

MYCOLOGIA

VOL. IV

SEPTEMBER, 1912

No. 5

THE AGARICACEAE OF THE PACIFIC COAST—II

WILLIAM A. MURRILL

The present article deals with two series of gill-fungi, those with hyaline spores and those with ochraceous or ferruginous spores.

SERIES I. SPORES HYALINE

Species belonging to the genera ordinarily known as *Lepiota*, *Amanitopsis*, and *Amanita* are considered in this series. Some of these names, unfortunately, can no longer be used, but in the most important one, *Amanita*, the new name suggests the deadly nature of many of the species and should prevent any serious mistakes.

Annulus alone present.

1. LEPIOTA.

Volva alone present.

2. VAGINATA.

Volva and annulus both present.

3. VENENARIUS.

I. LEPIOTA (P. Browne) S. F. Gray, Nat. Arr. Brit. Pl. 1: 601.
1821

1. *Lepiota subnivosa* sp. nov.

Pileus thin, convex to plane, umbonate, solitary, 1.5–3 cm. broad; surface dry, smooth, somewhat striate at times, slightly innate-fibrillose, with a few scattered floccose scales, snow-white throughout or rose-tinted on the umbo; lamellae free, narrow, not crowded, white; spores ellipsoid, smooth, hyaline, uniguttulate, $7-8 \times 3.5 \mu$; stipe thicker below, slender, glabrous, hollow, white, 5–9 cm. long and 2–4 mm. thick; annulus superior, white,

[MYCOLOGIA for July, 1912 (4: 163–230), was issued July 13, 1912.]

fixed, rarely ample and persistent, usually breaking up and vanishing, especially in small plants.

Type collected on the ground in deep woods near Seattle, Washington, October 20–November 1, 1911, *W. A. Murrill 336*. Also collected on banks in woods as follows: Seattle, Washington, *Murrill 304, 346, 485, 514, Zeller 105*. Related to *L. cristatella* Peck.

2. *LEPIOTA CRETACEA* (Bull.) Morgan, Jour. Myc. 13: 3. 1907

Lepiota cepaestipes Quél. Champ. Jura Vosg. 35. 1872.

Seattle, Washington, *Murrill 537*.

3. *Lepiota petasiformis* sp. nov.

Pileus thin, hat-shaped, with prominent conic umbo, scattered or gregarious, 1.5–2.5 cm. broad; surface dry, rosy-isabelline, or about the color of the back of the hand, covered with an abundance of fine powder; lamellae free, subdistant, rather broad, white; spores ellipsoid, smooth, hyaline, minute, $3.5 \times 2 \mu$; stipe slender, tapering upward, clothed with powder like the pileus, reaching 6 cm. long and 2–3 mm. thick; veil fugacious, not forming an annulus.

Type collected in humus in woods near Seattle, Washington, October 20–November 1, 1911, *W. A. Murrill 629*. Also collected in the same region, *Zeller 119*. It suggests some forms of *L. cretacea*.

4. *LEPIOTA CRISTATA* (Bolt.) Quél. Champ. Jura Vosg. 34.

1872

Seattle, Washington, *Murrill 356, 633, 695*; Stanford University, California, *McMurphy 30, 141*; Berkeley, California, *Harper*; Santa Cruz, California, *G. J. Streator*.

5. *Lepiota castaneidisca* sp. nov.

Pileus fleshy, regular, convex, umbonate, gregarious, 1.5–4 cm. broad; surface dry, white, with small, imbricate, avellaneous to light-chestnut scales, the umbo chestnut with unbroken cuticle; lamellae free, white, broad, ventricose, rather close; spores ellipsoid, smooth, hyaline, $5-6 \times 3 \mu$; stipe cylindrical, equal, hollow, glabrous, brownish-tinted, 4–7.5 cm. long, 3–10 mm. thick; annulus white, superior, delicate, inconspicuous.

Type collected on the ground under redwoods near Searsville Lake, California, December 11, 1911, *James McMurphy 123*. Related to *L. cristata*.

6. *Lepiota amplifolia* sp. nov.

Pileus convex to subexpanded, umbonate, gregarious, reaching 3.5 cm. broad; surface smooth, white, polished, with a few delicate, floccose, isabelline-testaceous scales, the umbo isabelline-testaceous with cuticle subentire; lamellae free, white, not crowded, very broad and triangular; spores oblong-ellipsoid, smooth, hyaline, $8-9 \times 3.5 \mu$; stipe equal, finely fibrillose, hollow, white, becoming rose-tinted on drying, 7-9 cm. long, 2-4 mm. thick; veil white, evanescent, remaining only in small fragments clinging to the margin and stipe.

Type collected on the ground in a dense fir forest at Glen Brook, Oregon, November 7, 1911, *W. A. Murrill 738*. In a dried condition, this species somewhat resembles *L. mutata* Peck, described from Kansas in 1896.

7. *Lepiota Sequoiarum* sp. nov.

Pileus thin, convex to nearly plane, umbonate, gregarious, 2-4 cm. broad; surface dry, finely imbricate-fibrillose-scaly, white, the center more densely fibrillose and tinted with isabelline, the remainder of the surface being at times tinted with the same color in the scales; context loosely woven, thin, white; lamellae white, free, close, narrow; spores ovoid to ellipsoid, smooth, hyaline, $7-9 \times 3.5-4 \mu$; stipe tapering upward, long, slender, white, smooth, glabrous, hollow, reaching 10 cm. long and 5 mm. thick; annulus superior, white, not fixed but collapsed on the stipe, persistent.

Type collected on the ground in Muir Woods, California, November 22, 1911, *W. A. Murrill 1143*.

8. *Lepiota fumosifolia* sp. nov.

Pileus convex, not umbonate, gregarious, 3 cm. broad; surface dry, white with isabelline, granular scales, the center isabelline; lamellae free, broad, rather crowded, white, becoming fumous on drying; spores oblong-fusiform, smooth, hyaline, $12 \times 7 \mu$; stipe equal or tapering upward, cylindrical, smooth, white, furfuraceous, pale-avellaneous below, 6 cm. long, 6 mm. thick;

veil soon breaking into fragments which cling to the margin and stipe.

Type collected on the ground in woods near Seattle, Washington, October 20–November 1, 1911, *W. A. Murrill 229*.

9. *Lepiota castanescens* sp. nov.

Pileus small, thin, convex to subexpanded, prominently umbonate, 2–3 cm. broad; surface dry, densely appressed-fibrillose, white to rose-colored, glabrous and darker-red on the umbo, the entire surface changing to castaneous on drying; lamellae free, crowded, narrow, plane, white, becoming fumous on drying; spores ellipsoid, smooth, pointed, strictly hyaline, $7-8 \times 3-4 \mu$; stipe tapering upward, slender, slightly fibrillose, hollow, about 6 cm. long and 2–5 mm. thick, white or rose-tinted, changing to castaneous on drying; annulus superior, fixed, ample, persistent, white, changing to castaneous on drying.

Type collected on the ground in woods near Seattle, Washington, October 20–November 1, 1911, *W. A. Murrill 397*.

10. *Lepiota roseilivida* sp. nov.

Pileus convex to expanded, thin, umbonate, gregarious, 2.5–4 cm. broad; surface dry, minutely and densely fibrillose-scaly, rose-lilac, livid in the center, becoming slightly darker on drying; lamellae white, unchanging, free, crowded, narrow; spores ellipsoid, smooth, hyaline, $8-9 \times 4-5 \mu$; stipe slender, tapering upward, subglabrous, white or pallid, changing to lilac on drying, hollow, 7–10 cm. long, 2–5 mm. thick; annulus superior, movable, ample, membranous, lilac-tinted, becoming lilac on drying.

The type of this beautiful species was collected on the ground in Muir Woods, California, November 22, 1911, *W. A. Murrill 1138*.

11. *Lepiota subfelina* sp. nov.

Pileus thin, convex to expanded, distinctly umbonate, solitary, about 2 cm. broad; surface dry, white, densely covered with small, latericious, imbricate scales, the umbo bay, with strigose-tomentose covering; lamellae free, rather broad, plane, close, white; spores oblong-ellipsoid, smooth, hyaline, $8 \times 4 \mu$; stipe very slender, slightly tapering upward, white and finely fibrillose above, avellaneous with a rosy tint below, and decorated with latericious fragments resembling the scales on the pileus, 4 cm. long, 2–2.5 mm. thick; veil obsolete, not forming an annulus.

Type collected on the ground in woods near Seattle, Washington, October 20–November 1, 1911, *W. A. Murrill* 349. Also collected at the same time in the same region, *W. A. Murrill* 622. In the latter collection, one pileus has the cuticle ruptured concentrically and the scales drawn together into rather coarse gemmate warts or ridges.

12. *Lepiota concentrica* sp. nov.

Pileus rather thick, convex to subexpanded, scarcely umbonate, solitary, 3–4 cm. broad; surface dry, white with yellowish tints between concentric rows of coarse, strigose-floccose, lateritious, raised scales formed from the deeply ruptured cuticle, the unruptured central portion being fuliginous; margin uneven, eroded, bearing fragments of the fugacious white veil; lamellae white, free, rather broad and close; spores ovoid, smooth, hyaline, $6 \times 3.5 \mu$; stipe tapering upward, decorated with fibrils from the veil, hollow, white above, cremeous and more shaggy below, 7–9 cm. long, 5–15 mm. thick.

Type collected on the ground in woods near Seattle, Washington, October 20–November 1, 1911, *W. A. Murrill* 587. Also collected in the same region, *Zeller* 103. Related to *Lepiota fuscosquamea* Peck.

13. *Lepiota roseifolia* sp. nov.

Pileus regular, convex to subexpanded, solitary, 4 cm. broad; surface dry, shining, innate-fibrillose, radiate-rimose, smooth and glabrous at the center, castaneous, blackish-tinted when fresh, assuming a more reddish tint after picking; lamellae free, crowded, slightly ventricose, regular, white when fresh, changing to rose-colored on drying or when bruised; spores ellipsoid, smooth, hyaline, $7-8 \times 3-3.5 \mu$; stipe equal, compressed, very long because buried in leaves, hollow, smooth, glabrous, avellaneous-isabelline, white at the apex, 17 cm. long, 5 mm. thick; annulus superior, slight, fixed, fuliginous.

Type collected in humus in a redwood forest at La Honda, California, November 25, 1911, *W. A. Murrill & L. R. Abrams* 1287.

14. *LEPIOTA BRUNNESCENS* Peck, Bull. Torrey Club 31: 177.
1904

Stanford University, California, *Baker 149*; Searsville Lake, California, *McMurphy 45*. Described from plants collected near St. Louis by Glatfelter. The western plants are not entirely typical, but they show the same decided change in color.

15. *LEPIOTA NAUCINA* (Fries) Quéf. Champ. Jura Vosg. 35.
1872

Stanford University, California, *Dudley 73, 324, Baker 133* (in part); Pasadena, California, *McClatchie*.

16. *Lepiota fuliginescens* sp. nov.

Pileus convex to subexpanded, solitary, about 8 cm. broad; surface dry, finely imbricate-floccose-scaly, slightly rimose, white with rosy tints, becoming fuliginous on drying; lamellae free, distant, narrow, arcuate, white, changing to pale-latericeous on drying; spores regularly ovoid, smooth, hyaline, $6 \times 4 \mu$; stipe long and twisted owing to its struggle through the leaves, tapering upward, polished, hollow, colored and changing like the pileus, about 10×1 cm.; annulus superior, ample, fixed, white to pale-fuliginous.

Type collected on the ground in a redwood forest at La Honda, California, November 25, 1911, *W. A. Murrill & L. R. Abrams 1265*.

17. *Lepiota rubrotinctoides* sp. nov.

Pileus convex to nearly plane, often umbonate, sometimes depressed in old plants, solitary or gregarious, 4-7 cm. broad; surface dry, subglabrous, white with rosy tints to red or purplish, the center always darker, varying from pink or red to dark-purple or blackish, cuticle even and unbroken when young, splitting radially, especially on the margin, as the pileus expands; context thin, white, drying soft and flexible; lamellae free, narrow, close, plane, white, the edges minutely serrulate; spores subovoid, smooth, hyaline, with a large clear nucleus, $7 \times 3.5 \mu$; stipe long and slender, equal or slightly tapering upward, hollow, glabrous or somewhat fibrillose, white, $10-15 \times 0.5-1$ cm.; annulus superior, fixed, membranous, ample, white, persistent.

Type collected on the ground in woods near Seattle, Washington, October 20–November 1, 1911, *W. A. Murrill 286*. Very abundant in the forests on the Pacific coast, and very constant in form, although varying in the amount of red coloring matter in the cuticle. It differs from *L. rubrotincta* Peck in its larger size, darker umbo, smaller spores, and the absence of scales on the surface of the pileus. Other collections are as follows: Seattle, Washington, *Murrill 338, 422, 573, Zeller 90*; Glen Brook, Oregon, *Murrill 768*; Muir Woods, California, *Murrill 1142*; La Honda, California, *Murrill & Abrams 1304*; Searsville Lake, California, *McMurphy 95, 96*.

18. *Lepiota magnispora* sp. nov.

Pileus thin, conic to convex, with a more or less prominent umbo, finally nearly plane, 3–5 cm. broad; surface dry, shaggy, imbricate-floccose-scaly, the umbo fulvous with erect scales, the rest of the surface pale-isabelline with numerous, darker isabelline or fulvous, upturned scales thinning out toward the margin, which is decorated with projecting scales and fragments of the veil; lamellae free, not crowded, of medium width, white; spores oblong-fusiform, smooth, hyaline, $15-18 \times 4-5 \mu$; stipe slightly tapering upward, with a small bulb at the base, glabrous at the apex, very floccose-tomentose and isabelline below, about 9 cm. long and 6 mm. thick; veil cottony, ample, ochraceous-isabelline, not forming an annulus but adhering to the margin and stipe.

Type collected on the ground among dead leaves in deep woods near Seattle, Washington, October 20–November 1, 1911, *W. A. Murrill 704*. Also collected as follows: Seattle, Washington, *Murrill 512, 518, 601, Zeller 114*; Stanford University, California, *Miss Patterson 23*.

19. *LEPIOTA AMIANTHINA* (Scop.) Quél. Ench. Fung. 7.
1886

This is a variable and widely distributed temperate species which has received many names, among them *Lepiota granulosa*, *L. carcharias*, *L. rugoso-reticulata*, *L. adnatifolia*, and *L. granosa*. Forms with coarse granules and rather brilliant colors are commonly referred to *L. granulosa*, while those with fine

granules and paler coloring are called *L. amianthina* or *L. granulosa amianthina*. There is little doubt that Scopoli in 1772 knew both these forms. Another character in which this species is both aberrant and variable is the attachment of the gills, which are sometimes squarely adnate or even a little decurrent and at other times they are adnexed or barely reach the stipe. All these variations in granular covering and gill attachment are represented on the Pacific coast, where the plant is common. When the species is more thoroughly known in its entire range, it may be possible to recognize two or three of these forms as species, and it may also be more consistent to group them under a distinct genus between *Lepiota* and *Armillaria*, as suggested by Fayod in 1889.

Seattle, Washington, *Murrill* 320, 457, 472, 571, 588, 645, 678; Tacoma Prairies, Washington, *Murrill* 715; Glen Brook, Oregon, *Murrill* 743; Corvallis, Oregon, *Murrill* 910, 954, 957; Newport, Oregon, *Murrill* 1077; Salem, Oregon, *M. E. Peck*.

20. *LEPIOTA ASPERA* (Pers.) Quél. Ench. Fung. 5. 1886

This rather rare but widely distributed temperate species was found only once. *L. asperula* Atk. and *L. eriophora* Peck, described from American material, should be compared with it carefully.

Seattle, Washington, *Murrill* 436.

21. *Lepiota nardosmioides* sp. nov.

Pileus thick, fleshy, convex, slow to expand, 6 cm. broad in its unexpanded form, resembling that of *Armillaria nardosmia* in form and color; surface dry, fibrillose, castaneous, becoming somewhat mottled with lighter and darker areas, margin strongly incurved; lamellae free, crowded, broad, ventricose, pallid; spores ovoid to ellipsoid, smooth, hyaline with an umbrinous tint, $5-7 \times 3.5-4 \mu$; stipe short, 2.5 cm. thick, bulbous, white, glabrous above and cottony below the large, membranous, simple, white, persistent annulus, which is fixed above the center of the stipe and is decidedly cottony on its lower surface.

Type collected on humus in a redwood forest at La Honda, California, November 25, 1911, *W. A. Murrill* & *L. R. Abrams* 1250.

2. VAGINATA (Nees) S. F. Gray, Nat. Arr. Brit. Pl. 1: 601.
1821

Amanitopsis Roze, Bull. Soc. Bot. Fr. 23: 50. 1876.

1. VAGINATA VAGINATA (Bull.) Murrill, Mycologia 3: 80.
1911

Found in its grisette form only and rather sparingly, but sometimes reaching 12 cm. in diameter, with a huge, subglobose, inflated volva resembling that of *A. volvata*.

Glen Brook, Oregon, *Murrill* 749; Mill City, Oregon, *Murrill* 831; Corvallis, Oregon, *Murrill* 925; Newport, Oregon, *Murrill* 1080; La Honda, California, *Murrill & Abrams* 1268; Santa Cruz, California, *G. J. Streator*.

2. *Vaginata velosa* (Peck)

Amanitopsis velosa Peck, Bull. Torrey Club 22: 485. 1895.

This species, described from material sent from Pasadena by McClatchie, is near *V. vaginata*, but has large whitish volval patches on the buff-colored pileus. It is abundant in southern California, almost to the exclusion of the common eastern species.

Pasadena, California, *McClatchie*; Stanford University, California, *Nohara* 56, *Miss Patterson* 62, *Baker* 154, 381; Searsville Lake, California, *W. F. Wight* 159.

3. VENENARIUS Earle, Bull. N. Y. Bot. Gard. 5: 450. 1909

The type of *Amanita* is *Agaricus campestris*, *Amanita* thus being a synonym of *Agaricus*. Earle erected the new genus *Venenarius* for *A. muscaria* and other species in which the basal volva breaks into fragments, leaving *Leucomyces* of Battarra for the remaining species. More recent usage discards Battarra's genus as not based on binomial publication, leaving the one genus *Venenarius*, which, in my opinion, is quite sufficient for all the species of *Amanita* as ordinarily considered.

1. *Venenarius muscarius* (Fries) Earle, Bull. N. Y. Bot. Gard. 5: 450. 1909

Brilliant orange and red sporophores of this deadly species were found in abundance in the sandy pine barrens at Newport, Oregon, and fresh specimens were shown me by Professor Setchell at Berkeley, California.

Newport, Oregon, *Murrill 1032*; Monterey, California, *Dudley 323*.

2. *Venenarius solitarius* (Bull.)

Agaricus solitarius Bull. Herb. Fr. pl. 48. 1780.

Stanford University, California, *Dudley 145*, *McMurphy 6*.

3. *Venenarius phalloides* (Vaill.)

Agaricus phalloides Fries, Syst. Myc. 1: 13. 1821.

No fresh plants of this deadly poisonous species were seen during my stay on the Coast, but Professor Campbell told me of a white species that occurs about Stanford University having the characters of *V. phalloides*, and the specimens cited below, which are without notes, may represent it. The spores of these specimens are subglobose to ovoid, smooth, hyaline, $8-10 \times 6-7 \mu$.

Santa Cruz Mountains, California, *Dudley 99*; Santa Cruz, California, *G. J. Streator*.

4. *Venenarius ocreatus* (Peck)

Amanita ocreata Peck, Bull. Torrey Club 36: 330. 1909.

Pileus fleshy, convex or nearly plane, glabrous, even on the margin, white, flesh white; lamellae close, unequal, broadly sinuate, white; stem equal, solid, glabrous or slightly fibrillose below the annulus, minutely floccose above, white, the annulus thin, membranaceous, the volva white, soft, deep with an entire free margin; spores subglobose or elliptic, $10-12 \times 8-10 \mu$.

Pileus 4-6 cm. broad; stem 8-10 cm. long, 1-2 cm. thick.

Described from specimens collected by Baker under oaks at Claremont, California. Types not seen. Evidently closely related to the white forms of *V. phalloides*.

5. *Venenarius bivolvatus* (Peck)

Amanita bivolvata Peck, Bull. Torrey Club 36: 329. 1909.

Pileus fleshy, convex or nearly plane, at first viscid, striate on the margin, white, brownish in the center, flesh white; lamellae close, unequal, free, white; stem equal, solid, flocculose, annulate, white, the annulus narrow, often disappearing with age, the volva large, thick, soft, spongy, lobed on the outer margin and having an elevated entire inner margin surrounding the stem; spores subglobose or broadly elliptic, $10-12 \times 8-10 \mu$.

Pileus 7-10 cm. broad; stem 13-15 cm. long, 1.6-2.5 cm. thick.

Described from specimens collected by Baker under oaks at Claremont, California. Types not seen.

6. *Venenarius calyptratus* (Peck)

Amanita calyptrata Peck, Bull. Torrey Club 27: 14. 1900.

Pileus fleshy, thick, convex or nearly plane, centrally covered by a large irregular persistent grayish-white fragment of the volva, glabrous elsewhere, striate on the margin, greenish-yellow or yellowish-brown tinged with green, the margin often a little paler or more yellow than the rest; lamellae close, nearly free but reaching the stem and forming slight decurrent lines or striations on it, yellowish-white tinged with green; stem stout, rather long, equal or slightly tapering upward, surrounded at the base by the remains of the ruptured volva, white or yellowish white with a faint greenish tint; spores broadly elliptic, 10μ long, 6μ broad, usually containing a single large nucleus.

Pileus 10-20 cm. broad; stem 10-15 cm. long, 12-20 mm. thick.

Described from specimens collected by Dr. H. Lane in fir forests in Oregon. The volva wall is one-fourth to one-half inch thick in the "egg" stage, and the pileus is apparently unable to break through it at times, thus dying and decaying in its infancy. Dr. Lane thoroughly tested the edibility of this species and found it good and wholesome.

7. *Venenarius calyptratoides* (Peck)

Amanita calyptratoides Peck, Bull. Torrey Club 36: 329. June, 1909.

Amanita calypthroderma Atkinson & Ballen, Ann. Myc. 7: 365. August, 1909.

Pileus fleshy, convex, then nearly plane, striate on the margin, covered in the center by a large irregular adhering fragment of the white universal veil or by small fragments formed by the breaking up of the veil, grayish-brown or lead-colored or sometimes ochraceous or cream-colored, flesh white, taste mild; lamellae moderately close, unequal, sinuate, adnexed, white; stem nearly equal, hollow, striate at the top, white, the slight evanescent annulus soon disappearing or becoming inconspicuous; spores often uninucleate, broadly elliptic, $10-12 \times 6-8 \mu$, usually with an oblique apiculus at one end.

Pileus 4-8 cm. broad; stem 8-12 cm. long, 8-16 mm. thick.

Described from specimens collected by Baker at Claremont, California. Mrs. Ballen's specimens, judging from her description, agree substantially, only they are somewhat larger. *V. calyptrata* is distinguished chiefly by its greenish tints.

8. *Venenarius umbrinidiscus* sp. nov.

Pileus fleshy, drying very thin, convex to expanded, at length depressed, umbonate, solitary, reaching 10 cm. broad; surface moist, glabrous, with large, irregular, adherent patches of the white volva, melleous, fading to stramineous on the conspicuously long-striate margin, the umbo yellow in young plants, becoming umbrinous; lamellae free, broad, not crowded, white; spores large, subglobose, smooth, hyaline, $7-9 \mu$; stipe white or slightly yellowish, tapering upward, 12 cm. long, 1-2 cm. thick; annulus ample, white, persistent, fixed above the center of the stipe; volva rather short, white, tough, 3 cm. broad, with subentire free limb.

Type collected on the ground in a fir forest near Seattle, Washington, October 20-November 1, 1911, *W. A. Murrill 414*. Also collected in the same region, *S. M. Zeller 100*. The flesh and gills are freely eaten by slugs. Related to *Amanita virosa*.

9. *Venenarius pantherinoides* sp. nov.

Pileus thick, fleshy, globose to plane, solitary, reaching 10 cm. broad; surface melleous or dirty-cremeous with brown or chestnut center, sticky when wet, slightly striate in old plants, the white volval patches small, numerous, regular, and regularly distributed until many of them fall away with age; lamellae sinuate, crowded, plane, white; spores ovoid, smooth, hyaline, $9 \times 5 \mu$; stipe tapering upward, white, glabrous, reaching 11 cm.

long and about 2 cm. thick, with bulbous base; annulus large, white, superior, persistent; volva white, 3 cm. broad, tough, regular, persistent, with entire or undulate free limb.

Type collected on a south slope in woods near Seattle, Washington, October 20–November 1, 1911, *W. A. Murrill* 399. Also collected as follows: Seattle, Washington, *S. M. Zeller* 80, *W. A. Murrill* 328; Newport, Oregon, in sandy pine barrens, *W. A. Murrill* 1092. Specimens at Albany sent by Copeland from California and temporarily referred by Peck to *Amanitopsis adnata* appear to belong here, but I have not examined them microscopically.

10. *Venenarius praegemmatum* sp. nov.

Pileus hemispheric to subexpanded, often splitting at the margin with age, scattered, reaching 6 cm. broad; surface smooth, melleous-avellaneous in the center, dark-melleous on the margin, not striate, densely covered with persistent, white, cottony, gemmate warts, the remains of the volva; lamellae free, crowded ventricose, white; spores ovoid to subglobose, smooth, hyaline, 8–10 μ ; stipe tapering upward from a bulbous base, smooth, white, reaching 7 cm. long and 1.5 cm. thick; annulus ample, white, persistent, fixed just above the middle of the stipe; volva white, 3 cm. broad, 2 cm. high, closely attached to the bulb and scarcely showing a free limb, without friable remains in the soil.

Type collected on sandy soil in open woods near Seattle, Washington, October 20–November 1, 1911, *W. A. Murrill* 247. Also collected as follows: Seattle, Washington, *W. A. Murrill* 548, 646; Coos Bay, Oregon, *H. D. House* 76. Fresh specimens suggest one of the honey-colored forms of *V. muscaria*, and dried specimens are not very different from small plants of *A. rubescens*.

SERIES 2. SPORES OCHRACEOUS OR FERRUGINOUS

Several departures from ordinary generic usage are made here. In using the key, please bear in mind that *Cortinarius*, *Inocybe*, *Hebeloma*, and *Naucoria* are not considered, these genera being reserved for later publication.

Lamellae readily separable from the context.

Stipe lateral or none.

Stipe central or eccentric.

1. TAPINIA.

2. PAXILLUS.

Lamellae not readily separable from the context.

Volva and annulus absent; veil evanescent, if present.

Pileus dimidiate or resupinate.

3. CREPIDOTUS.

Pileus centrally stipitate.

Stipe cartilaginous.

Lamellae free.

4. PLUTEOLUS.

Lamellae adnate or adnexed; margin of pileus straight from the first.

5. CONOCYBE.

Lamellae decurrent.

6. TUBARIA.

Stipe fleshy; lamellae adnate or decurrent; universal veil not arachnoid.

7. GYMNOPIIUS.

Volva absent, annulus present.

Stipe glabrous or fibrillose.

8. PHOLIOTA.

Stipe squarrose-scaly.

9. HYPONDENDRUM.

Volva present, annulus absent.

10. LOCELLINA.

1. TAPINIA (Fries) Karst. Hattsv. 452. 1879

TAPINIA PANUOIDES (Fries) Karst. Hattsv. 452. 1879

Seattle, Washington, *Murrill 313, 515, 530, Zeller 40*; Berkeley, California, *Harper*.

2. PAXILLUS Fries, Gen. Hymen. 8. 1836

1. PAXILLUS INVOLUTUS (Batsch) Fries, Gen. Hymen. 8.
1836

Corvallis, Oregon, *Murrill 1013*; Stanford University, California, *McMurphy 137*. Found in abundance under conifers on the campus of the Agricultural College, the pileus sometimes reaching over a foot in breadth.

2. PAXILLUS ATROTOMENTOSUS (Batsch) Fries, Epicr. Myc. 317.
1838

Coos Bay, Oregon, *H. D. House 86*.

3. CREPIDOTUS (Fries) Quél. Champ. Jura Vosg. 106. 1872

1. CREPIDOTUS HERBARUM Peck, Ann. Rep. N. Y. State Mus.
39: 72. 1886

Agaricus (Crepidotus) Herbarum Peck, Ann. Rep. N. Y. State Mus. 26: 56. 1874.

Seattle, Washington, *Murrill 660*; Tacoma, Washington, *Murrill 719*; Stanford University, California, *Dudley 156, 175, McMurphy 146*.

2. *CREPIDOTUS MALACHIAS* (Berk. & Curt.) Peck, Ann. Rep.
N. Y. State Mus. 39: 71. 1886

Seattle, Washington, *Murrill* 314.

3. *CREPIDOTUS MOLLIS* (Schaeff.) Quél. Champ. Jura Vosg.
106. 1872

Seattle, Washington, *Zeller* 126; La Honda, California, *Murrill & Abrams* 1273; California, *McClatchie*.

4. *Crepidotus submollis* sp. nov.

Pileus sessile, reniform to subcircular, lobed, wood-loving, 2-4 cm. broad; surface white to discolored, finely silky, radially sulcate or plicate, strigose-hirsute behind; lamellae white to ferruginous, rather broad, not distant, edges concolorous; spores ellipsoid, smooth, melleous under a microscope, $9 \times 4-5 \mu$.

Collected on dead alder in woods near Seattle, Washington, October 20-November 1, 1911, *W. A. Murrill* 572 (*type*), 603. Also collected at Berkeley, California, February 7, 1911, *R. A. Harper* 27.

5. *CREPIDOTUS PUBERULUS* Peck, Bull. Torrey Club 25: 324.
1898

Pileus thin, reniform or suborbicular, nearly plane, wood-loving, 6-10 mm. broad; surface minutely pubescent, brown; lamellae ventricose, rather broad, rusty-brown when mature, whitish on the edge; spores subellipsoid, usually uninucleate, $9-10 \times 5-6 \mu$; stipe 2-4 mm. long, equal, curved, lateral or eccentric, brown, with a patch of white mycelium at the base.

Compton, California, *McClatchie*.

6. *CREPIDOTUS CALOLEPIS* (Fries) Quél. Ench. Fung. 108.
1886

Crepidotus fulvotomentosus Peck, Ann. Rep. N. Y. State Mus.
26: 57. 1874.
Corvallis, Oregon, *Murrill* 907.

4. PLUTEOLUS (Fries) Gill. Champ. Fr. 1: 549. 1878

1. PLUTEOLUS LUTEUS Peck, Bull. Torrey Club 22: 203.
1895

Described from specimens collected by McClatchie under trees near Pasadena, California, in December. Specimens from Stanford University, California, *Baker 161*, distributed as *Bolbitius radians* Morg., are much larger than the types, reaching 7 cm. broad and 10 cm. high.

Pasadena, California, *McClatchie*; Stanford University, California, *Baker 161*, 380, *Miss Patterson 13*, 67, *Nohara 28*; California, *Harper 14*.

2. *Pluteolus stramineus* sp. nov.

Pileus thin, convex, solitary, 5 cm. broad; surface glabrous, viscid, flavous and rugose at the center, pale-stramineous and closely and conspicuously striate from the central area to the margin; lamellae narrow, free or slightly adnexed, twice inserted, dull dirty-stramineous; spores ovoid, smooth, bright ochraceous-melleous under a microscope, 11-14 × 6-8 μ; stipe perfectly straight, cylindric, equal, fleshy, smooth, stramineous, pulverulent above, hollow, 10 cm. long, 5 mm. thick.

Type collected in an open grassy yard after a light rain, Corvallis, Oregon, November 6-11, 1911, *W. A. Murrill 1019*. Related to *Pluteolus luteus*.

3. PLUTEOLUS CALIFORNICUS McClatchie, Proc. S. Cal.

Acad. Sci. 1: 383. 1897

Described from plants collected by McClatchie on dead stems and manure at Compton, California. The specimens sent to Dr. Peck appear to be quite distinct from *P. luteus*.

4. *Pluteolus parvulus* sp. nov.

Pileus convex to subplane, thin, solitary, scarcely 1 cm. broad; surface smooth, glabrous, shining, slightly viscid, dark-avellaneous, the small umbo concolorous, margin striate; lamellae free, ventricose, broad, fulvous, the edges white and minutely serrulate; spores ellipsoid, regular, smooth, bright-melleous under a microscope, 9-11 × 5 μ; stipe enlarged at the apex, pulverulent above, glabrous below, smooth, straw-colored, hollow, flaccid and collapsing, 2 cm. long, 1 mm. thick.

The type of this dainty little species was collected in humus on the ground in woods at Preston's Ravine, near Palo Alto, California, November 25, 1911, *W. A. Murrill & L. R. Abrams 1189*. Related to *P. callistus*, but smaller and lacking the red center.

5. CONOCYBE Fayod, Ann. Sci. Nat. VII. 9: 357. 1899

Galera (Fries) Quél. Champ. Jura Vosg. 103. 1872. Not
Galera Blume 1825.

I. CONOCYBE TENER (Schaeff.) Fayod, Ann. Sci. Nat. VII.
9: 357. 1899

This species is rather common, the usual form being slender and small. No. 395, however, growing in a compost heap at the edge of a woodland, is large, with isabelline cap and fulvous stipe, resembling the form sometimes called *G. sphaerobasis* Post. Specimens of *C. tener* from California have been referred by some to *Galera versicolor* Peck, but this species, described in 1897 from South Dakota material collected by Williams, is not a *Galera* but a *Pluteolus*, near *P. luteus* and *P. expansus*.

Seattle, Washington, *Murrill 395, 609*; Corvallis, Oregon, *Murrill 1004*; Preston's Ravine, California, *Murrill & Abrams 1167, 1180*; Stanford University, California, *Dudley 77, Baker 127, 1868*; California, *Miss Sutliff*.

2. CONOCYBE HYPNORUM (Batsch) Murrill, Mycologia 4: 75.
1912

Seattle, Washington, *Murrill 421, 446*; Preston's Ravine, California, *Murrill & Abrams 1217*. Stanford University, California, *L. R. Abrams 202a*.

3. Conocybe Bryorum (Pers.)

Galera Bryorum (Pers.) Sacc. Syll. Fung. 5: 868. 1887.

Seattle, Washington, in peat bog, *Murrill 391*; Tacoma Prairies, Washington, *Murrill 716*.

4. **Conocybe Sphagnorum** (Pers.)

Galera Sphagnorum (Pers.) Sacc. Syll. Fung. 5: 869. 1887.

Kadiak, Alaska, *Trelease 511*; Yakutat, Alaska, *Trelease 514a*, 516. This species has a much longer stipe than *C. Bryorum*, but the two are closely related. I have not seen the Alaskan specimens here listed.

5. **Conocybe semilanceata** (Peck)

Galera semilanceata Peck, Bull. Torrey Club 23: 415. 1896.

Pileus membranous, acutely conic or campanulate, often sharply umbonate, glabrous, sulcate-striate, pale-yellow or buff; lamellae rather broad, ascending, distant, adnate, tawny-ferruginous when mature; stem slender, glabrous, hollow, pallid; spores ellipsoid, ferruginous, $10-12.5 \times 5-6 \mu$; pileus 4 to 6 lines broad; stem 1.5 to 2 in. long, .5 to 1 line thick.

Described from specimens collected by Yeomans among fallen leaves, sticks, mosses, etc., at Camas, Washington. The types at Albany are somewhat broken and rather difficult to compare.

6. **Conocybe angusticeps** (Peck)

Galera angusticeps Peck, Bull. Torrey Club 24: 143. 1897.

Pileus thin, narrowly and irregularly conic or subcylindric, obtuse, acute, or abruptly acuminate at the apex, even, glabrous, viscid and dark-ochraceous when young and moist, nearly white when old and dry, the margin somewhat incurved and appressed to the stem; lamellae close, narrow, adnate, somewhat white-margined, more or less anastomosing, brownish-ferruginous when mature; stem slender, glabrous, hollow, equal or slightly thickened at the base, whitish or tinged with yellow, shining when dry; spores ellipsoid, $10-12.5 \times 7.5 \mu$. Pileus 8-15 lines long, 4-6 lines wide; stem 1.5-3 in. long, 1-1.5 lines thick.

Described from specimens collected by McClatchie on grassy ground in streets and pastures, at Pasadena, Los Angeles, and Compton, California. The pileus is viscid, estriate, and does not expand. *G. Besseyi*, described from Colorado, is apparently not distinct.

7. **Conocybe lirata** (Berk. & Curt.)

A. (Galera) liratus Berk. & Curt. Proc. Am. Acad. Arts & Sci. 4: 116. 1858.

Galera lirata (Berk. & Curt.) Sacc. Syll. Fung. 5: 865. 1887.

Described from specimens collected by Wright on the bark of oak trees on Mare Island, California. Pileus very small, umbilicate, reddish, atomaceous, margin striate; gills adnate, few, broad; stipe short. Types not seen.

6. TUBARIA (W. G. Sm.) Gill. Champ. Fr. 1: 537. 1878

1. TUBARIA FURFURACEA (Pers.) Gill. Champ. Fr. 1: 538. 1878

This species is common in California. *T. inquilina* is very closely related. *T. Eucalypti* Earle is a name assigned for purposes of distribution but no description was published. *Naucoria paludosa* Peck, described from the Catskills, is apparently identical, although the description calls for somewhat longer spores. *Tubaria contraria* Peck, also from New York, is apparently not distinct. All of the specimens listed below agree in having much closer lamellæ than European specimens obtained from Bresadola; in this particular they agree with *T. deformata* Peck.

Seattle, Washington, *Murrill*; Preston's Ravine, near Palo Alto, California, *Murrill & Abrams 1209, 1223*; Santa Cruz Mountains, California, *Dudley 130*; Stanford University, California, *Abrams 202, 203, Baker 157, 170, Dudley 76, 149, 167, 181, McMurphy 144, Nohara 4, 32, Miss Patterson 8, 42, 60.*

2. TUBARIA PALLESCENS Peck, Bull. Torrey Club 22: 202
1895

Pileus fleshy but thin, convex or nearly plane, sometimes slightly depressed in the center, glabrous, hygrophanous, brick-red when moist, yellowish or cream color when dry; lamellæ broad, adnate or slightly decurrent, tawny-buff, becoming brownish-ferruginous; stem slender, hollow, yellowish, with white mycelium at the base; spores ellipsoid, $7.5 \times 4 \mu$. Pileus 5 to 10 lines broad; stem 12-18 lines long, .5 to 1 line thick.

Described from specimens collected by McClatchie among sticks and leaves near Pasadena, California. Types not seen.

3. TUBARIA TENUIS Peck, Bull. Torrey Club 23: 415. 1896

Pileus membranous, hemispheric or convex, obtuse or subumbilicate, glabrous, hygrophanous, reddish-cinnamon when moist,

cream color or pale-ochraceous when dry, either faintly striate or sulcate-striate on the margin; lamellae 1-2 lines wide, distant, ventricose, adnate or slightly decurrent, tawny-ochraceous; stem slender, flexuous, often uneven, hollow, pruinose at the top, downy at the base, pale-yellow or cream color; spores ellipsoid, $7.5 \times 5 \mu$. Pileus 4-8 lines broad; stem 1-2 in. long, about 1 line thick.

Described from specimens collected by McClatchie among mosses on gravelly hillsides near Pasadena, California. Types not seen.

4. TUBARIA BREVIPES Peck, Rep. Harriman Alaska Exped.
Crypt. 45. 1904

Pileus thin, convex, glabrous, ferruginous; lamellae broad, arcuate, distant, adnate or slightly decurrent, ferruginous; stem short, slender, glabrous, hollow, brown; spores ellipsoid, uniloculate, 10-12 μ long, 7-8 μ broad. Pileus 6-10 mm. broad; stem 6-14 mm. long, scarcely 1 mm. thick.

Described from specimens collected on the ground at Port Clarence, Alaska, *Trelease 562, 567*. The dried specimens are said to resemble *Omphalia Campanella* in color, but the spores are ferruginous, 10-12 \times 7-8 μ .

7. GYMNOPIUS Karst. Hattsv. 400. 1879

Flammula (Fries) Quél. 1872. Not *Flammula* DC. 1818.

Several divisions of this genus have been proposed but none of them are satisfactory in the presence of the actual specimens. The veil, the attachment of the gills, the habitat of the plant, the shade of color in the spores, and the viscosity of the pileus may all be helpful in the separation of species, but they do not seem to furnish reliable and convenient characters for the segregation of the genus.

Most of the species here treated are plainly congeneric and rather difficult to separate from the descriptions alone. *G. decoratus* and *G. viridans* are imbricate-scaly; *G. echinulisporus* has noticeably roughened or echinulate spores; *G. laticolor* is bright-red in color; *G. subflavidus* and *G. viridans* become green-spotted when handled; and *G. carbonarius* has peculiarly dark-colored gills when the spores mature.

1. *Gymnopilus laeticolor* sp. nov.

Pileus convex or somewhat conic to subexpanded, rarely umbonate, thin, cespitose, wood-loving, 3-5 cm. broad; surface smooth, glabrous, slightly viscid, hygrophanous, miniatous when young, becoming testaceous at the center and ochroleucous on the margin in mature plants; context dull-colored, bitterish; lamellae adnate, rather narrow, not crowded, ochraceous; spores ellipsoid, smooth, hyaline with a yellowish tint under a microscope, probably pale-ochraceous in mass, with one or two very brilliant nuclei, $7 \times 3-4 \mu$; stipe equal, miniatous to ochroleucous below, white above, slightly moist and viscid, decorated with a few fibrils, the remains of a slight white veil, about 7 cm. long, 4-8 mm. thick.

Collected from the under side of a much decayed coniferous log in the forest near Seattle, Washington, October 20-November 1, 1911, *W. A. Murrill 297, 505 (type)*. Related to *F. astragalina*.

2. *Gymnopilus decoratus* sp. nov.

Pileus convex to slightly depressed, at times umbonate, cespitose, wood-loving, 3.5-5 cm. broad; surface slightly viscid, the center imbricate-scaly with pale-bay scales, chestnut-colored on the umbo, the remainder of the surface cremeous, fading to white toward the margin; lamellae adnate or sinuate, isabelline to fulvous, rather broad but plane, not crowded, edges undulate; spores ellipsoid or ovoid, smooth, very pale melleous under a microscope, $5-6 \times 3.5-4 \mu$; cystidia abundant, hyaline, conic, tapering to a short, narrow stalk, obtuse at the apex, $30 \times 12 \mu$; stipe equal, rather tough, stuffed, white or yellowish, shaggy-fibrillose, 5-8 cm. long, 5-6 mm. thick; veil fibrillose, evanescent, remaining attached partly to the margin and partly to the stipe.

Collected abundantly on dead wood in open ground or in woods near Seattle, Washington, October 20-November 1, 1911, *W. A. Murrill 553 (type), 538, 619*. Also collected on dead wood in a dense fir forest at Glen Brook, Oregon, November 7, 1911, *W. A. Murrill 750*.

3. *Gymnopilus ornatulus* sp. nov.

Pileus convex to nearly plane, gibbous or umbonate, cespitose, 3 cm. broad; surface dry, slightly viscid when wet, fibrillose, flavo-melleous tinted with pale rose-brown, the latter color more conspicuous at the center; lamellae adnate, plane, broad, of medium distance, pallid when young, becoming pale-fulvous from the

spores; spores ellipsoid, smooth, pale-melleous under a microscope, $6 \times 3.5-4 \mu$; stipe smooth, glabrous and cremeous at the apex, subconcolorous and shaggy-fibrillose below, 5 cm. long, 4 mm. thick.

Type collected on a bank by the roadside in Preston's Ravine, California, November 25, 1911, *W. A. Murrill* and *L. R. Abrams 1169*. Related to *G. decoratus*, but not conspicuously decorated, and without cystidia.

4. *Gymnopilus pallidus* sp. nov.

Pileus irregularly convex to plane, umbonate, 3-7 cm. broad; surface dull yellowish-gray, dry, smooth, glabrous, margin inflexed; context hyaline to grayish, watery, without characteristic taste or odor; lamellae adnexed, close, broad, falcate, grayish-white to fulvous; spores broadly ellipsoid, smooth, ochraceous-ferruginous under a microscope, fulvous in mass, $8-9 \times 3.5-4.5 \mu$; stipe stout, pallid, hollow, fibrillose, 3-4 cm. long, 5-7 mm. thick; veil slight, evanescent, leaving no annulus.

Type collected on the ground under conifers at New Westminster, British Columbia, March 28, 1905, *Albert I. Hill 6*.

5. *Gymnopilus permollis* sp. nov.

Pileus convex, not umbonate, solitary, wood-loving, 7 cm. broad; surface viscid when young, becoming dry, smooth, glabrous, very soft and pliable to the touch, isabelline; lamellae remotely sinuate-adnate, rather distant, broad, becoming fulvous; spores ovoid, slightly one-sided, obliquely pointed, minutely roughened, melleous under a microscope, with one large nucleus, $11 \times 6 \mu$; stipe equal, longitudinally striate, white, furfuraceous at the apex, fleshy, 8 cm. long, 8 mm. thick.

Type collected on dead wood in a coniferous forest near Seattle, Washington, October 20-November 1, 1911, *W. A. Murrill 546*.

6. *Gymnopilus subflavidus* sp. nov.

Pileus thin, conic or convex to expanded, umbonate when young, cespitose, wood-loving, 3-5 cm. broad; surface slimy, glabrous, smooth, melleous with fulvous center, becoming green-spotted when handled, margin entire, strongly incurved; lamellae citrinous to fulvous, sinuate or adnate, of medium breadth and distance; spores ellipsoid, rounded at the ends, smooth, melleous un-

der a microscope, $7-8 \times 3.5-4 \mu$; stipe equal, cremeous above, pale-fulvous below, smooth, fibrillose, 4-7 cm. long, 5-8 mm. thick; veil slight, citrinous, membranous in young stages, soon breaking into fibrils and leaving no annulus.

Collected on dead stumps and logs in woods near Seattle, Washington, October 20-November 1, 1911, *W. A. Murrill 298 (type), 496.*

7. *Gymnopilus californicus* (Earle)

Flammula californica Earle, Bull. N. Y. Bot. Gard. 2: 342. 1902.

Described from specimens collected by Baker in grassy places under trees, probably from buried wood, at Stanford University, December 5, 1901.

Stanford University, California, *Baker 167, Miss Patterson 75.*

8. *Gymnopilus Hillii* sp. nov.

Pileus slightly convex, umbonate, cespitose, 2-4 cm. broad; surface smooth, dry, glabrous, raw-sienna, brown to buff at the center; margin thin, even; context very thin, yellowish, mucilaginous to the taste, odor not characteristic; lamellae adnate or emarginate, crowded, inserted, rather broad, falcate, yellowish to fulvous; spores ovoid, smooth, fulvous, $6 \times 3.5-4 \mu$; stipe flexed because of its lateral position on the trunk, equal, glabrous, umber-brown to slightly blackish below, lighter above, hollow, 2.5-4 cm. long, 2-5 mm. thick.

Type collected on rotten logs and stumps at New Westminster, British Columbia, April 23, 1905, *Albert I. Hill 7.*

9. *Gymnopilus fulvellus* (Peck)

Flammula fulvella Peck; Macoun, Fur Seals North Pac. Pt. III. 584. 1899.

Pileus thin, convex or nearly plane, glabrous, subtawny, the margin deflexed or incurved, flesh whitish; lamellae thin, subdistant, adnate or slightly decurrent, somewhat tawny, inclining to ochraceous-tawny; stem equal, solid, fibrillose or fibrillose-squamulose, colored like the pileus; spores ellipsoid, $12.5 \times 7.5 \mu$.

Pileus 1.2-2.4 cm. broad; stem about 2.5 cm. long, 3-4 mm. thick.

Described from dried specimens collected on low ground, St. Paul Island, Bering Sea, September, 1896, by J. M. Macoun.

10. *Gymnopilus penetrans* (Fries)

Flammula penetrans (Fries) Quél. Champ. Jura Vosg. 233. 1872.

Seattle, Washington, *Murrill* 250, 361, 383, 411, 433, 455, 481, 486, 635, 693; Glen Brook, Oregon, *Murrill* 746, 767; Searsville, California, *F. J. Jack* 92; Marin County, California, *Miss Eastwood* 39; Stanford University, California, *Abrams & McMurphy* 65.

11. *Gymnopilus sapineus* (Fries)

Flammula sapinea (Fries) Quél. Champ. Jura Vosg. 98. 1872.

This species differs little from *G. penetrans*. Fries combined the two in his *Systema*, but later separated them again. The points of difference as he states them and also figures them are, as follows: *G. penetrans* is glabrous, with sinuate gills, which become fulvous-spotted, and a long stipe with white base and reddish-brown interior. *G. sapineus* is slightly floccose-squamulose, becoming rimose, with adnate gills, and short stipe not white at the base and yellow within. Cooke's figures of *G. sapineus* seem to agree well with Fries' figures of *G. penetrans*.

Salem, Oregon, *M. E. Peck*.

12. *Gymnopilus spumosus* (Fries)

Flammula spumosa (Fries) Quél. Ench. Fung. 70. 1886.

Seattle, Washington, *Murrill* 605.

13. *Gymnopilus spinulifer* sp. nov.

Pileus convex, umbonate, at length expanding and losing the umbo, scattered or clustered, 3.5–8 cm. broad; surface smooth, glabrous, viscid, light-yellow with bay center, margin entire; context cremeous, without characteristic taste or odor; lamellae adnate or very slightly sinuate, plane, of medium breadth and distance, yellowish to ferruginous; spores ovoid to ellipsoid, smooth, pale-melleous under a microscope, dark-fulvous in mass; cystidia hyaline, flask-shaped, with short, narrow neck and long stalk, $70 \times 15 \mu$; stipe equal, hollow, subglabrous, with conspicuous mycelium at the base, yellowish-white or tinted with bay; veil arachnoid, whitish, leaving a small ring of fibrils near the apex of the stipe.

Type collected on the ground among leaves under redwoods near Portola, California, January 4, 1903, *James McMurphy* 10. Also collected under redwoods near Jasper Ridge, California, January 11, 1912, *James McMurphy* 143. Both of these collections were accompanied by excellent field notes and sketches. Specimens without notes but recognized by the characteristic cystidia are, as follows: Mill Valley, California, under redwoods, December 28, 1902, *Alice Eastwood* 25; Santa Cruz Mountains, under redwoods, December, 1895, *W. R. Dudley* 107, 126.

14. *Gymnopilus echinulisporus* sp. nov.

Pileus convex to plane, at length depressed, slightly umbonate when young, wood-loving, reaching 7 cm. broad; surface nearly smooth, moist, glabrous, shining, ferruginous at the center, fulvous on the margin, paler in dry weather, when it is usually darker at the center than on the margin; margin folded or fissured, strongly incurved on drying; lamellae sinuate-adnate with a tooth, broad, slightly ventricose, ferruginous-isabelline to fulvous; spores broadly ovoid to subglobose, conspicuously and densely echinulate, ferruginous under a microscope, $6-9 \times 5-6 \mu$; stipe equal, or enlarged just at the base, longitudinally striate, whitish to isabelline-ferruginous, about 6 cm. long, 1.3-1.6 cm. thick; veil apparently wanting, even in quite young plants.

Type collected on dead wood in moist woods at Mill City, Oregon, November 9, 1911, *W. A. Murrill* 815. Also collected on dead wood in woods near Corvallis, Oregon, November 6-11, 1911, *W. A. Murrill* 939.

15. *Gymnopilus vialis* sp. nov.

Pileus convex to expanded, at length depressed, splitting radially at the margin, wood-loving, 5 cm. broad; surface dry, glabrous, smooth, at length rimose, dark flavo-luteous with bay center or the entire surface bay; lamellae adnate, ventricose, broad, rather close, citrinous to ferruginous-fulvous; spores ellipsoid, rounded at the ends, smooth, melleous under a microscope, $7 \times 3.5 \mu$; stipe equal or inflated, solid or hollow, citrinous, fibrillose, especially at the top, where a slight trace of the fugacious veil remains, 5 cm. long, 1-1.5 cm. thick.

Type collected on a railway tie in the town of Corvallis, Oregon, November 6-11, 1911, *W. A. Murrill* 969.

16. *Gymnopilus subcarbonarius* sp. nov.

Pileus convex to expanded, rarely umbonate, rather thin, gregarious, 3-4 cm. broad; surface smooth, glabrous, very viscid, red to bay, yellow on the margin, sometimes darker at the center; lamellae adnate or sinuate, not crowded, rather narrow, inserted, pale-yellow to ochraceous or fulvous; spores ellipsoid, smooth, melleous under a microscope, fulvous in mass, $7 \times 3-4 \mu$; stipe short, somewhat enlarged below, white, scaly, hollow, 3-4 cm. long, 4-8 mm. thick; veil fibrillose, evanescent, not leaving an annulus.

Type collected on the ground at Berkeley, California, January 31, 1911, *R. A. Harper* 6. Closely allied to *G. carbonarius*, but differing in the color of the gills.

17. *Gymnopilus carbonarius* (Fries)

Flammula carbonaria (Fries) Quél. Champ. Jura Vosg. 232. 1872.

For a description and colored figure of this species, see MYCOLOGIA for July, 1912. It usually occurs in charred ground and is of a nearly uniform reddish-brown color, with lamellae yellowish-white to dark-ochraceous or pale-fuscous and spores ferruginous, $7 \times 3-4 \mu$. *G. spumosos* occurs on naked ground and is yellowish-brown with reddish-brown center, and has yellow to ferruginous lamellae, with ochraceous spores that are slightly larger than those of *G. carbonarius*.

Seattle, Washington, *Murrill* 263, 325, 627, 641; Salem, Oregon, *M. E. Peck*; La Honda, California, *Murrill & Abrams* 1259; Presidio, California, *Harper* 69; Stanford University, California, *Abrams* 205, *Miss Patterson* 19.

18. *Gymnopilus viscidissimus* sp. nov.

Pileus conic, not fully expanding, gregarious, 2 cm. broad; surface smooth, glabrous, very slimy, isabelline with an incarnate tint, usually a little darker at the center; lamellae sinuate-adnate, broad, ventricose, rather crowded, pale-isabelline, becoming darker with age; spores ovoid, pointed, often one-sided, very pale with a fuscous tint under a microscope, dark-fulvous in mass, $7 \times 3-4 \mu$; stipe equal or slightly larger below, stuffed, whitish, furfuraceous above, fibrillose below, rather tough, 6 cm. long, 3.5 mm. thick.

Type collected among mosses and humus on the ground in low woods at Mill City, Oregon, November 9, 1911, *W. A. Murrill* 833. Also collected in a peat bog near Seattle, Washington, October 20–November 1, 1911, *W. A. Murrill* 347.

19. *Gymnopilus latus* sp. nov.

Pileus convex to plane, not umbonate, gregarious, wood-loving, reaching 9 cm. broad; surface glabrous, shining, viscid, radiate-lineate, ferruginous-fulvous at the center, ochroleucous on the margin; context rather thin, mild to the taste; lamellae sinuate or adnate, pallid to fulvous, plane, not crowded, rather narrow; spores ellipsoid, rounded at the ends, smooth, melleous under a microscope, $6 \times 3.5 \mu$; stipe equal, or slightly larger below, dry, smooth, subglabrous, fleshy, white or somewhat yellowish, with yellow or orange mycelium at the base, 5–7 cm. long, 1–1.3 cm. thick; veil pale-yellow, membranous in young sporophores, soon breaking into fibrils and disappearing.

Type collected on a dead deciduous log in woods near Seattle, Washington, October 20–November 1, 1911, *W. A. Murrill* 650.

20. *Gymnopilus viridans* sp. nov.

Pileus thick, convex, with large umbo, cespitose, wood-loving, reaching 8 cm. broad; surface dry, ochraceous, becoming green-spotted when handled, with conspicuous light-bay scales sparsely scattered except at the center, where they are rather close together; lamellae adnate, broad, crowded, isabelline to ferruginous, edges undulate; spores ellipsoid, obliquely pointed at one end, smooth, ferruginous in mass, $7 \times 3.5 \mu$; stipe larger below, longitudinally streaked, concolorous, reaching 6 cm. long, and 2 cm. thick.

Type collected on a burnt coniferous log in an open field near Seattle, Washington, October 20–November 1, 1911, *W. A. Murrill* 657. Also collected in clusters by the roadside near woods at Green River, King County, Washington, June, 1891, *A. M. Parker* 1. In habit and appearance, the plant resembles *Lentinus lepideus* and *Pholiota aeruginosa*.

21. *Gymnopilus foedatus* (Peck)

Hebeloma foedatum Peck, Bull. Torrey Club 22: 202. 1895.

Described from specimens collected by McClatchie on the streets of Pasadena, California. Similar to *G. carbonarius* in appearance, but with much darker spores.

Pasadena, California, *McClatchie*; Claremont, California, *Baker*.

8. PHOLIOTA (Fries) Quél. Champ. Jura Vosg. 91. 1872

1. PHOLIOTA MARGINATA (Batsch) Quél. Champ. Jura Vosg. 94.
1872

Muir Glacier, Alaska, *Trelease* 525. Specimens not seen, but it is doubtful if they represent the plant originally described by Batsch.

2. PHOLIOTA UNICOLOR (Vahl) Gill. Champ. Fr. 1: 436. 1878

This species is very abundant on dead wood in the Pacific Coast region. It differs from the plants usually known as *P. marginata* in having broader gills and larger spores, the latter measuring $8-10 \times 5-6 \mu$.

Seattle, Washington, *Murrill* 254, 264, 278, 350, 392, 474, 590, 690, 697; Mill City, Oregon, *Murrill* 820; Corvallis, Oregon, *Murrill* 977, 1017; Preston's Ravine, California, *Murrill & Abrams* 1232, 1237; La Honda, California, *Murrill & Abrams* 1246, 1282, 1305; Yakutat Bay, Alaska, *Trelease* 520.

3. *Pholiota subnigra* sp. nov.

Pileus very small for the genus, convex, slightly umbonate, solitary, 1.3 cm. broad; surface smooth, glabrous, slightly viscid, uniformly fuliginous, except on the immediate margin, where it is hoary on account of a pubescence originating from the veil; lamellae sinuate-adenate, ventricose, broad, not crowded, becoming fulvous, the edges remaining whitish; spores irregularly ellipsoid, pointed at the base, 1-2-guttulate, smooth, melleous under a microscope, $10-11 \times 4-5 \mu$; stipe equal, cylindric, pallid, fleshy, solid, rough with short, soft, whitish, conic scales pointing upward, 2 cm. long, 2.5 mm. thick; veil ample, white, membranous, leaving a large, superior, persistent annulus.

Type collected on the ground in woods, attached to a small buried root, near Seattle, Washington, October 20-November 1, 1911, *W. A. Murrill* 380.

4. *PHOLIOTA CANDICANS* (Bull.) Schröt. Krypt. Fl. Schles.
3¹: 608. 1889

Pholiota praecox (Pers.) Quél. Champ. Jura Vosg. 91. 1872.

A description and colored figure of this common eastern species were published in *MYCOLOGIA* for July, 1911. I found it only twice on the Coast.

Open grassy ground, Seattle, Washington, *Murrill 337*; mixed woods, Corvallis, *Murrill 1021*; Woodside, California, *E. B. Copeland*; Yakutat Bay, Alaska, *Trelease 502, 514, 517*.

5. *PHOLIOTA ANOMALA* Peck, Bull. Torrey Club 22: 202. 1895

Pileus at first hemispheric or subconic, then convex, glabrous, hygrophanous, broccoli-brown when moist, pale-yellow or cream-color when dry; lamellae adnate or slightly decurrent, subarcuate, pale becoming brownish-ferruginous, often white on the edge; stem cavernous or hollow with irregular transverse partitions, sometimes containing a cottony tomentum, whitish, with a slight evanescent annulus; spores ellipsoid, 8-10 × 6-7 μ .

Pileus 1.5-3.5 cm. broad; stem 4 cm. long, 2-6 mm. thick.

Described from specimens collected by McClatchie among sticks and leaves on the ground near Pasadena, California, in January. The species suggests *Tubaria*.

6. *Pholiota washingtonensis* sp. nov.

Pileus convex to applanate or slightly depressed, thin, gregarious, caespitose at times, reaching 10 cm. broad; surface hygrophanous, smooth, glabrous, more or less rugose, pale-isabelline, dull-fulvous at the center, margin striate, rather irregular; lamellae adnate with a tooth, broad, not crowded, avellaneous, becoming dark-fulvous; spores irregularly ellipsoid, often plane on one side, pointed obliquely at the base, smooth, ferruginous under a microscope, with a single large nucleus, 11 × 6 μ ; stipe fleshy, streaked, equal or tapering upward, white at the apex, brownish and fibrillose below, 6-8 cm. long, 0.5-1.5 cm. thick; veil ample, white, membranous, leaving a large, superior, persistent annulus.

Collected on the ground in low woods near Seattle, Washington, October 20-November 1, 1911, *W. A. Murrill 333 (type), 563, S. M. Zeller*.

7. *Pholiota McMurphyi* sp. nov.

Pileus convex to subexpanded, rather thick and fleshy, scattering, 4-8 cm. broad; surface slimy-viscid, smooth, glabrous, fulvous at the center, greenish-yellow on the margin; context whitish, without characteristic taste or odor; lamellae adnate, slightly sinuate, broad, plane, close, becoming fulvous with a bay tint; spores ellipsoid, pointed at times, ferruginous under a microscope, rough with tubercles or short papillae, averaging $12 \times 7 \mu$; stipe cylindric, equal, yellowish-white, solid or slightly spongy within, the surface rough with projecting ridges as though furnished with several scanty rings, 4-6 cm. long, 1-2 cm. thick; veil white, fibrillose even when young, leaving an annulus consisting of a few inconspicuous fibrils.

Type collected among leaves under oak trees near Searsville Lake, California, December 28, 1902, *James McMurphy* 11.

8. *Pholiota albivelata* sp. nov.

Pileus thin, convex to plane, slightly umbonate, solitary, terrestrial, reaching 5.5 cm. broad; surface very slimy-viscid, isabelline tinted with rose, resembling the color of some species of *Gomphidius*, the umbo slightly darker; lamellae adnate or slightly sinuate, arcuate, not crowded, becoming fulvous, edges pallid; spores ellipsoid, smooth, melleous under a microscope, 1-2-guttulate, $9-11 \times 4-5 \mu$; stipe milk-white throughout, glabrous and slightly smaller above the annulus, shaggy at the center, fibrillose becoming subglabrous and rarely yellowish at the base, solid, about 8 cm. long, 7 mm. thick above, 10 mm. thick below; annulus above the middle of the stipe, very ample, milk-white, fixed, persistent, colored above by the spores and furrowed by the lamellae.

Type collected on the ground in woods near Seattle, Washington, October 20-November 1, 1911, *W. A. Murrill* 593. Also collected in the same region, *S. M. Zeller* 88; at Glen Brook, Oregon, November 7, 1911, *W. A. Murrill* 741; and at Newport, Oregon, November 13, 1911, *W. A. Murrill* 1048.

9. *PHOLIOTA VENTRICOSA* Earle, Bull. N. Y. Bot. Gard. 2: 341.

1902

Pileus very convex, obtuse, cespitose, wood-loving, reaching 8 cm. in diameter; surface moist, ferruginous or luteous to dark-ferruginous or lateritious, slightly fibrillose-striate, with frag-

ments of the cream-colored, rather well-developed veil clinging to the margin and forming a small annulus near the apex of the stipe; lamellae sinuate to adnate with decurrent tooth, melleous to ferruginous, of medium breadth and distance, edges very irregularly repand and toothed; spores ellipsoid or ovoid, ferruginous, rough with conspicuous granular or short-papillate protuberances, $8-9 \times 4-5 \mu$; stipe bulbous, hollow, streaked, fibrillose-striate, cream-colored above, ferruginous below, $6-9 \times 1-2$ cm.

Described from specimens collected at the base of pine trees at Stanford University, California, *Baker 122*. Found on logs of *Pseudotsuga* at Seattle. Closely related to *Gymnopilus*.

Seattle, Washington, *Murrill 575, 618, Zeller 84, 118, A. M. Parker 2*; Glen Brook, Oregon, *Murrill 748*; Searsville Lake, California, *McMurphy 104*; Stanford University, California, *McMurphy 131, Baker 122*.

9. HYPODENDRUM Paulet, Icon. 75. 1793

1. *Hypodendrum flammans* (Batsch)

Agaricus flammans Batsch, Elench. Fung. 87. f. 30. 1783.

Pileus convex, fleshy, cespitose, 2-2.5 cm. broad; surface luteous, decorated with a few floccose, flavous scales, which appear to fall away with age; veil large, flavous, floccose-fibrous; lamellae adnate; spores subhyaline, ellipsoid, $4 \times 2 \mu$, not mature; stipe rough with floccose, flavous scales, fistulose, firm, 3 cm. long, 7 mm. thick.

Growing from a knothole near the base of a living trunk of *Abies*. The specimens are, unfortunately, immature.

Glen Brook, Oregon, *Murrill 770*.

2. *Hypodendrum limonellum* (Peck)

Agaricus (Pholiota) limonellus Peck, Ann. Rep. N. Y. State Mus. 31: 33. 1879.

Corvallis, Oregon, *Murrill 951*. Growing from a crack in a standing dead trunk of *Crataegus* in woods.

3. *Hypodendrum oregonense* sp. nov.

Pileus convex, at first circular, becoming one-sided from its position, not umbonate, thick and fleshy, cespitose, reaching 5 cm.

or more broad; surface dry, smooth, glabrous, flavous-ochraceous, margin strongly incurved; context thick, cremeous; lamellae adnate, yellowish to yellowish-brown, becoming fulvous, strongly interveined, distant, edges irregular; spores ellipsoid, smooth, ferruginous, uniguttulate, $7-9 \times 4-5 \mu$; stipe dry, large, varying in shape from ventricose to enlarging upward, yellowish above, fulvous below, with small, scattered, unicolorous scales pointing upward; veil large, irregular, yellowish-white, leaving an irregular, superior annulus.

Type collected on a decayed spot in a living willow trunk in a meadow near Glen Brook, Oregon, November 7, 1911, *W. A. Murrill* 754.

10. *Locellina* Gill. Champ. Fr. 1: 428. 1878

***Locellina stercoraria* (Peck)**

Pluteus stercorarius Peck, Bull. Torrey Club 22: 488. 1895.

Locellina californica Earle, Bull. N. Y. Bot. Gard. 3: 299. 1904.

Stanford University, California, *Baker* 382, *Abrams* 2, *Nohara* 47, *M. T. Cook* 9, *Miss Patterson* 45; Madera Creek, California, *McMurphy* 42; New Westminster, British Columbia, *A. I. Hill* 9.

NEW COMBINATIONS

For the benefit of those using Saccardo's nomenclature, the following new species in the above article are recombined, as follows:

- GYMNOPIIUS DECORATUS = *Flammula decorata*.
 GYMNOPIIUS ECHINULISPORUS = *Flammula echinulispora*.
 GYMNOPIIUS HILLII = *Flammula Hillii*.
 GYMNOPIIUS LAETICOLOR = *Flammula laeticolor*.
 GYMNOPIIUS LATUS = *Flammula lata*.
 GYMNOPIIUS ORNATULUS = *Flammula ornatula*.
 GYMNOPIIUS PALLIDUS = *Flammula pallida*.
 GYMNOPIIUS PERMOLLIS = *Flammula permollis*.
 GYMNOPIIUS SPINULIFER = *Flammula spinulifer*.
 GYMNOPIIUS SUBCARBONARIUS = *Flammula subcarbonaria*.
 GYMNOPIIUS SUBFLAVIDUS = *Flammula subflavida*.
 GYMNOPIIUS VIALIS = *Flammula vialis*.
 GYMNOPIIUS VIRIDANS = *Flammula viridans*.
 GYMNOPIIUS VISCIDISSIMUS = *Flammula viscidissima*.
 HYPODENDRUM OREGONENSE = *Pholiota oregonensis*.
 VENENARIUS PANTHERINOIDES = *Amanita pantherinoides*.
 VENENARIUS PRAEGEMMATUS = *Amanita praegemmata*.
 VENENARIUS UMBRINIDISCUS = *Amanita umbrinidisca*.