

# STUDIES IN THE GENUS MYCENA. V<sup>1</sup>

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(WITH 4 FIGURES)

During the season of 1937, with the aid of a grant from the Horace H. Rackham School of Graduate Studies of the University of Michigan, the writer was enabled to continue his investigations of the *Mycena* flora of the west coast. The locations selected for study were Blue River, Ore. on the western slope of the Cascade Mountains just below McKenzie Pass, and Crescent City, Calif., a small town on the coast a short distance south of the Oregon line. From the middle of October until the first of November, the *Mycena* flora on the moss and needle carpets under the various species of conifers which inhabit the western slope of the Cascades was the most luxuriant I have yet encountered anywhere. *Mycena tenax* Smith occurred everywhere in patches of hundreds of individuals, and *Mycena quiniaultensis* Smith was more abundant than I have ever seen it before. *Mycena flavoalba* (Fries) Quél., a species I had not encountered previously, was very abundant under Douglas fir at elevations of between two thousand five hundred and three thousand five hundred feet. *Mycena rosella* (Fries) Quél. and *Mycena strobilinoidea* Peck, covered the needle carpet under pine. In addition to many of the known species, an exceptionally large number of species previously undescribed were also collected. Some of these were relatively rare and some were as abundant as *Mycena rosella* or *Mycena tenax*. The most interesting feature of the agaric flora at Blue River was the large proportion of species of *Mycena*. They made up about sixty per cent of the agaric flora. At Crescent City the ratio was closer to that usually found (five to twenty per cent). Here again, however, many very unusual species were found in greater abundance than those usually considered common. *Mycena haematopoda* (Fries) Quél. and *Mycena occidentalis* Murr., for instance, were rare.

<sup>1</sup> Papers from the Herbarium of the University of Michigan.

In this paper twelve species of *Mycena* are described as new. Ten of these were collected along the west coast, two being abundant in 1935 and rare in 1937. The remaining two are from eastern United States. One of these was obtained while the writer was engaged in a survey of the fungous flora of Oakland County, Mich., in cooperation with the Cranbrook Institute of Science, Bloomfield Hills, Mich. The other was collected in Michigan and New York during the season of 1934.

The collection numbers and photographs are the writer's. All color names are taken from *Color Standards and Color Nomenclature*, R. Ridgway, Washington, D. C., 1912. The collections are deposited in the Herbarium of the University of Michigan.

***Mycena corticalis*** sp. nov. (FIG. 1, B).—Pileus 6–12 (155) mm. latus, cylindricus vel convexus, demum late convexus, griseus, glabrus; cheilocystidia 20–25  $\times$  6–8  $\mu$ , clavata, echinulata; sporae 9–11  $\times$  7–9  $\mu$ .—Specimen typicum in Herb. Univ. of Mich. conservatum: Legit prope Blue River, Ore., Oct. 22, 1937, A. H. Smith No. 8046.

Pileus 6–12 (15) mm. broad, cylindric, conic or convex, remaining unexpanded, the disc often becoming slightly flattened, margin appressed against the stipe when young, glabrous, hygrophanous, when moist pale watery-gray on the disc, the margin whitish, translucent-striate, fading to cinereous and becoming sulcate; flesh thin, fragile, grayish, odor and taste mild; lamellae broad, arcuate or with a distinct decurrent tooth, rather distant, whitish to pale-gray; stipe 1–2.5 cm. long, 1 mm. thick more or less, equal, curved, tough and cartilaginous; glabrous, moist, concolorous with the pileus above or paler, faintly strigose where inserted on the bark; pileus trama with a very thin adnate pellicle, below it a region of inflated cells, the remainder of loosely arranged hyphae with very large cells; pleurocystidia not present; cheilocystidia imbedded and very inconspicuous, 20–25  $\times$  6–8  $\mu$ , with short contorted projections scattered over the apex; basidia four-spored; spores 9–11  $\times$  7–9  $\mu$ , broadly ovoid and pointed at one end, hyaline to pale bluish in iodine; gill trama wine red in iodine.

Scattered on cedar bark, Blue River, Ore., Oct. 22, 1937, No. 8046-type, Oct. 24, No. 8159; Kerby, Ore., No. 20, 1937, No. 8918. It has been found only on cedar logs and trees which lacked a covering of bryophytes. It is often found in company with *Mycena brevipes* Murr. and resembles that species in color and stature, but differs in its broad gills, wider spores and small imbedded

roughened cheilocystidia. *Mycena corticola* has globose spores (FIG. 1, C) and is a much smaller agaric.

***Mycena fragillima*** sp. nov. (FIG. 1, G; 2, B-C).—Pileus fragillimus, griseus, hydrophanus, demum cinereus; lamellae confertae vel subdistantes, adnatae, cinerae; stipes (3-7) 9-15 cm. longus, (1) 1.5-3 mm. crassus, fragillimus, pubescens; pleurocystidia et cheilocystidia  $34-48 \times 10-20 \mu$ , late fusioidea, levia; sporae 7-9 (10)  $\times$  4-5 (5.5)  $\mu$ .—Specimen typicum in Herb. Univ. of Mich. conservatum: Legit Orick, Calif., Dec. 3, 1935, A. H. Smith No. 3744.

Pileus (5) 15-35 mm. broad, obtusely conic, becoming broadly campanulate to nearly plane in age, at first with a faint bloom, soon moist and watery, dark watery-gray and translucent-striate to the disc, becoming pale watery-gray or "hair brown" while still moist, hygrophanous and fading to very pale cinereous; flesh very thin, watery and fragile, grayish to pallid, odor and taste none; lamellae close in large caps, subdistant to distant in small individuals, adnate, pallid grayish with whitish even edges; stipe variable but long and slender (3-7) 9-15 cm. long, (1) 1.5-2 (3) mm. thick, usually decumbent, fragile, very pale watery-gray and minutely pubescent over all at first, soon polished and translucent, base white-strigose and sometimes slightly bulbous; pileus trama entirely of enlarged cells but with a thin adnate pellicle over the surface; pleurocystidia rare to absent, similar to cheilocystidia; cheilocystidia  $34-48 \times 10-20 \mu$ , hyaline, smooth, broadly fusoid with an acute apex which becomes drawn out into a long narrow neck (15-25  $\mu$  long) in age, forming a broad sterile band along the gill-edge; basidia four-spored; spores 7-9 (10)  $\times$  4-5 (5.5)  $\mu$ , pointed at one end, smooth, hyaline, bluish in iodine.

Gregarious on and around clumps of ferns, Booth, Ore., Nov. 24, 1935, No. 3620, and Orick, Calif., Dec. 3, No. 3744-type and Dec. 5, 1935, No. 3802. Judging from descriptions, the cystidia and spores separate this species from *Mycena vitrea* (Fries) Quél. and also from *Mycena vitreata* Britz. The fine pubescent covering of the stipe may also be a significant character, although it is one which might readily disappear if the specimens developed in an exposed area. The extremely delicate texture of both large and small fruiting bodies is the outstanding macroscopic character.

***Mycena madroñicola*** sp. nov. (FIG. 1, A).—Pileus 5-12 mm. latus, convexus vel subdepressus, brunneus demum avellaneus; lamellae distantes vel subdistantes, angustae vel latae, adnatae vel subdecurrentes; stipes 1-2 (3.5) cm. longus, 1 mm. crassus, pruinosis; cheilocystidia clavata, echinulata;

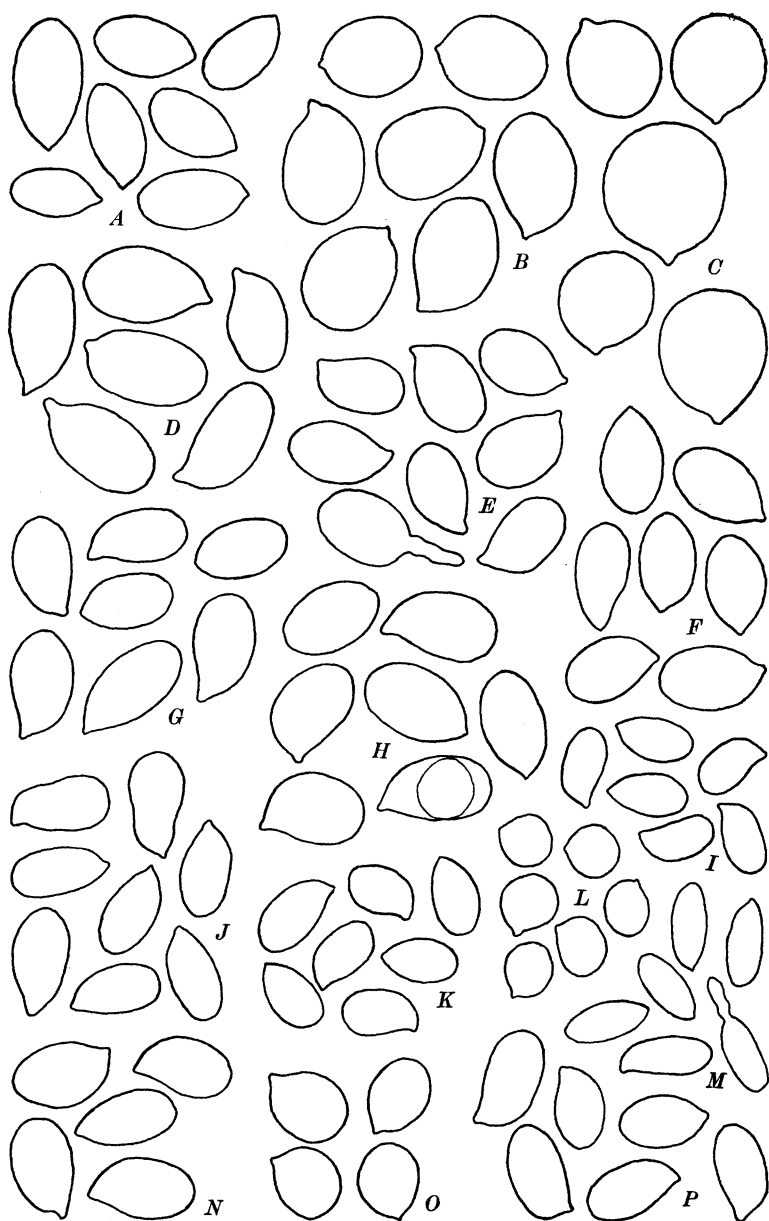


FIG. 1. A, seven spores of *Mycena madronicola*; B, seven spores of *Mycena corticola*; C, five spores of *Mycena corticola*; D, six spores of *Mycena sanguinolenta*; E, eight spores of *Mycena sanguinolenta*; F, five spores of *Mycena monticola*; G, seven spores of *Mycena fragillima*; H, seven spores of *Mycena subvitrea*; I, six spores of *Mycena pseudotenax*; J, eight spores of *Mycena pusilla*; K, seven spores of *Mycena piceicola*; L, six spores of *Mycena ulmicola*; M, six spores of *Mycena pelianthina*; N, five spores of *Mycena subplicosa*; O, four spores of *Mycena subcucullata*; P, six spores of *Mycena rutilantiformis*.

spores  $9-11 \times 5-6 \mu$  vel  $7.5-9.5 \times 4-5 \mu$ .—Specimen typicum in Herb. Univ. Mich. conservatum: Legit Kerby, Ore., Nov. 26, 1937, A. H. Smith, No. 9093.

Pileus 5–12 mm. broad, convex or with a somewhat flattened to subdepressed disc, not expanding, hoary when young, soon naked and in age more or less polished, moist, color “hair brown” to “cinnamon-brown” at first, fading to “avellaneous” or paler and with a whitish margin, at times “vinaceous-buff” or more grayish in age, when moist translucent-striate to the disc, becoming sulcate in age, margin at first appressed against the stipe; flesh concolorous, thin and pliant, odor when specimens were collected farinaceous but soon vanishing, no odor detected when specimens were unwrapped in the laboratory, taste mild; lamellae subdistant to distant, 14–18 (20) reach the stipe, narrow to moderately broad, broadly adnate but becoming toothed or more or less decurrent in age, color “tilleul buff” to pallid at all stages, edges even; stipe short 1–2 (3.6) cm. long, 1 mm. more or less thick, equal, base at first with a suboval bulb, tubular, concolorous with the pileus or paler, delicately frosted over all at first, base pruinose and inserted on bark as in *M. corticola*, apex pallid; pileus trama of three regions, a thin surface pellicle, a region of enlarged cells beneath it, and the remainder of floccose filamentose tissue; basidia four-spored; spores  $9-11 \times 5-6 \mu$  (in deposits), in revived material usually measuring  $7.5-9.5 \times 4-5 \mu$ , narrowly ellipsoid and pointed at one end, hyaline, smooth, bluish in iodine; pleurocystidia none; cheilocystidia variable, forming a more or less conspicuous band or imbedded in the gill-edge and inconspicuous,  $20-36 \times 5-9 \mu$ , clavate to capitate with short rod-like projections over the apex or the apex prolonged into a much branched contorted neck, sometimes smooth except for the branched apical portion.

Densely gregarious by the hundreds on bark of madroña trees in open places, after prolonged wet weather, Kerby, Ore., Nov. 26, No. 9093-type, Cave junction, Ore., Nov. 29, No. 9224, and Dec. 1, 1937, No. 9286. Because of the large number of immature spores in mounts of revived material one is likely to conclude that the spores are smaller than they actually are, and for this reason measurements from both spore deposits and dried specimens are included. The species is closely related to *Mycena corticola*. The truly ellipsoid spores, however, form a specific distinction which would enable one to recognize it even if both were found growing together. Although weather conditions were favorable for the development of *M. corticola*, it was not encountered during the season of 1937.

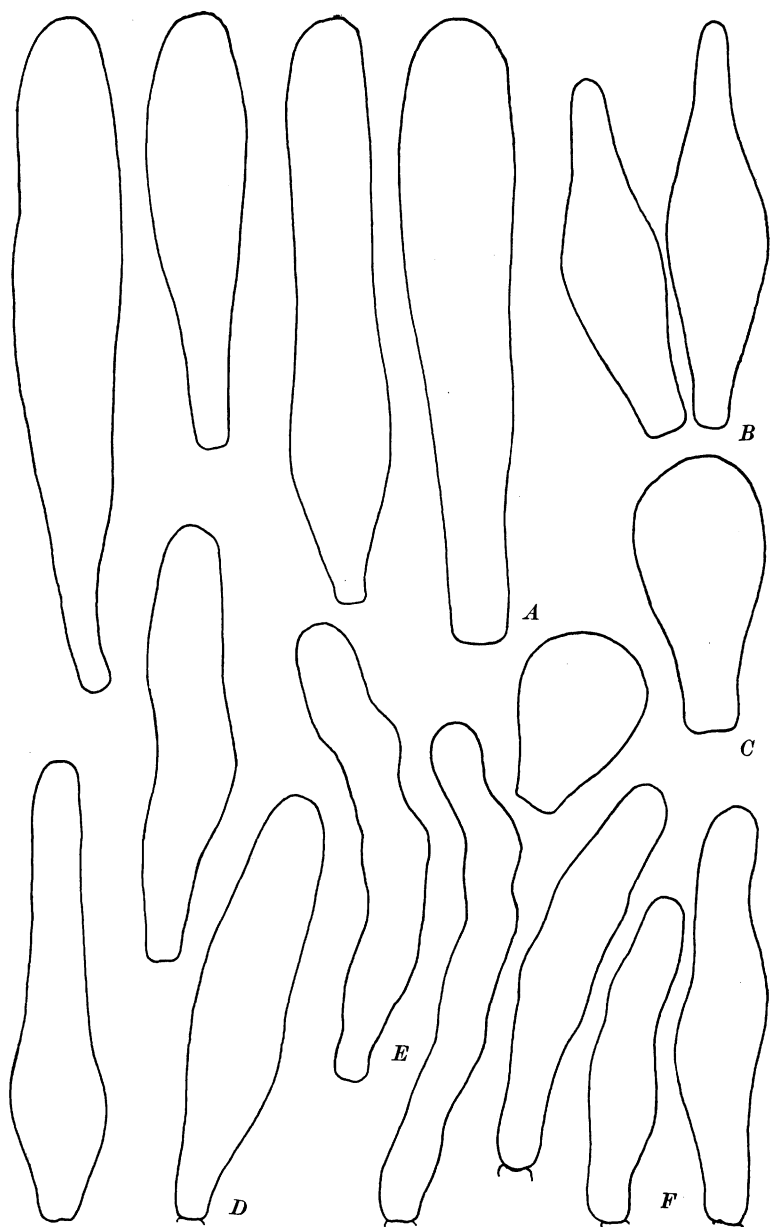


FIG. 2. A, four cystidia of *Mycena pseudotenax*; B, two mature cheilocystidia of *Mycena fragillima*; C, two immature cheilocystidia of *Mycena fragillima*; D, three cheilocystidia of *Mycena ulmicola*; E, two caulocystidia of *Mycena ulmicola*; F, three cheilocystidia of *Mycena subcucullata*.

***Mycena monticola*** sp. nov. (FIG. 1, *F*).—Pileus 1–3 cm. latus, conicus demum campanulatus, laete incarnatus; lamellae adnatae, confertae, latae, pallide incarnatae; stipes 4–7 cm. longus, 1–1.5 (2) mm. crassus, laete incarnatus; sporae  $7-10 \times 4-5 \mu$ ; cheilocystidia  $28-35 \times 9-12 \mu$ , echinulata.—Specimen typicum in Herb. Univ. Mich. conservatum: Legit prope McKenzie Pass, Ore., Oct. 18, 1937, A. H. Smith No. 7925.

Pileus 1–3 cm. broad, conic, obtusely campanulate becoming either plane or umbonate, the margin appressed against the stipe when very young or more often conivent to it, frequently with a wavy uplifted margin in age, glabrous, moist and hygrophanous, “pompeian red” on the disc and “light jasper red” to “coral pink” toward the margin, in some the disc is not darker, fading to “flesh color,” when moist translucent-striate, the margin slightly sulcate when faded; flesh thin, incarnate, brittle, no odor or taste; lamellae ascending adnate, close, 23–28 reach the stipe, moderately broad to broad, edges even and whitish or tinged “flesh pink” to “coral pink” when the faces are similarly tinted; stipe 4–7 cm. long, 1–1.5 (2) mm. thick, equal above a narrowed crooked base, hollow, juice watery and scanty, very sparsely fibrillose at the base, apex faintly frosted, soon naked and polished, “coral pink” over all when fresh, soon becoming sordid brown from the base upward and finally “blister” over the lower portion; pileus trama homogeneous beneath a somewhat differentiated adnate pellicle; pleurocystidia none; cheilocystidia  $28-35 \times 9-12 \mu$ , clavate, with short echinulations over the enlarged portion; basidia four-spored; spores  $7-10 \times 4-5 \mu$ , ellipsoid or pointed at one end, hyaline to pale-yellowish in iodine.

Gregarious under pine, McKenzie Pass, Ore., 3500 to 4500 ft. elevation, Oct. 18, No. 7925-type, Oct. 21, No. 8014 and Oct. 23, 1937, No. 8104. In its cystidia and color it resembles *Mycena rosella* somewhat, but differs from that species in its broader gills, lack of pleurocystidia, and lack of a colored gill-edge. The bright colors of *M. monticola* remind one of *M. clava* but the echinulate cheilocystidia separate it at once. *M. monticola* was found growing abundantly under yellow pine on the eastern slope of the Cascade Mts. and also on the western slope under pine. In both habitats it was second only to *M. rosella* in abundance.

***Mycena piceicola*** sp. nov. (FIGS. 1, *K*; 3).—Pileus 2–3.5 cm. latus, obtusus demum late campanulatus, fuscus demum griseus; lamellae angustae, confertae vel subdistantes, adnatae, pallidae; stipes (2) 4–6 (8) cm. longus, 1.5–2 mm. crassus, strictus, griseus; cheilocystidia  $25-34 \times 6-10 \mu$ , echinulata; sporae  $6-8$  (9)  $\times$   $3.5-4$  (5)  $\mu$ .—Specimen typicum in Herb. Univ.

Mich. conservatum: Legit prope Siltcoos Lake, Ore., Nov. 13, 1935, A. H. Smith No. 3449.

Pileus 2–3.5 cm. broad, ovoid to obtusely conic at first, becoming broadly convex or broadly ovoid in age with or without a wavy margin, pruinose when young, soon naked, surface even and lubricous when moist, color dark livid-gray to “fuscous” or “hair brown,” the margin usually paler, fading to “drab” on the disc or sordid ashy-gray with a pallid margin, subhygrophanous and fading slowly, translucent-striate when moist; flesh watery-gray, thin, fragile, taste mild, odor subfarinaceous but faint and hardly distinctive; lamellae narrow, close to subdistant, adnate, whitish, then



FIG. 3. *Mycena piciccola*  $\times 1$ .

pallid or grayish with pallid edges, intervenose; stipe (2) 4–6 (8) cm. long, 1.5–2 mm. thick, equal, strict, fragile, tubular, dark bluish-gray at very first and soon fading to “drab” or sordid below, with a pallid apex, covered with a hoary bloom but soon naked and polished and more or less translucent, the base white strigose and somewhat inflated; pileus trama with a thin surface pellicle, a region of enlarged cells beneath it appearing pseudo-parenchymatous in tangential section, the remainder of loosely interwoven hyphae; pleurocystidia not differentiated; cheilocystidia  $25\text{--}30 \times 7\text{--}11 \mu$ , cylindric to clavate with obtuse short projections over the apices; basidia four-spored; spores  $6\text{--}8 \times 3.5\text{--}4$



or  $7-9 \times 4-5 \mu$ , smooth, hyaline, ellipsoid, hyaline to bluish-gray in iodine.

Gregarious or in troops of hundreds of individuals under spruce, Siltcoos Lake, Ore., Nov. 13, 1935, No. 3449-type; scattered under spruce, La Push, Wash., Oct. 25, No. 3324, and at Lake Tahkenitch, Ore., Nov. 19, 1935, No. 3548. Although fragile, the stipe does not split as in *M. dissiliens*. In many respects *M. piceicola* resembles *M. leptcephala* but the cystidia easily separate the two. It may perhaps be confused with large specimens of *M. plicosa*, but the lack of reddish-brown stains, narrower gills and thinner polished smooth stipe which does not break readily when one pulls the fruiting body from its attachment, all serve to distinguish it. There are differences in color also. I have never seen *M. piceicola* with a scalloped, crenate or sulcate-plicate margin of the cap although abundant fresh material of both has been seen. For further comments see *M. pusilla*.

***Mycena pseudotenax*** sp. nov. (FIGS. 1, I; 2, A; 4).—Tenax: pileus 1-3 cm. latus conicus demum plano-umbonatus, lubricus, fuscus vel griseus; lamellae confertae, angustae, subsinuatae, cinereae; stipes 3-5 (6) cm. longus, 1.5-2 (3) mm. crassus, strictus, glabrus, lubricus, griseus, luteo-strigosus; plerucystidia et cheilocystidia  $50-60$  ( $90$ )  $\times$   $10-12$  ( $15$ )  $\mu$ , subcylindrica; sporae  $5.5-7$  ( $8$ )  $\times$   $3.5-4 \mu$ .—Specimen typicum in Herb. Univ. Mich. conservatum: Legit prope Belknap Springs, Ore., Oct. 23, 1937, A. H. Smith No. 8134.

Pileus 1-3 cm. broad, obtusely conic or with a rounded apex when young, becoming expanded umbonate to nearly plane, the umbo usually broad and somewhat flattened, the margin often flaring in unexpanded individuals, glabrous, surface lubricous when wet, translucent striate to disc and the margin often creased or crenate in age, "fuscous" to pale watery-gray in young stages, at maturity pale watery gray over all or the margin whitish, fading to ashy-gray and appearing as if pruinose; flesh gray, thin but distinctly cartilaginous and thus causing the pileus to be very rigid, odor and taste mild; lamellae moderately close, 18-23 reach the stipe, adnate, becoming slightly sinuate, narrow to moderately broad and slightly ventricose at times, white becoming grayish in age, not becoming spotted, edges even and concolorous with the faces; stipe 3-5 (6) cm. long, 1.5-2 (3) mm. thick, equal, strict, cartilaginous-tough, glabrous, apex frosted from projecting cystidia, concolorous with pileus or paler, apex often whitish, base of stipe and surrounding fibrils whitish but soon becoming sordid.

yellow; pileus trama with a very thin non gelatinous pellicle over the surface, the region beneath of enlarged hyphae and quite compact, the remainder floccose-filamentose with narrower cells; pleurocystidia abundant,  $50-60 (90) \times 10-12 (15) \mu$ , subcylindric with more or less rounded apices, arising in the subhymenium; cheilocystidia similar; basidia four-spored; spores  $5.5-7 (8) \times 3.5-4 \mu$ , subellipsoid, pointed at one end, hyaline, smooth, bluish in iodine.



FIG. 4. *Mycena pseudotenax*  $\times 1$ .

Gregarious on needle beds under fir and cedar, Blue River, Ore., Oct. 16, No. 7835; South Fork of the McKenzie River, Oct. 20, No. 7967; McKenzie Pass, under pine, Oct. 21, No. 8025 and 8038; Blue River, under cedar and fir, Oct. 22, No. 8049; Deschutes National Forest, Ore., Oct. 23, No. 8105; Belknap Springs, Oct. 23, 1937, No. 8134-type. In California it was found under brush at the edge of a pasture, Smith River, Nov. 17, No. 8823, on Nov. 26 under fir near Patrick's Creek, No. 9071, and on Nov. 28, 1937, under redwood, Prairie Creek State Park, Orick, Calif., No. 9152. This was a common species at Blue River and easily recognized macroscopically by the cartilaginous-tough consistency, mild taste, yellow hairs at the base of the stipe and the slippery

feel. It might be mistaken for *M. tenax*, but the taste of the latter and its gelatinous stipe readily separate it without a microscopic examination. The yellow hairs at the base of the stipe at maturity, and the non-gelatinous stipe also separate it from *M. quiniaultensis*. *Mycena plumbeibrunnea* Murr. has smaller, acutely pointed cystidia on the sides and edges of the gills which measure  $35-54 \times 9-12 \mu$ . These are longer at times due to the proliferated apex. They are broadly fusoid when young in contrast to the cylindric rounded cystidia of *M. pseudotenax*. In addition, the spores of *M. plumbeibrunnea* measure  $8-10 \times 5-5.5 \mu$ . The latter should be carefully compared with *M. aetites* and *M. stannea* if fresh material can be found.

***Mycena pusilla*** sp. nov. (FIG. 1, J).—Pileus 5–10 mm. latus, convexus, demum subplanus, lubricus, cartilagineus, pallide griseus, striatus; lamellae confertae, latae, adnatae, albiae; stipes 2.5–4 cm. longus, 1 mm. crassus, lubricus, griseus; cheilocystidia  $26-30 \times 7-12 \mu$ , echinulata; sporae  $7-10 \times 5-6 \mu$ .—Specimen typicum in Herb. Univ. Mich. conservatum: Legit prope Crescent City, Calif., Nov. 11, 1937, A. H. Smith No. 8620.

Pileus 5–10 mm. broad, convex to obtuse or with a slightly flattened disc, in age more or less expanded plane or umbonate, disc pale watery-gray, the margin whitish, fading to pallid cinereous over all, surface hoary at first, glabrous and polished in age, lubricous when wet, striate to the disc when moist; flesh thin and membranous, grayish to pallid, odor and taste not distinctive; lamellae close, moderately broad, adnate, equal, white, edge even and concolorous; stipe 2.5–4 cm. long, 1 mm. thick, equal, tubular, whitish above, darker grayish-brown toward the base, with a bloom when real young, soon polished and lubricous but not viscid, tough; pileus trama with a thick subgelatinous pellicle, tissue beneath of somewhat enlarged cells; pleurocystidia not differentiated, cheilocystidia  $26-30 \times 7-12 \mu$ , clavate, hyaline, with short obtuse rod-like projections over the apex; basidia four-spored; spores  $7-10 \times 5-6 \mu$ , broadly ovoid, hyaline, smooth, bluish in iodine.

In troops of hundreds of individuals on moss, South Fork of the McKenzie River, Ore., Oct. 20, 1937, No. 9797, and under second growth fir, Siskiyou National Forest, Calif., Nov. 11, 1937, No. 8620-type; Crescent City, Calif., Nov. 17, 1937, No. 8834. This species puzzled me at first. It is most likely to be mistaken for the small form of *M. atroalboides*. When the two are compared, however, one becomes aware of certain differences, in fact,

the two impress one as being very different. *M. pusilla* is a lubricous tough little fungus whereas *M. atroalboides* is dry and fragile. When mounted in KOH the pellicle of the former gelatinizes appreciably and becomes 25–40  $\mu$  thick, that of the latter similarly treated measures 5–8  $\mu$ . *M. pusilla* resembles *M. constans* Peck in this character as well as in stature and color, but lacks a sharp odor. *Mycena subplicosa*, *M. piceicola* and *M. pusilla* can be distinguished from each other as follows: *M. subplicosa* has echinulate cystidia distributed over the faces of the gills as in *M. metata*. In the other two the cystidia are confined to the gill-edge. The pilei of *M. piceicola* measure 2–3.5 cm. and the whole plant is fragile. *M. pusilla* is smaller and very tough for a *Mycena*. The thick pellicle in KOH also distinguishes the latter from the former. *M. sepia* Lange may be the same as our short-stemmed form of *M. atroalboides*.

***Mycena subaquosa*** sp. nov.—Pileus 2–3.5 cm. latus, convexus, demum subplanus, glabrus, hygrophanus, aquosus, lacteus, demum subcandidus; caro albo, odore et sapore valde raphanoideo; lamellae confertae, latae, albidae; stipes 4–9 cm. longus, 2–3 mm. crassus, albidus, equalis, glabrus; pleurocystidia et cheilocystidia 40–60  $\times$  10–16  $\mu$ , fusoido-ventricosa; sporae 5–6.5 (7)  $\times$  2.5–3  $\mu$ .—Specimen typicum in Herb. Univ. Mich. conservatum: Legit prope Blue River, Ore., Oct. 15, 1937, A. H. Smith No. 7813.

Pileus 2–3.5 cm. broad, obtuse to convex, becoming broadly convex to nearly plane or the margin somewhat recurved in age, glabrous and moist, hygrophanous, watery and dull white except for the milky-white disc, at maturity the disc tinged with watery-gray, fading and becoming shining whitish, striate to disc when moist, margin appressed against the stipe at very first but soon conivent to it; flesh watery-white, very soft and fragile, odor and taste very pronounced, resembling that of radish or more pungent; lamellae close, 26–32 reach the stipe, in three to four tiers, broad and ventricose (3–4 mm.) adnexed, concolorous with the pileus, edges even and whitish; stipe 4–9 cm. long, 2–3 mm. thick, white and translucent, hollow, equal, very fragile, glabrous except for sparse white hairs at the base, apex naked or faintly frosted; pileus trama with a scarcely differentiated pellicle, below it a region of compact radially arranged hyphae, the remainder floccose-filamentose, pleurocystidia 40–60  $\times$  10–6  $\mu$ , fusoid-ventricose with rounded apices, hyaline; cheilocystidia usually shorter, 30–45  $\times$  9–18  $\mu$ , broadly fusoid, with or without an elongated neck, smooth; basidia four-spored; spores 5–6.5 (7)  $\times$  2.5–3  $\mu$ , narrowly ellipsoid, bluish in iodine, smooth.

Gregarious under cedar on moss, Blue River, Ore., Oct. 15, 1937, No. 7813-type. This species is similar to *Mycena pura* in its spores, cystidia and radish-like odor. Although *M. pura* was found everywhere in the conifer forests around McKenzie Pass during the 1937 season, it was consistently different from the specimens described above. In the whitish form of *M. pura*, according to my experience, the odor is not exceptionally strong, the colors are usually faintly pinkish or lilac on the disc and apex of the stipe, and the stature and consistency are the same as for the other forms of the species. In *Mycena subaquosa* the stature is more like that of *M. polygramma* than *M. pura*. This difference can not be considered a variation due to habitat because typical specimens of *M. pura* were collected in the same moss beds. The glabrous translucent stipe of *M. subaquosa* is quite different from the stipe of *M. pura*.

***Mycena subcucullata*** sp. nov. (FIG. 1, O).—Pileus 1–6 mm. latus, conicus demum subcampanulatus, fuscus demum pallide griseus vel sordide ochraceus; lamellae subdistantes, latae, albae; stipes 10–20 mm. longus, 0.5 mm. crassus, albidus vel griseus; pleurocystidia et cheilocystidia  $26\text{--}34 \times 8\text{--}12 \mu$ ; sporae  $6\text{--}7$  (8)  $\times 5\text{--}6 \mu$ ; basidia bispora.—Specimen typicum in Herb. Univ. Mich. conservatum: Legit prope Warrensburg, N. Y., Sept. 12, 1934, A. H. Smith No. 779.

Pileus 1–6 mm. broad, conic, campanulate or expanded plane with a conic umbo, umbo lacking in some, often more or less cucullate, colors fuscous on the disc or dark-gray, margin paler and finally whitish, disc also fading and often sordid ochraceous in age, sometimes white except for a sordid yellowish umbo, prominently striate when moist, often splitting readily in age; flesh thin, grayish, becoming white, rather cartilaginous, odor and taste not distinctive; lamellae subdistant to distant, broad, adnexed, white, thickish, edge even and concolorous; stipe 10–20 mm. long, 0.5 mm. thick, filiform but rigid, white to pale-gray, sordid below, rooting in moss on the bark of logs; pileus trama homogeneous below a thin pellicle, or the cells under the pellicle slightly enlarged; pleurocystidia scattered to rare, smooth, hyaline, saccate when young, subcylindric in age,  $26\text{--}34 \times 8\text{--}12 \mu$ , cheilocystidia similar or more saccate,  $25\text{--}30 \times 9\text{--}14 \mu$ , smooth, hyaline; basidia two-spored; spores  $6\text{--}7$  (8)  $\times 5\text{--}6 \mu$ , hyaline, smooth, hyaline to pale-bluish in iodine.

Gregarious on mossy logs, Warrensburg, N. Y., Sept. 12, 1934, No. 779-type and No. 784, also Sept. 14, No. 913; Marquette,

Mich., Sept. 10, 1934, E. B. Mains, No. 34-150. This is a small gray *Mycena* related in some respects to *M. epiphloea* (Fries) Sacc. but readily distinguished by its small spores and by the much smaller more saccate cystidia on the faces of the gills. It is almost identical in stature and appearance with gray forms of *M. mirata* Peck from which the cheilocystidia separate it at once.

***Mycena subsanguinolenta*** sp. nov. (FIG. 1, E).—Pileus 10–25 mm. latus, conicus, sordide rubrus, demum incarnato-flavidus; lamellae rubro-marginatae; pleurocystidia nulla; cheilocystidia  $28-35 \times 6-9 \mu$ ; sporae  $7-8.5 \times 3.5-4 \mu$ .—Specimen typicum in Herb. Univ. Mich. conservatum: Legit prope Blue River, Ore., Oct. 15, 1937, A. H. Smith No. 7809.

Pileus 10–25 mm. broad, conic, becoming obtusely conic-campanulate, in age sometimes nearly plane but always with an abrupt obtuse umbo, hoary at first, soon glabrous and naked, moist, striate, in age sulcate to the disc, “burnt umber” near and on the disc, paler and near “vinaceous-buff” on the margin, in age a strong yellowish cast is evident throughout; flesh thin, yellowish or reddish under the disc, pliant, when cut exuding a watery orange-yellow latex, latex in the stipe blackish-red at first, later dull-orange, odor and taste mild; lamellae distant to subdistant, hooked, moderately broad, faces pale incarnate, edges dark reddish-brown; stipe 3–8 cm. long, 1–2 mm. thick, equal, fragile, hollow, base sparsely strigose with whitish hairs, apex hoary-pruinose, soon glabrous and naked, color pallid incarnate or concolorous with pileus margin, in age tinged yellowish; pileus trama with a thin surface pellicle, beneath it a region of more or less enlarged cells, the remainder floccose; pleurocystidia not differentiated; cheilocystidia numerous,  $28-33 \times 6-9 \mu$ , with a sordid reddish brown content, somewhat fusoid with subacute apices; basidia four spored; spores  $7-8.5 \times 3.5-4 \mu$ , smooth, hyaline, subovoid, bluish in iodine.

Densely gregarious under fir, Blue River, Ore., Oct. 14, No. 7775, Oct. 15, No. 7809-type; Lost Creek, Ore., Oct. 21, No. 8020; and Crescent City, Calif., Nov. 2, 1937, No. 8329. This species is separated from *M. sanguinolenta* by the smaller spores, lack of cystidia on the sides of the gills, and the more pronounced yellowish colors of the latex and also of both the pileus and stipe. Both species were observed in great abundance in California and were readily recognizable. Figure 1, D, illustrates the spores of *M. sanguinolenta*.

***Mycena subvitrea*** sp. nov. (FIG. 1, *H*).—Pileus 1–3 cm. latus, conicus, glabrus, valde pellucido-striatus, atrofuscus vel cinereus; lamellae angustae, distantes, adnatae, cinerae, demum rufomaculatae; stipes 5–8 cm. longus, 1–2 (3) mm. crassus, pallidus, deorsum rufobrunneus; cheilocystidia  $30\text{--}38 \times 9\text{--}12 \mu$ , subventricosa; sporae  $8\text{--}10$  (11)  $\times$  (4)  $5\text{--}6.5 \mu$ .—Specimen typicum in Herb. Univ. Mich. conservatum: Legit prope Lost Creek, Ore., Oct. 21, 1937, A. H. Smith No. 8028.

Pileus 10–30 mm. broad, obtusely conic, remaining so or becoming campanulate, the disc becomes somewhat flattened at times, black to “fuscous” on the disc, watery-gray toward the margin, conspicuously translucent striate to the disc, fading to ashy or blackish-gray and sulcate, hygrophanous, glabrous, surface even and moist when fresh; flesh very thin and fragile, dark watery-gray, odor and taste not distinctive; lamellae rather distant, narrow, bluntly adnate, dark-gray and staining reddish-brown in age or where bruised, edge even, pallid; stipe 5–8 cm. long, 1–2 mm. thick, equal, very fragile and watery, hollow, pale grayish white, glabrous, apex frosted, readily staining reddish-brown when bruised or in age; pileus trama with a thin nongelatinous pellicle over a region of globular cells which have brownish contents, the tissue below this of filamentous hyaline hyphae; pleurocystidia not differentiated, cheilocystidia inconspicuous, subfusoid, smooth, hyaline,  $30\text{--}38 \times 9\text{--}12 \mu$ ; spores  $8\text{--}10$  (11)  $\times$  (4.5)  $5\text{--}6.5 \mu$ , ovoid, smooth, hyaline, bluish in iodine.

Gregarious under fir, Blue River, Ore., Oct. 15, No. 7811; Lost Creek, Ore., Oct. 21, No. 8020-type, Oct. 22, No. 8050; Belknap Springs, Oct. 24, 1937, No. 8160. The dark-gray, fragile, conspicuously striate pileus, pale fragile stipe, and tendency to stain reddish-brown when bruised or in age characterize it among the gray fragile *Mycenas*. It was found in company with *M. tenax* but was much less abundant. It is closest to *M. stannea* from which it is readily separated by the conspicuous broad blackish striations which extend to the disc, by the tendency of all parts to stain reddish brown, and by its more watery fragile consistency. It is also very close to *M. Murina* Murr. a species with pleurocystidia and one in which the lamellae and stipe do not change to reddish when bruised.

***Mycena ulmicola*** sp. nov. (FIG. 1, *L*; 2, *D*, *E*).—Pileus 10–25 mm. latus, conicus demum umbonatus, fuscus, hygrophanus demum pallide cinereus, laceratus; lamellae confertae, angustae, candidae, adnatae vel adnato-decurrentes; stipes 2–3 cm. longus, 1.5–2 mm. crassus, equalis, valde pruinosis; cheilocystidia subcylindrica vel ventricosa,  $40\text{--}50$  (60)  $\times 9\text{--}12 \mu$ ; sporae

3.5–4  $\mu$ , globosae.—Specimen typicum in Herb. Univ. Mich. conservatum: Legit prope New Hudson, Mich., June 8, 1938, A. H. Smith No. 9537.

Pileus 10–25 mm. broad, obtusely conic, becoming umbonate with a flaring or recurved margin or sometimes nearly plane, with a narrow sterile margin which is curved in slightly at first but which soon becomes straight and more or less lacerated or split, “fuscous” on the disc at first and “buffy brown” toward the margin, becoming paler and often watery-gray before fading, hygrophanous, fading to “olive buff” more or less or almost white, in age often splitting radially, surface even to slightly rugose, translucent, striatulate when moist; flesh thin, pliant, watery-gray, odor and taste mild; lamellae crowded, 18–25 reach the stipe, three to four tiers of shorter lamellae are present, narrow, white, adnate to subdecurrent at times, readily seceding, edges even, pallid and sometimes crisped or wavy; stipe 2–3 cm. long, 1–1.5 mm. thick, equal, solid, brittle and easily broken, white-strigose around the base, densely pruinose to subpubescent over all, whitish above, pallid to grayish or sordid yellowish near the base in age; pileus trama without a differentiated pellicle, the surface region composed of a compact mass of radially arranged hyphae which are one or two times the diameter of the hyphae making up the remainder of the tramal body, in tangential section the surface region appears cellular due to the cut hyphal ends; pleurocystidia present only near the gill-edge and similar to the cheilocystidia; cheilocystidia 40–50 (60)  $\times$  9–12  $\mu$ , hyaline, subcylindric to subventricose with obtuse apices; caulocystidia very numerous; 40–50  $\times$  8–10  $\mu$ , filamentous with obtuse apices, hyaline; basidia four-spored; spores 3.5–4  $\mu$ , globose to subglobose, smooth, hyaline, hyaline to faintly yellowish in iodine.

Gregarious on elm logs which have not lost their bark, usually on logs which are still quite sound, Pontiac, Mich., June 11, H. V. Smith (A. H. Smith, No. 6283); June 15, 1937, No. 6303, and near New Hudson, Mich., June 8, 1938, No. 9537-type. The compact surface layer of the pileus made up of radially arranged hyphae doubtless explains why the cap splits so readily and presents such a torn appearance in age. The species is close to *M. atribrunnea* Murr. but differs in habitat and in the lack of pleurocystidia. *M. Kauffmani* is readily distinguished by its pseudorhiza and colored gill-edges.

MYCENA RUTILANTIFORMIS Murrill (FIG. 1, P) (*Mycena denticulata* Peck, not *Mycena denticulata* Quél., 1888; *Mycena pseudo-*



*pelianthina* Lange, Mycologia 26: 9, 1934). Pileus (1.2) 2–7 cm. broad, convex, becoming broadly convex or in age at times with an elevated wavy margin, glabrous, moist to lubricous, hygrophanous, “natal brown” to “deep brownish drab” fading to near “avellaneous” or “vinaceous-buff,” often paler and with a sordid yellowish cast, sordid purplish tints often persistent, margin striatulate when moist and frequently splitting in age; flesh moderately thick, yellowish to whitish, usually whitish in age, cuticle vinaceous in section, odor resembling that of radishes, taste similar or bitter and scarcely radish-like; lamellae close to subdistant, broad, adnate becoming sinuate or adnexed, seceding, intervenose, edges eroded to crenulate and sordid reddish-purple, faces “vinaceous fawn” or paler; stipe 3–8 cm. long, (3) 5–10 mm. thick, hollow, equal or base enlarged, somewhat longitudinally sulcate-striate, with scattered appressed purplish fibrils above, sometimes lacerate scaly from the broken cuticle, pallid grayish over all or the apex bright to sordid yellow beneath the purple fibrils, flesh grayish below, yellowish in the apex; pileus trama with a thin subgelatinous pellicle the cells of which may possess a reddish content, an indefinite region of enlarged cells beneath it, the remainder of floccose filamentous tissue (the pellicle may become washed or worn away in old pilei); pleurocystidia abundant,  $60\text{--}80 \times 9\text{--}15 \mu$ , smooth, with a reddish content; cheilocystidia similar or shorter; basidia four-spored; spores  $8\text{--}10 \times (3.5)$   $4\text{--}5 \mu$ , subovoid, smooth, hyaline, pale-bluish in iodine.

Gregarious on humus and debris under oak and hickory, Ann Arbor, Sept. 24, 1938, No. 11086. A form was collected near Joyce, Wash., in 1935, No. 2565, in which the characteristic odor and taste were lacking. Its spores measured  $7\text{--}9 \times 4\text{--}4.5 \mu$ . The spores of the type at the New York State Museum, Albany, N. Y., measure  $8\text{--}9 \times 4\text{--}4.5 \mu$ , and cystidia are abundant on the sides and edges of the gills. They measure  $48\text{--}60 \times 8\text{--}12 \mu$  and are filled with a dark brownish sap. In all of their macroscopic characters the type specimens are very similar to dried fruiting bodies of *M. pelianthina*. The specimens Kauffman (2) determined as *M. denticulata* Peck are more properly referred to *M. Kauffmanii* Smith. It is clear to me now, after observing *M. pelianthina* and *M. rutilantiformis* at various intervals over a ten year period that both are typically large fungi. Glatfelter's type collection happened to consist of exceptionally small individuals. Many of the specimens in my No. 11086 were well within the species as it was originally

described except that the pellicle was separable only in shreds. *M. rutilantiformis* differs from *M. pelianthina* in its broader spores, in the apex of the stipe which is usually yellowish at least within, and by the sulcate striations which are often present on the stipe. Lange gave a new name to the American species with yellow in the stipe and larger spores but otherwise like *M. pelianthina*, calling it *M. pseudopelianthina*. My studies indicate clearly that the latter name should be reduced to synonymy with *M. rutilantiformis*. Typical *M. pelianthina* also occurs in North America. During the past season it was collected in the same place on the same day—(No. 11087)—as *M. rutilantiformis*. Because it is one of the easiest *Mycenas* to recognize and since the literature is full of reliable descriptions, it does not seem necessary to redescribe it here.

*MYCENA SUBPLICOSA* Karsten.—Pileus 10–20 mm. broad, obtusely conic, becoming campanulate or expanded-umbonate, densely frosted-pruinose when young, the margin paler or whitish, fading to “hair brown” on the disc and finally dark sordid gray with a cinereous margin, or the margin becoming sordid ochraceous in age, striate to disc when moist, more or less sulcate when faded; flesh thin, scarcely fragile, grayish to pallid, odor and taste mild; lamellae narrow to moderately broad in age, adnate, close, whitish becoming gray, strongly intervenose, edges pallid; stipe 3–4 cm. long, 1.5 mm. thick, equal, tubular, rigid-cartilaginous but moderately fragile (not splitting as in *M. dissiliens*), base white strigose, concolorous with the pileus or paler, glabrous, apex frosted when young; pileus trama with a thin adnate pellicle over a region of inflated cells, the remainder filamentose; pleurocystidia and cheilocystidia similar,  $25\text{--}30 \times 8\text{--}15 \mu$ , saccate to pedicellate with a globose head, the upper portion covered with short rod-like projections, usually forming a broad sterile band on the gill-edge; basidia four-spored; spores  $6\text{--}8$  ( $9$ )  $\times 3.5\text{--}4 \mu$ , narrowly ellipsoid, hyaline, smooth, bluish in iodine.

Gregarious under spruce, La Push, Wash., Oct. 25, No. 3329; along the Quillayute River near Mora, Wash., Oct. 26, 1935, No. 3341; McKenzie Pass, Ore., Oct. 18, No. 7943; South Fork of the McKenzie River, Oct. 20, No. 7980, and at Blue River, Ore., Oct. 22, 1937, No. 8053. In California it was found under second growth spruce at Crescent City, Nov. 17, 1937, No. 8836 and No. 8833.

Karsten's species is here interpreted as having the same type of cystidia as *M. metata*. It differs from the latter in its dark colors and lack of an odor. The change to ochraceous which takes place in old caps is no way comparable to the brownish colors of the common form of *M. metata*.

#### LITERATURE CITED

1. **Lange, Jakob E.** Mycofloristic impressions of a European mycologist in America. *Mycologia* 26: 1-12. 1934.
2. **Kauffman, C. H.** The Agaricaceae of Michigan. Lansing, Michigan. 1918.

#### DESCRIPTION OF FIGURES

The drawings of the spores were made with the aid of a camera lucida and are magnified approximately 1500 times as reproduced. The drawings of cystidia are magnified approximately 900 times.

FIG. 1, *A*, seven spores of *Mycena madronicola*. *B*, seven spores of *Mycena corticalis*. *C*, five spores of *Mycena corticola*. *D*, six spores of *Mycena sanguinolenta*. *E*, eight spores of *Mycena subsanguinolenta*. *F*, five spores of *Mycena monticola*. *G*, seven spores of *Mycena fragillima*. *H*, seven spores of *Mycena subvitrea*. *I*, six spores of *Mycena pseudotenax*. *J*, eight spores of *Mycena pusilla*. *K*, seven spores of *Mycena piceicola*. *L*, six spores of *Mycena ulmicola*. *M*, six spores of *Mycena pelianthina*. *N*, five spores of *Mycena subplicosa*. *O*, four spores of *Mycena subcucullata*. *P*, six spores of *Mycena rutilantiformis*; 2, *A*, four cystidia of *Mycena pseudotenax*. *B*, two mature cheilocystidia of *Mycena fragillima*. *C*, two immature cheilocystidia of *Mycena fragillima*. *D*, three cheilocystidia of *Mycena ulmicola*. *E*, two caulocystidia of *Mycena ulmicola*. *F*, three cheilocystidia of *Mycena subcucullata*; 3, *Mycena piceicola*  $\times 1$ ; 4, *Mycena pseudotenax*  $\times 1$ .