavate, usually with a slight constriction near the middle, often arising in a candlebra fashion, (18-)24-28(-30) x (4-)4.5-6μ, bearing 4 sterigmata. Spores oblong-ellipsoid to sub-ovate, smooth, hyaline, nonamyloid, apiculate, 6-8(-9.5) x (3.5-)4-5μ.

On decayed deciduous wood. Rare, and previously unreported for Illinois. Also known from Austria, Denmark, France, Ontario, Poland, Sweden, Connecticut, Michigan, New York, North Carolina, and Pennsylvania.

Illinois material examined: Funk's Grove, McLean County, XI.24.1961, S. F. & A. E. Liberta 565 (AEL).

P. polonensis is characterized by its floccose fructification, oblong-ellipsoid to sub-ovate spores and its delicately granular, large septate cystidia.

32. **Peniophora subtestacea** Litsch., Oesterr. Bot. Zeitschr. 77:132. 1928. FIGURE 32.

Fruit body resupinate, widely effused, adnate, membranous; surface continuous with sparse cracking, hirsute; margin ending somewhat abruptly to sometimes arachnoid; color Tansan (12B6) to Honeysuckle (12D6).

Hyphae hyaline, nodose-septate, thin-walled, usually naked, difficult to separate, 3-4(-5)μ in diameter. Cystidia occurring frequently, cylindrical, often narrowing abruptly near the base, sparse to heavy incrustation with large crystals, thick-walled, septate, clamp connections often present at the septa, (50-)65-200 x (7-)9-13μ. Gloeocystidia absent. Basidia cylindrical, but often bending into irregular shapes, (15-)20-30(-35) x 5-7μ, bearing (2-)4 sterigmata. Spores cylindrical to oblong-ellipsoid, often appearing flattened on one side to sometimes slightly curved, contents often granulose, smooth, hyaline, nonamyloid, apiculate, (6.5-)8.5-11(-12) x 3.5-4.5μ.

On heartwood of deciduous tree. Rare, and previously unreported for Illinois. Also known from Austria, Ontario, Sweden, Connecticut, Iowa, Massachusetts, New York, Ohio, and Pennsylvania.

Illinois material examined: Funk's Grove, McLean County, V.29.1962, A. E. Liberta 411 (AEL).

P. subtestacea closely resembles *P. aspera*, but differs from the latter in having a darker colored hymenium and in having a hirsute fruit body rather than one that appears somewhat odontoid.

SUMMARY

This study serves as an up-to-date supplement to the previous knowledge of the genus *Peniophora* in Illinois, and provides a useful reference for present and future investigators. It should be noted that it is in no way intended to be a complete monograph of the species. A record of 32 species of *Peniophora* now exists for Illinois, in contrast to the preexisting 8 reported species.

All species described were found on fallen and decaying deciduous wood. Almost all species were found to occur throughout the state. The majority of material collected represents no major range extensions of the species, but helps to fill the existing distribution gaps in the midwest.

A gradual southward range extension of two species, *P. subulata* and *P. argillacea* is indicated in view of the fact that prior to this research these species had only been collected north of Illinois.

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