given it. It is easily confused with *T. venenata* when the spores are not examined, and hence should not be eaten. It is also likely that both *T. nobile* and *T. venenata* have been referred to *T. columbetta,* in the absence of available information on these plants, as both these species when young and fresh are rather white. The description of *T. serratifolium* Pk. very closely approximates this of *T. nobile.* It is entirely distinct from *Clitocybe piceina.*

727. **Tricholoma columbetta** Fr. (EDIBLE)

Syst. Myc., 1821.

Illustrations: Fries, Icones, Pl. 29.
Bresadola, Fungh. mang. e. vel., Pl. 23.
Gillet, Champignons de France, Pl. 671.
Cooke, Ill., Pl. 48.

"PILEUS 5-10 cm. broad, convex-plane, obtuse, dry, rigid, *pure white, satiny-shining,* at first glabrous, then silky-fibrillose or minutely scaly, *often with stain-like, carmine, yellow, or blue spots,* margin at first incurved and minutely tomentose. FLESH white. GILLS emarginate, almost free, close, rather broad, white, not changing color, edge uneven. STEM 5-9 cm. long, 1-1.5 cm. thick, equal or unequal, *not bulbous, solid, white,* shining, fibrillose-striate. SPORES 6-7 x 4-5 micr. ODOR none. TASTE mild."

In beech and birch woods, on the ground. The silky-shining and dry, white cap and stem, mild taste and elliptical spores distinguish this species from our other white plants of the genus. It must not be confused with *T. album* Fr. which has a bitter taste, nor with *T. nobile* which has a slight burning taste; both of these lack the pure white color of *T. columbetta.* The name refers to the satiny sheen of white pigeons. Several varieties, based on the different habit and various color-stains, have been described. It has not been found with certainty in the State; see remarks under *T. resplendens.*

***Gills becoming rufescent, cinereous or blackish.*

728. **Tricholoma imbricatum** Fr. (EDIBLE)

Sys. Myc., 1821.

Illustrations: Hard, Mushrooms, Fig. 53, p. 73, 1908.
N. Y. State Mus. Rep. 48, Pl. 21, Fig. 6-11, 1896.
Fries, Icones, Pl. 30.
Cooke, Ill., Plates 60 and 199.
Gillet, Champignons de France, No. 676.
Ricken, Blätterpilze, Pl. 90, Fig. 1.

PILEUS 5-8 cm. broad, convex-plane, obtuse or subumbonate, *dry,* brownish-red to pale reddish-umber, *innately fibrillose-scaly,* disk lacerate-scaly, margin thin, at first incurved and pubescent. FLESH compact, firm, white, *changing to light red when bruised.* GILLS slightly adnexed, sinuate, close, moderately broad, altogether white at first, changing to reddish in age or rufescent-spotted. STEM 5-9 cm. long, 1-1.5 cm. thick, *solid,* firm, equal or subequal, white, reddish-brown at base, *apex white-mealy,* elsewhere fibrillose. SPORES broadly elliptical, 5-6.5 x 4 micr. CYSTIDIA and *sterile cells* none. BASIDIA 24-28 x 5 micr., 2-4-spored. ODOR and TASTE mild or slightly farinaceous.

Gregarious or subcaespitose. On the ground in coniferous and mixed woods.

Frequent in the north. Rare in southern Michigan. Detroit. October.

It must not be confused with *T. transmutans,* which has a viscid cap, whose surface is bitter to the tongue. The stem is solid or hollowed by grubs. *T. vaccinum* Fr. differs mainly from this in the stuffed to hollow stem and the more scaly cap; it occurs also in conifer woods.

729. **Tricholoma vaccinum** Fr. (SUSPECTED)

Syst. Myc., 1821.

Illustrations: Gillet, Champignons de France, No. 707.
Ricken, Blätterpilze, Pl. 90, Fig. 4.

PILEUS 4-7 cm. broad, subhemispherical to campanulate, then expanded, obtuse or subumbonate, dry, cinnamon-rufous to dark

reddish-brown, not striate, rimose in wet weather, *at first densely scaly,* becoming fibrillose-scaly, *margin at first involute and tomentose.* FLESH rather thin except disk, white at first, becoming tinted with rufous hues. GILLS subadnate then sinuate, moderately broad, broader than the thickness of the flesh, close, pallid then *rufescent in age* or when bruised. STEM 5-7 cm. long, 10-15 mm. thick, subequal, somewhat irregular, *hollow,* fibrillose or lacerated-fibrillose, fibrils reddish-brown, pallid elsewhere but rufescent. SPORES sphoeroid, 5 x 4 micr., smooth, white. TASTE somewhat disagreeable, subastringent. ODOR similar.

Gregarious-subcaespitose. On the ground under conifers. In the northern portion of the State. August-September.

The stuffed then hollow stem and the dense fibrillose scales of the reddish-brown cap distinguish it. The color of the cap in large specimens approaches umber, but the rufous shades are always present. The margin of the pileus is distinctly tomentose.

730. **Tricholoma tricolor** Pk.

N. Y. State Mus. Rep. 41, 1888.

"PILEUS 5-10 cm. broad, broadly convex or nearly plane, sometimes slightly depressed in the center, firm, dry, obscurely striate on the margin, *pale alutaceous, inclining to russet.* FLESH white. GILLS adnexed, thin, narrow, close, *pale yellow,* becoming brown or purplish-brown in drying. STEM stout, 5-7 cm. long, 1-2 cm. thick, short, firm, tapering upward from the thickened or subbulbous base, *white.* SPORES broadly elliptical or subglobose, 7 micr. long."

Reported by Longyear from Chatham in the north, and from Lansing. I have not found it. The peculiar hue of the dried gills is said to characterize it.

731. **Tricholoma acre** Pk. (Suspected)

Bull. Torr. Bot. Club, Vol. 24, 1897.

Illustration: Plate CXLVIII of this Report.

PILEUS 4-9 cm. broad, campanulate at first, then subexpanded, plane to obtuse, virgate, *dry, pale silvery-gray or mouse-gray with innate silky fibrils,* or fibrillose-scaly on disk, sometimes whitish,

even. FLESH rather thin, *firm,* white, at length tinged ashy. GILLS adnexed, emarginate, rather broad, ventricose, close, white, at length pale cinereous, edge minutely fimbriate. STEM 3-6 cm. long, 7-15 mm. thick, equal or subequal, sometimes subbulbous or tapering downward, short, *stuffed then hollow, white* or slightly cinereous, innately silky-fibrillose, shining, apex flocculose. SPORES broadly elliptical, 6-7 x 4-5 micr., smooth, with a clear cavity on one side. CYSTIDIA none; *sterile cells* on edge of gills, 30-35 x 9 micr., subclavate. ODOR none. TASTE *acrid,* sometimes tardily so.

Gregarious or subcaespitose. On the ground in frondose woods, especially oak and maple. Detroit, Ann Arbor, Jackson. September-November. Rather frequent.

The acrid Tricholoma is probably the American form of *T. murinaceum* Bull., in the sense of Berkeley and Gillet, but digers in the closer gills and glabrous, not scaly, stem. The figures of Cooke (Ill., Plate 49) and Gillet, (Champignons de France, No. 683), are very suggestive of our plant, except in the character of the stem. *T. murinaceum* in the sense of Fries has a disagreeable, strong odor, and was originally referred by him to Hygrophorus, now *H. nitratus* Fr. Gillet's figure of *T. portentosum* is a fairly good picture of some of our plants when the gills and stem are white. *T. acre* is quite variable in size and in the shade of gray of the cap. Normally the radiating fibrils of the pileus are pale gray or silvery-gray, but in luxuriant individuals are much darker gray or blackish, and in such examples the stem may be streaked with dark fibrils. Sometimes the cap is almost entirely white or buff and then silky or obscurely virgate, sometimes somewhat fibrillose-scaly on disk. The plant is closely related to *T. terreum,* from which it differs in its acrid taste, its firmer flesh, larger size, presence of cystidia and flocculose, edge of gills and broader spores.

732. **Tricholoma terreum** Fr. (Edible)

Epicrisis, 1836.

Illustrations: Hard, Mushrooms, Fig. 55, p. 76, 1908.
Swanton, Fungi, Pl. 8, Fig. 9.
Michael, Führer f. Pilzfreunde, Vol. II, No. 92.
Bresadola, Fungh. mang. e. vel., Pl. 24.
Patouillard, Tab. Analyt., No. 307.
Ricken, Blätterpilze, Pl. 92, Fig. 4.
Gillet, Champignons de France, No. 704.
Cooke, Ill., Pl. 50.
Peck, N. Y. State Mus. Mem. 4, Pl. 45, 1900 (as var. *fragrans*).
Plate CXLIX of this Report.

PILEUS 2.5-6 cm. broad, *thin,* convex-campanulate or nearly plane, dry, subumbonate, *gray,* grayish-brown or mouse-color, *innately fibrillose to fibrillose-floccose and at length scaly,* not striate. FLESH white, cinerascent or gray near surface of pileus, thin. GILLS adnate, then emarginate and uncinate, close but distinct, white, pale ashy or cinerascent, sometimes yellowish-stained, medium broad, edge entire. STEM 2.5-4 cm. long, 4-8 mm. thick, equal, straight or slightly curved, *solid or persistently fibrous-stuffed, readily splitting lengthwise,* white, whitish or cinerascent, subrigid, *fragile.* SPORES *minute, nucleate,* narrowly oblong-ovate, 5-6 x 3, smooth. CYSTIDIA *none, sterile cells* short or lacking. ODOR and TASTE *farinaceous,* especially when plant is crushed.

Gregarious or subcaespitose. On the ground in grassy places in frondose woods, thickets, etc. Ann Arbor, Detroit, New Richmond. August-November. Rather frequent about Ann Arbor.

After reading the descriptions and remarks of a dozen writers concerning this species and related ones such as *T. scalpturatum* Fr. and *T. squarrulosum* Bres., and adding one's own observations, it becomes clear that we have here a series of many forms which run so close into each other that the amateur will hardly be able to diagnose them satisfactorily in most cases. This fact is already recognized by the number of varieties which have been described both under *T. terreum* and *T. scalpturatum.* The above description applies to the plants which have been found in frondose woods of southern Michigan. Variations will be found in which the pileus is more densely scaly with almost blackish scales on center, and others where the color is pale silvery-gray. The color of flesh and gills may remain almost white, or there may be an ashy tinge in all parts of the plant. Several characters seem to be constant in our plants, viz. the fragility, the nucleated narrow spores, and the fibrous nature of the interior of the stem. By these characters and the taste it is separable from *T. acre.* Authors give various shapes and sizes for the spores, which fact indicates that there are several independent species at present not separated. Bresadola has segregated a dark, scaly species whose spores measure 7-9 x 4-5 micr., as *T. squarrulosum. T. scalpturatum* (Fr.) Bres. has a well-developed but evanescent cortina at first; this approaches our form, and has the same spores, but lacks the distinct farinaceous odor. Our typical plants had no sterile cells on the edge of the gills. A form found at New Richmond had short cystidia and gills whose edges were minutely flocculose and spotted with drab-color, darker than the rest of the gills. Peck has named our form with the farinaceous odor var. *fragans.* The farinaceous odor seems to be the most common character of the American form of *T. terreum.*

733. **Tricholoma fumescens** Pk.

N. Y. State Rep. 31, 1879.

Illustration: Hard, Mushrooms, Fig. 54, p. 75.

PILEUS 2-6 cm. broad, convex-plane, regular at first, then undulate, obtuse, dry, *covered with a minute, appressed tomentum,* whitish to pale grayish-brown, darker where handled, even, margin at first incurved. FLESH rather thin. GILLS rounded behind at first, then acuminate adnexed, narrow, *very crowded,* whitish, *changing to bluish-black in age or when bruised,* easily separable from trama of pileus. STEM 2-6 cm. long, 5-10 mm. thick, short, rather stout, *whitish then brownish,* solid, becoming cavernous and splitting, pruinose at apex. SPORES narrow, subfusiform-elliptical, 5-6.5 x 3 micr.; *sterigmata* prominent, 3-4 micr. long. ODOR and TASTE slightly farinaceous.

Gregarious or subcaespitose. On the ground, in low, frondose woods. Jackson, Ann Arbor. September-October. Infrequent.

Recognizable by the narrow, crowded gills, which become bluish-black in fresh specimens if bruised; in age or when dried they are almost as black as old gills of *Agaricus campestris.* The pileus and stem do not change as much, inclining to brownish, and in this differ markedly from *T. fuligineum.* The latter also possesses

subdistant and broader gills. Our plant is not frequent, having been collected only thrice. The separable gills ally it to those species which W. G. Smith placed under the genus Lepista.

734. Tricholoma fuligineum Pk.

N. Y. State Rep. 41, 1888.

Illustration: Plate CXLIX of this Report.

PILEUS 3-7 cm. broad, convex, then expanded-subdepressed, or obtuse, often irregular, sometimes with sinus on one side, *sooty-brown to dark grayish-brown,* becoming blackish on handling, dry, minutely innately scaly or fibrillose, even. FLESH white at first, cinerascent, scissile. GILLS adnate or adnexed, then emarginate, *subarid,* very tough when dry, *close to subdistant,* moderately broad, whitish or cinereous, *becoming black when bruised.* STEM 3-6 cm. long, 6-10 mm. thick, short, rarely elongated, solid or spongy-stuffed, equal or subequal, innately fibrillose, pruinose at apex, whitish or cinereous, *blackish when handled.* SPORES narrow, elliptical-fusiform, 7-9 x 4-5 micr., smooth, white. CYSTIDIA and *sterile cells* lacking. BASIDIA about 30 x 6-7 micr. ODOR and TASTE more or less farinaceous.

Gregarious or caespitose. On the ground among mosses, leaves, etc., frondose woods of oak and maple. Jackson, Detroit, Ann Arbor. September-October. Infrequent.

Somewhat variable in size and shape, etc., under different conditions of weather and situation. It differs from *T. fumescens* in that the entire plant becomes sooty when dried, and it has larger spores and gills. The gills often assume a reddish hue when bruised, then become black, as in *Russula nigricans.* The stem is sometimes slightly floccose at first, as if frosted, and occasionally becomes cavernous. Small forms of *T. cinerascens* have a more watery pileus and the gills do not turn sooty-black. Dr. O. E. Fisher reports that it has appeared abundantly in his back yard on discarded mushroom beds.

Section II. Rigida. Pellicle of the pileus rigid, with a tendency to crack into small smooth scales, sometimes punctate-granulose; neither viscid, floccose-scaly nor fibrillose. Flesh of pileus rigid, somewhat cartilaginous.

**Gills not becoming reddish nor cinereous, nor yellow-stained.*

735. Tricholoma saponaceum Fr. (Unpalatable)

Epicrisis, 1836.

Illustrations: Hard, Mushrooms, Fig. 56, p. 77, 1908.
Michael, Führer f. Pilzfreunde, Vol. II, No. 90.
Ricken, Blätterpilze, Pl. 93, Fig. 1.
Cooke, Ill., Plates 91 and 216.
Gillet, Champignons de France, No. 698.
Fries, Icones, Pl. 32.

PILEUS 4-8 cm. broad, convex-expanded, firm, glabrous or becoming cracked to form small scales, not virgate, pale *livid-brown to lead-gray* but variable in color, often olive tinged, margin at first naked and incurved. FLESH white, *becoming pinkish,* thick, firm. GILLS adnato-emarginate then uncinate, subdistant, *distinct,* rather broad, *whitish, not cinerascent,* edge entire. STEM 5-8 cm. long, 1.5-2 cm. thick, rather stout, *ventricose, attenuated or subradicating below,* solid, fibrous-fleshy, apex flocculose, *becoming pink within,* white without, glabrous varying to floccose or minutely dark-scaly. SPORES minute, elliptical-ovate, smooth, 5 x 3-3.5 micr. ODOR and TASTE strongly oily-farinaceous (soapy), distasteful.

Solitary or gregarious. In frondose woods, on the ground. September-October. Ann Arbor, New Richmond, Detroit. Infrequent.

The colors of the pileus vary and are difficult to describe, sometimes varying from whitish to grayish-brown or smoky-brown. The gills are said to become greenish or rufescent at times. The odor, color of the flesh and minute spores distinguish it. Where bruised the flesh of the stem retains the pink tinge in a persistent manner, and this character is quite marked. It is unfit for food on account of its taste. The odor and taste are sometimes very slight. *T. pallidum* Pk. is probably a variation of this species.

***Gills becoming stained or changing to ashy or reddish in age.*

736. Tricholoma laticeps sp. nov.

Illustration: Plate CL of this Report.

PILEUS 3-10 cm. broad, *rigid,* broadly convex, obtuse, *smoky-umber to blackish,* moist, even, *glabrous, or punctate-granulose on disk,* margin at first strongly decurved, then spreading naked. FLESH firm, brittle, *thick,* thinner at margin, *cinerascent, scissile.* GILLS broadly adnexed, emarginate, close to subdistant, *broad,* white, at last cinereous, edge sometimes eroded. STEM *short,* rigid, spongy-solid, 1-3 cm. long, 7-16 mm. thick, equal or subequal, white or pallid, cinerascent within, innately silky. SPORES short and broadly elliptical to subglobose, smooth, 6-7 x 5-6 micr., white. BASIDIA 30 x 6-7 micr. CYSTIDIA and *sterile cells* none. ODOR and TASTE mild.

Gregarious to caespitose. On the bare ground or among mosses or in grassy places, in conifer or frondose woods or groves. Ann Arbor, Detroit, New Richmond. September-November. Infrequent.

Distinguished by its very short stem and relatively broad pileus which hugs the ground so as to hide the stem. The pileus is often broader in one diameter. It seems to be related to *Tricholoma cartilagineum,* but the gills are broad and subdistant in well-developed specimens, and the pellicle is rarely granular-punctate and then only on the disk. The pellicle is rather adnate and composed of long, narrow, horizontal cells. It cannot be referred to *T. lugubre* Pk. since that species is described as having narrow and close gills; nor to *T. tumidum* Fr. whose stem is longer, and whose gills have a rufescent tinge. The scissile flesh indicates a hygrophanous condition, but this is not marked. Its edibility was not tested.

Section III. Sericella. Pileus without a distinct pellicle, silky or glabrous, very dry; neither moist, viscid, hygrophanous, nor distinctly scaly. Pileus opaque, rather thin.

737. Tricholoma sulphureum Fr. (Unpalatable)

Syst. Myc., 1821. (As Clitocybe.)

Illustrations: Cooke, Ill., Pl. 62.
Gillet, Champignons de France, No. 703.
Bresadola, Fungh. mang. e. vel., Pl. 27.
Patouillard, Tab. Analyt., No. 507.
Berkeley, Outlines, Pl. 4, Fig. 4.
Swanton, Fungi, Pl. 44, Fig. 1.
Hard, Mushrooms, Fig. 46, p. 65.

PILEUS 2-8 cm. broad, convex-expanded, mostly *umbonate,* at first silky, soon glabrous, *sulphur-yellow to olivaceous-yellow,* usually tinged brown on disk, subgibbous, even, margin decurved. FLESH yellow or yellowish, thick on disk. GILLS adnexed with tooth, emarginate at length, *subdistant, yellow,* moderately broad, thick, firm. STEM 4-8 cm. long, 5-10 mm. thick, equal or variously enlarged, sometimes curved, fleshy-fibrous, innately fibrillose, stuffed, sometimes compressed, yellow to olivaceous-yellow, yellowish within. SPORES elliptical-oval, 8-10 x 5-6 micr., smooth. ODOR strong, foetid or of coal-tar; TASTE disagreeable.

Gregarious. On the ground in frondose woods of maple, birch, oak, etc. Houghton, Ann Arbor. July-September. Infrequent.

Our plant is well illustrated by Cooke, but it is usually a less deep yellow, and often tinged with olive or reddish-brown on the cap. It is well marked by the disagreeable, coal-tar odor and taste, by the subdistant gills and by the spores. Bresadola (Funghi mang. et. vel.) gives the spores as warty; this cannot be our plant. In Stevenson the spores are given too small, being nearer those of *T. sulphurescens* Bres., which also has the odor and color of *T. sulphureum* but whose gills are said to be crowded and whitish. Unler a lens the dry pileus is often seen with micaceous-shining spots. It differs from *T. chrysenteroides* Pk. in its disagreeable odor, subdistant gills and stuffed to hollow stem.

738. Tricholoma chrysenteroides Pk.

N. Y. Mus. Rep. 24, 1872.

"PILEUS 2.5-5 cm. broad, convex or plane, *not umbonate,* firm, dry, slightly silky or glabrous, *pale yellow or buff,* becoming dingy

with age. FLESH pale yellow. GILLS *close*, emarginate, yellowish, dingy or pallid in age, marked with transverse veinlets along the upper edge, intervenose. STEM 5-7 cm. long, 6-8 mm. thick, firm, equal, *solid*, glabrous, fibrillose-striate, yellowish within and without. SPORES elliptical, 7-10 x 5-6 micr. ODOR and TASTE *farinaceous.*"

Gregarious. On the ground in woods.

This species has not with certainty been collected within the State. The description is adopted from Peck, and included for the sake of comparison.

739. **Tricholoma odorum** Pk.

Torrey Bot. Club. Bull., Vol. 25, 1898.

PILEUS 2-5 cm. broad, convex-expanded, obtuse, glabrous, "soft like kid," shining when young, *waxy yellow to pale tan,* even. FLESH thick, concolor. GILLS adnexed, emarginate, *rather broad,* subdistant, thick, *whitish, tinged flesh-pink,* edge entire. STEM 3-7 cm. long, 4-10 mm. thick, equal or subbulbous, *stuffed then hollow,* subflexuous, silky-fibrillose, yellowish white, darker yellow at base and within, pruinose at apex. SPORES broadly elliptic-ovate, smooth, 7-9 x 5-6 micr., variable, white. CYSTIDIA and *sterile cells* none. ODOR rather strong, reminding one of that of *T. sulfureum;* TASTE farinaceous.

Gregarious. On the ground in beech and pine woods. New Richmond. September. Rare.

This seems to approach *T. sulfureum* and is probably a variation of it. Further data are necessary to establish it fully. The incarnate tinge to the whitish gills, and the peculiar odor are characters which distinguish it.

740. **Tricholoma carneum** Fr.

Syst. Myc., 1821.

Illustrations: Fries, Icones, Pl. 40, Fig. 3.
Cooke, Ill., Pl. 96.
Patouillard, Tab. Analyt., No. 614.

PILEUS 1.5-2 cm. broad, convex-plane, obtuse, sometimes umbonate, even, glabrous or *subpruinose,* testaceous when young, then *flesh color* to whitish tan, margin thin and at length spreading or recurved. FLESH thickish on disk, white, soft, rather fragile. GILLS sinuate-adnexed, uncinate, at length subdecurrent, *crowded,* rather narrow, *pure white,* edge mostly even. STEM 1.5-2.5 cm. long, 2-3 mm. thick, equal, *fibrous,* hollow, sometimes compressed, *tinged flesh color,* pruinose above, subtomentose below. SPORES minute, oblong, 4-5 x 2.5 micr., smooth, white. ODOR and TASTE none or subfarinaceous.

Gregarious or subcaespitose. On the ground among leaves and debris in frondose woods. Ann Arbor. August-September. Infrequent.

This small species of Tricholoma is well-marked by the incarnate color of cap and stem which contrasts with the pure white of the gills. Fries has described a species near it, *T. paeonium,* which is said to differ in the "ruber"-red color of cap which does not fade as in our plants; the latter species also has a softer stem than ours.

SUBGENUS III. MELANOLEUCA. Pileus glabrous, either watery-spotted, moist or hygrophanous; not viscid (except when very water-soaked), nor silky, scaly nor granular. FLESH soft, spongy, or very thin, moist, watery or hygrophanous.

Section I. Guttata. Pileus fleshy, fragile, watery-spotted or rivulose. Usually caespitose.

741. **Tricholoma unifactum** Pk. var.

N. Y. State Mus., Bull. 105, 1906.

Illustration: Ibid.

PILEUS 3-8 cm. broad, *convex,* dull white *mottled with watery spots,* subpruinose, even, creamy-buff in age. FLESH thick on disk, thin elsewhere, white, fragile. GILLS adnexed, becoming emarginate, narrow, narrowed anteriorly, crowded, whitish, edge entire. STEM 5-10 cm. long, prolonged by insertion into a crack in the log, 8-15 mm. broad, equal or tapering upward, curved, solid, even, floccose-pruinose, tomentose at base. SPORES subglobose, minute, 3-4.5 x 3.5 micr., smooth, white. CYSTIDIA and *sterile cells* none. ODOR and TASTE slight.

Caespitose. On decayed charred log, probably hemlock, in mixed woods of ravines. New Richmond. September. Rare.

The plants from which Peck derived his description grew on the ground under hemlock trees and in that situation formed a thick fleshy mass from which the stems arose. Although our plants were caespitosely united only at the base, and grew from a woody substratum, I have scarcely any doubt that they are the same. When dried, the cap, gills and base of stem are ochraceous. In some ways it approaches *Pleurotus elongatipes* Pk. but the stem is solid and scarcely eccentric, and the pileus is spotted with watery marks. *T. conglobatus* Fr. (Eddelbuttel, Ann. Mycol., Vol. 9, p. 512) differs in its brownish-gray pileus and spores 6-7 x 5 micr., although Schroeter (Die Pilze Schlesiens, p. 660) says the cap of that species is often whitish. Our plants are very close to *T. boreale* Fr., whose spores, according to Massee (European fungus Flora) are the same, but whose pileus is at first bright flesh color, then fades to whitish.

Section II. Spongiosa. Pileus fleshy, compact, becoming spongy, obtuse, even, glabrous, moist. Neither hygrophanous nor viscid. (Water soaked specimens sometimes become subgelatinous; the pileus in all cases absorbs water in wet weather.)

742. Tricholoma album Fr. (Sense of Fries) (UNPALATABLE)

Syst. Myc., 1821.

Illustrations: Fries, Icones, Pl. 43.
Cooke, Ill., Pl. 65.
Berkeley, Outlines, Pl. 4, Fig. 6.
Patouillard, Tab. Analyt., No. 615.

"PILEUS 6-10 cm. broad, convex then plane and depressed, not umbonate, *glabrous,* dry, even, margin at first involute at length repand, *sometimes entirely white, sometimes yellowish especially on the disk.* FLESH tough, moderately thick, but not compact. GILLS more or less emarginate, close, up to 8 mm. broad, white, unchanging. STEM 6-10 cm. long, 8-12 mm. thick, attenuated upwards, *solid, elastic,* externally fibrous, glabrous, obsoletely pruinose at apex under lens, concolor. ODOR none; TASTE acrid, unpleasant." SPORES (Massee, Stevenson, Winter) elliptical, 5-6 x 2.5-3; (Romell) 6-7 x 4-4½; (Ricken) lanceolate, 7-8 x 3-3.5 micr.

This species has not yet been found with certainty in the State. The description is adopted from that of Fries in Icones *T. venenata* Atk. and *T. nobile* Pk. approach it by their external characters, but if the spore-measurements given by the English authors actually belong to this species, then *T. nobile* is quite distinct by its spherical spores, and *T. venenata* by its larger spores. It is easy to confuse *T. album* with *T. panoeolum* in some of its forms when young and white, but later the changing gills of the latter species mark it sufficiently. The pileus is said to be entirely glabrous, and this also separates *T. album* from *T. venenata* and *T. nobile.* The taste is given by Fries as "acrid" in Icones, and "bitter" in Hymen. Europ. In Lindblad's Svampbok the pileus is said to become sordid-stained an hour after being bruised, the odor is said to be strongly radishy; and the plant is said to have a sharp burning taste after being chewed awhile. Some authors consider it *poisonous,* and it is evidently not edible, and must be regarded close to *T. venenata* in this respect. It appears that this species needs further study, and it is desirable that continental authors give us exact data concerning the spores of their plants.

743. Tricholoma acerbum Fr. (UNPALATABLE)

Syst. Mycol., 1821.

Illustrations: Gillet, Champignons de France, No. 662.
Plate CLI of this Report.

PILEUS 7-10 cm. broad, firm, convex-expanded, *obtuse,* dry, subpruinose, soft to the touch, *dull buff to yellowish-white, or whitish with a flesh color tinge,* margin at first inrolled and *obscurely ridged.* FLESH white, thick on disk, thin on margin. GILLS emarginate with decurrent tooth, *narrow, crowded,* whitish becoming creamy-white or slightly rufescent, edge entire. STEM 4-6 cm. long, 1-2 cm. at apex, 2-2.5 cm. below, sometimes abruptly short-rooting, *solid,* firm, at first bulbous then *tapering upward,* at first covered by a thin satiny tomentum or pruinosity, becoming fibrillose, whitish becoming dingy where handled. SPORES minute, spherical, nucleate, 4-5 micr., white. CYSTIDIA none. BASIDIA about 30 x 5-6 micr. TASTE *very bitter;* ODOR scarcely agreeable, somewhat aromatic-farinaceous.

Gregarious to subcaespitose. On the ground in frondose woods. Ann Arbor, Detroit, New Richmond, Bay View. June-October (earliest record, June 11). Frequent.

The bitter taste and changing gills and stem distinguish *T. acerbum* from *T. laterarium* Pk. with which it is easily confused. Both species are marked by the narrow, crowded gills, spherical spores, the whitish to pale yellowish-tan cap, and the slight ridges which are found on the margin of the cap. The gills are sometimes spuriously decurrent, when it might be confused with small forms of *Clitocybe candida,* but the latter has a mild taste and its pileus becomes concave. Superficially it approaches *T. panoeolum* var. *caespitosum* also. Bresadola (Fungh. mang.) assigns to it obovate spores, measuring 6-7 x 3-3.5 micr., while others give them globose.

744. **Tricholoma laterarium** Pk. (Edible)

N. Y. State Mus. Rep. 26, 1874 (Buffalo Soc. Nat. Hist., 1873).

Illustration: Hard, Mushrooms, Fig. 47, p. 66, 1908.

"PILEUS 5-10 cm. broad, convex-expanded, sometimes slightly depressed in center, pruinose, whitish, *disk often tinged with brick-red or brown,* the thin margin marked with slight, subdistant, short, radiating ridges. FLESH white. GILLS emarginate, decurrent in slight lines, *narrow, crowded, white.* STEM 5-7 cm. long, nearly equal, solid, white. SPORES globose, 4-5 micr. diameter."

Gregarious. On the ground in conifer woods. Probably in the northern part of the State.

I have no notes on this species, hence have given Peck's description. No data are at hand as to its taste and odor. It is close to *T. acerbum,* apparently only distinguishable by its mild taste and white gills, and may prove to be identical with that species.

745. **Tricholoma leucocephalum** Fr.

Epicrisis, 1836.

Illustrations: Fries, Icones, Pl. 43.
Cooke, Ill., Pl. 78.

PILEUS 3-6 cm. broad, *thin,* convex then plane, obtuse, even, moist, glabrous, the slight silkiness disappearing, *white.* FLESH compact, *white, watery in wet weather.* GILLS rounded behind, *free,* thin, crowded, *pure white,* edge very entire. STEM 5-7 cm. long, 4-8 mm. thick, subcartilaginous to fibrous, *hollow, solid at the narrowed, rooting base, glabrous,* white. SPORES 6-8 x 3-4 micr.

(perhaps longer when fully mature), elliptic-ovate, apiculate. ODOR and TASTE distinctly *farinaceous.*

Gregarious. On the ground in conifer woods. Marquette. September. Rare.

The description is adapted from the Icones of Fries. The figures cited represent a plant like that of form (B) of *T. resplendens* (which see), whose stem was minutely hollow, but whose cap was distinctly viscid. *T. leucocephalum* has been found but once, and is apparently rare. It has been confused, according to Fries, with *T. columbetta* and *T. album;* "the former is mild and edible, the latter bitter and very poisonous, while *T. leucocephalum* has a strong odor of fresh meal."

746. **Tricholoma fumosiluteum** Pk.

N. Y. State Mus. Rep. 27, 1875.

"PILEUS 3-7 cm. broad, convex-expanded, *moist, glabrous,* smoky-*yellow.* FLESH white or yellowish under the subseparable cuticle. GILLS rounded behind, deeply emarginate at length, *broad,* close, white. STEM 6-10 cm. long, *rather elongated,* 6-10 mm. thick, glabrous, *hollow,* white. SPORES globose, 4.5-6 micr. diameter. ODOR and TASTE farinaceous when flesh is crushed."

Gregarious to subcaespitose. On the ground in frondose woods. Ann Arbor. October. Rare.

The description is adapted from that of Peck. "The disk of the pileus is often darker, and sometimes spotted." My specimens show a tendency for the stem to become elongated relative to the width of the pileus.

747. **Tricholoma personatum** Fr. (Edible)

Syst. Myc., 1821.

Illustrations: Atkinson, Mushrooms, Fig. 87 and 88, 1900.
Murrill, Mycologia, Vol. 2, Pl. 19, Fig. 1.
Hard, Mushrooms, Fig. 61 and 62, p. 84, 1908.
Marshall, Mushroom Book, Pl. 21, p. 72, 1905.
Ricken, Blätterpilze, Pl. 95, Fig. 3.
Michael, Führer f. Pilzfreunde, Vol. II, No. 89 (as *T. bicolor*), and Vol. III, No. 113.
Peck, N. Y. Mus. Rep. 48, Pl. 22, 1896.
See also Cooke, Gillet, Berkeley, etc.

PILEUS 5-12 cm. broad, convex-expanded to plane, obtuse, glabrous, moist or water-soaked, *variable in color,* grayish to brownish, *tinged with lilac, lavender or purplish hues,* fading in age to pale livid or sordid-white, even, *margin at first involute and villose-pruinose,* at length spreading, naked and undulate. FLESH lavender-tinged when fresh, fading to whitish, often water-soaked in wet weather. GILLS slightly truncate-adnate to almost free, rather broad, crowded, *at first blue, then lavender, grayish-rufescent, etc.,* separable from pileus, edge entire. STEM 3-7 cm. long, 1-2 cm. thick, rather short, stout, at first bulbous, becoming clavate or tapering upwards or sometimes equal, *solid, at first blue then persistently lavender or lilac,* sometimes fading to pale livid, etc., *frosted by minute, furfuraceous-squamules,* glabrescent, pale grayish within. SPORES narrowly elliptical, smooth, non-nucleate, 7-8 x 4-5 micr. (rarely longer), *pale flesh color in mass.* CYSTIDIA and *sterile cells* none. BASIDIA 28-30 x 6-7 micr., 2-4-spored. ODOR and TASTE mild.

Gregarious or subcaespitose. On the ground among decaying leaves or brush piles, in mixed or frondose, open or thin woods. Throughout the State. September-November. (Earliest record August 25.) Common.

This is a favorite for the table. It is easily known among the large Tricholomas by its bluish or lavender colors when fresh, and in this respect imitates some of the Cortinarii, but such confusion will not lead to trouble, as the latter are equally safe. *Cortinarius michiganensis* and *Cortinarius albatus* have similar colors, but are distinguished by the cortina when young, and the darker gills when old. It is not easily confused with *Cortinarius violaceous,* as some have stated, since that species is long-stemmed, has a much darker color and the cap is minutely scaly. *T. nudum* is a more slender plant, and differs mainly in its deeper blue or purplish colors on cap and stem, and the naked margin when young. All are edible. Our plant loves to grow among heavy masses of fallen or decaying leaves which often completely hide it in the late autumn. It varies in color, so that several varieties have been named; these varieties are mostly the result of weather conditions, of habitat or of late growth. After having been soaked by rains it is less palatable. The color of the spores shows it to be intermediate between Tricholoma and Entoloma, and induced W. G. Smith and others to call it *Lepista personata.*

748. **Tricholoma nudum** Fr. (EDIBLE)

Syst. Myc., 1821.

Illustrations: N. Y. State Mus. Bull. 116, Pl. 104, Fig. 1-9, 1907.
Cooke, Ill., Pl. 67 (too faded).
Gillet, Champignons de France, No. 685.
Bresadola, I. Funghi mang. e. vel., Pl. 30.
Ricken, Blätterpilze, Pl. 95, Fig. 4.

PILEUS *3-8 cm. broad, thin,* convex-expanded to plane, obtuse, sometimes depressed, glabrous, even, soft to the touch, moist, *purplish-violaceous to lavender,* fading to pale violaceous-brown or dingy rose-color, *margin at first incurved and naked.* FLESH tinged violet, at length whitish, thin, rather firm. GILLS truncate-adnate then subdecurrent and slightly sinuate, crowded, narrow, violaceous at first. STEM 3-7 cm. long, 4-10 mm. thick, *slender or moderately stout,* solid, equal or slightly enlarged at base, silky-pruinose, glabrescent, purplish-violaceous then grayish-brown. SPORES 6-7 x 4-5 micr., elliptical, sordid flesh color in mass. ODOR and TASTE mild or slightly acid.

Gregarious or subcaespitose. On the ground in woods. Ann Arbor. September.

This is intermediate in size between *T. personatum* and *T. ionides,* and all three have similar colors. *T. ionides,* which has been reported from the state by Longyear, is known by its conic-campanulate pileus, which is at first flocculose on the margin, its stuffed to hollow stem, and whitish gills and spores; its cap is 2-5 cm. broad. Huyot (Soc. Myc. de France, Vol. 16, p. 95) states that it can always be distinguished, since the flesh of the stem is uniformly *blue,* while that of *T. personatum* is pallid or grayish. Peck says the stem of his plants was stuffed or hollow, while European authors describe it as solid. The spores, as in *T. personatum,* are pale flesh color, and show the relation of these plants to the rosy-spored group; but as it is now pretty well admitted that the sum of the other characters of a plant are of more generic importance than the spore-color, especially where it is not very marked, it would seem best to keep them in this genus.

749. **Tricholoma tumidum** Fr.

Syst. Mycol., 1821.

Illustrations: Cooke, Ill., Pl. 93.
Michael, Führer f. Pilzfreunde, Vol. III, No. 111.
Plate CLII of this Report.

PILEUS 6-10 cm. broad, firm, convex-expanded, then plane or broadly depressed, *moist,* regular at length wavy, glabrous, sometimes watery-spotted, clouded with *gray to brownish-gray especially on disk,* whitish on margin, even, margin thin and *at first tomentulose.* FLESH white, slightly and slowly cinerascent, thin on margin, rather brittle. GILLS adnexed, then deeply sinuate, *broad, subdistant,* ventricose, at first shining white then slightly cinerascent, brittle, scarcely intervenose, edge entire. STEM 5-7 cm. long, 1.5-2 cm. thick, *stout, solid,* compact spongy within, subequal or subbulbous, sometimes abruptly subradicating, *glabrous,* slightly scurfy at apex, white then slightly cinerascent. SPORES minute, subfusiform-elliptic, smooth, 5-6 x 3 micr., white. CYSTIDIA and *sterile cells* none. ODOR and TASTE mild.

Scattered or singly. On the ground among fallen leaves, etc., in frondose woods. October. Ann Arbor. Infrequent.

A rather noble plant when fresh, rather firm at first, becoming brittle. It was placed by Fries in section Rigida, but is placed here because of its similarity to *T. cinerascens.* The pileus has a slightly raised circular ridge a short distance from the margin as indicated in Cooke's figure. In some individuals the pileus was marked by watery spots toward the margin (like those on the stem of *Lactarius scrobiculatus*) and sometimes it was slightly ochraceous-stained. The thin margin at length becomes subplicate-crenate. The stems are not ventricose nor is the cap as dark, but otherwise it seems to have all the marks of the species figured by Cooke and Michael. It differs from *T. cinerascens* which it approaches closely in color, by its more rigid habit and by its subdistant gills which do not separate easily from the trama of the pileus.

750. **Tricholoma cinerascens** Fr. (Edible)

Monographia, 1863.

Illustration: Ibid, Pl. 153.
Ricken, Blätterpilze, Pl. 97, Fig. 2.
Plate CLIII of this Report.

PILEUS 5-10 cm. broad, convex then expanded, obtuse, obscurely floccose-tomentose or glabrous, *white or buff, then gray,* sub-unicolorous, *moist,* even, margin thin, naked. FLESH white, thick on disk. GILLS adnexed, slightly emarginate, *close, medium broad,* dingy white, becoming yellowish, *easily separable from pileus,* edge entire. STEM 5-7 cm. long, 1-1.5 cm. thick, equal, except spongy-thickened base, which is often mycelioid-tomentose, *spongy-stuffed to hollow,* sometimes curved, white, then cinerascent, subglabrous, pruinose at apex. SPORES minute, elliptical, 5 x 3 micr. (rarely longer). TASTE when crushed, farinaceous. ODOR subfarinaceous.

Gregarious to caespitose. On the ground among decaying leaves in frondose woods. October. Ann Arbor. Infrequent.

The pileus is more spongy and less firm than in *T. tumidum,* the gills are close and become more or less dingy yellowish. The pileus feels glabrous, although there is an innate floccosity to it. The gills separate from the trama of the pileus as in the genera Lepista, Paxillus and Gomphidius, etc. It belies its name, since the fresh plant may become only slightly cinereous.

751. **Tricholoma panoeolum** var. **caespitosum** Bres.

Fungi Trid., Vol. 2, 1892.

Illustration: Ibid, Pl. 153.

PILEUS 5-12 cm. (sometimes up to 20 cm.) broad, convex-expanded, then irregular or sinuate-lobed, sometimes eccentric, *whitish, buff, grayish-brown or dingy tan,* sometimes *shining white,* glabrous or obscurely flocculose on disk, *cuticle subcartilaginous, margin persistently incurved.* FLESH rather firm, very moist in wet weather or water-soaked and then fragile. GILLS *very crowded, narrow, easily separable from the pileus, varying subdecurrent or truncate adnate or slightly sinuate,* white at first, *soon dingy-flesh color.* STEM 3-8 cm. long, 8-15 mm. thick, subequal, solid or spongy within, at first covered with white frostiness, then fibrillose,

apex scurfy, pallid-whitish. SPORES elliptic-ovate, minute, smooth, 5-6 x 3-3.5 micr., whitish or pale dingy flesh color in mass. ODOR slight or of rancid meal. TASTE slowly peppery or disagreeable, remaining in the mouth a long time.

Caespitose, rarely solitary. On the ground in frondose or conifer woods. Ann Arbor, Detroit, Bay View, Marquette and New Richmond. September-November. Frequent.

This is one of the most difficult species of Agarics to place properly. Its gills which are often subdecurrent tend to throw it into the genus Clitocybe; and the ease with which they separate from the trama of the pileus is characteristic of the genus Paxillus. The attachment of the gills varies furthermore, sometimes becoming sinuate, sometimes not at all decurrent. In other respects the gills form the very best means of recognizing this species, as indicated in the description. The plants also vary in size and color; clusters composed of several very large specimens are sometimes found, which simulate *Clitocybe gigantea* and *Clitocybe candida,* but differ from both in that the gills become flesh color, and in the tardily peppery taste. After being exposed to rains, the plants become water-soaked, take on a flesh-tint throughout and are quite fragile. It is probable that *T. rancidulum* Banning is the same plant.

Section III. Hygrophana. Pileus thin, hygrophanous. Flesh at first compact, then soft, moist and hygrophanous.

The color of the pileus changes as the moisture escapes, usually becoming much paler. Patouillard (Les Hymenomycetes d'Europe, p. 36, 1887) has separated certain species, e. g., *T. melaleuca,* from this section on the basis of their echinulate spores, spongy consistency and grayish or blackish tinge, and erected the genus Melaleuca for them. Fayod (Ann. d. Sci. Nat., 7 ser., vol. 9, p. 348) did the same, including *T. brevipes, T. nudum, T. grammopodium, T. personatum* and *T. sordidum* in that genus, and using mainly the irregular hyphae of the gill-trama as the separation character. It has seemed best however, to keep the Friesian arrangement of this section until the data are more complete. Only a few species of this section have so far been identified.

752. **Tricholoma melaleucum** Fr.

Syst. Mycol., 1821.

Illustrations: Fries, Icones, Pl. 44.
Ricken, Blätterpilze, Pl. 96, Fig. 5.
Gillet, Champignons de France, No. 682.
Cooke, Ill., Pl. 119.
Hard, Mushrooms, Fig. 50, p. 69, 1908.
Michael, Führer f. Pilzfreunde, Vol. III, No. 112.
Murrill, Mycologia, Vol. 3, Pl. 49, Fig. 4.

PILEUS 3-7 cm. broad, thin, *convex-plane,* regular or wavy, obscurely umbonate, glabrous, moist, hygrophanous with a somewhat separable cuticle, *smoky-brown or fuliginous* (*moist*), ochraceous-tan, buff or paler (dry), umbo darker. FLESH scissile, grayish, or grayish-white. GILLS adnexed, emarginate, narrow to moderately broad, subventricose, rather close, thickish, pure white at first becoming dingy. STEM 3-8 cm. long, 3-6 mm. thick, *strict,* elastic, equal or thickened at base, whitish, *streaked with smoky fibrils,* persistently stuffed. SPORES 6-8 x 4-5 micr., minutely rough, elliptical-oval, white.

Scattered or growing singly. On the ground or among grass in cultivated fields, gardens, lawns, etc., rarely in woods. Spring and autumn, June, September-October. Ann Arbor, New Richmond, Marquette. Frequent.

This is usually an open ground Tricholoma. The somewhat rigid, subcartilaginous stem reminds one more of Collybia than of Tricholoma. The pileus is sometimes quite blackish and the stem streaked with black fibrils. It was formerly (Mich. Acad. Sci.) referred to *Collybia stridula* because of the spores. The measurements given by Massee for *T. melaleucum* are 10 x 4-5 micr. Schroeter and Ricken, however, find spore measurements the same as in our plants, and hence, as it agrees well otherwise, it is referred to *T. melaleuca.* The gills vary from linear to subventricose. The stem is sometimes smoky, covered with white fibrils.

753. **Tricholoma leucocephaloides** Pk.

N. Y. State Mus. Rep. 49, 1896.

PILEUS 3-6 cm. broad, convex, obtuse, undulate or irregular,

hygrophanous, brown or grayish-brown (moist), whitish or whitish-tan (dry), subviscid in wet weather, even. FLESH becoming white, thin. GILLS adnate to subdecurrent, slightly emarginate, close to subdistant, moderately broad, whitish. STEM 3-6 cm. long, 5-8 mm. thick, equal, curved, spongy-stuffed, apex floccose, elsewhere glabrescent, whitish (dry). SPORES minute, elliptical, smooth, 5-6 x 3-4 micr. ODOR and TASTE *strongly farinaceous.*

Gregarious. On the ground, frondose woods. Ann Arbor. October. Rare.

754. Tricholoma sordidum Fr.

Syst. Myc., 1821.

Illustrations: Fries, Icones, Pl. 45.
Cooke, Ill., Pl. 100.
Hard, Mushrooms, Fig. 44, p. 63, 1908.
Ricken, Blätterpilze, Pl. 95, Fig. 5.

PILEUS 2-6 cm. broad, convex then expanded and depressed, with or without an obscure umbo, hygrophanous, *flesh color* to *avellanus* (Ridg.) when young, wood-brown in age, fading, glabrous, even or substriatulate on the naked and incurved margin. FLESH thin, except disk, toughish, drab color when young or moist, pallid in age. GILLS adnate, at length emarginate-sinuate, *vinaceous-drab* to subviolaceous, close, thin, moderately broad, edge entire. STEM *short,* 2-4 cm. long, 4-8 mm. thick, equal, solid, toughish-fibrous, *fibrillose,* naked at apex, whitish or sordid, curved, base mycelioid or subrooting. SPORES elliptic-oblong, 6-7.5 x 3-4 micr., smooth, white. *Trama of gills* parallel. CYSTIDIA none. BASIDIA clavate, 30-32 x 4-5 micr. ODOR and TASTE mild.

Caespitose or gregarious-subcaespitose. On decaying vegetable matter, straw-heaps, etc., in fields and gardens. August-October. Ann Arbor. Infrequent.

Known by the caespitose habit, by the dingy flesh-colored or subviolaceous pileus and gills and by the place of growth. Usually it appears only after abundant rains. The stem is said to be sometimes eccentric. It must not be confused with *T. nudum.*

Clitocybe Fr.

(From the Greek, *clitos,* sloping, and *cybe,* head.)

White-spored; stem *spongy-fleshy to fibrous,* elastic, its fibers continuous with the trama of pileus, hence not separable. Gills *decurrent* or acutely adnate, often separable from the pileus, *not emarginate* nor sinuate, margin of pileus at first involute. No annulus.

Fleshy, firm or soft mushrooms, growing mostly on the ground or decaying leaves, sometimes on wood, in fields, road-sides or forest. Mostly medium to large size.

The PILEUS is mostly glabrous or silky fibrillose, scaly in a few species, sometimes with rather thick flesh, often quite thin and flexible. Many are hygrophanous and change color during dry weather and have scissile thin flesh, others are merely moist and have thicker unchanging flesh. The surface is never viscid. The shape of the pileus varies greatly, convex to plane, obtuse, depressed in the center, umbilicate or infundibuliform; very regular, irregular or compressed when clustered, or often merely wavy in outline. The color of the pileus is generally white to tan, gray, dull reddish or brownish, although a few bright-colored species like *C. illudens* and *C. anisearia* are quite common. The STEM lacks the true cartilaginous rind of the genus Collybia; its outer layer being fibrous or sometimes soft-fleshy, (though it may become hard and cartilaginous-like in dry weather). Within it may be fibrous throughout, i. e., solid, or spongy-stuffed and becoming more or less hollow. The fibrous structure is length-wise and is continued into the trama of the pileus and gives the stem considerable elasticity. The color of the stem is usually like that of the pileus. The GILLS are mostly white, some are ashy-brown, or become ashy-colored in age; in the subgenus Laccaria, they are colored reddish, violet or yellow. They are always attached to the stem, sometimes deeply decurrent, sometimes adnate at first and later pseudo-decurrent when the expanding pileus is elevated anteriorly; whatever the mode of attachment, the gills are narrowed to a point where they terminate on the stem. In one species, *C. laccata,* the gills are aberrant, being emarginate-adnate as in Tricholoma. The gills, when decurrent, are often unequally so, some extending farther down the stem than others, especially when the pileus is irregular. In many species the gills are of different texture from the trama of the pileus and can be peeled off from it, in this character approach-

ing the genus Paxillus as set up by Fries. It has seemed best, however, to follow Peck, by referring white-spored species with decurrent and separable gills, even if they anastomose on the stem, to the genus Clitocybe instead of Paxillus. The VEIL is poorly developed or entirely lacking in this genus. Where it becomes evident, as in *C. praecox* sp. nov. we have a transition to the genus Armillaria. But no species in which the veil forms an annulus can be included here. The SPORES are white, mostly small, elliptical and smooth in the larger number of species, globose and echinulate in others. As seen below, this character with others will be used to separate the two subgenera. The spores of *Clitopilus caespitosa* are only slightly tinged with flesh color, so that it is easily mistaken for a Clitocybe. The TASTE is mild in nearly all the species; sometimes it is farinaceous; in *C. piccina* and a few others it is disagreeable. Two species are known to be poisonous, viz. *C. illudens* and *C. morbifera;* as far as known, the others are safe, and become tender and palatable when properly cooked. *C. sudorifica* Pk. (N. Y. State Mus. Bull. 157) causes profuse perspiration and should be avoided.

The genus is large, and may be divided into two subgenera: Clitocybe (propria), and Laccaria.

The former is again divided into sections and groups as follows:

SUBGENUS CLITOCYBE.

Section I. Paxilloideae.

Section II. Squamulosae.

Section III. Siccae.

Section IV. Hygrophanae.

SUBGENUS LACCARIA.

Key to the Species

(A) Pileus hygrophanous, changing color from wet to dry weather; flesh usually scissile.
  (a) Pileus becoming furfuraceous-squamulose; spores spherical, markedly echinulate; gills adnate.
    (b) Plant large; stem 8 mm. or more thick; gills purplish. 796. *C. ochropurpurea* Berk.

    (bb) Plants rather small; gills flesh color, pallid or violaceous.
      (c)) Stem 3-7 cm. long; spores 8-9 micr. diam., very common. 794. *C. laccata* Fr.
      (cc) Stem 1-2 cm. long; spores 12-14 micr. diam., rare. 795. *C. tortilis* Fr.
  (aa) Pileus glabrous or dotted with dark points.
    (b) Pileus thin, funnel-form, cup-shaped or deeply umbilicate at maturity.
      (c) Gills distant or subdistant.
        (d) Growing on lichens; pileus grayish-brown (moist), very small. 790. *C. peltigerina* Pk.
        (dd) Growing on wood, sometimes on the debris of forests.
          (e) Pileus virgate, with black scaly points; gills yellowish. 783. *C. ectypoides* Pk.
          (ee) Pileus, stem and gills smoky to ashy-brown (moist), pileus glabrous. 782. *C. cyathiforme* Fr.
      (cc) Gills crowded or close.
        (d) Pileus grayish-brown when moist at least in the center; gills close.
          (e) Caespitose; pileus infundibuliform; gills long-decurrent. 787. *C. caespitosa* Pk.
          (ee) Not truly caespitose; pileus umbilicate; gills subdecurrent. 786. *C. albidula* Pk.
        (dd) Pileus white or whitish-tan, gills very crowded.
          (e) Stem attached by long white strands to decayed wood or debris, often eccentric; gills decurrent. 785. *C. eccentrica* Pk.
          (ee) Stem without such strands; gills long decurrent. 784. *C. adirondackensis* Pk.
    (bb) Pileus obtuse to convex-depressed; plants rather small.
      (c) Gills, pileus and stem ashy-colored or brownish-gray.
        (d) Taste farinaceous. 789. *C. ditopoda* Fr.
        (dd) Taste mild. 788. *C. metachroa* Fr.
      (cc) Gills, pileus and stem white or tinged tan color.
        (d) Pileus shining-white when dry. 793. *C. angustissima* Fr.
        (dd) Pileus not shining-white.
          (e) On lawns, etc., among grass. 791. *C. morbifera* Pk.
          (ee) In woods, among leaves. 792. *C. compressipes* Pk.
(AA) Pileus not hygrophanous.
  (a) Stem 2-6 cm. thick; pileus very large, ochraceous tan, obtuse; gills soon dingy yellowish. 758. *C. maxima* Fr.
  (aa) Stem not as stout.
    (b) Caespitose, often in large clusters; plants large.
      (c) Gills extending down the stem in lines or ridges; pileus dull-white or pale tan. 757. *C. piceina* Pk.
      (cc) Gills rarely decurrent in lines.
        (d) Pileus becoming deep funnel-shaped or depressed-concave; very large.
          (e) Margin of pileus sulcate; gills anastomosing on stem. 755. *C. gigantea* Fr.
          (ee) Margin of pileus even; gills rounded behind at first. 756. *C. candida* Bres.
        (dd) Pileus obtuse, umbonate or only slightly depressed.
          (e) Pileus becoming scaly, reddish-tawny to honey-colored. 759. *C. monodelpha* Morg.
          (ee) Pileus glabrous.
            (f) Whole plant saffron or dingy golden-yellow. 773. *C. illudens* Schw.
            (ff) Plants not at all yellow.
              (g) Pileus with a cartilaginous cuticle, smoky-tan or paler. 775. *C. cartilagineus* Bres.

(gg) Pileus without cartilaginous cuticle; whole plant whitish. 774. *C. multiceps* Pk.
(bb) Singly, gregarious or subcaespitose; plants small to medium size; stems seldom over 8 mm. thick.
(c) Pileus yellow, covered with dark brown scales; on wood. 760. *C. decora* Fr.
(cc) Pileus not like the preceding.
(d) Pileus greenish, bluish or yellowish, not scaly.
(e) Whole plant yellowish, soft; spores globose, minutely echinulate. 781. *C. pulcherrima* Pk.
(ee) Tinged green or blue.
(f) Stem solid.
(g) Pileus green or tinged green. 767. *C. odora* var. *viridis* Fr.
(gg) Pileus tinged blue. 771. *C. connexa* Pk.
(ff) Stem stuffed then hollow; pileus greenish.
(g) Gills narrow, crowded. 767. *C. odora* var. *anisearia* Pk.
(gg) Gills rather broad, close. 767. *C. odora* Fr.
(dd) Pileus not green, blue nor yellow.
(e) Pileus funnel-form or deeply concave at maturity.
(f) Pileus buff-white. 776. *C. catina* Fr.
(ff) Pileus reddish-tan fading to dingy white. 777. *C. infundibuliformis* Fr.
(ee) Pileus obtuse, umbilicate or slightly depressed.
(f) Pileus smoky-brown, ashy brown or clouded with gray.
(g) Gills deeply decurrent.
(h) Pileus obtuse, 3-7 cm. broad; gills white or tinged yellowish, subdistant; stem clavate, stout. 763. *C. clavipes* Fr.
(hh) Pileus more or less depressed, 1-3 cm. broad; gills dingy white, close; stem equal, slender. 779. *C. parilis* Fr.
(gg) Gills short-decurrent.
(h) Stem slender, 1-3 mm. thick; pileus depressed; gills tinged ashy. 766. *C. vilescens* Pk.
(hh) Stem stout, 8-16 mm. thick; pileus obtuse to umbonate.
(i) Gills rather crowded. 762. *C. nebularis* Fr.
(ii) Gills subdistant; stem subequal.
(k) Gills entire. 764. *C. media* Pk.
(kk) Gills forked. 765. *C. carnosior* Pk.
(ff) Pileus rufous-brown to brick red; 2-5 cm. broad.
(g) Gills very crowded; flesh thin; pileus umbilicate. 780. *C. sinopica* Fr.
(gg) Gills hardly close; flesh thick on disk; pileus obtuse. 761. *C. praecox* Kauff.
(fff) Pileus whitish to shining white.
(g) Growing on wood; gills narrow and crowded. 772. *C. truncicola* Pk.
(gg) On the ground among leaves, or in grassy places.
(h) Pileus dingy-white to pale tan, umbilicate; on pine needles on the ground. 778. *C. pinophila* Pk.
(hh) Pileus shining-white when dry.
(i) Pileus 3-8 cm. broad; stem solid; spores minutely echinulate. 770. *C. albissima* Pk.
(ii) Pileus smaller, 1-4 cm. broad; stem stuffed to hollow; spores smooth.
(k) Stem cartilaginous; pileus regular; in woods. 768. *C. candicans* Fr.
(kk) Stem fibrous-tough; pileus wavy on margin; usually in fields and pastures. 769. *C. dealbata* Fr.

SUBGENUS CLITOCYBE (propria). Spores elliptical to ovate, when spherical not spinulose (see *C. pulcherrium*).

Section I. Paxilloideae. Pileus firm; flesh thickish, not hygrophanous. Gills separable from trama of pileus, more or less anastomosing on the stem. Plants medium to very large.

755. Clitocybe gigantea Fr. (Edible)

Sys. Mycol., 1821.

Illustrations: Gillet, Champignons de France, Pl. 100.
Cooke, Ill., Pl. 106.

PILEUS *large,* 15-25 cm. broad, relatively thin, soon expanded, plane *then infundibuliform,* soft, glabrous, *white* or tinged tan, slightly flocculose when dry, *margin* involute, then spreading, at length *coarsely sulcate.* Flesh thin, white. GILLS subdecurrent, *very crowded,* rather *broad,* (2-3 times thickness of pileus), some forked, *anastomosing on the stem.* STEM short and *stout,* 2-6 cm. long, 2-3 cm. thick, *solid,* glabrous, even, whitish. SPORES 5 x 3 micr., elliptical, apiculate, white. ODOR and TASTE mild.

(Dried: Pileus rufous-brown in patches, dingy whitish elsewhere. Gills cinnamon brown.)

Caespitose. Ground, in rich woods of maple, oak, basswood, etc. Ann Arbor. September-October. Infrequent. Edible.

Certain remarks found in fungi books indicate that this species needs further study in its relation to *C. maxima* and *C. candida.* Massee says the gills are not separable from the hymenophore, although Fries does not mention the matter in Hymen. Europ., Epicrisis and Systema. The lengthy quotations of McIlvaine do not meet the difficulties in deciding between the three mentioned. This is one of our largest fungi, often a foot across the cap, and a caespitose cluster of them is a marked feature of the forest. It differs, according to our diagnosis, from *C. maxima* by the anastomosing gills, the sulcate-ridged margin of the pileus, lack of any umbo and smooth stem; and from *C. candida* in the character of the gills and the sulcate margin of the pileus. Large fresh clusters of *Tricholoma panoeolum* var. *caespitosum* have all the appearance of this plant, but in that species the gills turn slowly flesh color and the spores are smaller. The illustrations of *C. gigantea* fail to show its size and caespitose character.

756. Clitocybe candida Bres.

Fungi Tridentini, 1881.

Illustrations: Ibid, Pl. XVIII, Vol. I.
Atkinson, Mushrooms, p. 89, 90, Plates 28, 29, Figs. 90, 91.

PILEUS 10-20 cm. broad, convexo-plane, *then depressed and infundibuliform,* relatively thin, glabrous to obscurely scaly on disk, *white,* somewhat shining, *even* or obscurely striate on margin, not umbonate. FLESH white, unchanging, very *scissile.* GILLS subdecurrent, rounded at point of attachment, not emarginate, *very crowded, narrowly linear,* few forked, many shorter, edge entire. STEM 5-9 cm. long, stout, about 2 cm. thick, subequal, spongy-stuffed, white, fibrillose, mycelioid-tomentose at base. ODOR and TASTE mild. SPORES 6-7 x 3-4 micr., elliptical, apiculate, white.

(Dried: Pileus whitish-tan, gills pale fuscous-cinnamon.)

Caespitose. On the ground, under balsam-fir, in conifer forest. Marquette. August. Infrequent.

Differs from preceding in even pileus, in narrow gills which do not anastomose; from *C. maxima* in lack of umbo, gills not long decurrent and pileus not squamulose. Atkinson says gills are broad; in our plants they are narrow as shown in Bresadola's figure. It is made a variety of *C. gigantea* by Quelet, and present information seems to show that the two forms run into each other.

757. Clitocybe piceina Pk.

Torr. Bot. Club. Bull., Vol. 31, p. 178, 1904.

Illustrations: Chicago Nat. Hist. Surv. Bull. VII, Part I, Pl. 2, Fig. 2.
Plate CLIV of this Report.

PILEUS 5-20 cm. broad, rarely more, firm, convex-expanded to *plane,* dull white or tinged ochraceous to tan, dry, obscurely silky, tomentose, margin *even, involute.* FLESH white, rather thick, not scissile. GILLS close, rather narrow, thin, whitish or tinged yellowish, *decurrent* especially *by lines or ridges* running down the stem and *anastomosing,* separable from hymenophore, transversely split in age, edge entire. STEM 5-8 cm. long, 1-3 cm. thick, short and *stout,* solid, firm, sometimes spongy, subequal to subbulbous, whitish, *minutely tomentose,* often curved at base, *rigid at apex.*

SPORES broadly elliptical, 6-7 x 4-5 micr., apiculate, with a large oil-drop nearly filling the interior, white. ODOR strong, somewhat aromatic to disagreeable. TASTE unpleasant, bitter.

(Dried: Cap and gills dingy ochre to ochraceous-buff.)

Single or subcaespitose. On very rotten wood, or on debris under hemlock trees in northern Michigan; under maple, etc., in the southern part of the State. Ann Arbor, New Richmond, Detroit, Houghton, Huron Mountains, Marquette. Infrequent. Edibility not tested.

This is one of the large Clitocybes, one of my specimens measuring 25 cm. across the cap. It is easily known by the peculiar gills and the narrow ridges at the apex of the stem. The change to yellow on drying is very marked, and distinguishes this species from *C. gigantea* and *C. candida.* Small to medium plants are apparently more common than those of full size. The oil-drop in the spores is large and simulates a globular spore. The white mycelium gives a white, mouldy appearance to the neighboring leaves, etc. It appears to be the same as *Paxillus extenuatus* Fr., in the sense of Ricken.

758. Clitocybe maxima Fr. (Edible)

Epicrisis, 1836-38.

Illustrations: Barla, Champignons des Alpes-maritimes, Pl. 50.
Plate CLV of this Report. (Much reduced.)

PILEUS 10-30 cm. or more broad, thick-fleshy, firm, *at first broadly convex with broad umbo, then plane,* scarcely subinfundibuliform in age but obtuse or broadly umbonate, always dry, with a thin, interwoven, silky-tomentosity on surface, slightly floccose-scaly in age, at first pallid, *soon ochraceous-tan to rusty alutaceous,* margin at first involute and pubescent-tomentulose, then spreading and *even* or only obscurely short-striate. FLESH *thick and compact on disk,* abruptly thin toward margin, later attenuated, whitish becoming dingy. GILLS at first subemarginate becoming decurrent to long-decurrent in fully expanded plants, relatively narrow (4-10 mm.), acuminate at both ends, *close,* not ventricose, whitish at first, *soon dingy yellowish,* pale tan in age, separable from pileus, edge entire. STEM *stout* and usually *short,* 6-12 cm. long, inflated-bulbous to clavate-bulbous, 2-5 cm. thick above, 3-8 cm. at bulb, *spongy-solid, covered by a thin,* continuous, appressed

white *tomentum,* often ferruginous-stained, white or whitish, bulb at length color of pileus. SPORES elliptic-oval, 7-7.5 x 5-5.5 micr., obscurely echinulate, nucleate, white. CYSTIDIA none; *sterile cells* on edge of gills acicular. ODOR *rather strong,* oily-farinaceous. TASTE mild.

Gregarious or subcaespitose. On the ground in frondose woods. Ann Arbor, Detroit. August-September. Infrequent.

In America this huge and massive mushroom is distinguished by its exceedingly stout stem, by the compact flesh of the half-grown plant, by the gills which soon become deep straw-yellow and by the odor. When developing slowly the pileus remains compact and thick on the central portion, but under favorable growth-conditions it expands more fully, the flesh becomes thinner throughout and it tends to become infundibuliform. The majority of plants found, although many of them very large, had a plane or obtuse pileus, sometimes with a very broad umbo. Solitary, relatively small specimens approach the appearance of the figures given for *C. geotropa* Fr. and such specimens being the only ones seen the first time the species was found, I referred them to *C. geotropa* Fr.; later collections showed me the error. The gills in the young plants are merely sinuate-emarginate, but when the pileus expands they become decurrent. The decurrent character of the gills is not as strongly marked as the European descriptions indicate, and our plant departs from European forms in several particulars. Fries (Monographia) says the gills are whitish, not changing, whereas the yellowish to tan color which the gills soon assume in our plants is one of the most marked characteristics, becoming more noticeable after the specimens are picked. The thin tomentose coating on the stem, its bulbous tendency and the rusty-tan color of the old plants is also not mentioned. Clearly we have a distinct American form. The relation between *C. maxima* and *C. gigantea* does not seem to be clear to most European authors. The two are very distinct as Fries has pointed out. The American *C. gigantea* has a whitish, thinner, much more infundibuliform pileus and its gills are more crowded and anastomose on the stem, and the margin of the pileus is strongly marked by sulcate-ridges. The attachment of the gills relates this to the genus Tricholoma. But in all other respects it is a Clitocybe of the Paxilloideae group.

Section II. Squamulosae. Surface of pileus broken up into scales, dry; flesh rather thick, stem scaly or fibrillose.

759. **Clitocybe monadelpha** Morg. (EDIBLE)

Jour. Cinn. Soc. of Nat. Hist., Vol. VI, 1883.

Illustrations: Ibid, Pl. 4.
N. Y. State Mus. Memoir, Vol. III, No. 4, Pl. 46, 1900.
Hard, Mushrooms, p. 103, Pl. XXI, Fig. 75, 1908.
McIlvaine, Amer. Mushrooms, p. 88, Pl. XXVII.

PILEUS 3-10 cm. broad, size very variable in a cluster, convex then plane, obtuse, depressed in age, entire surface dry, *becoming innately fibrillose-scaly,* scales floccose and more dense on disk, *rufous-tawny* to chestnut on disk, honey-colored beneath scales, margin recurved and splitting in age. FLESH white or tinged ochraceous-brown, very thick on disk. GILLS subdecurrent, subdistant, rather broad in the middle, tapering to both ends, intervenose, *pallid then dull flesh color* and often stained with brown spots, edge entire. STEM *elongated,* 7-20 cm. long, tapering downward and *attenuated at the caespitose and crowded bases,* fibrous-stuffed, at length hollow, densely fibrillose or fibrillose-scurfy, glabrescent, twisted, pallid then fuscous-brown, darker to blackish-brown at base, brownish within. SPORES broadly elliptical, 6-7.5 x 5-5.5 micr., smooth, white. ODOR and TASTE mild, or slightly bitter.

(Dried: Umber-brown.)

Very caespitose. On the ground in woods, usually attached to old roots or rotten wood. New Richmond. September. Rare.

This is apparently the American form of *C. tabescens* Bres. of Europe. In the few collections examined, the spores of the native plant rarely measured over 7 micr. long, while Bresadola gives 8-10 x 5-7 micr. for his species. When young this species simulates *Armillaria mellea,* but without a veil, later it is not easily confused with it. The scales on the cap are often well-developed.

760. Clitocybe decora Fr.

(= *Tricholoma multipunctum* Pk.)

Syst. Mycol., 1821. (N. Y. State Mus. Rep. 25, 1873.)

Illustration: Fries, Icones Select, Vol. I, Pl. 60.

PILEUS 3-6 cm. broad, convex, rather thin, depressed in center or plane, yellow (luteous) or tinged brown or olivaceous, covered with dense, innate, fibrillose, minute, blackish or brownish scales, disk darker. FLESH yellowish. GILLS *obtusely adnate,* crowded, seceding, yellow, rather narrow. STEM 3-6 cm. long, 4-10 mm. thick, subequal, stuffed then hollow, yellow, dotted with minute scales, central or eccentric. SPORES variable, broadly-ovate to subelliptical, 6-7 x 4.5-5.5 micr., mixed with a large per cent of young globose spores 4-5 micr. diameter.

Single or subcaespitose. On rotten logs, in hemlock and spruce swamp. Sault Ste. Marie. July-September.

The generic position of this species is unsettled. Fries first placed it under Clitocybe, then Pleurotus. Gillet referred it to Clitocybe; Quelet to Tricholoma; Saccardo to Pleurotus. Peck name it anew *Tricholoma multipunctum,* then referred it back to *Clitocybe decora,* where it is to be hoped it will remain. It is an aberrant Clitocybe, like *C. laccata,* in departing from the manner in which in this genus the gills are attached.

761. Clitocybe praecox sp. nov.

Illustration: Plate CLVI of this Report.

PILEUS 2-5 cm. broad, fleshy, *dry,* convex, then plane or obtuse, somewhat irregular, or deformed, sometimes lobed, *flocculose or covered with minute rufous-brown scales,* umber-brown or paler when young; margin incurved at first, obscurely fibrillose, even. FLESH whitish, thick on disk. GILLS acutely subdecurrent, close to subdistant, not broad, narrowed toward both ends, whitish or ward, obscurely bulbous, curved, *solid,* fibrous, dotted below with venose. STEM 3-4 cm. long, 6-8 mm. thick, equal or tapering downward, obscurely bulbous, curved, *solid;* fibrous, dotted below with delicate floccose scales from the veil, mealy at apex, at length silky-fibrillose throughout, pallid to brownish, white within, outer rind

subcartilaginous. VEIL thin, fibrillose, whitish, evanescent. SPORES broadly elliptical, 7-9.5 x 5-6 micr., smooth, obtuse, white; basidia 4-spored. CYSTIDIA none. ODOR and TASTE strong, farinaceous.

Singly or subcaespitose. On lawns, parks, etc. Ann Arbor. April 20-June 1. Edibility not tested.

First found on the Campus of the University of Michigan among moss and grass through which it pushed and which probably caused its deformed appearance. The earliest specimens mature slowly. The collapsing veil at first leaves remnants on the stems in the form of obscure, transverse, delicate rings or scales, which soon disappear. Its scaly cap and veil indicate that it is related to the Friesian section "Versiformis" but the flesh is not hygrophanous. It has some affinities with *C. incilis* Fr.

Section III. Siccae. Pileus not scaly nor hygrophanous; flesh not watery nor scissile.

Subsection I. Disciformis. Pileus convex, then plane or depressed, obtuse, *regular;* gills equally decurrent. Stem *simple* or somewhat subcaespitose.

**Pileus cinereous or fuscous.*

762. Clitocybe nebularis Fr. (Edible)

Syst. Mycol., 1821.

Illustrations: N. Y. State Mus. Rep. 48, Pl. 23, 1896.
Fries, Sverig. ätl. u. gift. Svamp., Pl. 45.
Gillet, Champignons d. France, Pl. 115.
Bresadola, Fungh. mang. e. vel., Pl. 33.
Cooke, Ill., Pl. 79.
Michael, Führer f. Pilzfreunde, Vol. II, No. 84.

PILEUS 5-9 cm. broad, convex, then plane, obtuse, rarely depressed, margin often wavy, even, *subpruinose,* glabrescent, *smoky-brown to grayish-buff,* margin pliant and soft. FLESH pure white, thick on disk, thin on margin. GILLS subdecurrent finally decurrent, *crowded,* attenuate at both ends, narrow, white then dingy or tinged gray, edge entire. STEM stout, 5-7 cm. long, 1-2.5 cm. thick, sub-clavate at base, or subventricose, *fibrous-spongy and*

solid, pruinose, smoky-buff, concolor, even. SPORES minute, 5-6 x 3-4 micr., elliptical-ovate, smooth, white. ODOR and TASTE mild or very slightly acrid.

(Dried: Cap grayish-brown to smoky-isabelline; gills ochraceous-buff.)

Subcaespitose. Ground in woods of oak, maple, etc. Ludington, Ann Arbor. September. Infrequent.

This is called the "Clouded Clitocybe," because of the smoky hue of cap and stem. The spores of the American plant seem to be smaller than those of the European species, since Bresadola gives them 9 x 6-7 micr. Some specimens have a bit of acridity to the taste, a fact also recorded by Barla in Europe. McIlvaine, Bresadola, Cooke, Badham, Quelet and Michael report it as edible. Older authors in Europe have reported it as unsafe, e. g. Cordier, Paulet and Barla. The American plant has no evidence against it. It is sometimes attacked by another mushroom, *Volvaria loveianus,* which forms fruit-bodies on its cap. (See Fig. 7, Pl. XI, Swanson, Fungi.)

763. **Clitocybe clavipes** Fr. (Edible)

Syst. Mycol., 1821.

Illustrations: N. Y. State Mus. Mem., Vol. III, No. 4, Pl. 46, 1900.
Fries, Icon., Vol. I, Pl. 47.
Gillet, Champignons de France, Pl. 117.
Cooke, Ill., Pl. 80.
Hard, Mushrooms, p. 94, Fig. 69.

PILEUS 2-7 cm. broad, soft, convex then plane, almost obconic, rarely umbonate, obtuse, even, *glabrous, sooty-brown,* fuscous-cinereous to brown, sometimes paler. FLESH white, thick on disk. GILLS deeply *decurrent, subdistant,* rather broad in middle, narrowed toward both ends, flaccid, white or tinged yellowish, edge entire. STEM 2-6 cm. long, 6-8 mm. thick at apex, clavate at base, tapering upwards, sometimes bulbous, concolor, spongy-solid, white within, fibrillose. SPORES 6-7.5 x 4-5 micr., subelliptical, smooth, white. ODOR and TASTE agreeable.

(Dried: Pileus fuscous-cinnamon; gills sordid gilvous.)

Scattered or tufted. On the ground, mostly reported in conifer woods, but also in southern Michigan, under maple, oak, etc. September-October. Infrequent. Edible.

Water-soaked in wet weather. Differs from *C. nebularis* in its subdistant, decurrent gills, and slightly larger spores.

764. **Clitocybe media** Pk. (Edible)

N. Y. State Mus. Rep. 42, 1899.

Illustrations: Ibid. Pl. 1. Figs. 9-12.
N. Y. State Mus. Rep. 48, Pl. XXIII, Fig. 1-7, 1896.
Hard, Mushrooms, p. 88, Fig. 64, 1908.

This is a variety of the preceding, recognizable by the subequal, not bulbous stem, broader and more distant gills, varying decurrent. The spores are 7.5-8 x 5 micr. TASTE mild. Edible.

On the ground, in oak, maple or birch woods. Marquette, Ann Arbor.

765. **Clitocybe carnosior** Pk.

N. Y. State Cab. Rep. 23, p. 76, 1872.

This may be considered as another *variety* of *C. clavipes,* distinguished by the forked gills. The pileus is brown to grayish-brown. TASTE pleasant. Habit, etc., of the type. Marquette. August.

766. **Clitocybe vilescens** Pk.

N. Y. State Mus. Rep. 33, 1880.

PILEUS *small,* 1-3 cm. broad, convex then plane and obtuse or slightly umbilicato-depressed, fragile, glabrous, even, pale-ashy to brownish-ashy, sometimes subpapillate, slightly pruinose at first on the involute margin. FLESH whitish, soft, thickish. GILLS subdecurrent, whitish tinged ashy, close, moderately narrow, occasionally veined. STEM *slender,* 2-5 cm. long, 1.5-4 mm. thick, concolor or paler, solid, glabrous, equal, straight or curved, white-mycelioid at base. SPORES short and subglobose or broadly elliptical, 5-6 x 3-5 micr., smooth, white. ODOR and TASTE mild.

(Dried: Cap grayish, gills dingy pale tan.)

In frondose or mixed woods. July-August. Marquette, Ann Arbor. Infrequent.

***Pileus greenish.*

767. Clitocybe odora Fr. (EDIBLE)

Syst. Myc., 1821.

Illustrations: Michael, Führer f. Pilzfreunde. No. 86.
Fries, Sverig. ätlig. u. gift Svamp., Pl. 85.
Gillet, Champignons de France, No. 113.
Marshall, Mushroom Book, p. 71, Pl. XV. (As *Clitocybe* or *virens.*)
Conn. Nat. Hist. Surv. Bull. 3, Pl. XVII.

PILEUS 3-8 cm. broad, rather thin, convex then expanded-plane, subrepand, even, glabrous, margin incurved and pliant, sometimes substriate, *pale dingy-green to bluish-green* varying to whitish. FLESH white, *rather tough.* GILLS *rather broad,* close, adnate-decurrent, white then yellowish or tinged green. STEM 3 to 8 cm. long, 4-6 mm. thick, equal or thickened below, pruinose at apex, stuffed then hollow, white mycelioid or often soft-spongy at base, white or tinged green. SPORES 6-8 x 4-5 micr., broadly elliptical, smooth, white. ODOR *fragant,* sometimes evanescent. "Flavor, when cooked, rather strong, but not unpleasant." (McIlvaine.)

(Dried: Green color disappears; pileus grayish-tan to dark fuscous; the deep green colored pileus darkest when dried, those merely tinged green, paler; gills alutaceous.)

Subcaespitose, base of stem often deeply sunk in leaves and forest-mould. In conifer and broad-leaved forest. Marquette, Houghton, Ann Arbor. August-September. This typical form is rare.

This species runs into two varieties, *C. anisearia* Pk. and *C. viridis* Fr., of which the first variety is by far the commonest of the three in Michigan. The odor is usually strongly fragrant, but is variable, so that a normal green plant may be almost inodorous in age, further, the color varies to white with no sign of green, in which case the odor may be very marked. The color may therefore be white, or tinged a delicate green, dull uniformly green, grayish-green to bluish-green. The variability of the plant has caused some uncertainty as to whether our form is the same as the European plant. Our commonest form or variety has *narrow, crowded* gills, and is given below as *C. anisearia* Pk. Fries and others describe *C. odora* with *broad* gills, not crowded; and *C. viridis* with *crowded, white* gills and *solid* stem. I believe

that all these characters are variants of one species, and have been unduly emphasized. The European plants as well as ours are *edible,* though strong-flavored when alone.

Var. *anisearia* (*Clitocybe anisearia* Pk.) (EDIBLE.)

N. Y. State Mus. Rep. 32, 1879.

Like the preceding, of which it may be considered a variety. It differs in the *narrow, crowded* gills, and perhaps in the stronger development of the fibrillose cuticle of the cap. The gills are white then cream-color. SPORES, etc., the same. Habitat the same.

Houghton, Marquette, Ann Arbor, Detroit, New Richmond, etc. Common throughout the State. August-October. Edible.

Var. viridis (*Clitocybe virdis* Fr.)

Syst. Myc., 1821.

This variety, with the *solid* stem, has not been found in Michigan. Fries separated it because of information he obtained from others. He never saw it. Cooke and others consider it identical with *C. odora.* Under certain conditions of growth, the interior "stuffed" center of stems of mushrooms often appears as if composed of the same substance and texture as the rest of the stem, i. e., as if "solid," and care must be taken to distinguish between such appearances.

****Pileus white or whitish.*

768. Clitocybe candicans Fr.

Syst. Myc. Fr., 1821.

Illustrations: Fries, Icones, Pl. 51, Fig. 3.
Cooke, Ill., Pl. 82.
Gillet, Champignons de France, Pl. 110.

"PILEUS 2-3 cm. broad, thin, dry, convex then plane or depressed, *shining white* in dry weather, with a superficial micaceous silkiness, dull white when moist, even, *margin decurved, regular.* FLESH white, thin. GILLS adnate then decurrent, crowded, very thin, narrow, white, edge entire. STEM 2-5 cm. long, 2-4 mm. thick, even, equal, *waxy-shining, cartilaginous, glabrous,* stuffed then hollow, curved and villose at base, somewhat rooting among

the leaves, etc., to which it is attached. SPORES *broadly-elliptical* to subglobose, 5.5-6 x 4 micr., smooth, white. ODOR and TASTE mild."

Subcaespitose. Among leaves, etc., in woods. Reported by Longyear.

The cartilaginous stem and broader spores separate it from *C. dealbata* and the other Clitocybes. In the character of the stem it approaches the genus Omphalia.

769. Clitocybe dealbata Fr.

Syst. Myc., 1821.

Illustrations: Cooke, Ill., Pl. 104.
Gillet, Champignons de France, Pl. 111.

PILEUS 1-4 cm. broad, convex then expanded, depressed in center, or umbilicate, glabrous, even, dry, *shining-white,* margin *undulate and becoming recurved* or ascending, very thin. FLESH white, thin. GILLS adnate then subdecurrent, persistently white, rather narrow, *crowded,* thin, edge entire or minutely erose. STEM 2-3 cm. long, 2-5 mm. thick, rather slender, stuffed then hollow and often compressed, white to pallid, *tough* and fibrous, straight, glabrous, even, equal, base oblique and villose, apex subpruinose. SPORES narrowly elliptical-oval, 4-5.5 x 2.5-3 micr., apiculate, nucleate, smooth, white; basidia 4-spored. ODOR and TASTE mild.

(Dried: Cap buff-white, gills whitish, stem sordid.)

Subcaespitose, usually in *twos* as figured by Cooke. Attached to decaying leaves in pastured woods of deciduous trees; also on lawns and pastures. Ann Arbor, etc. September-November. Frequent.

This species is known by its persistently white cap and gills, small size, etc. The tendency of mycologists to describe new varieties of it, shows that it varies considerably. Peck has named a variety growing in mushroom beds var. *deformata.* The above description applies to the Ann Arbor form. It is very probable that there are intermediate grades between this species and *C. candicans.* Our plants were thin, and hence more like *C. candicans.* The two differ from such species as *C. albissima* Pk. and *C. phyllophila* Fr. in the entire absence of a yellowish color in cap or gills when old or dried. The stem is toughish-fibrous instead of cartilaginous as in *C. candicans;* the other points of difference are italicised, but may

all vary. Some say the caps of both species are sometimes mamillate. Our plants grow in the woods among leaves, in twos or singly, and might be taken for *C. candicans* if one failed to examine the stem structure and the spores. The minute spores are only slightly different in the two species, but can be used as a good diagnostic character, since those of *C. candicans* are broader and shorter.

770. Clitocybe albissima Pk.

N. Y. State Mus. Rep. 26, 1874.

PILEUS 3-8 cm. broad, *medium large,* convex to expanded, dry, *thin and flexible, pure shining white;* not changed by weather, very regular, margin subzonate. FLESH white. GILLS close, short decurrent, narrow, whitish. STEM 5-8 cm. long, 5-10 mm. thick, subequal or tapering upward, *solid* or sometimes with cavity at one place, glabrous above, subtomentose towards spongy base. SPORES 6-8 x 4-5 micr., broadly elliptical, thin-walled, *minutely spinulose.* ODOR sometimes slightly of radish. TASTE slightly bitter or mild.

(Dried: Cap soft and white; gills yellowish.)

Gregarious, sometimes in fairy-rings.

In conifer woods of northern Michigan, Marquette, Greenville. August-September. Infrequent.

The snowy-white cap and size distinguish *C. albissima* from *C. candicans* and *C. dealbata.* In our specimens, which were identified by Peck, the gills become yellowish in dried specimens, while the cap, as in *C. dealbata,* retains its whiteness. The spores are unique in being very minutely echinulate, like those of *C. pulcherrima.* It is said to be close to *C. cerussata* Fr. of Europe, which has globose spores. Our specimens reported as *C. cerussata* in 12th Report, Michigan Academy of Science, were found to belong here.

771. Clitocybe connexa Pk.

N. Y. State Mus. Rep. 26, 1874.

"PILEUS 5-7 cm. broad, convex, then expanded, subumbonate, minutely silky, *white, sometimes faintly tinged blue,* especially on margin. GILLS crowded, narrow, decurrent, whitish. STEM 5-7 cm. long, 4 mm. thick, equal or tapering upwards, *solid,* whitish. SPORES ovoid, 7 x 5 micr."

Reported by Longyear, Jackson County. Apparently rare.

Morgan says the pileus is sometimes quite bluish. The gills are said to be rounded behind and to imitate the genus Tricholoma. The odor is weak but aromatic.

772. **Clitocybe truncicola** Pk.

N. Y. State Mus. Rep. 26, 1874.

"PILEUS 2-5 cm. broad, thin, firm, expanded and slightly depressed, glabrous, dry, white. GILLS narrow, thin, crowded, adnato-decurrent, white. STEM equal, stuffed then hollow, glabrous, often eccentric and curved. SPORES oval, 4-5 x 3-4 micr."

On logs and branches of maple. Our specimens were found on old roots of maple. September. Detroit.

A few other species of Clitocybe are partial to wood, e. g., *C. cyathiforme* Fr., *C. leptoloma* Pk., *C. ectypoides* Pk., and *C. decora* Fr.

Subsection II. Difformis. Pileus thick on disk, convex to plane, obtuse or umbonate, *irregular*. Gills unequally decurrent or variable in this respect, some rounded behind as in Tricholoma. Stem *caespitose*, stout in our species.

773. **Clitocybe illudens** Schw. (Poisonous)

Synopsis Fung. Carolina, 1822.

Illustrations: McIlvaine, Amer. Fungi, Pl. 29 a, p. 96, 1900.
Marshall, Mushroom Book, p. 70, 1904.
Hard, Mushrooms, Pl. 10, Fig. 67, p. 92, 1908.
Conn. Nat. Hist. Surv. Bull. 3, Pl. 18, 1905.
Rep. 32, Geol. and Nat. Resources Ind., p. 1231, Fig. 8, 1907.
N. Y. State Mus. Mem. 4, Pl. 68, 1900.

PILEUS 8-20 cm. broad, thick, convex to expanded, plane or depressed, glabrous, often umbonate, bright *golden or saffron yellow, irregular,* or lobed, margin elevated in age but often decurved. FLESH white to yellowish. GILLS unequally long decurrent, close, *yellow,* becoming discolored, narrowed to both ends, sometimes forked. STEM *long,* 7-20 cm. long, 1-1.5 cm. thick, *firm,* solid, glabrous, *irregularly and variously curved or twisted, narrowed at base, concolor,* becoming darker at base. SPORES globose, 4-5 micr. diameter, white, copious. ODOR and TASTE strong and disagreeable.

Caespitose. On and around old stumps or decaying roots, forming large clusters often of 25-50 individuals. August-October. Frequent. Unsafe.

An attractive-looking mushroom, forming large golden-yellow masses, which catch the eye from a distance. It has poisonous properties, however, which affect most people with nausea and vomiting. When fresh clusters are brought into a dark room, it is shown to be strongly phosphorescent. This phenomenon is accompanied by a liberation of heat. The species is not found in Europe, and was first discovered by Louis de Schweinitz in North Carolina. Most of the photographs mentioned above look like *Armillaria mellea* without rings. I have seen it but occasionally about Ann Arbor, though Longyear marks it "common."

774. **Clitocybe multiceps** Pk. (Edible)

N. Y. State Mus. Rep. 43, 1890.

Illustrations: N. Y. State Mus. Bull. 139, Pl. 117, 1910.
Clark & Kantor, Mycologia, Vol. 3, Pl. 52.
Atkinson, Mushrooms, 2d ed.
McIlvaine, Amer. Mushrooms, Pl. 27 a, p. 94, 1900.
Plate CLVII of this Report.

PILEUS 3-8 cm. broad, thick on disk, *firm,* convex, *white or whitish,* sometimes tinged gray or yellowish-gray, even, moist, glabrous, regular or irregular. FLESH pure white. GILLS *close, adnate to slightly decurrent,* sometimes sinuate, whitish, medium broad. STEM 5-10 cm. long, 6-12 mm. thick, *stout, solid,* equal or slightly thickened at base, glabrous or pruinose at apex, white or whitish. SPORES globose, 5-8 micr. in diameter, smooth, white. TASTE slightly unpleasant.

(Dried: Caps grayish-fawn color, gills pale cinnamon.)

Very caespitose. Pastures, fields, grassy roadsides, open woods usually of broad leaved trees. Ann Arbor, Bay View, Marquette, New Richmond, etc. June to October. Frequent. Edible but not of the best variety for culinary purposes.

Except in color and in the nature of the cuticle of the cap, this species approaches *C. cartilaginea* Bres. The variations in the

attachment of the gills shade into the genus Tricholoma. *C. multiceps* appears after prolonged rainy weather, and when developed rapidly it is quite tender and sweet. The clusters are often densely crowded and may usually be recognized by their firmness and dull white color.

775. **Clitocybe cartilaginea** Bres.

Fungi Tridentini, 1892.

Illustration: Ibid, Pl. 111.

PILEUS 4-8 cm. broad, convex, obtuse, dry, *provided with a cartilaginous cuticle, smoky-tan or whitish-tan,* tinged with gray or brown, glabrous, even, margin splitting. FLESH white, *thick.* GILLS *crowded,* attenuate subdecurrent, sometimes adnate and becoming sinuate or almost free when old, *narrow,* tough, subcartilaginous, attenuate at both ends, sordid white to *pale straw color.* STEM 5-7 cm. long, tapering upwards or subequal, 1-2 cm. thick at apex, stout, paler than pileus, somewhat spongy-clavate at base, cuticle toughish, solid, pruinose above, subfibrillose, bases somewhat connate. SPORES globose, 5-7 micr., nucleate, smooth, white. CYSTIDIA none; basidia 30-32 x 6-7 micr. ODOR and taste mild.

Caespitose. In woods. June, etc.

Sent in from outside the southern boundary of the State, and apt to occur within the State. The darker colors of the cap, and the straw-colored, truly crowded gills seem to be the only characters besides the cartilaginous cuticle of the pileus, by which to separate pale forms of *C. cartilaginea* from *C. multiceps.* Superficially, the habit, etc., of the two species are much the same. It was placed among the Tricholomas by Fries as *T. loricatum.* When quite young the color of the pileus is smoky-black.

Subsection III. Infundibuliformis. Pileus at length infundibuliform or deeply umbilicately depressed. Gills deeply and equally decurrent from the first. Color of pileus often fading but not hygrophanous.

776. **Clitocybe catina** Fr.

Epicrisis, 1836-38.

Illustration: Fries, Icones, Pl. 51, Fig. 4.

PILEUS 3-5 cm. broad, pliant, convex-infundibuliform, *regular, glabrous,* with a gelatinous feel when moist, not striate on margin (moist or dry), buff-white, after repeated rains pale dingy brownish, moist, not hygrophanous, never becoming shining-white, margin decurved. FLESH thin, *white, toughish.* GILLS decurrent, *crowded,* narrow, *dull whitish,* never yellowish nor cinereous, simple, edge entire. STEM 3-4.5 cm. long, 3-5 mm. thick, equal, terete, *straight,* stuffed then hollow, *tough,* white becoming sordid, pruinose above, tomentose toward base. SPORES ovate, 4-5.5 x 3 micr., smooth, white. CYSTIDIA none. ODOR farinaceous.

Gregarious or scattered, on the ground among leaves and pine needles in woods of beach and white pine. New Richmond. September-October. Abundant locally.

This seems to be merely a form of *C. catina,* from which it varies slightly. The gills are more crowded and after rains no incarnate tint is noticeable. It agrees very well in other respects with the figures and descriptions of Fries. The plants have the size and much the shape of *C. infundibuliformis,* but the latter has a reddish-tan colored cap when young, fading in age. *C. catina* is watery-whitish when fresh and the surface of the pileus becomes perfectly smooth and almost slippery, but is not truly hygrophanous. The shape of the cap is that of a regular vase or deep bowl and this character gives it the name. The pileus is more regular and smaller than *C. phyllophila* although the two species may apparently be easily confused.

777. Clitocybe infundibuliformis Fr. (Edible)

Elenchus Fungorum, 1828.

Illustrations: Cooke, Ill., Pl. 107.
Bresadola, Fungh. mang. e. vel., Pl. 38.
Gillet, Champignons de France, Pl. 107.
Hard, Mushrooms, p. 89, Pl. 9, 1908.
Conn. Geol. and Nat. Hist. Surv. Bull. 3, Pl. 19, 1905.
Plate CLVIII of this Report.

PILEUS 5-7 cm. broad, at first convex and *subumbonate* then depressed and finally entirely *infundibuliform,* dry, flaccid, coated with a delicate silkiness, *reddish to pale tan color,* fading with age, margin even and thin. FLESH white, thickish on disk. GILLS deeply decurrent, close, *thin,* white or whitish, narrow, acuminate at both ends, edge rather serratulate. STEM 4-8 cm. long, 5-10 mm. thick, tapering slightly upward, glabrous, spongy within, externally firm, rather elastic, pale reddish or pallid, white-mycelioid at base where attached to leaves, etc. SPORES ovate to subpyriform, obliquely sharp-pointed and apiculate, 5-8 x 3-4 micr. when mature, smaller when immature; basidia 4-spored. ODOR pleasant, TASTE mild.

(Dried: Cap reddish-tan, gills alutaceous to tan.)

Single or somewhat caespitose. Attached to decaying leaves and debris in both conifer and non-coniferous woods. Throughout the State as far as Isle Royale. July-October. My first record is July 8, the last October 20. Very common.

This is one of the first species to appear after the July rains set in. It becomes very robust at times, simulating *C. geotropa,* but the spores are longer than in that species. (See Patouillard, Tab. Analyt.) The color of the cap changes in a definite direction; when young and fresh the red color is predominant, when old the whitish hues appear. *C. flaccida* Fr. is said to differ in the tawny to rust-colored pileus which does not fade in age; I have been unable to recognize it in this State. The gills become yellowish. Its shape and habit are like *C. infundibuliformis,* and are therefore well shown in the illustrations of the latter. Both are edible and not likely to be confused with any injurious mushrooms.

778. Clitocybe pinophila Pk.

N. Y. State Mus. Rep. 31, 1879.

PILEUS 2-3 cm. broad, convex, then plane and slightly umbilicate, subinfundibuliform in age, moist, glabrous to minutely squamulose, *tan-color* to dingy-white, even on margin. FLESH whitish. GILLS subdecurrent, close, *narrow,* intervenose, whitish. STEM short, 1.5-2 cm. long, 2 mm. thick, equal, even, *solid,* fibrillose to pruinose, concolor. SPORES elliptical-ovate, narrowed to the apiculus, 5-6 x 4 micr., smooth, white. CYSTIDIA none; basidia 4-spored. ODOR farinaceous. TASTE farinaceous slowly becoming biting to the tongue.

Gregarious. On beds of pine needles, under white pine. New Richmond. September. Infrequent.

The plants do not agree in every respect with Peck's description. The stem is solid when fresh and young. It seems to approach two other species, *C. gallinacea* Fr. and *C. pithyophila* Fr. From *C. gallinacea, C. pinophila* differs in color and habitat and in the tendency to become infundibuliform; from *C. pithyophila, C. pinophila* differs in its small size, color and solid stem, etc. The acridity is slight. We need more microscopic data on these three species.

779. Clitocybe parilis Fr.

Syst. Myc., 1821.

Illustrations: Fries, Icones, Vol. I, Pl. 48.
Cooke, Ill., Pl. 281.

PILEUS 2-3 cm. broad, convexo-plane, obtuse, depressed or cup-shaped, dry, *minutely flocculose-scaly, brownish-ashy,* margin even, decurved and flexible, splitting when old. FLESH thin, white, soft. GILLS close to subdistant, long decurrent, arcuate, narrow, becoming dingy-white, *at first slightly cinereous,* few forked. STEM 3 cm. long, 2 mm. thick, equal or subequal, even, pruinose, glabrescent, terete, toughish, stuffed, pale ashy to pallid, base white mycelioid. SPORES 6 x 3.5 micr., elliptic-ovate, smooth, white. TASTE slightly but tardily disagreeable. ODOR somewhat farinaceous.

Singly or gregarious. On the ground in frondose and mixed woods. Ann Arbor. New Richmond. October. Infrequent.

Our specimens had close gills, whereas the European plant is said to have crowded gills. Otherwise it seems to belong here. Barla says the odor is like that of *Armillaria caligata,* or of *jasmine,* at first agreeable then nauseous.

780. Clitocybe sinopica Fr.

Syst. Myc., 1821.

Illustrations: Cooke, Ill., Pl. 647.
Fries, Icones, Pl. 55, Fig. 2.
Gillet, Champignons de France, No. 105.

"PILEUS 2-3 cm. broad, thin, soon plane and depressed, *umbilicate,* dry, at first glabrous then flocculose, brick-red then becoming pale. FLESH white, elastic. GILLS decurrent, *very crowded, rather broad,* white becoming yellowish. STEM 2-4 cm. long, 3-8 mm. thick, stuffed, *equal,* subfibrillose, concolor or yellowish. SPORES 6-8 x 4-5 micr. ODOR and TASTE strong, farinaceous."

Woods. Spring and summer. Infrequent. Reported by Longyear. *C. praecox* might be mistaken for it, but that species has a stouter habit, is quite fleshy on the disk, and the gills are not at all crowded.

781. Clitocybe pulcherrima Pk.

Jour. of Mycology, Vol. 14, 1908.

PILEUS 3-7 cm. broad, convex, then umbilicate-depressed, *citron-yellow to cream-color* (Sacc.), fading, opaque, moist, not hygrophanous, *soft,* slightly silky-tomentose on disk, margin even. FLESH white or sometimes tinged cream color, thin on margin. GILLS equally decurrent, *narrow,* subdistant, *ochraceous-yellow,* few forked, edge entire. STEM 4-8 in. long, equal or subequal, spongy at base, stuffed then hollow, at first silky-tomentose then fibrillose with loose longitudinal fibrils, even. SPORES globose, 4-5.5 micr. diameter, *minutely echinulate,* white. ODOR and TASTE mild.

On decaying leaves or wood. Detroit, New Richmond. September-October. Infrequent.

The above description was made from fresh co-type material, at the time the type was sent to Peck. The spores have an obscure angularity, and are very minutely spinulose. In this character

they approach *C. spinulosa* Smith, a British species, whose spinulose spores are said to be larger, as much as 8-9 micr. The type was found near Detroit by members of the Detroit Mycological Society. I found it again in the western part of the State. It seems to be rather rare. Its yellow color is unusual in this genus. *C. sulphurea* Pk. has a streaked yellow pileus and stem, adnate gills and larger spores.

Section IV. Hygrophanae. Pileus thin, hygrophanous, not scaly. Flesh soft, watery, scissile.

Subsection I. Cyathiformis. Pileus depressed then cup-shaped: flesh scissile, thin.

**Gills cinereous.*

782. Clitocybe cyathiforme Fr.

Syst. Myc., 1821.

Illustrations: Cooke, Ill., Pl. 113.
Plate CLIX of this Report.

PILEUS 2-7 cm. broad, thin, convex, soon plane and umbilicate-depressed, or *cup-shaped,* hygrophanous, fuliginous-brown when young and moist, becoming brownish-gray, glabrous or innately fibrillose, opaque, margin involute and even. FLESH watery, concolor, scissile. GILLS becoming acuminate-decurrent, narrow, *subdistant,* intervenose, varying to close or distant, grayish-brown, edge entire. STEM 4-7 cm. long, 3-6 mm. thick, tapering upwards, *spongy-stuffed, elastic, brownish to cinereous,* fibrillose when fresh, the fibrils forming reticulations, tomentose at base. SPORES 7-9.5 x 5-6 micr., occasionally some larger, elliptical-ovate, with an oblique apiculus, smooth, white; sterigmata stout; basidia 4-spored. ODOR slightly aromatic or none, TASTE mild.

(Dried: Pileus smoky-fuscous to smoky cinnamon; gills brownish-gray.)

Scattered, *on rotten wood,* logs, etc. Ann Arbor, Bay View, Marquette, New Richmond. In coniferous, mixed or frondose woods. September-October. Infrequent.

This is an autumnal species, and with us always occurs on rotten wood. The gills are said to be distant in the European plants.

The gills of our plants are never separated to such extent; they are either truly subdistant or rather close. *C. expallens* Fr. is a species with close gills, but European mycologists seem to consider that this is an ecological variant of *C. cyathiforme.* Excepting the gills all the characters of our specimens are those of the European *C. cyathiforme,* and I am inclined to think that variations with close gills will also have to be included under *C. cyathiforme.* The spores of our collections are all alike, although quite variable in single plants. Barla says the odor is that of hay. Although the gills are ashy-brown, the spores are white. Peck has described two related species, *C. subcyathiforme* and *C. subconcava. C. subcyathiforme* is watery-white on the cap when moist, and the gills are white, but the stem is fibrillose-reticulate as in *C. cyathiforme,* the spores slightly smaller; *C. subconcava* has a brownish to reddish-brown cap, its gills are close and subcinereous, but the spores are only 5-6 x 3-4 micr. I have not seen them.

***Gills yellowish.*

783. **Clitocybe ectypoides** Pk.

N. Y. State Mus. Rep. 24, 1872.

PILEUS 2-5 cm. broad, thin, broadly umbilicate to infundibuliform, finely *virgate* with close-pressed blackish fibrils, *squamulose-punctate, the black points seated on the radiations,* hygrophanous, watery-gray to dull watery-yellow, margin spreading and even. FLESH with an aqueous juice, concolor. GILLS long decurrent, narrow, sometimes forked, *subdistant* or nearly so, *yellowish.* STEM 2-5 cm. long, 2-4 mm. thick, equal, firm, *solid,* concolor or paler, white-mycelioid at base. SPORES elliptical, 8-9 x 4-5 micr., smooth, white.

Scattered, on rotten logs in conifer or mixed woods of northern Michigan. Bay View, Marquette, Huron Mountains. August-September. Frequent locally.

The pileus is sometimes irregular, and the stem may be eccentric. In our plants the gills are always more nearly subdistant than close.

****Gills whitish.*

784. **Clitocybe adirondackensis** Pk. (EDIBLE)

N. Y. State Cab. Rep. 23, 1872.

Illustrations: N. Y. State Mus. Rep. 54, Pl. 69, 1901.
Hard, Mushrooms, Fig. 71, p. 97, 1908.

PILEUS 2-5 cm. broad, thin, convex then plane and *umbilicato-depressed* to infundibuliform, glabrous, hygrophanous, *white or tinged tan-color,* margin at first decurved, then elevated, even, *with a narrow zone near the edge when moist.* FLESH white, thin. GILLS long decurrent, *crowded, very narrow,* thin, white. STEM 3-7 cm. long, 2-4 mm. thick, cylindrical, *glabrous, stuffed then hollow,* even, white or whitish, mycelioid-thickened at the base. SPORES minute, elliptical-ovate, smooth, 4-5.5 x 3-3.5 micr. TASTE "like that of the common mushroom," Peck.

(Dried: Cap and gills ochraceous-tan, stem paler.)

Gregarious or subcaespitose among leaves, etc., in frondose and mixed woods. Ann Arbor, Marquette, Detroit. Frequent. August-October.

The characters are well shown in Dr. Fischer's photograph in Hard's book. The crowded narrow gills, the dingy white color of the cap varying into a circular zone near the edge, and the stuffed stem distinguish the plant. It seems to be quite common on wooded hillsides of southern Michigan. It approaches *C. eccentrica.*

785. **Clitocybe eccentrica** Pk.

Bull. Torr. Bot. Club, Vol. 25, p. 321, 1898.

PILEUS 2-5 cm. broad, convexo-plane, umbilicate then infundibuliform and turbinate, glabrous, subhygrophanous, *watery-white and shining when moist,* sometimes tinged ochraceous, buff whitish when dry, the thin surface layer slightly differentiated into long subgelatinous cells, the thin margin even, often lobed, split and finally recurved. FLESH thin, whitish. GILLS *short-decurrent* from beginning, *very crowded, narrow,* somewhat forked, *dingy-white.* STEM 2-4 cm. long, 2-4 mm. thick, slender, equal, stuffed, fibrous, elastic, whitish, pruinose above, *base inserted by a tuft of strigose hairs and continued into the substratum by long white*

strings or rhizomorphs, often eccentric. SPORES very minute, 4-5 x 2-3 micr., elliptical-ovate, smooth, white. ODOR mild, TASTE sometimes slightly bitter.

(Dried: Cap and gills pale rufous-tan.)

Caespitose or scattered. On very rotten wood in mixed and frondose woods. Ann Arbor, Bay View, Houghton, etc. July-September. Frequent throughout the State.

This species approaches *C. adirondackensis,* from which the short decurrent gills, the different lustre of the cap and the rhizomorphs at the hairy base of the stem separate it; the spores too, average half a micron smaller. These differences may be merely an expression of habitat, since the one grows mainly on rotten wood, the other among leaves and humus. Another species of Peck, said to grow on rotten wood, is *C. leptoloma.* Here also, the strigose base of the stem and the rhizomorphs are about the only characters of *C. eccentrica* which separate it. It is likely that these three species are variations of one of them.

786. Clitocybe albidula Pk.

N. Y. State Mus. Rep. 46, 1893.

Illustrations: N. Y. State Mus. Rep. 53, Pl. C, Figs. 16-20.

PILEUS 1-4 cm. broad, thin, convex-plane, umbilicate, subhygrophanous, *pale grayish-brown* to whitish, the *umbilicus always darker and brown,* glabrous, margin faintly striatulate. GILLS subdecurrent, crowded, narrow, thin, sometimes forked, intervenose, whitish. STEM 2-5 cm. long, 2-4 mm. thick, equal, stuffed then hollow, concolor, fibrous-toughish, even, white-mycelioid at base. SPORES 5-6 x 3-4 micr., elliptic, smooth, white. ODOR and TASTE farinaceous.

Gregarious, in woods of hemlock and cedar. Bay View. September. Infrequent.

A form occurs with creamy-white pileus and brown umbilicus with spores the same. This form has only a faint odor, but no doubt belongs here. The brown umbilicus and slightly larger spores, along with the grayish tinge in the color, separate this species from the preceding two. It never becomes truly cyathiform nor infundibuliform.

787. Clitocybe caespitosa Pk.

N. Y. State Mus. Bull. 41, 1888.

"PILEUS 2-4 cm. broad, convex-plane then infundibuliform, *often irregular,* slightly silky, hygrophanous, *grayish-brown when moist,* subcinereous or argillaceous when dry. GILLS decurrent, narrow, close, somewhat forked, white. STEM 2-3 cm. long, 4-6 mm. thick, equal, stuffed then hollow, silky, white. SPORES minute, subelliptical, 3-4 micr. long."

In woods. Caespitose, the caps deformed and made irregular by mutual pressure. Reported by Longyear.

Subsection II. Orbiformis. Pileus convex then plane or slightly depressed, often obtuse, polished, not squamulose nor mealy.

********Gills grayish.***

788. Clitocybe metachroa Fr.

Syst. Myc., 1821.

Illustrations: Cooke, Ill., Pl. 115.
Patouillard, Tab. Analyt., No. 308.

PILEUS 1-4 cm. broad, thin, convex then plane and depressed, *at first dark-fuscous* then brownish-gray or livid (moist), dull grayish-white (dry), hygrophanous, glabrous, margin even, substriate (dry). FLESH thin, concolor. GILLS adnate to slightly subdecurrent, sometimes by lines, *crowded,* narrow, dark fuscous when young, *then whitish-ashy,* thin, at length flaccid, edge entire. STEM 3-4 cm. long, 2-4 mm. thick, subequal, even, at first *dark fuscous and pruinose-silky,* then grayish and glabrescent, stuffed then hollow, often compressed, toughish. SPORES minute, ovate, 5 x 2.5 micr., smooth, white. CYSTIDIA none. ODOR none or faintly farinaceous after crushing the flesh. TASTE mild.

Gregarious or scattered. On the ground in frondose and conifer woods. Ann Arbor, Marquette. September-November. Infrequent.

The color of the whole plant changes remarkably from the young stage to maturity and in age. *C. ditopoda* Fr. is similarly colored, differing mainly in its strong farinaceous odor and probably in the spore characters. It should not be confused with *C. cyathiforme,* which is larger, has larger spores and usually grows on wood.

789. Clitocybe ditopoda Fr.

Syst. Myc., 1821.

Illustration: Cooke, Ill., Pl. 116.

PILEUS 2-5 cm. broad, convex then subexpanded and *umbilicate-depressed,* pliant, glabrous, even, hygrophanous, *cinereous or grayish-brown* (moist), dull white (dry), margin somewhat irregular. FLESH thin. GILLS adnate or scarcely subdecurrent, *crowded,* rather narrow, pallid at first, soon *cinerascent* and smoky-gray, edge entire. STEM 2-3 cm. long, 3 mm. thick, terete or more *often compressed,* irregular, *pale cinereous,* stuffed soon hollow, pruinose downwards. SPORES elliptic-ovate, 5-6 x 3-4 micr., smooth, white. CYSTIDIA none. ODOR and TASTE farinaceous.

Gregarious or subcaespitose. On the ground, among needles and debris of tamarack trees in wet swamp.

Ann Arbor. October-November. Infrequent.

This species was abundant in this one locality. It has much in common with *C. metachroa,* but differs from it in the farinaceous odor and in the different color changes in passing from the young to the old stage. The plants also do not have the stiff appearance of *C. metachroa.*

790. Clitocybe peltigerina Pk.

N. Y. Mus. Rep. 30, 1878.

PILEUS 4-10 mm. broad, *small,* subexpanded, umbilicate, hygrophanous, *grayish-brown and striatulate when moist,* whitish to pale gray when dry, glabrous. GILLS decurrent, *distant,* narrow, somewhat forked and intervenose, *grayish-brown,* thickish, pruinose. STEM 1-2 cm. long, 1.5 mm. thick, equal, solid, elastic, pallid or tinged grayish-brown, pruinose below, base minutely tomentose. SPORES elliptical-ovate, pointed-apiculate, 8-10 x 4-5.5 micr., smooth, white; basidia 4-spored; cystidia none. ODOR and taste none.

Singly or subcaespitose. On Peltigera, one of the lichens. Ann Arbor. May 5. Rarely found.

Remarkable for its habitat. It is small and imitates the color of its substratum and is easily overlooked.

***Gills whitish.*

791. Clitocybe morbifera Pk. (Poisonous)

Bull. Torr. Bot. Club, Vol. 25, p. 321, 1893.

Illustration: Plate CLIX of this Report.

PILEUS 1.5-4 cm. broad, convex then plane, sometimes slightly depressed or obtuse, hygrophanous, or at least moist, glabrous, grayish-brown to grayish-buff when moist, *white to alutaceous when dry,* somewhat reviving, margin even and incurved. FLESH thin, whitish. GILLS adnate-decurrent, moderately close, slightly broad in middle, narrowed to a point at both ends, whitish, becoming pale tan in age, thin, edge entire. STEM 2-3.5 cm. long, 2-4 mm. thick, subequal, *solid* and *spongy-fibrous within, pruinose,* slightly fibrillose, *tough,* colored like pileus or paler, straight or curved, not slender.

Microscopic: SPORES oval, minute, about 5 x 3 micr., white, smooth, usually poorly developed; basidia about 20 micr. long; trama of gills of parallel hyphae, 4 micr. in diameter; trama of pileus only slightly wider, all of the trama being composed of compact, narrow, long hyphae; the cuticle is not noticeably differentiated. Cystidia none. ODOR none. TASTE varies, sometimes slight, when fresh it is slightly astringent.

(Dried: Entirely dirty white or grayish-white.)

Singly or subcaespitose among grass *on lawns,* roadsides, etc. Specimens from Adrian found under a syringa bush and elsewhere. October. Adrian, Ann Arbor, and Detroit. Frequency not yet certain, as it is probably often overlooked. *Poisonous.*

This is apparently a dangerous plant. In the case of *C. illudens,* there is no uncertainty in its recognition, as it is more brightly and differently colored than any related mushrooms; but *C. morbifera* has many near relatives which, like *C. dealbata,* are sometimes difficult of separation. Fortunately, no one except beginners, or extreme mycophagists, collect these small species. Still the fact that it grows on lawns where only edible species are normally found, makes this a troublesome intruder. Several families in different parts of the country are now known to have been made sick from eating it. Peck reports a case from Washington, D. C., from which source came the material for his description. Our specimens were sent by E. D. Smith from Adrian, Michigan. Several persons in

Adrian ate *C. morbifera* with a mess of *L. naucina*. The victims suffered blindness, swollen throat, etc. Our specimens did not have the marked taste described by Peck, nor a truly "hollow" stem. It is doubtless the same species however.

792. Clitocybe compressipes Pk.

N. Y. State Mus. Rep. 33, 1880.

PILEUS 2-5 cm. broad, convex then plane and depressed or subumbilicate, hygrophanous, thin, glabrous, *pale watery-brown and even when moist,* whitish or tinged tan when dry, edge of margin persistently incurved. FLESH rather thin, concolor, upper layer of trama differentiated and composed of delicate, long, subgelatinous cells. GILLS subdecurrent, close, rather narrow, *pale watery-ochraceous or brownish when moist,* whitish when dry, intervenose. STEM short, 2-3 cm. long, 2-3 mm. thick, soon hollow and compressed, equal, even, glabrous or subvillose, grayish-brown to pallid, attached by tomemtum to leaves, etc. SPORES 4-5.5 x 2.5-3.5 micr., elliptical-ovate, smooth, white. ODOR and TASTE mild.

(Dried: Cap pale tan to dingy white, gills sordid white.)

Scattered or subcaespitose. Among leaves in frondose woods. Ann Arbor. September-October. Infrequent.

These plants do not have the farinaceous odor which is present in *C. albidula* of conifer woods.

793. Clitocybe angustissima Fr.

Epicrisis, 1836-38.

Illustrations: Fries, Icones, Pl. 59, Fig. 2.
Gillet, Champignons de France, No. 111.
Cooke, Ill., Pl. 125.

PILEUS 2-5 cm. broad, convex-expanded, *obtuse or subdepressed,* subhygrophanous, glabrous, *watery-white, candicans,* even (moist), slightly striatulate (dry), margin spreading, at length recurved. FLESH thin, whitish. GILLS slightly *subdecurrent,* very narrow, *very crowded,* thin, whitish, edge entire. STEM 3-5 cm. long, slender, 2-5 mm. thick, whitish, flexuous or curved at base, equal or tapering downward, *apex naked,* pubescent at base. SPORES short elliptical. 5-7 x 3-4 micr., smooth. CYSTIDIA none. BASIDIA about 27 x 6 micr., 4-spored. ODOR none or faint.

Scattered, on the ground among leaves in low frondose woods. September. New Richmond. Infrequent.

This is one of a number of similar species, in this case well-marked by the very crowded and narrow whitish gills, the watery-white color and the lack of odor. *C. albidula* Pk. differs mainly in its farinaceous odor. *C. compressipes* Pk. can probably be differentiated by its close rather than very crowded gills and by the compressed stem; both of Peck's species are said to have the caps tinged brownish when moist, and not shining-white (candicans) as in *C. angustissima.*

SUBGENUS LACCARIA. Spores globose, echinulate; pileus usually minutely scaly or floccose.

794. Clitocybe laccata Fr. (Edible)

(*Laccaria laccata*)

Syst. Myc., 1821.

Illustrations: N. Y. State Mus. Rep. 48, Pl. 25, 1896.
Murrill, Mycologia, Vol. 3, Pl. 40, Fig. 4.
Hard, Mushrooms, Fig. 76, 77, p. 105, 1908.
Cooke, Ill., Pl. 139.
Patouillard, Tab. Analyt., No. 104.
Gillet, Champignons de France, No. 99.

PILEUS 2-5 cm. broad, thin, convex then plane, subumbilicate, variable in shape, hygrophanous, glabrous at first, then scurfy-scaly, pale red to flesh-red when moist, pale ochraceous-whitish when dry. FLESH thin, moist. GILLS broad, *distant,* broadly emarginate, tinged flesh color, white-pruinose. STEM 2-7 cm. long, 2-6 mm. thick, slender, equal, *fibrous and tough,* stuffed, *pale flesh-red,* sometimes striate. SPORES globose, 8-10 micr., echinulate, spines 1 mm. long, white. ODOR agreeable. TASTE fungoid.

Scattered everywhere in woods, groves, swamps or grassy places, on naked soil, mosses, or leaves, etc. Throughout the season; my earliest record is May 5, the last November 8. Everywhere in the State, in coniferous or frondose woods. Very abundant in wet weather. It is edible, but not particularly well-flavored.

Varieties occur, and the common form shades gradually into var. *striatula* Pk., var. *amethystina* Bolt and var. *pallidifolius.* Var.

striatula Pk. has a very thin cap which is radially striate from near the umbilicate center; spores 9-11 micr. diam., globose, echinulate, the spines about 1 micron long. Var. *amethystina* Bolt. has a darker cap, and beautiful deep-violaceous gills, which are broadly adnate-decurrent. The spores of our specimens of var. *amethystina* are like those of the normal form. Var. *pallidifolia* Pk. is like the common form except that the gills are pallid. This species and its varieties are sometimes confused with *Lactarius subdulcis*.

795. Clitocybe tortilis Fr.

(*Laccaria tortilis*)

Hymen. Europ., 1874.

Illustration: Patouillard, Tab. Analyt., No. 105.

PILEUS 5-12 mm. broad, submembranaceous, convex then expanded and depressed on disk, *distantly radiately striatulate from the center* when moist, hygrophanous, pale reddish or salmon color, pruinose, disk whitish-scurfy, margin sometimes plicate or splitting, often deformed or irregular. GILLS *distant,* rather narrow, *adnate-subdecurrent,* thick, not forked nor veined, salmon-colored, edge concolor. STEM 1-2 cm. long, 1 mm. thick, slender, equal, *fibrous-toughish, stuffed with a white pith,* pellucid flesh color, glabrous, base white-mycelioid. SPORES *large, globose,* long-echinulate, white, 12-14 micr. diam.; basidia 2-spored.

On the ground, in wet places, sometimes on moss. Marquette. August-September.

This is a distinct species and must not be confounded with *C. laccata* nor its varieties. The spores are nearly twice as large as in that species. It is easily mistaken for a species of the rosy-spored genus Eccila. It has sometimes been referred to as a variety of *C. laccata*.

796. Clitocybe ochropurpurea Berk. (Edible)

(*Laccaria ochropurpurea*)

Illustrations: N. Y. State Mus. Bull. 116, Pl. 106, 1907.
Hard, Mushrooms, p. 98, Pl. XI, Fig. 72, 1908.
Chicago Nat. Hist. Surv., Bull. VII, Fig. 2, 1909.

PILEUS 5-20 cm. broad, sometimes large, *subhemispherical,* then convex with a decurved margin or nearly plane or depressed, *compact,* rather thick, hygrophanous, purplish-brown when moist, pale grayish-alutaceous when dry, unpolished, margin regular or wavy, upturned in age. FLESH *tough,* concolor or pallid. GILLS *distant, thick,* broad, *adnato-decurrent, purple.* STEM 5-20 cm. long, 1-2 cm. thick, varying much in length and shape, subequal to fusiform or cylindrical, fibrous, often rigid and hard, solid, concolor or paler, sometimes curved or twisted. SPORES globose, short-echinulate, 8-9.5 micr., white, or tinged in mass with a lilac hue. TASTE rather disagreeable.

(Dried: Cap and stem grayish-white to sordid-white, gills smoky-fuscous.)

Scattered or subcaespitose. On bare ground or open grassy places, preferring a hard soil, often in woods, conifer, mixed or frondose. From Isle Royale to the southern limit of the State, everywhere. July-October.

Not as common as *C. laccata*. In its colors and shape it appears somewhat like a purple-gilled Cortinarius, but its texture is different and it lacks a veil. It becomes tender and of agreeable flavor when cooked.

Collybia Fr.

(From the Greek, *kollybos,* a small coin; probably because of the regularity of the disk-like pileus.)

White-spored. Stem *cartilaginous* or with a cartilaginous cuticle. Pileus *soon expanded,* not very fleshy, *its margin at first involute.* Gills adnate, adnexed or almost free, *not decurrent.* Spores mostly small or minute, smooth. Volva and annulus lacking.

Putrescent, thin capped, mostly lignicolous mushrooms, of slow growth, not reviving when moistened except in the section Marasmioideae, and, with few exceptions, of medium or small size. They are mostly attached to decayed wood, like stumps, logs, old buried roots, twigs, leaves, etc.; a few species even occur on decayed mushrooms, while others seem to grow on naked soil. The genus is most closely allied to Marasmius, but the plants differ in not reviving after drying up; from Mycena, the involute margin of the pileus, with its resultant expansion at maturity, is the main distinction. As this is only clearly seen in the very young stage, it is often difficult in mature plants to decide whether one has a Collybia or

Mycena. In the majority of Collybias, however, the pileus is expanded at maturity, but in Mycena the pileus usually remains campanulate.

The PILEUS is rarely brightly colored. The color may be brown, ashy, blackish, tan, yellowish, white, or shades of these colors. A few have a viscid cap, and in one section the cap is hygrophanous; it is glabrous except in *C. longipes,* and some of the Marasmioideae. In several of the hygrophanous species the margin is striatulate when moist. The GILLS are submembranous and soft, and continuous with the trama of the pileus. They are usually white, yellowish, rufescent or ashy. In one species they are lilac. Some mycologists have divided the sections by the difference in the width of the gills, some species have quite broad gills, others narrow gills. The mode of attachment separates the genus from Omphalia and Clitocybe, since they are never decurrent. The STEM is primarily cartilaginous, as in Mycena, Omphalia and many Marasmii. This character is not always easily recognized, and in some large species like *C. platyphylla,* the otherwise soft stem may mislead one. Furthermore, the stems of plants belonging to the fleshy-stemmed genera may, on drying in the wind, become somewhat cartilaginous in texture, so as to be mistaken for true cartilaginous forms. The base of the stem is usually rooting, sometimes remarkably so, as in *C. radicata,* and *C. longipes.* Some species have glabrous stems, while one section is composed of species with hairy, floccose, or pruinose stems. The presence of deep or at least evident striations running up and down the stem is used to set off another section. A few small species form a small sclerotium from which the fruitbody develops.

No poisonous species of Collybia are known, although the smaller species have probably never been tested. Many of the large species are of good flavor and much sought.

It is probable that some forty-five species occur within the State, but so far only thirty-four have been identified. The species have been grouped in various ways by different authors. In the main, the Friesian arrangement is retained, although somewhat modified. It seemed that relationships could be better shown by using the color of the gills to divide the main sections, rather than divide the whole genus into two main groups having white and cinereous gills respectively as Fries had done. A new section has been established to contain those species which approach the genus Marasmius. This is called the Marasmioideae and serves as a bridge to that genus. The genus is therefore composed of the five sections:

I. Tephrophanae.
II. Laevipedes.
III. Striaepedes.
IV. Vestipedes.
V. Marasmioidae.

Key to the Species

(A) Not reviving when moistened. [See also (AA).]
(a) Stem velvety, tomentose, floccose or pruinose. [For *C. myriadophylla* with lilac gills, see (aa).]
(b) Stem with a dense, tawny-brown to blackish, velvety covering.
(c) Pileus with a viscid, even, separable pellicle; mostly caespitose. 818. *C. velutipes* Fr.
(cc) Pileus not viscid, striatulate; growing scattered. *C. amabilipes* Pk.
(bb) Stem not densely velvety.
(c) Flesh changing to purplish-black where cut or bruised; stem fuliginous, pubescent. 820. *C. succosa* Pk.
(cc) Flesh not changing black; gills white or whitish.
(d) Pileus 2.5-5 cm. broad.
(e) Stem very long, deeply rooted; pileus velvety, brown. 819. *C. longipes* Fr.
(ee) Stem 3-4 cm. long covered with a close white tomentum, not rooting; pileus glabrous, whitish to pale reddish on disk. 825. *C. hariolorum* Fr.
(dd) Pileus less than 2 cm. broad; stems slender. (Mycena-like plants.)
(e) Stem arising from a small tuber, on decaying mushrooms or rich mold; pileus small, 1 cm. or less, whitish. 823. *C. tuberosa* Fr.
(ee) Stem not arising from tuber-like sclerotia.
(f) Growing on pine cones, needles, etc.
(g) Pileus 1-3 cm. broad, fuscous; stem elongated by a tomentose "root." *C. conigena* Fr.
(gg) Pileus 2-10 mm. broad, creamy-white to pale brownish, minutely pubescent. 822. *C. conigenoides* Ell.
(ff) Growing on the ground, humus, etc.
(g) Pileus whitish, faintly reddish-tinged; stem white-pulverulent. 824. *C. cirrhata* Fr.
(gg) Pileus grayish-brown to smoky-brown; stem white, under lens with minute dark points. 821. *C. floccipes* Fr.
(aa) Stem glabrous (often tomentose-hairy at base and pruinose at apex).
(b) Stem deeply rooting.
(c) Pileus viscid, radiately wrinkled, grayish, brown, or almost white; gills pure white; very common. 815. *C. radicata* Fr.
(cc) Pileus not viscid, hygrophanous, rufous-tan, smaller; gills dingy flesh color. 806. *C. hygrophoroides* Pk.
(bb) Stem without a long, root-like prolongation.
(c) Pileus large, 6-12 cm. broad.
(d) Gills broad, subdistant; pileus grayish-brown, etc., streaked with darker fibrils. 816. *C. platyphylla* Fr.
(dd) Gills narrow, crowded.
(e) Stem equal, subbulbous at base; pileus whitish, tinged creamy-yellow. 812. *C. albiflavidum* Pk. (*Tricholoma albiflavidum*).

(ee) Stem narrowed toward base, short-rooting.
(f) Gills yellow or yellowish; pileus ochraceous, not stained. 817. *C. scorzonerea* Fr.
(ff) Gills white or whitish; pileus stained ferruginous in spots. 817. *C. maculata* A. & S.
(cc) Pileus less than 6 cm. broad.
(d) Pileus white, small, 4-10 mm. broad.
(e) Gills narrow; spores narrowly-elliptical, 10 x 4-5 micr. *C. delicatella* Pk.
(ee) Gills broad, ventricose; spores subglobose, 4-5 x 3-4 micr. *C. alba* Pk.
(dd) Pileus not truly white.
(e) Gills lilac-color, narrow, very crowded; pileus 1-2.5 cm. broad. 807. *C. myriadophylla* Pk.
(ee) Gills some other color.
(f) Gills white or whitish.
(g) Gills rather broad, ventricose.
(h) Odor alkaline when crushed; pileus grayish-umber, hygrophanous, striatulate. 801. *C. alcalinolens* Pk.
(hh) Odor not alkaline.
(i) Taste bitter; pileus pale yellowish-brown, umbilicate. *C. esculentoides* Pk.
(ii) Taste farinaceous; pileus and stem dark rufous-brown, obtuse. 814. *C. succinea* Fr.
(gg) Gills rather narrow.
(h) Caespitose or densely gregarious on decaying logs; pileus grayish-brown to buff.
(i) Pileus subumbilicate, not hygrophanous; gills adnate. 813. *C. abundans* Pk.
(ii) Pileus obtuse, hygrophanous; gills nearly free. 802. *C. familia* Pk.
(iii) See also *C. dryophila*.
(hh) Solitary, gregarious or subcaespitose.
(i) Pileus smoky-brown; not hygrophanous; stem 4-6 mm. thick, brown. *C. fuliginella* Pk.
(ii) Pileus pale, chestnut, reddish-brown, yellowish brown, waxy-yellow or tan.
(k) Stem striate; pileus umbonate; gills crenulate on edge. 797. *C. butyracea* Fr.
(kk) Stem not striate.
(l) Stem reddish-brown or yellowish, pileus pale reddish-brown, yellowish, tan, etc. 798. *C. dryophila* Fr.
(ll) Stem white or whitish.
(m) Pileus yellowish-white tinged rufous, slightly rugose; stem strict. 800. *C. strictipes* Pk.
(mm) Pileus reddish-brown to chestnut (moist); gills serrate on edge. 799. *C. lentinoides* Pk.
(ff) Gills not at length white or whitish.
(g) Gills yellow or yellowish.
(h) On decaying wood, scattered; pileus yellow; gills brownish-red on drying. 804. *C. colorea* Pk.
(hh) On the ground, caespitose; pileus watery-rufous-brown at first, then honey-yellow. 803. *C. aquosa* Fr. var.
(gg) Gills soon rufescent or cinerascent or darker.
(h) Pileus pale tan or flesh-reddish (moist); gills tinged flesh color. 805. *C. acervata* Fr.

(hh) Pileus hygrophanous, blackish or smoky-brown at first; gills cinerascent or dark brown.
(i) Odor and taste farinaceous; pileus striatulate (moist). 811. *C. expallens* Pk. var.
(ii) Odor none or slight; pileus even.
(k) Stem 2-3 cm. long, pileus umbilicate, pitch-black (moist); on burnt ground. 808. *C. atrata* Fr.
(kk) Stem longer; pileus blackish-chestnut (moist), obtuse; on mossy ground. 809. *C. plexipes* Fr. var.
(kkk) Stem 2-3 cm. long; pileus grayish-brown; gills fuscous; on wood. 810. *C. atratoides* Pk.
(AA) More or less reviving when moistened.
(a) Pileus umbilicate, fibrillose-hairy.
(b) Pileus 1-2.5 cm. broad, zonate, dark tawny. 827. *C. zonata* Pk.
(bb) Pileus 0.5-1 cm. broad, umbilicus papillate. 828. *C. stipitaria* Fr.
(aa) Pileus not umbilicate.
(b) Pileus and stem sulphur-yellow, tough, sub-rigid. 830. *C. lacunosa* Pk.
(bb) Not yellow.
(c) Pileus 2-5 cm. broad, convex-plane, hygrophanous; stem densely whitish-pubescent; on the ground. 826. *C. confluens* Fr.
(cc) Pileus 5-8 mm. broad, conical-campanulate; stem institious, on twigs of arbor vitae. 829. *C. campanella* Pk.

Section I. Tephrophanae. Pileus more or less hygrophanous; at least watery.

**Gills white or whitish.*

797. Collybia butyracea Fr. (Edible)

Syst. Myc., 1821.

Illustrations: Michael, Führer f. Pilzfreunde, Vol. III, No. 104.
Cooke, Ill., Pl. 143 (faded).
White, Conn. State Geol. and Nat. Hist. Surv. Bull. 15, Pl. VIII, 1910.
Gillet, Champignons de France, No. 149 (faded).

PILEUS 3-7 cm. broad, convex-expanded, *umbonate* to subumbonate, even, glabrous, reddish-brown, darker when young, fading with age, surface *with a fatty lustre when moist,* subhygrophanous, or watery and soft in wet weather. FLESH becoming white, thickish on disk. GILLS adnexed, almost free, crowded, thin, rather narrow, *white,* edge *crenulate.* STEM 3-7 cm. long, conico-attenuated upwards, 4-6 mm. thick above, at length subequal and subbulbous, *striate,* glabrous or slightly downy toward base, cuticle rigid-cartilaginous, base mycelioid. SPORES 5-7 x 3-3.5 micr., nar-

rowly ovate, pointed-apiculate, smooth, white; CYSTIDIA none. ODOR and TASTE mild.

Solitary or gregarious. Very common in woods of white pine, New Richmond; infrequent in frondose woods, Detroit, Ann Arbor and Marquette. July-October.

The "buttery Collybia" is often hard to separate from *C. dryophila* by descriptions, and there are probably intermediate forms. The typical plant seems to be limited to *coniferous woods.* The striate stem influenced Fries to refer it to the Striaepedes; but it seems to belong more naturally to this group, from its general appearance and the somewhat hygrophanous flesh. The umbo often disappears somewhat in age, but the crenulate gills, and striate stem seem quite consistent for the typical plants of conifer woods. The spores of this species and several of those following are practically the same. It is probable that the form in frondose woods is an ecological variety, as it rarely possesses a distinct umbo.

798. **Collybia dryophila** Fr. (Edible)

Syst. Myc., 1821.

Illustrations: Cooke, Ill., Pl. 204.
Gillet, Champignons de France, No. 156.
Michael, Führer f. Pilzfreunde, Vol. III, No. 103.
Patouillard, Tab. Analyt., No. 315.
Murrill, Mycologia, Vol. 3, Pl. 40, Fig. 8.
N. Y. State Mus. Bull. 122, Pl. 111, 1908 (coloring poor).
Plate CLX of this Report.

PILEUS 3-5 cm. broad, convex-expanded, obtuse or depressed, often irregular, even, glabrous, subhygrophanous, color variable, *tan, with reddish or yellowish shades,* disk darker, sometimes bay-brown, often faded. FLESH white, rather thin and pliant, somewhat watery. GILLS adnexed or narrowly adnate, *narrow, crowded, whitish* or pallid (yellowish in variety), edge entire or minutely crenulate. STEM 3-6 cm. long, 2-4 mm. thick, equal or tapering upward, *reddish-brown* or yellowish-tinged, usually concolor, glabrous, hollow, cuticle cartilaginous, white-mycelioid at base. SPORES 5-7 x 3.5 micr., smooth, narrowly ovate, white, CYSTIDIA none. ODOR and TASTE mild.

Gregarious or subcaespitose. Typical form in hard-wood forests, groves, etc. June to October. (Earliest record, May 28; latest, October 4.) Very common, throughout the State.

This species is the center of a "group," including *C. butyracea, C. lentinoides, C. estensis* Morg., *C. aquosa* and *C. acervata,* which may be called the "dryophila" group. There seem to be a whole series of variations, connecting *C. dryophila* and *C. butyracea* on the one hand, and *C. dryophila* and *C. aquosa* on the other. It is difficult in many cases to refer individual collections in a very strict way to the species mentioned, except by generalizing the descriptions. In this report, it seemed best to select plants which well fit the Friesian descriptions, and draw our descriptions from them, and consider intermediate plants as "forms" or "varieties" of these, leaving such identifications to the students. Secretan, long ago, named a number of these varieties; but such names carry very little meaning, as even the varieties may vary. It is very probable that the varieties occur under different influences of habitat, i. e., grow in different soil, under different moisture conditions, etc. The spore print is white at first, but may become yellowish-tinged with age. The plants appear at their best growing from thick mats of leaves and humus, and are then often caespitose and the stems are covered toward the base with a white down. The caps are delicious when fried with bread-crumbs and egg.

799. **Collybia lentinoides** Pk.

N. Y. State Rep. 32, 1879.

"PILEUS 1-2.5 cm. broad, convex or nearly plane, obtuse, glabrous, *hygrophanous,* reddish-brown or chestnut color when moist, reddish-tan color when dry. GILLS adnexed, narrow, close, *white,* serrate on edge. STEM 3-5 cm. long, about 2 mm. thick, equal, even or slightly striate, hollow, slightly pruinose at top, *white or whitish.* SPORES 6-7.5 x 4 micr.

"This species bears some resemblance to *C. dryophila,* from which it is differentiated by its hygrophanous pileus, serrated gills and white stem."

Reported by Longyear. Swamps. Summer. Apparently rare.

800. **Collybia strictipes** Pk. (Edible)

N. Y. State Mus. Rep. 41, 1888.

Illustration: Plate CLXI of this Report.

PILEUS 2.5 to 6.5 cm. broad, convex then plane, margin at

length raised, obtuse to subdepressed, *slightly rugose on disk,* rarely even, glabrous, *subhygrophanous,* yellowish-white, tinged with red, more deeply colored on disk, margin often slightly striate when moist. FLESH thin, watery-white when moist. GILLS adnexed or nearly free, rather crowded, medium width, *white or whitish,* edge minutely fimbriate. STEM 2-5 cm. long, 3-6 mm. thick, strict, *equal,* hollow, terete or subcompressed, sometimes twisted, even, glabrous, pruinose at apex, *white to pellucid,* white-mycelioid or strigose at base. SPORES narrowly elliptic-ovate, 6.5-8 x 3-3.5 micr., pointed at one end, smooth, white in mass. CYSTIDIA none; *sterile cells* on edge of gills short and slender. ODOR and TASTE mild.

Gregarious or scattered. Low, moist, rich frondose woods; on the ground or among mosses. Ann Arbor and New Richmond. Probably throughout the State. September-October. Infrequent.

The straight, pellucid-white stem and rugose cap distinguish it. Luxuriant specimens have rugose lines over the whole surface of the cap. The colors are rather clear compared with those of *C. dryophila* and *C. butyracea.* Peck compares it with *C. maculata,* from which it is easily distinct. *C. estensis* Morg. (Cinn. Soc. of Nat. Hist. Journ., Vol. 6, 1883, Plate 5) is very close, and may be a variety.

801. Collybia alcalinolens Pk.

N. Y. State Mus. Rep. 49, 1896.

Illustration: Plate CLXII of this Report.

PILEUS 1-2.5 cm. broad, at first ovate with incurved margin, *hygrophanous,* glabrous, grayish-umber (moist), grayish-brown or cinereous (dry), *margin striatulate when moist.* FLESH thin, whitish or grayish-tinged. GILLS sinuate-adnexed or emarginate, rather broad, *subdistant,* subventricose, white then obscurely grayish-tinged, edge entire. STEM 3-5 cm. long, 2-4 mm. thick, rarely thicker, equal, subpruinose, glabrescent, *shining even,* flexuous, stuffed then hollow, cartilaginous, elastic, whitish. SPORES oblong-ovate, narrow, 7-10 x 4 micr., smooth, white. CYSTIDIA and *sterile cells* lacking. BASIDIA about 27 x 5-6 micr., 4-spored. ODOR strong, *alkaline.* TASTE mild.

Gregarious or subcaespitose. On the ground among leaves, rich frondose woods. Ann Arbor. October-November. Frequent locally.

This species is known by its odor, its finally striate pileus and by its shining stem. It has the appearance and size of a Mycena, but the pileus is soon expanded. It reminds one strongly of *Collybia floccipes,* but the latter has numerous cystidia and no odor, although it grows in similar places.

802. Collybia familia Pk. (Edible)

N. Y. State Cab. Rep. 23, 1872.

Illustrations: N. Y. State Mus. Bull. 75, Pl. 84, 1904.
Marshall, The Mushroom Book, Pl. 16, op. p. 67, 1905.
Plate CLXIII of this Report.

PILEUS 1-3.5 cm. broad, *fragile,* convex or hemispherical, then expanded, *obtuse,* glabrous, hygrophanous, even or margin substriatulate when moist, watery-brownish-buff (moist), *creamy-buff to whitish* (dry), margin at length recurved and split radially. FLESH thin, concolor. GILLS adnexed or almost free, crowded, narrow, whitish, edge entire. STEM 4-8 cm. long, 2-3 mm. thick, *slender,* equal, toughish, stuffed then hollow, glabrous, rarely minutely flocculose, subconfluent at base with mycelioid tomentum, whitish. SPORES subglobose to oval, 3-4.5 x 3 micr., few larger, smooth, white. CYSTIDIA and *sterile cells* none. ODOR and TASTE none.

Densely *caespitose.* On decaying trunks and logs of hemlock and tamarack. Huron Mountains, Marquette, Munising, New Richmond, Ann Arbor. August-October. Infrequent.

Because of their edibility, it is fortunate that the abundant clusters of from ten to twenty individuals are rarely attacked by grubs; these clusters often cover a large part of a log. The species has the general habit of *Collybia abundans* from which it is distinguished by the hygrophanous flesh and by the pileus not being umbilicate nor virgate. The European *Collybia lacerata* Fr. has a similar habit and appearance, but its gills are said to be broad and distant. Peck compares it with *C. acervata,* a caespitose species with very different colors. The Ann Arbor specimens were found on tamarack logs.

***Gills yellow or yellowish.*

803. Collybia aquosa Fr. var. (Edible)

Syst. Myc., 1821.

Illustration: Fries, Icones, Pl. 66, Fig. 2.

PILEUS 2-5 cm. broad, convex at first, soon plane or depressed, distinctly *hygrophanous,* watery-brown or rufous-brown *with a yellow cast* (moist), pale tan to buff (dry), obscurely rugulose, *margin striatulate when moist,* even when dry. FLESH thin, subpliant, whitish, soft. GILLS adnexed or almost free, rounded behind, narrow, crowded, *luteous or pallid with sulphur tinge,* becoming erose. STEM 5-7 cm. long, 4-6 mm. thick, *equal or subequal,* hollow, subterete or compressed, minutely flocculose-pubescent, even, cuticle cartilaginous, straight or flexuous, *pallid or tinged sulphur-yellow,* especially above, extreme base slightly inflated-bulbous. SPORES 5-6 x 3 micr., narrowly ovate, smooth, white. CYSTIDIA none. ODOR and TASTE mild.

Caespitose. On the ground, among tamaracks or low frondose woods. Ann Arbor. May 20-June.

This is intermediate between *C. dryophila* and *C. aquosa,* but because of its hygrophanous, watery flesh and finely striatulate pileus it seems closer to *C. aquosa.* The plant has a honey-yellow cap and stem, shading its citron or sulphur when fresh and moist, but soon fading. The gills of *C. aquosa* are said to be pallid, in which respect our plant differs somewhat. It forms tufts among grass in drained tamarack swamps or among leaves in low woods. The base of the stem is slightly enlarged, not truly bulbous nor strigose-hairy. It seems to be somewhat related to *C. acervata.* Whether it has been described is uncertain.

804. Collybia colorea Pk.

N. Y. State Mus. Rep. 26, 1874.

"Pileus 1-3 cm. broad, convex-expanded, subumbilicate, *hygrophanous,* glabrous, "luteous"-yellow, not striate, paler when dry. FLESH rather thin, soft, yellowish. GILLS adnexed, emarginate, close, moderately broad, *luteous* to sordid-ochre, edge entire. STEM 2-4 cm. long, 2-4 mm. thick, *equal,* even, subpruinose, hollow, glabrous, colored like pileus. SPORES subglobose or broadly elliptical, 4-5 micr."

Scattered or subcaespitose. On decaying wood, especially of pine. Negaunee, New Richmond, Greenville (Longyear). June-September. Rare.

An unidentified Michigan plant approaches this rather closely. It has the same colors, etc., but differs in its fleshy-fibrous, solid stem and bitterish taste. The spores are white.

****Gills rufescent.*

805. Collybia acervata Fr. (Edible)

Syst. Myc., 1821.

Illustrations: Fries, Icones, Pl. 64, Fig. 2.
Gillet, Champignons de France, No. 147.
Cooke, Ill., Pl. 267.
Hard, Mushrooms, Fig. 87, p. 117.
Peck, N. Y. State Mus. Bull. 75, Pl. 84, 1904.

"PILEUS 2-5 cm. broad, convex, becoming expanded or nearly plane, glabrous, *hygrophanous,* pale tan color or incarnate red and sometimes obscurely striatulate on the margin when moist, whitish after the escape of the moisture. GILLS close, rounded behind, slightly adnexed or free, whitish, or slightly tinged pink. STEM 5-7.5 cm. long, 3-5 mm. thick, equal, hollow, slender, rigid but brittle, glabrous except the white-tomentose base, *reddish-brown* or purplish-brown. SPORES elliptic, 6-7.5 x 4 micr., white."

Caespitose. On decaying prostrate trunks and leaves, or on half-buried rotten wood. August-September. Ann Arbor. Infrequent.

The description is obtained from Peck, (N. Y. State Mus. Bull. 75), as my own notes are incomplete. This species may be merely an ecological variety of *C. dryophila.* Like Hard, I have found it in localities formerly occupied by saw-mills. The gills become slightly rufescent in age. Our plant does not seem to agree well with the European descriptions.

806. Collybia hygrophoroides Pk.

N. Y. State Mus. Rep. 32, 1879.

Illustration: Plate CLXIV of this Report.

PILEUS 2-4 cm. broad, *obtusely conical at first* and reddish-brick color, then campanulate to expanded and almost plane, with or without umbo, rufous-tan (moist), dull-tan or isabelline (dry), hygrophanous, glabrous, even, margin straight at first. FLESH thin, whitish. GILLS arcuate-uncinate or deeply emarginate, almost free at times, close, *rather broad,* ventricose, dingy white at first, *then tinged flesh color,* edge becoming eroded. STEM 5-12 cm. long, 2-5 mm. thick, *tough,* often long and twisted, *longitudinally striate* to sulcate, lower third *rooting* and densely white-tomentose, upper part pallid to rufescent and pruinose, stuffed then hollow, curved or straight. SPORES oblong, 5-6.5 x 3-3.5 micr., smooth, white in mass. CYSTIDIA rather abundant on sides of gills, *slender, acuminate above,* 50-60 x 4-5 micr.

Solitary to subcaespitose or scattered. On the ground in low, moist, maple and oak woods. Ann Arbor. May-July. Rare and local; rather common in a single locality.

This is apparently a Mycena as shown by the straight margin of the young pileus. It somewhat resembles Cooke's figure of *M. excisa* (Plate 148), (= M. *berkeleyi* Mass.) which is certainly not the *M. excisa* figured by Fries (Icones). That species, however, grows on trunks of pine, and the color is different from ours according to Fries' description. The young, unopened pileus resembles that of *Hygrophorus conicus* in color and shape, as pointed out by Peck. It seems to have no direct relationship to either Mycena or Collybia. The lower half or third is usually immersed in the soil which adheres to the tomentum when pulled up; this portion may be attenuated or scarcely so as shown in our plate. The older plants have rufescent gills and stem, but the spore-print is white. Our specimens were seen and identified by Peck, who says it is a very rare species.

*****Gills lilaceous.*

807. Collybia myriadophylla Pk.

N. Y. State Mus. Rep. 25, 1873.

Illustration: Hard, Mushrooms, Fig. 85, p. 115, 1908.

PILEUS 1.5-2.5 cm. broad, soon plane or depressed, flexible, *hygrophanous,* glabrous, even, sometimes umbilicate or mammilate, *dull umber-brown with lilac tinge* (moist), ochraceous-buff (dry). FLESH very thin. GILLS slightly adnexed, *very crowded, narrow,* linear, thickish, *dark lilac,* edge entire. STEM 2-3 cm. long, 1-1.5 mm. thick, slender, equal, terete or compressed, stuffed by a white pith, then hollow, *dull lilac to reddish-brown,* subglabrous, sometimes densely silky-pruinate. SPORES very minute, 3-4 x 2 micr., elliptic-oval. CYSTIDIA none.

Gregarious. On mossy hemlock or tamarack logs or wood. July to October. Ann Arbor (on tamarack), New Richmond, South Haven, Bay View and Houghton. Infrequent.

A very distinct little Collybia, sometimes lilac-tinged throughout; this color persists longer on the gills than elsewhere. The gills are often glaucous, and on drying become reddish-brown. The stem is sometimes attenuated below and rooting; at times it is entirely white-pruinose with a tuff of lilaceous strigose hairs at the base. The species seems to be limited to coniferous woods.

******Gills cinerascent or rufescent.*

808. Collybia atrata Fr.

Syst. Myc., 1821.

Illustrations: Fries, Icones, Pl. 70, Fig. 1.
Cooke, Ill., Pl. 155.
Gillet, Champignons de France, No. 148.
Hard, Mushrooms, Fig. 83, p. 113, 1908.

"PILEUS 1-2.5 cm. broad, *tough,* plano-depressed, never papillate, convex toward margin, very glabrous, orbicular, umbilicate, *even, pitch-black* and shining (moist), fuscous (dry). FLESH rather thick, firm. GILLS adnate, scarcely decurrent, at first arcuate, then straight, *rather broad, subdistant,* whitish to gray, then fus-

cous. STEM *short,* 2-3 cm. long, 2-4 mm. thick, tough, equal or subequal, *glabrous,* stuffed then hollow, *cartilaginous, fuscous* within and without." SPORES 5-6 x 4 micr., elliptical (Schroeter, W. G. Smith). ODOR *none.*

Around burned stumps or burned over soil, in exposed places.

The above description is taken from Fries' Icones. The occurence of the species in Michigan is somewhat uncertain, as my notes are incomplete. June. Ann Arbor. Infrequent to rare.

A Marasmius-like plant in appearance, but it does not revive. When young and fresh, it seems to be firm, but the thin margin is soon flexible. The gills are not ventricose, and a section through them reveals peculiar hyphae forming the central layer, which are dark colored from blackish-brown granules in their interior; they are not truly ashy, but dark cinnamon-brown when fresh and mature. The base of the stem is sometimes strigose-hairy with fuscous-brown hairs, and under high magnification the rest of the stem is seen to be covered with short, intertwined or spreading dark hairs. On drying the pileus becomes rusty-reddish, or occasionally appears scorched. There are some very similar species and the group needs further study. It is said to occur in autumn.

809. **Collybia plexipes** Fr. var.

Syst. Myc., 1821.

Illustration: Plate CLXV of this Report.

PILEUS 1-2.5 cm. broad, campanulate-expanded, *obtuse,* glabrous, hygrophanous, *blackish-chestnut* (moist), *rufous when drying,* obscurely rugulose-striatulate when moist, not shining. FLESH concolor, very thin on margin. GILLS slightly adnexed, narrow, tapering outward, thickish, close to crowded, plane, *brown, glaucescent,* edge entire. STEM 3-5 cm. long, 1.5-2.5 mm. thick, subequal, opaque, tubular, *subterete or compressed and furrowed,* flexuous, cartilaginous, often curved, tough, subglabrous, black, paler at apex. SPORES minute, elliptic-ovate, 5-7 x 2.5-3 micr., white, smooth. CYSTIDIA none. ODOR and TASTE none.

Caespitose or subcaespitose to solitary. On very rotten wood, among moss, etc., about old stumps and mounds, in frondose woods.

810. **Collybia atratoides** Pk.

N. Y. State Rep. 32, 1879.

Illustration: Hard, Mushrooms, Fig. 86, p. 116, 1908.

"PILEUS 1-2 cm. broad, convex, subumbilicate, glabrous, hygrophanous, *blackish-brown (moist),* grayish-brown and shining (dry). FLESH thin. GILLS adnate, *rather broad, subdistant,* intervenose, grayish-white. STEM 2-3 cm. long, 1-2 mm. thick, equal, hollow, glabrous, grayish-brown, with a mycelioid tomentum at base. SPORES nearly globose, about 5 micr. diameter.

"Gregarious or subcaespitose. On decaying wood and mossy sticks in woods."

The description is adapted from Peck. Hard points out that the margin of the pileus is often crenate. It doubtless occurs within the State, and may be confused with Mycena by its shape and size.

811. **Collybia expallens** Pk. var.

N. Y. State Mus. Rep. 44, 1891.

PILEUS 1-2.5 cm. broad, orbicular, convex-expanded, depressed or subumbilicate on disk, *hygrophanous, at first blackish,* then brown to pale fuscous, *glabrous, striatulate on margin when* moist. FLESH rather thin, brownish then whitish. GILLS adnate, seceding, medium width, close to subdistant, fuscous, edge entire. STEM 1-2 cm. long, 2-4 mm. thick, tapering downward, tough, hollow, sometimes compressed or grooved, cartilaginous, livid-brown, sometimes blackish on handling, pruinose-pubescent. SPORES subglobose, 5 x 4 micr., smooth, white. CYSTIDIA and STERILE CELLS none. ODOR and TASTE *farinaceous.*

Gregarious among fallen needles of white pine. New Richmond. September. Infrequent.

Differs from *C. atrata* and *C. atratoides* by the presence of a distinct farinaceous odor, and a striate margin to the pileus. It approaches *C. ambusta* except in odor and the lack of a papillate pileus. The stem is pruinose, at least at the apex.

Section II. Laevipedes. Putrescent; not hygrophanous; stem *glabrous, not conspicuously striate.*

812. Collybia albiflavida (Pk.) (Edible)

N. Y. State Mus. Rep. 23, 1872 (as *Tricholoma albiflavidum*).

PILEUS 5-12 cm. broad, convex-expanded, then depressed, obtuse or slightly umbonate, umbo subobsolete and darker, moist, *whitish or creamy-yellow*, even, glabrous, margin at first involute. FLESH white. GILLS adnexed-emarginate, *narrow, crowded,* thin, white or whitish, edge entire. STEM 6-18 cm. long, 5-8 mm. thick, equal above the *bulbous base,* solid, fibrous within, *cuticle cartilaginous,* whitish. SPORES elliptical, smooth, obtuse, 7-10 x 4.5-5.5 micr., white in mass. CYSTIDIA lanceolate, scattered or infrequent on sides of gills, often crystallate at apex, 55-65 x 10-15 micr. ODOR and TASTE none.

Solitary, gregarious or subcaespitose. On the ground in frondose or coniferous woods, among fallen leaves. Throughout the State. June-September. Frequent.

This noble plant is found frequently, especially in moist ravines of most kinds of woods. It was referred by Peck to Tricholoma, where he considered it close to *T. lascivum.* Collectors nearly always mistake it for a Collybia, and this tendency is given a basis because of the presence of cystidia on the gills, and by the nature of the stem, whose rind is cartilaginous. The plant presents a stiff appearance due to the straight and rather rigid-elastic stem. It sometimes attains a much larger size than the original description indicates. A form occurs in low, wet or swampy places, with similar habit and structure, but smaller and darker in color. The color is almost smoky-brown, and the general appearance suggests a form of *Tricholoma melaleucum;* its microscopic details, however, agree with the above species; its pileus is 2.5-5 cm. broad. *T. albiflavidum* has a disagreeable odor at times, but this may disappear, especially after it is picked and left overnight.

813. Collybia abundans Pk. (Edible)

N. Y. State Mus. Rep. 29, 1878.

Illustration: Plate CLXVI of this Report.

PILEUS 1-3 cm. broad, convex or nearly plane, *subumbilicate,* whitish or pale grayish-brown, disk darker, *innately-fibrillose,* fibrils more dense on disk, the thin margin at length splitting. FLESH thin. GILLS adnate, rather narrow, close, sometimes veiny, white. STEM 3-5 cm. long, 2 mm. thick, rather short, equal, glabrous, hollow, often curved, easily splitting, concolor or whitish. SPORES subglobose, 5-6 micr. ODOR and TASTE mild.

Caespitose. On decaying wood and logs, in frondose and mixed woods, especially in the north. Ann Arbor, Marquette, Houghton. August-October. Infrequent.

The "abundant Collybia" usually grows in great profusion when it occurs. It is very similar in general appearance to *Collybia familia,* but is usually smaller and shorter-stemmed; its pileus has a slight umbilicus; it is not hygrophanous, and when dried usually becomes rufescent,—a special characteristic of the stem.

814. Collybia succinea Fr.

Epicrisis, 1836.

Illustrations: Fries, Icones, Pl. 65, Fig. 3.
Cooke, Ill., Pl. 151.

PILEUS 1-3 cm. broad, convex-campanulate, subexpanded, smoky rufous-brown, becoming paler, moist, glabrous, even, firm at first then flexible. FLESH becoming whitish, rather thin. GILLS *adnexed, broad,* close to *subdistant,* thickish, ventricose, whitish, edge minutely serrulate. STEM 2-3 cm. long, 1.5-3 mm. thick, equal, *glabrous,* stuffed then hollow, even, cartilaginous, tough, pruinose at apex, *dark rufous-brown.* SPORES oblong, obtuse, 8-9 x 3-3.5 micr., white. CYSTIDIA ventricose, acuminate-pointed above, 45 x 12 micr., abundant on edge of gills, few elsewhere. TASTE and ODOR farinaceous.

Gregarious. On the ground in hemlock-beech woods. New Richmond. September. Infrequent.

The colors are well represented by the illustrations referred to. The farinaceous odor is not mentioned by the European authors, but in other respects the characters of our plants are apparently the same as of those of Europe.

Section III. Striaepedes. Putrescent; not hygrophanous; stem *conspicuously striate,* glabrous.

815. **Collybia radicata** Fr. (EDIBLE)

Syst. Myc., 1821.

Illustrations: Hard, Mushrooms, Fig. 78, p. 107, 1908.
McIlvaine, One Thousand Amer. Mushrooms, Pl. 29, op. p. 112, 1900.
White, Conn. State Geol. and Nat. Hist. Surv., Bull. No. 3, Pl. 6, op. p. 27, 1905.
Cooke, Ill., Pl. 140.
Gillet, Champignons de France, No. 165.
Peck, N. Y. State Mus. Mem. 4, Pl. 48, 1900.
Plate CLXVII of this Report.

PILEUS 3-10 cm. broad, convex to nearly plane, sometimes umbonate, *viscid,* glabrous, grayish-brown to smoky-brown or umber, sometimes nearly white, even or rugose. FLESH rather thin, white. GILLS *adnexed, broad,* thick, subdistant, white. STEM elongated, 5-20 cm. long above the surface of the ground, with a long root-like prolongation penetrating the earth, tapering upward, 4-8 mm. thick, rigid-erect, *glabrous, twisted-striate* to sulcate, white above, usually brownish or smoky-brownish elsewhere, cartilaginous. SPORES broadly elliptical, smooth, 14-17 x 9-11 micr. CYSTIDIA scattered, on edge and sides of gills, 60-80 x 15-18 micr. ODOR and TASTE mild.

Gregarious or solitary. On the ground in woods, groves, clearings, etc., throughout the State. June-October. (Earliest record June 26, latest October 4.) Common.

The "rooted Collybia" is closely related to *C. longipes,* whose stem has a similar root-like prolongation at the base. The viscidity of the pileus is almost absent in dry weather. The stem is usually thickened just above the "root," and as Atkinson has pointed out, this "root" is sometimes attached to dead tree roots deep in the soil. They often grow from much decayed stumps or logs, especially in recent clearings. The clear white of the gills is quite marked. It is one of the first summer mushrooms with which the beginner becomes acquainted, and the great variation in color and size will often mislead him into thinking he has several kinds, especially if he collects without getting the "root." Peck has named two varieties: Var. *furfuracea:* (Ill., Peck, N. Y. State Mus. Mem. 4, Plate 48, Fig. 9-11). STEM *minutely scurfy.* This variety, therefore, differs mainly from *C. longipes* in viscid cap and spores. Var. *pusilla:* (Ill., Peck, N. Y. State Mus. Mem. 4, Plate 48, Fig. 12-14). Cap 1-3 cm. broad, otherwise like the typical form. All of these are edible.

816. **Collybia platyphylla** Fr. (EDIBLE)

Syst. Myc., 1821.

Illustrations: Marshall, The Mushroom Book, Pl. 15, op. p. 66, 1905.
Hard, Mushrooms, Fig. 79, p. 109, 1908.
White, Conn. State Survey Bull. 15, Pl. 7, 1910.
Peck, N. Y. State Mus. Mem. 4, Pl. 49, 1900.
Michael, Führer f. Pilzfreunde, Vol. III, No. 106.
Fries, Icones, Pl. 61.
Cooke, Ill., Pl. 128.

PILEUS 6-12 cm. broad, at first ovate-campanulate, then convex-expanded, obtuse or depressed, grayish-brown to whitish-gray, *streaked with darker fibrils* or innate scurfy scales, often wavy on margin. FLESH thin, fragile, scissile, white. GILLS adnexed, deeply emarginate, *broad,* subdistant, often transversely striate and splitting, edge entire or eroded, white. STEM 7-12 cm. long, *stout,* 1-2 cm. thick, *fibrous-fleshy,* cuticle subcartilaginous, equal, fibrous-solid becoming cavernous, *fibrillose-striate,* white or whitish, base blunt or attached to thick strands of mycelium. SPORES broadly elliptical, smooth, 8-10 x 6-7 micr., white. (Immature spores abundant in mounts.) CYSTIDIA none. STERILE CELLS on edge of gills, inflated-rounded, 25 x 13 micr. ODOR mild, slightly of anise. TASTE slightly unpleasant when fresh, disagreeable when old.

Solitary, gregarious or subcaespitose. On decaying wood, stumps, humus, etc., in frondose woods, throughout the State after heavy rains. June-October. (Earliest record June 15, latest October 4.)

This species is our largest Collybia although *C. radicata* sometimes has a cap equal in width. The fleshy, scarcely cartilaginous, consistency of its stem may lead one to refer it to the genus Tricholoma. Peck and others say the stem is stuffed or hollow. I have found the young stem solid-fibrous, later tunneled by grubs, and the interior loosened. Insects attack the plant readily and spoil it for use on the table, but as it does not rank very high in flavor,

this is of little consequence. Stevenson has incorrectly given the spore measurements as 19 x 13 micr., and McIlvaine has copied the error.

817. Collybia maculata A. & S. (Edible)

Syst. Myc., 1821.

Illustrations: Marshall, The Mushroom Book, Pl. 15, op. p. 66, 1905.
Hard, Mushrooms, Fig. 82, p. 113, 1908.
Murrill, Mycologia, Vol. 6, Pl. 130.

PILEUS 5-15 cm. broad, *compact,* convex then expanded, obtuse or broadly subumbonate, *glabrous,* even, *white with ferruginous* stains or spots, later becoming rusty-red throughout, margin at first inrolled, then waxy or lobed. FLESH white, firm. GILLS adnexed, or nearly free, *very narrow, crowded,* white or whitish, edge entire. STEM 6-16 cm. long, 6-12 mm. thick, equal or subventricose, *attenuated below* and praemorsely rooting, *firm, cartilaginous, striate* or subsulcate, hollow. SPORES subglobose to short-elliptical, 6 x 3-4 micr., smooth, white. CYSTIDIA none.

Solitary or subcaespitose. On the ground, conifer or mixed woods of northern Michigan. Isle Royale, Marquette, Houghton, Bay View. July-September. Infrequent.

The firm, compact flesh, the narrow crowded gills and stained pileus characterize this plant. The pileus is often narrow compared with the long and rather stout stem. With age the stains spread and the whole plant becomes reddish. Specimens were found in frondose woods of southern Michigan which approach *C. szorconerea* Batsch. with cream-colored to ochroleucous gills, and bitterish taste; the spores of this form measured 6 x 3 micr. The pileus was rufous-tinged or darker on disk. *Tricholoma submaculatum* Pk. has smaller spores and a solid stem; otherwise it seems to approach some of the variations of *Collybia maculata.*

Section IV. Vestipedes. Putrescent; stem *velvety, fibrillose* hairy, *floccose* or *pruinose.*

818. Collybia velutipes Fr. (Edible)

Syst. Myc., 1821.

Illustrations: Hard, Mushrooms, Pl. 15, p. 119, 1908.
Reddick, Dept. of Geol. & Nat. Resources of Indiana, Rep. 32, 1907, Fig. 10.
Peck, N. Y. State Mus. Mem. 4, Pl. 47, 1900.
Cooke, Ill., Pl. 184.
Gillet, Champignons de France, No. 169.
Murrill, Mycologia, Vol. 1, Pl. 3, Fig. 6.
Michael, Führer f. Pilzfreunde, Vol. II, No. 82.
Plate CLXVIII of this Report.

PILEUS 2-5 cm. broad, convex-expanded, *viscid,* obtuse, glabrous, the viscid pellicle separable, tawny, *reddish-yellow,* usually darker on disk and yellowish on margin, even, margin often irregular. FLESH rather thickish, white or tinged reddish-yellow. GILLS adnexed, emarginate, broad, subdistant to close, whitish or yellowish, edge minutely fimbriate. STEM 2-7 cm. long, 3-6 mm. thick, firm, stuffed, then hollow, *densely velvety with short, tawny or blackish-brown hairs,* yellow at apex, *tough,* short-radicating. SPORES oblong, smooth, 7-9 x 3-4 micr. (rarely longer), white in mass. CYSTIDIA none. STERILE CELLS on edge of gills, slender, awl-shaped. ODOR and TASTE mild.

Caespitose. On decaying stumps, logs, roots, etc., as well as on bark of living trees; throughout the State. Most abundant in autumn, in September to December, occurring, however, occasionally any time during the year. In winter it may be found during warm weather, almost surrounded by ice, seeming *to revive* at each warm period. As soon as the snow is gone fresh specimens, which have developed at the first touch of the warm spring sunshine, may be found.

The viscid, reddish-yellow pileus and dark velvety stem are characters by which it is easily known. It may appear to grow from the ground, but in such cases the "root" is usually attached to dead woody matter below the surface. Specimens which had no pileus, and were composed only of a stem, several feet long, were found in the Calumet mine almost a mile beneath the surface of the ground; the characteristic blackish-brown velvety covering on the

lower portion indicated that it was clearly a monstrous form of this species; it was growing on the mine timbers. Whether it is truly parasitic on living trees has not been satisfactorily proven. When preparing it for table use, it is best to peel off the viscous pellicle of the cap.

819. Collybia longipes Fr.

Epicrisis, 1836.

Illustrations: Cooke, Ill., Pl. 201.
Gillet, Champignons de France, No. 160.

"PILEUS 3-5 cm. broad, convex-expanded, subumbonate, *dry,* radiate-wrinkled, clear brown, disk darker, *densely velvety with short brown hairs.* FLESH thin. GILLS almost free, rather broad, subdistant, ventricose, *pure white,* edge fimbriate. STEM 8-12 cm. long, 4-5 mm. thick, solid, firm, straight, thicker below, the base prolongated into an oblique "root," white within, leather-brown to chestnut-brown, pale above, *covered with spreading, tomentose, brown hairs.* SPORES broadly elliptical, 9-10 x 6-7 micr., smooth, white. CYSTIDIA large, flask-shaped, 55 x 17 micr., scattered on sides and edge of gills."

On decayed wood, stumps and logs.

Not with certainty found within the State. The description is adopted from Schroeter, as my notes are incomplete. The plant has much the appearance of *C. radicata,* but the pileus is dry and velvety. McIlvaine reports it in West Virginia, but his remark that "it is more glutinous" than *C. radicata* eliminates his claim. It is included for purposes of comparison.

820. Collybia succosa Pk.

N. Y. State Mus. Rep. 25, 1873.

PILEUS 1-3 cm. broad, subcartilaginous, campanulate to convex, *cinereous-brown to fuliginous, minutely pubescent,* margin incurved and surpassing the gills. FLESH thickish, white at first, *becoming purplish-black where wounded.* GILLS adnate with a slight decurrent tooth, becoming emarginate, moderately broad, tapering in front, close, whitish, *turning blackish where bruised.* Stem 2-5 cm. long, 2 mm. thick, equal, cartilaginous, compact except the stuffed axis, often curved, *clothed with a fine, fuliginous pubescence,*

becoming blackish. SPORES minute, globose-ovoid, 3-4 micr. in diameter, smooth, white. CYSTIDIA none; *sterile cells* on edge of gills, abundant, slender, subfiliform. ODOR and TASTE not marked.

Scattered or caespitose. On decayed wood, logs, etc., mostly on hemlock, in coniferous regions. Marquette, Munising, South Haven, New Richmond. July-September.

Easily distinguished by the change of color when bruised. This change is due to lactiferous tubes containing a juice which turns blackish on exposure to the air. These tubes are specialized hyphae interspersed throughout the trama of the pileus, gills and stem. Under the microscope it may be seen that the pubescence is composed of elongated hyaline cells. The presence of a juice which exudes on wounding the plant is unusual in this genus, and reminds one of a section of the genus Mycena; but the incurved margin of the young pileus indicates its relationship with Collybia.

821. Collybia floccipes Fr.

Epicrisis, 1836.

Illustrations: Cooke, Ill., Pl. 1168.
Plate CLXIX of this Report.

PILEUS small, 5-20 mm. broad, conic-campanulate, subexpanded to almost plane, *papillate, grayish-brown to sooty-brown,* almost blackish on umbo, glabrous, faintly striatulate and shining when moist, margin at first incurved. FLESH thin, whitish except cuticle, which is composed of erect, vesiculose cells. GILLS narrowly adnexed, medium broad, close to subdistant, subventricose, *white,* edge pulverulent-fimbriate. STEM 3-5 cm. (sometimes up to 10 cm.) long, flaccid, filiform, 5-2 mm. thick, often rooting, *toughish,* equal, flexuous, even, hollow, white, *minutely dotted under lens, with subcolorous to blackish points,* base with white spreading fibrils. SPORES subglobose, prominently apiculate, 5-6 x 4-5 micr. (with apiculus 1 micr. longer), smooth, white. CYSTIDIA *abundant,* on edge and sides of gills, narrowly lanceolate, 60-90 x 7-11 micr., subobtuse at apex. ODOR and TASTE *none.*

Gregarious, scattered or subcaespitose. On humus, decayed leaves, very rotten wood, etc., in frondose woods. Ann Arbor. May-June. Frequent locally.

This species has the appearance of a Mycena, but the pileus has an incurved margin. A lens is often necessary to detect the minute

brownish points on the stem, at other times they are easily visible. These points are due to short, microscopic, dark, cystidia-like hairs. Otherwise the stem is shining and whitish. When growing on much decayed wood the stem may be long, deeply rooting; when on the ground it is scarcely more than attached by the spreading white hairs and is shorter. In size *C. floccipes* reminds one somewhat of *C. alcalinolens* and it grows in similar places, but it has no odor and is not hygrophanous.

822. Collybia conigenoides Ellis

Torr. Bot. Club Bull., Vol. 6.

PILEUS small, 1-5 mm. broad, *convex* then plane, pellucid-striate, dingy cream-colored or tinged tan, *covered by a minute pubescence* (under a lens). FLESH thin, white. GILLS slightly adnexed or free, close to subdistant, medium broad, whitish, becoming yellowish, edge minutely pubescent. STEM filiform, 2-3 cm. long, delicate, minutely pubescent under a lens, attached at base by small rooting white hairs, white. SPORES minute, oblong, smooth, 4-5 x 2-3 micr., white. CYSTIDIA mostly on edge of gills, lanceolate, 25-35 micr. long.

On half-buried cones of white pine. New Richmond. September. Rare.

Peck has described a similar species growing on cones, which he called *C. albipilata*. It has the same kind of spores and cystidia as our species. It is said to be larger with an 8-12 mm. pileus which is brown. In other respects *C. albipilata* is like *C. conigenoides*. I suspect *C. albipilata* is merely a luxuriant form. Cystidia are apt to vary somewhat in large and small plants. Two European species which grow on pine cones have been critically discussed by Bresadola. They are *C. esculenta* and *C. conigena*. Their spores measure 6-8 x 3-4 micr., and hence our plant cannot be referred to them. Their size is also markedly different, the pilei being 1-3 cm. across. Their stems are long, creeping and rooting, and are covered on the rooting portion with a fibrillose tomentum.

823. Collybia tuberosa Fr.

Syst. Myc., 1821.

Illustrations: Michael, Führer f. Pilzfreunde, Vol. II, No. 80.
Gillett, Champignons de France, No. 168.
Cooke, Ill., Pl. 144.

PILEUS *small*, 5-10 mm. broad, convex or nearly plane, obtuse or subumbonate, even, glabrous or nearly so, *whitish, often tinged reddish or yellowish*. FLESH thin, white. GILLS adnate, thin, close, whitish, edge minutely pubescent. STEM slender, 2-4 mm. long, 1 mm. thick, flaccid, hollow, whitish or reddish-tinged, covered by a thin white cortinoid pulverulence, often nearly glabrous above, *arising from a reddish-brown or blackish, small sclerotium*. SCLEROTIUM 2-5 cm. long, 1-2 mm. wide, variable in shape. SPORES elliptical, 4-5.5 x 2-3 micr., smooth, white.

Gregarious or crowded. On the remains of decayed Agarics or damp humus. Throughout the State. July-September. Frequent.

The tuber-bearing Collybia is usually aggregated in numbers on the blackened remains of some mushroom, in which the small, tuber-like sclerotia are imbedded. Occasionally, however, it appears to develop on much decayed leaf-humus on the ground. It resembles *C. cirrata* in color and size.

824. Collybia cirrata Fr.

Epicrisis, 1836.

Illustrations: Cooke, Ill., Pl. 144.
Gillet, Champignons de France, No. 150.

PILEUS 5-12 mm. broad, soon plane or slightly depressed, *at length umbilicate,* sometimes papillate, *slightly silky,* toughish, white or tinged reddish. FLESH thin, white. GILLS adnate, *narrow,* close, whitish. STEM 2-5 cm. long, filiform, equal, somewhat hollow, flexuous, pallid, *covered by a white pulverulence,* with a fibrillose, radicating base. SPORES minute, elliptical, smooth, 4-5 x 2-3 micr.

Decaying vegetable matter in woods, throughout the State. July-September. Infrequent.

This little Collybia is closely related to *C. tuberosa*. Authors differ with reference to the presence or absence of a sclerotium.

Schroeter (Die Pilze Schliesiens, p. 645) describes a small yellowish sclerotium from which the stem arises, and which he says forms abundantly between the gills of decaying fungi, especially *Hypholoma fasciculare*. Berkeley also notes that it is "often attached to a little, yellowish, nodular schlerotium." Stevenson remarks that "it never has a radical tuber." Fries, Gillet and others do not mention a sclerotium; I have not observed any. Most authors agree that it occurs on decaying mushrooms, as well as humus, etc. It differs from *C. tuberosa* in its umbilicate pileus.

825. Collybia hariolorum Fr. (Edible)

Syst. Myc., 1821.

Illustrations: Cooke, Ill., Pl. 150.
Gillet, Champignons de France, No. 159.

PILEUS 2-5 cm. broad, broadly convex-expanded, thin, flexible, *becoming soft and flabby in moist weather,* even, glabrous, *whitish with a rufescent disk* or altogether rufous-tinged, often fading to pallid-whitish; flesh thin, white, *soft.* GILLS adnexed or almost free, *very narrow, crowded,* hollow, thickish, edge entire, collapsing. STEM 2-5 cm. long, 2-3 mm. thick, equal or tapering slightly upward, pallid or tinged rufescent, *covered by a white tomentum* which is thinner towards apex, hollow, elastic, cartilaginous, becoming soft when wet. SPORES small, 6-7.5 x 3 micr., narrowly oblong-ovate, smooth, white. CYSTIDIA none. ODOR strong and somewhat disagreeable when plants are crushed.

Gregarious, often scattered, sometimes caespitose. Among fallen leaves in frondose woods, probably throughout the State. August-September. Rather frequent.

This Collybia may be known by its soft and somewhat collapsible texture, the white tomentosity of the stem, and the pale rufous-white or whitish cap. It has somewhat the appearance of *C. confluens* to which it seems related, but as a rule it has a shorter stem, and in wet weather, instead of reviving becomes soft and fragile. The figure of Cooke illustrates our plant fairly well. The rufous tinge of the pileus is apparently more characteristic of American than of European plants.

Section V. Marasmioidae. Plants partially or wholly reviving (not truly putrescent). Hygrophanous or dry. Stem pulverulent, floccose, fibrillose-hairy or floccose-hairy.

The species placed under this new section have anomalous characters which ally them equally with the genus Marasmius. In fact this section and the section Collybiae under Marasmius contain species which intergrade between the two genera, and hard and fast lines of separation are impracticable. *Marasmius oreades* might be included here, as its flesh is more like Collybia than Marasmius. *C. confluens* is an equally good Marasmius.

826. Collybia confluens Fr. (Edible)

Syst. Myc., 1821.

Illustrations: Hard, Mushrooms, Fig. 84, p. 114, 1908.
Cooke, Ill., Pl. 150.
Gillet, Champignons de France, No. 153.

PILEUS 2-5 cm. broad, tough, flaccid, convex-plane, obtuse, *hygrophanous,* reddish-brown (moist), grayish-flesh-colored to whitish (dry), subumbonate, striatulate when moist. FLESH rather thin toward stem, almost as thick as width of gills, white. GILLS free, *narrow, very crowded,* whitish. STEM 5-10 cm. (or more) long, 2-5 mm. thick, subequal, hollow and often compressed, subcartilaginous, tough, *reddish under the dense, whitish pubescence,* even, sometimes grooved, often joined at base by a floccose myceliod web which spreads among the leaves on which it grows. SPORES minute, narrowly pip-shaped, 4-6 x 3-4 micr., white. CYSTIDIA none. STERILE CELLS on edge of gills small. ODOR and TASTE mild or slightly unpleasant.

Coherent in tufts, or gregarious in troops or part-rings. Among fallen leaves on the ground. Throughout the State. July-October. Common.

The colors of the young and old pilei vary considerably; when young they may be almost bay-red, later becoming reddish-brown to grayish or white. The stem is rather long in proportion to the pileus. The species is most common in frondose woods, where its mycelium forms a whitish mould over and among the fallen leaves.

827. Collybia zonata Pk.

N. Y. State Mus. Rep. 24, 1872.

Illustrations: Hard, Mushrooms, Pl. 14, Fig. 81, p. 111, 1908.
White, Conn. State Surv. Bull. 15, Pl. 9, 1910.
Murrill, Mycologia, Vol. 4, Pl. 56, Fig. 8 (as *Collybidium zonatum*).
Lloyd, Mycological Notes, Vol. I, No. 5, Fig. 17, p. 43.

PILEUS 1-2.5 cm. broad, convex or nearly plane, *umbilicate, covered with coarse, tawny, densely matted hairs, arranged in obscure zones.* GILLS free, close, narrow, white. STEM 2-5 cm. long, about 2 mm. thick, firm, equal, hollow, covered with tawny hairs similar to those of the pileus. SPORES broadly elliptical, smooth, 5 x 4 micr., white.

Solitary or subcaespitose. On decaying wood. New Richmond. August-September. Infrequent or rare.

The dark tawny color, the zones on the pileus and the fibrillose-hairy covering of cap and stem distinguish our plant. It revives after drying. When dry the pileus becomes concentrically grooved. Some think it is a large variety of *C. stipitaria,* but as it is easily distinguished from that species, such a view is speculative. To prove this point, it would be necessary to grow one form from spores or tissue derived from the other. This has not been done.

828. Collybia stipitaria Fr.

Syst. Myc., 1821.

Illustrations: Lloyd, Mycological Notes, Vol. I, No. 5, Fig. 15, p. 42.
Berkeley, Outlines, Pl. 5, Fig. 6.
Cooke, Ill., Pl. 149.

PILEUS *small,* 5-12 mm. broad, convex-expanded to plane, *umbilicate, with a minute blackish papilla* in umbilicus, whitish, grayish or pale grayish-tawny, *minutely and radiately fibrillose-hairy* or strigose-hairy, radiate-rugulose when dry. FLESH thin, submembranous, soft. GILLS adnexed-seceding, subdistant to close, narrow, white. STEM 2-5 cm. long, filiform, .5-1 mm. thick, equal, *reddish-black when moist, whitish when dry,* tough, cartilaginous, tubular, *instititious,* clothed with a grayish-white fibrillose covering when dry, sometimes twisted-striate. SPORES elliptic-ovate, pointed at one end, smooth, white, 6-8 x 3-4 micr. Odor none.

Gregarious. On twigs, wood, acorns, etc., in mixed or frondose woods. Throughout the State. Frequent and abundant. June-October.

The pileus of this fine little plant has a delicate circular ridge around the papillate umbilicus. The color of the stem changes markedly; when thrown into water it becomes reddish to blackish, on drying the fibrillose covering becomes pale gray or whitish. The margin of pileus is often fimbriate from the minute strigose hairs. Peck has named a long-stemmed form var. *setipes.* This was found in northern Michigan on several occasions.

829. Collybia campanella Pk.

N. Y. State Mus. Bull. 116, 1907.

Illustration: Lloyd, Myc. Notes, Vol. I, No. 5, Fig. 16 (probably as *C. stipitaria* var. *robusta*).

"PILEUS 6-8 mm. broad, *conical or campanulate* with a papilla at the apex, covered with coarse appressed or deflexed strigose hairs, dark tawny. GILLS ascending, moderately close, whitish. STEM 2-3 cm. long, 1 mm. thick, *instititious,* firm, equal, floccose-hairy, colored like the pileus." Spores elliptic-oval, smooth, 7-8 x 3-4 micr., white.

Gregarious. On dead and dry twigs of arbor vitae. Houghton. August.

My specimens were identified by Peck, whose description is reproduced. The plant has the appearance, like all of this section, of a Marasmius. It differs from *C. stipitaria* in its persistent conic-campanulate cap, a character retained when dried. The dark tawny color also remains uniform on the cap and stem of the dried specimens. The floccose-strigose covering of the stem is thick and concolorous. Its habitat seems to be exclusively on cedar twigs.

830. Collybia lacunosa Pk.

N. Y. State Mus. Rep. 26, 1874 (as Tricholoma).

PILEUS 8-15 mm. broad, convex then expanded, dry, *lacunose,* densely furfuraceous, sometimes sulcate-striate to rugose, *sulphur-yellow to golden-yellow.* GILLS adnate to subdecurrent, rather

broad, *distant,* thick, sometimes *intervenose,* white, edge pruinose. STEM 2-5 cm. long, about 2 mm. thick, firm, *tough,* solid, equal, instititious, *floccose-scaly or furfuraceous,* sulphur or pallid-yellow. SPORES broadly-oval, or subglobose, granular-punctate, 8-10 x 6-7 micr. STERILE CELLS on edge of gills, subcylindrical, rounded-subcapitate, about 45-50 x 9 micr.

Solitary or scattered. On fallen branches and decaying wood, in mixed woods of coniferous regions. Marquette, Bay View, New Richmond. August-September.

The attractive color, the tough texture, furfuraceous to floccose covering of cap and stem distinguish this species easily from all other Collybias. The plant has occasionally been wrongly identified as *Lentinus chrysopeplos* B. & C. Its texture is doubtless very similar to Lentinus and Panus, but it lacks the arid gills of those genera. The description of *Omphalia scabriuscula* Pk. also fits our plant rather closely, but if it were that species it would be far removed from *Omphalia umbellifera* to which Peck attached *O. scabriuscula* as a variety. The gills have a tendency to become decurrent, and if referred to the genus Omphalia the plant would become *O. lacunosa.* In many respects it is an anomalous mushroom, half-way between Omphalia, Collybia and Panus.

Mycena Fr.

(From the Greek, *mykes,* a fungus.)

White-spored. Stem *cartilaginous,* slender, hollow. Pileus thin, conic or sub-cylindrical at first, then *campanulate, margin at first straight and applied to stem.* Gills adnexed or adnate, *not decurrent,* sometimes uncinate.

Epiphytal, lignicolous or terrestrial, putrescent, small or minute plants; separated from Collybia by the unexpanded, bell-shaped pileus; from Omphalia by the non-decurrent gills; and from Marasmius by their non-reviving consistency. The genus is a large one. Many species are probably edible, but because of their small size most of them yield very little substance. Peck (N. Y. State Mus. Bull. 167, 1913) reports *M. splendidipes* Pk. as poisonous. They correspond to Nolanea of the pink-spored group, and Galera of the ochre-spored group. The genus is of great interest scientifically.

The PILEUS is either conical at first, or parabolic-cylindrical, or ovate. On opening it usually remains campanulate, except in a comparatively small number of species in which it often develops a marked umbo. In certain species like *M. pelianthina, M. pura, M. cohaerens, M. galericulata,* etc., the mature pileus usually expands like that of Collybia, and the margin may even become recurved; this is more often true of the larger species. The tendency however for the pileus to remain conical or conic-campanulate for quite a time is due to the position of the margin of the young cap on the stem; the growth-tensions in such cases do not easily raise the margin outward, except in the more fleshy and larger caps. The caps may be very fragile or quite tough, usually very thin or membranous in the smaller species. The *trama* of the mature pileus is composed of large, vesiculose cells with a more or less differentiated cuticle of various structures. The color of the caps is often very delicate, red, blue, yellow, brown, gray and white being found in the various shades and tints. The surface is usually glabrous and striatulate on the margin. The GILLS are adnexed or adnate, sometimes running down the stem by a short tooth, and in *M. vulgaris* becoming somewhat decurrent as the pileus expands. In some species they are pure white, in others they become slightly ashy or flesh color in age, and in a few cases, like *M. leajana* and *M. pelianthina,* are brightly colored. There are CYSTIDIA present in a number of species. In one group (Calodontes) these are colored and hence the edges of the gills where they occur have the corresponding color. In others the cystidia are hyaline or colorless. They may be very numerous on both sides and edges as in *M. cohaerens* and *M. leajana,* in which species they give the color to the entire surface of the gills; in *M. atroalboides, M. dissiliens* and *M. polygramna* var. *albidus,* they are hyaline. In some the cystidia are found only on the edge and are then referred to as *sterile cells,* especially if of different shape from the others, e. g., *M. alkalina, M. polygramna* and *M. metatus.* In these species the shape of the cystidia varies considerably—they may be flask-shaped, lanceolate, pear-shaped, sac-shaped, or hair-like. In some species no cystidia, or only a few scattered ones occur; e. g., *M. galericulata, M. pura* and *M. epipterygia.* It is an open question whether the numbers or shapes do not vary to a considerable extent in a species. The STEM in each of the different groups has quite distinct characters, and these are the most convenient means of distinguishing the species. Some stems exude a colored juice, others are viscous; the base is sometimes attached by a disk, and at other times it penetrates the substratum by a hairy, root-like extension. It may be firm, fragile or flaccid. The interior is mostly tubular, and the rind is cartilaginous. The surface may be glabrous,

horny and shining, or dull opaque and pruinose or hairy. It is delicate and filiform in the smaller forms. The SPORES with very few exceptions are smooth. It seems to be a marked characteristic of this genus, that the immature spores are easily loosened when sections of the gills are mounted in water. The result is that abundant immature spores are present in a mount, and great care must be taken to get the measurements from mature spores. The immature spores are usually delicately punctate-granular or irregular in shape but practice will soon make the observer properly discriminating. The spores of different species vary from spherical to oval or elliptical, and are white when deposited in a mass. In *M. lasiosperma* the spores are rough with short knobs. The ODOR of some species is alkaline or *nitrous*, sometimes of radish, and when collecting it is well to test the fresh plant, since the odor may disappear. If the plants are kept in a tight box till one gets home, the odor is often very marked on opening the box. Omission to test for the odor may make it difficult to identify the plant correctly.

Mycenas may be found from early spring until the late autumn. They are usually gregarious or caespitose, and the wood-inhabiting species often form dense clusters of individuals. Many are quite small, and are hidden among leaves, sticks and grass. The caps of others reach a size of one or two inches.

The genus was divided by Fries (in Hymen. Europ.) into nine sections, largely with reference to the characters of the stem. These divisions have been found so fundamental and satisfactory that most later mycologists have followed the Friesian arrangement. The nine sections are characterized in the key, and in the text following.

Key to the Species

I. Stem with a colored or milky juice, (Lactipedes) (A).
I. Stem without colored juice, II.
II. Stem viscous, (Glutinipedes) (B).
II. Stem not viscous, III.
III. Base of stem dilated into a disk or bulb; pileus white or delicately tinted, 4-10 mm. broad, (Basipedes) (C).
III. Base of stem not with abrupt bulb or disk, IV.
IV. Edge of gills darker-colored from colored cystidia, (Calodontes) (D).
IV. Edge of gills not of a different color, V.
V. Stem inserted by the naked base on the wood, leaves, etc., from which it grows, (Instititiae) (E).
V. Stem attached by a villose or fibrilose more or less rooting base, VI.
VI. Gills remaining clear white; mostly on the ground; pileus rarely above 1 cm. broad, white or brightly colored, (Adonidae) (F).
VI. Gills tending to ashy, fuscous or flesh tints in age, VII.

VII. Stem firm, rigid; mostly on wood and usually caespitose, (Rigipedes) (G).
VII. Stem not markedly firm or rigid, VIII.
VIII. Stem fragile, slender; pileus hygrophanous; plants often odorous, (Fragilipedes) (H).
VIII. Stem flaccid, filiform; pileus not hygrophanous; on the ground, mosses, mossy logs, etc., (Filipedes) (I).

(A) LACTIPEDES

(a) Edge of gills deeply colored, provided with red to dark-purple cystidia; juice dull red. 832. *M. sanguinolenta* A. & S.
(aa) Edge of gills not differently colored. Juice reddish; margin of pileus crenate; pileus and gills soon stained. 831. *M. haematopa* Fr.

(B) GLUTINIPEDES

(a) Pileus and stem both with a more or less viscid thin pellicle.
  (b) Pileus, stem and gills bright orange-yellow; caespitose; pileus 2-4 cm. broad. 833. *M. leajana* Berk.
  (bb) Colored differently, smaller.
    (c) Gills at length decurrent; pileus convex, umbilicate, 4-10 mm. 834. *M. vulgaris* Fr.
    (cc) Gills at most with decurrent tooth; pileus conic-campanulate, obtuse.
      (d) Stem slender, 0.5-1 mm. thick, elongated.
        (e) Stem yellowish; spores 8-10 x 4-5 micr. 835. *M. epipterygia* Fr.
        (ee) Stem brownish; spores broader, 8-9 x 5-6 micr. 835. *M. epipterygia* var. B.
      (dd) Stem yellowish, 1.5-2 mm. thick, not long; spores 9-10 x 6-6.5 micr.
(aa) Pileus without a viscid pellicle; stem viscid, slender.
  (b) Pileus, stem and gills white; spores 7-9 x 5 micr. 836. *M. clavicularis* Fr. var. *alba*.
  (bb) Pileus, stem and gills yellowish; spores 11-12 x 7-8 micr. 836. *M. clavicularis* var. *luteipes*.

(C) BASIPEDES

(a) Base of stem attached by a flat, orbicular disk to fallen leaves, twigs, etc; gills free. 837. *M. stylobates* Fr.
(aa) Base of stem attached by white radiating hairs, forming a floccose bulblet.
  (b) Pileus and stem beset with minute glandular particles; gills close. 838. *M. crystallina* Pk.
  (bb) Pileus glabrous, pellucid-striate; gills distant, thick. 839. *M. echinipes* Fr.

(D) CALODONTES

(a) Pileus 2-6 cm. broad, at length fully expanded; gills violet to brown; stem 3-5 mm. thick. 840. *M. pelianthina* Fr.
(aa) Pileus conic-campanulate, less then 2 cm.; stem filiform.
  (b) Pileus and stem violet, rosy or purple-tinged, becoming paler; pileus striatulate.
    (c) Gills tinged flesh color, edge deeper-colored; spores oblong-elliptic. 841. *M. rosella* Fr.
    (cc) Gills white, edge purplish; spores subglobose. 842. *M. purpureofusca* Pk.
  (bb) Pileus livid-gray, grayish-brown or dark-brown; edge of gills purplish-brown.

(c) Pileus striate (moist), hygrophanous; stem fragile. *M. capillaripes* Pk.
(cc) Pileus not striate nor hygrophanous; stem toughish. 843. *M. denticulata* Pk.

(E) INSTITITIAE

(a) On the bark of living tree trunks; common on shade trees; gills broad. 844. *M. corticola* Fr.
(aa) On fallen leaves in woods; stem hairy; gills narrow. 845. *M. setosa* Fr.

(F) ADONIDAE

(a) Pileus 2-5 cm. broad, thick, rose color to pale lilac; odor of radish. 846. *M. pura* Fr.
(aa) Pileus usually less than 2 cm. broad. Pileus, stem and gills entirely white; small; gills rather broad, subdistant.
(b) Stem at first minutely-pulverulent; pileus papillate on disk. 847. *M. minutula* Pk.
(bb) Stem glabrous, pellucid; pileus not papillate. 848. *M. immaculata* Pk.

(G) RIGIPEDES

(a) Pileus bluish at first, 5-12 mm. broad; stem grayish-brown. 855. *M. cyaneobasis* Pk.
(aa) Pileus not bluish, larger, 1-4 cm. broad.
(b) Gills brown from the brown cystidia; stem horny, shining, dark brown. (See 46. *Marasmius cohaerens*).
(bb) Gills not deep brown.
(c) Gills assuming an incarnate tinge in age; stems rufous-brown downwards; odor and cystidia lacking. 849. *M. galericulata* Fr.
(cc) Gills usually cinerascent in age.
(d) Pileus some shade of gray or almost white.
(e) Odor nitrous; cystidia abundant on sides of gills; pileus white to pearl-gray. 853. *M. polygramma* Fr. var. *albida* Kauff.
(ee) Odor not nitrous.
(f) Pileus 1-3 cm. broad, dark ashy to pearl-gray; cystidia few; gills not with decurrent tooth. 852. *M. parabolica* Fr.
(ff) Pileus 0.5-2 cm. broad, dark ashy;gills uncinate; spores tubercular-rough. 854. *M. lasiosperma* Bres.
(dd) Pileus dark fuscous or dark brown, 2-4 cm.
(e) Gills subdistant, with cystidia, rather broad but narrowly adnexed. 851. *M. excisa* Fr.
(ee) Gills crowded, narrow; whole plant brownish-fucescent, dark. 850. *M. inclinata* Fr. var.

(H) FRAGILIPEDES

(a) Odor alkaline or nitrous in fresh plants.
(b) Stem lubricous; spores symmetrically elliptical; pileus grayish-brown to grayish-umber (moist). 856. *M. alcalina* Fr.
(bb) Stem not lubricous; usually gregarious, not very caespitose.
(c) Pileus glaucous-pruinose when dry, soon grayish-white; gills not decurrent by tooth. 859. *M. leptocephala* Fr.
(cc) Pileus not glaucous.
(d) Gills adnate with tooth; odor strong; pileus dark fuscous-gray (moist). 857. *M. ammoniaca* Fr.

(dd) Gills not uncinate; odor weak, evanescent; among mosses and grasses in wet places. 858. *M. metata* Fr.
(ddd) Cystidia abundant on sides of gills. (Not identified).
(aa) Without nitrous or alkaline odor.
(b) Cystidia numerous on sides of gills; pileus 5-15 mm. broad.
(c) Pileus tending to convex, brownish to umber (moist); stem white. 860. *M. dissiliens* Fr. var.
(cc) Pileus conic-campanulate, fuscous-cinereous; young stem and pileus bluish-blackish-gray. 862. *M. atroalboides* Pk.
(bb) Cystidia none on sides of gills.
(c) Pileus 1-2.5 cm., with smoky-fuscous umbo; stem 1.5-2.5 mm. thick, short. 861. *M. atroalba* Fr.
(cc) Pileus 5-15 mm., conic-campanulate, brown tinged lead color; stem very long, filiform; on sphagnum. 863. *M. praelonga* Pk.

(I) FILIPEDES

(a) Plants with bluish, reddish or yellowish tints; small and very slender.
(b) Base of stem adorned with blue hairs or mycelium threads. 865. *M. cyanothrix* Atk.
(bb) Without any blue tints.
(c) Gills somewhat flesh-color, uncinate; pileus rufous-yellowish; on wood. 866. *M. subincarnata* Pk.
(cc) Gills yellowish, not uncinate.
(d) Spores 7-9 x 3-4 micr.; pileus orange-red to bright-red, 2-6 mm. broad. 868. *M. acicula* Fr.
(dd) Spores 7-8 x 5-6 micr.; pileus dull-red to yellow, 5-12 mm. broad. 867. *M. pulcherrima* Pk.
(aa) Plants without any bright colors.
(b) Gills attached to a collar at the stem. 864. *M. collariata* Fr.
(bb) Gills not attached to a collar; small and very slender plants, fuscous.
(c) Gills free, crowded, white. *M. filopes* Fr.
(cc) Gills not free.
(d) Gills broadly adnate, distinct. *M. debilis* Fr.
(dd) Gills attenuate-adnexed, subdistant; pileus brownish to livid ashy. *M. vitilis* Fr.

Section I. Lactipedes. Flesh exuding a juice when broken; stem rooting, not viscid.

831. Mycena haematopa Fr.

Sys. Myc., 1821.

Illustrations: Fries, Icones, Pl. 83, Fig. 1.
Cooke, Ill., Pl. 162.
Gillet, Champignons de France, No. 450.
Atkinson, Mushrooms, Fig. 100, p. 100, 1900.
Hard, Mushrooms, Fig. 90, p. 123, 1908.
Marshall, The Mushroom Book, Pl. 37, op. p. 93.
Conn. State Geol. & Nat. Hist. Surv. Bull., No. 15, Pl. 10, 1910.

PILEUS 1-3 cm. broad, at first narrow elliptical then campanu-

late, obtuse, at first purplish-maroon then livid-reddish or paler, glabrous, striate, stained darker in age; the sterile *margin extends beyond the gills and is crenate.* FLESH thin, *bleeding when cut.* GILLS narrowly adnate, ascending, narrow, subdistant, whitish *soon reddish-stained,* edge flocculose. STEM 4-8 cm. long, 1.5-3 mm. thick, rigid, fragile, hollow, white-pruinate when young, at length glabrous except the hairy base, even, rufous-tinged, *exuding reddish juice when broken.* SPORES elliptical, 8-10 x 5-6 micr. (few larger), smooth, white. CYSTIDIA none. *Sterile cells* on edge of gills numerous, with swollen-ventricose base and tapering to a narrow acuminate point, about 50 micr. long. ODOR and TASTE mild.

Caespitose or subcaespitose, sometimes confluent, on decaying wood. In frondose and coniferous woods throughout the State. June to September. Rather frequent.

Known by the reddish juice of the flesh, the crenate flaps on the margin of the cap and the caespitose habit. The juice is not always equally abundant depending on weather and vigor of plant. All the parts of the plant become stained darker reddish in age. Fries does not mention the striations on the cap, which are sometimes quite marked.

A variety occurs on hemlock logs whose pileus is often markedly umbonate, at first striate, very rugose striate in age, its margin scarcely crenate. The gills at length secede and remain attached to each other behind by a false collar, often very veiny and staining reddish after being bruised. The stem and cap also become reddish-stained from the watery juice contained in the flesh. The juice itself seems uncolored but causes the bruised parts to assume the reddish stains. The base of the very caespitose stems is imbedded in cracks in the logs and is strigose with white hairs. It was collected during several seasons at New Richmond. It occurs in dense clusters. The spores are like those of *M. haematopa.*

832. Mycena sanguinolenta Fr.

Syst. Myc., 1821.

Illustrations: Fries, Icones, Pl. 83, Fig. 3.
Cooke, Ill., Pl. 163, Fig. 1.

PILEUS small, 4-6 mm. broad, soft, campanulate, obtuse or subumbonate, striate, glabrous, pale reddish then fuscous. FLESH membranaceous. GILLS narrowly adnate, broader in front, subdistant, rufous-tinged, *edge dark purple.* STEM 4-8 cm. long, filiform, fistulose, flaccid, soft, glabrous, mycelioid, pallid or pale rufescent, *exuding reddish juice when broken.* SPORES 8-11 x 4-5 micr., long-elliptical. *Sterile cells* on edge of gills numerous, enlarged below, tapering to a point above, about 30 micr. long.

On the ground among leaves in frondose and mixed woods, sometimes in tamarack swamps. Throughout the State. June-September. Infrequent.

This little Mycena is smaller than *M. haematopa* and lacks the crenate margin of that species. It has a somewhat different habitat, is very soft and slender and when young the cap is dark red. It is readily distinguished from *M. haematopa* by the colored edge of the gills. Stevenson says it is common in Great Britain, but with us it occurs rather seldom, and prefers the northern area.

Section II. Glutinipedes. Stem viscid, without juice; gills at length uncinate.

833. Mycena leajana Berk.

Hooker, London Journal, Vol. IV, p. 300.

Illustrations: Hard, Mushrooms, Fig. 94, p. 127, 1908.
Conn. State Geol. & Nat. Hist. Bull. No. 15, Pl. 11, 1910.

PILEUS 2-3 cm. broad (rarely larger), convex, subexpanded, umbilicate, *covered by a tough, viscid, orange separable cuticle,* shining when moist, glabrous. FLESH rather thick, livid-whitish. GILLS adnate, becoming sinuate, rather narrow, close, thickish, yellowish to pale orange, *edge reddish to vermillion.* STEM 3-7 cm. long, 2-4 mm. thick, equal, even, hollow, tough-cartilaginous, viscid, at first yellow and covered by orange scurfy-pulverulence, varying below to strigose tomentum at times, attached by an orange-colored mycelium. SPORES elliptic-oblong, 8-9.5 x 5-6 micr., smooth, dented on one side. CYSTIDIA none; *sterile cells* on and near the edge of the gills, numerous, reddish-orange, about 45 micr. long, apiculate.

Caespitose on logs, branches and stumps in frondose and conifer woods. Throughout the State. July-September. Rather frequent, especially in the north.

This is a striking and beautiful species, easily recognized at a distance by the reddish-orange color of the rather dense clusters. The cap often fades to a livid-tan and finally to a whitish color, and then develops striations on the margin. This species does not

seem to be closely related to other Mycenas, and its position here is uncertain. It belongs more nearly to Heliomyces.

834. Mycena vulgaris Fr.

Syst. Myc., 1821.

Illustrations: Cooke, Ill., Pl. 191.
Berkeley, Outlines, Pl. 6, Fig. 4.
Atkinson, Mushrooms, Fig. 9, p. 97, 1900.

PILEUS 5-15 mm. broad, convex to subexpanded, subviscid when moist, pale grayish-brown to fuscous, *umbilicate*, striatulate to umbilicus, somewhat darker in center, soft, fragile, sometimes papillate on center. FLESH membranaceous, subhygrophanous. GILLS *broad behind and subdecurrent*, subdistant, thin but sometimes thickish, often venose, white then grayish-white. STEM 2-5 cm. long, 1-1.5 mm. thick, cartilaginous, toughish, hollow, glabrous, somewhat rooting, *very viscid when moist*, straight or flexuous, equal, even, pallid brownish or grayish. SPORES broadly elliptical, 6-8 x 4-5 micr., smooth, white. CYSTIDIA and STERILE CELLS none or few. BASIDIA slender, 30 x 5 micr., clavate. ODOR and TASTE none.

Caespitose or gregarious. Attached to pine needles, leaves and sticks in conifer or frondose woods, so far only in the coniferous regions of the State. New Richmond, Marquette. August-September.

Mycena vulgaris, except for its viscidity, would be looked for under the genus Omphalia. Fries describes the pileus as "depressed," but it usually has the umbilicate character in our plants, and is practically an Omphalia with broad, subdecurrent gills. Authors differ widely as to size of spores. Massee and Karsten (Stevenson's British Fungi) give the measurements very small, 4-5 x 2 micr., while Schroeter says they are 9-11 micr. long. This discrepancy shows that these authors were dealing with different species. American authors do not give any spore measurements. When young and moist the pileus is quite viscid, but soon dries. The species is often very abundant under favorable weather conditions in the localities where it occurs.

835. Mycena epipterygia Fr.

Syst. Myc., 1821.

Illustrations: Cooke, Ill., Pl. 208.
Patouillard, Tab. Analyt., No. 215.
Gillet, Champignons de France, No. 462.
Atkinson, Mushrooms, Fig. 96, p. 96, 1900.
Hard, Mushrooms, Fig. 96, p. 129, 1908.

Var. *A.* PILEUS 1-2 cm. broad, conic-ovate then campanulate or subhemispherical, obtuse, *subviscid* by a thin, separable pellicle, hygrophanous, at first yellowish-gray *then gray to fuscous*, glabrous, striate on the margin which is at first straight. GILLS arcuate-adnexed, uncinate, rather broad, ventricose, subdistant, whitish at first, grayish-rufescent in age, edge entire. STEM 4-5 cm. long, *2 mm. thick*, yellowish or pellucid pale yellow, *tough*, equal, straight or flexuous, tubular, sometimes twisted or compressed, *viscid by a thin, separable pellicle*, rooting. SPORES broadly elliptical, 9-10 x 6-6.5 micr., smooth, obtuse, white. CYSTIDIA none. ODOR none or slightly farinaceous. BASIDIA attenuated downward, clavate, 45 x 6-7 micr., 4-spored.

On the ground in low, elm woods. Detroit. October.

Form *typical.* This is a much more slender-stemmed plant, described and illustrated by Atkinson and Hard. The pileus is elongated-conical at first and the stem filiform. The colors are similar to Var. *A.* I have seen this form rather frequently in northern Michigan, but have no notes on it.

Var. *B.* PILEUS 5-8 mm. broad, obtusely conic-campanulate, glabrous, *with a viscid, separable, thin pellicle,* obscurely striatulate, *grayish-brown.* GILLS adnate-arcuate, uncinate, rather narrow, subventricose, *white,* intervenose. STEM *filiform,* 3-8 cm. long, 0.5 mm. thick, equal, *viscid,* flaccid, shining, glabrous, even, pruinose at apex, *pallid with brown tinge,* rooting and mycelioid at base. SPORES broadly elliptical, 8-9 x 5-6 micr., smooth, obtuse, white. CYSTIDIA none. BASIDIA about 24 micr. long. ODOR none or slightly nitrous. TASTE none.

On decorticated, half-decayed logs. New Richmond. September.

Mycena epipterygia, like the following, is probably a composite species, as Maire has pointed out. (Bull. Soc. Myc. France, Vol. 26, p. 160.) Fries placed a series of previously described species under this one and considered the colors insufficient to differentiate them.

Color, like size, shape and habitat, is very variable, but Fries did not consider any microscopic characters, hence it is likely he has been too conservative in this series, and sooner or later several species will be segregated. Maire (l. c.) has already separated *M. viscosa* Maire, a plant of the coniferous regions.

836. Mycena clavicularis Fr.

Syst. Myc., 1821 (var. *alba,* N. Y. State Mus. Rep. 28, 1885).

Illustrations: Fries, Icones, Pl. 84, Fig. 1.
Cooke, Ill., Pl. 208.

Var. *álba* Pk. PILEUS 5-7 mm. broad, conico-campanulate, *dull-white,* not changing, sulcate-striate, pruinose, dry (not viscid), without pellicle. FLESH membranaceous. GILLS adnate, moderately broad, close, *white,* edge obscurely flocculose. STEM 5-6 cm. long, *filiform,* .5 mm. thick, *pellucid-whitish, viscid when moist,* glabrous, long-rooting, even, fistulose, flaccid, flexuous, loosely hairy below. SPORES 7-9 x 5 micr., elliptical, obtuse at ends, smooth, white. CYSTIDIA none. *Sterile cells* on edge of gills inflated, rounded-pyriform on narrow stalks, 15-30 micr. in diam. BASIDIA about 24 micr. long, subclavate, 4-spored. ODOR none.

Caespitose or singly, attached to fallen leaves by the rooting, hairy stem, in mixed woods. New Richmond. September. Infrequent.

Var. *luteipes* nov. var. PILEUS 10-15 mm. broad, convex-campanulate, obtuse, striate up to the papilla, silky, not viscid, *sulphur-yellow with olivaceous or green shades,* brownish or grayish in age. GILLS adnate, uncinate or arcuate-subdecurrent, *yellowish, flesh color or rufescent in age,* rather narrow and distant, edge entire. STEM 5-8 cm. long, 1-1.5 mm. thick, slender, equal, hollow, *tough,* pruinose at apex, *viscid,* darker yellow than pileus, rooting at the somewhat attenuated base. SPORES broadly elliptical, 11-12 x 7-8 micr., smooth, white in mass.

On the ground among debris, mosses, etc. Bay View, Detroit. Rare.

M. clavicularis Fr. is doubtless a composite species. Fries, himself, considered it composed of a number of color forms, with caps either whitish, pale yellow or fuscescent. Peck named three varieties: *alba, cinereus* and *filipes.* The size of the spores seems to be omitted by authors. The two varieties described above are probably distinct species but further data on all the supposed

varieties are needed. The *M. clavicularis* group differs from the *M. epipterygia* group in the lack of a viscid pellicle on the pileus. Until these two groups have been more fully studied with reference to the microscopic characters, it is better not to segregate new species from them. Fries' figure shows a yellowish plant, somewhat smaller than var. *luteipes.*

Section III. Basipedes. Stem dry, juiceless, not rooting, the base naked and dilated into a disk, or strigose and swollen into a little bulb. Very thin, solitary, becoming flaccid.

837. Mycena stylobates Fr.

Syst. Myc., 1821.

Illustrations: Cooke, Ill., Pl. 249.
Berkeley, Outlines, Pl. 6, Fig. 5.
Patouillard, Tab. Analyt., No. 624.

PILEUS 3-6 mm. broad, *campanulate-convex,* obtuse, dry, glabrous, *white, striate.* FLESH membranaceous. GILLS free, distinct behind, *distant,* ventricose, *white.* STEM, 2-5 cm. long, *filiform,* hollow, *white,* equal, glabrous, dry, seated upon an *orbicular, plane, striate subvillose base.*

Solitary on fallen leaves, in frondose woods. Ann Arbor. October. Rare.

Only two specimens were obtained. The pileus of our plant was glabrous, lacking the scattered pilose hairs attributed to it. Very delicate and fragile.

838. Mycena crystallina Pk.

N. Y. State Mus. Rep. 41, 1888.

PILEUS 4-10 mm. broad, conical then campanulate, subumbonate, *pure white to creamy-white,* obscurely striatulate, *pruinate* under lens, *due to minute, shining, glandular, capitate hairs and particles.* FLESH membranaceous. GILLS *narrow,* narrowly adnate or scarcely adnexed, thin, close, white. STEM 2-5 cm. long, filiform, hollow, white and adorned like pileus, *attached by a white-hairy strigose base.* SPORES narrow, 7-9 x 3 micr., smooth, white. CYSTIDIA none.

On cedar twigs, mosses, etc., in cedar and tamarack swamps.

Bay View and New Richmond. September. Infrequent.

Known by the glandular particles and hairs which cover the surface of cap and stem of the fresh plant. These can scarcely be seen with the lens on account of the minute size. The color varies somewhat as indicated above. This species was referred to the section Basipedes by Peck, but might with equal propriety be placed among the Adonidae. At times the strigose hairy base is not well-developed and it is then easily mistaken for *M. immaculata* Pk., but that species lacks the glandular covering. *Marasmius resinosus* is also glandular-viscid, but is a larger plant.

839. Mycena echinipes Fr.

Epicrisis, 1836 (Lasch, in Linn.).

Illustration: Fries, Icones, Pl. 84, Fig. 5.

PILEUS 2-5 mm. broad, very thin, convex, widely pellucid-striate, *white,* glabrous. FLESH membranaceous. GILLS broadly adnate, thick, distant, subvenose, *white.* STEM 2-3 cm. long, filiform, glabrous, hollow, white, *attached by a villose, bulbillose base.* SPORES 7-8 x 3 micr., smooth, white.

On decaying leaves in birch and hemlock woods. Bay View. September. Rare.

A minute species, closely related to others of the group.

Section IV. Caldontes. Stem juiceless, dry, base not bulbillate or dilated into a disk; edge of gills provided with cystidia which give it a deeper color than elsewhere.

In the preceding sections, *M. sanguinolenta* and *M. leajana* also have this character of the gills, but differ in other respects.

840. Mycena pelianthina Fr.

Syst. Myc., 1821.

Illustrations: Cooke, Ill., Pl. 156.
Berkeley, Outlines, Pl. 6, Fig. 1.
Patouillard, Tab. Analyt., No. 418.

PILEUS 2-5 cm. broad, hemispherical-convex then expanded, obtuse, moist, *hygrophanous, varying purplish-livid to sordid brownish-violet,* fading to dingy whitish, striate. FLESH somewhat fleshy, white. GILLS adnexed-rounded behind, becoming sinuate, narrow, at first dull violet, becoming brownish, close, *edge purple.* STEM 5-8 cm. long, 2-5 mm. thick, equal, often curved at base, fragile, hollow, even, glabrous, *sordid whitish or streaked with violaceous fibrils.*

Solitary or scattered. Among fallen leaves in frondose woods. Throughout the State. July-September. Frequent.

Has the size of *M. pura,* but differs from it in that the edge of the gills is darker from the colored cystidia, in the more solitary habit and the cylindrical stem. Generally only one or two plants are found in a place. It seems to prefer maple, oak and beech woods. The color of the cap is variable and hard to describe, usually of a dirty color. Fries says it is intermediate between the genera Collybia and Mycena.

841. Mycena rosella Fr.

Syst. Myc., 1821.

Illustration: Cooke, Ill., Pl. 131.

PILEUS 4-15 mm. broad, campanulate-convex then hemispherical to subexpanded, obtusely umbonate, sometimes plane on disk, *sulcate-striate, pale rose color,* paler and tinged ochraceous in age, glabrous. FLESH membranaceous, fleshy at umbo. GILLS broadly adnate, slightly subdecurrent, medium broad, subdistant, *pale rose-colored, edge darker.* STEM 4-5 cm. long, 1 mm. thick, *pellucid-flesh color,* filiform, hollow, cartilaginous, slightly tough, *glabrous,* even, attached at base by white, hairy tomentum. SPORES oblong-elliptical, 8-9 x 4 micr., smooth, white. CYSTIDIA on sides and edge of gills, dense on edge, ventricose, narrowed to acuminate above, 60-70 x 12-15 micr., filled with a rosy to flesh-colored sap when mature. ODOR at first none, becoming nitrous after being picked.

Caespitose, usually of 2 or 3 stems, sometimes connate by the white tomentum, sometimes gregarious. On and among pine needles and other fallen leaves, in woods of white pine and oak.

New Richmond, Marquette. September-October. Common locally.

This pretty little Mycena is well named. It can be easily distinguished by the pale rosy coloring of the cap and gills and by its habitat. The surface of the cap and stem is slightly viscid or lubricous when the plant is fresh, and this is due to a very thin

layer of subgelatious hyphae which cover these parts. After drying out somewhat it was found that a nitrous odor developed; this fact does not seem to be mentioned elsewhere. Peck reports the species from New York, but elsewhere it seems to have been overlooked. The attachment of the gills is almost like that of the genus Omphalia, and the color of the gills is apt to lead one to place it among the pink-spored group. *Mycena capillaripes* Pk. (N. Y. State Mus. Rep. 41, 1888) is very close to if not identical with it.

842. Mycena purpureofusca Pk.

N. Y. State Mus. Rep. 38, 1885.

"PILEUS 8-16 mm. broad, *not hygrophanous*, campanulate or convex, obtuse, glabrous, *striate, purplish-brown*. FLESH membranous. GILLS adnate, ascending, lanceolate, subdistant, white or whitish, *purplish-brown* on the edge. STEM 2.5-7.5 cm. long, scarcely 2 mm. thick, *slender*, even, hollow, glabrous, with white hairs at the base, colored like the pileus or a little paler. SPORES subglobose or broadly elliptical, 6-7.5 x 6.5 micr."

On mossy hemlock logs in woods. Bay View. September. Rare.

Peck says it is closely related to *M. rubromarginata* Fr., from which it differs in its darker color and non-hygrophanous striate pileus. Longyear, in the 4th Report of the Michigan Academy of Science, lists *M. rubromarginata* Fr. but he is uncertain of the identification; it is probably Peck's species.

843. Mycena denticulata Pk.

Torr. Bot. Club, Bull. 32, 1905.

PILEUS 8-18 mm. broad, campanulate, toughish, often obtusely subconic, glabrous, *not striate*, grayish-brown, darker on center, margin soon split. FLESH thin, membranous. GILLS adnate with slightly decurrent tooth, often adnexed-emarginate then broader, *medium broad*, ventricose, subdistant, thickish, whitish, *edge dark brown, crenulate*, sometimes venose-connected or a few forked. STEM 3-6 cm. long, 1-1.5 mm. thick, equal, slender, even, hollow, *toughish*, glabrous or subfurfuraceous with minute brown dots, pallid. SPORES sub-globose to elliptic-oval, 7-8 x 5-7 micr., smooth, white. CYSTIDIA none. *Sterile cells* on edge of gills, short, subelliptical-saccate, obtuse, 30-35 x 12-15 micr., filled with brownish substance as shown under microscope.

On rotten wood or humus, in oak and maple woods. Ann Arbor, New Richmond. June-September. Infrequent.

This little Mycena was described by Peck from material sent to him from St. Louis, Mo., by Glatfelter. Peck says the edge is purplish, but there is scarcely any tint of that color in the gills of our specimens; nevertheless the two forms appear to be identical in other respects. In general appearance and habitat it imitates *Collybia floccipes* Fr., but the stem is less purely white, the gills have the brown-dotted edge, cystidia are lacking and the spores are slightly larger.

Section V. Instititiae. Stem inserted (i. e. attached directly to other plant parts without root-like base or tubercle, etc.), dry. Gills adnate, uncinate (not truly decurrent as in Omphalia).

844. Mycena corticola Fr.

Syst. Myc., 1821.

Illustrations: Cooke, Ill., Pl. 164.
Fries, Icones, Pl. 85, Fig. 2.
Gillet, Champignons de France, No. 458.
Hard, Mushrooms, Fig. 93, p. 126, 1908.
Patouillard, Tab. Analyt., No. 217.

PILEUS 4-8 mm. broad, hemispherical, obtuse or at length subumbilicate, distantly *striate*, flocculose-pruinate, blackish (when young), becoming fuscous, cinereous, grayish-ochraceous, etc. FLESH thin, membranaceous. GILLS adnate, uncinate, *distant, broad*, subovate, paler than pileus. STEM 6-12 mm. long, 1 mm. thick, slender, *incurved*, glabrous or minutely furfuraceous, paler than pileus.

On the bark of living trunks of frondose trees; everywhere, especially on shade trees of cities. Probably throughout the State, very common in southern part. July-October.

After rains, in late summer and fall, this little Mycena appears in large numbers, scattered over the trunks of our shade trees, elm, maple, etc. It appears to revive somewhat after succeeding rains, but the texture is that of a Mycena rather than a Marasmius. The color is very variable, especially during development. *M. hiemalis* Fr. is said to be its near relative, and to grow in similar situa-

tions, but I have been able to distinguish only *M. corticola* within our area.

845. Mycena setosa (Sow.) Fr.

Hymen. Europ., 1874.

Illustration: Cooke, Ill., Pl. 193.

PILEUS 1-2 mm. broad, minute, very thin, hemispherical, obtuse, glabrous, *becoming fuscous.* GILLS distant, *narrow,* white. STEM delicately filiform, 10-12 mm. long, *inserted,* capillary, *everywhere shaggy with distant spreading hairs.*

On fallen leaves and pine needles, in woods of white pine and beech. New Richmond. September. Rare.

Section VI. Adonidae. Stem dry and usually growing from the ground. Gills of one color, neither darker on edge, nor becoming ashy nor fuscous.

The plants in this section are usually brightly colored or white, not with ashy or fuscous shades on cap and gills. Those of the following sections often have white gills at first but become tinged with cinereous or fuscous color, although this character is in some cases scarcely determinable in fresh specimens.

846. Mycena pura Fr.

Syst. Myc., 1821.

Illustrations: Cooke, Ill., Pl. 157.
Gillet, Champignons de France, No. 476.
Gillet, (var. *alba*) No. 477.
Gillet, (var. *lutea*) No. 478.
Bresadola, Fung. Trid., Vol. 2, (var. *multi-color*) Pl. 114.
Patouillard, Tab. Analyt., No. 313.
Atkinson, Mushrooms, Fig. 95, p. 95, 1900.
Hard, Mushrooms, Fig. 95, p. 128, 1908.
Swanton, Fungi, Pl. 8, Fig. 3 and 4, 1909.

PILEUS 2-4 cm. broad, rarely broader, campanulate to convex, finally expanded, more or less obtusely *umbonate,* sometimes broadly so, moist, striatulate on margin, *bright rosy-red,* sometimes rose-purplish, lilac or violet. FLESH thin, moist. GILLS adnate, sinuate, *broad,* ventricose, subdistant to close, varying rose, violet, white, etc., often veined or with the interspaces veiny. STEM 5-10 cm. long, 2-4 mm. thick, *cylindrical,* sometimes twisted, even, toughish, *glabrous,* hollow, more or less hairy at base, colored like or paler than pileus. SPORES elliptic-oblong, 6-7 x 3-3.5 micr., smooth, white. CYSTIDIA few on sides of gills, clavate-cylindrical, about 40-50 x 12-15 micr. *Sterile cells* not abundant on edge of gills, similar but smaller. ODOR somewhat of radish.

Caespitose or scattered to solitary. On humus, moss or much decayed logs in frondose or mixed woods, or tamarack, balsam and cedar swamps. Throughout the State. June to October. (Earliest record June 14, latest October 4.) Common.

A widely distributed Mycena, beautifully colored and one of the larger species of the genus. Its prevailing color, which often extends into the gills, is a pale rose-purple (Ridgway, new ed.), although it varies, under different conditions, localities or in age, to darker or lighter shades. Peck (23rd Rep.) says the umbo is lacking, but I have seen it often in the form shown by Cooke, Patouillard and Gillet in their illustrations. Schroeter (Die Pilze Schliesiens) says the edges of the gills are densely beset with cystidia. This is shown in Patouillard's figure; these I have usually referred to as "sterile cells." The very young pileus is ovate-subconical, and hoary-pubescent.

847. Mycena minutula Pk.

N. Y. State Mus. Rep. 25, 1873.

PILEUS 2-8 mm. broad, campanulate then expanded, *white, papillate,* glabrous, moist, striatulate to center. GILLS adnate with tooth, subdistant, *rather broad, white,* interspaces venose. STEM 2-4 cm. long, filiform, scarcely .5 mm. thick, *white,* elastic, *covered throughout its length by microscopic, subcylindrical hairs,* about 30 micr. long, 4-6 micr. thick, which give it a mealy appearance. SPORES 6-8 x 3.5-5 micr., elliptical, oval, smooth, white. BASIDIA 4-spored, 18-20 micr. long. CYSTIDIA none. ODOR and TASTE none.

Gregarious or scattered on moss of prostrate trunks, on rotten wood, twigs, etc., of pine, beech and oak woods. New Richmond, Ann Arbor. September-October. Infrequent.

The pruinosity of the stem and the entirely white color of the spores characterize this little species. It must not be confused with *M. crystallina* Pk. and *M. immaculata* Pk.

848. Mycena immaculata Pk.

N. Y. State Mus. Rep. 38, 1885.

PILEUS 4-8 mm. broad, conical or subhemispherical, *glabrous,* slightly striate on the margin, pure *white.* FLESH membranaceous. GILLS adnate or uncinate-decurrent, moderately broad, *distant,* white. STEM 1.5-3.5 cm. long, scarcely .5 mm. thick, slender, *pellucid-white,* glabrous, generally villose-strigose at the base, slightly thickened at apex. SPORES oblong or cylindrical, 7.5-9 x 3 micr.

On mosses and fallen leaves on the ground. Bay View. August.

This seems to differ sufficiently from *M. lacteus* Fr. which has crowded narrow gills; the latter grows caespitosely on wood according to Stevenson (British Fungi), while Fries (Epicrisis) says it is generally found on the ground. *M. minutula* Pk. and *M. crystallina* Pk. should be compared with it.

Section VII. Rigipedes. Stem firm, rigid, somewhat tough, juiceless, somewhat strigose and rooted at the base. Gills becoming tinged with gray, flesh color, fuscous, etc. Pileus *not hygrophanous.*

Tough, persistent, inodorous, normally *growing on wood and caespitose.*

Fries originally (Syst. Myc., Vol. I, p. 13) included some of the following species under *M. galericulata.* In Epicrisis he divided the latter into a number of species. As Fries did not consider any microscopic characters, some of these species have been much misunderstood, and even today no clear account can be given by which they can, with entire certainty, be separated. I have attempted below, by using such critical studies as others have made with the microscope, and adding my own, to separate those which have been found in my collecting by using the characteristics of the spores and cystidia. As Fries pointed out (Epicrisis, p. 104), the color, especially of the stem, is very deceptive in many of these species, and cannot be relied on to any great extent for their separation.

**Pileus and stem usually brown or dark colored, not constantly gray.*

849. Mycena galericulata Fr. (Edible)

Syst. Mycol., 1821 (in part).

Illustrations: Fries, Icones, Pl. 80, Fig. 2 (var.).
Cooke, Ill., Pl. 222 and Pl. 223 (var.).
Gillet, Champignons de France, No. 462.
Patouillard, Tab. Analyt., No. 214 and No. 317.
Hard, Mushrooms, Pl. 16, Fig. 89, p. 121.
Marshall, The Mushroom Book, Pl. 7, op. p. 55.
Michael, Führer f. Pilzfreunde, III, No. 92.
Clements, Minnesota Mushrooms, Fig. 17, p. 30, 1910.
Moffatt, Nat. Hist. Surv. Chicago Acad. of Sci., Bull. 7, Pl. 4.

PILEUS 2-4 cm. broad, campanulate or obtusely conic-campanulate, umbonate, *striate or subsulcate to umbo,* glabrous, *buff on margin, shading to brown or umber on umbo;* ashy white and subshining when old, often with brown or blackish-ferruginous stains. FLESH thin, toughish, whitish. GILLS *adnate* or arcuate-adnate, *uncinate,* moderately broad, subdistant, dull white, *usually tinged with flesh color in age,* often stained when old, edge entire or crenulate-eroded, interspaces usually venose. STEM 4-10 cm. long or longer, 1-3 mm. thick, *tough,* very tough in age, *cartilaginous,* hollow, *even* or only innately striatulate, flexuous, sometimes twisted, *from pallid to rufous-brown or ferruginous-stained below,* paler to whitish at apex, glabrous and shining, base often connate with ferruginous or dingy-yellow strigose hairs, and rooting. SPORES 8-9 x 5-6 micr., broadly-elliptical *when mature,* smooth, white, immature spores with large globule simulating globular spores. BASIDIA 4-spored, with long and stout sterigmata. CYSTIDIA *none.* ODOR none or slightly farinaceous.

Very caespitose on rotten wood, old logs, stumps, etc., of all kinds of trees.

Throughout the State. March-November. (Earliest record March 15; latest, November 2.) Very common.

Reported throughout North America, Europe, Tasmania, etc. The weather and locality bring about much variation in this species, especially as to color and texture. The essential characters seem to be the lack of cystidia, the absence of a nitrous odor, the caespitose rufous-brown stems, the sulcate-striate cap, which is often

stained in moist weather, the tendency for the white gills to assume a flesh tint and the size of the spores. The stains on cap and gills and base of stem are dingy yellow, purplish-brown or dark ferruginous. At other times, especially in dry places, the pilei become silvery-shining and scarcely stained. In mounting a section of the gills the large mature spores with homogeneous contents sink to the bottom of the water on the slide. The immature spores are subspherical and contain a large globule which is more prominent than the wall of the spore and accounts for the fact that to some observers the spores look spherical. Patouillard reports that a common variety has 2-spored basidia; I have not found it. *M. haematopa,* which becomes stained in the old stage must not be confused with this species. Occasionally the stem is striate but this form differs from *M. polygramma* var. *albida* in the lack of cystidia, and in our territory by the different colors.

Var. *calopus* Fr.

Illustrations: Fries, Icones, Pl. 80, Fig. 2.
Cooke, Ill., Pl. 223 A.

Like *M. galericulata,* except that the gills are adnexed, the stem striatulate and coherent or proliferous at base, joined together and covered by rusty or brown strigose hairs, elsewhere rufous-bay color and shining. Spores as in *M. galericulata.* No cystidia. The appearance of the stem reminds one of that of *Marasmius cohaerens,* but the pileus, etc., are very different.

Caespitose, on decaying logs in woods. Ann Arbor. May and June. Infrequent.

850. **Mycena inclinata** Fr. var.

Epicrisis, 1836-38.

Illustration: Plate CXLIX of this Report.

PILEUS 2-3 cm. broad and high, obtusely conical at first, then persistently conical-campanulate *with a broad oblong strongly marked umbo,* at length with a spreading or recurved margin, often gibbous-cernuous, dry, striate to the middle, *fuscous-brown,* umbo smoky-fuscous, darker colored in age. FLESH thin, concolor or paler. GILLS narrowed behind and sinuate-adnexed, *not uncinate,* narrow, ascending, crowded, soft, whitish or grayish-fuscescent, edge entire. STEM 3-6 cm. long, 2-5 mm. thick, curved, *twisted,* hollow, *often compressed or furrowed,* toughish-fibrous and splitting longitudinally under pressure, subfibrillose, pallid above, fuscous below, *fuscescent or blackish-fuscous throughout in age,* rooting. SPORES broadly elliptical, 8-10 x 5-6 micr., smooth, white. CYSTIDIA none. ODOR fungoid.

Caespitose or subcaespitose on logs in woods of juniper, oak, etc. Ann Arbor. October. Infrequent.

Apparently intermediate between *M. prolifera* and *M. inclinata,* concerning whose microscopic characters little is known. It is allied to the former by its broad and dark umbo and to the latter by the character of the stem, the cernuous pileus which is at first much incurved and the strongly fuscescent colors of cap and stem. The narrow gills are still more narrowed and broadly sinuate behind. The pileus often undulates from umbo to margin, and remains obtusely conic-campanulate. No tendency of the stem to proliferate was observed. It is very distinct from *M. galericulata.* The figure of Gillet does not appear to agree at all with the description of Fries.

851. **Mycena excisa** Fr.

Epicrisis, 1836.

Illustration: Fries, Icones, Pl. 81, Fig. 1.

PILEUS 1.5-4 cm. broad, *firm,* campanulate, broadly umbonate, gibbous, dark brown, *dark umber or blackish-fuscous, rugulose,* margin at first straight. FLESH concolor or paler. GILLS adnexed by an abruptly much narrower portion, elsewhere *rather broad,* ventricose, *subdistant, thickish,* pallid then tinged brownish. STEM short, 2-3 cm. long, 2-4.5 mm. thick, equal, floccose-fibrillose, glabrescent, stuffed then hollow, *rigid, toughish,* often twisted, sometimes compressed, *fuscous-brownish,* darker in age. SPORES elliptical, 8-10 x 5-6 micr., smooth, apiculate, white. CYSTIDIA moderately abundant, cylindrical above, ventricose above the slender pedicel, obtuse, 75-110 x 15-18 micr. BASIDIA about 40 x 6 micr., 4-spored. ODOR and TASTE none.

Caespitose or subcaespitose to gregarious. On the ground, among grass in oak woods. Ann Arbor. October-November. Infrequent.

Known by its dark brown cap, its short stem which is rigid and rather tough, and the abruptly narrowed and slightly adnexed

gills. It has scarcely any tinge of gray to either cap or stem. The stem is sometimes strongly entwined on the grass-stalks or obliquely attached to buried roots, etc. Fries has not adhered to the same description in his different works; our plants agree best with the description in Icones, although in size and build they are more like the figures of *M. dissiliens* of the same work. The cystidia are large and striking.

***Pileus fundamentally gray, or some shade of gray, or white.*

852. Mycena parabolica Fr.

Epicrisis, 1836.

Illustrations: Fries, Icones, Pl. 80, Fig. 3.
Cooke, Ill., Pl. 224.

PILEUS 1-3 cm. broad, campanulate, *margin at length recurved,* umbo obtuse, *striate,* becoming coarsely rugose-striate, *sometimes sulcate,* moist, glabrous, *at first blackish-cinereous,* especially on center, *then gray to pearl-gray* or whitish when dry, disk darker. FLESH thin, *concolor at first.* GILLS narrowly adnate, *not uncinate, narrow,* at first ascending and close, then subdistant, whitish, *then tinged cinereous,* edge entire. STEM 3-10 cm. long, 1.5-2.5 mm. thick, sometimes long and rooting, cartilaginous, hollow, terete or compressed, *even,* glabrous, *cinereous,* fading, the rooting base white-hairy and curved or flexuous. SPORES 8-10 x 5-7 micr., elliptical, ends obtuse, smooth, white. CYSTIDIA few, lanceolate, soon collapsing, sometimes on the edge of the gills; sterile cells none. BASIDIA 4-spored, 27 x 8 micr., with prominent awl-shaped sterigmata, 6 micr. long. ODOR none.

Solitary, gregarious or subcaespitose. On or around decaying logs, stumps in mixed woods of white pine and beech. New Richmond. September.

This gray Mycena is frequent locally. The margin of the cap becomes expanded or recurved and is then coarsely sulcate on account of the thin flesh. The young stage distinctly shows its non-identity with *M. galericulata.* The stem is not as rigid as that of its neighbors and becomes somewhat flaccid in age.

853. Mycena polygramma Fr.

Epicrisis, 1836.

Illustrations: Cooke, Ill., Pl. 223.
Michael, Führer f. Pilzfreunde, III, No. 91.

Var. *albida* Kauff. Mich. Acad. Sci. Rep. 13, p. 219.

PILEUS 2-5 cm. broad, campanulate or conic-campanulate, dry, obtusely subumbonate, *sulcate-striate on margin* in large specimens, *white,* whitish-buff or grayish, glabrous, atomate when dry. FLESH white, thin. GILLS *narrowly adnate, not uncinate,* ascending or arcuate, rather broad in middle, subdistant, white, with a faint flush of pink in the gray forms, edge even. STEM 5-10 cm. long, 2-4 mm. thick, *equal,* cartilaginous, hollow, *striatulate or distinctly striate at apex or throughout,* sometimes twisted, straight or flexuous, firm and rather rigid but fragile, glabrous and *shining,* white or grayish-white, hairy at base. SPORES 8-10 x 5-6 micr., broadly elliptical, ends rounded, smooth, white. CYSTIDIA fusiform-acuminate, *abundant,* 45-75 x 9-15 micr. BASIDIA 4-spored, sterigmata slender. ODOR *nitrous,* varying from slight to strong.

Caespitose, gregarious or solitary on decaying logs of maple, elm, basswood, etc. Ann Arbor. May-June. Frequent locally.

Not to be confounded with *M. alkalina,* which lacks cystidia or possesses but a few of them, and which has pseudo-viscid stems. The typical *M. polygramma* of Europe has not been recognized with certainty and appears to be rare. Atkinson has referred *M. praelonga* Pk. to it, but the latter is kept intact in this report. Our plants, described above, are relatively large, almost pure white and have striate stems and a nitrous odor. It cannot be *M. sudora* Fr. since the cap is not viscid.

854. Mycena lasiosperma Bres.

Fung. Trid., 1881.

Illustration: Ibid, Pl. 37, Fig. 1.

PILEUS 5-20 mm. broad, conic-campanulate then expanded-umbonate, *subviscid,* striatulate to umbo, subhygrophanous, *dark cinereous,* almost black on umbo, paler toward margin. FLESH thin, concolor. GILLS adnexed, with tooth, close, ventricose, whitish

then tinged gray, interspaces venose, stem 3-7 cm. long, 1-2 mm. thick, equal or attenuated below, *toughish* and *firm*, flexuous, hollow, white-pulverulent, brownish above, paler below, curved-rooting. SPORES spherical, *covered with blunt, rod-like tubercles*, 6-7 micr. diam., *white*. CYSTIDIA moderately abundant, fusoid, attenuate above, 45-60 x 8-12 micr. ODOR slight or none.

On very rotten wood and debris in beech and maple forest (Quirk's woods, east of Ypsilanti, Michigan). Gregarious or subcaespitose. August. Rare.

An interesting find of a remarkable plant which does not seem to have been noted except by its discoverer. The structure of the spores naturally leads one to suspect an Inocybe, but their color is white (hyaline under the microscope), and the habit of the plants is that of a Mycena. Bresadola describes it as having a strong odor of rancid meal, which our plants seemed to lack. The stems become firmer and tougher on drying and it is placed by Saccardo under the Rigipedes next to *M. raeborrhiza* which is said to have tuberculate spores. The latter is, however, a very different plant both in color and shape, according to the figure of it by Fries. (Icones, Pl. 83, Fig. 4.) Two other species of Mycena have been described with tuberculate spores, *M. bryophila* Vogl. and *M. receptibilis* Britz.

855. **Mycena cyaneobasis** Pk.

N. Y. State Mus. Rep. 51, 1898.

Illustrations: Ibid, Pl. B, Fig. 1-7.

PILEUS 6-15 mm. broad, tough, firm, elliptic-oval at very first, then conic-campanulate, dark aeruginous-brown at first, at length paler and grayish, especially toward *the bluish margin*, glabrous, papillate or obtuse, striatulate on margin. *Trama* composed of a thick amorphous to subgelatinous upper layer, elsewhere pseudoparenchymatous. GILLS narrowly *adnate*, not uncinate, ascending, rather narrow, close, whitish or tinged grayish, edge minutely fimbriate. STEM 5-8 cm. long, 1-1.5 mm. thick, equal, slender, *flexuous*, terete or composed, tubular, cartilaginous, elastic, *floccose-pruinose at first*, glabrescent, *grayish-brown*, hairy and rooting at base. SPORES subspherical, 7-8 micr. diam., smooth, white. CYSTIDIA none. *Sterile cells* on edge of gills *filiform*, numerous, 40 x 2 micr., hyaline. OROR and TASTE mild or slightly of radish.

Subcaespitose, among leaves and much decayed wood in frondose woods. Ann Arbor. June and October. Infrequent.

This differs but little from *M. cyanothrix* Atk. The pileus and stem are slightly gelatinous when moist. The mycelium has a bluish tinge or is dull white. There is a bluish-green tinge to the young pileus which is sometimes slightly zonate. Peck referred it to the Rigipedes where it is somewhat doubtfully retained. *M. cyanothrix* seems to have a much longer rooting stem, adnexed gills, and the stem is glabrous and differently colored. It may turn out to be identical with *M. cyaneobasis*. In Europe three other small Mycenas with blue tints have been described, *M. marginella* Fr., *M. iris* Berk. and *M. calorhiza* Bres., all closely related. The last, however, has spores very different from either of ours.

Section VIII. Fragilipedes. Stem *fragile*, dry, juiceless, scarcely rooting, neither dilated nor inserted. Pileus *hygrophanous*. Gills white then tinged grayish or fuscous.

Delicate, fragile, often soft, *usually odorous*, normally on the ground, debris, leaves, etc., not densely caespitose on wood (except *M. alkalina*).

This section, like the preceding, needs a revision on a microscopical basis, especially of those species with nitrous or alkaline odor; the latter have been arranged as well as possible in the absence of detailed information from European sources. We have a number of forms with a more or less nitrous odor, some of which have not been included below for lack of data.

856. **Mycena alcalina** Fr.

Syst. Myc., 1821.

Illustrations: Fries, Icones, Pl. 81, Fig. 3.
Cooke, Ill., Pl. 187.

PILEUS 1-2.5 cm. broad, campanulate (at first narrowly ovate to conic-campanulate), obtusely umbonate or obtuse, glabrous, *hygrophanous*, deeply striate (moist), *grayish-brown to grayish-umber (moist)*, fading to grayish when dry, center always darker. FLESH thin, membranous. GILLS narrowly adnate, arcuate ascending, close to subdistant, *whitish then glaucous-gray*, or yellowish in age. STEM 3-7 cm. long, 1-2 mm. thick, rigid, *fragile*, terete or compressed, slippery-subgelatinous, hollow, *even*, glabrous, pallid-brown, sometimes darker at first, fading, the rooting base white-strigose. SPORES 9-10 x 5-6 micr., broadly elliptical, smooth, ob-

tuse at ends, white. CYSTIDIA none or few, then sublanceolate to subfusiform, 45-65 mm. long. *Sterile cells* ventricose below, obtuse-cylindrical above, abundant, 35-42 micr. long. ODOR strongly *nitrous*.

Caespitose, gregarious or solitary, on decayed logs and debris of tamarack, elm, etc. Ann Arbor, New Richmond. May-June and September-November. Not very common.

Characterized by the odor, by the few cystidia, and the slippery pseudo-viscous stem. The surface of the cap is composed of large, brown, erect, vesiculose cells. There is no separable pellicle, and the stem is not truly viscid, but feels gelatinous when applied to the lips. It differs from *M. ammoniaca* in its slippery stem, lack of a decurrent tooth at the attachment of the gills, and in the differently shaped spores. In *M. alcalina* the spores are symmetrically elliptical, in *M. ammoniaca* they are pip-shaped, i. e., narrowed and pointed toward one end. Both may be found on the decayed debris of leaves and wood on the ground and both may occur solitary or gregarious, although *M. ammoniaca* is rarely, if ever, caespitose. Both differ from *M. metata, M. leptocephala* and *M. constans* in the marked excess of brown shades instead of gray.

857. Mycena ammoniaca Fr.

Epicrisis, 1836.

Illustration: Cooke, Ill., Pl. 238.

PILEUS 5-15 mm. broad, conic-campanulate, but obtuse (at first elliptic-ovate), umbonate, hygrophanous, *striatulate* on margin, glabrous, fuscous-blackish to grayish-brown (moist), grayish buff or paler (dry). FLESH membranaceous, concolor. GILLS adnate, *uncinate,* close to subdistant, *narrow* and *linear,* interspaces venose at times, whitish then pale cinereous, often dark cinereous at the very first. STEM 3-5 cm. long, 1-1.5 mm. thick, toughish, equal, *straight, hollow, even, not slippery, whitish to pale brownish-ashy,* white mycelioid at base, scarcely rooting. SPORES 8-10 x 6-7 micr., pip-shaped, or elliptical-ovate, *pointed at one end,* smooth, white. CYSTIDIA none or few, *short, stout,* ventricose and obtuse, 36-40 x 15 micr. BASIDIA about 30 x 6 micr., slender. ODOR strongly *nitrous*.

Gregarious or scattered among leaves, remnants of decayed wood, etc. Ann Arbor, New Richmond. May-June and September-October. Infrequent.

Mostly separable from *M. alcalina* by its terrestrial, scattered habit, smaller size and dry stem. *M. metata* has narrower spores, the odor is faint or obsolete, and the shape of the pileus is often more convex. The stem of this species is slightly tough and might on this account be referred to the Filipedes. The trama of the gills is composed of rather large cells, among which globose vesicular cells are conspicuous.

858. Mycena metata Fr.

Syst. Myc., 1821.

Illustration: Cooke, Ill., Pl. 228.

PILEUS 5-20 mm. broad, convex-campanulate, varying to narrowly *campanulate, hygrophanous,* umbonate, obtuse, *striate* and *ashy-brown (moist)*, pale ashy to brownish-ashy (dry), glabrous. FLESH thin, membranaceous. Gills adnate, ascending, *narrow,* close to subdistant, cinerascent or tinged flesh color, *edge obscurely flocculose.* STEM 4-6 cm. long, 1.5-2.5 mm. thick, equal, fragile, toughish, dry, hollow, even, grayish-brown or paler, flexuous, hairy at base. SPORES 9-11 x 4-5 micr., *narrowly* elliptical, sometimes narrower toward one end, variable, smooth, white. CYSTIDIA none. *Sterile cells* on edge of gills globose-pyriform, about 25-30 x 18 micr., covered above by very short, rod-like protuberances. ODOR weakly alkaline when plants are fresh.

Gregarious or subcaespitose among moss and grass, in tamarack, cedar and hemlock swamps. Ann Arbor, Bay View. September-November. Infrequent locally.

The microscopic characters are the best mark of this species. The color is between grayish-brown and ashy (see Chapman), fading to pale ashy or whitish. The shape of the cap varies considerably in the same patch. Fries, in his later works, Epicrisis and Hymen. Europ., does not give the shape. In Systema, however, he says it is campanulate, one-half inch across. Massee (British Fungus Flora) and Stevenson (British Fungi), mislead by speaking of the young cap as hemispherical. It is apparently most abundant in late autumn, in or on the borders of swamps among sphagnum or other moss and grasses, even after heavy frosts. The trama of the gills is composed of large, cylindrical cells. It differs from *M. ammoniaca* in its microscopic characters and its habitat, and by the paler color of its cap.

859. Mycena leptocephala Fr.

Epicrisis, 1836.

Illustration: Cooke, Ill., Pl. 187.

PILEUS 5-20 mm. high and broad, conico-campanulate, *scarcely hygrophanous,* fuscous-ashy (young and moist) *soon grayish-white or buff,* obtuse umbo tinged drab, often unicolorous, *striate to subsulcate when dry* and with a *glaucous* pruinosity, opaque. GILLS ascending, narrowed behind, adnate, *not uncinate,* not broad, ventricose, close to subdistant, whitish, then tinged pale cinereous. STEM 5-10 cm. long, .5-1 mm. thick, *filiform,* cartilaginous, elastic, glabrous, even, hollow, *darker than pileus when dry,* whitish above, subrooting. SPORES 8-9.5 x 5-6 micr. (rarely up to 10 x 7 micr.), elliptic-ovate, apiculate and somewhat pointed at one end, smooth, white. CYSTIDIA and *sterile cells* lacking. BASIDIA short, about 15-18 x 6-7 micr., 4-spored; sterigmata prominent, 6 micr. long. ODOR nitrous, varying weak or strong.

Solitary, scattered or rarely subcaespitose, among fallen leaves, mosses, decayed debris on the ground in woods. Ann Arbor, New Richmond. September-October. Not infrequent.

This is one of the gray Mycenas. It has been placed here because of the glaucous bloom on the cap when dry, referring to the "pruinosity" of Fries' description. No certainty can be reached in placing it because of lack of detailed data of related European species. It cannot be referred to *M. constans* Pk. which is a small plant and has a decurrent tooth to the gills. It might be referred to *M. consmilis* Cke., but that species is figured with shorter stems, and has no odor. Sometimes the cap and stem have a pale drab or faint purplish tint. The stem becomes flaccid in age, allying it to the Filipedes. The odor is often not noticeable until sometime after the plants have been picked, or when crushed.

860. Mycena dissiliens Fr. var.

Epicrisis, 1836.

Illustrations: Fries, Icones, Pl. 81, Fig. 2.
Cooke, Ill., Pl. 285.

PILEUS 5-15 mm. broad, obtusely convex at first, then campanulate to subexpanded, subumbonate, striatulate and *grayish-brown to umber* (Sacc.) when moist, hygrophanous, fading to whitish, glabrous, substriate or even when dry, *margin at first straight.* FLESH watery brownish then whitish, membranous, not very fragile. GILLS adnate, *with a decurrent tooth,* ascending-arcuate, moderately broad, subventricose, close to subdistant, *white* then tinged with gray. Edge obscurely fimbriate, scarcely venose. STEM 3-4 cm. long, 1-3 mm. thick, often rather thick, *pellucid-white,* shining, glabrous, even, straight, equal, hollow, *fragile, easily split longitudinally.* SPORES 7-9 x 4-4.5 micr., narrowly elliptical, pointed at one end, smooth, white. CYSTIDIA rather abundant, subcylindrical, obtuse, 50-65 x 8-9 micr. on sides and edge of gills. ODOR none.

Scattered-gregarious on the ground among pine needles, moss, leaf mold, in woods of white pine, beech, etc. New Richmond. September. Infrequent.

These plants have been temporarily referred to *M. dissiliens;* they differ in that the pileus is not sulcate and the odor is lacking. The smell of *M. dissiliens* is said to be unpleasant. Our plant has a subgelatinous feel to the cap and stem, but there is no pellicle. The base of stem is scarcely hairy except where the mycelium masses among the decaying leaf mold from which it sometimes grows. The pileus dries to a glistening white, as does that of *M. stannea* Fr. It has the stature of a Collybia, as shown in Fries' figure of his species. It differs from *M. hemispherica* Pk. to which it appears to be related, in the mucb larger spores. The stem becomes very fragile with age and breaks on picking.

861. Mycena atroalba Fr.

Syst. Myc., 1821.

PILEUS 1-2.5 cm. broad, narrowly elliptical at first, then campanulate to expanded, umbonate, glabrous, hygrophanous, *umbo smoky-fuscous,* elsewhere pale grayish-white, sometimes uniformly fuscous-gray, fading, striate to the umbo when moist, radiately wrinkled or furrowed when dry, opaque. FLESH thin, concolor, rigid-fragile. GILLS narrowly adnexed, uncinate, close to scarcely subdistant, narrow, subventricose, white then pale cinereous, edge entire. STEM 4-6 cm. long, 1.5-2.5 mm. thick, equal, striate, rigid-fragile, subshining, glabrous, shining, even, *whitish above, dark fuscous below,* toughish, sometimes compressed, hollow, mycelioid-hairy and somewhat rooting. SPORES broadly elliptical, 8-9 x

5.5-6 micr., smooth, white. CYSTIDIA *none.* STERILE CELLS on edge of gills short, lanceolate, ventricose below. ODOR and TASTE none.

Gregarious. On the ground, moss and debris under tamarack trees. Ann Arbor. October. Infrequent.

The plants have the habitat of *M. metata,* but differ from it in the lack of odor, the dark-colored umbo and the microscopic characters. The gills are not provided with cystidia as in *M. atroalboides* and the stem is differently colored. Despite the similarity of the descriptions the two species are very distinct. Our plants differ from Fries' description in that the base of the stem lacks any marked "bulbous-tumid" root, therefore they are only provisionally referred to *M. atroalba.*

862. Mycena atroalboides Pk.

N. Y. State Mus. Rep. 27, 1875.

PILEUS 5-15 mm. broad, acorn-shaped at the very first, then conico-campanulate, finally umbonate and margin recurved, striatulate and *blackish-fuscous when moist and young,* hygrophanous, fading to fuscous or cinereous, and then subsulcate. FLESH *very thin,* membranaceous, whitish with a gray tinge. GILLS uncinate-adnexed, *narrow, close,* white, faintly grayish at length, edge entire. STEM *slender,* 4-10 cm. long, 1-1.5 mm. thick, equal or attenuated upwards, glabrous and even above, hollow, wavy, *fragile,* shining, terete or compressed, easily splitting lengthwise, *dark bluish or blackish-gray at apex,* tinged gray or fuscous elsewhere, sometimes connate with cottony fibrils below. SPORES 7-9 x 5-6 micr., broadly elliptical, smooth, white. CYSTIDIA numerous on sides of gills, subcylindrical, slightly ventricose below, obtuse, 75-85 x 7-8 micr. STERILE CELLS none.

Solitary or subcaespitose, on decayed wood and mosses, in woods of hemlock, beech, etc. New Richmond. August-September. Infrequent.

Manifestly related to *M. atrocyaneus* Fr. and *M. atroalbus* Fr. *M. atrocyaneus* is said to have the gills joined to a collar and distant, while the pileus is deeply sulcate. From *M. atroalbus, M. atroalboides* differs in possessing abundant cystidia on the sides of the gills and by its more uniformly colored pileus. A *form* occurs with pileus cylindric when very young and at first dotted with white, scattered, silky fibrils on the surface; its cystidia are thicker,

12-16 micr. in diameter. The young stem has a watery juice which is at first dark-colored. The tint of blackish-blue on young cap and stem is common to both forms.

863. Mycena prælonga Pk.

N. Y. State Cab. Rep. 23, 1872.

Illustration: Atkinson, Mushrooms, Fig. 94, p. 94, 1900. (As *M. polygramma.*)

PILEUS 5-15 mm. broad, at first subcylindrical then conic-campanulate or subexpanded, umbonate, glabrous, striate, *dark brown with a leaden tint.* GILLS adnate, uncinate, arcuate-ascending, *narrow,* close to subdistant, white, at length subcinereous. STEM very long, 10-20 cm. long, .5-1 mm. thick, *filiform,* firm, innately striatulate, glabrous, hollow, tinged rufous-brown, white at apex, rooting in the sphagnum. SPORES 8-9 x 5-6 micr. when mature, subglobose or broadly elliptical, smooth, white. CYSTIDIA only on edge of gills, flask-shaped, with narrow, acuminate neck about 45 x 12-14 micr.

Gregarious. On sphagnum in tamarack swamps; local. Ann Arbor. May-June.

This species has been referred by Atkinson to *M. polygramma* Fr. It is known by its very long slender stem, by the leaden tint of the brown cap, and by the microscopic characters. Many of the bog species develop these long stems, apparently the result of the moisture present.

Section IX. Filipedes. Stem *filiform, flaccid,* somewhat tough, rooting, dry, juiceless. Gills whitish or tinged with the color of the cap. Pileus not hygrophanous.

Stem commonly very long in proportion to pileus; very slender, tense and straight when fresh, collapsing with age because of the flaccid texture; growing on the ground among mosses and grass, singly, i. e., not caespitose. Inodorous. Sometimes not easily distinguished from those of the Fragilipedes which have slender, filiform stems; and from the Adonidae, which differ, however, in the persistently white gills. A few brightly colored species are included here, which might perhaps be as well placed under the Adonidae.

864. **Mycena collariata** Fr.

Epicrisis, 1821.

Illustrations: Fries, Icones, Pl. 82, Fig. 5.
Cooke, Ill., Pl. 189.

"PILEUS 6-12 mm. broad, campanulate-convex, subumbonate, striate, typically fuscous, but *commonly whitish-gray* and only fuscous on disk, fading, glabrous. FLESH membranaceous. GILLS adnate, *joined in a collar behind,* thin, crowded, distinct, whitish or obsoletely incarnate. STEM filiform, 2-3 cm. long, tough, glabrous, shining, striatulate under a lens. SPORES 8-10 x 4-6 micr. (Sacc. and Berk.)."

Not yet found in the State. I have seen specimens on decayed logs in a neighboring State and it doubtless occurs in Michigan. It has the stature and appearance of *M. vulgaris,* but the cap is not viscid.

865. **Mycena cyanothrix** Atk.

Mushrooms, Edible, Poisonous, etc., 1900.

Illustrations: Ibid, Fig. 99, p. 99.
Conn. State Geol. and Nat. Hist. Surv., Bull. 3, Pl. 37.

PILEUS 1-2 cm. broad, *ovate to convex,* viscid when young, glabrous, striatulate on margin, *bright blue when young,* becoming pale and whitish in age or fuscous in the center. GILLS free, narrow, close, white then grayish-white, edge minutely fimbriate. STEM 6-9 cm. long, 1-1.8 mm. thick, slender, hollow, faintly purple when young, becoming whitish or flesh color, flexuous or nearly straight, even, rooting. SPORES globose, smooth, 6-9 micr., white or with a delicate bluish tinge.

Gregarious, subcaespitose or solitary, on decayed wood, debris, etc. Marquette, Bay View. Not rare in the north.

A slender, delicately tinted plant, so far found in our northern regions only. It differs from *M. cyaneobasis* in its thinner substance, *free gills and brighter colors.*

866. **Mycena subincarnata** Pk.

N. Y. State Cab. Rep. 23, 1872.

PILEUS 5-12 mm. broad, hemispherical then campanulate-convex, finally subexpanded, fragile, striatulate, *glabrous, pale, incarnate* or yellowish, usually dull reddish on center. FLESH thin, membranaceous. GILLS adnexed, rounded behind, not broad, ventricose, close, whitish *tinged flesh color.* STEM 2-5 cm. long, filiform, *pruinose,* equal, hollow, even, toughish, *pellucid-white,* base rooting and white-villose. SPORES 6-7 x 4 micr., elliptic-ovate, smooth, white. ODOR none.

Gregarious, on the ground or on mossy logs in hemlock or pine woods. Bay View, New Richmond. September. Infrequent.

Near *M. pulcherrima,* but differing in color, and size of spores. The stem becomes fuscous or darker in age.

867. **Mycena pulcherrima** Pk.

N. Y. State Cab. Rep. 23, 1872.

PILEUS 5-10 mm. broad, conico-campanulate to subcampanulate, subexpanded, obtuse, faintly striatulate on margin, *dull, yellowish to reddish,* paler toward margin, delicately glaucous, glabrous. FLESH membranaceous. GILLS adnexed, not uncinate, broad in the middle, *ventricose,* close to subdistant, *yellowish* or tinged like pileus. STEM 3-5 cm. long, .5-1 mm. thick, filiform, flaccid, equal, even, flexuous, white-pulverulent when young, glabrescent, *pellucid-white* and shining, white-hairy at base. SPORES 7-8 x 5-6 micr., oval-elliptical, smooth, white. CYSTIDIA none. ODOR none.

Scattered or in twos and threes, on very decayed wood or debris, under hemlock and pine. New Richmond.

A distinct little plant, to be separated from *M. acicula* Fr. by its habitat, larger size and different spores.