

NOTES ON SOUTHERN APPALACHIAN FUNGI, XII¹

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In this report, twenty-seven species of agarics are treated. Those marked with an asterisk (*) have been found in the Great Smoky Mountains National Park. Color names in quotation marks are from Ridgway's *Color Standards and Color Nomenclature*.

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Agaricus magniceps Pk. *Pileus* 6-14 cm. broad, caespitose (in clusters of 8-20 sporophores), hemispherical-convex then convex-expanded, finally plane, dry, white or whitish when young, becoming tawny to "honey yellow" on disk, finally, in age, pale to darker buff, fibrillose, the cuticle breaking to form many concentric flat scales (in some cases the cuticle cracks), margin even. *Flesh* white, unchanging when rubbed, turning quickly to "light greenish yellow" in 15% KOH, firm; *odor* and *taste* mild or slight. *Lamellae* free, rather remote, rounded behind, white when young, becoming bright pink (not well matched), then "ecru-drab," finally "dusky drab," ("light greenish yellow" in 15% KOH), crowded, medium broad, edges even. *Stipe* 8-13 cm. x 12-20 mm., white, flesh promptly "light greenish yellow" in 15% KOH, at first somewhat squamulose below, glabrescent, equal or tapering slightly either way, solid. *Annulus* membranous, ample, white, pendant to flaring, rather persistent, superior. *Spores* 4.5-6 x 2.8-3.3 microns, ellipsoid, "fuscous black" in mass. *Pleurocystidia* none; *cheilocystidia* clustered, 10-16 x 4-5 microns, clavate, rather inconspicuous.

On freshly filled lawn, Tennessee, May. Despite the fact that the above measurements were based on spores from a deposit, they were slightly shorter than given in Smith's description, though about the same as given for the type (1940:119). Our material was named by Dr. A. H. Smith,

***Agaricus subrutilescens** (Kauff.) Hotson & Stuntz. *Pileus* 6-10 cm. broad, hemispheric then convex, white to pinkish, with "sorghum brown" to "walnut brown" fibrillose scales, margin even. *Flesh* medium thick, thin on margin, soft, white, unchanging; *odor* and *taste* mild. *Lamellae* free, rounded behind, white then pink, finally "natal brown," crowded, narrowed in front, edges entire. *Stipe* 8-10 (15) cm. x 6-8 mm., pallid, with a vinaceous tinge, stuffed, fibrillose below the annulus, base bulbous. *Annulus* apical, white, ample, median to superior, with vinaceous patches near edge. *Spores* ellipsoid, 5-5.5 x 3-3.5 microns, smooth. *Pleurocystidia* none; *cheilocystidia* rare, saccate to clavate, 10-20 x 8-15 microns.

In humus, conifer-deciduous woods, Tennessee, July. Reported from northwestern United States (Smith 1940:121-122).

***Agaricus sylvicola** (Vitt.) Fr. *Pileus* 6-8 cm. broad, convex-hemispheric then expanded-plane, broadly umbonate, dry, whitish but distinctly tinted yellowish, "empire yellow," and with reddish brown "russet vinaceous," stains over disk, distinctly fibrous, the yellow and reddish color confined to fibrils. *Flesh* white, soft, reddish-brown on bruising, 5 mm. thick at disk, thin at margin; *odor* and *taste* mild and pleasant. *Lamellae* free, crowded,

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Fig. 1. *Armillaria Zelleri* Stuntz & Smith. x 1

ventricose, medium broad (about 5 mm. broad), white becoming "brownish drab" to "warm sepia," edges floccose-fimbriate. *Stipe* 6-10 x 8-10 mm., equal, or enlarged slightly downward, base subbulbous, fibrillose, whitish at apex, elsewhere stained yellowish to brownish, promptly turning yellowish on rubbing, stuffed then hollow. *Annulus* median, white, double. *Spores* 4.5-6 x 3.5-4.5 microns, ellipsoid, color in mass: "deep brownish drab." *Pleurocystidia* none; *cheilocystidia* clavate or fusoid-ventricose, 15-28 x 8-15 microns (Smith 1949: 542).

On soil and humus, in deciduous woods, Tennessee, North Carolina, and Florida, June-August. This has often been referred to as *A. abruptibulbus* Pk. The latter has been placed in synonymy.

Agaricus xanthodermus Genevier. *Pileus* 4-6 cm. broad, hemispheric then convex, firm, white, appressed-fibrillose scaly, scales dingy on disk, white elsewhere, staining when rubbed or bruised, margin incurved at first, then straight, appendiculate, even. *Flesh* thick, firm, white, turning yellow when cut or bruised; *odor* and *taste* fungoid. *Lamellae* barely free, narrow, crowded, ivory white at first, then "pale salmon color," finally dark drab, edges serrulate. *Stipe* 7-9 cm. x 12-18 mm., white, yellowish when handled, scattered-fibrillose, hard and firm, equal, with a white pith. *Annulus* membranous, white with yellow stains on lower surface, simple. *Spores* ellipsoidal, smooth, 4.5-5.5 x 3-3.5 microns, color in mass near "chaetura drab."

On lawn, Tennessee, May. Our collections were identified by Dr. A. H. Smith.

Armillaria Zelleri Stuntz & Smith (Fig. 1). *Pileus* (3) 5-11 cm. broad, convex, expanding plane or nearly so, viscid when wet (nearly glutinous when young), "honey yellow" to "isabella color" to "tawny olive" or "yellow ochre," appressed-fibrillose, becoming scaly from agglutinated fibrils, margin at first strongly incurved and densely to felty white-fibrillose (from veil-remnants), even. *Flesh*, firm, thick on disk, thin on margin; white; *odor* and *taste* slightly farinaceous when fresh. *Lamellae* adnate to adnate-subdecurrent, finally emarginate, white at first, becoming dingy or ashy, and often spotted brown, close or crowded, medium broad, many short, few forked at base, edges even or eroded. *Stipe* 2-5 (9) cm. x 10-15 (25) mm., dry, fibrillose, often white squamulose at apex, at times compressed, base curved and tapering rather abruptly, apex white, elsewhere brownish, with 1-3 median or basal rusty brown zones and scales, solid. *Veil* apical, membranous, at first forming a flaring *annulus*, which is white above, orange to brownish below, soon collapsing. *Spores* 3.8-5.5 x 3-3.5 microns, ellipsoid to subglobose, smooth, white in mass, non-amyloid. *Basidia* 24-32 x 5-6.5 microns. *Pleurocystidia* and *cheilocystidia* none. *Gill trama* subparallel.

On soil, in pine woods, usually forming a fairy-ring 6 to 8 feet in diameter, Tennessee and Georgia, November-December. This species was originally discovered in Washington and Oregon in 1941. (Smith, 1949: 351-352). My collections from Tennessee and Georgia appear to be the only other reports of it.

Cortinarius bivelus Fr. *Pileus* 6-9 cm. broad, convex-campanulate, expanded-wavy, unbonate, hygrophanous, pale silvery-gray when dry, dark brown when wet, (not matched), silky-shining, margin even. *Flesh* thin except on disk whitish; *odor* and *taste* of radish. *Lamellae* adnate to adnexed, broad (up to 15 mm. broad), "verona brown" (not observed in young state), faces wrinkled, edges conspicuously white, fimbriate. *Stipe* 7-10 cm. x 14-17 mm., tapering downward, white-silky, violaceous beneath and within, hollow, dry. *Spores* ellipsoidal, 8.5-12 x 5.5-6.5 microns, slightly rough.

On soil, in spruce woods, North Carolina, August. Found once, at 5200 ft., Indian Gap, the Park. It has been reported in the North (New York to Michigan), and the West (Colorado) by Kauffman (1932). Identified by Dr. A. H. Smith.

***Cortinarius canescens** Pk. *Pileus* 2.5-4 cm. broad, convex, dry, not hygrophanous, densely silky to fibrillose, "pinkish buff" to "light pinkish cinnamon" with a pale brown tint, margin even. *Flesh* pale pinkish to "lilac buff," firm; *odor* and *taste* faintly of radish or unpleasant. *Lamellae* deeply emarginate, seceding, "snuff brown" (young gills not seen), broad, nearly subdistant, edges white, entire. *Stipe* 4-7 cm. x 6-9 mm., dry, dingy, fibrillose-striate, clavate, solid; veil white, leaving an evanescent annulus. *Spores* 9.5-12 (14) x 6-7 (8) microns, minutely rough, ellipsoidal to subpyriform.

On soil, in deciduous woods, Tennessee and North Carolina, August-September. Reported from New York under spruce (Kauffman, 1932).

***Cortinarius colymbadinus** Fr. *Pileus* 3-7 cm. broad, convex, expanding, tomentose-subscaly, "saya brown," disk blackish, slightly hygrophanous, not viscid, margin even. *Flesh* thick, firm, pale yellow, in 15% KOH promptly turning pinkish; *odor* and *taste* slight of radish. *Lamellae* emarginate, pallid at first, soon olive, finally brown, close, rather broad, edges eroded. *Stipe* 3-5 (8) cm. x 9-12 mm., dingy greenish-brown, dry, clavate-bulbous, with a median, annular band, solid. *Spores* subglobose to short-ellipsoid, 6.5-7.5 x 6-6.5 microns, tuberculate-warty. *Pleurocystidia* and *cheilocystidia* not observed.

On soil and in deep moss, in conifer woods, Tennessee and North Carolina, August-September. Identification confirmed by Dr. A. H. Smith.

***Cortinarius lanatipes** Pk. *Pileus* 3-6.5 cm. broad, viscid, glabrous, "light buff" when young, "saya brown" at maturity, margin striate. *Flesh* pallid or whitish, thick on disk, thin on margin; *odor* and *taste* mild. *Lamellae* emarginate, pale caesius ("ecru-drab") when young, "saya brown" at maturity, thin, medium broad, close. *Stipe* 4-6 cm. x 8-12 mm., dry, whitish, fibrillose, equal or subbulbous, with 2-3 remnants of veil forming evanescent rings at middle or below, solid. *Spores* 8-9.6 x 4.5-5 microns, minutely rough.

On soil, under rhododendron, Tennessee, October. Found once, in Cades Cove, in the Park. Identified by Dr. A. H. Smith.

***Cortinarius obliquus** Pk. *Pileus* 4-6 cm. broad, convex, not fully expanding, "lilac gray" to "pallid purple-drab," moist, not hygrophanous, not viscid, white-silky, margin even. *Flesh* medium thick on disk, thin on margin, nearly concolorous; *odor* and *taste* mild. *Lamellae* rounded-adsnate or adnexed, "vinaceous gray" at first, then "saya brown" at maturity, medium broad, ventricose, close, transversely rivulose, edges crenulate. *Stipe* 5-6 cm. x 10-12 mm., concolorous, "vinaceous gray" within, white-silky, moist, equal above the oblique, emarginate bulb (bulb 2-3 cm. diam.), spongy. *Veil* whitish, webby, leaving an apical, evanescent ring. *Spores* variable, 7-9 x 4.8-6.6.4 microns, slightly rough, ellipsoidal.

On soil, in coniferous and mixed woods, Tennessee, July-September and December.

***Cortinarius oliyaceus** Pk. *Pileus* 4-6 cm., broad, expanded, glutinous, "dresden brown," "buffy brown" to "olive-brown" tinged dark-red or with a rusty olive tint; glabrous, radiately wrinkled to corrugated, margin with short striae, with a zone of dark spots near margin. *Flesh* gray-brown, thick on disk, thin on margin; *odor* and *taste* mild. *Lamellae* subemarginate, medium broad, broadest behind, color when young probably olive, at maturity "antique brown" to "argus brown," close, faces rugulose, edges eroded. *Stipe* 4-6 cm. x 4-6 mm., dingy, scattered brown-fibrillose or

reticulated, not viscid, with an ovoid bulb up to 2 cm. diam., bulb not at all marginate-depressed, tapering upward, stuffed to hollow. Spores ellipsoidal, 9.5-12 x 5.5-7 microns, rough.

On soil among moss, North Carolina, August. One collection, taken from a moss-hummock, in fir woods atop Clingman's Dome. This species is closely related to *C. luteo-fuscous* Pk., in which the lamellae are at first yellow. Identification confirmed by Dr. A. H. Smith.

**Cortinarius pseudo-salor* Lange (Fig. 2). Pileus 3-6 cm. broad, hemispheric at first, finally expanded plane or nearly so, slightly and obtusely umbonate, glutinous, at first "deep vinaceous gray," becoming "tawny olive" to "buckthorn brown" or "cinnamon brown" with splashes and areas of "dark plumbago blue," at times entirely blue except disk which remains "tawny olive," fading, pellicle separable, glabrous, margin incurved, pellucid-striatulate. Flesh medium on disk, thin on margin, concolor to pileus (brownish to bluish); odor and taste mild. Lamellae adnate-decurrent, sometimes emarginate, at first "deep vinaceous gray" to "dark heliotrope gray," finally "snuff brown," broad to medium broad, close, edges eroded to serrulate. Stipe 5-12 (15) cm. x 5-12 mm., glutinous, varying whitish,



Fig. 2. *Cortinarius pseudo-salor* Lange. x 2/3

"lilac gray," "dark heliotrope gray," "deep plumbago gray," "dark plumbago blue," "deep lavender," "bluish lavender," base white, flexuous or strict, equal, with or without a slight bulb, hollow-stuffed, concolor (bluish) within. Cortina cottony, covered by heavy gluten, breaking to form a conspicuous, flaring evanescent collar. Spores (11) 14-16 x (7.5) 8-9 microns, sterigmata 6-8 microns long. Pleurocystidia none; cheilocystidia clustered, pyriform-clavate to inflated (balloon-shaped), 27-41 x 12-21 microns.

On soil and in deep humus, in deciduous and mixed woods, Tennessee and western North Carolina. Smith (1944:178-179) gives a good account of this species as he found it.

***Cortinarius uraceus** Fr. (Fig. 3). *Pileus* 3-5 cm., convex, umbonate, umbo prominent, acute, hygrophanous, pale dull brownish and silky, shining when dry, darker ("walnut brown") and radiately streaked blackish when wet, umbo "army brown" to black, margin incurved at first. *Flesh* dingy-grayish, thick on disk, thin on margin; *odor* and *taste* of radish. *Lamellae* emarginate, at first drab, finally "warm sepia," nearly close, broad, thin, markedly rugose on sides. *Stipe* 4-8 cm. x 6-10 mm., dingy, apex and base tinted violaceous, clavate-enlarged below, dry, fibrillose-striate, hollow. *Veil* rather sparse, at times leaving a slight apical ring. *Spores* 8-9.5 x 5-6.5 microns, slightly rough, ellipsoidal.

On soil, in spruce woods, North Carolina, August. Found once, at Indian Gap, in the Park. Kauffman (1932) reports it from the Adirondack Mts., New York, Colorado, and in Europe. Identified by Dr. A. H. Smith.

***Cortinarius varicolor** Fr. *Pileus* 5-8 cm. broad, convex, expanded-convex, viscid, at first pale to smoky olive (not matched), with a violet tint, finally "buffy brown" to "tawny olive," appressed fibrillose. *Flesh* "dark



Fig. 3. *Cortinarius uraceus* Fr. x 2/3.

plumbago gray," to "dark lavender," more intense when wet, fading in age to nearly white, thick; *odor* and *taste* not distinctive. *Lamellae* narrowly emarginate, broad, narrowed at ends, at first violet (near "dark plumbago gray"), finally "Prout's brown," not changing when bruised, close, edges even. *Stipe* 5-8 cm. x 8-15 mm., "dark lavender" at first, finally dingy whitish, concolor within, fibrillose (fibrils brown), dry, stuffed with a pith, slightly bulbous (bulb 10-20 mm. diam., ovoid). *Spores* (9)10-12 x (5) 6-6.8 microns, rough, somewhat almond-shaped.

On soil, in mixed woods, Tennessee, August. Only one collection has been found, and that in the Park. Apparently rare in North America. Identified by Dr. A. H. Smith.

Entoloma Cordae Karsten (Fig. 4). *Pileus* 25-35 mm. broad, convex, "drab," disk "hair brown," with few scattered white fibrils, disk radiately

rugulose, margin striatulate. *Flesh* thin, "drab;" *odor* and *taste* mild. *Lamellae* narrowly emarginate, broad, ventricose, narrowed in front, ashy-color (not matched), edges even. *Stipe* 5-7 cm. x 3-4 mm., equal, twisted, dingy grayish, fibrillose-striate, mealy at apex, base strigose, hollow. *Spores* indistinctly 5-angled, apiculate, 8 x 7 or 8 x 8 microns; color in mass: "russet." *Pleurocystidia* and *cheilocystidia* none.

On debris, edge of pine woods, Tennessee, August. Lange's description and illustration represent our collection very well (1935-40). Previous report of this species in North America has not come to my attention.

***Lactarius pyrogalus** Fr. *Pileus* (4) 10-13 cm. broad, at first convex-plane, finally depressed from upturned margin, "light drab" to livid-grayish, zonate, not viscid, glabrous, margin crenate-wavy. *Flesh* white, somewhat firm, thick on disk, thin on margin; *odor* and *taste* mild. *Milk* white, unchanging, promptly very acrid. *Lamellae* adnate, becoming sub-decurrent, distant or nearly so, pallid, finally "chamois," broad (up to



Fig. 4. *Entoloma Cordae* Karsten. x 1

12 mm.), many short, few forking behind, edges even. *Stipe* 3-8 cm. x 7-20 mm., concolor to pileus or paler, not spotted, dry, glabrous, equal above pointed base, solid. *Spores* globose, 6-7 microns diam., echinulate; spore-print failed. *Pleurocystidia* abundant, cylindrical, 55-77 x 6-8 microns (projecting 25-40 microns); *cheilocystidia* few, not conspicuous, clavate, 16-20 x 5-7 microns. *Cuticle* fibrillose.

On soil, in deciduous woods, Tennessee and North Carolina, July-September. Three collections, all from the Park, have thus far been taken.

***Lentinus adhaerens** Fr. *Pileus* 10-18 mm., convex, dry, pinkish brown to "tawny," white-hoary, even. *Flesh* thin, white, firm; *odor* and

taste mild. *Lamellae* emarginate-uncinate, white, unchanging, broad, nearly close, edges serrate to crenulate. *Stipe* 2-3 cm. x 2-4 mm., curved, tapering slightly upward, fibrillose, dry, solid. *Spores* 7-9 (11) x 3-4 microns, white, smooth, cylindrical, non-amyloid. *Pleurocystidia* scattered, cylindrical, conspicuous, 50-65 x 9-10 microns; *cheilocystidia* clustered, slender-cylindrical, 22-25 x 2 microns.

On soil, in spruce woods, Tennessee-North Carolina State line, October. Pilat (1946) presents a rather full account of this species, which, although of wide range in the world, is apparently rather rare here. Identity established by Dr. A. H. Smith.

Lentinus cochleatus Fr. *Pileus* 1-5 cm. broad, convex, depressed-umbilicate, hygrophanous, white to "pinkish buff," glabrous but appearing velvety under lens, often lobed, margin even. *Flesh* thin, whitish, pliant; *odor* slight, *taste* acrid-bitterish. *Lamellae* decurrent, white, then dingy, close, broad, many short, short ones of six ranks, edges dentate. *Stipe* 0.7-4 cm. x 3-8 mm., often flattened, ridged and sulcate, eccentric or central, "buckthorn brown," velvety, dry, equal or enlarged at base, solid, bases confluent. *Spores* subglobose to short-ellipsoid, 5-5.5 x 4-4.5 microns, smooth, white in mass, amyloid. *Pleurocystidia* and *cheilocystidia* not differentiated. *Surface of pileus* composed of short, cylindrical, palisade cells.

Singly to sub-caespitose, on deciduous log, Tennessee and Kentucky, October-November.

Lentinus lepideus Fr. *Pileus* 5-12 cm. or more broad, expanded, depressed behind, white with "snuff brown" scales (from breaking of cuticle), scales larger and more numerous on disk, margin even. *Flesh* thick, hard, white; *odor* and *taste* mild. *Lamellae* sinuate-decurrent, white yellowish to rusty on bruising, broad, close, edges conspicuously serrate-dentate. *Stipe* 3-5 cm. x 12-25 mm., lateral or eccentric, tapering downward, hard, fibrillose, at times scaly, solid. *Veil* evanescent. *Spores* 8-12 x 2.5-5 microns, oblong, smooth; white in mass, non-amyloid. *Basidia* slender, 40-48 x 5-6 microns; 2- to 4-spored. *Pleurocystidia* and *cheilocystidia* none found (Smith, 1949:300, reports both types of cystidia).

On dead wood of oak and pine, Tennessee, North Carolina, South Carolina, and Florida, May-July. This is perhaps our largest species of this genus, and, though infrequent in Tennessee, is widespread in temperate and tropical North America.

****Lentinus omphalodes*** Fr. *Pileus* 1-3 cm. broad, convex, deeply umbilicate, hygrophanous, "pale pinkish buff" when dry, "Prout's brown" when wet, glabrous, margin often lobed. *Flesh* thin, pallid; *odor* and *taste* mild. *Lamellae* adnate to decurrent, narrow, subdistant, whitish, edges serrate. *Stipe* 1-3 cm. x 2-3 mm., equal or tapering upward, tough, glabrous, wrinkled or lacunose, central to eccentric, concolor to pileus or paler, stuffed to hollow. *Spores* 4.5-6.5 x 3.5-4.5 microns, ellipsoid, verruculose, white in mass, amyloid. *Pleurocystidia* and *cheilocystidia* slender-clavate to sub-cylindrical, similar, buried, not conspicuous, 13-26 x 3-6 microns. Hyphae of pileus and gilltrama non-amyloid.

Gregarious to sub-caespitose on logs and fallen limbs of deciduous trees, Tennessee and Virginia, throughout the year. Following Pilat (1946), I am placing *L. umbilicatus* Ph. in synonymy.

****Lentinus tigrinus*** Fr. *Pileus* 2-7 cm. broad, convex to plane, depressed to umbilicate, white with dense, dark brown or black scales, margin inrolled, becoming wavy and split. *Flesh* white, often becoming reddish when wounded, thin; *odor* and *taste* mild. *Lamellae* decurrent, white to yellowish, close, narrow, edges serrate-dentate. *Stipe* 1-2 cm. x 2-5 mm., whitish with ashy to brownish squamules, base often darker, often curved,

attenuated downward, solid. *Veil* slight, evanescent. *Spores* 5-7 x 3.4 microns, ovoid-ellipsoid, smooth, pale cream in mass, non-amyloid. *Pleurocystidia* and *cheilocystidia* none.

On wood (logs, stumps, timbers), Tennessee, North Carolina, Alabama, and Florida, May-October. Widespread in eastern North America and other continents.

***Lentinus vulpinus** Fr. *Pileus* 2-9 cm. broad, sessile, imbricated, reniform to conchate, coarsely hairy to scrupeose, radiately ribbed, whitish at first, then alutaceous, finally brownish, margin even. *Flesh* thick on disk, thin on margin, white, tough; *odor* strong, pungent, *taste* acrid. *Lamellae* decurrent, broad, close or crowded, white, finally reddish, edges serrate, dentate or lacerate. *Stipe* none. *Spores* 3-5 x 2-3 microns, subglobose, smooth, white in mass, amyloid. *Pleurocystidia* and *cheilocystidia*, if present, resembling basidia.

On deciduous logs, Tennessee, Kentucky, and West Virginia, August-January. Following Pilat (1946:29), I am placing *L. ursinus* Fr. in synonymy.

***Paxillus atrotomentosus** Fr. *Pileus* 8-15 cm., convex, expanding, finally upturned and deeply depressed, "ochraceous buff" to "yellow ocher," at times reddish-brown, dry, short-tomentose, glabrescent, at times coarsely scaly from cracking of cuticle, margin even, wavy, incurved. *Flesh* thick, rather compact, white, promptly yellow becoming lavender in 15% KOH; *odor* and *taste* somewhat alkaline. *Lamellae* short-decurrent, close, broad, easily separable from pileus, "ochraceous buff," brown in KOH, forked and at times anastomosing, edges even. *Stipe* 3-7 cm. x 15-30 mm., central or eccentric, tough, with a dense brown-velvety tomentum, equal or tapering upward slightly, solid. *Spores* 4.5-6 x 3-3.5 microns, ovoid to ellipsoid, smooth, non-amyloid, in mass: "dark olive buff." *Pleurocystidia* and *cheilocystidia* none.

Singly and caespitose, on conifer logs and stumps, Tennessee and North Carolina, June-September.

***Paxillus Curtisii** Berk. *Pileus* 2-7 cm. broad, imbricate, sessile, laterally attached and shelving, flabelliform to dimidiate, convex, expanding, "olive-ocher" then "isabella color" to "medal bronze," matted-tomentose, margin even. *Flesh* thick, brownish, thin on margin, spongy; *odor* strong, disagreeable (suggesting old magnolia blossoms); *taste* bitter. *Lamellae* close, radiating from central-basal point, crisped, about 3 mm. broad, narrowed in front, dichotomously forked, anastomosed, "ferruginous" to "warm buff," finally "yellow ocher," easily separating from pileus, edges even but wavy. *Stipe* absent. *Spores* ellipsoidal, 3-3.5 x 1.5-2 microns, color in mass: "dark olive buff" to "buffy citrine." *Pleurocystidia* and *cheilocystidia* none.

On conifer logs and stumps, Tennessee, North Carolina. In our No. 18019, from Greenbrier, in the Park, the pileus was fasciculate-squamulose, the odor mild, and the spores 4-5 x 3.5-4 microns, "honey yellow" in mass.

***Paxillus involutus** Fr. *Pileus* 5-12 cm. broad, convex, fibrillose, viscid when wet, "clay color," "saya brown," "snuff brown" to "tawny olive," at times with "orange cinnamon" areas, margin at first involute, often heavy-tomentose and ridged. *Flesh* medium thick, abruptly thin on margin; pale yellow, brownish when bruised; *odor* and *taste* mild. *Lamellae* decurrent, rather broad, close, forked, anastomosed-porosed on stipe, at first pallid then yellowish, finally "tawny olive," to brownish in age or when bruised. *Stipe* 2.5-8 cm. x 5-16 mm., central or eccentric, equal or enlarged downward or at base, dingy brownish, reddish or brownish when bruised, dry, solid. *Spores* 7-9 (11, rarely 13) x 4.5-5 microns, ellipsoidal, smooth. *Pleurocystidia* scattered, lanceolate, often inconspicuous, at times with brownish contents, 40-73 x 6-10 microns; *cheilocystidia* similar.

On soil and decaying logs, Tennessee and North Carolina, June-September.

***Paxillus panuoides** Fr. *Pileus* 2-6 (10) cm. broad, sessile, fan-shaped or conchate, "pale orange-yellow" to "honey yellow," rarely whitish, hirsute behind, tomentose in front, margin incurved, even. *Flesh* thick, soft, pale yellow; *odor* mild and *taste* mild or bitter. *Lamellae* radiating, close, yellowish, medium broad, anastomosing and crisped behind, edges even. *Stipe* none. *Spores* 3.5-5 x 2.5-4 microns, short-ellipsoid, smooth, in mass: "sayaal brown." *Pleurocystidia* and *cheilocystidia* none.

On conifer logs and stumps, Tennessee, North Carolina, Alabama, and Florida, June-October. About a dozen collections have been taken, most of them from the Park. All parts become reddish brown in 15 per cent KOH.

***Paxillus rhodoxanthus** Schw. *Pileus* 4-10 cm. broad, convex, depressed, "orange cinnamon," "mikado brown," "sayaal brown," "ochraceous tawny," "cinnamon," "hazel," or "Kaiser brown," tomentose, rimosely cracked, margin even, incurved. *Flesh* medium thick on disk, thin on margin, tinged pinkish above, yellowish below, firm; *odor* and *taste* mild. *Lamellae* arcuate-decurrent, "aniline yellow" to "lemon chrome," "pale lemon yellow" to "strontian yellow," broad, close, many short, none forked, edges even. *Stipe* 1.5-6 cm. x 4-15 mm., curved, concolor to pileus above, yellowish below, upper portion tomentose, at times with russet scales, flesh yellow, cavernous, enlarged upward, at times equal, dry. *Spores* oblong, 11-12 x 4-5 microns, like *Boletus* spores, smooth; color in mass: "vetiver green" to "buffy olive." *Pleurocystidia* 104-112 x 12-14 microns, scattered, buried deeply but projecting about 40 microns, yellow, bottle-shaped-fusiform; *cheilocystidia* clavate-cylindrical, 48-56 x 10-13 microns, yellow.

On soil in mixed and deciduous woods, Tennessee and North Carolina, June-September.

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