THREE NEW SPECIES OF LIGNICOLOUS AGARICS IN THE TRICHOLOMATACEAE

Orson K. Miller, Jr.¹

(with 14 figures)

Two of the three species described in this paper were collected and studied in the course of fieldwork in the Pacific Northwest during the past three field seasons. The third species fruiting in culture and was sent to me by Mrs. Frances Lombard of the Forest Disease Laboratory, U. S. Forest Service, at Laurel, Maryland. Dr. C. H. Driver isolated this fungus from wood in the southern United States. Fresh material of all three species has been studied by the author.

The methods used to study collections and record data are those previously described (Miller, 1964). The line drawings were made with a camera lucida. Ridgway (1912) colors are indicated in quotation marks, e.g., “dark vinaceous brown.” The collections are all deposited in the University of Michigan Herbarium unless otherwise stated. The descriptions of cultures were based on those grown according to the procedure used by Davidson et al. (1942).² The oxidase test was carried out with gallic and tannic acid as described by Davidson et al. (1942) and the gum guaiac test for extracellular oxidase was taken from Nobles (1958). Cultures that served as a basis for the descriptions are deposited at the Forest Disease Laboratory at Laurel, Maryland.

Lentinellus montanus O. K. Miller, sp. nov. Figs. 1, 4, 5, 11, 12

Pileus 4.5–6.5 cm latus, 4.0–11.0 cm longus, sessilis, humidus, villosus, glaber margine, badius in centro, cinnemomeus vel subcinamomeus margine, demum vinaceus; caro hygropha, pallide badia, 1–4 mm crassa; lamellae grosse serratae, subdistantes, purpureae vel flavo-albae in maturitate, sordide fuscae in KOH sporeae luteae, 4.5–6.5 × 4.0–5.0 μ, ovoideae vel subglobosae, echinulatae, amyloideae; cystidia clavata vel lagaeniformia, saepe apice mucronato; hyphae pilei non-amyloideae; prope nivis in montanis. Typus legit O. K. Miller 2130, McCall, Idaho, June 26, 1963, in Herbarium Univ. Michigan conservatum.

¹ Present address: Forest Disease Laboratory, Forest Service, United States Department of Agriculture, Laurel, Maryland.
fig. 1. Lentinellus montanus × 1/2 (O. K. Miller 2286).
Fig. 3. *Panus fragilis* × 1 (O. K. Miller 3032).
Pileus 4.5–6.5 cm wide, 4.0–11.0 cm long, sessile, moist but not viscid, central portion of cap with short hairs which are hirsute to villose, rest glabrous, center near “dark vinaceous-brown,” “dark livid brown,” lightening toward margin to (“light vinaceous-cinnamon,” “light pinkish-cinnamon”) very light just at the margin (“pale pinkish-cinnamon” to “pale pinkish-buff”) but in age the margin darkens to “deep brownish-vinaceous.” Context water-soaked, nearly the color of the pileus cuticle above it, usually 1–4 mm or more. Lamellae broad, coarsely serrate, subdistant, lammellulae alternate, extending one-third of way to the point of attachment, purplish when young but “light buff” to “cartridge buff” in age, gill edges not strongly olivaceous but dull brown in KOH.

Spores 4.5–6.5 x 4.0–5.0 µ, ovoid, subglobose to nearly globose, hyaline, thin-walled, echinulate, spore wall clearly amyloid in Melzer’s solution, gray in KOH. Hymenium: Basidia 20–47 x (5.2–)6.2–8.0 µ, four spored, clavate, hyaline in KOH, in Melzer’s yellow-brown to hyaline. Cystidia: Cheilocystidia 27–38 x 4.5–8.5 µ clavate to lageniform with elongated mucronate apices on many, thin-walled, hyaline in KOH and Melzer’s solution, often protruding to about 15–16 µ beyond hymenium, frequent to abundant. Pleurocystidia 26–39 x 5.3–7.0 µ clavate, fusiform, lageniform, mucronate or acuminate apices on many, occasional elongate hyphal-like elements up to 50 µ long, hyaline in KOH and Melzer’s solution, present in all sporophores examined but varying from gill to gill ranging from none to abundant. Tissues: Cuticle of fibrils made up of hyphae 3.0–9.2 µ in diam, yellow-brown in Melzer’s solution with frequent clamps, frequent pilocystidia 25–91 x 6–11 µ aculeate to ventricose or cylindric, hyaline in KOH, in Melzer’s solution yellowish, both hyphae and cystidia thick-walled. Where fibrils are poorly developed, cuticle of tightly interwoven hyphae 3.0–5.0 µ in diam in a dark rusty layer in KOH, dingy yellow-brown in Melzer’s solution. Trama of pileus of interwoven hyphae 3.0–7.7 µ in diam, light gray-brown tinted to nearly colorless in KOH and Melzer’s solution. A few hyphae seem to be of the oleiferous type. Trama of lamellae subparallel near subhymenium to interwoven over central portion of hyphae 4.6–7.7 µ in diam and thin-walled throughout nearly hyaline with scattered yellowish lactifers in KOH and Melzer’s solution, no distinct subhymenium seen.

Habit and Habitat. On conifer wood, both large logs and twigs, usually Engelmann spruce (Picea engelmannii), Shasta red fir (Abies magnifica var. shastensis) and subalpine fir (Abies lasiocarpa), found as solitary sporophores but usually in imbricate clusters often extending for several feet along a log; found in, under, or very near receding snow from approximately 5000 to 9000 feet in the northern and central Rocky Mountains, the Cascade Range, and in the Siskiyou Mountains, fruiting
from May to July, usually later at higher elevations. Fruiting in a given location is usually of short duration.

**Distribution.** Known from high elevations in northeastern Montana, northern and central Idaho, and California. It is quite likely that it is distributed throughout the Pacific Northwest at high elevations.

**Observations.** *L. montanus* is separated from *L. ursinus* (Fr.) Kühner by its pleurocystidia, larger spores, lack of distinct subhymenium, and nonamyloid pileus and gill trama. It differs from *L. vulpinus* (Fr.) Kühner & Maire by its larger spores, larger pleurocystidia and its distinctly different characters in culture. It differs from both in occurring on conifer wood in restricted regions of the Pacific Northwest at high elevations and in its fruiting pattern as an early spring member of the snowbank fungus flora.

The nonamyloid pileus trama coupled with the lack of a strong olivaceous reaction of the gill edge in KOH, and the lack of a laterally attached short stipe would distinguish *L. montanus* as a distinct species in sect. *Lentinellus* of Smith and Shaffer (1964) or sect. *Pleuroti* of Singer (1951, 1962).


**Description of Cultures**

**Key pattern.** B-P-I-1-7-11.

**Growth characteristics.** Growth medium to moderately rapid, forming a mat of 70–90+ mm in diam in 14 days; mat not appressed, thin with only a few aerial hyphae, white at first becoming yellow ("Naples yellow" to "mustard yellow") in central zone by 14 days, margin usually near white; odor not distinctive; positive oxidase reaction, in gum guaiac a dark blue reaction in 1½ min at 24° C, giving a weak to

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moderately strong reaction on gallic and moderately strong to strong reaction on tannic agars in 7 days.

Hyphal characteristics. All hyphae staining in phloxine, 1.5–4.6 μ in diam, with many clamps (FIG. 5), thin-walled, simple branching, frequently lightly incrusted with small crystals, yellow-brown to reddish-brown in Melzer’s solution; mycelial cystidia 43–73 × 3–3.5 μ in diam, always present, ranging from infrequent to abundant, occur as aerial hyphae, staining heavily in phloxine and quite conspicuous in the mounts, nearly cylindric to narrowly fusiform with granular contents (FIGS. 4–5), occasionally with short lateral branches.

Cultures examined: O. K. Miller 2130 (type), 2282, 2286, 2287, 2300; R. L. Gilbertson 4569, 4577, 4580.

Lentinus ponderosus O. K. Miller, sp. nov.  

Figs. 2, 14

Pileus 5–15 cm latus, convexus,حادي-squamulosus; caro albida; tenax; lamellae confertae, grosse serratae, adnatae, albidae vel pallidae; stipes 2.5–10.0 cm longus, 3–5 cm crassus, sursum pallidus, deorsum “avellaneous” fulvo-punctatus, ad basim badius; vellum nullum; spores 8–10.5 × 3.5–4.0 μ, subfusoidae vel ellipsoideae, albidae in cumulo. Typus legit A. H. Smith 58507, McCall, Idaho, July 3, 1958, in Herbarium Univ. Michigan Conservatum.

Pileus 5–15 cm broad, convex, often slightly inrolled at margin, small squamules becoming larger in age, cinnamon to cinnamon brown (“cinnamon” to “caco brown,” “cinnamon drab”) in age, flesh in between squamules buff to pinkish-buff (“light buff,” “warm buff,” “avellaneous,” to “vinaceous-buff”), squamules usually flat, not thickening and not usually becoming recurved in age. Context: tough, white to pallid, lamellae close, coarsely serrate, adnate or broadly adnate alternating with lamellulae which extend up to two-thirds of the way to the stipe, bright white to pallid, light buff to light orange in age. Stipe 2.5–10 cm long, 3–5 cm thick, no annulus present, pallid at apex, then “avellaneous” with small reddish-brown dots (“vinaceous-rufous”) which coalesce over lower half of the stipe, darkening at maturity to reddish-brown (“deep brownish-vinaceous,” “deep vinaceous-brown” or “seal brown”), mostly smooth with scattered tufts of projecting fibrils but without recurved squamules. Veil absent.

Spores 8.0–10.5 × 3.5–3.8 μ, thin-walled, subfusiform in profile, elliptical in face view, hyaline in KOH and Melzer’s solution. White in deposit. Hymenium: Basidia 26–33 × 6.2–8.8 μ, clavate, four-spored, hyaline in KOH and Melzer’s solution. Cystidia: Cheilocystidia 35–64 × 4.4–6.2 μ, narrowly clavate to hyphal-like, thin-walled, hyaline in