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## FUNGI THAT DECAY MESQUITE IN SOUTHERN ARIZONA<sup>1/</sup>

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### SUMMARY

Forty-eight species of lignicolous Basidiomycetes are reported from mesquite in Arizona. *Phellinus badius* and *Inonotus texanus* are the main causes of heartrot in living mesquite. Three new species, *Hypochnicium prosopidis*, *Mycoacia austro-occidentale*, and *Poria baboquivariensis* are described.

Common mesquite (*Prosopis juliflora* (Sw.) DC.) is a woody member of the Leguminosae with a wide distribution in the Southwest. It occurs most frequently as a spreading shrub on drier sites but also becomes a tree with a trunk 1 to 4 feet in diameter and up to 50 feet in height along streams. Benson (1941) considers the species to be composed of 3 intergrading varieties; var. *glandulosa*, var.

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*torreyana*, and var. *velutina*. We have made no effort to distinguish between these varieties as hosts of the wood decay fungi discussed below. Screwbean mesquite (*P. pubescens* Benth.) occurs in some localities in southeastern Arizona but we have not investigated the fungi on this species.

In southern Arizona common mesquite is distributed from the fringe of the Sonoran Desert to the adjoining desert-grasslands, and upward to the lower portion of the oak-woodland zone. At lower elevations it is associated with other woody legumes such as catclaw acacia (*Acacia greggii* Gray), whitethorn acacia (*A. constricta* Benth.), yellow palo verde (*Cercidium microphyllum* (Torr.) Rose and Johnston), and blue palo verde (*C. floridum* Benth.). Other associates include several species of prickly pear and cholla cacti (genus *Opuntia*), the giant saguaro cactus (*Carnegiea gigantea* (Engelm.) Britt. et Rose) and creosote bush (*Larrea tridentata* (DC.) Coville). Along stream beds it is associated to some extent with a great diversity of hardwood trees. Among these are Fremont cottonwood (*Populus fremontii* S. Wats.), Arizona walnut (*Juglans major* (Torr.) Heller), velvet ash (*Fraxinus velutina* Torr.), desert willow (*Chilopsis linearis* (Cav.) Sweet), Arizona sycamore (*Platanus wrightii* S. Wats.), Goodding willow (*Salix gooddingii* Ball), and others. At its highest elevational range it is an infrequent associate of Emory oak (*Quercus emoryi* Torr.) in the lower portion of the oak-woodland zone.

Decay of heartwood in living mesquite is due mainly to two fungi, *Phellinus badius* and *Inonotus texanus*, both of which cause a white rot. Their mode of entrance into the heartwood is unknown. Tunnels of the mesquite borer (*Megacyllene antennatus* (White)) are a possible infection court. Both *P. badius* and *I. texanus* are restricted in their American distribution to the arid Southwest. *Inonotus texanus* is not known to occur elsewhere, but *P. badius* is widely distributed throughout the tropical regions of the world.

Dead branches of mesquite might seem an unlikely place for the development of wood-rotting fungi. However, a very distinctive group of species has adapted to this dry environment and is generally found wherever mesquite grows. The four most important branch decay fungi are *Peniophora tamaricicola*, *Byssomerulius corium*, *Peniophora albobadia*,

and *Exidiopsis leucophaea*. Other species frequently found fruiting on dead branches are *Peniophora nuda*, *Phanerochaete tuberculata*, *Phanerochaete arizonica*, and *Phanerochaete allantospora*. All of these fungi produce basidiocarps that remain dry and dormant over long periods of little or no precipitation and low humidity. Following precipitation during the summer and winter rainy periods, they revive and begin sporulation very quickly. Basidiocarps of all of the branch decay fungi mentioned above (except for *Exidiopsis leucophaea*, a Heterobasidiomycete) have a typical euhymenium and have no specialized structures that enable them to remain viable over dry, hot periods. It is of interest that no species of *Aleurodiscus* or *Laeticorticium* are found on branches of mesquite although members of these genera are found on dead branches of trees at higher elevations in the Southwest and in more northern latitudes. Apparently the catahymenium and thick-walled resting probasidia found in many species of these genera are not adapted to survival over long periods in a hot, dry climate.

A number of other fungi have been found on dead fallen branches, dead standing trees, and fallen mesquite. *Phellinus ferruginosus*, *Poria tarda*, and *Antrodia heteromorpha* are probably the most important decay fungi on dead, fallen mesquite wood.

Our observations indicate that the fungi treated here are all associated with white rots except *Antrodia heteromorpha*, *Panus fulvidus* and *Coniophora eremophila*.

In the descriptions that follow, capitalized color names are from Ridgway (1912). The collectors cited by initials are R. L. Gilbertson (RLG), E. R. Canfield (ERC), and H. H. Burdsall, Jr. (HHB). A few collections by others are cited, and in these cases the collector's name is given.

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## CHECKLIST OF FUNGI THAT DECAY MESQUITE IN SOUTHERN ARIZONA

## TREMELLALES

1. *Dacrymyces minor* Pk.
2. *Exidiopsis calcea* (Pers.) Wells
3. *Exidiopsis leucophaea* (Bres.) Wells
4. *Platyglaea mycophila* Burds. et Gilbertson
5. *Platyglaea peniophorae* Bourd. et Galz.
6. *Tremella simplex* Jacks. et Martin

## APHYLLOPHORALES

## Coniophoraceae

7. *Coniophora eremophila* Lindsey et Gilbertson

## Corticiaceae

8. *Athelia coprophila* (Wakef.) Jülich
9. *Byssomerulius corium* (Fr.) Parm.
10. *Byssomerulius sulphureus* (Burt) Lindsey
11. *Hyphoderma amoenum* (Burt) Donk
12. *Hyphoderma* sp. (RLG 10255)
13. *Hyphodontia quercina* (Fr.) J. Erikss.
14. *Hyphodontia sambuci* (Pers. ex Fr.) J. Erikss.
15. *Hypochnicium bombycinum* (Sommerf. ex Fr.) J. Erikss.
16. *Hypochnicium prosopidis* Burds.
17. *Mycoacia austro-occidentale* Canf.
18. *Odontia pruni* Lasch
19. *Peniophora albobadia* (Schw. ex Fr.) Boidin
20. *Peniophora nuda* (Fr.) Bres.
21. *Peniophora tamaricicola* Boidin et Malençon
22. *Phanerochaete allantospora* Burds. et Gilbertson
23. *Phanerochaete arizonica* Burds. et Gilbertson
24. *Phanerochaete chrysorhizon* (Torr.) Budington et Gilbertson
25. *Phanerochaete tuberculata* (Karst.) Parm.
26. *Phlebia ochraceofulva* (Bourd. et Galz.) Donk

## Cyphellaceae

27. *Henningsomyces candidus* (Pers.) O. Kuntze

## Ganodermataceae

28. *Ganoderma lucidum* (Leyss. ex Fr.) Karst.

## Hymenochaetaceae

29. *Hymenochaete arida* Karst.  
 30. *Hymenochaete rubiginosa* Dicks. et Lev.  
 31. *Inonotus texanus* Murr.  
 32. *Phellinus badius* (Berk.) G. H. Cunn.  
 33. *Phellinus ferruginosus* (Schrad. ex Fr.) Bourd. et Galz.  
 34. *Phellinus gilvus* (Schw.) Pat.

## Lachnocladiaceae

35. *Vararia tropica* Welden

## Polyporaceae

36. *Antrodia heteromorpha* (Fr.) Donk  
 37. *Polyporus arcularius* Batsch ex Fr.  
 38. *Poria apacheriensis* Gilbertson et Canf.  
 39. *Poria baboquivariensis* Gilbertson  
 40. *Poria latemarginata* (Dur. et Mont.) Cke.  
 41. *Poria medulla-panis* (Jacq. sensu Pers.) Bres.  
 42. *Poria subincarnata* (Pk.) Murr.  
 43. *Poria tarda* (Berk.) Cke.  
 44. *Funalia gallica* (Fr.) Bond. et Sing.

## Stereaceae

45. *Lopharia crassa* (Lév.) Boidin

## Thelephoraceae

46. *Tomentella coerulea* (Bres.) Hoehn. et Litsch.

## AGARICALES

47. *Marasmius siccus* (Schw.) Fr.  
 48. *Panus fulvidus* Bres.

## KEY TO WOOD-ROTTINGBASIDIOMYCETES ON MESQUITE IN ARIZONA

1. Basidia septate or bifurcate . . . . . 2  
 1. Basidia not septate or bifurcate, of the  
 homobasidium type. . . . . 7  
 2. Basidia bifurcate, . . . . . 1. *Dacrymyces minor*  
 2. Basidia septate. . . . . 3

3. Basidia transversely septate. . . . . 4
3. Basidia vertically septate . . . . . 5
4. Basidia with one septum; basidiospores spherical . . . . . 4. *Platygløea mycophila*
4. Basidia with three septa; basidiospores ellipsoid . . . . . 5. *Platygløea peniophorae*
5. Basidiocarps gelatinous; parasitic on other fungi; basidia one- or two-celled . . . . . 6. *Tremella simplex*
5. Basidiocarps not gelatinous; not parasitic on other fungi; basidia four-celled at maturity. . . . . 6
6. Basidiocarps discoid, with a hirsute, inrolled margin; hymenial surface purplish-gray. . . . . 3. *Exidiopsis leucophaea*
6. Basidiocarps broadly effused, chalky white . . . . . 2. *Exidiopsis calcea*
7. Hymenium lining the inner surface of united tubes . . . . . 8
7. Hymenium not lining the inner surface of united tubes . . . . . 21
8. Upper surface of pileus crustlike, often appearing varnished; basidiospores truncate, with a pitted exospore. . . . . 28. *Ganoderma lucidum*
8. Upper surface neither crustlike nor appearing varnished or basidiocarps not pileate; basidiospores not as above, . . . . . 9
9. Basidiocarp tissue brown, permanently blackening in KOH solution . . . . . 10
9. Basidiocarp tissue white to pale colored, not permanently blackening in KOH solution. . . . . 13
10. Setae abundant in the hymenium; basidiospores hyaline . . . . . 11
10. Setae not present in the hymenium; basidiospores pigmented . . . . . 12
11. Basidiocarps resupinate; setae large, up to 65 um long; basidiospores oblong. . . . . 33. *Phellinus ferruginosus*
11. Basidiocarps pileate; setae small, up to 30 um long; basidiospores ovoid . . . . . 34. *Phellinus gilvus*
12. Basidiocarps annual; upper surface cracking concentricly and radially into rectangular scales, . . . . . 31. *Inonotus texanus*
12. Basidiocarps perennial; upper surface becoming blackened and rimose. . . . . 32. *Phellinus badius*

13. Basidiocarps stipitate, sessile, effused-reflexed, or occasionally resupinate; basidiospores large, cylindric, over 7  $\mu\text{m}$  long . . . . . 14
13. Basidiocarps always resupinate; basidiospores subglobose to ellipsoid, or if cylindric, not over 5  $\mu\text{m}$  long . . . . . 16
14. Basidiocarps stipitate .37. *Polyporus arcularius*
14. Basidiocarps not stipitate . . . . . 15
15. Basidiocarps small; pores 1–3 per mm; upper surface tomentose to glabrous; associated with a brown cubical rot . . . . . 36. *Antrodia heteromorpha*
15. Basidiocarps becoming much larger; pores commonly over 1 mm diam; upper surface hispid; associated with a uniform white rot . . . . . 44. *Funalia gallica*
16. Generative hyphae with simple septa . . . . . 17
16. Generative hypae with clamp connections . . . . . 18
17. Pore surface pink on fresh specimens; basidiospores short-cylindric. . . . . 43. *Poria tarda*
- 171 Pore surface white to cream-colored; basidiospores broadly ellipsoid to ovoid . . . . . 40. *Poria latemarginata*
18. Hyphal system monomitic, only nodose-septate generative hyphae present . . . . . 19
18. Hyphal system dimitic, with thick-walled skeletal or binding hyphae . . . . . 20
19. Basidiocarps orange; basidiospores minutely echinulate . . . . . 39. *Poria baboquivariensis*
19. Basidiocarps white to cream-colored; basidiospores smooth . . . . . 39. *Poria apacheriensis*
20. Basidiospores ovoid, often truncate, dextrinoid in Melzer's reagent . . . . . 41. *Poria medulla-panis*
20. Basidiospores allantoid, negative in Melzer's reagent . . . . . 42. *Poria subincarnata*
21. Hymenium lining inner surface of individual, white, tubular basidiocarps . . . . . 27. *Henningsomyces candidus*
21. Hymenium not lining individual tubes. . . . . 22
22. Basidiocarps stipitate; hymenophore in form of radial gills . . . . . 23
22. Basidiocarps resupinate or effused-reflexed; hymenophore not as above . . . . . 24
23. Basidiocarps fragile, with dark brown filamentous stipe and reddish-brown cap; basidiospores 13–16 x 4–5  $\mu\text{m}$  . . . . . 47. *Marasmius siccus*
23. Basidiocarps not fragile, cap and stipe pale tan to cream-colored; basidiospores 12–15 x 6–6.5  $\mu\text{m}$  . . . . . 48. *Panus fulvidus*

24. Basidiocarp tissue becoming permanently black in KOH; setae present in hymenium. . . . . 25
24. Basidiocarp tissue not becoming black in KOH; setae not present in hymenium. . . . . 26
25. Basidiospores cylindrical; hyphae loosely arranged. . . . . 29. *Hymenochaete arida*
25. Basidiospores ovoid; hyphae compactly arranged. . . . . 30. *Hymenochaete rubiginosa*
26. Basidiospores pale brown . . . . . 27
26. Basidiospores hyaline. . . . . 28
27. Basidiospores echinulate, negative in Melzer's reagent . . . . . 46. *Tomentella coerulea*
27. Basidiospores smooth, dextrinoid in Melzer's reagent . . . . . 7. *Coniophora eremophila*
28. Hymenial surface merulioid, with irregular shallow folds and ridges . . . . . 29
28. Hymenial surface smooth, tuberculate, or distinctly hydnceous . . . . . 30
29. Basidiocarps resupinate to effused-reflexed; upper surface grayish, tomentose; hymenial surface tan to reddish-purple . . . . . 9. *Byssomerulius corium*
29. Basidiocarps resupinate, with abundant rhizomorphs; hymenial surface bright yellow. . . . . 10. *Byssomerulius sulphureus*
30. Hymenial surface distinctly hydnceous . . . . . 31
30. Hymenial surface smooth or tuberculate . . . . . 34
31. Basidiocarps bright orange-yellow; rhizomorphs present . . . . . 24. *Phanerochaete chrysorhizon*
31. Basidiocarps white to cream-colored or pale buff; rhizomorphs not present . . . . . 32
32. Hyphae with simple septa only, clamp connections not present. . . . . 18. *Odontia pruni*
32. Hyphae with abundant clamp connections . . . . . 33
33. Hymenial surface with smooth, well-developed cylindrical teeth; heavily incrustated hyphae imbedded in inner tissue of teeth; hymenial cystidia absent . . . . . 17. *Mycoacia austro-occidentale*
33. Hymenial surface with short, fimbriate teeth; cystidia present, cylindrical or capitate. . . . . 13. *Hypodontia quercina*
34. Dichohyphidia abundant in hymenial region and subiculum. . . . . 35. *Vararia tropica*
34. Dichohyphidia not present. . . . . 35
35. Hyphae with simple septa only, clamp connections lacking . . . . . 36
35. Hyphae with abundant clamp connections. . . . . 39

36. Cystidia not present in the hymenium . . . . . 25. *Phanerochaete tuberculata*
36. Cystidia present in the hymenium . . . . . 37
37. Hymenial surface purple when fresh, drying brown; cystidia thick-walled, heavily incrustated . . . . . 45. *Lopharia crassa*
37. Hymenial surface cream-colored to pale buff; cystidia thin-walled, not incrustated . . . . . 38
38. Basidiospores allantoid, 10–11.5 x 2.5–3  $\mu\text{m}$  . . . . . 22. *Phanerochaete allantospora*
38. Basidiospores cylindric, 6.5–7 x 2–2.5  $\mu\text{m}$  . . . . . 23. *Phanerochaete arizonica*
39. Heavily incrustated cystidia imbedded in subiculum and in hymenium; imbedded or projecting gloeocystidia also present. . . . . 40
39. Cystidia if present, not heavily incrustated; gloeocystidia absent. . . . . 42
40. Basidiocarps resupinate or effused-reflexed; hymenial surface dark purplish-brown with whitish margin . . . . . 19. *Peniophora albobadia*
40. Basidiocarps always resupinate; hymenial surface pale purplish-gray or pink when fresh; margin concolorous . . . . . 41
41. Basidiocarps pink when fresh, becoming cinereous and extensively cracked into small rectangular blocks on drying; dendrohyphidia present . . . . . 21. *Peniophora tamaricicola*
41. Basidiocarps pale purplish-gray when fresh and on drying; dendrohyphidia not present . . . . . 20. *Peniophora nuda*
42. Cystidia not present . . . . . 43
42. Cystidia present . . . . . 44
- 431 Basidiocarps fleshy, crustlike on drying; basidiospores broadly ellipsoid, 7–10 x 5–6.5  $\mu\text{m}$ . . . . . 15. *Hypochnicium bombycinum*
43. Basidiocarps arachnoid, fragile; basidiospores subglobose, 5–6 x 4–4.5  $\mu\text{m}$ . . . . . 8. *Athelia coprophila*
44. Cystidia of two types, some acicular and others capitate. . . . . 14. *Hyphodontia sambuci*
44. Cystidia of one type . . . . . 45
45. Cystidia acicular, thin-walled, 4–5  $\mu\text{m}$  diam and projecting to 30  $\mu\text{m}$  . . . . . 26. *Phlebia ochraceofulva*
45. Cystidia clavate or moniliform, thin- to thick-walled, up to 10  $\mu\text{m}$  diam and projecting to 70  $\mu\text{m}$  or over. . . . . 46

46. Basidiospores broadly ellipsoid, up to  
8.5  $\mu\text{m}$  wide. . . . . 16. *Hypochnicium prosopidis*
46. Basidiospores narrowly ellipsoid, up to  
6  $\mu\text{m}$  wide. . . . . 47
47. Basidiospores cylindric-ellipsoid,  
11-13 x 5.5-6  $\mu\text{m}$ . . . . . 11. *Hyphoderma amoenum*
47. Basidiospores broadly ellipsoid to ovoid,  
5-6.5 x 4-4.5  $\mu\text{m}$ . . . . 12. *Hyphoderma* sp. (RLG 10255)

1. DACRYMYCES MINOR Pk., Ann. Rept. N.Y. State Mus. 30:49. 1877.

Basidiocarps discoid to slightly cerebriform, gelatinous, pale orange-yellow to olivaceous yellow, up to 1 mm diam, attached by a central point; hyphae imbedded in a gelatinous matrix, thin-walled, 2-4  $\mu\text{m}$  diam, simple-septate; basidia (Fig. 1a) bifurcate, up to 70  $\mu\text{m}$  long; basidiospores (Fig. 1b) broadly allantoid, 12-13 x 5-6  $\mu\text{m}$ , becoming 1-3 septate, hyaline, negative in Melzer's reagent.

*Dacrymyces minor* is found on dead branches of a number of desert trees and shrubs. The associated rot has not been determined. Some of the basidiocarps of *D. minor* in ERC 71-48 were found parasitized by *Platyglœa peniophorae* and *Tremella simplex*, described as collections ERC 71-48a and 71-48b, respectively in this paper.

Voucher specimens: ERC 71-48 and HHB 5945, Santa Rita Expt. Range, Santa Rita Mts., Pima County; HHB 5954, Redington Rd., east of Tucson, Pima County.

2. EXIDIOPSIS CALCEA (Pers.) Wells, Mycologia 53:348. 1961.

*Sebacina calcea* (Pers.) Bres., Fungi Trid. 2:64. 1892.

Basidiocarps broadly effused, thin, hard and crust-like, at first small spots, then coalescing to form patches to 1-1.5 x 15-20 cm, cracking extensively to expose the substrate; hymenial surface white to grayish-white, smooth, shiny; margin minutely fimbriate, sometimes abrupt; hyphae of two kinds, one narrow, branched and sinuous, 1-1.5  $\mu\text{m}$  diam, aseptate, the other branched, 3-5  $\mu\text{m}$  diam, with clamp connections, these giving rise to basidia; basidia (Fig. 2a, 2b) with a basal clamp, subglobose to ellipsoid, be-

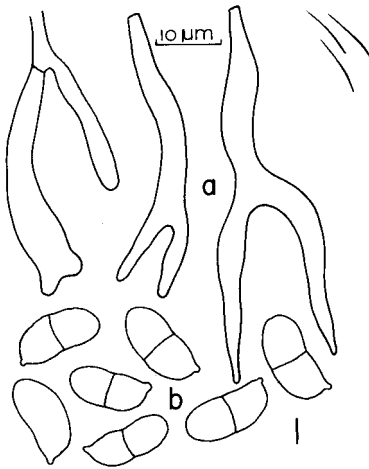


Fig. 1. *Dacrymyces minor* (ERC 71-48). a, basidia; b, basidiospores.

coming longitudinally septate, 4-celled at maturity, 12-15 x 15-25  $\mu\text{m}$ , epibasidia up to 35  $\mu\text{m}$  long; basidiospores (Fig. 2c) broadly allantoic, 16-20 x 6-8  $\mu\text{m}$ , smooth, hyaline, negative in Melzer's reagent.

*Exidiopsis calcea* occurs on dead branches of a number of trees and shrubs from the desert to the coniferous forest zones. It is associated with a white rot.

Voucher specimens:

RLG 10538, 10541, ERC 71-359, San Pedro River at Camp Grant Wash, Pinal County.

3. *EXIDIOPSIS LEUCOPHAEA* (Bres.) Wells, *Mycologia* 53: 352. 1961.

Basidiocarps disciform, cupulate, 1-6 mm diam, single to densely gregarious and crowded; margins free, densely tomentose-hirsute with matted white hairs; hymenial surface smooth, Light Grayish-Vinaceous or Light Vinaceous Fawn (grayish-pink), margin paler; hyphae of abhymenial surface hyaline, thin-to thick-walled, unbranched, aseptate, 2-4  $\mu\text{m}$  diam, with very slight wall thickening, somewhat refractive, difficult to separate, clamp connections present but obscure; subhymenial hyphae gelatinized and difficult to separate; dendrohyphidia (Fig. 3b, 3c) almost cylindrical or lobed, up to 8  $\mu\text{m}$  diam, others profusely branched, 2.5-3.5  $\mu\text{m}$  diam; basidia (Fig. 3a) ellipsoid, longitudinally septate, 20-30 x 13-15  $\mu\text{m}$ , with obscure basal clamps, usually proliferating through the clamp, with 4 stout epibasidia, these 3.5-5  $\mu\text{m}$  diam, up to 30  $\mu\text{m}$  long; basidiospores (Fig. 3d) cylindrical to broadly allantoic, 15-20 x 6-7.5  $\mu\text{m}$ , smooth, hyaline, negative in Melzer's reagent, prominently apiculate.

*Exidiopsis leucophaea* is common on dead branches of

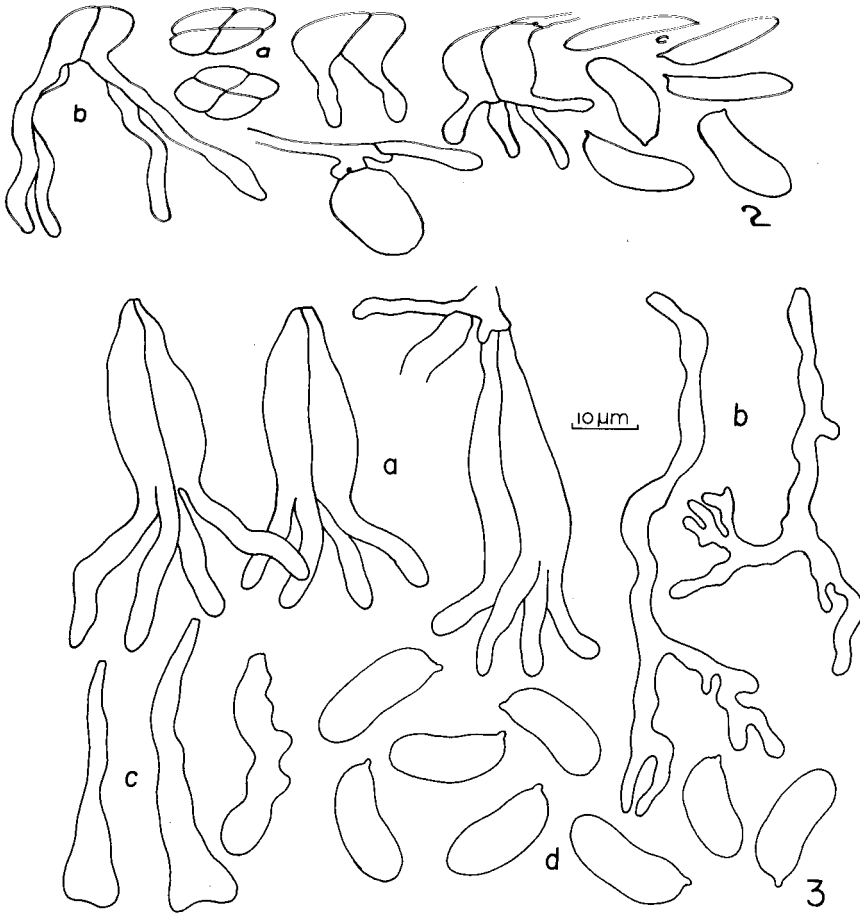


Fig. 2. *Exidiopsis calcea* (ERC 71-131). a, basidia in various stages of development; b, mature basidium; c, basidiospores. Fig. 3. *Exidiopsis leucophaea* (ERC 71-47). a, basidia; b, dendrohyphidia; c, unbranched hyphidia; d, basidiospores.

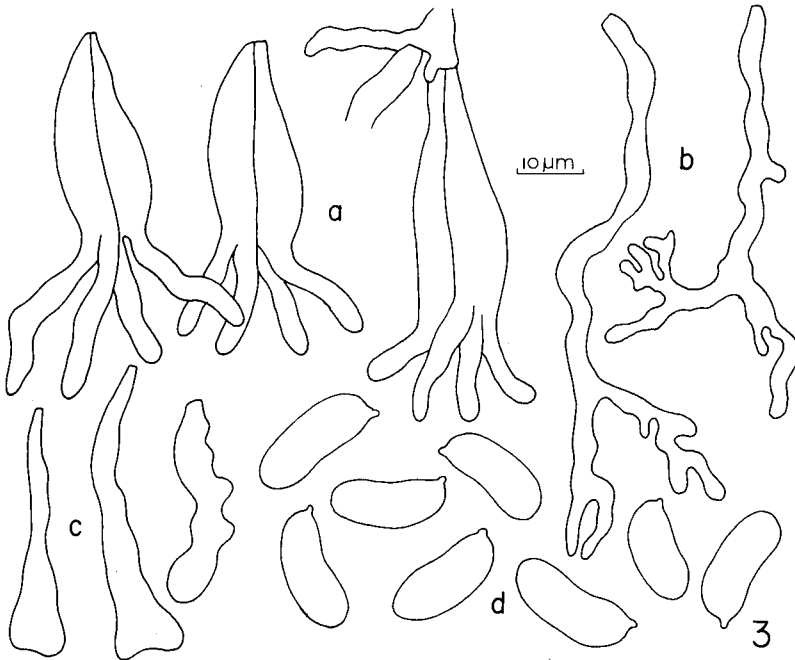
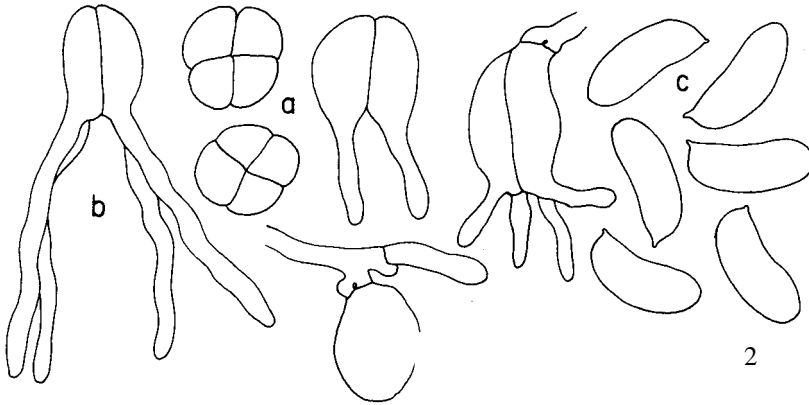


Fig. 2. *Exidiopsis calcea* (ERC 71-131). a, basidia in various stages of development; b, mature basidium; c, basidiospores. Fig. 3. *Exidiopsis leucophaea* (ERC 71-47). a, basidia; b, dendrohyphidia; c, unbranched hyphidia; d, basidiospores.

mesquite and has been found on a number of other Sonoran Desert trees and shrubs. It is associated with a white rot l

Voucher specimens: RLG 10215, ERC 71-47, ERC 71-135, Santa Rita Expt. Range, Santa Rita Mts., Pima County; RLG 10497, near Kitt Peak Junction, Papago Indian Reservation, Santa Cruz County; RLG 10550, San Pedro River near Camp Grant Wash, Pinal County.

4. PLATYGLOEA MYCOPHILA Burds. et Gilbertson, *Mycologia* 66:702-706. 1974.

Basidiocarps circular, appressed pustules, up to 2 mm diam, on *Peniophora tamaricicola* Boidin et Malenc., immature areas and margin white and pubescent when dry, mature areas yellowish-brown and smooth when dry; subicular hyphae 4-7  $\mu\text{m}$  diam, in hymenium of *Peniophora tamaricicola*, simple septate, regularly branched, with walls up to 2  $\mu\text{m}$  thick, slightly refractive; basidia (Fig. 4a) arising directly from subicular hyphae, oval to cylindrical, 10-25 x 6-9  $\mu\text{m}$ , with slightly thickened walls, septate at base; metabasidium cut off from probasidium by basal septum, 24-40 x 5-7  $\mu\text{m}$ , cylindrical, protruding from among elements of the *Peniophora* hymenium, 1-septate, 2-sterigmate, sterigmata 10-25 x 5-7  $\mu\text{m}$ ; basidiospores (Fig. 4b) 7-9  $\mu\text{m}$  diam, globose to subglobose, thin-walled, hyaline, smooth, negative in Melzer's reagent, with large apiculus, germination by repetition (Fig. 4c).

*Platygløea mycophila* is known only as a parasite on *Peniophora tamaricicola* on dead branches of mesquite and desert broom (*Baccharis sarothroides* Gray).

Voucher specimens: HHB 5948a, HHR 5953a, Redington Rd. Rd., Rincon Mts., Pima County; RLG 10577, Peck Canyon, Tumacacori Mts., Santa Cruz County.

5. PLATYGLOEA PENIOPHORAE Bourd. et Galz., *Bul. Soc. Mycol. France* 25:17. 1909.

Parasitizing *Dacrymyces minor* and not producing a basidiocarp distinct from that of the host; hyphae embedded in hymenium of host, 1-2  $\mu\text{m}$  diam, with clamps; basidia (Fig. 5a) straight or curved, 30-50 x 6-9  $\mu\text{m}$ , becoming 3-septate, sterigmata filiform, up to 75  $\mu\text{m}$  long; basidiospores (Fig. 5b) cylindric-ellipsoid, hyaline, 8-9 x 4-4.5

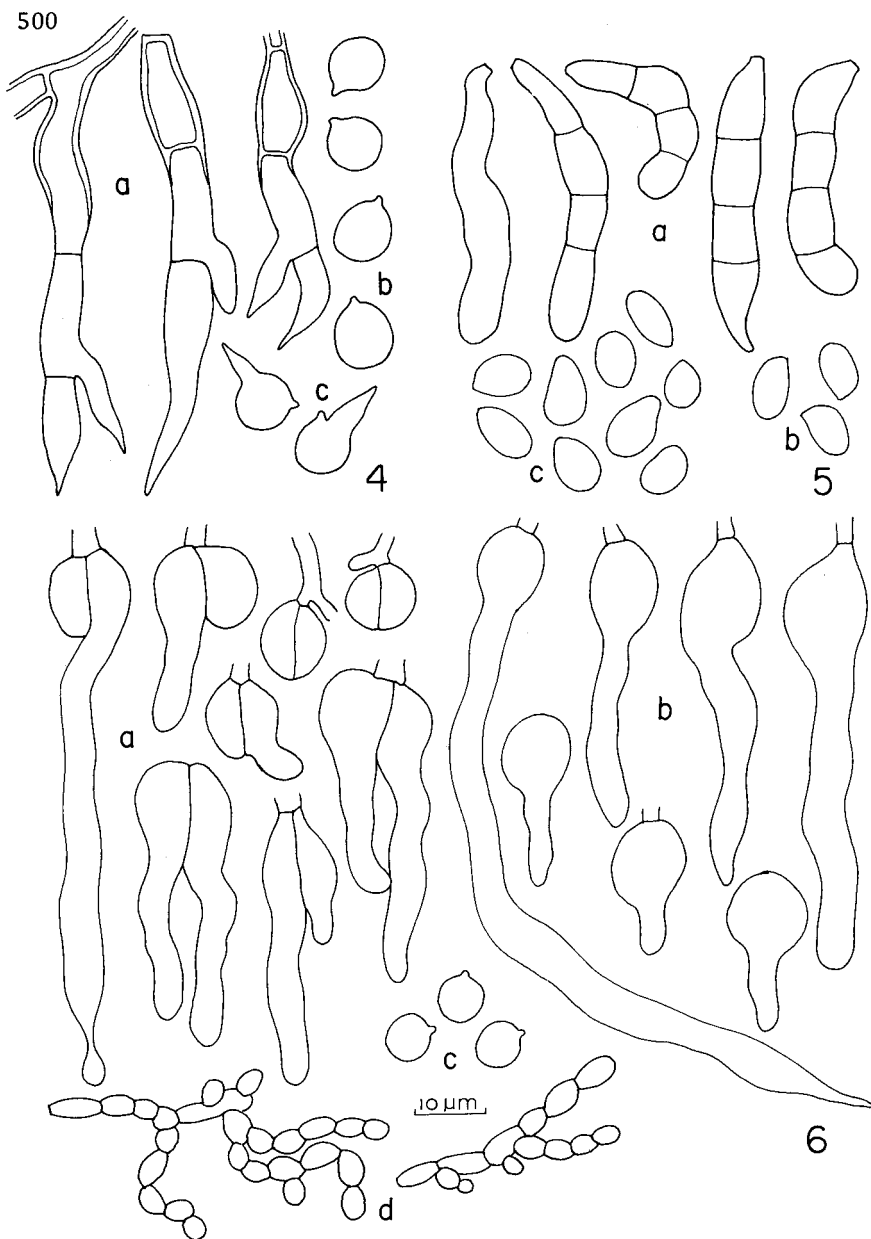


Fig. 4. *Platygloea mycophila* (RLG 10056). a, basidia; b, basidiospores; c, germinating basidiospores. Fig. 5. *Platygloea peniophorae* (ERC 71-48A). a, basidia; b, basidiospores, c, conidia. Fig. 6. *Tremella simplex* (ERC 71-48B). a, two-celled basidia; b, one-celled basidia; c, basidiospores; d, conidia.

$\mu\text{m}$ , negative in Melzer's reagent; hymenial conidia (Fig. 5c) abundant, variable in shape, some attenuated at one end, others ellipsoid to subglobose, thick walled, hyaline, negative in Melzer's reagent,  $7\text{--}12 \times 5\text{--}7 \mu\text{m}$ .

Voucher specimens: ERC 71-48a, parasitizing *Dacrymyces minor* on mesquite branches, Santa Rita Exp. Range, Santa Rita Mts., Pima County.

6. *TREMELLA SIMPLEX* Jacks. et Martin, *Mycologia* 32:687. 1940.

Basidiocarps gelatinous, discoid or pulvinate, less than 1 mm diam, very inconspicuous and difficult to distinguish from the host basidiocarps (*Dacrymyces minor*); hyphae septate, lacking clamps; conidial branches abundant, moniliform, conidia subglobose to ellipsoid,  $3\text{--}5 \mu\text{m}$  long; basidia globose,  $9\text{--}16 \mu\text{m}$  diam, some becoming 2-celled (Fig. 6a) with a single vertical septum and producing 1 or 2 epibasidia, others remaining one-celled (Fig. 6b), producing a single epibasidium; epibasidia  $3\text{--}6 \mu\text{m}$  diam, up to  $100 \mu\text{m}$  long; basidiospores (Fig. 6c)  $6\text{--}7 \mu\text{m}$  diam, globose, with a prominent apiculus, hyaline, negative in Melzer's reagent; conidia (Fig. 6d) catenulate, ellipsoid,  $2.5\text{--}6 \times 2\text{--}3 \mu\text{m}$ .

*Tremella simplex* and *Platyglea peniophorae* were found on basidiocarps of *Dacrymyces minor* in the same collection on mesquite branches.

Voucher specimen: ERC 71-48B, Santa Rita Expt. Range, Santa Rita Mts., Pima County.

7. *CONIOPHORA EREMOPHILA* Lindsey et Gilbertson, *Mycotaxon* 2:86. 1975.

Basidiocarps fragile, easily separated, becoming widely effused; hymenial surface smooth, colored Light Brownish Olive by the massed basidiospores; hymenial tissue soft and floccose over a white, arachnoid lower subiculum; margin with fine white mycelial strands from subiculum; subicular hyphae (Fig. 7a) simple-septate or with very rare clamps (Fig. 7c), hyaline, thin-walled, mostly  $2\text{--}6 \mu\text{m}$  diam but with some cells inflated up to  $10 \mu\text{m}$  (Fig. 7b), some lightly incrustated; basidia (Fig. 7d) clavate, usually sinuous, often with a basal swelling, 4-sterigmate,  $50\text{--}55$

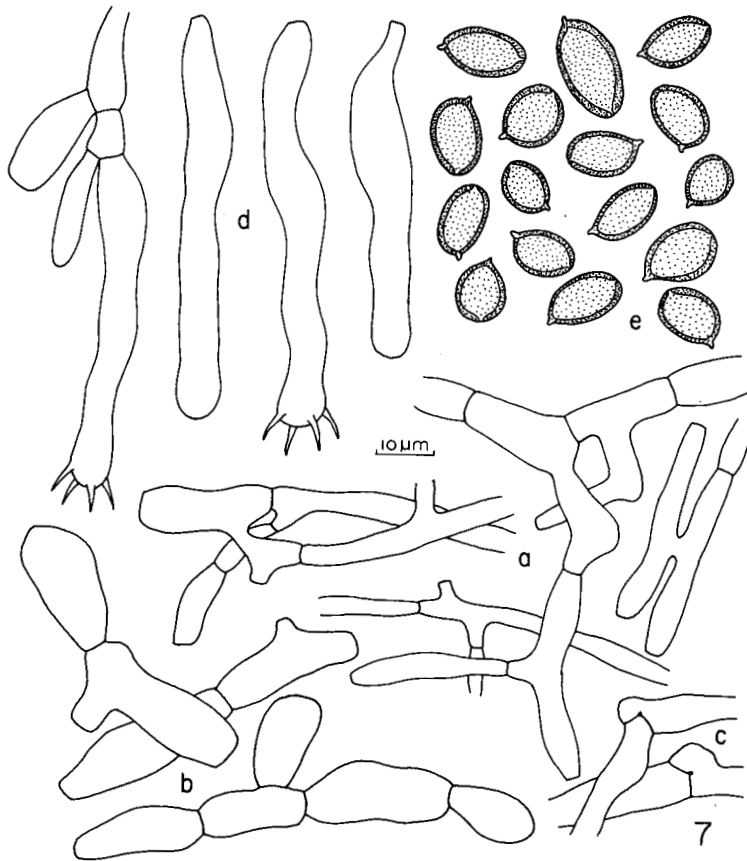


Fig. 7. *Coniophora eremophila* (RLG 10925). a, uniform subicular hyphae; b, closely septate, swollen subicular hyphae; c, nodose-septate subicular hyphae; d, basidia; e, basidiospores.

x 6–8  $\mu\text{m}$ , with a basal septum, sterigmata up to 7  $\mu\text{m}$  long; basidiospores (Fig. 7e) brownish-olive in mass, pale yellow in KOH, dextrinoid in Melzer's reagent, thick-walled, oval to broadly cylindrical, with a prominent peg-like apiculus and apical germ pore, 7.5–14 x 5–9  $\mu\text{m}$ .

*Coniophora eremophila* occurs on other Sonoran Desert

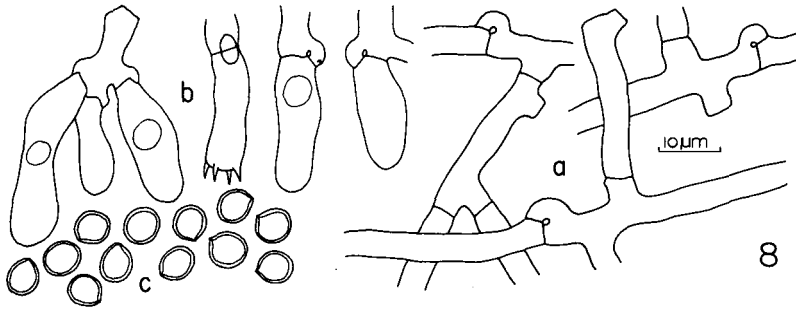


Fig. 8. *Athelia coprophila* (RLG 10926). a, subicular hyphae ; b , basidia ; c , basidiospores.

plants, including *Carnegiea gigantea* (Engelm.) Britt. et Rose (saguaro), *Olneya tesota* Gray (ironwood), and *Sambucus mexicana* Presl (Mexican elder), and is associated with a brown rot.

Voucher specimen: RLG 10925, Canyon del Oro, Santa Catalina Mts., Pinal County (TYPE).

8. *ATHELIA COPROPHILA* (Wakef.) Jülich, Willdenowia 7:66. 1972.

*Corticium coprophilum* Wakef., Trans. Brit. Mycol. Soc. 6:480. 1916.

Basidiocarps becoming widely effused, thin, soft, tomentose, easily separated; hymenial surface grayish-white, smooth to slightly tuberculate, under 30X lens appearing interrupted with arachnoid subiculum and mycelial strands visible below hymenium; hyphal system monomitic; subicular hyphae (Fig. 8a) thin-walled, with simple septa and occasional clamps, 3–5  $\mu\text{m}$  diam; clamps abundant in subhymenial hyphae; basidia (Fig. 8b) cylindrical to clavate, 4-sterigmate, 19–30 x 5–7  $\mu\text{m}$ , with a basal clamp; basidiospores (Fig. 8c) subglobose, 5–6 x 4–4.5  $\mu\text{m}$ , hyaline, smooth, thick-walled, negative in Melzer's reagent.

*Athelia coprophila* is associated with a white rot of fallen mesquite.

Voucher specimens: RLG 10387, Aravaipa Canyon, Galliuero Mts., Pinal County; RLG 10926, Canyon del Oro, Santa Catalina Mts., Pinal County (ARIZ).

9. BYSSOMERULIUS CORIUM (Fr.) Parm., Akad. Sci. Estonian SSR, Biol. Sci. 16:383. 1967.

*Merulius corium* Fr., Elenchus Fung. 1:58. 1828.

Basidiocarps effused to narrowly reflexed; upper surface white, tomentose; hymenial surface waxy, reticulately poroid, pale buff to dark cinnamon-brown or reddish-purple; subicular hyphae (Fig. 9a) 3–5  $\mu\text{m}$  diam, simple-sepate, with thin to slightly thickened walls, distinct near the substratum, often gelatinizing and agglutinated in the subhymenial layer; cystidia none; basidia (Fig. 9b) narrowly clavate, 40–50 x 6–7  $\mu\text{m}$ , 4-sterigmate, with a basal septum; basidiospores (Fig. 9c) cylindric to cylindric-ellipsoid, 6–8.5 x 3–4.5  $\mu\text{m}$ , hyaline, smooth, negative in Melzer's reagent.

*Byssomerulius corium* causes a white rot of dead branches. This is one of the most important branch decay fungi on mesquite, and is generally conspicuous wherever mesquite is found.

Voucher specimens: RLG 7761, Patagonia-Lochiel Rd., Patagonia Mts., Santa Cruz County; RLG 9311, Buenos Aires, Baboquivari Mts., Santa Cruz County; ERC 71–54, Santa Rita Exp. Range, Santa Rita Mts., Pima County.

10. BYSSOMERULIUS SULPHUREUS (Burt) Lindsey, Univ. Ariz. Agr. Expt. Sta. Tech. Bul. 209, p. 5. 1973.

*Merulius sulphureus* Burt, Ann. Missouri Bot. Gard. 4: 333. 1917.

Basidiocarps effused up to 5 cm, soft, fragile, easily separated from the substrate, associated with abundant yellow mycelium and slender white to yellow rhizomorphic strands in the litter under the wood; hymenial surface shallowly meruliod, bright lemon-yellow when fresh, (Barium Yellow to Pale Lemon Yellow), cracking on drying to expose the white arachnoid subiculum; hyphal system monomitic; subicular hyphae (Fig. 10a) 3–4.5  $\mu\text{m}$  diam, simple-

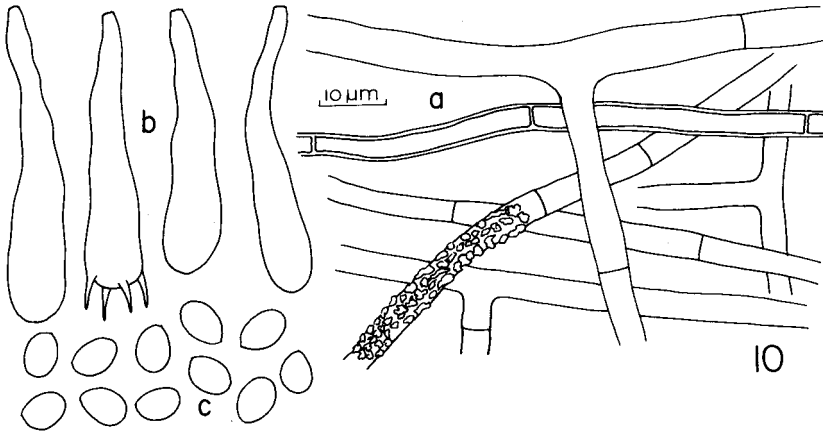
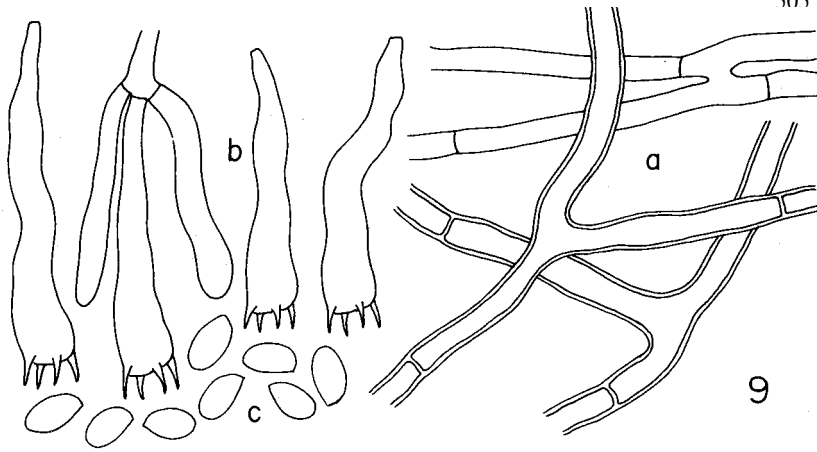


Fig. 9. *Byssomerulius corium* (RLG 7761). a, subicular hyphae; b, basidia; c, basidiospores. Fig. 10. *Byssomerulius sulphureus* (RLG 10499). a, subicular hyphae; b, basidia; c, basidiospores.

septate, with occasional branching, thin-walled; cystidia none; hyphidia in hymenial layer slender, contorted, some lobed or sparsely branched, 40–60 x 2–4 µm; basidia (Fig. 10b) narrowly clavate, with a basal septum, 35–40 x 6–7 µm, 4-sterigmate; basidiospores (Fig. 10c) ellipsoidal, 6–8 x 4–5 µm, hyaline, smooth, negative in Melzer's reagent.

*Byssomerulius sulphureus* was originally described from

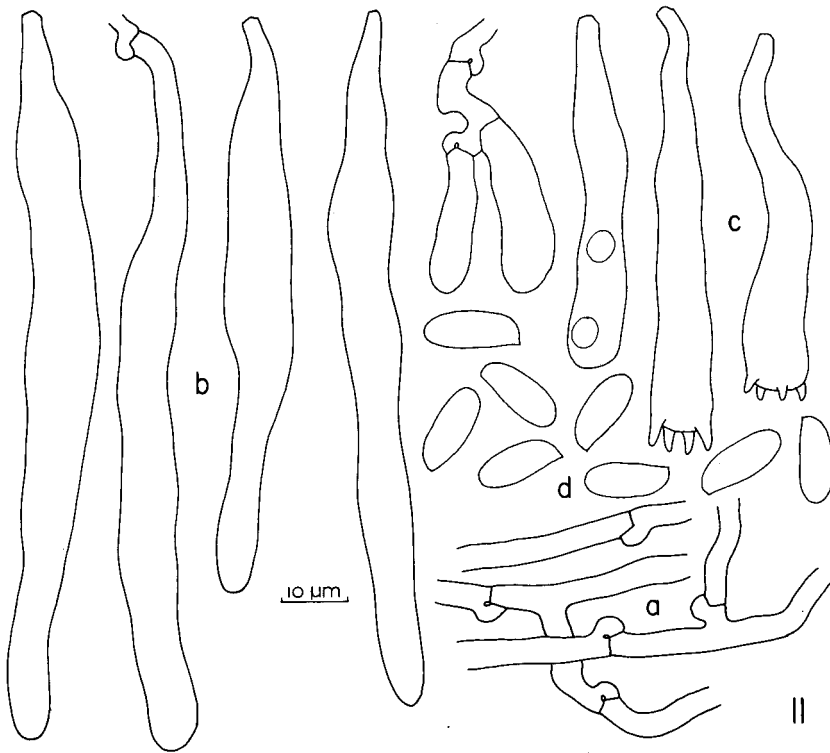


Fig. 11. *Hyphoderma amoenum* (ERC 71-21). a, subicular hyphae; b, cystidia; c, basidia; d, basidiospores.

Florida and is apparently known elsewhere only from Arizona. It has also been found on ironwood (Gilbertson, et al., 1974) and is associated with a white rot.

Voucher specimens: RLG 10498, Rest Area near Kitt Peak Rd., Ariz. Rt. 86, Pima County; HHB 5852, and 5856, Santa Rita Exp. Range, Santa Rita Mts., Pima County; RLG 10929, Canyon del Oro, Santa Catalina Mts., Pinal County.

11. *HYPHODERMA AMOENUM* (Burt) Donk, Fungus 27:14. 1957.

*Peniophora amoena* Burt, Ann. Missouri Bot. Gard. 12: 276. 1925.

Basidiocarps effused up to 2 cm, adnate; hymenial surface smooth, Pale Pinkish Buff to Cartridge Buff, finely tomentose, cracking on drying to reveal white subiculum; margin white, tomentose; hyphal system monomitic; subicular hyphae (Fig. 11a) hyaline, thin-walled, with clamps, 2.5-4  $\mu\text{m}$  diam, lightly incrustated with hyaline crystals; cystidia (Fig. 11b) frequent, cylindric, 65-100 x 5-8  $\mu\text{m}$ , with a basal clamp, tapered slightly to the apex, some with constrictions, projecting to 70  $\mu\text{m}$ ; basidia (Fig. 11c) clavate, 4-sterigmate, 38-44 x 7.5-9  $\mu\text{m}$ , with a basal clamp, sterigmata up to 7  $\mu\text{m}$  long and 2  $\mu\text{m}$  wide at the base; basidiospores (Fig. 11d) cylindric, 9-13 x 5-6  $\mu\text{m}$ , hyaline, smooth, thin-walled, negative in Melzer's reagent.

*Hyphoderma amoenum* is associated with a white rot of dead branches of a number of Sonoran Desert trees and shrubs.

Voucher specimen: KJM 331, Canyon del Oro, Santa Catalina Mts., Pinal County.

12. *HYPHODERMA* sp. (RLG 10255).

Basidiocarps effused up to 5 cm, waxy, adnate, cracking on drying; hymenial surface pale buff, slightly tuberculate, cystidiate under a 30X lens; hyphal system monomitic; subicular hyphae (Fig. 12a) thin-walled, with clamps, 3-5  $\mu\text{m}$  diam, some (Fig. 12b) irregularly contorted; cystidia (Fig. 12c) frequent, cylindric to narrowly clavate, with uniformly slightly thickened walls, 80-130 x 4-10  $\mu\text{m}$ , with a basal clamp; basidia (Fig. 12d) clavate, 4-sterigmate, 35-40 x 6-7  $\mu\text{m}$ , with a basal clamp; basidiospores (Fig. 12e) broadly ellipsoid to ovoid, 5-6.5 x 4-4.5  $\mu\text{m}$ , hyaline, smooth, negative in Melzer's reagent.

*Hyphodema* sp. (RLG 10255) is associated with a white rot of dead, fallen mesquite. The small basidiospores and large cystidia are a combination of characters not found in any species of *Hyphodema* known to us. The single small specimen is not an adequate basis for describing a new taxon although the microscopic structures are well developed and distinctive.

Voucher specimen: RLG 10255, Redington, San Pedro Valley, Pima County.

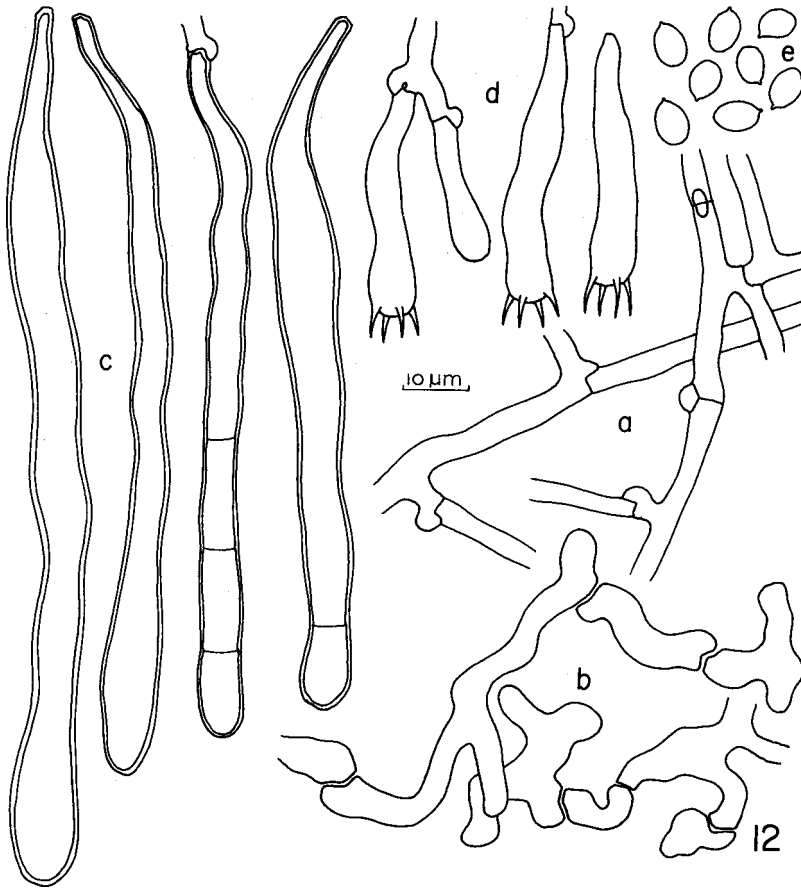


Fig. 12. *Hyphoderma* sp. (RLG 10255). a, uniform subicular hyphae; b, contorted subicular hyphae; c, cystidia; d, basidia; e, basidiospores.

13. *HYPHODONTIA QUERCINA* (Fr.), J. Erikss., *Symb. Bot. Upsalienses XVI*: 1, p. 105, 1958.

*Radulum quercinum* Fr., *Hym. Eur.*, p. 623. 1874.

Basidiocarps effused up to 8 cm, adnate, cracking to expose white byssoid subiculum; hymenial surface white to Cream Color, with crowded short teeth that appear fimbriate

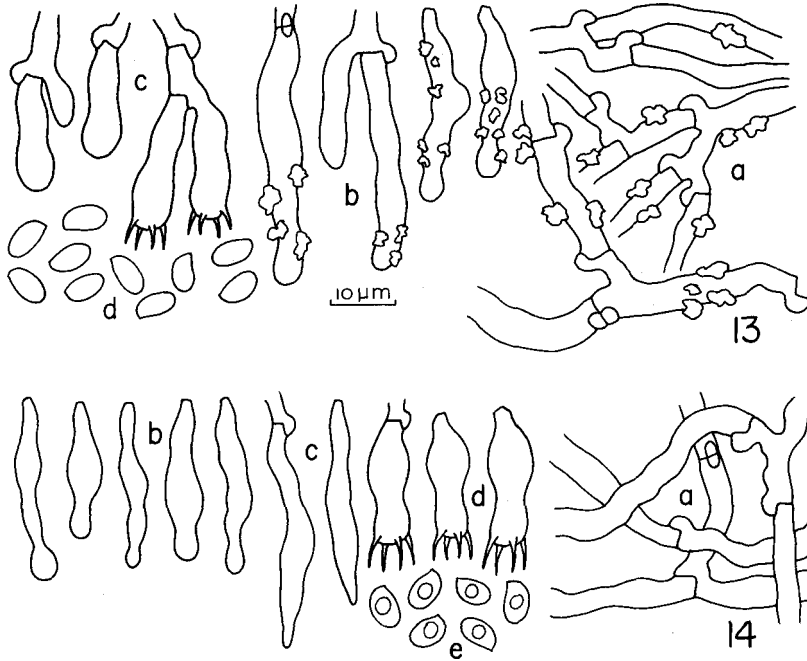


Fig. 13. *Hyphodontia quercina* (RLG 10042). a, subicular hyphae; b, cystidia; c, basidia; d, basidiospores.

Fig. 14. *Hyphodontia sambuci* (ERC 71-61). a, subicular hyphae; b, capitate cystidia; c, acicular cystidia; d, basidiospores.

at apices under 30X lens; margin thinning out; subiculum very thin, white, soft; hyphal system monomitic; subicular hyphae (Fig. 13a) 2.5–4 μm diam, with abundant clamps, with frequent branching, loosely interwoven, moderately thick-walled; cystidia (Fig. 13b) abundant in hymenial layer, irregularly cylindrical or slightly swollen at the apex, 3–5 μm diam, projecting up to 10 μm, smooth or lightly incrustated with coarse crystals; basidia (Fig. 13c) clavate with median constriction, 17–20 x 4.5–5.5 μm, 4-sterigmate; basidiospores (Fig. 13d) cylindrical-oblong, 6–7.5 x 2.5–3 μm, hyaline, smooth, negative in Melzer's reagent.

*Hyphodontia quercina* is associated with a white rot of dead, decorticated branches on standing plants.

Voucher specimen: RLG 10042, Patagonia–Lochiel Rd., Patagonia Mts., Santa Cruz County.

14. HYPHODONTIA SAMBUCCI (Pers. ex Fr.) J. Erikss., Symb. Bot, Upsalienses XVI:1, p. 104. 1958.

*Peniophora sambuci* (Pers. ex Fr.) Burt, Ann. Missouri Bot, Gard. 12:233. 1926.

Basidiocarps broadly effused, soft, adnate; hymenial surface smooth, pellicular, minutely farinose under 30X lens; subiculum white, byssoid; hyphal system monomitic; subicular hyphae (Fig. 14a) 2–4  $\mu\text{m}$  diam, thin-walled, with abundant clamps, with occasional branching, with abundant crystalline material; cystidia frequent, acicular (Fig. 14c) or with swollen apices (Fig. 14b), 3–4  $\mu\text{m}$  diam, thin-walled, projecting slightly, not incrusting; basidia (Fig. 14d) clavate, with median constriction, 15–20  $\times$  6–7  $\mu\text{m}$ , 4-sterigmate; basidiospores (Fig. 14e) cylindrical-ellipsoid to broadly ellipsoid, smooth, hyaline, negative in Melzer's reagent, 6–7  $\times$  3.5–4.5  $\mu\text{m}$ .

*Hyphodontia sambuci* is associated with a white rot of dead branches.

Voucher specimen: ERC 179, Patagonia - Lochiel Rd., Patagonia Mts., Santa Cruz County.

15. HYPOCHNICIUM BOMBYCINUM (Sommerf. ex Fr.) J. Erikss., Symb. Bot. Upsalienses XVI:1, p. 101. 1958.

*Corticium bombycinum* (Sommerf. ex Fr.) Karst., Hedwigia 32: 120. 1893.

Basidiocarps becoming broadly effused, adnate; hymenial surface smooth to slightly tuberculate or raduloid, Cream Color to Light Buff or watery grayish-white before drying; margin arachnoid to fibrillose; hyphal system monomitic; subicular hyphae (Fig. 15a) hyaline, thin- to slightly thick-walled, with clamps, 2–4.5  $\mu\text{m}$  diam; cystidia none; basidia (Fig. 15b) clavate, 4-sterigmate, 50–60  $\times$  9–11  $\mu\text{m}$ , with a basal clamp; basidiospores (Fig. 15c) broadly ellipsoid, 7–10  $\times$  5–6.5  $\mu\text{m}$ , smooth, hyaline, negative in Melzer's reagent, with slightly thickened walls.

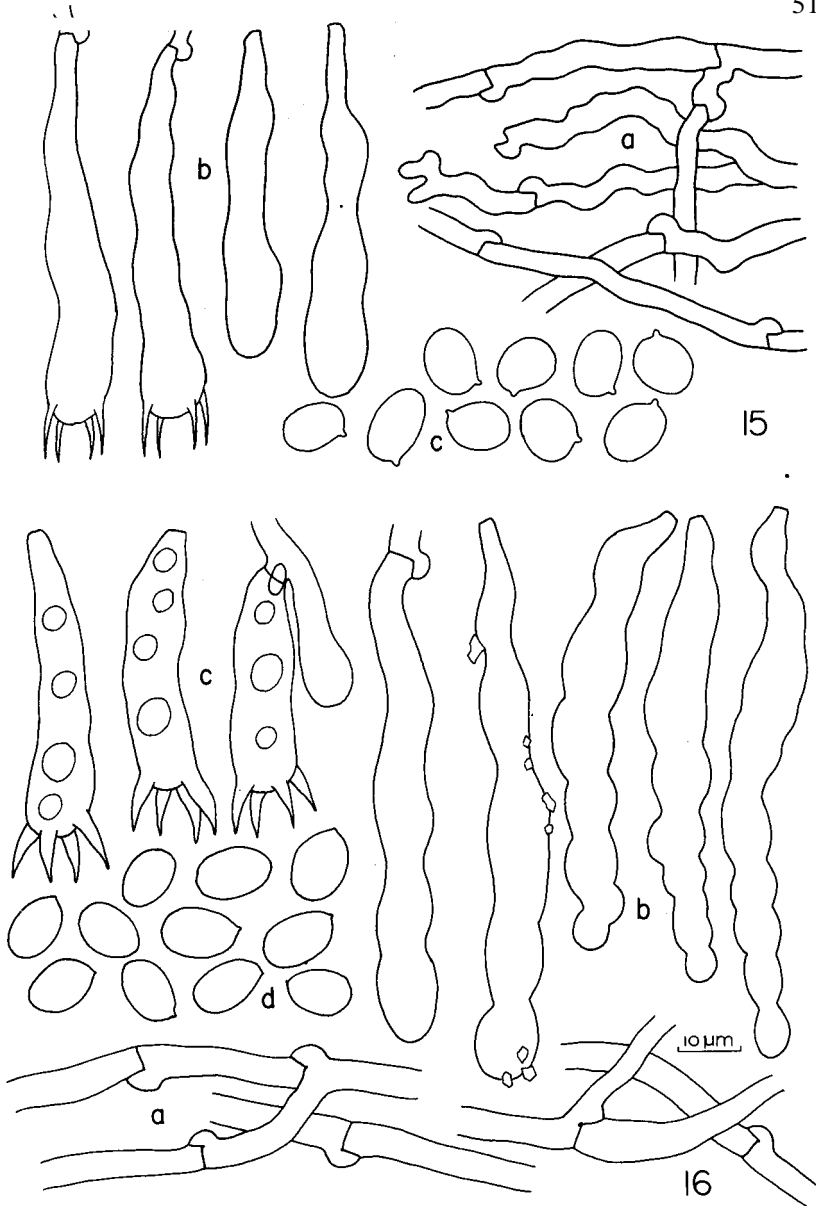


Fig. 15. *Hypochnicium bombycinum* (RLG 10398). a, subicular hyphae; b, basidia; c, basidiospores. Fig. 16. *Hypochnicium prosopidis* (HHB 8479). a, subicular hyphae; b, moniliform cystidia; c, basidia; d, basidiospores.

*Hypochnicium bombycinum* is associated with a white rot of dead hardwoods and conifers and is found occasionally on dead mesquite branches.

Voucher specimens: RLG 10394 and 10398, Aravaipa Canyon, Nature Conservancy Reserve, Galliuro Mts., Pinal County.

16. HYPOCHNICIUM PROSOPIDIS Burdsall, sp. nov.

Basidiocarpus effusus, mollis; hymenium laevis vel tuberculatus, cremea vel roseo-cremea; margo albus, arachnoideus; hyphis systematis monomitica; hyphae 2.5-4  $\mu$ m diam, fibulatae, tenuitunicatae; cystidia inclusa, moniliformae, 60-85 x 5-10  $\mu$ m; basidia late-clavata, 40-45 x 8-11  $\mu$ m, 4-sterigmatibus; basidiosporae late-ellipsoidae, 9-12 x 5.5-8.5  $\mu$ m, hyalinae, laeves, non-amyloidae. HOLOTYPUS: in ligno *Prosopis juliflora* (Sw.) DC., Santa Rita Mts., Pima County, Arizona, U.S.A., leg. H. H. Burdsall, Jr., No. 8479; in herb. CFMR; isotypus in herb. ARIZ.

ETYMOLOGY: from *Prosopis* (generic name for mesquite), the only substrate on which *H. prosopidis* is known.

Basidiocarps effused up to 6 cm, up to 02 mm thick, adnate, soft, crumbling on sectioning when dry; hymenial surface smooth to slightly tuberculate, finely tomentose under 30X lens, Cartridge Buff to Pinkish Buff, cracking deeply on drying; margin white, arachnoid to farinaceous; subiculum thin, concolorous with hymenial surface; hyphal system monomitic; subicular hyphae (Fig. 16a) hyaline, thin-walled, with abundant clamps and frequent branching, 2.5-4  $\mu$ m diam, lightly incrustated with hyaline crystals; cystidia (Fig. 16b) arising at various levels in subiculum, completely imbedded or projecting slightly from hymenium, thin-walled, nearly cylindrical, moniliform, with few or several constrictions, 60-85 x 5-10  $\mu$ m, with a basal clamp, some lightly incrustated with large crystals, negative in sulfuric benzaldehyde; basidia (Fig. 16c) broadly clavate, 4-sterigmate, 40-45 x 8-11  $\mu$ m, with a basal clamp, sterigmata up to 2  $\mu$ m diam at base and up to 8  $\mu$ m long; basidiospores broadly ellipsoid, 9-12 x 5.5-8.5  $\mu$ m, smooth, hyaline, with slightly thickened walls, negative in Melzer's reagent.

*Hypochnicium prosopidis* is morphologically similar to *H. bombycinum* but differs in having moniliform cystidia. Cystidia of other species of *Hypochnicium* (*H. analogum*, *H. geogenium*, *H. punctulatum*, and *H. sphaerosporum*) are not moniliform. Basidiospores of *H. analogum* and *H. punctulatum* are globose to subglobose with tuberculate walls. Those of *H. sphaerosporum* are also globose but are smooth. *Hypochnicium geogenium* basidiospores are much smaller (6.5-8 x 4.5-5  $\mu\text{m}$ ) than those of *H. prosopidis*.

*Hypochnicium prosopidis* is associated with a white rot of fallen mesquite branches.

Voucher specimen: Holotype previously mentioned.

#### 17. MYCOACIA AUSTRO-OCCIDENTALE Canfield, sp. nov.

Fructificatio annua, resupinata, hydncea, crenea vel pallido-bubalina; aculei cylindrici, 1-3 mm longi; margo crenea, tenua, fimbriata; hyphae fibulatae, 2.5-3.5  $\mu\text{m}$  diam, aliquae incrustatae; cystidia nulla; basidia clavata, 4-sterigmatibus, 20-21 x 5-6  $\mu\text{m}$ ; basidiosporae ellipsoidae, 4-4.5 x 2-2.5  $\mu\text{m}$ , tunica hyalina, levi, non-amyloidea. HOLOTYPUS: in ligno *Prosopis juliflora* (Sw.) DC., Arizona Highway 86, prope Kitt Peak Rd., Pima County, Arizona, leg. R. L. Gilbertson No, 10501, in herb. CFMR.

ETYMOLOGY: from Southwest, referring to the southwestern United States.

Basidiocarps adnate, effused; hymenial surface strongly hydnceous, pale buff to cream, teeth cylindric, simple or confluent, smooth, apices entire or minutely fimbriate, up to 3 mm long; margin thinning out, cream-colored, minutely fimbriate; hyphal system monomitic; subicular hyphae (Fig. 17a) with abundant clamps, thin-walled, with occasional branching, 2.5-3.5  $\mu\text{m}$  diam; cystidia none; some heavily incrustated hyphae imbedded in inner tissue of teeth, these not projecting from hymenial layer; basidia (Fig. 17b) clavate, 20-21 x 5-6  $\mu\text{m}$ , 4-sterigmate; basidiospores (Fig. 17c) ellipsoid, 4-4.5 x 2-2.5  $\mu\text{m}$  hyaline, smooth, negative in Melzer's reagent.

*Mycoacia austro-occidentale* is associated with a white rot of fallen mesquite trunks.

Voucher specimen: holotype previously mentioned.

18. ODONTIA PRUNI Lasch, in Rabenhorst, Fungi. Europ. Exsiccata No. 1514. 1872.

Basidiocarps becoming broadly effused, adnate; hymenial surface Pale Ochraceous Buff to Cinnamon-Buff, hydnceous, the teeth minute, finely fimbriate at apex; margin thinning out; hyphal system monomitic; subicular hyphae (Fig. 18a) simple-septate, thin-walled, 2-5  $\mu\text{m}$  diam, fascicles of heavily incrustated hyphae (Fig. 18b) present in inner tissue of teeth and extending to the apex, some entirely imbedded, others projecting, the entire fascicle up to 30  $\mu\text{m}$  diam; cystidia none; narrow, sinuous or lobed hymenial elements (Fig. 18c) present, barely projecting, 2-3  $\mu\text{m}$  diam; basidia (Fig. 18d) clavate, 4-sterigmate, 35-45 x 6-7  $\mu\text{m}$ , with a basal septum; basidiospores (Fig. 18e) ellipsoid, 7-8 x 4-5  $\mu\text{m}$ , hyaline, smooth, negative in Melzer's reagent.

*Odontia pruni* is associated with a white rot of dead hardwoods over a wide elevational range in the Southwest. Jülich (1974) transferred *O. pruni* to the genus *Hyphoderma*. The lack of clamps casts doubt on this relationship and we prefer to retain the older name for the present.

Voucher specimen: HHB 5971-A, Redington, San Pedro Valley, Pima County.

19. PENIOPHORA ALBOBADIA (Schw. ex Fr.) Boidin, Rev. Mycol. 26:164. 1961.

*Stereum albobadium* (Schw. ex Fr.) Fr., Epicr. Syst. Mycol., p. 551. 1838.

Basidiocarps thin, usually effused, 1 to 3 mm at first, enlarging and coalescing to 15-20 x 2-5 cm, occasionally reflexed, upper surface of reflexed portions brown, silky to strigose; hymenial surface dark brown with areas of purplish-brown (Drab) to cinnamon brown, fading to vinaceous-brown or gray-brown (Drab Gray); margin pale buff to white, tomentose to velutinous; hyphal system dimitic; generative hyphae (Fig. 19a) hyaline to pale brownish in KOH, with clamps, 3-5  $\mu\text{m}$  diam; skeletal hyphae (Fig. 19b) thick-walled, brownish in KOH, aseptate, with frequent

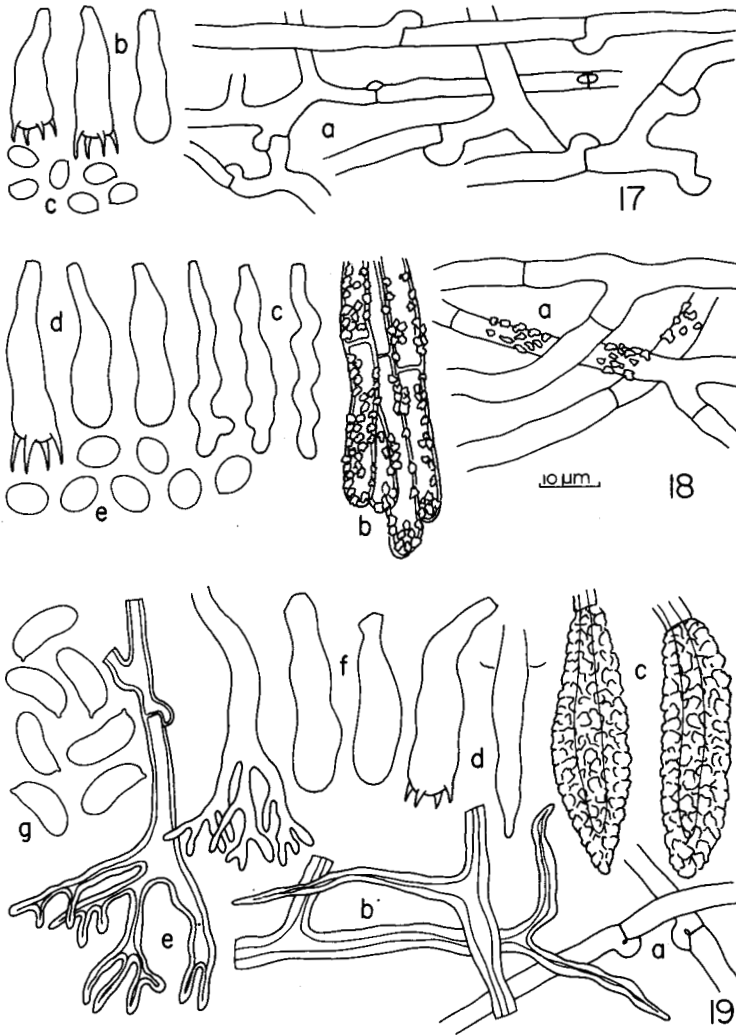


Fig. 17. *Mycoacia austro-occidentale* (RLG 10501). a, subcicular hyphae; b, basidia; c, basidiospores. Fig. 18. *Odontia pruni* (HHB 5971A). a, subcicular hyphae; b, fascicle of incrustated hyphae; c, sinuous or lobed hymenial elements; d, basidia; e, basidiospores. Fig. 19. *Peniophora albobadia* (ERC 87). a, generative hyphae; b, dendritic skeletal hyphae; c, incrustated cystidia; d, thin-walled, fusoid cystidium; e, dendrohyphidia; f, basidia; g, basidiospores.

branching, narrowing down to very slender tips; dendrohyphidia (Fig. 19e) abundant in hymenium, branched apices pale yellow-brown in KOH; cystidia (Fig. 19c) hyaline, conical, incrustated, imbedded or projecting up to 20  $\mu\text{m}$ , 12–15 x 25–30  $\mu\text{m}$ ; basidiospores (Fig. 19g) broadly cylindrical and slightly curved, 10.5–13 x 3.5–5  $\mu\text{m}$ , smooth, hyaline, negative in Melzer's reagent.

*Peniophora albobadia* is associated with a white rot of dead branches and fallen wood of a number of hardwood trees and shrubs in the Southwest.

Voucher specimens: ERC 87, Patagonia, Santa Cruz County; ERC 177, Box Canyon, 10 miles east of Florence, Pinal County; RLG 10543, Camp Grant Wash, San Pedro River Valley, Pinal County.

20. *PENIOPHORA NUDA* (Fr.) Bres., Atti I. R. Accad. Sci. Lett. Art. Agiati, ser. 3, 3:114. 1897.

Basidiocarps becoming broadly effused, thin, crustaceous, at first in small patches, then coalescing to cover areas up to 1 x 4 cm, hymenial surface smooth, light gray to pale pinkish gray; margin abrupt; hyphal system monomitic; subicular hyphae (Fig. 20a) 2–3.5  $\mu\text{m}$  diam, hyaline, with frequent branching, thin-walled or with slight wall thickening, with clamps; gloecystidia (Fig. 20b) imbedded in subiculum or occasionally in hymenium, pyriform to subglobose, 40–50 x 15–25  $\mu\text{m}$ , hyaline, thick-walled, with a basal clamp, with granular to globular contents, becoming light blue to dark blue in sulfuric benzaldehyde; cystidia (Fig. 20c,d) scattered in hymenium, subulate, 25–35 x 5–6  $\mu\text{m}$ , thin-walled, some heavily incrustated with hyaline crystals, protruding 10  $\mu\text{m}$  beyond basidia; basidia (Fig. 20e) narrowly clavate, slightly sinuous, 30–40 x 5–6  $\mu\text{m}$ , hyaline, thin-walled, 4-sterigmate, some regenerating by percurrent proliferation, occasionally with transverse septa; basidiospores (Fig. 20f) cylindrical to allantoid, 13–15 x 3–3.5  $\mu\text{m}$ , hyaline, thin-walled, smooth, negative in Melzer's reagent.

*Peniophora nuda* is associated with a white rot of dead branches on many hardwood species.

Voucher specimen: RLG 8442, Sonoita Creek, near Patagonia, Santa Cruz County.

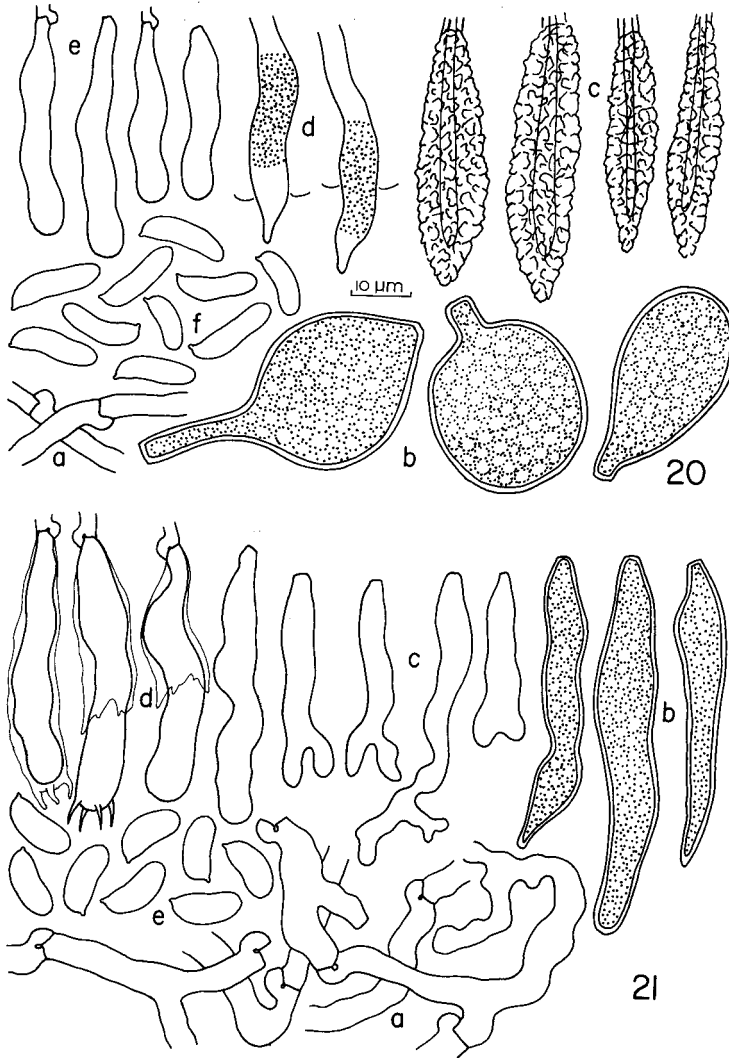


Fig. 20. *Peniophora nuda* (RLG 8442). a, subicular hyphae; b, gloeocystidia; c, incrustated cystidia; d, thin-walled, fusoid cystidia; e, basidia; f, basidiospores. Fig. 21. *Peniophora tamaricicola* (RLG 10496). a, subicular hyphae; b, gloeocystidia; c, dendrohyphidia; d, basidia; e, basidiospores.

21. PENIOPHORA TAMARICICOLA Boidin et Malençon, Rev. Mycol. 26:153. 1961.

Basidiocarps becoming broadly effused, adnate, drying tough and horny, cracking extensively on drying into small angular blocks; hymenial surface smooth to distinctly tuberculate, pruinose, pink when fresh, pale purplish-gray on dried specimens (Pale Smoke Gray, Pallid Mouse Gray or Light Gull Gray); margin abrupt and fertile; subiculum pale brown, hymenial layer distinct and white in longitudinal sections; hyphal system monomitic, subicular hyphae (Fig. 21a) agglutinated and difficult to separate, thin- to thick-walled, all with inconspicuous clamps, 3-4  $\mu\text{m}$  diam; gloeocystidia swollen, vesicular, imbedded in subiculum, some with refractive granular contents, strongly positive in sulfuric benzaldehyde; hymenial gloeocystidia (Fig. 21b) occasional, barely projecting, acuminate, some with refractive contents, weakly to distinctly positive in sulfuric benzaldehyde; dendrohyphidia (Fig. 21c) lightly incrustated, sparsely branched, 2-3  $\mu\text{m}$  diam; basidia (Fig. 21d) clavate, developing by percurrent proliferation, 25-40(-50) x 7-7.5  $\mu\text{m}$ , 4-sterigmate; basidiospores (Fig. 21e) smooth, cylindric to allantoid, 10.5-11.5 x 4-4.5  $\mu\text{m}$ , hyaline, negative in Melzer's reagent.

*Peniophora tamaricicola* was recently reported from North America as a major decay fungus on dead branches of mesquite as well as a number of other desert shrubs in southern Arizona (Gilbertson and Burdsall, 1975). It is associated with a white rot.

Voucher specimens: HHB 6223, Guadalupe Canyon, Peloncillo Mts., Cochise County; RLG 10055, Santa Rita Expt. Range, Santa Rita Mts., Pima County; RLG 10577, Peck Canyon Rd., Tumacacori Mts., Santa Cruz County; ERC 71-271, Peppersauce Canyon, Santa Catalina Mts., Pima County; RLG 10388, Aravaipa Canyon, Galliuro Mts., Pinal County.

22. PHANEROCHAETE ALLANTOSPORA Burds. et Gilbertson, Mycologia 66:780. 1974.

Basidiocarps effused in small confluent crustaceous patches, adnate; hymenial surface Pale Yellow-Orange to Light Buff, smooth to slightly tuberculate, cracking on drying to expose white subiculum; margin thinning out, white, narrow, sterile; subiculum white, soft; hyphal sys-

tern monomitic; subicular hyphae (Fig. 22a) loosely arranged, septate, lacking clamps, with frequent branching, 2–4.5  $\mu\text{m}$  diam, walls slightly thickened, smooth, or incrustated with pale yellow granules; cystidia (Fig. 22b) infrequent, cylindrical, tapering to the apex, smooth, thin-walled, hyaline, 50–125 x 5.5–8  $\mu\text{m}$  and projecting to 15  $\mu\text{m}$ , pale yellowish-brown granules on imbedded portion; basidia (Fig. 22c,d) clavate, hyaline, thin-walled, 22–27 x 6–6.5  $\mu\text{m}$ , 4-sterigmate, with a basal septum; basidiospores (Fig. 22e) allantoid, 10–11.5 x 2.5–3  $\mu\text{m}$ , hyaline, smooth, thin-walled, negative in Melzer's reagent.

*Phanerochaete allantospora* is associated with a white rot of dead branches on several desert trees and shrubs in Arizona.

Voucher specimens: ERC 69, Cottonwood Springs, Sonoita Creek, Santa Cruz County; ERC 71–258, Nature Conservancy Area, Aravaipa Canyon, Pinal County; RLG 10540, 10542, Camp Grant Wash, San Pedro River Valley, Pinal County.

23. PHANEROCHAETE ARIZONICA Burds. et Gilbertson,  
Mycologia 66:785. 1974.

Basidiocarps effused up to 8 cm, adnate; hymenial surface becoming raduloid with scattered rounded projections, cream-colored to pale buff (Light Buff), minutely cystidiate under 30X lens, cracking on drying to expose a white, arachnoid subiculum below; margin white, thin, fibrillose; hyphal system monomitic; subicular hyphae (Fig. 23a) hyaline, septate, lacking clamps at most septa, thin- to thick-walled, heavily incrustated with hyaline crystals, with frequent branching, 3–7  $\mu\text{m}$  diam; cystidia (Fig. 23b) nearly cylindrical, tapering to apex, 50–80 x 4–6  $\mu\text{m}$ , thin-walled, with a basal septum; basidia (Fig. 23c) clavate, 4-sterigmate, 25–30 x 5–7  $\mu\text{m}$ , with a basal septum; basidiospores (Fig. 23d) cylindrical, hyaline, thin-walled, negative in Melzer's reagent, smooth, 5–7 x 2.5–3  $\mu\text{m}$ .

*Phanerochaete arizonica* is associated with a white rot of dead branches and fallen stems of several desert trees and shrubs.

Voucher specimen: RLG 10393, Guadalupe Canyon,

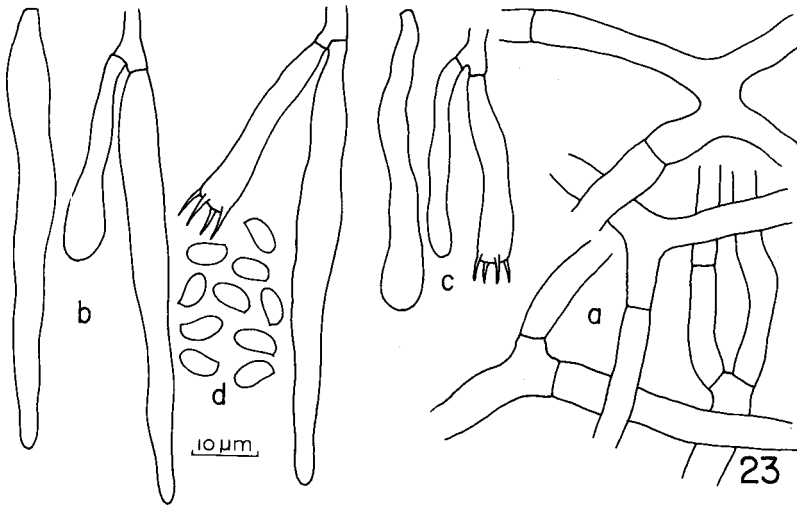
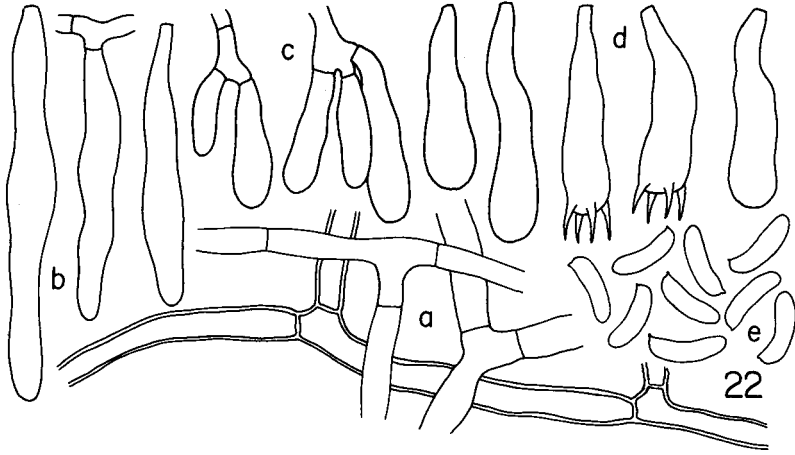


Fig. 22. *Phanerochaete allantospora* (ERC 69). a, subicular hyphae; b, cystidia; c, immature basidia; d, mature basidia; e, basidiospores. Fig. 23. *Phanerochaete arizonica* (RLG 10383). a, subicular hyphae; b, cystidia; c, basidia; d, basidiospores.

Peloncillo Mts., Cochise County.

24. PHANEROCHAETE CHRYSORHIZON (Torr.) Gilbertson et  
Budington, Southwestern Nat. 17(4):417. 1973.

*hydnum chrysorhizon* Torr., in Eaton, Manual of Botany,  
ed. 3, p. 309. 1822.

Basidiocarps effused in small patches, fragile, pel-  
liculose, easily separated from the substratum; hymenial  
surface bright orange-yellow to cream-colored, becoming  
strongly hydnceous, teeth cylindric, up to 1 mm long;  
margin rhizomorphic with orange-yellow to white, plumose  
fans of radiating hyphal strands in arachnoid mycelium;  
yellow to cream rhizomorphs usually present on substratum  
and in adjacent soil and litter; hyphal system monomitic;  
subicular hyphae with abundant septa (Fig. 24a) and occa-  
sional single or double clamp connections (Fig. 24b,c),  
smooth or lightly incrustated, 4-8  $\mu\text{m}$  diam; cystidia (Fig.  
24d) few, cylindric, 35-40 x 4-4.5  $\mu\text{m}$ , thin-walled, pro-  
jecting to 25  $\mu\text{m}$ ; basidia (Fig. 24e) clavate, 4-sterigmate,  
with a basal septum, 20-30 x 5.5-7  $\mu\text{m}$ ; basidiospores (Fig.  
24f) oblong, 5-6 x 4-4.5  $\mu\text{m}$ , hyaline, smooth, negative in  
Melzer's reagent.

*Phanerochaete chrysorhizon* is associated with a white  
rot of fallen hardwoods and is also common on dead cotton  
roots in Arizona.

Voucher specimens: RLG 10507, Sycamore Canyon,  
Baboquivari Mts., Papago Indian Res., Santa Cruz County;  
RLG 10391, Aravaipa Canyon, Galliuero Mts., Pinal County;  
RLG 10887 and 10888, Pima Canyon, Santa Catalina Mts.,  
Pima County; RLG 10794, Sierra Vista, Cochise County.

25. PHANEROCHAETE TUBERCULATA (Karst.) Parm. Conspect.  
Syst. Corticiacearum, p. 83. 1968.

*Corticium tuberculatum* Karst., Hedwigia 35:45. 1896.

Basidiocarps becoming broadly effused, adnate, membra-  
nous; hymenial surface tuberculate, deeply cracked when  
dry, Cinnamon-Buff to Clay-Color; margin thinning out,  
white, arachnoid; hyphal system monomitic, subicular hyphae  
(Fig. 25a) thin-walled, hyaline, simple-septate, sometimes  
incrusted, 3.5-5  $\mu\text{m}$  diam; cystidia none; basidia (Fig. 25b)  
clavate, 4-sterigmate, simple-septate at base, 25-35 x 5-6  
 $\mu\text{m}$ ; basidiospores (Fig. 25c) ellipsoid, 6-9 x 3.5-5  $\mu\text{m}$ ,

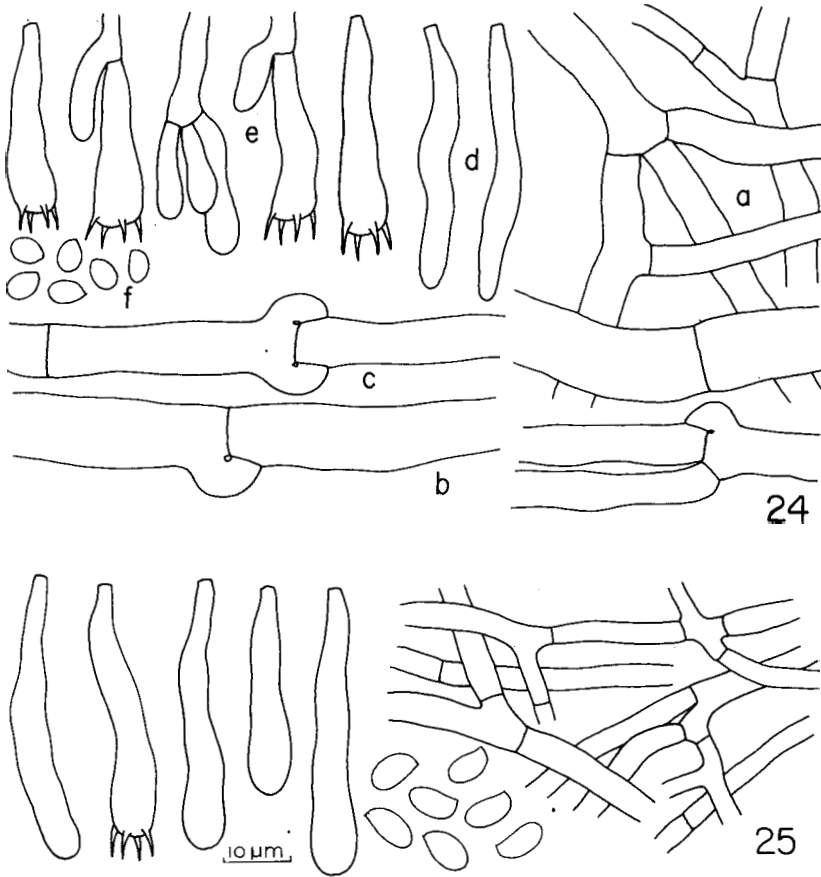


Fig. 24. *Phanerochaete chrysorhizon* (RLG 10391) a, simple-septate subicular hyphae; b, subicular hyphae with single clamps; c, subicular hypha with double clamp; d, cystidia; e, basidia; f, basidiospores.  
 Fig. 25. *Phanerochaete tuberculata* (RLG 10082). a, subicular hyphae; b, basidia; c, basidiospores.

hyaline, smooth, negative in Melzer's reagent.

*Phanerochaete tuberculata* is associated with a white rot of dead branches or wood on the ground. It has been found on wood of a number of shrubs and trees in the Sonoran and Mohave deserts and plays an important role in the desert ecosystem.

Voucher specimens: RLG 10082, Cascabel, San Pedro River Rd., Cochise County; D. C. Rhodes P-016A, Patagonia, Santa Cruz County; HHB 5971, Redington, San Pedro Valley, Pima County.

26. *PHLEBIA OCHRACEOFULVA* (Bourd. et Galz.) Donk, Fungus 27:12. 1957.

Basidiocarps broadly effused, soft-waxy, adnate; hymenial surface pale pinkish-buff to orange-buff when fresh, drying light buff, slightly tuberculate, appearing pilose under 30X lens; hyphal system monomitic; subicular hyphae (Fig. 26a) somewhat agglutinated, thin-walled, hyaline, with clamps, same much contorted and irregularly lobed, up to 10  $\mu\text{m}$  diam; cystidia (Fig. 26b) abundant, subulate, 18-22 x 4-5  $\mu\text{m}$ , thin-walled, not incrustated, with a basal clamp; basidia (Fig. 26c) clavate, 4-sterigmate, 20-25 x 5-6  $\mu\text{m}$ , with a basal clamp; basidiospores (Fig. 26d) oblong, 5-6.5 x 3-3.5  $\mu\text{m}$ , hyaline, smooth, negative in Melzer's reagent.

*Phlebia ochraceofulva* is associated with a white rot of fallen mesquite.

Voucher specimen: RLG 10494, Rest Area on Ariz, Highway 85 near Kitt Peak Rd., Pima County.

27. *HENNINGSOMYCES CANDIDUS* (Pers.) O. Kuntze, Rev. Gen. P1. 3:483. 1898.

*Solenia candida* Pers., Myc. Eur. 1:334. 1822.

Basidiocarps consisting of individual tubes that are separate from each other or closely packed and confluent, white, minutely tomentose on the outer surface, about 600-700  $\mu\text{m}$  long and 160-200  $\mu\text{m}$  diam; apical pore usually conspicuous; hymenium continuous on inner surface, about 22  $\mu\text{m}$  thick; hyphal system monomitic; hyphae (Fig. 27a) 2-4  $\mu\text{m}$  diam, thin-walled, with simple septa and obscure clamps, agglutinated and difficult to separate; apically branched slender hyphae on outer surface (Fig. 27b), branched at the apex, 1.5-2  $\mu\text{m}$  diam; fusiform cystidioles (Fig. 27c) abundant, up to 25 x 5  $\mu\text{m}$ , scarcely projecting; basidia (Fig. 27d) broadly clavate, 14-17 x 6-7  $\mu\text{m}$ ; basidiospores (Fig. 27e) subglobose, 4 x 5  $\mu\text{m}$ , hyaline, thin-walled,

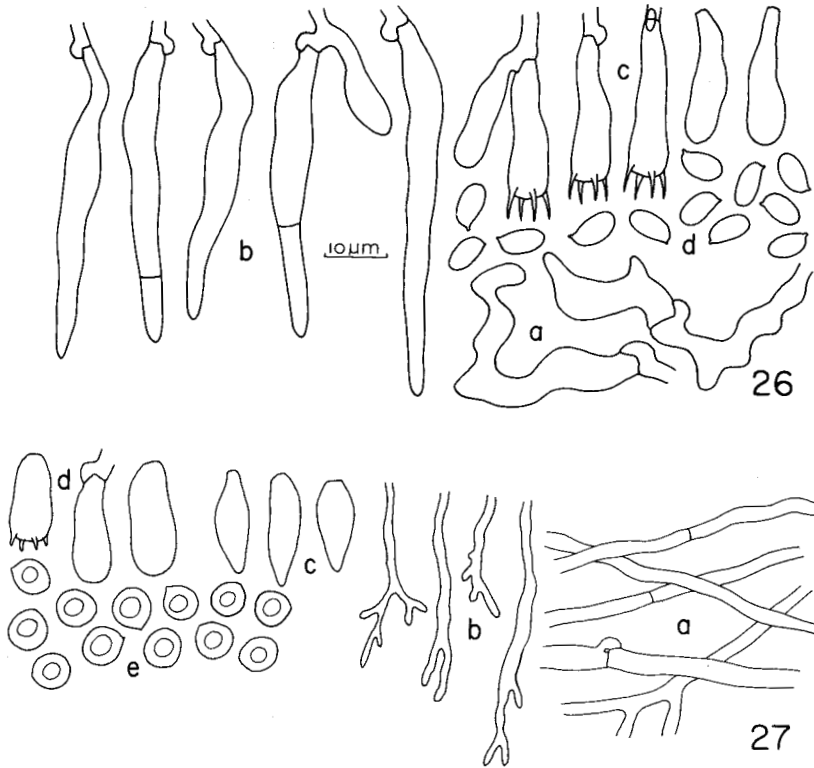


Fig. 26. *Phlebia ochraceofulva* (RLG 10494). a, sub-circular hyphae; b, cystidia; c, basidia; d, basidiospores.  
 Fig. 27. *Henningsomyces candidus* (RLG 8437). a, hyphae from wall of basidiocarp; b, branching hyphae from outer surface of basidiocarp; c, fusoid cystidioles; d, basidia; e, basidiospores.

smooth, negative in Melzer's reagent.

*Henningsomyces candidus* is associated with a white rot of fallen stems.

Voucher specimen: RLG 8437, Sonoita Creek, 6 miles east of Patagonia, Santa Cruz County.

28. *GANODERMA LUCIDUM* (W. Curt. ex Fr.) Karst., Rev.  
Mycol. 3:17. 1881.

Basidiocarps annual, sessile to laterally substipitate, applanate, 15 cm or more broad, upper surface with thin varnished crust at maturity, dark reddish brown, typically covered with powdery layer of basidiospores deposited by air currents; margin acute, narrowly sterile below; context at first creamy white, becoming dark purple brown in older portions, zonate, up to 3 cm thick at base; tube layer purple-brown, sharply distinct from context, up to 1 cm thick; pore surface creamy white at first, becoming light buff, staining dark purple-brown on bruising; pores circular to angular, 4-5 mm, with thick dissepiments; pileus surface 25-30  $\mu\text{m}$  thick, a dense palisade of clavate, reddish-brown, thick-walled hyphal end cells (Fig. 28c) up to 7-11  $\mu\text{m}$  diam; hyphal system dimitic; contextual skeletal hyphae (Fig. 28b) hyaline to pale golden brown, thick-walled, aseptate, with frequent dendritic branching, branch tips tapering to less than 1  $\mu\text{m}$  diam, main hyphae up to 7  $\mu\text{m}$  diam; contextual generative hyphae (Fig. 28a) 2-2.5  $\mu\text{m}$  diam, hyaline, thin-walled, with clamps; tramal skeletal hyphae (Fig. 28d) pale greenish brown, thick-walled, aseptate, 2-3.5  $\mu\text{m}$  diam, also some slender, thick-walled, branching, hyaline, aseptate hyphae 1-1.5  $\mu\text{m}$  diam; tramal generative hyphae 2-2.5  $\mu\text{m}$  diam, hyaline, thin-walled; basidia (Fig. 28e) broadly ellipsoid, 12-15 x 10-11  $\mu\text{m}$ , 4-sterigmate; basidiospores (Fig. 28f) ellipsoid, 9-12 x 5.5-8  $\mu\text{m}$ , truncate at apex, pale brown in KOH, with thick, pitted exospore; negative in Melzer's reagent.

*Ganoderma lucidum* is associated with a white root and butt rot of living mesquite and is found on other native southwestern desert trees and exotic ornamental trees and shrubs. The basidiocarps develop at or near the ground line.

Voucher specimen: RLG 11223, Univ. Ariz. Farm, Campbell Avenue, Tucson, Pima County.

29. *HYMENOCHAETE ARIDA* Karst., in Sacc., Syll. Fung. 9:  
228. 1891.

Basidiocarps resupinate, effused up to 12 cm, adnate;

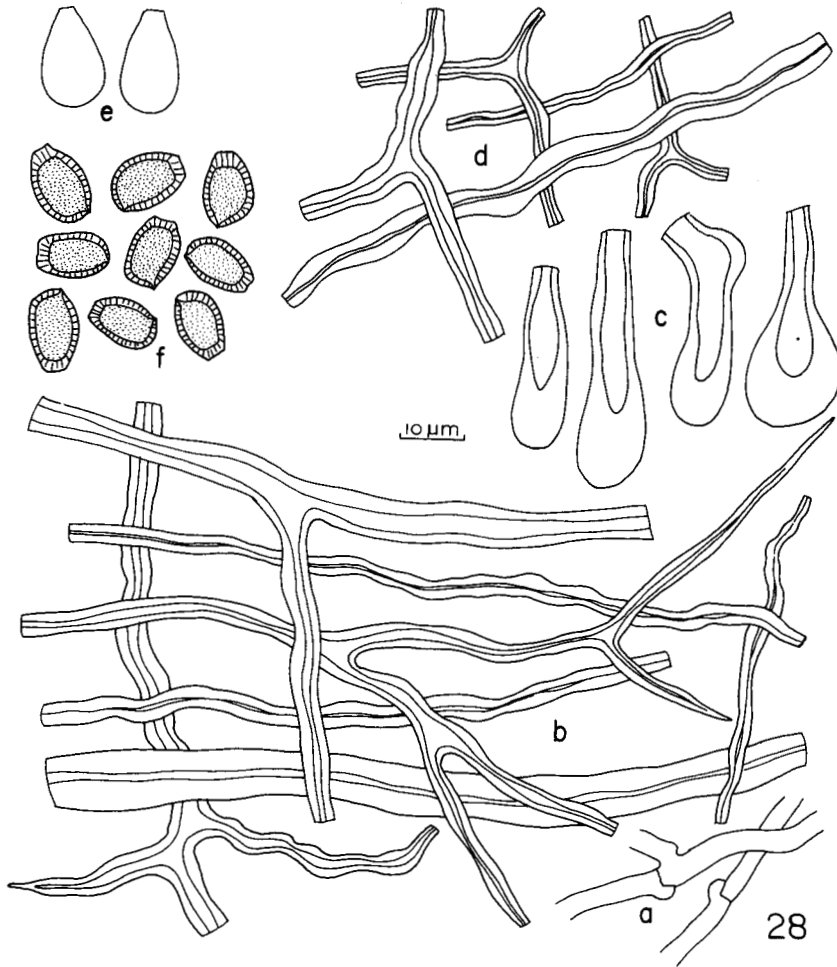


Fig. 28. *Ganoderma lucidum* (RLG 11223). a, contextual generative hyphae; b, contextual skeletal hyphae; c, thick-walled, clavate hyphal ends from pileus surface; d, tramal skeletal hyphae; e, basidia; f, basidiospores.

hymenial surface brown (Sudan Brown), smooth, setulose under 30X lens, margin abrupt, fertile; subicular hyphae (Fig. 29a) brown, darkening in KOH, simple-septate, moderately thick-walled, loosely arranged, with frequent branching, 3-5 µm in diam; setae (Fig. 29b) abundant, in a single layer, subulate, thick-walled, 60-100 x 5-8 µm, projecting

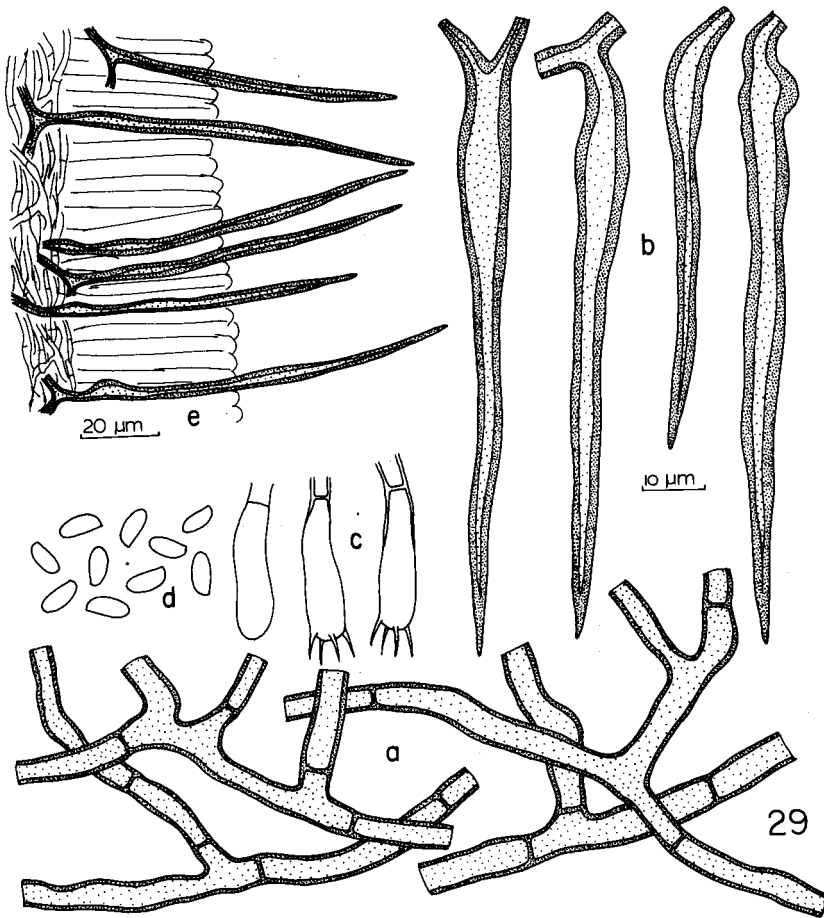


Fig. 29. *Hymenochaete arida* (HHB 8693). a, subicular hyphae; b, setae; c, basidia; d, basidiospores; e, schematic drawing of hymenium.

up to 60  $\mu\text{m}$ , straight or curved; basidia (Fig. 29c) clavate, 4-sterigmate, 20–22 x 5–6  $\mu\text{m}$ , with a basal septum; basidiospores (Fig. 29d) cylindrical, 5–7 x 2–2.5  $\mu\text{m}$ , hyaline, smooth, negative in Melzer's reagent.

*Hymenochaete arida* is associated with a white rot of hardwood and conifer logs and slash.

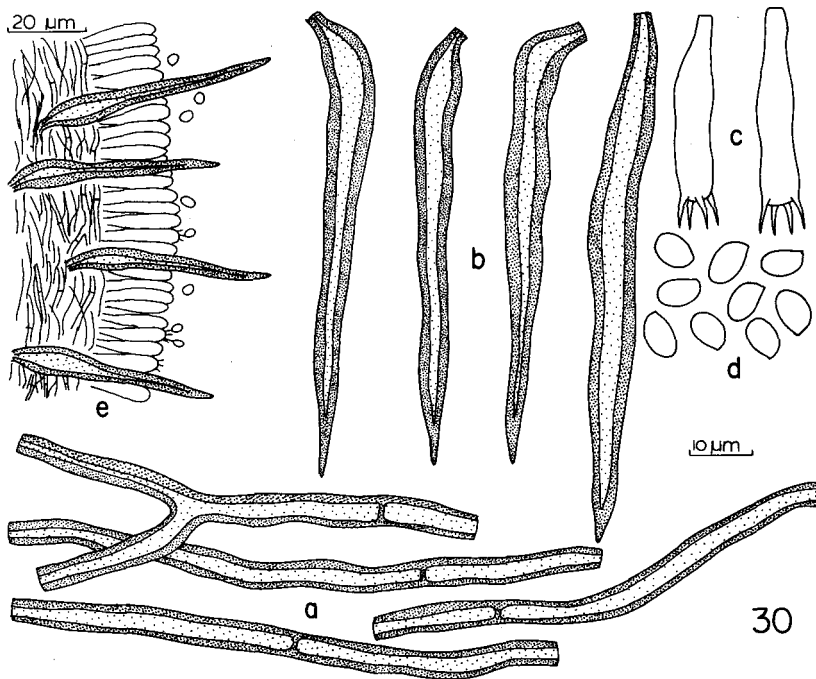


Fig. 30. *Hymenochaete rubiginosa* (RLG 10867). a, subicular hyphae; b, setae; c, basidia; d, basidiospores; e, schematic drawing of hymenium.

Voucher specimen: HHB 8693, Sycamore Canyon, Atascosa Mts., Santa Cruz County.

30. HYMENOCHAETE RUBIGINOSA Dicks. et Lév., Ann. Sci. Nat. Bot. ser. 3. 5:151. 1846.

Basidiocarps broadly effused to effused-reflexed, reflexed up to 5 mm; pileus thin, upper surface dark brown to dark reddish-brown, finely tomentose, concentrically zonate; hymenial surface Buffy Brown to Olive-Brown or Saccardo's Umber, smooth; margin sterile, reddish-brown with yellowish-brown outer edge; subicular hyphae (Fig. 30a) tightly interwoven, reddish-brown, 2-4 µm diam, thin- to thick-walled, simple-septate, darkening in KOH; setae (Fig. 30b) abundant, subulate, 60-80 x 5-7 µm, arising in

subhymenium, thick-walled, reddish-brown, aseptate, darkening in KOH; basidia (Fig. 30c) broadly clavate, 25–30 x 5–6.5  $\mu\text{m}$ , 4-sterigmate, hyaline at apex, yellow-brown at base; basidiospores (Fig. 30d) broadly ovoid, 5.5–7 x 3.5–4.5  $\mu\text{m}$ , hyaline, thin-walled, smooth, negative in Melzer's reagent 1

*Hymenochaete rubiginosa* is associated with a white root and butt rot of living mesquite. The basidiocarps develop at the ground line and are inconspicuous.

Voucher specimens: HHB 8417, at base of living mesquite, lower Sabino Canyon, Santa Catalina Mts., Pima County; RLG 10865, 10867 and 10872, at base of living mesquite, Lower Bear Canyon, Santa Catalina Mts., Pima County.

31. *INONOTUS TEXANUS* Murr., Torrey Bot. Club. Bul. 31:597. 1904.

Basidiocarps annual, sessile, unguulate to applanate, up to 6 x 8 x 5 cm; upper surface pale brown, glabrous or soon becoming so, cracking radially and concentrically to form angular scales; context with distinct granular core of intermixed white and brown tissue; fibrous context yellowish-brown, up to 1 cm thick; tube layer concolorous with fibrous context, up to 3.5 cm thick, brittle; hyphae of fibrous context (Fig. 31b) hyaline to dark brown, thin- to thick-walled, simple-septate, some with rare branching, 3–6  $\mu\text{m}$  diam, others contorted and much branched, 2.5–4  $\mu\text{m}$  diam; hyphae of granular core (Fig. 31c) dark brown in KOH, thick-walled, contorted and swollen, breaking readily into short fragments up to 20  $\mu\text{m}$  diam; tramal hyphae (Fig. 31a) mostly hyaline or pale yellowish, thin-walled, 2–4  $\mu\text{m}$  diam; setae absent; basidia (Fig. 31d) clavate, 4-sterigmate, 7–8  $\mu\text{m}$  diam; basidiospores (Fig. 31e) ovoid to broadly ellipsoid, 6–8(–9) x 5–6.5(–7)  $\mu\text{m}$ ; dark yellowish-brown, with slightly thickened walls, negative in Melzer's reagent; spore print rusty brown.

*Inonotus texanus* causes a white rot of the heartwood of living trees. It is also found on catclaw acacia (*Acacia greggii* Gray), a common associate of mesquite in southern Arizona.

Voucher specimens: RLG 7043 and 7045, Santa Rita Expt. Range, Santa Rita Mts., Pima County; RLG 8947,

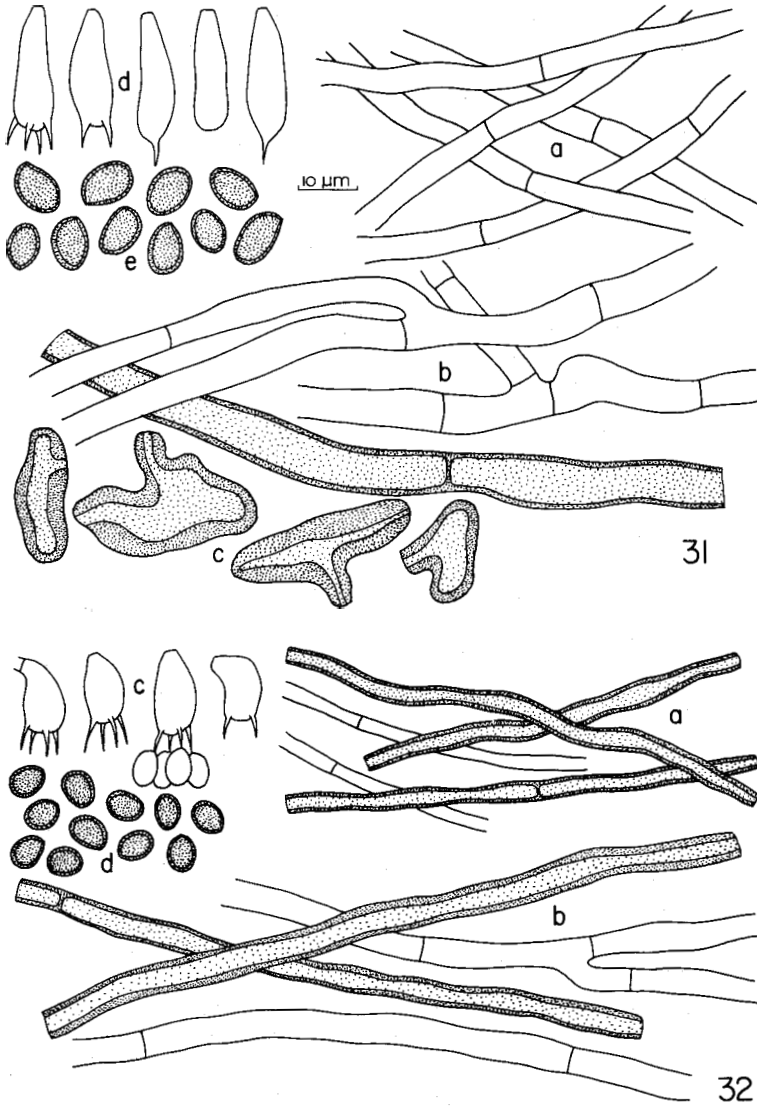


Fig. 31. *Inonotus texanus* (RLG 10508). a, tramal hyphae; b, hyphae from fibrous context; c, thick-walled, contorted hyphae from granular core; d, basidia; e, basidiospores. Fig. 32. *Phellinus badius* (RLG 7737). a, tramal hyphae; b, contextual hyphae; c, basidia; d, basidiospores.

Sonoita Creek, Santa Cruz County; ERC 174, Ruby, Atascosa Mts., Santa Cruz County; ERC 71-71, Old Spanish Trail near Colossal Cave, Pima County; RLG 10508 and 10510, Forestry Cabin Trail, Baboquivari Mts., Papago Indian Res., Pima County.

32. PHELLINUS BADIUS (Berk.) G. H. Cunn., New Zealand Dept. Sci. Ind. Res. Bull. 164. p. 233. 1965.

*Fomes badius* (Berk.) Cke., Grevillea 14 : 18. 1885.

Basidiocarps perennial, sessile, dimidiate, to 6 x 7 x 3.5 cm; upper surface quickly becoming blackened and rimose, margin yellowish-brown, tomentose, up to 1.5 cm wide; pore surface yellowish-brown, smooth; pores circular to angular, 3-5 per mm, with smooth, entire dissepiments; context bright yellowish-brown, firm, fissile, faintly zonate, up to 2 cm thick; tube layers concolorous, not distinct from context, up to 2 cm thick; contextual hyphae (Fig. 32b) simple-septate, some thin-walled, pale brown, 4-6  $\mu\text{m}$  diam, some thick-walled, dark brown, 3-9  $\mu\text{m}$  diam; tramal hyphae (Fig. 32a) similar; basidia (Fig. 32c) broadly clavate, up to 12-14 x 6-7  $\mu\text{m}$ , sterigmata 5-6  $\mu\text{m}$  long; setae absent; basidiospores (Fig. 32d) ovoid, 5-7 x 4-6  $\mu\text{m}$ , dark reddish-brown with slightly thickened walls, negative in Melzer's reagent.

*PHELLINUS badius* causes a white rot of the heartwood of living trees. The decayed wood becomes pale yellow with brown mycelium developing in shrinkage cracks as decay progresses.

Voucher specimens: RLG 7834, Baboquivari Peak Rd., Papago Indian Res., Pima County; ERC 71-89, Sonoita Creek, Patagonia, Santa Cruz County; N. Simmons, Tule Desert, Yuma County; ERC 71-72, Colossal Cave Area, Rincon Mts., Pima County.

33. PHELLINUS FERRUGINOSUS (Schrad. ex Fr.) Bourd. et Galz., Hym. France. p. 625. 1928.

*Poria ferruginosa* (Schrad. ex Fr.) Karst., Rev. Mycol. 3, 9:18. 1881.

Basidiocarps annual or perennial, becoming widely

effused, tough to soft-spongy, adnate; margin often appearing setulose under a lens, up to 2 cm wide; pore surface ferruginous, the pores circular, usually 7-9 per mm, but in some unusual specimens 2-3 per mm, with thick, tomentose dissepiments; context yellowish-brown, azonate, soft-fibrous, up to 1.5 mm thick; tube layer slightly darker than the context or concolorous, continuous with the context, up to 2 mm thick; contextual hyphae (Fig. 33a) simple-septate, hyaline or pale yellow and thin-walled to dark brown and thick-walled, 2-4  $\mu\text{m}$  diam; tramal hyphae similar; setal hyphae usually present in marginal tissue, dark reddish-brown, thick-walled, tapering to a point, unbranched, 5-8  $\mu\text{m}$  diam; basidia (Fig. 33c) clavate, 4-sterigmate, 11-14 x 4.5-6.5  $\mu\text{m}$ , hyaline, with a basal septum; setae (Fig. 33b) abundant in hymenium, mostly subulate, thick-walled, 25-65 x 6-8  $\mu\text{m}$ ; basidiospores (Fig. 33d) cylindrical or short-oblong, 5-7 x 3-3.5  $\mu\text{m}$ , hyaline, smooth, negative in Melzer's reagent.

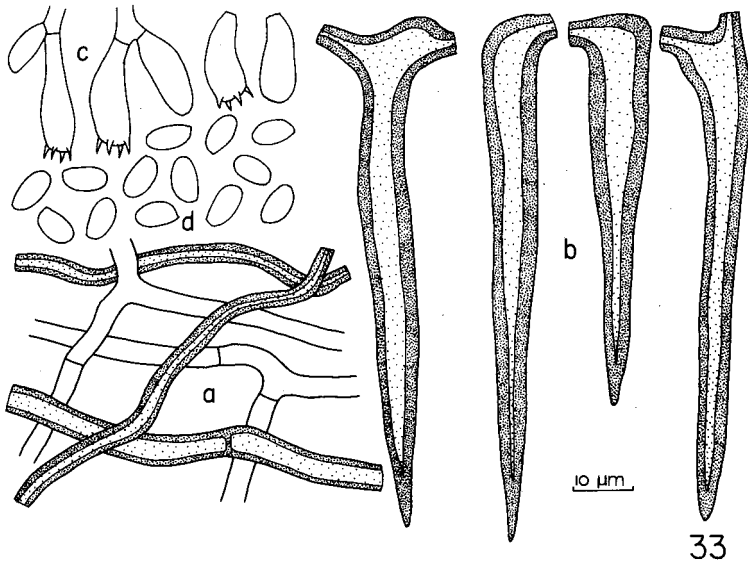
*Phellinus ferruginosus* causes a white rot of fallen trunks and branches.

Voucher specimens: RLG 7044, Santa Rita Expt. Range, Santa Rita Mts., Pima County; ERC 71-78, Redington-Benson Rd., San Pedro Valley, Cochise County; RLG 10385, and ERC 71-257, Aravaipa Canyon, Galliuo Mts., Pinal County.

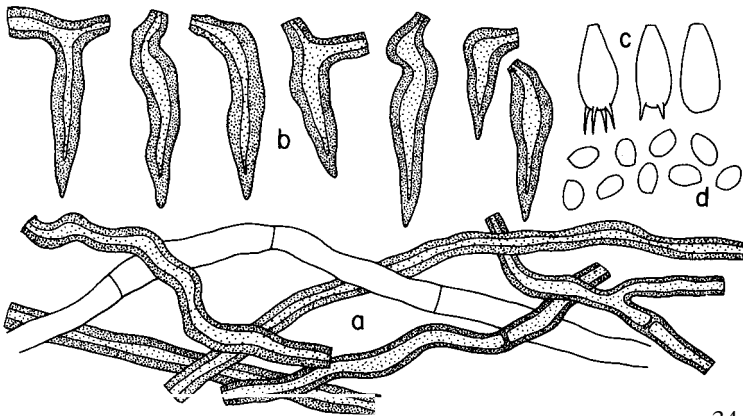
34. PHELLINUS GILVUS (Schw.) Pat., Ess. Tax. Hym., p. 97. 1900.

*Polyporus gilvus* (Schw.) Fr., Elench. Fung. 1:104. 1828.

Basidiocarps perennial or annual, sessile; upper surface pale yellowish-brown to reddish-brown and tomentose, becoming smooth to warted, blackening with age, sometimes zonate especially near margin; pore surface purplish-brown, pores circular, 6-8 per mm; context bright golden yellow, fibrous, up to 2 cm thick; contextual hyphae (Fig. 34a) pale yellow, thin-walled, and septate to reddish-brown, thick-walled, and infrequently septate, rarely branched, 2.5-6.5  $\mu\text{m}$  diam; tramal hyphae similar; setae (Fig. 34b) abundant, subulate, 20-30 x 5-6  $\mu\text{m}$ , reddish-brown, thick-walled, bifurcate or not at base, projecting up to 15  $\mu\text{m}$ ; basidia (Fig. 34c) broadly clavate, 8-11 x 5-7  $\mu\text{m}$ , 4-sterigmate, with a basal septum; basidiospores (Fig. 34d)



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Fig. 33. *Phellinus ferruginosus* (ERC 71-257). a, contextual hyphae; b, setae; c, basidia; d, basidiospores.  
 Fig. 34. *Phellinus gilvus* (ERC 86). a, contextual hyphae; b, setae; c, basidia; d, basidiospores.

ovoid, hyaline, 4-5 x 2.5-3.5 µm, negative in Melzer's reagent.

*Phellinus gilvus* is a common fungus on a number of stream-bank hardwoods at lower elevations in southern

Arizona and causes a white heartrot of living trees and also decays dead standing and fallen trees. It causes a butt rot in living mesquite with basidiocarps inconspicuous near the ground line.

Voucher specimens: ERC 71-86, Sonoita Creek, Santa Cruz County; RLG 10869 and 10873, at base of living mesquite, Lower Bear Canyon, Santa Catalina Mts., Pima County.

35. *VARARIA TROPICA* Welden, *Mycologia* 57:516. 1965.

Basidiocarps annual, effused, cracking into small angular blocks on drying, soft and easily sectioned; hymenial surface pale buff, minutely tomentose under 30X lens, smooth or slightly tuberculate; margin thinning out, fertile; hyphal system dimitic; generative subicular hyphae (Fig. 35a) thin- to moderately thick-walled, hyaline, simple-septate, 2.5-4  $\mu\text{m}$  diam; dichohyphidia (Fig. 35b) dextrinoid in Melzer's reagent, abundant, concentrated in a zone below the hymenial region but also scattered in lower subiculum, with thickened walls, profusely branched with ultimate branches tapering to slender curved apices, basal portion 2-4  $\mu\text{m}$  diam and slender apices less than 1  $\mu\text{m}$  diam; gloeocystidia (Fig. 35c) mostly imbedded, elongated, cylindric or with swollen portions, negative in sulfuric benzaldehyde, thin-walled, 70-90 x 6-12  $\mu\text{m}$ ; basidia (Fig. 35d) in a catathymenium arising from imbedded probasidia at different levels, thick-walled at base, 25 x 6-8  $\mu\text{m}$ , 4-sterigmate; probasidia (Fig. 35e) globose to ellipsoid, 9-12  $\mu\text{m}$  diam; basidiospores (Fig. 35f) subglobose to ellipsoid, 9-12 x 7-9  $\mu\text{m}$ , hyaline, negative in Melzer's reagent, smooth, with slightly thickened wall and a blunt, prominent apiculus.

*Vararia tropica* was originally described from Puerto Rico, and has not been reported previously from western North America. It is associated with a white rot of dead branches.

Voucher specimen: RLG 10950, near Arizona State Rd. 289, 5 mi. west of Arivaca, Santa Cruz County.

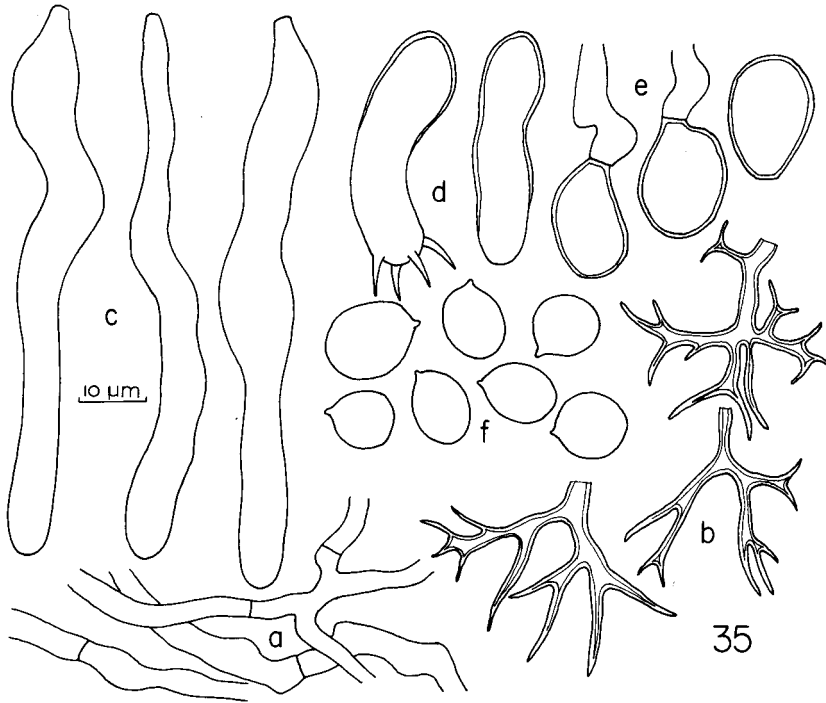


Fig. 35. *Vararia tropica* (RLG 10950). a, subicular hyphae; b, dichohyphidia; c, gloeocystidia; d, basidia; e, probasidia; f, basidiospores.

36. *ANTRODIA HETEROMORPHA* (Fr.) Donk, Persoonia, 4:339. 1966.

*Trametes heteromorpha* (Fr.) Bres., in Neuman, Wis. Geol. Nat. Hist. Sur. Bul. 33:40. 1914.

Basidiocarps annual, usually effused-reflexed, often effused or sessile; pilei solitary or imbricate; reflexed portion dimidiate to elongate, up to 3 x 20 x 1.5 cm; surface of pileus ivory white to pale brown, glabrous to slightly tomentose; margin even, sometimes abrupt, concolorous with pileus surface; pore surface concolorous with upper surface, dull, pores angular to circular, 1 to 3 per mm; dissepiments at first thick and entire, thin and lacerate with age; context ivory-colored, corky, up to 6 mm

thick; hyphal system dimitic; generative contextual hyphae (Fig. 36a) thin-walled, with clamps, 2-4  $\mu\text{m}$  diam; contextual skeletal hyphae (Fig. 36b) thick-walled, aseptate, 3-6  $\mu\text{m}$  diam; tramal hyphae similar; basidia (Fig. 36c) clavate, 4-sterigmate, 30-40 x 9-10  $\mu\text{m}$ ; with a basal clamp; cystidia none; basidiospores (Fig. 36d) broadly cylindric, slightly curved, 12-16.5 x 5-7.5  $\mu\text{m}$ , hyaline, smooth, negative in Melzer's reagent.

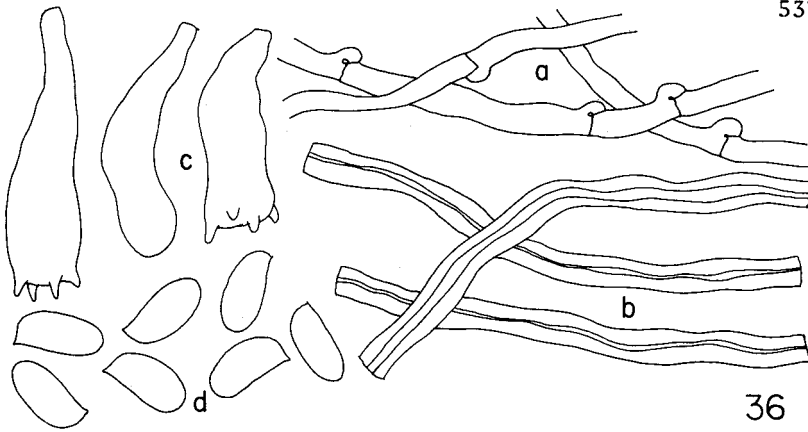
*Antrodia heteromorpha* is associated with a brown cubical rot of fallen and standing dead stems and branches.

Voucher specimens: RLG 10213 and 10216, Santa Rita Expt. Range, Santa Rita Mts., Pima County; ERC 71-79, Redington-Benson Rd., San Pedro Valley, Cochise County; ERC 71-255, Aravaipa Canyon, Pinal County; ERC 71-356, Camp Grant Wash, San Pedro Valley, Pinal County; HHB 5955, Redington Rd., Pima County.

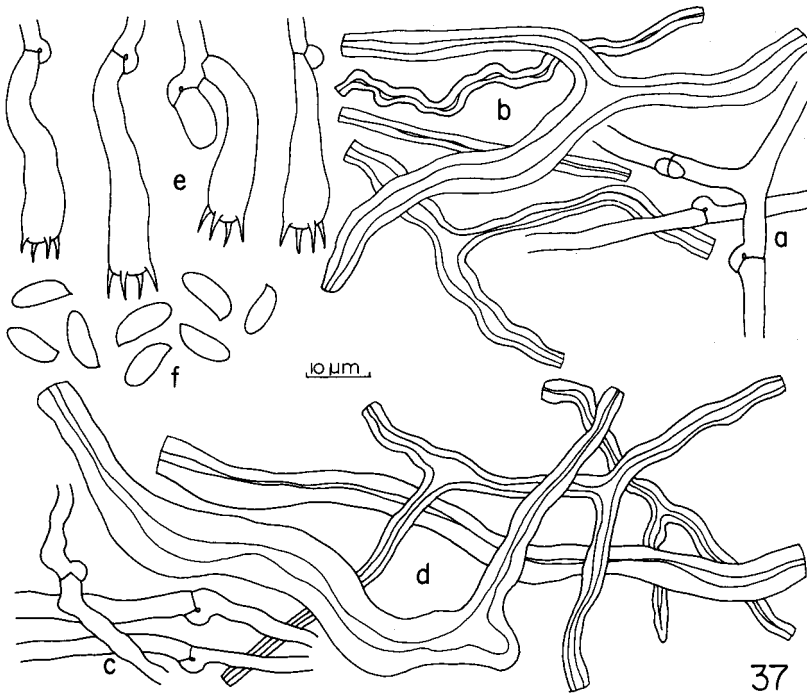
37. POLYPORUS ARCULARIUS Batsch. ex Fr., Syst. Myc. 1: 342. 1821.

Basidiocarps annual, centrally stipitate; pilei circular, solitary, up to 2.5 cm diam and 0.3 cm thick; surface of pileus straw-colored to dark brown, azonate, glabrous, smooth to rugose; margin ciliate, acute, sterile below; stipe central, concolorous with pileus, glabrous, up to 3.5 cm long and 0.4 cm thick; pore surface cream-colored to buff, dull, rough, the pores hexagonal, radially aligned, 1-2 per mm, dissepiments thin, becoming lacerate; context white to buff, azonate, tough, less than 1 mm thick; tube layer concolorous and continuous with context, up to 2 mm thick; hyphal system dimitic; contextual generative hyphae (Fig. 37c) thin-walled, often branched, with abundant clamps, 2.5-5  $\mu\text{m}$  diam; contextual skeletal hyphae (Fig. 37d) thick-walled, aseptate, with occasional branching, 2-11  $\mu\text{m}$  diam; tramal hyphae (Fig. 37a,b) similar, not readily separable; hyphae on pileus surface slender, thin-walled, with clamps, 1-1.5  $\mu\text{m}$  diam; cystidia none; basidia (Fig. 37e) clavate, 4-sterigmate 25-35 x 5-6  $\mu\text{m}$ , with a basal clamp; basidiospores (Fig. 37f) cylindric, straight or slightly curved, 7-9 x 2.5-3.5  $\mu\text{m}$ , hyaline, smooth, negative in Melzer's reagent.

*Polyporus arcularius* causes a uniform white rot of fallen dead hardwoods and is occasionally found on



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Fig. 36. *Antrodia heteromorpha* (RLG 9952). a, context-generative hyphae; b, context-skeletal hyphae; c, basidia; d, basidiospores. Fig. 37. *Polyporus arcularius* (RLG 7903). a, tramal-generative hyphae; b, tramal-skeletal hyphae; c, context-generative hyphae; d, context-skeletal hyphae; e, basidia; f, basidiospores.

junipers. It is especially common on oak in southern Arizona.

Voucher specimen: HHB 8481, Santa Rita Expt. Range, Santa Rita Mts., Pima County.

38. *PORIA APACHERIENSIS* Gilbertson et Canfield.  
Mycologia, 65:1117. 1973.

Basidiocarps annual, effused up to 10 cm, adnate, soft-fibrous; pore surface white to Cream Color or Light Buff, the pores irregular in shape, daedaloid in some areas, up to 1 mm diam but mostly 2-3 per mm; dissepiments thick and finely tomentose at first but becoming thick and deeply lacerate; tube layer soft-fibrous, white to cream colored, up to 2 mm thick; subiculum white, soft, azonate, less than 0.5 mm thick; hyphal system monomitic; subicular hyphae (Fig. 38a) with clamps, thin-walled, with occasional branching, 2-4  $\mu\text{m}$  diam; tramal hyphae similar, incrustated at dissepiment edges; cystidia of two types, some acicular to cylindric (Fig. 38b), thin-walled, smooth or lightly incrustated, 3-5  $\mu\text{m}$  diam and projecting up to 40  $\mu\text{m}$ , others capitate (Fig. 38c), with stalk 3-5  $\mu\text{m}$  diam and swollen apex up to 10  $\mu\text{m}$  diam, projecting to 45  $\mu\text{m}$ ; basidia (Fig. 38d) clavate, 4-sterigmate, 18-21 x 6-7  $\mu\text{m}$ ; basidiospores (Fig. 38e) broadly ellipsoid to subglobose, 5-6.5 x 4-5.5  $\mu\text{m}$ , hyaline, smooth, negative in Melzer's reagent.

*Poria apacheriensis* is associated with a white rot of dead fallen mesquite and other desert trees and shrubs. It has also been found associated with a root rot of several of these desert plants (Gilbertson and Canfield, 1973).

Voucher specimen: ERC 180, Patagonia, Santa Cruz County (TYPE).

39. *PORIA BABOQUIVARIENSIS* Gilbertson, sp. nov.

Fructificatio annua, resupinata, aurantiaca; pori angulati, 1-3 per mm; subiculum album, arachnoideum; margo alba, floccosa vel arachnoidea cum rhizomorphis; hyphae fibulatae et septatae, cum ampullae, 3-8  $\mu\text{m}$  diam; cystidia tenuitunicata, cylindrica; basidia late clavata, 4-sterigmatibus, 7-9  $\mu\text{m}$  diam; basidiosporae globosae vel late ellipsoidae, 5-6 x 4-5  $\mu\text{m}$ , tunica echinulatae, hyalina, non-

amyloidea; HOLOTYPUS: in ligno *Prosopis juliflora* (Sw.) DC., Arizona Highway 86 near Kitt Peak Rd., Pima County, Arizona, leg. R. L. Gilbertson No. 10503, in herb. CFMR.

ETYMOLOGY: from Baboquivari Mountains near the type locality.

Basidiocarps annual, effused up to 5 cm; pore surface orange when fresh, drying to orange-brown, the pores rounded to angular, up to 1 mm diam; margin whitish, arachnoid to floccose, with hyphal strands visible near the substratum, these continuing beyond the margin in some places, formed by a large central hypha surrounded by closely interwoven narrow hyphae; tubes soft and fragile when fresh, drying brittle, up to 2 mm long; subiculum white, arachnoid, very thin; hyphal system monomitic; subicular hyphae (Fig. 39a,b) thin-walled, with frequent branching, with clamp connections and simple septa, some ampullate, 3-8  $\mu\text{m}$  diam; cystidia (Fig. 39c) thin-walled, often with clamps or simple septa, cylindric, scattered in hymenium and abundant at dissepiment edges, 3-5  $\mu\text{m}$  diam, often with a swollen base up to 10  $\mu\text{m}$  diam, projecting to 50  $\mu\text{m}$ ; basidia (Fig. 39d) broadly clavate, with a basal clamp, 7-9  $\mu\text{m}$  diam; basidiospores (Fig. 39e) hyaline, negative in Melzer's reagent, subglobose to broadly ellipsoid, distinctly echinulate at maturity, with a large central guttule, 5-6 x 4-5  $\mu\text{m}$ .

*Poria baboquivariensis* is associated with a white rot of dead, fallen mesquite. The distinctive characters are the orange color of the basidiocarp, the echinulate spores, and the ampullate hyphae. The latter two characters suggest a relationship to the genus *Trechispora* of the Corticiaceae.

Voucher specimen: holotype previously listed,

40. *PORIA LATEMARGINATA* (Dur. et Mont.) Cke., *Grevillea* 14:112. 1886.

*Poria ambigua* Bres., *Accad. Rover. Agiati Atti ser.* 3, 3:84. 1897.

Basidiocarps annual or rarely perennial, becoming

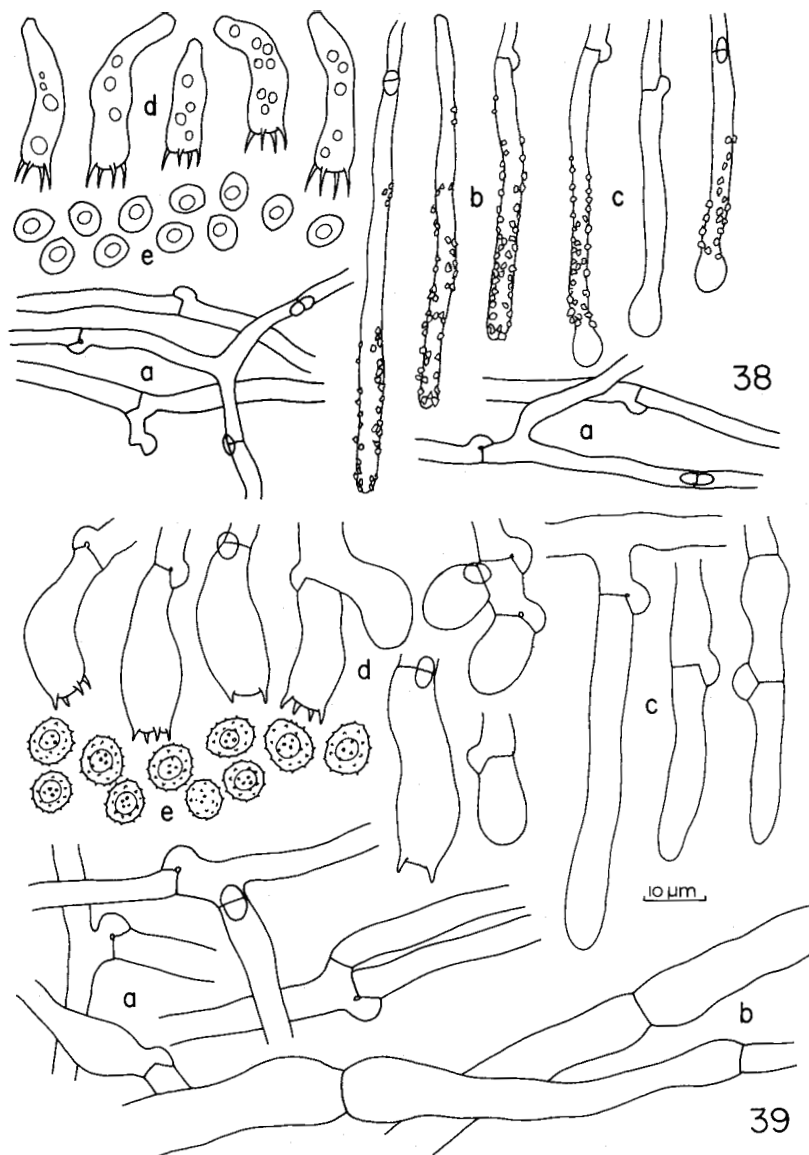


Fig. 38. *Poria apacheriensis* (ERC 180). a, subicular hyphae; b, cylindrical cystidia; c, capitate cystidia; d, basidia; e, basidiospores. Fig. 39. *Poria baboquivariensis* (RLG 10503). a, nodose-septate subicular hyphae; b, simple-septate subicular hyphae; c, cystidia; d, basidia; e, basidiospores.

widely effused, adnate; pore surface cream-colored to pale tan, the pores angular, 1–3 per mm; subiculum ivory, soft-fibrous; hyphal system monomitic; subicular hyphae (Fig. 40a) hyaline, single septate, thin-walled to relatively thick-walled, often partially incrustated, 3–10  $\mu\text{m}$  diam; cystidia frequent or rare, to absent, cylindrical to clavate, entirely or capitately incrustated, 17–25 x 5–7  $\mu\text{m}$ ; basidia (Fig. 40b) clavate, 4-sterigmate, 20–25 x 6–7  $\mu\text{m}$ , with a basal septum; basidiospores (Fig. 40c) broadly ellipsoid to ovoid, 5–8 x 3–5  $\mu\text{m}$ , hyaline, smooth, negative in Melzer's reagent.

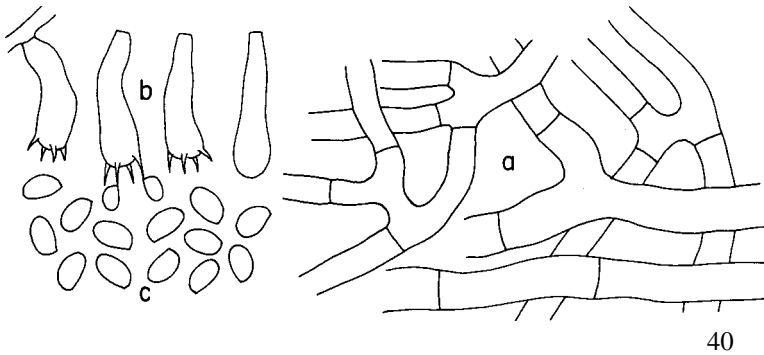
*Poria latemarginata* is associated with a white rot of dead hardwoods. Collection RLG 10843 was from the base of a recently killed standing mesquite and was associated with a root and butt rot.

Voucher specimens: RLG 10843, Vail Road near Pantano Wash, Pima County; RLG 10843, Aravaipa Canyon, Galluero Mts., Pinal County.

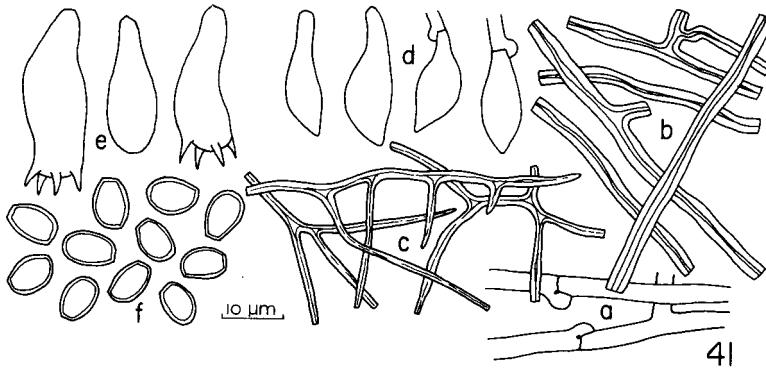
41. *PORIA MEDULLA-PANIS* (Jacq. sensu Pers.) Bres., *Accad. Rover. Agiati Atti ser.* 3, 3:84.

Basidiocarps annual or perennial, usually effused but sometimes narrowly reflexed on vertical surfaces, tough-corky; pore surface cream-colored to yellow, drying pale buff on some specimens, the pores circular, 5–7 per mm; dissepiments thick, entire; hyphal system trimitic; subicular generative hyphae (Fig. 41a) with clamps, thin-walled, with occasional branching, 3–4  $\mu\text{m}$  diam; subicular skeletal hyphae (Fig. 41b) thick-walled, aseptate, rarely branched, 3–4  $\mu\text{m}$  diam; binding hyphae (Fig. 41c) thick-walled, often dextrinoid in Melzer's reagent, aseptate, mostly with abundant branching, tips of branches tapering down to a very slender tip, (0.5–)1–2  $\mu\text{m}$  diam; tramal hyphae similar; hyphal pegs present; fusoid cystidioles (Fig. 41d) 15–20 x 6–8  $\mu\text{m}$ , with a basal clamp; basidia (Fig. 41e) broadly clavate, 4-sterigmate, 20–27 x 9–10  $\mu\text{m}$ , with a basal clamp; basidiospores (Fig. 41f) 6–8 x 4.5–6  $\mu\text{m}$ , ovoid to ellipsoid, becoming truncate and thick-walled at maturity, with a germ pore at the truncate end, hyaline, weakly to strongly dextrinoid in Melzer's reagent.

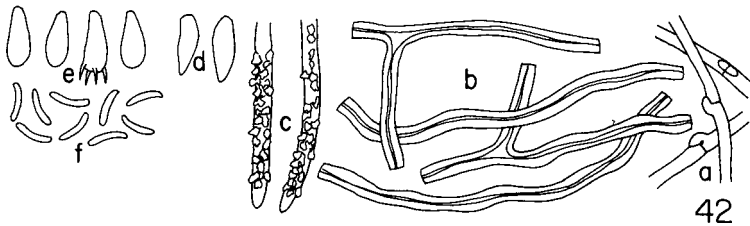
*Poria medulla-panis* is associated with a white rot of hardwood logs and stumps and is a common fungus from the



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Fig. 40. *Poria latemarginata* (RLG 10843). a, subicular hyphae; b, basidia; c, basidiospores. Fig. 41. *Poria medulla-panis* (RLG 8459). a, subicular generative hyphae; b, subicular skeletal hyphae; c, slender binding hyphae; d, fusoid cystidioles; e, basidia; f, basidiospores. Fig. 42. *Poria subincarnata* (KJM 310). a, subicular generative hyphae; b, subicular skeletal hyphae; c, incrustated hyphal ends at dissepiment edges; d, fusoid cystidioles; e, basidia; f, basidiospores.

desert up through the oak-woodland zone in southern Arizona.

Voucher specimens: RLG 7782, Saguaro Nat. Monument, East Unit, Pima County; RLG 8459, Buenos Aires, Papago Indian Res., Baboquivari Mts., Pima County; RLG 10495, Rest area near Kitt Peak Rd., Highway 86, Pima County.

42. *PORIA SUBINCARNATA* (Pk.) Murr., Mycologia 13:86. 1921.

Basidiocarps annual, becoming broadly effused, separable or somewhat adnate, often cracking upon drying; taste mild; margin narrow, white, tomentose to fimbriate; pore surface creamy-white or with a pink tint when fresh, drying cream to buff, tubes soft-waxy to coriaceous, to 4 mm in length, the pores 4-7 per mm; subiculum soft, thin, white; hyphal system dimitic; subicular skeletal hyphae (Fig. 42b) thick-walled, aseptate, 2-3.5  $\mu\text{m}$  diam; subicular generative hyphae (Fig. 42a) with clamps, 2-3  $\mu\text{m}$  diam; tramal hyphae (Fig. 42c) similar, heavily incrustated at the dissepiment edges; conspicuous hyphal pegs present; fusoid cystidioles (Fig. 42d) 9-11 x 3-4  $\mu\text{m}$ ; basidia (Fig. 42e) clavate, 4-sterigmate, 9-11 x 4-5  $\mu\text{m}$ , with a basal clamp; basidiospores (Fig. 42f) allantoid, 4-5 x 1-1.5  $\mu\text{m}$ , hyaline, smooth, negative in Melzer's reagent.

*Poria subincarnata* is associated with a white rot of conifer, and rarely hardwood logs and slash. White rhizomorphs are sometimes present in bark and between bark and wood under basidiocarps.

Voucher specimen; RLG 7041, Madera Canyon, Santa Rita Mts., Pima County.

43. *PORIA TARDA* (Berk.) Cke., Grevillea 14:109. 1886.

Basidiocarps becoming broadly effused, annual, usually adnate, up to 1 mm thick; pore surface rose-pink to cream, usually drying cream to pale buff, tubes originating as isolated cupules; pores 3-5 per mm; 0.5-1 mm long; sterile margin usually rather wide, thinning out, white to cream; context white to cream, soft, very thin; tube layer concolorous with subiculum, 0.5-1 mm thick; hyphal system monomitic; subicular hyphae (Fig. 43a) hyaline, thin-

walled, simple-septate, lacking clamps or with rare clamps, often slightly ampullate at the septa, frequently branched at right-angles, frequently lightly incrustated, 3.5  $\mu\text{m}$  diam; tramal hyphae similar; cystidia none; basidia (Fig. 43b) clavate, 4-sterigmate, 16-18 x 4-5  $\mu\text{m}$ , simple-septate at base; basidiospores (Fig. 43c) 4-5 x 2-2.5  $\mu\text{m}$ , cylindric, ellipsoid, hyaline, thin-walled, smooth, negative in Melzer's reagent.

*Poria tarda* is associated with a white rot of fallen conifer and hardwood branches and stems.

Voucher specimen: HHB 5970, Redington, San Pedro River Valley, Pima County.

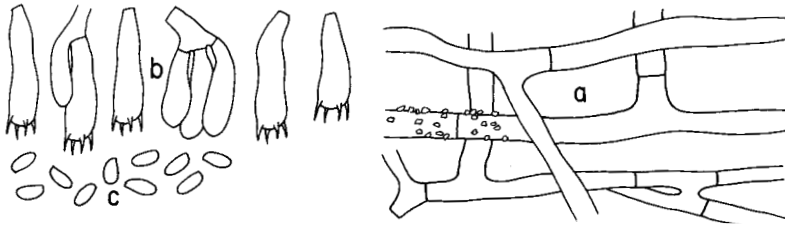
44. FUNALIA GALLICA (Fr.) Bond. et Sing., Ann. Mycol. 39: 62. 1941.

*Trametes hispida* Bagl., Erb. Crittog. Ital., no. 1356. 1866.

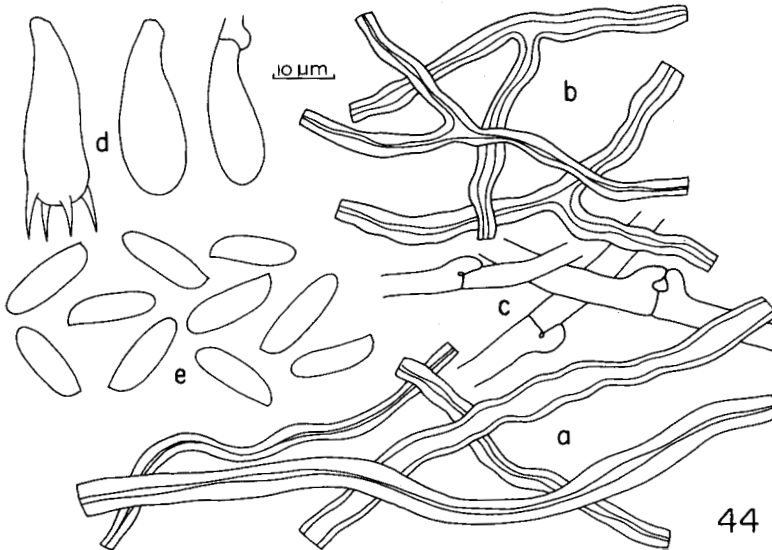
Basidiocarps annual, effused-reflexed to sessile, occasionally completely effused; pilei dimidiate, up to 10 cm wide; upper surface hispid, pale brown, azonate or faintly zonate; pore surface pale purplish (Drab to Light Drab); pores angular, over 1 mm diam in some specimens; dissepiments thick at first, tomentose, becoming thin and lacerate; hyphal system trimitic; contextual generative hyphae (Fig. 44c) inconspicuous, thin-walled, hyaline to pale yellow, septate and with clamps, rarely branched, 2-2.5  $\mu\text{m}$  diam; contextual skeletal hyphae (Fig. 44a) conspicuous, slightly to strongly thick-walled, pale greenish-brown, aseptate, rarely branched, 2-3  $\mu\text{m}$  diam; cystidia none; basidia (Fig. 44d) clavate, 4-sterigmate, 24-30 x 8-10  $\mu\text{m}$ ; basidiospores (Fig. 44e) 11-16 x 4-5  $\mu\text{m}$ , cylindric, hyaline, thin-walled, negative in Melzer's reagent.

*Funalia gallica* is associated with a uniform white rot of dead standing or fallen hardwoods. It is common on several hardwoods, including Fremont cottonwood (*Populus fremontii* S. Wats) and Arizona sycamore (*Platanus wrightii* S. Wats.), but rare on mesquite in southern Arizona.

Voucher specimen: RLG 10396, Aravaipa Canyon, Pinal County.



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Fig. 43. *Poria tarda* (RLG 10135). a, subicular hyphae; b, basidia; c, basidiospores. Fig. 44. *Funalia gallica* (RLG 10396). a, contextual skeletal hyphae; b, contextual binding hyphae; c, contextual generative hyphae; d, basidia; e, basidiospores.

45. *LOPHARIA CRASSA* (Lév.) Boidin, Bull. Soc. Mycol. France 74:479. 1958.

Basidiocarp effused up to 20 cm, annular, adnate, hymenial surface smooth, bright purple at maturity, drying near Taupe Brown or Anthracene Purple, eventually becoming brown and rimose with age, hymenial layer cracking to ex-

pose the pale buff subiculum; hyphal system monomitic; subicular hyphae (Fig. 45a) oriented parallel to substrate, simple-septate, thin- to moderately thick-walled, with frequent branching, 3-5  $\mu\text{m}$  diam; cystidia (Fig. 45b) abundant, thick-walled, imbedded or projecting up to 45  $\mu\text{m}$ , fusiform, usually incrusting over the apical half, 60-180 x 8-12  $\mu\text{m}$ , originating from horizontally oriented hyphae of subiculum, curving out parallel with the basidia; basidia (Fig. 45c) narrowly clavate, with a basal septum, 28-40 x 5-6  $\mu\text{m}$ ; basidiospores (Fig. 45d) cylindrical, 7-9 x 3-4  $\mu\text{m}$ , hyaline, thin-walled, negative in Melzer's reagent.

*Lopharia crassa* is associated with a white rot of dead fallen stems of desert plants.

Voucher specimens: RLG 10493 and 10502, Rest Area near Kitt Peak Rd., Highway 86, Pima County; RLG 10537, ERC 71-357, Camp Grant Wash, San Pedro Valley, Pinal County; HHB 5968, Redington, San Pedro Valley, Pima County.

46. TOMENTELLA COERULEA (Bres.) Hoehn. et Litsch.,  
Sitzungs. kaiserl. Akad. Wissensch. Wien, Math.-  
naturw. Klasse 116:831. 1907.

Basidiocarps effused up to 2 cm, fragile, arachnoid, smooth or slightly granulose, easily separated from substratum; hymenial surface Cinnamon-Buff to Chamois, discontinuous; margin with slender white mycelial strands; subicular hyphae (Fig. 46a) mostly with clamps, thin-walled to slightly thick-walled, yellow-brown, with crystalline material dissolving, becoming green in KOH, 3-6  $\mu\text{m}$  diam; cystidia none; basidia (Fig. 46b) cylindrical to clavate, 4-sterigmate, sometimes with transverse septa, contents often red in  $\text{H}_2\text{O}$ , walls yellow-brown in KOH, surface granular materials dissolving and becoming green in KOH, 50-60 x 6.5-7  $\mu\text{m}$ ; basidiospores (Fig. 46c) subglobose to globose, 5.5-7  $\mu\text{m}$  in diam, echinulate, pale brown, negative in Melzer's reagent.

The associated rot is unknown but probably of little importance in the decay of mesquite.

Voucher specimen: RLG 10515, Rest area near Kitt Peak Rd., Highway 86, Pima County.

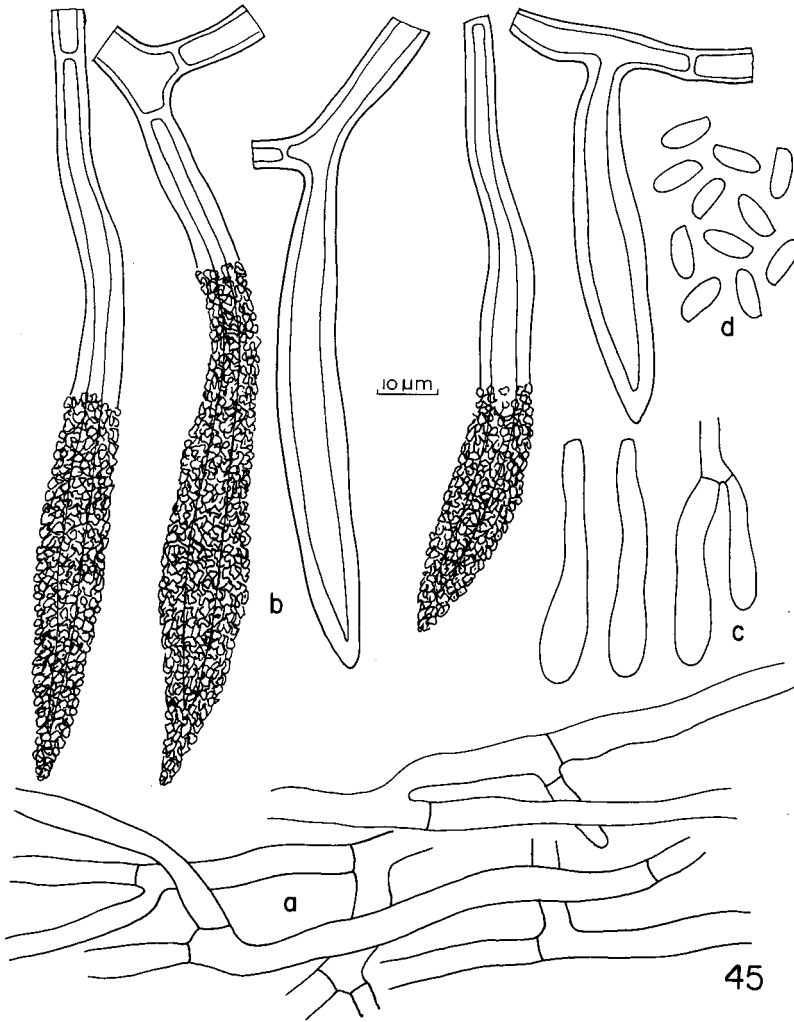


Fig. 45. *Lopharia crassa* (RLG 10502). a, subicular hyphae; b, cystidia; c, basidia; d, basidiospores.

47. *MARASMIUS SICCUS* (Schw.) Fr., *Epicr. Syst. Mycol.* p. 382. 1836.

Basidiocarps centrally stipitate, reviving; pileus hemispherical, up to 4 mm diam, thin, fragile; upper surface reddish-brown, plicate-striate; gills cream-colored,

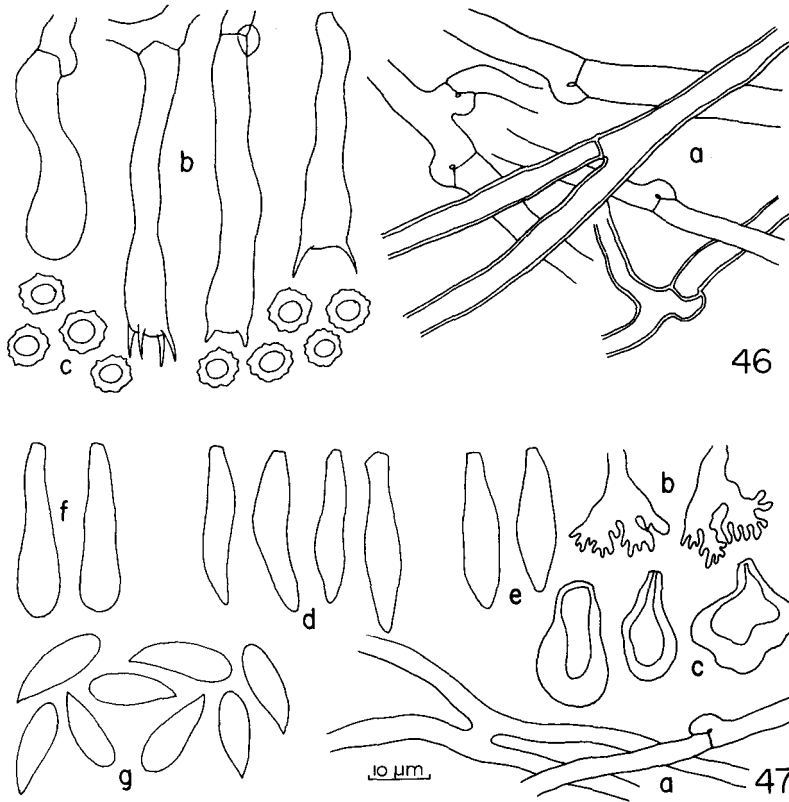


Fig. 46. *Tomentella coerulea* (RLG 10515). a, subicular hyphae; b, basidia; c, basidiospores. Fig. 47. *Marasmius siccus* (HHB 8483). a, contextual hyphae; b, broom cells; c, thick-walled hyphal ends from upper surface; d, pleurocystidia; e, cheilocystidia; f, basidia; g, basidiospores.

adnate, dry, subdistant; stipe 10-15 mm long and 0.5 mm diam, tough-cartilaginous, brown, with appressed darker fibrils, shiny; pileus cuticle composed of dark reddish-brown, variously-shaped, irregularly thick-walled broom cells up to 13  $\mu\text{m}$  diam (Fig. 47b), with few to numerous pale yellow to hyaline finger-like projections; thick-walled, brown swollen hyphal ends also present on upper surface (Fig. 47c); contextual hyphae (Fig. 47a) hyaline, thin-walled, tightly interwoven, 2.5-5  $\mu\text{m}$ , with clamp

connections; gill trama similar; pleurocystidia (Fig. 47d) cylindrical, tapered to apex, hyaline, thin-walled, 24–28 x 4.5–6  $\mu\text{m}$ , with basal clamp; cheilocystidia (Fig. 47e) cylindrical, slightly tapered at apex, 22–25 x 5–6  $\mu\text{m}$ ; broom cells also present on gill edges; basidia (Fig. 47f) clavate, 26–27 x 7–7.5  $\mu\text{m}$ , hyaline, with a basal clamp; basidiospores (Fig. 47g) narrowly lacrymiform, adaxially flattened, 13–16 x 4–5  $\mu\text{m}$ , hyaline, thin-walled, negative in Melzer's reagent.

*Marasmius siccus* was found on fallen mesquite twigs. It has not been reported on other Sonoran Desert plants and the associated rot is unknown.

Voucher specimen: HHB 8483, Santa Rita Expt. Range, Santa Rita Mts., Pima County.

48. PANUS FULVIDUS Bres., Fungi Trid. II, p. 56. 1900.

Basidiocarps centrally stipitate, single to gregarious; pileus circular to hemispherical, 0.5–3 cm diam; upper surface dry, pale brown (Cinnamon–Buff to Clay Color) or cream colored with scattered pale brown, radially arranged fibrillar scales; stipe equal, 10–20 x 1–2 mm, cream colored to pale brown, usually darker at the base, glabrous to minutely pubescent; gills pinkish–cream to pale buff when dried, distant, edges sinuous and distinctly granulose under 30 X lens, free to adnate, continuous with striations on upper stipe; contextual hyphae (Fig. 48a) filamentous, simple–septate, thin– to thick–walled, 3–5  $\mu\text{m}$  diam; hyphae of gill trama (Fig. 48b) thin–walled, simple–septate, 2–4  $\mu\text{m}$  diam; pleurocystidia (Fig. 48c) fusoid, barely projecting, 45–50 x 5–6  $\mu\text{m}$ ; cheilocystidia similar; basidia (Fig. 48d) clavate, 4–sterigmate, 38–42 x 7–8  $\mu\text{m}$ ; with a basal septum; basidiospores (Fig. 48e) broadly cylindrical, 12–15 x 6–6.5  $\mu\text{m}$ , hyaline, smooth, negative in Melzer's reagent.

*Panus fulvidus* is associated with a brown cubical rot of dead hardwood trees and shrubs and is commonly found on junipers and juniper fence posts in southern Arizona.

Voucher specimen: ERC 71–158, Redington, San Pedro Valley, Pima County,

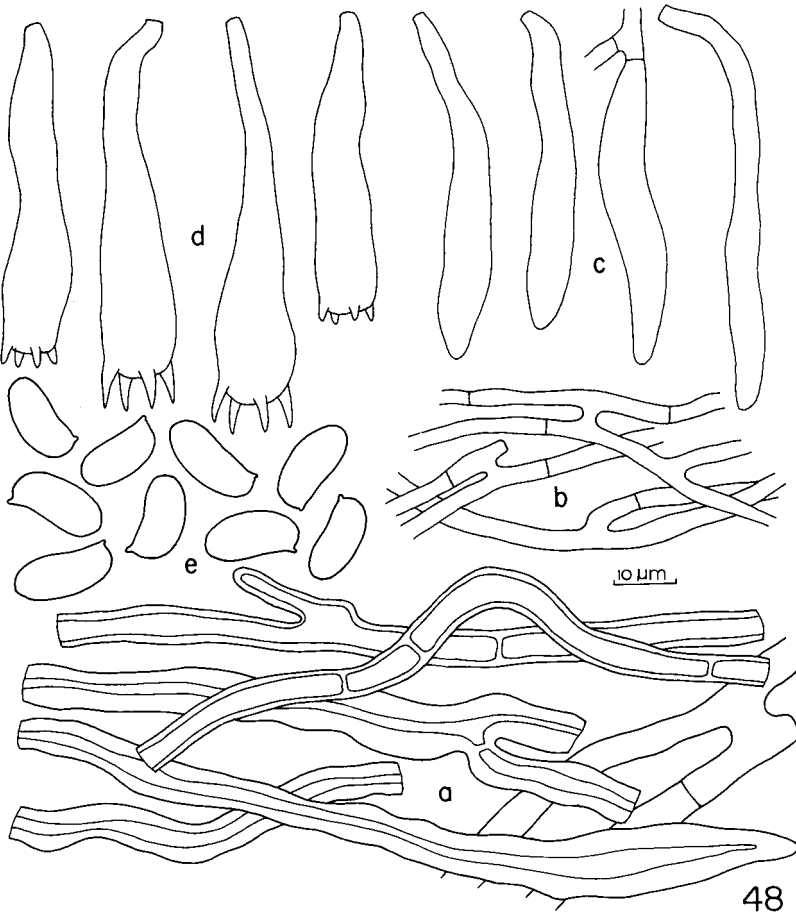


Fig. 48. *Panus fulvidus* (ERC 71-132). a, contextual hyphae; b, tramal hyphae; c, pleurocystidia; d, basidia; e, basidiospores.

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