









# THE MYCOLOGIC FLORA

—OF THE—

MIAMI VALLEY, OHIO.

BY A. P. MORGAN.

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THE MYCOLOGIC FLORA OF THE MIAMI VALLEY, O.

By A. P. MORGAN.

FUNGI, Linn.

Fungi are Thallophytes which grow upon organic substances, usually dead or decaying animal or vegetable matter, and derive their nourishment from them; they are destitute of chlorophyll, the green coloring matter of plants, and are therefore incapable of assimilation.

The whole process of development of a fungus may be divided into two periods; first, from the spore is produced a *mycelium*; secondly, out of the mycelium the *fructification* subsequently arises. The mycelium consists of filaments simple or branched, and single or variously associated. The mycelium creeps in or upon the substratum which nourishes it out of which it absorbs the useful materials. The fructification consists of simple or branched filaments, bearing the spores at their extremities; these threads are either separate and free from each other, or they grow closely compacted together forming a *hymenium*. The hymenium is either naked and exposed, and borne upon a *receptacle*, or it is inclosed in a *peridium* or a *perithecium*. The spores are either produced naked at the extremities of the filaments or they arise inside their sac-like swollen terminal cells; in the former case the supporting cell or filament takes the name of *basidium*, in the latter it is called an *ascus*.

TABLE OF CLASSES OF FUNGI.

A. Spores naked.

a. Hymenium present.

1. HYMENOMYCETES.—Hymenium free, mostly naked or soon exposed.
2. GASTEROMYCETES.—Hymenium inclosed in a peridium, which is ruptured when mature.

b. Hymenium absent.

3. CONIOMYCETES.—Spores mostly terminal on inconspicuous threads.
4. HYPHOMYCETES.—Spores on conspicuous threads.

B. Spores contained in asci.

5. PHYSOMYCETES.—Fertile cells seated on threads not compacted into a hymenium.
6. ASCOMYCETES.—Asci formed from the fertile cells of a hymenium.



CLASS I.—HYMENOMYCETES.

Hymenium free, mostly naked, or, if inclosed at first, soon exposed ; spores naked, mostly quaternate, on distinct spicules.—*Cooke*.

TABLE OF ORDERS OF HYMENOMYCETES.

*A. Hymenium effigurate.*

1. AGARICINI.—Hymenium spread over the surface of gills or lamellæ.
2. POLYPOREI.—Hymenium lining the interior of tubules or pores.
3. HYDNEI.—Hymenium consisting of teeth, tubercles or papillæ.

*B. Hymenium lævigatæ.*

4. THELEPHOREI.—Hymenium horizontal and inferior.
5. CLAVARIEI.—Hymenium investing a clavate or branched body.
6. TREMELLINEI.—Hymenium investing a lobed or convolute gelatinous body.

ORDER I.—AGARICINI.

Hymenophore inferior, lamellose. Lamellæ radiating from the center or from the stipe, covered on both surfaces with basidia and paraphyses ; basidia 4-sporous at the apex.

TABLE OF GENERA OF AGARICINI.

*A. Fungi fleshy, putrescent.*

1. AGARICUS.—Lamellæ membranaceous, soft, persistent.
2. COPRINUS.—Lamellæ dissolving into a black fluid.
3. BOLBITIUS.—Lamellæ becoming moist ; spores subferruginous.
4. CORTINARIUS.—Veil of cobwebby threads ; lamellæ pulverulent with subochraceous spores.
5. PAXILLUS.—Lamellæ easily separating from the hymenophore ; spores colored.
6. HYGROPHORUS.—Lamellæ somewhat waxy.
7. LACTARIUS.—Lamellæ with a milky juice.
8. RUSSULA.—Lamellæ rigido-fragile.
9. CANTHARELLUS.—Lamellæ with the edge obtuse.

*B. Fungi tough, persistent, subcoriaceous.*

10. MARASMIUS.—Fungi marcescent, reviving when wet.
11. LENTINUS.—Fungi fleshy-tough ; lamellæ lacero-dentate.
12. PANUS.—Fungi fleshy-coriaceous ; lamellæ entire.
13. TROGIA.—Fungi tough, soft ; lamellæ fold-like, the edge crisp.

14. SCHIZOPHYLLUM.—Fungi coriaceous; lamellæ with the edge split and revolute.

15. LENZITES.—Fungi corky; lamellæ coriaceous.

GENUS I.—AGARICUS, Linn.

Lamellæ membranaceous, soft, persistent, not tough nor deliquescent, easily separable into two layers, the edge acute; trama subfloccose; universal veil never cobwebby.

The subgenera of the genus Agaricus are arranged in five series, according to the color of the spores, as follows:

1. LEUCOSPORI.—Spores white or whitish.
2. HYPORHODII.—Spores rosy or reddish.
3. DERMINI.—Spores subferruginous, argillaceous or ochraceous.
4. PRATELLI.—Spores purplish or brown.
5. COPRINARIII.—Spores black.

TABLE OF THE SUBGENERA OF LEUCOSPORI.

*A. Stipe central and veil present.*

*a. Lamellæ free from the stipe.*

1. AMANITA.—Universal veil discrete from the epidermis of the pileus.
2. LEPIDOTA.—Universal veil concrete with the epidermis of the pileus.

*b. Lamellæ attached to the stipe.*

3. ARMILLARIA.—Veil partial, annuliform.

*B. Stipe central, veil absent.*

*c. Stipe fleshy or fibrous.*

4. TRICHOLOMA.—Lamellæ sinuate.
5. CLITOCYBE.—Lamellæ decurrent.

*d. Stipe cartilaginous, lamellæ not decurrent.*

6. COLLYBIA.—Pileus convexo-plane, the margin at first involute.
7. MYCENA.—Pileus campanulate, the margin straight.

*e. Stipe cartilaginous, lamellæ decurrent.*

8. OMPHALIA.—Pileus more or less umbilicate.

*C. Stipe excentric or none.*

9. PLEUKOTUS.—Pileus irregular or sessile.

SUBGENUS I.—AMANITA, Fr.

Spores white. Universal veil (the *velva*) at first contiguous, discrete

from the epidermis of the pileus. Hymenophore discrete from the stipe. All terrestrial.

A. Annulus present.

a. Volva entire, 1, 2.

b. Volva circumscissile, 3, 4.

c. Volva broken up, 5.

B. Annulus absent, 6, 7.

A. *Annulus manifest, superior.*

a. *Volva dehiscing at the apex; the limb free, persistent.*

1. A. CÆSAREUS, Scop.—Pileus hemispheric, expanded, somewhat orange-color; the margin striate; the flesh yellowish. Stipe somewhat ventricose, flocculose, stuffed with cottony fibres; the volva and annulus lax. Lamellæ free, luteous.

In woods. This magnificent Agaric appears to be rare in the Miami Valley; it is not in Lea's Catalogue; I have met with it as yet only at the "Pinnacles" near Dayton. My figures vary in size, with the pileus 4-6 in. in diameter, and the stipe 5-8 in. in height. The thick volva is about the size of a hen's egg, and of like shape and color; it is burst at the apex by the growth of the pileus and remains entire about the base of the stipe. The pileus is said to vary in color, being found yellow, red and copper-color. This is the most showy of Agarics and well deserves the appellation "Fungorum Princeps" (*Kaiserling*, vulgo dictus). It has been celebrated as an article of diet from the most ancient times; "Cibus Deorum," Clus. It was known to the ancient Romans under the name "Boletus," and is said to have had the honor, under Agrippina's orders, and Locusta's cookery, of poisoning the emperor Claudius; in memory of which event, it is now called *Agaricus cæsareus*, Cæsar's Agaric. It is the only ancient mushroom which we at once recognize by the description of it. Pliny says "it originates in a volva or purse, in which it lies at first concealed as in an egg; breaking through this, it rises upwards on its stalk; the color of the cap is red; it takes a week to pass through the various stages of its growth and declension."

2. A. VERNUS, Fr.—White. Pileus ovate then expanded, somewhat depressed, viscid; the margin orbicular, even. Stipe stuffed, then hollow, equal, floccose; the limb of the volva free and closely sheathing the stipe; annulus reflexed, tumid. Lamellæ free.

The spring Agaric is found in moist woods in spring and early summer; it is quite common. Pileus 2-3 in. in diameter, the stipe 4-6

in. high. Dr. Cooke and Prof. Peck both give this as a species, though Fries considers it a variety of *A. phalloides*. It is readily distinguished from white forms of *A. vaginatus*, or of *A. volvatus* by the presence of the annulus.

*b. Volva definitely circumscissile, the margined base persistent, the upper part separating into thick warts upon the pileus.*

3. *A. MUSCARIUS*, Linn. Pileus convexo expanded; the margin striate; the flesh beneath the viscid cuticle yellowish. Stipe cobwebby within, soon hollow, ovate-bulbous at the base; the volva adnate, concentrically scaly-margined; the annulus superior, lax. Lamellæ reaching the stipe and decurrent in striae. Spores  $.008 \times .006$  mm.

In woods, not abundant in our region. This species does not appear in Lea's Catalogue, but I have met with it in all localities; it is very common in the Eastern States. Pileus 3-6 in. broad, stipe 4-8 in. high. The color of the European plant is commonly orange or scarlet, but in this country it is usually bright yellow, sometimes varying to whitish. The lamellæ are white, sometimes with a yellowish tint. It is always to be distinguished by the scaly-margined bulbous base of the stipe. This plant, as its name indicates, is called the "Fly Agaric," because its flesh has been used to poison flies, bugs, etc. In sufficient quantities, it is a highly narcotic violent poison, producing delirium and death. It is habitually used by some of the Tartar tribes of Eastern Asia to produce intoxication: a curious account of this may be found in Goldsmith's Letters of a "Citizen of the World," letter xxxii. This statement has recently been verified by George Kennan in a volume entitled "Tent-life in Siberia." page 203.

4. *A. PANTHERINUS*, DC.—Pileus convexo-expanded; the margin striate; the flesh beneath the viscid cuticle white. Stipe stuffed, then hollow, nearly glabrous; the base ochreate by the volva, the margin of which is entire and obtuse. Lamellæ attenuate, free. Spores  $.0076 \times .0048$  mm.

In pastures along the borders of woods. Pileus 4-6 in. in diameter, stipe 5-7 in. long. Pileus white or brownish, never yellow or red, when dry, soft to the touch like kid leather; the annulus is usually midway of the stipe or distant from its apex, it is often found deflexed or with its margin turned upward; the volva invests the base of the stipe smoothly, and has a separable or free margin, which is bluntly obtuse or truncate. The species is reputed poisonous.

c. *The whole volva friable, broken up into scales and warts.*

5. *A. RUBESCENS*, Pers.—Pileus convexo-expanded, strewn with unequal mealy warts; the flesh becoming reddish. Stipe stuffed, tapering upward, scaly; the annulus superior, entire. Lamellæ attenuate, reaching the stipe and decurrent in striæ. Spores  $.0076 \times .0058$  mm.

On hills and bluffs in woods. Pileus 3-5 in. in diameter, stipe 3-5 in. long. The color of the pileus is dirty-reddish, pale flesh-color or alutaceous; when fully grown the margin is often striate; it is characterized by the reddish flesh. It is distinguished from all the other *Amanitas* here enumerated by the complete absence of the volva about the base of the stipe. It is commonly classed among the suspicious fungi, though by some said to be edible.

*B. Annulus absent.*

6. *A. VOLVATUS*, Peck.—Pileus fleshy, convex, then expanded, sprinkled with small floccose scales, whitish, the disk pale brown; the margin striate. Stipe equal or slightly tapering upward, stuffed, floccose-scaly, whitish; the volva large, firm, loose. Lamellæ close, free, white. Spores somewhat elliptic,  $.010 \times .007$  mm.

In moist woods; quite abundant in spring and summer. Pileus 2-4 in. broad, stipe 3-7 in. high, the volva  $1\frac{1}{2}$ - $2\frac{1}{2}$  in. long, and 1 in. in diameter. My figures are much larger than Prof. Peck's typical plant. This is a very elegant species, well marked by the absence of the annulus, and the presence of a large, thick, elongated volva. I find the upper part of the volva sitting like a cap on the disk of the pileus, or hinged on one side, and resting against the stipe, sometimes it has fallen off on to the ground; commonly, the volva is only burst at the apex, and presents a free lobed margin. A dense mealiness invests the pileus and stipe. The native American species have scarcely as yet been tested in reference to their qualities as food; such experiments should be instituted with great caution. I find only the Morel and the Common Mushroom eaten by people in the Miami Valley; these two fungi are both delicious articles of diet.

7. *A. VAGINATUS*, Bull.—Pileus thin, campanulate then explanate; the margin membranaceous, pectinate-sulcate. Stipe hollow, tapering upward, fragile, floccose-scaly; the volva sheathing, loose. Lamellæ free, white. Spores oval,  $.0096 \times .0081$  mm.

In woods, common throughout the season from spring to autumn. Pileus 2-3 in. in diameter, stipe 4-6 in. in height, the volva 1  $1\frac{1}{2}$  in. long.

The pileus is commonly brownish or tawny, but is sometimes white, and sometimes quite a deep brown, especially on the disk ; the pileus and stipe both are usually quite smooth and glabrous. The volva is commonly concealed beneath the surface of the ground, and is liable to be overlooked. Badham says this species is edible, but it was formerly classed among suspicious fungi.

NOTE.—*A. virosus*, Fr., of Lea's Catalogue, has been omitted because it does not appear to have been recorded elsewhere in the Eastern U. S., and because I have never met with it in the Miami Valley ; it seems scarcely possible that I should not have found so conspicuous a fungus. I have an *Amanita* figured, which is mouse-color, and resembles *A. strangulatus*, Fr., but the spores are curved and apiculate, and very different in measurement from the latter ; having had but the single specimen, I can not venture to characterize it. Specimens of *Amanitas*, differing from the seven here described, are earnestly desired by the writer.

A. P. M.

## SUBGENUS II.—LEPIOTA, Fr.

Spores white (*green* in No. 10). Hymenophore discrete from the stipe. Universal veil concrete with the epidermis of the pileus. Lamellæ free (except in No. 21), often remote. Terrestrial.

- A. Pileus dry, scaly.
  - a. Annulus movable.
    - a'. Pileus brownish, 8, 9.
    - b'. Pileus whitish, 10, 11.
  - b. Annulus fixed.
    - c'. Pileus reddish, 12, 14.
    - d'. Pileus blackish, 15, 16.
    - e'. Pileus whitish, 17, 18.
- B. Pileus dry, granulose, 19-21.
- C. Pileus viscid, 22.
- A. *Pileus dry, scaly.*
  - a. *Annulus movable.*
    - a'. *Pileus reddish brown.*

8. A. PROCERUS, Scop.—Pileus fleshy, soft, ovate, then explanate, umbonate ; cuticle thick, torn into seceding scales. Stipe hollow, tall, bulbous, variegated, with appressed scales. Lamellæ remote, spores .0152 × .0076 mm.

Along the borders of woods and in pastures. Pileus 3-5 in. broad, stipe 5-9 in. high. The pileus is tough, dry and strongly umbonate, the cuticle being reddish brown, and broken so that the surface resembles brown shaggy leather. The stipe is brown-scaly, with some times peculiar snake-like spots.

9. A. RHACODES, Vitt.—Pileus fleshy, soft, globose, then explanate or depressed; the cuticle thin, reticulate, broken up into persistent scales. Stipe hollow, even, bulbous; the bulb ample, at first margined. Lamellæ remote. Spores  $.0064 \times .0046$  mm.

In pastures and meadows. Pileus 3-5 in. in breadth, stipe 5-9 in. high, of the size of the preceding species; it is also of the same reddish-brown color. But it is not umbonate, the disk being depressed or somewhat umbilicate; the flesh grows reddish after being broken or bruised; the stipe is never spotted. According to Worthington Smith's measurement, there is a great difference in the size of the spores. Prof. Peck expresses doubts as to this species being found in this country, but I have had specimens which I confidently referred here.

*b'. Pileus white or whitish.*

10. A. MORGANI, Peck.—Pileus fleshy, soft, globose, then explanate; the cuticle breaking up into seceding scales. Stipe cobwebby-stuffed, somewhat bulbous, tapering upward. Lamellæ remote, at first white, then changing to greenish. Spores subelliptic *greenish*,  $.010-.012 \times .007-.008$  mm. (See Plate II.)

Open, dry, grassy grounds, in pastures and along the roadsides. Pileus white, or the cuticle alutaceous, commonly 5-9 in. in diameter, the stipe 6-8 in. long, though larger specimens are sometimes found. This is the most conspicuous Agaric in the meadows and pastures of the Miami Valley; it appears to flourish from spring to autumn whenever there is abundance of rain. It is readily recognized by its green spores, by which it is remarkably distinguished from all other Agarics. See article by Prof. Chas. H. Peck, in *Botanical Gazette*, for March, 1879, also note by the writer in the September number.

11. A. MASTOIDEUS, Fr.—Pileus somewhat fleshy, soft, ovate-expanded, umbonate; the umbo prominent; cuticle thin, seceding in papillæ. Stipe hollow, slender, tapering equally from the bulb. Lamellæ very remote, pallid.

About old stumps in open woods. Pileus  $1\frac{1}{2}-2\frac{1}{2}$  in. across, stipe about

3 in. high; the margin in my figure is thin and striate; the color is white, with a sordid or alutaceous cuticle seceding up to the conspicuous umbo.

*b. Annulus fixed.*

*c'. Pileus with reddish or reddish-brown scales.*

12. *A. ACUTESQUAMOSUS*, Weinm.—Pileus fleshy, obtuse, at first hirtifloccose, then echinate, with erect acute squarrose scales. Stipe stout, bulbous. Lamellæ approximate, lanceolate, simple. Spores with a nucleus on one side, oblong  $.0042 \times .0028$  mm.

In woods in rich soil about old stumps. Pileus 2-3 in. broad, reddish-brown, with darker squarrose scales; the stipe 3-4 in. high, the bulb sometimes with a crenate margin. Veil clinging to the margin of the pileus, and finally forming an ample annulus. Our plant seems to differ from the European one, especially in the nature of the bulb.

13. *A. RUBRO-TINCTUS*, Peck.—Pileus fleshy, soft, convex, then explanate; cuticle reddish, fibrose-lacerate. Stipe hollow, glabrous, somewhat bulbous, tapering upward; annulus persistent. Lamellæ free, white.

Among the old leaves in rich woods. Pileus  $1\frac{1}{2}$ -3 in. broad, stipe 3-4 in. long. This is a very beautiful plant; the pileus is bright red, and the stipe white, smooth and shining, the cuticle breaks up into silky fibres, which commonly remain.

14. *A. AMERICANUS*, Peck.—Pileus convex, umbonate; the margin obscurely striate. Stipe glabrous, gradually enlarged below into a long sub-ventricose bulb-like base. Lamellæ free.

On lawns and elsewhere on grassy grounds. Pileus 2-3 in. broad, stipe 3-4 in. high. The whole plant when handled or in drying changes to a dull pinkish-red color. The frail annulus is sometimes carried away upon the margin of the pileus.

*d'. Pileus with blackish or blackish brown scales.*

15. *A. FUSCOSQUAMEUS*, Peck.—Pileus convex, rough with erect pointed blackish-brown scales. Stipe floccose, thickened at the base. Lamellæ free, white. Spores  $.0076 \times .0036$  mm.

In rich woods among the leaves. Pileus  $1\frac{1}{2}$ -2 in. broad, stipe 2-3 in. long. All parts of the plant somewhat whitish at first turn black in handling.

16. *A. FELINUS*, Pers.—Pileus fleshy, thin, the umbo and the scales



blackish. Stipe hollow, fragile, rather equal, floccose-sealy; the annulus fugacious. Lamellæ approximate, white. Spores  $.0055 \times .0035$  mm.

In woods. Pileus 1-2 in. broad, stipe about 2 in. long. This is a variety of *A. clypeolarius*, Bull, according to Fries.

*c'. Pileus with whitish or alutaceous scales.*

17. *A. CRISTATUS*, A. & S.—Pileus slightly fleshy, campanulate, obtuse; cuticle at first contiguous, then seceding in subgranulose scales. Stipe hollow, slender, equal, silky-fibrillose; the annulus seceding. Lamellæ free, at length remote.

In woods among the old leaves. Pileus 1-2 in. broad, stipe 2-3 in. high. This plant is remarkable for its offensive odor. The pileus is whitish, alutaceous or yellowish, it is fragile, and often split and irregular; the stipe is curved or crooked and floccose.

18. *A. MIAMENSIS*, n. sp.—White. Pileus somewhat fleshy, convex then explanate, even, scaly. Stipe hollow, glabrous, nearly equal; the annulus fragile. Lamellæ approximate. Spores  $.006 \times .003$  mm. (See Plate III.)

In woods upon the old leaves. Pileus 1-1½ in. in diameter, stipe about 2 in. long. This plant differs from *A. ermineus*, Fr., in its habitat, and in the pileus being scaly, and the stipe glabrous.

*B. Pileus dry, granulose.*

19. *A. NAUCINUS*, Fr.—Whitish. Pileus fleshy, soft; cuticle, thin, glabrous, crumbling into granules; the center umbonate, even. Stipe rather hollow, fibrillose, tapering upward from the thickened base; annulus thin, seceding. Lamellæ free, approximate.

On slopes and grassy grounds. Pileus 4-5 in. broad, stipe 3-4 in. high, and nearly an inch thick at the base. I have seen very few specimens of this plant, and have not had an opportunity to examine the spores; they are said by Fries to be globose. A similar plant is called *A. naucinoides* by Prof. Peck; in it the spores are subelliptic, and  $.0080 \times .0056$  mm.

20. *A. CARCHARIAS*, Pers.—Pileus fleshy, convex, then plane, umbonate, granulose, flesh-color. Stipe stuffed, then hollow, somewhat bulbous, sealy, concolorous. Lamellæ attached, pure white.

In woods among the old leaves, not common. Pileus 1-2 in. broad, the stipe about 2 in. long.

21. *A. GRANOSUS*, n. sp.—Pileus fleshy, convex, umbonate, furfurace-

ous-granulose, ochraceous; the disk rugose-plicate; the margin more or less undulate or irregular. Stipe somewhat bulbous, tapering upward, curved or crooked, stuffed, furfuraceous-scaly and ochraceous below the annulus, pallid or brownish above; the annulus reflexed, persistent. Lamellæ adnate, whitish. Spores subelliptic  $.005 \times .003$  mm. (See Plate III.)

Gregarious or cæspitose, growing on or near rotten stumps and logs in woods. Pileus 2-3½ in. in diameter, stipe 2-4 in. long, ½ an inch thick at the base. Related to *A. amianthinus*, Scop., but a very much larger plant, and with a different mode of growth.

*C. Pileus with a viscid cuticle.*

22. *A. OBLITUS*, Peck.—Pileus fleshy, convex or expanded, somewhat umbonate, viscid, alutaceous or brownish. Stipe nearly equal, floccose, viscid; the annulus obsolete. Lamellæ free, whitish or yellowish. Spores  $.004 \times .003$  mm.

In woods, common. Pileus 2-3 in. broad, stipe 2-3 in. long. This is readily recognized by its brownish, viscid pileus.

NOTE—*A. CLYPEOLARIUS*, Bull., of Lea's list, is omitted. I am disposed to think the *A. clypeolarius* of Fries' Icones has not yet been found in this country. The Lepiotas are very interesting plants, and I am aware that I have not here exhausted the list of those that grow in our valley; several of those given need more study and the measurement of the spores.

SUBGENUS III.—*ARMILLARIA*, Fr.

Spores white. Hymenophore confluent with the stipe. Veil partial annuliform.

23. *A. MELLEUS*, Fl. D.—Pileus fleshy, thin, explanate, scaly-pilose; the margin when expanded, striate, stipe spongy-stuffed; the annulus floccose, spreading. Lamellæ adnate, decurrent by a tooth, rather distant, pallid, at length somewhat reddish-spotted, mealy with the spores. Spores  $.008-.009 \times .005-.006$  mm.

Very abundant in autumn in woods and fields about old stumps.

Pileus commonly 3-5 in. across, and stipe 4-6 in. high; though these measurements are exceeded. It occurs solitary, and is often densely cæspitose. The color is reddish or yellowish, the scales sometimes becoming brown; the stipe is firm, elastic and solid, more or less fibrillose. This is the only *Armillaria* as yet detected in the Miami valley.

SUBGENUS IV.—TRICHOLOMA, Fr.

Spores white (except in No. 27). Stipe fleshy, not corticate. Hy-menophore confluent with the stipe, the lamellæ sinuate behind. All terrestrial.

- a. Pileus white or whitish, 24, 25.
- b. Pileus gray or violaceous, 26, 27.
- c. Pileus brown or blackish, 28, 29.

a. *Pileus white or whitish.*

24. A. SPERMATICUS, Paul.—White. Pileus somewhat fleshy, convex, then explanate, obtuse, repand, glabrous, viscid. Stipe stuffed, then hollow, elongated, twisted, even. Lamellæ emarginate, rather distant, eroded. Spores .0056 mm. long.

In woods in autumn. Pileus about 3 in. in diameter, the stipe 3-4 in. long. The viscid pileus, shining when dry, and the twisted stipe often tapering at the base, distinguish the species. I find it rather scarce.

25. A. LATERARIUS, Peck.—Pileus convex or expanded, pruinose, whitish; the disk often tinged with red or brown; the thin margin marked with slight, subdistant, short, radiating ridges. Stipe nearly equal, solid, white. Lamellæ narrow, crowded, white, prolonged in little decurrent lines on the stem. Spores oval, .0046 mm. long.

Around old rotten logs in woods. Pileus 2-4 in. broad, stipe 3-4 in. high. The pinched up margin of the pileus is a convenient mark of specific distinction.

b. *Pileus gray or violaceous.*

26. A. TERREUS, Schæff.—Pileus fleshy, thin, soft, campanulate, then expanded, umbonate, clothed with innate floccose or scaly down, mouse-color. Stipe stuffed, nearly equal, appressed-fibrillose, whitish. Lamellæ attached, decurrent by a tooth, crenulate, white-gray. Spores somewhat elliptic, .0070×.0055 mm.

In woods, solitary. Pileus 2-3 in. broad, stipe about 3 in. high. Very scarce. The spores in my specimen are rather larger than in the British plant where they are given as nearly spherical and .0050 mm. long; yet the agreement is close otherwise.

27. A. PERSONATUS, Fr.—Pileus compact, then soft, convexo-plane, obtuse, regular, glabrous, moist. Stipe solid, obese, somewhat bulbous, villous. Lamellæ rotundate-free, close, violaceous then sordid. Spores pale salmon color, regular, .006×.003 mm.

In woods and thickets, September and October. Pileus 2-4 in. broad, stipe 1-3 in. long,  $\frac{3}{4}$  in. thick. The whole plant in its prime is of a violet or lilac hue; this changes with age to a pallid or dirty white color. The pileus has an oily appearance on the surface, but is watery not viscid; the stipe is often very short and thick for the size of the pileus. The margin of the pileus is at first involute and villous-pruinose. The spores, although reddish, are regular in shape, and not angular as in *Entoloma*.

*c. Pileus brown or blackish.*

28. *A. CERINUS*, Pers.—Pileus fleshy, convexo-plane, obtuse or depressed, becoming glabrous. Stipe stuffed, fibrillose-striate, glabrous at the base, often brown. Lamellæ attached, seceding, close, yellow. Spores oval,  $.0083 \times .0055$  mm.

In open woods about logs and rotten wood. Pileus  $1\frac{1}{2}$ -2 in. broad, stipe about  $1\frac{1}{2}$  in. long. The plant I have so referred has the stipe brown-tomentose; in other respects it agrees quite perfectly.

29. *A. MELALEUCUS*, Pers.—Pileus fleshy, thin, convexo-plane, somewhat umbonate, glabrous, moist, growing pallid. Stipe stuffed, slender, elastic, rather glabrous, whitish with a few dark fibrils, thickened at the base. Lamellæ emarginate-attached, close, white. Spores unsymmetrical, apiculate,  $.006 \times .004$  mm.

In woods in wet weather and on grassy grounds. Pileus  $1\frac{1}{2}$ -3 in. broad, the stipe 2-3 in. long. The pileus varies in color from a sooty-black when fresh and wet to pale when dry; the lamellæ and stipe are white.

NOTE.—Our species of *Tricholoma* are remarkably few in number, and the individuals very scarce. Not a single species occurs in Lea's Catalogue. I am disposed to think I have had specimens of *A. schumacheri*, Fr., but they are not figured, and need verification. Being so few in number, I have given them an artificial arrangement, in order simply to facilitate their determination.

SUBGENUS V.—*CLITOCYBE*, Fr.

Spores white (except in No. 31). Stipe spongy-stuffed, somewhat elastic, externally fibrous. Margin of the pileus involute. Lamellæ attenuate behind, adnate or decurrent, never sinuate. Fungi mostly terrestrial.

A. Fungi solitary, pileus not infundibuliform.

a. Pileus not white, 30-32.

b. Pileus white, 33-37.

B. Fungi cæspitose, pileus more or less irregular, 38, 39.

C. Pileus infundibuliform, 40-42.

A. *Pileus convex then plane or depressed, regular; lamellæ adnate or regularly adnate-decurrent. Fungi solitary.*

a. *Pileus cinereous, purplish or brown, not white.*

30. A. NEBULARIS, Batsch.—Pileus fleshy, compact, convexo-explanate, obtuse, even, clouded with gray or dingy-brown. Stipe stuffed, firm, fibrillose-striate. Lamellæ somewhat decurrent, arcuate, close, white then pallid. Spores .0043×.0025 mm.

In woods, not common. Pileus 3-5 in. broad, stipe 3 in. long and about 1 in. thick. This is a large Clitocybe, with a stout stipe and a thick pileus. I have not yet found it myself; it is in Lea's Catalogue where it is stated as growing "amongst dead leaves in a fern ravine."

31. A. OCHRO-PURPUREUS, Berk.—Pileus subhemispheric, at length depressed, fleshy, compact, tough, pale alutaceous, slightly changing to purplish; the cuticle easily separable; the margin inflexed, at first tomentose. Stipe paler, here and there becoming purplish, tumid in the middle. Lamellæ thick, purple, broader behind, decurrent. Spores white or pale yellow.

In woodlands on clay soil. Pileus 2 in. across, stipe 2½ in. high, ¾ in. thick in the middle. This is one of Mr. Lea's new species, found first at Cincinnati, then at Waynesville. It has also been found in New York by Prof. Chas. H. Peck, the State botanist.

32. A. LACCATUS, Scop.—Pileus somewhat membranaceous, convex, then versiform, somewhat umbilicate, when mature, mealy or somewhat scaly, hygrophanous. Stipe stuffed, equal, tough, fibrous. Lamellæ adnate, thick, distant, brightly colored, at length white-pruinose.

In woods. Pileus 1-2 in. across, stipe 2-5 in. long. The pileus is usually reddish brown or ochraceous, sometimes of a brighter color. The lamellæ are commonly flesh-color or violaceous.

b. *The whole fungus white or whitish.*

33. A. CONNEXUS, Peck.—Pileus thin, convex or expanded, somewhat umbonate, minutely silky, white, sometimes faintly tinged with blue, especially at the margin. Stipe solid, nearly equal, whitish. Lamellæ crowded, narrow, whitish, decurrent. Spores somewhat ovoid, .007×.005 mm.

In woods. Pileus 2-3 in. broad, stipe 2-3 in. long. A very pretty species. I find it sometimes quite bluish on the pileus; and sometimes the stipe rather thicker than "tapering" at the base. The lamellæ sometimes appear a little rounded behind.

34. *A. PHYLLOPHILUS*, Fr.—White. Pileus fleshy, thin, rather plane, umbilicate, glabrous, growing pale. Stipe rather hollow, terete, then compressed, glabrous, white tomentose at the base. Lamellæ, adnate-decurrent, moderately distant, white then yellowish. Spores oblong-ovoid,  $.0055 \times .0028$  mm.

In woods among old leaves, especially of beech. Pileus 2-3 in. broad, stipe 2-3 in. long. It sometimes occurs large and cæspitose, the pileus repand or even undulately lobed.

35. *A. CANDICANS*, Pers.—White. Pileus a little fleshy, convex then plane or depressed, even, out of a thin silky film becoming pure white, shining. Stipe disposed to be hollow, even, waxy, shining. Lamellæ adnate, close, thin, finally decurrent.

In moist places in woods among the leaves. Pileus about 1 in. across; stipe 1-2 in. high, incurved and villous at the base, the rest glabrous. The pileus usually preserves a very perfect and regular outline.

36. *A. DEALBATUS*, Sow.—White. Pileus a little fleshy, convex, then plane and revolute, even, glabrous, somewhat shining. Stipe stuffed, wholly fibrous, slender, equal, somewhat pruinose at the apex. Lamellæ adnate, close, thin, white.

In pastures and grassy grounds. Pileus about 1 in. across, sometimes orbicular, sometimes very wavy; stipe about 1 in. long, often curved. It has a mild, mealy odor.

37. *A. TRUNCICOLA*, Peck.—Pileus, thin, firm, expanded or slightly depressed, smooth, dry, white. Stipe equal, stuffed, smooth, often ex-centric and curved, whitish. Lamellæ narrow, crowded, adnate-decurrent. Spores oval,  $.0048 \times .0037$  mm.

In woods, growing on fallen trunks and branches, especially of Maples. Pileus 1-2 in. broad, stipe about 1 in. high. This species, like *cyathiformis*, has a rather peculiar habitat for a *Clitocybe*.

*B. Pileus more or less irregular; lamellæ unequally decurrent. Fungi cæspitose, often connate.*

38. A. *ILLUDENS*, Schw.—Cæspitose, reddish-yellow. Pileus fleshy, glabrous, umbonate, convex, then expanded and depressed. Stipe very long, firm, solid, glabrous, tapering at the base. Lamellæ unequally decurrent.

In woods, growing in great masses about old stumps. Pileus commonly 4-6 in. broad, stipe 5-8 in. long, but these dimensions are sometimes much exceeded. This is a very showy and magnificent plant; it is a native of this country. It was first found in the woods of North Carolina, by Louis de Schweinitz; it occurs in New England, New York, Pennsylvania, and no doubt ranges westward to beyond the Mississippi. These great masses of bright saffron-yellow color attract the attention of the beholder at a great distance through the open woods. Passing its prime it begins to blacken.

39. A. *MONADELPHUS*, n. sp.—Densely cæspitose. Pileus fleshy, convex, then depressed, at first glabrous, then scaly, honey color, varying to pallid-brownish or reddish. Stipe elongated, solid, crooked, twisted, fibrous, tapering at the base, pallid-brownish or flesh-color. Lamellæ short, decurrent, not crowded, pallid flesh-color. Spores white, a little irregular  $.0076 \times .0055$  mm. (See Plate IV.)

On the ground in wet woods from spring to late autumn. Pileus 1-3 in. in diameter, stipe 3-7 in. long. Symmetrical tufts of numerous (20-50) individuals spring up from a common point in the ground. In some of the tufts the pilei are of a beautiful bright honey-yellow color, in others they are a dull yellow, dull reddish or even brownish. The pileus is finally more or less scaly. This species does not appear to be closely related to any other Clitocybe; in color and general appearance it much resembles slender specimens of *Agaricus mellens*, but there is no ring.

C. *Pileus infundibuliform*; lamellæ equally decurrent.

40. A. *INFUNDIBULIFORMIS*, Schæff.—Pileus fleshy, compact, then soft, at first convex, umbonate, innate-silky, afterward infundibuliform, flaccid, expallent. Stipe spongy-stuffed, soft, elastic, thickened downwards. Lamellæ long-decurrent, a little close, pure white.

Among mosses and leaves in woods, common. Pileus 2-3 in. across. Stipe 2-3 in. high. The color of the pileus varies from pale reddish to alutaceous, and passing into white, but not at first white; it is sometimes variously crisped and lobed, the margin involute and downy, often pinched up into little raised striæ.

41. *A. CYATHIFORMIS*, Bull.—Pileus fleshy-membranaceous, depressed then infundibuliform, even, nearly glabrous, moist, hygrophanous, margin for a long time involute. Stipe stuffed, elastic, tapering upward, fibrillose-reticulate. Lamellæ adnate then decurrent, distant, joined behind, sordid. Spores .008-.010×.005-.007 mm.

On the ground and on logs in woods. Pileus  $1\frac{1}{2}$ - $2\frac{1}{2}$  in. across, stipe about 2 in. long. The color is at first brownish, then clay-color or alutaceous. The margin, when fully expanded, becomes striatulate. The stipe is colored as the pileus.

42. *A. PRUINOSUS*, Lasch.—Pileus fleshy-membranaceous, umbilicate, then infundibuliform, rather even, hygrophanous, sprinkled with a leaden bloom. Stipe stuffed, somewhat ascending, fibrillose, pallid. Lamellæ adnate then decurrent, close, narrow, white, then sordid.

On the ground and also on trunks, in woods, late in autumn. Pileus 1-2 in. broad, stipe 1-2 in. long. The pileus is brown, growing cinereous, sometimes scaly. This is one of Mr. Lea's finds that I have not yet met with.

#### SUBGENUS VI.—COLLYBIA, Fr.

Spores white. Pileus convexo-plane, the margin at first involute. Stipe hollow and cartilaginous, or medullate, with a cartilaginous bark, rooting. Lamellæ free or attached obtusely. Fungi epiphytal on wood, leaves, etc., or rooting in the ground.

##### A. Stipe glabrous.

a. Lamellæ broad, distant, 43, 44.

b. Lamellæ narrow, close, 45-48.

##### B. Stipe not glabrous.

c. Lamellæ broad, distant, 49-51.

d. Lamellæ narrow, close, 52-54.

##### A. Stipe glabrous.

a. Lamellæ broad, distant.

43. *A. RADICATUS*, Rehl.—Pileus fleshy, thin, convexo-plane, gibbous, rugose, glutinous. Stipe stuffed, tall, tapering upward, rigid, glabrous, at length sulcate. Lamellæ attached, disposed to secede, distant, white. Spores, .017×.010 mm.

In woods and fields about the bases of old stumps; one of the commonest Agarics from early spring till late in autumn; always readily recognized by its long rooting stipe. Pileus usually 2-4 in. broad.



stipe 4-8 in. high, though these dimensions are sometimes greatly exceeded. The pileus varies much in color, being brownish, ochraceous, pallid and even whitish; it is at first slimy. The stipe is sometimes twisted, and in the variety which most commonly grows with us, the stipe is furfuraceous with minute scurfy particles.

44. A. PLATYPHYLLUS, Pers.—Pileus fleshy-membranaceous, explanate, obtuse, moist, fibrillose-irrigate. Stipe stuffed, equal, soft, naked, striate, pallid; the root premorse. Lamellæ truncate-attached, distant, very broad, white. Spores, .018×.013 mm.

In woods, on and about rotten logs, common from spring to autumn. Pileus 4-7 in. across, stipe 3-5 in. high, and  $\frac{1}{4}$ - $\frac{3}{4}$  in. thick. The pileus is watery, and varies in color from brownish and cinereous to whitish; it is sometimes quite wavy and irregular. The stipe is white, very stout and blunt at the base, with an abundant white mycelium. Ours may be the variety *repens* figured by Fries in his "Icones Selectæ;" I find the stipe sometimes hollow.

b. Lamellæ narrow, close.

45. A. BUTYRACEUS, Bull.—Pileus fleshy, convexo-expanded, umbonate, even, glabrous, moist, expallent, the flesh becoming white. Stipe somewhat stuffed, cartilaginous-corticate, conic, striate, dark reddish. Lamellæ nearly free, close, crenulate, white. Spores .0076×.0050 mm.

In woods, not common. Pileus 2-3 in. broad, stipe  $2\frac{1}{2}$ - $3\frac{1}{2}$  in. high. The color of the pileus exceedingly changeable, normally reddish or brownish, then passing through ochraceous or alutaceous to pallid or whitish. The stipe often twisted and downy or villous at the thickened base. Our figure and specimens agree well with the figures of the species in Dr. Cooke's illustrations.

46. A. DRYOPHILUS, Bull.—Pileus somewhat fleshy, rather plane, obtuse, somewhat depressed, even, glabrous, expallent. Stipe hollow, glabrous, reddish or yellowish. Lamellæ sinuate-attached, nearly free, close, narrow, white or pallid. Spores .006 mm. in length.

Common in woods from early spring to autumn. Pileus 1-2 in. broad, stipe 2-3 in. high. Pileus commonly reddish-brown, sometimes paler, of a watery substance, and easily detached from the stipe. Stipe of the same color as the pileus, very smooth, often mycelio-enlarged at the base.

47. A. ESTENSIS, n. sp.—Pileus a little fleshy, conic-campanulate, then depressed or even revolute, yellowish, with a pallid margin. Stipe

equal, hollow, glabrous, pallid. Lamellæ narrow, crowded, nearly free, pallid, spores white, curved, .008 mm. long. (See Plate V.)

Growing among the fallen leaves in the woods from spring to autumn. Pileus 1-2 in. across, stipe 2-3 in. high. It is closely related to *A. dryophilus*; both are common in Este's woods, where the observer will readily distinguish them apart. The yellowish color of the pileus is seldom uniform: sometimes it is in streaks or patches, sometimes spread over the disk, leaving a pallid margin.

48. *A. COLOREUS*, Peck.—Pileus convex, then explanate and umbilicate, somewhat fibrillose, hygrophanous, yellow, sometimes tinged with red. Stipe hollow, glabrous, yellow, with a long crooked villous root. Lamellæ moderately close, emarginate, yellow. Spores .0083 mm. long.

Among decaying leaves and wood, solitary or subcæspitose. Pileus  $\frac{1}{2}$ -1 in. broad, stipe 1-2 in. long without the root. The plant I have here described comes so near Prof. Peck's plant, that I have so referred it, although his description does not cover some of its marks. It resembles *A. cirrhatus* in size and general appearance, but maintains a uniform pale yellow color of stipe, pileus and lamellæ.

*B. Stipe velvety, floccose or pruinose.*

*c. Lamellæ broad, distant.*

49. *A. VELUTIPES*, Curt.—Pileus fleshy, thin, convexo-plane, obtuse, glabrous, viscid. Stipe stuffed, velvety, reddish-black, rooting. Lamellæ attached, distant, yellowish. Spores .006-.008 mm. long.

Common on and about stumps and trunks in woods, at the foot of posts, along fence rows, etc.: appearing late in autumn and persisting through the winter, new plants appearing with a mild spell of moist weather, until spring. Somewhat cæspitose, commonly ascending, sometimes excentric. Pileus 1-3 in. broad, slimy, and of a beautiful tawny color; stipe 2-5 in. long incurved, of a rich tawny brown, pale above.

50. *A. STIPITARIUS*, Fr.—Pileus a little fleshy, convexo-plane, umbilicate, velvety-scaly or brown-fibrillose. Stipe stuffed then hollow, tough, brown, hirsute-fibrillose. Lamellæ seceding free, ventricose, rather distant, white.

Upon sticks, roots of grasses, etc., gregarious. Pileus  $\frac{1}{4}$ - $\frac{1}{2}$  an inch broad, the stipe 1-2 in. long. A very singular Agaric, with the habit of a Marasmius. Pileus whitish, clothed with tawny or brown hairs or fibres which sometimes form scales.

51. *A. ZONATUS*, Peck.—Pileus thin, fleshy, convex then expanded,

umbilicate, hairy-tomentose, tawny with obscure darker zones. Stipe equal, firm, hollow, tomentose-fibrillose, brownish-tawny. Lamellæ narrow, close, free, white. Spores somewhat elliptic, .005 mm. long.

In woods on old sticks on the ground. Pileus  $\frac{1}{2}$ -1 in. broad, stipe  $1\frac{1}{2}$ -2 in. long. Under a lens the pileus is seen to be clothed with coarse, densely matted, prostrate tawny or brown hairs. This curious plant is quite common in our woods in summer.

*d. Lamellæ narrow, close.*

52. *A. LACHNOPHYLLUS*, Berk.—Pileus somewhat fleshy, conic-hemispheric, brownish-tawny, velvety. Stipe hollow, brown-purple, shining, pallid above, somewhat velvety. Lamellæ free, velvety, with tawny pubescence.

On rotten pieces of wood, amongst dead leaves in woods, Waynesville. Somewhat cæspitose. Pileus  $\frac{3}{4}$  in. across, stipe 2 in. high. I have not yet seen this exquisite species of Mr. Lea's.

53. *A. HARIOLORUM*, DC.—Pileus somewhat fleshy, campanulate, then hemispheric, plane or depressed, glabrous. Stipe hollow, tapering upward, reddish, woolly-hirsute. Lamellæ nearly free, rather close, narrow, white, growing pallid.

Among leaves, gregarious or somewhat cæspitose. Pileus  $1\frac{1}{2}$ -3 in. broad, stipe 2-3 in. long. Pileus whitish or alutaceous.

54. *A. CIRRHATUS*, Schum.—Pileus somewhat fleshy, plane, finely silky, at length umbilicate. Stipe disposed to be hollow, flexuous, equal, pallid, pulverulent; the root twisted, fibrillose. Lamellæ adnate, close, narrow, white.

Among leaves, rubbish, etc. Small, tough, white inclining to reddish. Pileus  $\frac{1}{2}$  an inch broad, stipe 1-2 in. long. The stipe generally has small yellowish tubers attached to it beneath the leaves or soil.

SUBGENUS VII.—*MYCENA*, Fr.

Spores white. Pileus campanulate, more or less striate; the margin at first straight and appressed to the stipe. Stipe tubular, cartilaginous, tapering upward. Lamellæ not decurrent, only uncinatè by a tooth. Fungi epiphytal or rooting.

*A. Stipe without juice.*

*a.* Pileus bright colored, 55, 56

*b.* Pileus dull colored, 57, 58.

B. Stipe with a colored juice, 59.

A. *Stipe without juice.*

a. *Pileus bright colored.*

55. A. LEAIANUS, Berk.—Cæspitose, viscid, bright orange. Pileus somewhat fleshy, convex; the margin striate. Stipe mostly curved, strigose at the base. Lamellæ distant, broad, emarginate-attached; the edge a darker orange or vermilion. Spores elliptic, apiculate, .0090×.0056 mm.

Growing in dense tufts on logs and branches in woods; very abundant throughout the year, from spring to autumn. Pileus about 1 in. across, stipe 1-3 in. long. The plant is very viscid, and stains the fingers that handle it. The bright orange color fades out as the plant grows old. This very beautiful Agaric was named for Mr. Thomas G. Lea, who was the first person to study the Fungi of the Miami Valley; his original notice of it is dated May, 1844. It grows in New York and New England.

56. A. PURUS, Pers.—Strong-scented. Pileus somewhat fleshy, campanulate expanded, obtusely umbonate, glabrous, expallent; the margin striate. Stipe rigid, even, nearly naked, villous at the base. Lamellæ broadly sinuate-attached, very broad, reticulate-connected, of a paler color than the pileus. Spores .008 mm. long.

In woods among the leaves. With a taste and odor of radishes. Pileus about 1 in. broad, stipe 2-3 in. high. Ours may be the *pseudopurus* of Cooke, but I have not seen the description, only the figure; the rather narrow lamellæ and longer spores seem to correspond with Cooke's figure. The plant exhibits considerable diversity of color, being rose-colored, lilac, lavender, pallid, and even white. It is commonly solitary or gregarious, scarcely cæspitose.

b. *Pileus dull colored.*

57. A. GALERICULATUS, Scop.—Pileus somewhat membranaceous, conic-campanulate then expanded, striate to the umbo, dry, glabrous. Stipe rigid, polished, even, glabrous; the base with a fusiform root. Lamellæ adnate, decurrent by a tooth, venose-connected, whitish or flesh-colored.

Common in woods upon stumps and fallen trunks. Often densely cæspitose, the stipes packed together at the base and strigose. Pileus  $\frac{1}{2}$ - $\frac{3}{4}$  in. broad, the stipe of variable length. The color whitish, cinereous, tawny, or brownish.

58. A. FILOPES, Bull.—Pileus membranaceous, obtusely, campanulate, expanded, striate. Stipe filiform, flaccid, rather fragile, glabrous; the base hairy, rooting. Lamellæ free, lanceolate, close, white.

In woods among the fallen leaves, simple and solitary. Pileus  $\frac{1}{2}$ - $\frac{3}{4}$  in. broad, stipe nearly 2 in., besides the root. The color brownish or livid gray, rarely white.

B. *The plant when cut or broken exuding a colored juice.*

59. A. HÆMATOPUS, Pers.—Cæspitose. Pileus somewhat fleshy, campanulate, obtuse; the margin denticulate. Stipe rigid, white, pulverulent, when broken exuding a dark red juice. Lamellæ adnate, whitish.

Common in woods upon logs; recognized at once by the dark-red juice when broken. Pileus  $\frac{1}{2}$ -1 in. in diameter, the stipe 2 in. or more. The color is commonly a dark reddish or purplish, sometimes paler. Our plant seems to be the same as the British plant described by B. & Br. in the Handbook, but neither seems to me to be the plant of Fries. The latter is *even*, the lamellæ of *one color*, etc. Fries' figure shows no striæ.

NOTE.—The Mycenæ like the Tricholomæ appear to be remarkably scarce in the Miami Valley. Yet being mostly very small plants, it is quite likely several species have been overlooked. *Leaianus*, *galericulatus* and *hæmatopus* are common enough, other species must be rare, and the individuals few in number.

#### SUBGENUS VIII.—OMPHALIA, Fr.

Spores white. Pileus somewhat membranaceous, more or less umbilicate. Stipe cartilaginous, usually thickened upward, and expanded into the pileus. Lamellæ truly decurrent.

A. Margin of the pileus at first inflexed.

a. Lamellæ narrow, close, 60-62.

b. Lamellæ broad, distant, 63-65.

B. Margin of the pileus straight.

c. Lamellæ broad, 66, 67.

d. Lamellæ narrow, 68.

A. *Pileus dilated from the first, the margin inflexed.*

a. *Lamellæ narrow, close.*

60. A. CHRYSÆUS, Peck.—Yellow. Pileus plane or somewhat depressed, umbilicate, striatulate, minutely scaly. Stipe nearly glabrous, stuffed or hollow, sometimes curved. Lamellæ close, rather narrow.

In woods. Pileus  $\frac{1}{2}$ -1 in. broad, stipe 1-1 $\frac{1}{2}$  in. high. A beautiful little *Omphalia*, growing on leaves, I have here referred to this species. Some of my specimens are a little brownish on the pileus, with the lamellæ rather pale. It may prove to be something different.

61. *A. EPICHYSIUM*, Pers. Pileus membranaceous, rather plane, umbilicate; when wet, striate, cinereous-fuliginous; when dry, pallid, silky or flocculose-sealy. Stipe disposed to be hollow, glabrous, cinereous. Lamellæ briefly plano-decurrent, whitish-cinereous.

Growing on mouldy wood. Tender, soft, watery. Pileus  $\frac{1}{2}$ - $\frac{3}{4}$  in. in diameter, stipe an inch or more long. Sent by Mr. Meyncke, from Brookville, Ind.

62. *A. RUSTICUS*, Fr.—Pileus membranaceous, a little convex, umbilicate, striate, glabrous, hygrophonous, when dry, even, a little silky. Stipe somewhat stuffed, slender, glabrous, gray-brown. Lamellæ decurrent, thick, rather distant, gray; the edge arcuate. Spores somewhat elliptic, .008 $\times$ .005 mm.

In moist places in woods. Pileus  $\frac{1}{2}$ -1 $\frac{1}{2}$  in. broad, at first gray, then becoming whitish or brownish. The specimens agree well with Fries' species, except in some cases they are much larger.

*b. Lamellæ broad, distant.*

63. *A. MURALIS*, Sow.—Pileus somewhat membranaceous, tough, convex, umbilicate then infundibuliform, radiate-striate, glabrous, reddish-brown; the margin crenulate. Stipe stuffed, short, glabrous, concolorous. Lamellæ decurrent, distant, pallid.

In neglected spots upon the ground. Pileus  $\frac{1}{2}$ -1 in. broad, stipe  $\frac{1}{2}$  an inch high.

64. *A. UMBELLIFERUS*, Linn.—Pileus a little fleshy, convexo-plane; when wet, radiate-striate; when dry, even, somewhat silky. The margin at first inflexed, crenate. Stipe disposed to be hollow, short, pubescent at the base. Lamellæ decurrent, very distant, broadest behind. Spores .0030 $\times$ .0025 mm.

Upon turf or sod in swamps and pastures, also on rotten wood; somewhat gregarious. Pileus  $\frac{1}{2}$ -1 in. broad, stipe  $\frac{1}{2}$ -1 in. high. Pileus depressed in the center, the margin deflexed and sometimes waved, whitish, whitish-brown or yellow, darker when wet; the stipe whitish or yellowish.

65. *A. ALBOFLAVUS*, n. sp.—Pileus fleshy-membranaceous, somewhat infundibuliform, even, glabrous, the margin inflexed. Stipe

stuffed, stout, thickened upward, white or yellowish. Lamellæ decurrent, very distant, arcuate, rather broad, thin, white then yellowish. Spores nearly globose, .004-.005 mm. long. (See Plate V.)

In woods on rotten wood in spring and summer. Pileus  $1\frac{1}{2}$ -3 in. in diameter, stipe 1-2 in. long. The pileus is whitish and changes to yellowish as it passes maturity.

*B. Pileus campanulate from the first, the margin straight and appressed to the stipe.*

*c. Lamellæ broad.*

66. A. CAMPANELLA, Batsch.—Pileus membranaceous, convex, umbilicate, striate, hygrophanous. Stipe hollow, horny, clear brown; the base attenuate, tawny-strigose. Lamellæ decurrent, arcuate, venose-connected, luteous.

Upon trunks in woods; cæspitose, luteous-ferruginous. Pileus  $\frac{1}{4}$ -1 in. across, stipe 1-2 in. long.

67. A. FIBULA, Bull.—Pileus membranaceous, cucullate then expanded, somewhat umbilicate, striate, expallent, even when dry, weak orange-color. Stipe setaceous, concolorous. Lamellæ long decurrent, distinct, whitish. Spores .003 $\times$ .002 mm.

In moist places frequent among mosses. Pileus  $\frac{1}{2}$  an inch or less in breadth, yellow or tawny with a dusky center; lamellæ yellowish or whitish; stipe 1-1 $\frac{1}{2}$  in. high, yellow or tawny with a brownish apex.

*d. Lamellæ narrow.*

68. A. INTEGRELLUS, Pers.—White, fragile. Pileus hemispheric then expanded, pellucid-striate. Stipe very slender, short, pubescent below. Lamellæ decurrent, fold-like, distant, somewhat branched; the edge acute. Spores .0125 mm. long.

Common on old rotten stumps; gregarious or cæspitose. Pileus thin, and membranaceous  $\frac{1}{2}$  an inch or more broad, stipe  $\frac{1}{2}$ -1 in. long. I have seen an old stump covered with them after abundant rains.

SUBGENUS IX.—PLEUROTUS.

Spores white. Stipe excentric, lateral or none. Fungi irregular, epiphytal.

A. Stipe excentric.

a. Lamellæ adnate, 69-72.

b. Lamellæ decurrent, 73-75.

B. Stipe lateral, 76.

C. Stipe none ; pileus sessile.

c. Pileus uniform, 77, 78.

d. Pileus gelatinous, 79, 80.

A. *Pileus entire, the stipe excentric.*

a. *Lamellæ sinuate or obtusely adnate.*

69. A. *ULMARIUS*, Bull.—Pileus fleshy, compact, convexo-plane, glabrous, somewhat spotted, moist. Stipe rather excentric, thickened downwards, somewhat tomentose. Lamellæ attached, rather close, broad, whitish. Spores nearly globose, .005 mm. long.

Upon trunks of trees, especially elm, frequent; in autumn. Pileus 3-7 in. broad, or sometimes larger, whitish or pale brownish, sometimes marbled with livid spots; stipe ascending, 2-3 in. long, about 1 in. thick, solid. Solitary or cæspitose.

70. A. *SUBPALMATUS*, Fr.—Cæspitose, reddish. Pileus fleshy, soft, convexo-plane, obtuse, wrinkled; the cuticle gelatinous. Stipe excentric, incurved, equal, fibrillose. Lamellæ adnate, close, joined behind. Spores minutely echinulate, nearly globose, .0056-.0070 mm. long.

On timber, old trunks, etc. This curious species was sent me from Brookville, Ind., by Mr. O. M. Meyncke; this appears to be the first locality in which it has been met with in this country. The specimens I have seen are 1½-2 in. wide, with a stipe  $\frac{3}{4}$ -1 in. long. The British plant measures 3-4 in. broad, with a stipe of 1-2 in.

71. A. *CRASPEDIUS*, Fr.—Cæspitose. Pileus fleshy, more or less excentric, crenate and lobed, even, glabrous. Stipe solid, firm, elastic, glabrous, pallid. Lamellæ adnate, close, narrow, white. Spores nearly globose, .0056 mm. in diameter.

On trunks in woods. Pileus 3-5 in. broad, stipe 2-3 in. long. The whole plant is quite hard and tough; the pileus in my specimens, grayish or brownish, the margin much folded and lobed; the stipe rather thicker below. This seems to be the first record of it in North America.

72. A. *LIGNATILIS*, Fr.—Pileus fleshy, tough, convex then plane or umbilicate, irregular, at first flocculose-pruinose, afterward glabrous. Stipe stuffed then hollow, rather slender, irregular, somewhat villous. Lamellæ adnate, close, narrow, white. Spores .003-.004 mm. long.



On wood of beech and maple. Pileus 1-3 in. broad, stipe an inch or less in length. Commonly whitish, with a strong mealy odor.

*b. Lamellæ decurrent.*

73. A. CORTICATUS, Fr.—Pileus compact, entire, densely villous, at length floccose-scaly. Stipe firm, rooting, somewhat excentric, fibrillose; annulus membranaceous, lacerate. Lamellæ decurrent, rather distant, divided, white, anastomosing behind. Spores large, elliptic-oblong,  $.011 \times .005$  mm.

On trunks in woods. Pileus in my specimens about 4 in. in diameter, the stipe 2-3 in. long. These specimens which were very few in number, may have been the variety *tephrotrichus*; the annulus was obsolete with the veil appendiculate around the margin of the pileus. The whole plant was clear white.

74. A. Sapidus, Kalch.—Cæspitose. Pileus fleshy, somewhat excentric, deformed, glabrous; the center depressed. Stipes solid, arising out of a common fleshy tubercle, glabrous, white. Lamellæ decurrent, rather distant, whitish. Spores with a lilac tinge, oblong, or a little curved and pointed,  $.0083 \times .0037$  mm.

Very common on all sorts of fallen trunks and branches, from early spring till late in autumn, and even in the mild weather of winter. Pileus commonly 3-6 in. in diameter, the stipe 1-2 in. long or the pileus nearly sessile. The plant is various in form and color, being commonly white or clouded with brown; the flesh is always white. Clear white paper will disclose the lilac tint of the spores.

75. A. Salignus, Abb. d. Schw.—Pileus fleshy, compact, spongy, somewhat dimidiate, horizontal, at first pulvinate, even, afterward the disk depressed, somewhat strigose. Stipe short, tomentose. Lamellæ decurrent, some of them branched, eroded, distinct at the base, nearly the same color as the pileus. Spores  $.009 \times .0038$  mm.

“Upon trunks of willows late in autumn, solitary.”—*Fries*. Pileus convex, 4-6 in. broad, stipe excentric or lateral, sometimes obsolete; commonly fuliginous-cinereous, though sometimes ochraceous. *Lea's* Catalogue is authority for this plant. “On a prostrate buckeye, *Cincinnati*, December.” It is strange that *sapidus*, so common as it is, is not in *Lea's* Catalogue. Unless *salignus* shall yet be verified, we must conclude that Mr. *Lea* mistook *sapidus* for *salignus*.

*B. Pileus definitely lateral, not marginate behind.*

76. A. SEROTINUS, Schrad.—Pileus fleshy, compact, viscid. Stipe ex-

actly lateral, thick, scaly with sooty points. Lamellæ determinate, close, yellow or pallid. Spores oblong,  $.005 \times .002$  mm.

Upon fallen trunks, common, late in autumn and in the winter. Pileus commonly 2-3 in. across, yellowish-green or olivaceous, the cuticle at first viscid, the margin slightly involute.

*C. Pileus at first resupinate, the lamellæ concurrent to an eccentric point, afterward the pileus reflexed, sessile.*

*c. Pileus uniform, the cuticle not gelatinous.*

77. *A. PIXSITUS*, Fr.—Whitish. Pileus fleshy, soft, at first resupinate, afterward expanded, horizontal, sessile, silky-villous, undulate, hygrophanous. Lamellæ broad, distinct. Spores of a sordid color.

"On trunks of trees, rare."—*Fries*. Said to resemble *A. mollis*, Schæff. Color of the pileus sordid when wet, pure white when dry.

78. *A. NIGER*, Schw.—Black. Pileus fleshy, tough, at first resupinate, then expanded, sessile, somewhat reniform, tomentose, glabrate toward the margin. Lamellæ thick, broad, close; the edge cinereous. Spores *white*, oblong,  $.007 \times .004$  mm.

In woods on fallen branches. Pileus about  $\frac{5}{8}$ ths of an inch wide, and  $\frac{1}{2}$  an inch long. I find a black *Plenrotus* which I take to be Schweinitz's species; I do not have his description, and therefore submit the one given. It is a very interesting species; it seems singular that the spores should be white. It is quite tough and revives well after being dried.

*d. Pileus with the cuticle viscid or gelatinous.*

79. *A. MASTRUCATUS*, Fr.—Pileus fleshy, the upper stratum gelatinous, at first resupinate, afterward expanded, sessile, lobed, scaly, mouse-gray. Lamellæ broad, rather distant, whitish-gray. Spores oblong, oblique,  $.008 \times .005$  mm.

Upon fallen trunks in woods. Imbricated; pileus 1-4 in. across, lobed in the larger specimens. flaccid, rough, with hairs and rigid points intermixed; some of the hairs or points are blackish. Evidently rare; I have found it but once.

80. *A. ALGIDUS*, Fr.—Pileus fleshy, at first resupinate, afterward expanded, reniform; the cuticle thin, viscid, glabrous, reddish brown. Lamellæ rather broad, close, yellowish.

On rotten wood. Pileus about 1 in. across, reddish umber or cinereous, usually caespitose and imbricated.

NOTE.—It is hoped the preceding pages will prove a fair introduction to the White-spored Agarics. This is the second effort, within the writer's knowledge, to introduce the student to a systematic knowledge of the Agaricini of any region of the U. S., the first being Prof. Chas. H. Peck's Agaricini of New York State, in the Twenty-third Report of the State Museum of Natural History. It is not to be expected that I have found all the species, yet I have increased the list from 34 in Lea's Catalogue to 80. Compared with the corresponding number in Mr. Frost's list of the fungi about Brattleboro, Vt., a region undoubtedly richer in this class of Fungi, there are in the latter 100 species of Leucospori. We will certainly make some additions, and I hold in reserve some figures which as yet appear to me to be new species. That I do not make some mistakes in the determination and identification of species, would be to accomplish something that has not yet been done in this country, even with flowering plants; but the greater part of these plants have been seen by me before in the Eastern States, and furthermore, specimens or figures of many of the remainder have been submitted to the most competent authority in this country, Prof. Chas. H. Peck, the State Botanist of New York.

These pages, and what may follow, are arranged according to the Hymenomycetes Europæi, of the illustrious Elias Fries, of Sweden; this arrangement accords also with the Handbook of British Fungi, by Dr. M. C. Cooke. It is designed to introduce the student, through the medium of our local flora, to a more extended knowledge of the Hymenomycetes of North America, by means of the works above mentioned, which are the most accessible to students. The specific descriptions of Fries, which are models of perspicuity and elegance, are translated with great care; such variations as may appear in our species along with other general observations on locality and time of growth, are made in appended remarks. The remaining Agarici will form the subject of a second paper.

A. P. M.

[TO BE CONTINUED.]







.010-.011 x .0070-.0076 mm

AGARICUS MORGANI, PECK.



53

.005 x .003 77

AGARICUS GRANOSUS, MORG



53

.006 x .003 77

AGARICUS MIAMENSIS, MORG.









AGARICUS MONADELPHUS, MORG.



.008 x .005 mm

L.V.M.

AGARICUS ESTENSIS, MORG.



.004 - .005 mm

L.V.M.

AGARICUS ALBOFLAVUS. MORG.



THE MYCOLOGIC FLORA OF THE MIAMI VALLEY, O.

By A. P. MORGAN.

[Continued from p. 81.]

TABLE OF THE SUBGENERA OF HYPORHODII.

*A. Stipe central, lamellæ free.*

10. VOLVARIA.—Veil universal, discrete, membranaceous, persistent.

11. PLUTEUS.—Veil none, margin of the pileus straight.

*B. Stipe central, lamellæ attached.*

*a. Stipe fleshy or fibrous.*

12. ENTOLOMA.—Lamellæ sinuate.

13. CLITOPILUS.—Lamellæ decurrent.

*b. Stipe cartilaginous.*

14. LEPTONIA.—Pileus convexo-plane, the margin at first inflexed.

15. NOLANEA.—Pileus campanulate, the margin straight. (*No species yet.*)

SUBGENUS X.—VOLVARIA, Fr.

Spores rose-color. Veil universal, free persistent, discrete from the epidermis of the pileus (volva). Lamellæ rotundate-free, ventricose

81. A. BOMBYCINUS, Schæff.—White. Pileus fleshy, soft, campanulate then expanded, somewhat umbonate, silky-fibrillose. Stipe solid, tapering upward, glabrous; the volva very ample. Lamellæ free, flesh-color. Spores regular,  $.007 \times .005$  mm.

Upon trunks of trees in woods; sometimes growing out of knot-holes of *standing* trees, or even out of the augur holes in Sugar Maple. Pileus 3-5 in. broad, the stipe about 3 in. long. The pileus is at first inclosed in the large slimy tough volva, but is soon protruded leaving the volva persistent at the base of the stipe; it usually remains broadly campanulate, and is covered over with white or yellowish-white silky fibrils. This is one of the most showy Agarics, and is not uncommon in the Miami Valley.

SUBGENUS XI.—PLUTEUS, Fr.

Spores rosy. Destitute of volva and annulus. Lamellæ rotundate behind, free.

*a. Pileus scaly or pruinose.*

82. *A. CERVINUS*, Schæff.—Pileus fleshy, campanulate, then expanded, even, glabrous; the cuticle afterward seceding in fibrils or scales; the margin naked. Stipe solid, black-fibrillose. Lamellæ free, white, then flesh-color. Spores regular,  $.0058 \times .0046$  mm.

On stumps and old logs in woods; one of the commonest Agarics throughout the year from early spring till winter. Pileus commonly about 3 in. in diameter, and stipe 3 in. long, though it varies considerably in size, as well as in color, and is often found much larger than these dimensions. Color sooty, smoky-gray, tawny-yellow and whitish, the stipe often white.

83. *A. GRANULARIS*, Peck.—Pileus convex, then expanded, somewhat umbonate, rugose-wrinkled, sprinkled with minute blackish granules, brown or brownish-yellow. Stipe solid, pallid or brown, velvety, with a short, close plush. Lamellæ free, close, ventricose, whitish then flesh-color. Spores nearly globose, about .005 mm. in diameter.

On old logs in woods, especially in damp ravines. Pileus  $1\frac{1}{2}$ - $2\frac{1}{2}$  in. broad, stipe 2-3 in. long. This is a very pretty species, not uncommon in our woods. I at first took it for the large form of *A. nanus*, Pers., though I could never find a white stipe; afterward I found that Prof. Peck had made a new species of it, as above. The granules form a sort of plush which is more dense on the disk of the pileus and on its wrinkles.

*b. Pileus glabrous.*

84. *A. LEONINUS*, Schæff.—Pileus somewhat membranaceous, campanulate then expanded, glabrous, naked, luteous; the margin striate. Stipe solid, glabrous, striate. Lamellæ free, yellow flesh-color. Spores regular, elliptic.

On decayed branches in woods. Pileus 1-3 in. broad, stipe 2-3 in. high. The pileus is tawny yellow, shaded with bright orange or purplish-brown; the stipe is downy at the base, tapering upward, twisted and striate, yellow or ochraceous shaded with orange.

85. *A. CHRYSOPHÆUS*, Schæff.—Pileus somewhat membranaceous, campanulate then expanded, even, naked, glabrous and virgate, cinnamon; the margin striate. Stipe disposed to be hollow, glabrous. Lamellæ free, white then flesh-color.

On trunks of beech and other wood; somewhat gregarious. Pileus 1-3 in. across, stipe 2-4 in. long. The color of the pileus yellowish or ochraceous-brown; the stipe whitish, mostly twisted.

SUBGENUS XII.—ENTOLOMA.

Spores rosy. Pileus somewhat fleshy, the margin incurved. Stipe fleshy or fibrous, soft. Lamellæ sinuate-attached behind or seceding.

a. *Pileus umbonate.*

86. A. *CLYPEATUS*, Linn.—Pileus slightly fleshy, campanulate then explanate, umbonate, glabrous, lurid, hygrophamous. Stipe floccose-stuffed, tapering upward, fibrillose, becoming pale. Lamellæ rotundate-attached, seceding, serrulate, dirty flesh-color. Spores irregular, angular.

In cultivated and waste places and in meadows. Pileus 3-5 in. across, stipe 3-4 in. high.

87. A. *STRICTIOR*, Peck.—Pileus thin, somewhat membranaceous, convex or expanded, umbonate, smooth, shining, hygrophamous; striatulate, grayish-brown. Stipe straight, equal, hollow, nearly glabrous, with a dense white mycelium at the base. Lamellæ rather broad, rounded or deeply emarginate, pale flesh-color. Spores irregular.

Ground in groves and on their borders. Pileus 1-2 in. diameter, stipe 2-4 in. long. The umbo is small, but distinct, the stipe is quite straight, and the aspect of the whole plant is beautifully regular and symmetrical.

b. *Pileus not umbonate,*

88 A. *RHODOPOLIUS*, Fr. Pileus slightly fleshy, campanulate-expanded, gibbous then somewhat depressed, hygrophamous; the margin flexuous, at first inflexed. Stipe hollow, nearly equal, glabrous, pure white, pruinose above. Lamellæ adnate then sinuate, white then rosy. Spores very irregular, angular.

In humid places in woods. Pileus 2-3 in. across, stipe 3-4 in. high. The younger pileus fibrillose, soon glabrous, when wet livid or brownish, the margin slightly striate, when dry tawny or paler and and silky-shining.

SUBGENUS XIII.—CLITOPILUS, Fr.

Spores rosy. Pileus with the margin at first involute. Stipe fleshy or fibrous. Lamellæ decurrent.

89. A. *ABORTIVUS*, B. & C.—Perfect, imperfect or altogether abortive.

*Perfect form* : Pileus fleshy, convex, then expanded and more or less irregular, gray or lilac in color. Stipe solid, nearly equal or

somewhat deformed, concolorous. Lamellæ arcuate and long-decurrent in some specimens, in others nearly plane and adnate-decurrent, at first grayish, at length bright flesh color. Spores angular.

The imperfect and abortive forms present all stages of imperfection to a complete obliteration of all semblance of stipe and pileus when the fungus consists of a rounded more or less lobed mass.

In woods about old logs and stumps. Pileus 3 in. or more in breadth, stipe 2-3 in. long. The abortive forms sometimes cohere together in large masses. There is an odor of fresh meal, and a not unpleasant taste.

#### SUBGENUS XIV.—LEPTONIA, Fr.

Spores rosy. Pileus thin, umbilicate, or with the disk darker; the margin at first incurved. Stipe cartilaginous, tubular, polished, shining. Lamellæ at first attached or adnate, but easily seceding.

90. *A. ASPRELLUS*. Fr.—Pileus somewhat membranaceous, convex then explanate, sometimes glabrous, sometimes fibrillose, striate, the umbilicus villous and at length scaly, fuliginous, then livid gray. Stipe hollow, slender, even, glabrous. Lamellæ adnate, seceding, equally attenuate from the stipe to the margin, whitish-gray.

In pastures and grassy places. Pileus 1-1½ in. broad. Stipe 1-2 in. long. Stipe typically livid, but varies in color from brown to green and blue. Pileus at first dingy or mouse color, soon plane and livid-gray.

*Note*.—Our *Hyporhodium* have not yet been looked for with sufficient care; three or four of the subgenera are yet wanting, which must have some representatives. I have had specimens of four or five other species, but so few in number, or so imperfect, that I am not yet able to assign them to any place. *Agaricus sapidus*, a common *Pleurotus*, with lilac tinted spores, and *Panus dorsalis*, with red spores, are apt to be looked for in this series.

#### TABLE OF THE SUBGENERA OF DERMINI.

*A. Stipe central, fleshy or fibrous.*

*a. Stipe annulate.*

16. *PHOLIOTA*.—Lamellæ attached to the stipe.

*b. Stipe not annulate.*

*a'. Lamellæ sinuate-adnate.*

17. *ISOCYBE*.—Pileus dry, scaly, fibrillose or silky.



18. *HEBELOMA*.—Pileus viscid, glabrous.

*b'*. *Lamellæ adnate or decurrent.*

19. *FLAMMULA*.—Pileus with the margin at first involute.

*B. Stipe central, cartilaginous.*

*c. Lamellæ free.*

20. *PLUTEOLUS*.—Pileus with the margin at first straight and appressed to the stipe.

*d. Lamellæ attached.*

*c'. Lamellæ not decurrent.*

21. *NAUCORIA*.—Pileus with the margin at first inflexed.

22. *GALERA*.—Pileus with the margin at first straight and appressed to the stipe.

*d'. Lamellæ decurrent.*

23. *TUBARIA*.—Pileus plane or depressed.

*C. Stipe eccentric or none.*

24. *CREPIDOTUS*.—Pileus eccentric, lateral or resupinate.

SUBGENUS XVI.—*PHOLIOTA*, Fr.

Veil partial, annulate. Lamellæ attached to the stipe.

*A. Terrestrial, not cæspitose, 91, 92.*

*B. Lignatile, cæspitose.*

*a. Pileus scaly.*

*a'. Lamellæ at first whitish, 93-95.*

*b'. Lamellæ at first yellow, 96-98.*

*b. Pileus glabrous, 99, 101.*

*A. Terrestrial, rarely cæspitose.*

91. *A. DURUS*, Bolt.—Pileus rather compact, convexo-plane, glabrous, at length rimose-areolate; the margin even. Stipe stuffed, hard, externally fibrous, at the apex somewhat thickened and mealy; the annulus somewhat lacerate. Lamellæ adnate, ventricose, livid then brown-ferruginous. Spores ochraceous-brown, almost ferruginous,  $.009 \times .006$  mm.

In gardens, hot houses, etc. Pileus 3 in. or more broad, the stipe short, about half an inch thick. Pileus pale tawny, or brownish tan.

92. *A. PRÆCOX*, Pers.—Pileus fleshy, soft, convexo-plane, becoming glabrous, even, pallid. Stipe medullate then hollow, cylindric, mealy-pubescent, afterward glabrous; the annulus white. Lamellæ rotundate-

attached, close, white changing to brown. Spores brown, sometimes inclined to be irregular in shape,  $.008 \times .005$  mm.

Upon lawns, on grassy places along paths: sometimes very abundant after rains in spring, and the forepart of summer. Pileus  $1\frac{1}{2}$ -3 in. in diameter, stipe 2-4 in. high. Pileus white or pale-tawny, sometimes yellowish; stipe somewhat flexuous, equal or tapering downward, white or shaded with buff; the annulus often dependent in fragments from the edge of the pileus.

*B. Lignatile or epiphytal, generally caespitose.*

*a. Pileus scaly, not hygrophanous.*

*a'. Lamellæ at first whitish.*

93. *A. SQUARROIDES*, Peck.—Pileus firm, convex, viscid when moist, at first densely covered by erect papillose or subspinose tawny scales. Stipe equal, firm, stuffed, rough with thick squarrose scales, white above the thick floccose annulus, pallid or tawny below. Lamellæ close emarginate, at first whitish, then pallid or dull cinnamon. Spores elliptic, ferruginous,  $.005 \times .004$  mm.

Dead trunks and old stumps of maple in woods, in autumn. Densely caespitose; pileus 2-4 in. broad, stipe 3-5 in. long. This species is closely related to *A. squarrosus*, with which it has no doubt been confused; but the latter is dry, not viscid, and is differently colored. I take this to be the *A. squarrosus* of Lea's Catalogue.

94. *A. LIMONELLUS*, Peck.—Pileus thin, convex or expanded, somewhat umbonate, viscid, rough with scattered erect reddish-brown scales, lemon-yellow. Stipe equal, solid, rough with revolute or recurved scales, pallid or yellowish; the annulus lacerate. Lamellæ narrow, close, rounded behind, whitish. Spores elliptic, ferruginous,  $.006 \times .005$  mm.

Prostrate trunks of beech, in woods. Caespitose; pileus 1-2 in. broad, stipe 2-3 in. long. This species is easily distinguished by its lively lemon-yellow color. The reddish brown scales on the surface of the pileus finally become scattered and remote.

95. *A. ALBOCRENULATUS*, Peck.—Pileus fleshy, firm, convex or campanulate, somewhat umbonate, viscid, rough with dark-brown or blackish floccose scales, yellowish-brown. Stipe firm, nearly equal, stuffed or hollow, white above the evanescent annulus, scaly and pallid below. Lamellæ broad, rather distant, emarginate, the edge white crenulate, grayish, then ferruginous. Spores somewhat elliptic, rather acute at each end,  $.011 \times .006$  mm.

Growing out of the base of standing maple trees. Pileus 2-3 in. broad, stipe 3-5 in. long. This is a very marked species and rather rare, though it is liable not to be seen by reason of its habit of nestling between the roots of the maple. Under a lens the lamellæ appear to be beaded on the edge with milky globules.

*b'. Lamellæ at first yellow.*

96. *A. SPECTABILIS*, Fr.—Pileus compact, convexo-plane, dry; the cuticle torn into silky scales or fibres. Stipe solid, ventricose, somewhat rooting, mealy above the annulus. Lamellæ adnate-decurrent, close, narrow, yellow then ferruginous. Spores ferruginous, oblique,  $.009 \times .006$  mm.

At the base of oak stumps. Somewhat cæspitose; pileus 3-5 in. broad; stipe 3-5 in. long, and 1 in. thick in the middle. Pileus thick, tawny or golden in color, then growing paler; flesh pale yellow, with here and there a tinge of sulphur. A large coarse species not uncommon in autumn, which does not appear to grow eastward.

97. *A. ADIPOSUS*, Fr.—Pileus compact, convexo-plane, obtuse, luteous, glutinous, squarrose with superficial, seceding, concentric, darker scales. Stipe stuffed, somewhat bulbous, luteous and scaly as the pileus. Lamellæ adnate, broad, luteous then ferruginous. Spores ferruginous,  $.007 \times .005$  mm.

At the base of trees, especially beech. Cæspitose, very large, shining when dry, white within; the scales thick, ferruginous. Pileus 3-5 in. broad, the stipe 3-5 in. long. This is a beautiful species growing in large tufts. Compared with the preceding, the pileus is very viscid, the stipe nearly equal, the flesh white within, and the lamellæ broad. Lea's Catalogue.

98. *A. TUBERCULOSUS*, Schæff.—Pileus, fleshy, convexo-plane, obtuse, dry; the cuticle broken up into innate, appressed, small scales. Stipe hollow, incurved, short, bulbous fibrillose; the annulus somewhat membranaceous, deciduous. Lamellæ emarginate, broad, serrulate, yellow, somewhat cinnamon. Spores bright ferruginous, elliptic,  $.0083 \times .0056$  mm.

Growing out of solid timbers, little decayed. Rather solitary; the pileus 2-3 in. broad; the stipe 1-2 in high, rather slender and somewhat bulbous where it starts from the wood. The pileus is quite thick, the flesh white; the lamellæ are very broad.

*b. Pileus glabrous, hygrophaneous.*

99. *A. MUTABILIS*, Schæff.—Pileus fleshy, convexo-explanate, glab

rous, expallent; the margin thin. Stipe stuffed then hollow, rigid, scaly-squarrose, ferruginous-blackish downward. Lamellæ adnate-decurrent, close, rather broad, pallid then cinnamon. Spores brown-ferruginous,  $.011 \times .007$  mm.

Upon stumps and fallen trunks, rarely upon the ground. Cæspitose; pileus  $1\frac{1}{2}$   $2\frac{1}{2}$  in. in breadth, stipe 2-3 in. long, though the plant as its name indicates is quite variable in size and appearance. Pileus cinnamon, becoming pale when dry, commonly more or less umbonate and irregular. The stipe in my figures is rather smooth.

100. *A. MARGINATUS*, Batsch.—Pileus a little fleshy, convexo-expanded, glabrous, moist, hygrophanous; the margin striate. Stipe hollow, soft, not scaly, pruinose above the fugacious annulus; the base darker, white velvety. Lamellæ adnate, close, narrow, watery cinnamon.

On ground and wood in a damp ravine; in spring. Pileus 1-1 $\frac{1}{2}$  in. across, stipe about 2 in. long. Of a watery substance; the veil often curtained; the stipe somewhat fibrillose or striatulate. Color watery-cinnamon, changing to alutaceous or whitish.

101. *A. UNICOLOR*, Fl. D.—Pileus a little fleshy, campanulate then convex, somewhat umbonate, glabrous, rather even, hygrophanous. Stipe stuffed then hollow, nearly glabrous, concolorous; the annulus thin, entire. Lamellæ adnate-seceding, broad, somewhat triangular; ochraceous-cinnamon. Spores ferruginous, oblong ovoid,  $.0076 \times .0056$  mm.

On fallen trunks and branches in woods, especially along the damp ravines, in autumn. Cæspitose or solitary; pileus about 1 in. in diameter, stipe about 1 in. long. This little plant is very abundant; it is well marked by its regular shape, smooth surface and persistent annulus. The color is a brownish, ferruginous, drying to paler or ochraceous.

#### SUBGENUS XVII.—*INOBYE*, Fr.

Pileus scaly, fibrillose or silky; the veil universal, concrete with the cuticle of the pileus. Stipe fleshy fibrous, not annulate. Lamellæ mostly sinuate. Spores more or less brown-ferruginous.

- A. Stipe colored, scaly or fibrillose.
  - a. Stipe and pileus of the same color, 102, 103.
  - b. Stipe paler than the pileus, 104.
- B. Stipe whitish, fibrillose.
  - c. Stipe solid, bulbous, 105.

d. Stipe equal, solid, 106, 107.

e. Stipe equal, hollow, 108.

C. Stipe whitish, glabrous, polished, 109.

A. *Stipe colored, scaly or fibrillose.*

a. *Stipe and pileus of the same color.*

102. A. LANUGINOSUS, Bull.—Pileus a little fleshy, hemispheric-expanded, obtuse, floccose-scaly, squarrose with erect muricate scales. Stipe solid, slender, scaly-fibrillose, white-pulverulent at the apex. Lamellæ seceding, ventricose, denticulate, pale-argillaceous.

Upon the earth in beech woods. Pileus about 1 in. broad, stipe  $1\frac{1}{2}$ -2 in. high. Umber then yellowish, regular, scarcely odorous. Flesh dirty-white.

103 A. DULCAMARUS, A. & S.—Pileus a little fleshy, convexo-umbonate, pilose-scaly. Stipe disposed to be hollow, curtained-fibrillose and scaly, mealy at the apex. Lamellæ arcuate-attached, ventricose, pallid then olivaceous.

In woods, gregarious. Pileus olivaceous-brown, the flesh white changing to yellowish. I do not know this plant, and have no figure of it; it is given on the authority of Lea's Catalogue.

b. *Stipe paler than the pileus.*

104. A. PYRIDOROUS, Pers.—Pileus fleshy, conic-expanded, umbonate, clothed with appressed fibrous scales. Stipe solid, firm, equal, curtained fibrillose, growing pale, pruinose at the apex, reddish within. Lamellæ emarginate, rather distant, white-sordid then somewhat cinnamon.

Along roads and paths in woods, early. Pileus about 2 in. across, the stipe 2-3 in. high. "With a pleasant odor of pears or violets.—Fries. "Odor penetrating, like that of rotten pears."—Berkley. Pileus brown then becoming ochraceous-palid; the flesh reddish.

B. *Stipe whitish, slightly tinged with the color of the pileus, fibrillose.*

c. *Stipe solid, bulbous.*

105. A. RIMOSUS, Bull. Pileus fleshy, thin, campanulate, silky-fibrous, when expanded longitudinally rimose. Stipe solid firm, nearly glabrous, somewhat bulbous, white-mealy at the apex. Lamellæ free, somewhat ventricose, argillaceous changing to brownish. Spores elliptic-ovoid, .0083×.0056 mm.

In woods and waste places. Pileus 1-2 in. broad, stipe  $1\frac{1}{2}$ -2 $\frac{1}{2}$  in. long,

with an earthy odor. The bulb somewhat top-shaped, flattened above. Pileus commonly brown changing to yellowish; the flesh white.

*d. Stipe equal, solid.*

106. A. EUTHELES, B. & Br.—Pileus thin, campanulate, then expanded, silky-shining, somewhat scaly, cervine; the umbo fleshy, prominent. Stipe solid, nearly equal, fibrous, striate, pallid. Lamellæ adnate, pallid; the edge denticulate, white. Spores brown, even, cymbiform. .008 mm. in length.

On the ground in damp woods in autumn. Pileus 1-2 in. broad, stipe 1½-2½ in. long. Odor rather disagreeable. This species differs from *rimosus* in the adnate lamellæ, and in the shape of the spores. My figures, however, are not strongly umbonate.

107. A. DISTRICUS, Fr.—Pileus fleshy, campanulate then explanate, umbonate, rimose, fibrillose, afterward lacerate-scaly, pallid, becoming reddish. Stipe solid, glabrous, fibrillose, striate, white changing to red. Lamellæ uncinata adnate, close, whitish then gray-cinnamon.

Upon the earth in woods. Pileus about 1½ in. broad, stipe 2 in. long. Flesh white; odor unpleasant.

*e. Stipe equal, hollow.*

108. A. AURICOMUS, Batsch.—Pileus a little fleshy, conic-campanulate, fibrillose, rimose-parted, yellowish; the margin striate. Stipe hollow, equal, undulate, fibrillose, white-pulverulent at the apex. Lamellæ attached, ventricose, whitish-brown.

Upon the ground in burnt places. Pileus much cracked. I have not seen this Agaric, and have no figure of it. Fries makes it a variety of *A. descissus*.

*C. Stipe whitish, glabrous, polished.*

109. A. GEOPHYLLUS, Sow.—Pileus somewhat fleshy, conic then expanded, umbonate, even, fibrillose-silky. Stipe stuffed, equal, rather firm, white, white-mealy at the apex. Lamellæ attached, close, white then sordid, at length earth-color. Spores argillaceous, somewhat oblique, .008 mm. long.

On the ground in woods. Pileus 1 in. broad, white, yellowish, etc. Stipe 1-3 in. long. Flesh white, odor unpleasant. My specimens are white, but it is said to vary much in color.

SUBGENUS XVIII.—HEBELOMA, Fr.

Pileus glabrous, more or less viscid; the margin at first incurved.

Stipe fleshy-fibrous, not annulate. Lamellæ sinuate-adnate. Spores mostly argillaceous.

110. *A. FASTIBILIS*, Fr.—Pileus compact, convexo-plane, repand, obtuse, viscid, glabrous. Stipe solid, firm, somewhat bulbous, white, fibrose-scaly. Lamellæ emarginate, rather distant, whitish then argillaceous-cinnamon. Spores elliptic, pointed,  $.010 \times .0076$  mm.

In level woods in summer and autumn. Pileus 1-3 in. broad, stipe 2-4 in. high, and of variable thickness. Gregarious or solitary. Pileus reddish, yellowish, alutaceous or whitish. Lamellæ sometimes exuding watery drops. Odor and taste of radish.

111. *A. ILLICITUS*, Peck.—Pileus fleshy, firm, broadly convex or expanded, smooth, hygrophanous, very dark brown when moist, a little paler when dry. Stipe firm, equal, hollow, scabrous, distinctly striate at the top, paler than the pileus, with a white mycelium. Lamellæ close, broad, tapering outwardly, plane or ventricose, rounded behind, with a very slight decurrent tooth, pale dingy-brown. Spores somewhat elliptic,  $.007 \times .005$  mm.

On rotten logs and sticks in woods in autumn. Pileus 1-1½ in. broad, stipe 1½-2 in. high. The habitat is unusual for species of this subgenus.

#### SUBGENUS XIX.—FLAMMULA, Fr.

Pileus fleshy; the margin at first involute. Stipe fleshy-fibrous. Lamellæ decurrent or adnate without a sinus.

112. *A. SAPINEUS*, Fr.—Pileus compact, convexo-plane, very obtuse, finely floccose-scaly, afterward rimose, golden-tawny. Stipe somewhat stuffed, deformed, thick, sulcate, rooting, yellowish. Lamellæ adnate, broad, golden, afterward tawny-cinnamon. Spores bright ferruginous, elliptic,  $.008 \times .005$  mm.

Growing on wood; "on fence rails."—*Lea*. Pileus 1-4 in. broad; stipe commonly short, solid or hollow, often compressed, lacunose, etc. Flesh thick, soft, yellowish. Somewhat cæspitose; the odor strong. Vestiges of the veil scarcely to be perceived.

113. *A. POLYCHROUS*, Berk.—Pileus convex then plane, broadly umbonate, of many colors, at first purple, viscid; the disk fleshy. Stipe firm, nearly equal, somewhat woody, at first furfuraceous. Lamellæ broad, rather distant, adnate, slightly decurrent, at first dirty white, then brownish-purple, at length yellow-brown.

On rotten trunks of trees, sticks, etc. Solitary or cæspitose; pileus 2-3 in. in diameter, stipe 1-1½ in. high; the veil fugitive consisting of purple and yellow flocci. The pileus when young is purple, it then changes to buff or light yellow on the margin, with the umbo purple or brownish yellow. This very beautiful Agaric was first found by Mr. Lea, and named by his friend and correspondent, Rev. M. J. Berkeley, of England.

SUBGENUS XX.—PLUTEOLUS, Fr.

Pileus conic or campanulate, then expanded; the margin at first straight and appressed to the stipe. Stipe somewhat cartilaginous. Lamellæ rotundate-free.

114. *A. MUCIDOLENS*, Berk.—Scented. Pileus a little fleshy, lobed, glabrous, viscid, shining, sooty. Stipe fibrillose. Lamellæ free. Spores dull-ferruginous, somewhat cymbiform.

“On a rotten trunk, Cincinnati, April 21, 1842.”—*Lea*. Pileus 2-3 in. broad, of a dull smoky brown; stipe 2 in. or more in height, clothed with brownish fibres. Smell like that of decayed cheese. This plant is one of Mr. Lea's new species. It is very interesting as being the only representative thus far known of this subgenus in North America.

SUBGENUS XXI.—NAUCORIA, Fr.

Pileus more or less fleshy, convexo-plane; the margin at first inflexed. Stipe cartilaginous. Lamellæ free or attached, but not decurrent.

115. *A. VERVACTI*, Fr.—Pileus fleshy, convexo-plane or umbonate, even, glabrous, viscid, shining when dry. Stipe stuffed then hollow, tapering upward, glabrous, rigid, whitish. Lamellæ adnate with a decurrent tooth, close, afterward ventricose, pallid then ferruginous-brown. Spores brown-ferruginous.

In meadows, pastures, etc. Pileus luteous, obtuse; stipe short, about 1 in. long, rather thick, tapering sometimes upward and sometimes downward. Flesh white.

116. *A. SEMIORBICULARIS*, Fr.—Pileus a little fleshy, hemispheric, expanded, even, glabrous, somewhat viscid, at length rivulose. Stipe slender, tough, almost straight, pale ferruginous, shining, with a free tubular pith. Lamellæ adnate, very broad, close, pallid then ferruginous. Spores brown-ferruginous, elliptic, very large, .013×.008 mm.



On lawns and in pastures and grassy grounds. Pileus 1-2 in. broad, stipe 3-4 in. long. Color when fresh tawny-ferruginous, when dry ochraceous.

SUBGENUS XXII.—GALERA, Fr.

Pileus more or less membranaceous, from conic or oval expanded, striate; the margin at first straight and appressed to the stipe. Stipe cartilaginous. Lamellæ not decurrent.

117 A. TENER, Schæff.—Pileus somewhat membranaceous, conic-campanulate, obtuse, hygrophanous. Stipe straight, fragile, somewhat shining, concolorous. Lamellæ adnate, close, ascending, linear, cinnamon. Spores somewhat ferruginous, elliptic, very large, .0137×.0076 mm.

In grassy grounds, upon manure, rotten wood, etc. Pileus  $\frac{3}{4}$ -1 in. high and broad, stipe 3-5 in. long. Changing from a watery ferruginous or brownish when wet to ochraceous or pallid when dry.

118. A. SILIGINEUS, Fr.—Pileus membranaceous, globose-campanulate then expanded, unequal, even, not expallent. Stipe somewhat flexuous, equal, pallid, somewhat pruinose. Lamellæ adnate, broadly-linear, rather close, ochraceous.

Found with the preceding, commonly smaller. It can be separated from it by the stipe pallid, not straight, the base often attenuate, the pileus grayish, more convex, the margin often flexuous.

SUBGENUS XXIII.—TUBARIA, W. Smith.

Pileus somewhat membranaceous, often clothed with a universal floccose veil. Stipe cartilaginous, hollow. Lamellæ more or less decurrent.

119. A. FURFURACEUS, Pers.—Pileus a little fleshy, convex then plane, and at length umbilicate, hygrophanous, with a silky scaly veil, especially around the margin. Stipe hollow, flocculose, rigid, pallid. Lamellæ adnate-decurrent, rather distant, cinnamon. Spores ferruginous, .0056 mm. long.

Upon the ground, pieces of wood, piles of leaves. Pileus  $\frac{1}{2}$ -1 in. broad, stipe 1-2 in. long. Pileus rich umber or cinnamon when moist, alutaceous-canescens when dry; stipe white-floccose at the base.

120. A. INQUILINUS, Fr.—Pileus somewhat membranaceous, convex then plane, glabrous, a little viscid, striate when wet, hygrophanous.

Stipe hollow, tough, tapering downward, dark brown, white-fibrillose. Lamellæ somewhat decurrent, rather distant, triangular, brown. Spores brown-ferruginous.

In woods on rotten wood, sticks and rubbish. Gregarious, very small; pileus  $\frac{1}{2}$  an inch or less in breadth; stipe 1 in. long, scarcely a line in thickness.

#### SUBGENUS XXIV.—CREPIDOTUS, Fr.

Pileus eccentric, lateral or resupinate.

##### a. *Pileus lateral.*

121. *A. MOLLIS*, Schæff.—Pileus gelatinous-fleshy, soft, obovate or reniform, flaccid, nearly sessile, glabrous, pallid then canescent. Lamellæ decurrent to the base, close, linear, whitish then watery cinnamon. Spores ferruginous, elliptic, .009 $\times$ .0056 mm.

On old stumps and rotten trunks; common. Solitary or imbricated; pileus 1-2 in. broad. Pileus, in the larger forms, undulately lobed, commonly sessile, but it varies, being sometimes produced behind into a short, strigose stipe.

122. *A. DORSALIS*, Peck.—Pileus fleshy, sessile, dimidiate or somewhat reniform, flat or a little depressed behind, with a decurved slightly striate margin, somewhat fibrillose-tomentose, distinctly tomentose at the point of attachment. reddish-yellow. Lamellæ close, ventricose, rounded behind, somewhat emarginate, converging to a whitish, villous, lateral space, pale ochraceous-brown. Spores ferruginous, globose, .006 mm. in diameter.

On old logs in woods. Pileus 1-2 in. broad. In general appearance, it bears some resemblance to *Panus dorsalis*.

123. *A. CROCOPHYLLUS*, Berk.—Pileus fleshy, convex, somewhat flabelliform, sessile, appressed scaly, ochraceous-brown. Lamellæ rather broad, rounded behind, bright buff or orange. Spores pale ochre-yellow, nearly globose.

On old logs in woods. Pileus scarce half an inch long. This is one of Mr. Lea's new species.

##### b. *Pileus at first resupinate.*

124. *A. VERSUTUS*, Peck.—Pileus at first resupinate, then reflexed, sessile, thin, pure white, soft-villous, the margin incurved. Lamellæ rather broad, somewhat distant, concurrent to an excentric point,

rounded behind, pale then ferruginous. Spores ferruginous-brown, somewhat elliptic, .010 mm. long.

In cavities of old stumps, on much decayed, half-buried wood, etc. Pileus less than 1 in. broad.

TABLE OF THE SUBGENERA OF PRATELLI.

A. *Stipe annulate.*

- 25. PSALLIOTA.—Lamellæ free from the stipe.
- 26. STROPHARIA —Lamellæ adnate.

B. *Stipe not annulate.*

- 27. HYPHOLOMA.—Veil woven into a web which adheres to the margin of the pileus.
- 28. PSILOCYBE.—Veil none.

SUBGENUS XXV.—PSALLIOTA, Fr.

Stipe annulate    Lamellæ free.

a. *Annulus ample, not distant.*

125. A. ARVENSIS, Schæff. Pileus fleshy, conic-campanulate then explanate, at first floccose-mealy, afterward almost glabrous, even or rivulose. Stipe hollow, floccose-medullate; annulus pendulous, ample, consisting of two layers, the outer layer radiately divided. Lamellæ free, broader in front, reddish-white then brown. Spores elliptic, variable in size, averaging .010 × .006 mm.

In meadows and grassy grounds in fields. Pileus commonly 3-5 in. broad, and stipe 3-4 in. long, but these dimensions are often greatly exceeded. This is the "Horse Mushroom" of England; it is edible, but is not so delicate as *A. campestris*. The pileus and stipe are white, staining yellowish when bruised. The flesh remains white or takes on only a yellowish tint when cut or broken.

126. A. FABACEUS, Berk.—Pileus thin, somewhat fleshy, conical, umbonate, at length plane. Stipe bulbous, rather slender, nearly glabrous; veil ample, externally floccose. Lamellæ close, free, broader behind, brown then nearly black. Spores brown, nucleate on one side small, .0055 mm. long.

On the ground amongst the old leaves in woods; common. Pileus 3-4 in. across, stipe 3-4 in. high. The pileus is smooth, tough, feeling like fine kid leather, turning yellow when bruised; the stipe is bulbous

at the base, nearly equal above, rather slender and often gracefully curving. The lamellæ are at length almost black, like the dark part of a bean flower. This is one of the elegant new species of Lea's Catalogue.

*b. Annulus small, remote.*

127. *A. CAMPESTRIS*, Linn.—Pileus fleshy, convexo-plane, floccose-silky or scaly. Stipe stuffed, even, white; the annulus in the middle, somewhat lacerate. Lamellæ free, approximate, ventricose, somewhat liquescent, fleshy-brown. Spores brown, nearly elliptic, .008×.006 mm.

In rich soil of old pastures; some years abundant. Pileus commonly 2-3 in. broad, stipe  $1\frac{1}{2}$ - $2\frac{1}{2}$  in. long. This is the "Common Mushroom," which from the most ancient times has been highly esteemed for food; out of it numerous cultivated varieties have arisen. It has a faint odor and a pleasant taste; the flesh is firm, thick, white changing more or less to a reddish hue when cut or broken. It is the small, round, undeveloped plants that are eaten.

128. *A. SILVATICUS*, Schæff.—Pileus fleshy, thin, campanulate then expanded, gibbous, fibrillose and scaly. Stipe hollow, equal, whitish; the annulus simple, distant. Lamellæ free, close, equally attenuate both ways, thin, dry, reddish changing to brown. Spores elliptic, .0064×.0043 mm.

In woods. Pileus about 3 in. broad, stipe 3-4 in. long. The pileus is a great deal thinner than in the preceding species, more fragile, darker, it is at first covered with brown scales which at length scale off, leaving at least the disk smooth; the margin is often rimosely incised. The flesh is white changing a little to reddish.

SUBGENUS XXVI.—STROPHARIA, Fr.

Stipe annulate. Lamellæ more or less adnate.

*a. Growing on wood or on the ground.*

129. *A. ÆRUGINOSUS*, Curt.—Pileus fleshy, convexo-plane, somewhat umbonate, covered with a bluish-green seceding slime, expallent. Stipe hollow, equal, viscid, beneath the annulus scaly or fibrillose, tinged with blue. Lamellæ adnate, soft, brown changing to purple. Spores elliptic, purplish .007×.005 mm.

Upon the earth and upon trunks of trees in woods. Pileus 1-4 in. broad, stipe 2-3 in. high. Gregarious; pileus dull yellow but covered with a bluish gluten; above this, but not always, clothed with white scales; stipe with various tints of blue, green or yellow, within mottled

with blue, the center white; annulus generally fugacious; smell disagreeable.

b. *Growing on manure.*

130. A. STERCORARIUS, Fr.—Pileus a little fleshy, hemispheric then expanded, even, glabrous, discoid, somewhat viscid. Stipe stuffed with a discrete pith, elongated, flocculose beneath the distant annulus, even, somewhat viscid. Lamellæ adnate, broad, white then umber and olive-black. Spores purple-brown, elliptic, very large, .017×.013 mm.

In woods and pastures, on manure. Pileus 1-1½ in. broad, stipe 3-4 in. high. Pileus luteous, livid-yellowish, etc.; stipe yellowish. Lamellæ broadest behind, truncate and somewhat decurrent. Distinguished from *A. semiglobatus* by the distinct medullary substance by which the stipe is stuffed, and by the pileus finally becoming expanded.

131. A. SEMIGLOBATUS, Batsch.—Pileus a little fleshy, hemispheric, even, yellowish, glutinous. Stipe hollow, slender, straight, glabrous, yellowish, glutinous; the veil inferior, with an abrupt annular termination. Lamellæ adnate, broad, plane, clouded with black. Spores purple-brown, elliptic, large, .014×.009 mm.

Common on manure or manured soil. Pileus ½-1 in. in diameter, stipe 2-3 in. high. The pileus is viscid when moist, shining and smooth when dry; the stipe is hollow, at first very viscid, shining when dry, with a closely glued silkiness; the annulus is more or less perfect and deflexed, the lamellæ are very broad, mottled with the purple-brown spores, with at length a cinereous, sometimes a yellow tinge.

SUBGENUS XXVII.—HYPHOLOMA.

Pileus more or less fleshy, the margin at first incurved; the veil woven into a web, which adheres to the margin of the pileus. Lamellæ adnate or sinuate.

- A. Pileus not hygrophanous.
  - a. Pileus glabrous, bright-colored, 132, 133.
  - b. Pileus scaly or fibrillose, 134-136.
- B. Pileus glabrous, hygrophanous, 137, 138.
  - A. *Pileus not hygrophanous.*
    - a. *Pileus glabrous, bright-colored when dry.*

132. *A. SUBLATERITIUS*, Schæff.—Pileus fleshy, convexo-plane, obtuse, discoid, dry, becoming glabrous; the flesh compact, whitish. Stipe stuffed, fibrillose, tapering downward, ferruginous. Lamellæ adnate, close, white then dingy-olive. Spores elliptic, brown-purple,  $.005 \times .0035$  mm.

On and about old stumps; very common late in autumn and at the beginning of winter. Pileus 2-4 in. broad, stipe 3-5 in. long. Gregarious and caespitose; pileus brick-red or tawny on the disk, paler toward the margin, silky when young, but becoming glabrous; taste bitter and nauseous.

133. *A. FASCULARIS*, Huds.—Pileus fleshy, thin, somewhat umbonate, glabrous. Stipe hollow, slender, fibrillose, flexuous, yellow; the flesh yellow. Lamellæ adnate, crowded, linear, somewhat liquescent, sulphur then greenish. Spores elliptic, ferruginous-purple,  $.006 \times .004$  mm.

On stumps and old logs and on the ground. Gregarious and densely caespitose; pileus about 2 in. in breadth, the stipe 2-5 in. or more in length. Pileus at first conic, then expanded, more or less irregular from the tufted mode of growth, tawny, yellow toward the margin; stipe long, curved and unequal, yellow-greenish above; taste bitter and nauseous.

*b. Pileus scaly or fibrillose.*

134. *A. LACRYMABUNDUS*, Fr.—Pileus fleshy, convex, obtuse, pilose scaly; the scales innate and darker; the flesh whitish. Stipe hollow, fibrillose-scaly, whitish. Lamellæ adnate, close, brown-purple. Spores brown purple, oblique  $.0076 \times .0056$  mm.

Upon the ground and rotten trunks in woods. Commonly caespitose; pileus 2-4 in. broad, stipe 2-4 in. high. Pileus at first campanulate, at length expanded, pale reddish-brown, darker in the center; flesh pale umber; lamellæ at first pale, then reddish-brown; stipe pale, umber toward the base, whitish above, somewhat thickened below, rather flexuous, pale umber within; odor disagreeable.

135. *A. PYROMICENS*, Holmsk.—Pileus somewhat fleshy, conic then hemispheric, obtuse, densely clothed with tawny fibrils, reddish-tawny; the flesh and curtain tawny. Stipe hollow, fibrillose, becoming tawny. Lamellæ adnate, pallid, afterward changing to brown.

About the trunks of trees in woods; perhaps scarce, as I have found it but once. Pileus 3-5 in. broad, stipe 3-4 in. long. The pileus is characterized by the peculiar bright tawny or flame-colored hue, with densely appressed or fasciculate fibrillæ. When again found it needs to be more closely observed.

136. A. VELUTINUS, Pers.—Pileus somewhat fleshy, campanulate, then expanded, at length obtusely umbonate, even, at first tomentose, with appressed fibrils, afterward becoming glabrous, hygrophanous; the flesh very thin, concolorous. Stipe hollow, fibrillose-silky, sordid-argillaceous. Lamellæ seceding, rather close, brown, black-punctate.

In the streets of the suburbs, along the country roads, etc. Size various, often extremely large, very fragile. Pileus not scaly, when fresh lurid, partly dry, tawny, when dry rather clay-color.

B. *Pileus glabrous, hygrophanous.*

137. A. CANDOLLEANUS, Fr.—Pileus somewhat fleshy, campanulate-convex, explanate, obtuse, glabrous, hygrophanous. Stipe hollow, fragile, somewhat fibrillose, white, striate at the apex. Lamellæ rotundate-attached, close, violaceous then brown-cinnamon. Spores brown, oblique, .0090×.0056 mm.

On the ground in woods. Pileus 1½-3 in. in diameter, stipe 1½-3 in. high. The colors even of the lamellæ seem to be exceedingly variable; the pileus is commonly cinereous or whitish, darker in the center.

138. A. APPENDICULATUS, Bull.—Pileus fleshy-membranaceous, ovate-expanded, glabrous, hygrophanous, when dry rugose and somewhat atomate. Stipe hollow, equal, glabrous, white, pruinose at the apex. Lamellæ somewhat adnate, close, dry, whitish then fleshy-brown. Spores .005×.004 mm.

Upon trunks especially of beech. Densely cæspitose; pileus 2-3 in. broad, stipe 3 in. in length. Pileus brownish then tawny or pale ochre; the flesh of the same color.

SUBGENUS XXVIII.—PSILOCYBE.

Pileus more or less fleshy, glabrous; the margin at first incurved; the veil none. Stipe somewhat cartilaginous.

139. A. SPADICEUS, Fr.—Rigid. Pileus fleshy, convexo-plane, obtuse, even, moist, hygrophanous. Stipe hollow, tough, pallid, even at the apex. Lamellæ rotundate-attached, dry, close, whitish then fleshy-brown. Spores elliptic, purplish-brown, .0076×.0051 mm.

In grassy grounds of dooryards, lawns and fields, very abundant after rains, in spring and summer. Pileus 1½-3 in. broad, stipe 2-3 in. long. Pileus even, at first glabrous, rigid, scabrous, umber-brown, becoming pale when dry; the flesh whitish; the margin inflexed, often cracked and split when dry. The lamellæ sometimes finally cinnamon or umber.

## TABLE OF THE SUBGENERA OF COPRINARIÆ.

29. PANÆOLUS.—Pileus a little fleshy, not striate.

30. PSATHYRELLA.—Pileus membranaceous, striate.

## SUBGENUS XXIX.—PANÆOLUS.

Pileus a little fleshy, not striate, the margin exceeding the lamellæ. Stipe polished, rather firm. Lamellæ variegated.

*a. Pileus viscid, shining when dry.*

140. *A. SOLIDIPES*, Peck.—Pileus firm, hemispheric, then somewhat campanulate, smooth, whitish; the cuticle at length breaking up into dingy-yellowish, rather large, angular scales. Stipe firm, smooth, white, solid, slightly striate at the top. Lamellæ broad, slightly attached, whitish, becoming black. Spores black with a bluish tint.

In pastures on piles of dung. Pileus 2-3 in. in diameter, stipe 5-8 in. high. A large species, remarkable for its solid stipe. The scales on the pileus are larger on the disk, becoming smaller toward the margin. The upper part of the stipe is sometimes beaded with drops of moisture.

141. *A. FIMIPETRIS*, Bull.—Pileus somewhat membranaceous, conic-expanded, rather gibbous, even, viscid. Stipe slender, equal, glabrous, pallid, marked with an annular zone. Lamellæ attached, livid-blackish. Spores black. .009×.007 mm.

In pastures on dung. Pileus 1-2 in. broad and high, stipe 3-5 in. long. Pileus reticulate rugulose, dark cinereous, livid when dry; the annulus broken into triangular loops or laciniaë fringing the margin; stipe scaly-tomentose, pulverulent, often beaded with little drops, striate above, nearly white, at length reddish.

*b. Pileus dry, glabrous.*

142. *A. CAMPANULATUS*, Lindb.—Pileus a little fleshy, campanulate, dry, even, glabrous, somewhat shining. Stipe equal, straight, reddish; the apex striate, dark pulverulent. Lamellæ attached, ascending, variegated with gray and black. Spores black.

On manured ground. Pileus  $\frac{3}{4}$ -1½ in. in diameter,  $\frac{3}{4}$ -1 in. in height; stipe 3-4 in. long. Pileus from brown changing to reddish.

143. *A. FIMICOLA*, Fr.—Pileus a little fleshy, campanulate-convex, obtuse, glabrous, opaque, marked around the margin with a narrow brown zone. Stipe fragile, elongated, equal, pallid, white-pruinose at



the apex. Lamellæ adnate, broad, variegated with gray and sooty. Spores black.

On dung and on manured land, in spring and summer. Pileus 1-2 in. broad, stipe 2-4 in. long. Pileus when moist commonly sooty-canescenscent, when dry argillaceous-canescenscent.

SUBGENUS XXX.—PSATHYRELLA.

Pileus membranaceous, striate, the margin not exceeding the lamellæ. Lamellæ uniformly black-sooty, not variegated.

a. *Stipe straight, glabrous.*

144. A. GRACILIS, Fr.—Pileus somewhat membranaceous, conic, striatulate, hygrophalous, when dry not striate. Stipe slender, straight, naked, pallid. Lamellæ broadly adnate, rather distant, cinereous-blackish; the edge obsoletely rose-color. Spores black, elliptic, very large,  $.014 \times .008$  mm.

In low grounds along fence-rows. Pileus  $\frac{3}{4}$ -1 $\frac{1}{2}$  in. broad, stipe 3-5 in. high. Pileus at first livid or brownish, then changing to ochraceous, alutaceous, pinkish or whitish.

b. *Stipe flexuous, pruinat at the apex.*

145. A. ATOMATUS, Fr.—Pileus somewhat membranaceous, campanulate, obtuse, striatulate, hygrophalous, when dry rugulose, entire, furfuraceous with shining atoms. Stipe lax, fragile, white; the apex white-furfuraceous. Lamellæ adnate, broad, cinereous-blackish. Spores black, elliptic, large  $.011 \times .008$  mm.

Among chips and rotten wood in woods. Pileus  $\frac{1}{2}$ -1 in. in diameter, stipe 2-3 in. long. Pileus at length plano-expanded. ochraceous inclining to pale reddish, at length cream-colored or nearly white. Stipe somewhat rooting, more or less cottony at the base.

146. A. DISSEMINATUS, Pers.—Pileus membranaceous, ovate campanulate, furfuraceous, afterward naked, sulcate-plicate, entire, changing color. Stipe lax, somewhat flexuous, fragile, furfuraceous then glabrous. Lamellæ adnate, broadly linear, white-cinereous, then changing to black. Spores black, elliptic,  $.0076 \times .0051$  mm.

About trunks of trees and on the ground, in woods. Gregarious and cæspitose, sometimes in countless numbers. A very small Agaric; pileus about one fourth of an inch in breadth, the stipe about 1 inch long. Pileus yellowish or ochraceous, at length cinereous or whitish, sometimes with a pearly tint toward the margin.

[TO BE CONTINUED.]



THE MYCOLOGIC FLORA OF THE MIAMI VALLEY, O.

By A. P. MORGAN.

[Continued from p. 117.]

GENUS II.—COPRINUS, Pers.

Lamellæ membranaceous, at first pressed together and coherent, easily split, at length dissolving into a black fluid. Trama obsolete. Spores black.

TRIBE I. PELLICULOSI.—Pileus fleshy or membranaceous, not splitting along the back of the lamellæ, but becoming torn and revolute.

A. Stipe annulate.

- a. Pileus covered with broad scales, 1-3.
- b. Pileus covered with minute scales, 4-6.

B. Stipe not annulate.

- c. Pileus floccose, tomentose or villous, 7.
- d. Pileus strewn with sparkling atoms, 8-10.

A. *Stipe annulate.*

- a. *Pileus covered with broad scales.*

1. C. COMATUS, Fl. D.—Pileus somewhat fleshy, cylindric, then expanded, even, soon torn into broad, scattered, appressed scales. Stipe hollow, fibrillose; the bulb solid, rooting; the annulus movable. Lamellæ free, linear, at first white, then changing to purple, finally black. Spores somewhat oblique, apiculate, very large  $.015 \times .008$  mm.

On rich soil in pastures and grassy grounds. Solitary or gregarious; pileus 2-4 in. high and  $1\frac{1}{2}$ -3 in. in diameter; stipe 6-12 in. in height, and  $\frac{1}{2}$ - $\frac{3}{4}$  in. thick. The largest and most showy of the genus. Pileus sordid whitish or verging into lilac, in the larger specimens densely shaggy with the broad fibrillose cinereous or brownish scales. Stipe white or pinkish; the annulus sometimes volvaceous and persistent at the base of the stipe, sometimes clinging at various heights upon the stipe or dropping off. Lamellæ beautifully variegated with pink and brown and black. Finally the whole pileus becomes a revolute, torn and fragmentary dripping mass of black inky fluid and spores, staining the stipe and herbage.

2. C. SQUAMOSUS, n. sp.—Pileus somewhat membranaceous, ovoid then expanded, cinereous, covered with reddish-brown scales. Stipe

hollow, rather equal, below the annulus covered with reddish-brown scales like those of the pileus, above the annulus smooth and white. Lamellæ free, ventricose, white then reddish-brown, finally black. Spores cymbiform. .008—,009 mm. in length. (See Plate VIII.)

Growing about old stumps and trees in woods. Cæspitose; pileus about 1 in. in height, expanding to a diameter of  $1\frac{1}{2}$ - $2\frac{1}{2}$  in., then split and revolute; stipe 4-6 in. long, about  $\frac{1}{4}$ th of an inch in thickness. This species is readily distinguished by its persistent reddish-brown scales upon the pileus and lower part of the stipe.

3. *C. VARIEGATUS*, Peck. Pileus fleshy, thin fragile, oblong-ovate then campanulate, obtuse, hygrophanous, pale watery brown when moist, whitish or cream-color when dry, variegated by scales or patches of a superficial ochraceous tomentum; the margin finely striate. Stipe equal, brittle, hollow, white, at first peronate-annulate, then floccose pruinose. Lamellæ lanceolate, free, white then rosy-brown, finally black. Spores somewhat elliptic,  $.0083 \times .0056$  mm.

On old logs and on the ground in damp woods. Densely cæspitose; pileus 1-2 in. in diameter, and the same in height, stipe 3-5 in. long, and  $\frac{1}{4}$   $\frac{1}{2}$  an inch thick. When young the whole plant is coated by an abundant superficial floccose tomentum: this soon breaks up into loose scales or patches which peel off in flakes.

*b. Pileus covered with minute scales.*

4. *C. ATRAMENTARIUS*, Bull.—Pileus somewhat fleshy, ovate expanded, the vertex spotted with innate scales. Stipe hollow, firm, zonate within; the annulus abrupt, fugacious. Lamellæ free, ventricose, at first white, then purplish brown, at length blackish. Spores elliptic  $.009 \times .005$  mm.

About old stumps and on rich soil along country paths and roads. In dense groups, cæspitose. Pileus  $1\frac{1}{2}$   $2\frac{1}{2}$  in. in height, expanding to 3 in. or more; stipe 3-6 in. long, and nearly  $\frac{1}{2}$  an inch thick. The young plant obese, cheesy-soft, the pileus rugose-plicate, lacunose and lobed; when fully grown, the pileus even, white-cinereous, with brown scales.

5. *C. FUSCESCENS*, Schæff.—Pileus somewhat membranaceous, ovate-expanded, not polished; the disk a little fleshy, even or rimose, scaly. Stipe hollow, equal, fragile, somewhat fibrillose, scarcely annulate. Lamellæ attached,umber black. Spores oblique, apiculate,  $.010 \times .006$  mm.

Upon trunks of oak, ash, willow. Pileus about 2 in. in diameter

stipe 3 in. long, and  $\frac{1}{4}$  of an inch or less in thickness. Smaller than *C. atramentarius*, thinner, at first more nearly equal; the pileus brownish-gray; the disk reddish, not sprinkled with sparkling atoms, but at first somewhat pruinose.

6. *C. insignis*, Peck.—Pileus campanulate, thin, sulcate-striate to the disk, grayish fawn-color, the smooth disk sometimes cracking into small areas or scales. Stipe hollow, slightly fibrillose, striate, white. Lamellæ ascending crowded. Spores elliptic, rough,  $.010 \times .007$  mm.

About the roots of trees in woods. Solitary (?) pileus 2-4 in. in diameter; stipe 4-5 in. long, and  $\frac{1}{4}$  in. thick. This species is remarkable for its rough spores. In size and general appearance it bears some resemblance to *C. atramentarius*.

*B. Stipe not annulate.*

*c. Pileus floccose, tomentose or villous.*

7. *C. niveus*, Pers.—Pileus somewhat membranaceous, oval then campanulate and explanate, covered with a dense, white, floccose-scaly, somewhat persistent villosity. Stipe hollow, equal, villous, white. Lamellæ somewhat adnate, narrow, becoming black. Spores oval,  $.012 \times .010$  mm.

Common on dung-heaps, especially of horse-manure. Pileus  $\frac{1}{2}$ -1 in. in diameter, stipe 3-5 in. in height. Margin of the pileus very thin and delicate, at length rolled back. Clearly distinguished by the adnate lamellæ.

*d. Pileus strewn with sparkling atoms.*

8. *C. micaceus*, Bull.—Pileus somewhat membranaceous, oval then campanulate, somewhat repand, striate, tawny-ferruginous, discoid, strewn with glittering fugacious granules, soon naked, rimose-sulcate. Stipe hollow, silky-even, whitish. Lamellæ attached, lanceolate, at first whitish, then brown to the middle, at length becoming black. Spores oblique, apiculate,  $.0076 \times .0066$  mm.

Upon the ground and about old stumps; very common from early spring till late in autumn, and even in the mild moist weather of winter. Pileus  $\frac{3}{4}$ -1 in. in diameter, expanding to  $1\frac{1}{2}$  2 in.; stipe 2-5 in. high and  $\frac{1}{4}$  of an inch or less in thickness. Pileus often more or less irregular from the densely crowded mode of growth, the stipes from mutual pressure often angulate.

9. *C. semilanatus*, Peck.—Pileus somewhat membranaceous, broadly conical, then expanded and strongly revolute, farinaceo-atomaceous,

finely and obscurely rimose-striate, pale grayish brown. Stipe elongated, fragile, hollow, slightly tapering upward, white, the lower half clothed with loose cottony flocci which rub off easily, the upper half smooth or slightly farinaceous. Lamellæ narrow, close, free. Spores oval or somewhat oblique, apiculate,  $.012 \times .010$  mm.

On rich ground and manure. Pileus  $\frac{3}{4}$ -1 in. in diameter, expanding to  $1\frac{1}{2}$ - $1\frac{3}{4}$  in.; stipe 3-5 in. long, and less than  $\frac{1}{4}$  of an inch thick. Gregarious and cæspitose, very fragile.

10. *C. PULCHRIFOLIUS*, Peck.—Pileus membranaceous, conical or campanulate, striate to the small even yellowish disk, cinereous, strewn with minute whitish scales or granules. Stipe slender, fragile, hollow, white. Lamellæ narrow, crowded, free, white then cinnamon-brown. Spores elliptic, brown with a slight rosy tinge,  $.0070 \times .0056$  mm.

On the ground among the old leaves in woods. *Solitary*; pileus  $\frac{3}{4}$ -1 in. in diameter, and  $\frac{3}{4}$ -1 in. in height; stipe 2-3 in. high, and  $\frac{1}{4}$  of an inch or less in thickness at the base. This is a very singular and beautiful little plant growing solitary in the woods. According to Prof. Peck it is scarcely a *Coprinus*, because the lamellæ are not deliquescent, but it has no place among either the black or brown-spored *Agarics*, and therefore for the present is placed in the genus *Coprinus*.

TRIBE II.—VELIFORMES.—Pileus extremely thin, at length splitting along the back of the lamellæ, plicate-sulcate. Stipe slender, hollow. Lamellæ dissolving into fine lines.

*a. Lamellæ free from the stipe.*

11. *C. NYCTHEMERUS*, Fr.—Pileus very tender, at first conic-cylindric, furfuraceous-floccose, soon splitting, explanate, radiate-plicate, naked, forked-striate, gray, the disk brown. Stipe flaccid, glabrous. Lamellæ free, narrow, at length remote.

Upon manured land. Pileus, at first  $\frac{1}{3}$  of an inch in height; afterward expanding to  $\frac{1}{2}$  an inch or more in diameter. Stipe becoming pale.

12. *C. RADIATUS*, Bolt.—Very small. Pileus very tender, clavate then campanulate, cinereous-tomentose, soon splitting, radiate-plicate, yellowish, the disk reddish. Stipe filiform, hyaline, becoming glabrous. Lamellæ free, few, pallid blackish. Spores  $.0076 \times .0050$  mm.

On manure, very common in green houses, in the pots among the

plants. Pileus  $\frac{1}{4}$  of an inch or less in breadth, stipe 1-3 in. high. One of the most tender, fugacious, with a flaccid habit.

b. *Lamellæ attached to the stipe or to a distinct collar.*

13. C. *PLICATILIS*, Curt.—Pileus very tender, oval-cylindric then campanulate, soon expanded and splitting, sulcate plicate, nearly glabrous, brown then lavender-cinereous; the disk broad, even, at length depressed, darker. Lamellæ attached to a collar remote from the stipe, gray-blackish.

On the moist earth along paths in fields and woods. Pileus  $\frac{1}{2}$ -1 in. broad, the stipe 1-3 in. high. Extremely fugacious; disappearing with the rising sun; pileus at length plane, nearly naked, umbilicate, gray, yellowish-brown in the center; stipe very slender, fragile, smooth, gray, tinged with brown, sometimes white, hollow.

GENUS III.—*BOLBITIUS*, Fr.

Hymenophore somewhat discrete; lamellæ membranaceous, soft, liquescent, pulverulent from the seceding spores. Spores ovate, even, somewhat ferruginous.

1. B. *TITUBANS*, Bull.—Pileus membranaceous, ovate-campanulate, afterward split and explanate, yellow, discoid. Stipe slender, straight, yellowish, shining. Lamellæ slightly attached, pallid then becoming purplish or fleshy-brown. Spores salmon-color, elliptic,  $.008 \times .004$  mm.

On manure in woodlands. Pileus 1-2 in. in diameter, stipe 3-5 in. long. Pileus very delicate and tender at length almost deliquescent. This is the only species that has yet been found in our region; I found it in July, 1882, and have the figure of the only specimen.

GENUS IV.—*CORTINARIUS*, Fr.

Veil cobwebby, discrete from the cuticle of the pileus, superficial. Hymenophore contiguons with the stipe; lamellæ persistent dry, changing color, pulverulent from the slowly seceding spores; trama fibrillose. Spores on white paper somewhat ochraceous.

Fungi terrestrial, putrescent, growing in woods.

*Note.*—The individuals as well as the species of this vast genus are extremely limited in number in the Miami Valley. I have been able to make scarcely any additions to the very few species enumerated by Mr. Lea. I have figures of a few species as yet undetermined. Specimens are so scarce that it is difficult to meet with the different stages of growth.

## A. Pileus viscid.

a. Stipe not marginate-bulbous, 1.

b. Stipe marginate-bulbous, 2, 3.

## B. Pileus dry, 4, 5.

A. *Pileus viscid.*a. *Stipe not marginate-bulbous.*

1. *C. varius*, Schaef.—Pileus compact, hemispheric-explanate, even, viscid, discoid; the margin glabrous; the flesh white. Stipe solid, short, conic, appressed-flocculose; whitish. Lamellæ emarginate, close, entire, purplish then argillaceous-cinnamon.

In woods, in autumn. Pileus 2 in. and beyond in breadth, stipe  $1\frac{1}{2}$ - $2\frac{1}{2}$  in. long,  $\frac{1}{2}$  an inch thick above, 1 in. and beyond below. Pileus equal, not plainly virgate, encrusted, ferruginous-tawny, fibrillose-appendiculate around the margin; stipe within at length cinerascens not yellowish.

b. *Stipe marginate-bulbous.*

2. *C. calochrous*, Weinm.—Pileus fleshy, convexo-explanate, glabrous, viscid, unchangeable; the flesh compact, white. Stipe solid, equal, fibrillose, white-yellowish; the bulb with a distinct margin. Lamellæ emarginate, close, serrate, blue purplish.

In open beech woods. Pileus 3-4 in. across; stipe 1-3 in. high, 1 in. thick. Pileus commonly tawny, luteous around the margin, often spotted or soiled with dirt; the margin thin, involute, sometimes flexuous, not bent inward. Stipe equal, short, without any bluish color.

3. *C. caeruleus*, Fr.—Pileus fleshy, convex, explanate, viscid. Stipe solid, tapering upward, naked, blue changing to white; the bulb marginate. Lamellæ attached, close, entire, at first pure dark blue.

In hilly woods. Pileus  $2\frac{1}{2}$ -3 in. broad, stipe 3 in. high. The young plant sometimes all blue; pileus commonly argillaceous or brownish-yellow, when dry somewhat fibrillose; the flesh preserves its intense blue color when broken; the lamellæ change to purple and at length to cinnamon; there is scarcely any odor.

B. *Pileus dry.*

4. *C. violaceus*, Linn.—Dark violaceous. Pileus fleshy, obtuse, villous scaly. Stipe bulbous, spongy, villous, violaceous-cinereous within. Lamellæ attached, broad, thick, distant, darker.

In woods. Pileus 4 in. or more in diameter, stipe 4 in. high. Showy, inodorous and all of one color. Lamellæ when young deep violet, almost black.



5. *C. ALBO-VIOLACEUS*, Pers.—Pileus fleshy, silky with innate fibrils, at length gibbous, violaceous-whitish. Stipe clavate, somewhat annulate, violaceous, whitish. Lamellæ attached, rather distant, serrulate, at first cinereous-violaceous.

In woods. Pileus 2-3 in. broad, stipe 3-4 in. high. Inodorous, the stipe being violet above and white below the obscure annulus, sometimes appears as if sheathed with a white silky covering; flesh juicy, blue-white.

#### GENUS V.—PAXILLUS, Fr.

Hymenophore contiguous with the stipe, decurrent. Lamellæ membranaceous, easily split, somewhat branched and anastomosing behind, discrete from the hymenophore and easily separating from it.

##### *a. Pileus entire, the stipe central.*

1. *P. FLAVIDUS*, Berk.—Pileus fleshy, plane then depressed, somewhat tomentose; the margin thin, involute, even or somewhat repand. Stipe solid, tough, curved and crooked, tapering downward. Lamellæ long-decurrent, thin, sparingly branched, connected by veins, bright yellow. Spores sordid, somewhat fusiform, .010×.005 mm.

On hillsides in woods. Pileus 2-3 in. across, stipe 1½-2 in. long. Pileus reddish, brownish or alutaceous, more or less tomentose and soft to the touch; stipe yellowish or reddish. This is one of Mr. Lea's new species; it is quite common on the wooded bluffs about Cincinnati. It is readily known by its bright yellow decurrent lamellæ.

##### *b. The stipe excentric or lateral.*

2. *P. POROSUS*, Berk.—Pileus fleshy, excentric, irregular, somewhat reniform, reddish or yellowish-brown, somewhat tomentose or glabrous. Stipe short excentric or lateral, curved, more or less reticulated by the decurrent pores. Hymenium bright yellow, porous, formed by numerous thin radiating folds which are crossed by other narrower folds so as to form large angular pores. Spores bright yellow.

On the ground in woods. Pileus 2-5 in. in diameter, a half to an inch thick; stipe 1½ in. or less in length. This is a very curious species closely allied to *Boletus*. It is liable at the first glance at the hymenium to be taken for a *Boletus*, but the pores are not easily separable from each other. It has a rather leathery feeling and appearance though quite fleshy. I have not observed the disagreeable odor that Mr. Berkeley speaks of.

3. *P. PANUOIDES*, Fr.—Pileus fleshy, dimidiate, conchate, downy

then glabrous, produced behind, sessile or resupinate, sordid luteous. Lamellæ decurrent, close, branched, crisped, luteous. Spores sordid, somewhat oblong,  $.0050 \times .0035$  mm.

Growing on a rotten log in a piece of woods near Fairmount, Cincinnati; the specimens grew in the same place from early spring till late in autumn. Pileus 1-2 in. broad and about the same length, more or less lobed about the margin. Although not fitting the description perfectly, yet it comes so near that there does not seem enough difference to make a new species.

#### GENUS VI.—HYGROPHORUS, Fr.

Hymenophore contiguous with the stipe, and descending unchanged into the trama. Lamellæ with the edge acute; the hymenium changing into a waxy mass. Spores white. Fungi terrestrial.

A. Veil universal, viscid, 1, 2.

B. Veil none, plant fragile.

a. Lamellæ not ventricose, 3, 4.

b. Lamellæ ventricose, 5-7.

A. *Veil universal, viscid.*

1. *H. LAURÆ*, n. sp.—Pileus fleshy, convex and umbonate, then expanded and depressed, more or less irregular, glutinous, white clouded with a reddish or brownish tinge especially on the disk. Stipe solid, more or less curved or crooked, tapering downward, yellowish-white; the apex scabrous with scaly points. Lamellæ unequally adnate decurrent, distant, white. Spores pellucid, elliptic, apiculate,  $.0083 \times .0055$  mm. (See Plate IX.)

Growing in rich soil among the leaves in hilly woods. Pileus 2-4 in. broad, stipe 2-4 in. long and  $\frac{1}{2}$  an inch thick. This is a much larger plant than *H. chburneus*, has a wash of red or brown upon the disk, and is covered with a thick gluten. It is more like *H. cossus*, but has no odor.

2. *H. FIBERSEI*, Bull.—Pure white. Pileus fleshy, convex then plane, even, viscid, the margin soon naked. Stipe stuffed then hollow, unequal, viscid, scabrous at the apex with scaly points. Lamellæ decurrent, distant, straight, firm. Spores  $.0056 \times .0043$  mm.

In woods, common. Pileus 2-3 in. broad, shining when dry; stipe at length hollow, various in stature, flexuous in elongated specimens. Odor and taste pleasant

## B. Veil none, plant fragile.

## a. Lamellæ not ventricose.

3. H. CERACEUS, Wulf.—Fragile. Pileus thin, convexo-plane, obtuse, a little striate, viscid, waxy, shining. Stipe hollow, unequal, waxy, shining. Lamellæ adnate, somewhat decurrent, distant, broad, almost triangular, yellow. Spores  $.0065 \times .0046$  mm.

In many places in meadows and pastures. Pileus about 1 inch broad, stipe 2-3 in. long. Stipe often flexuous, afterward compressed, of the same color as the pileus at the apex, paler at the base. Lamellæ very broad,  $\frac{3}{4}$  of an inch, connected by veins.

4. H. COCCINEUS, Schæff.—Fragile. Pileus thin, convex, obtuse, glabrous, scarlet then expallent. Stipe hollow, compressed, yellowish, scarlet above. Lamellæ adnate, decurrent by a tooth, venose-connected, variously colored. Spores  $.0068 \times .0040$  mm.

In meadows and pastures. Pileus 1-2 in. broad, stipe 1-2 in. long. An elegant plant; pileus unequal, soft, at length yellowish. Lamellæ when mature purple at the base, yellow in the middle, the edge glaucous.

## b. Lamellæ ventricose.

5. H. PUNICEUS, Fr.—Fragile. Pileus thin, campanulate, obtuse, repand, even, viscid, scarlet then expallent. Stipe hollow, thick, ventricose, striate, the base white. Lamellæ slightly attached, thick, distant, yellow.

In meadows and pastures. Pileus 2-4 in. in diameter; stipe about 3 in. long,  $\frac{1}{2}$ -1 in. thick, attenuated both ways.

6. H. CONICUS, Scop.—Fragile. Pileus somewhat membranaceous, conic, acute, glabrous, often lobed, at length expanded and rimose. Stipe hollow, cylindric, fibrose-striate. Lamellæ attenuate-free, ventricose, thin, rather close. Spores  $.010 \times .006$  mm.

In wet places in woods. Pileus 1-2 in. high, acutely conic, variously waved and lobed; stipe 3-4 in. long. The whole plant turns black when broken or bruised; its colors are various orange, yellow, scarlet, etc., often blended together.

7. H. CHLOROPHANUS, Fr.—Fragile. Pileus somewhat membranaceous, convex, obtuse, somewhat lobed, striate, viscid. Stipe hollow, equal, even, viscid. Lamellæ attached, ventricose, thin, rather distant, whitish.

Amongst grass and mosses. Pileus about an inch in diameter, commonly bright sulphur-yellow; stipe 2-3 in. long, smooth, viscid when moist, shining when dry, yellow; lamellæ emarginate-free at

first white or yellow. Its external appearance is almost that of *H. ceraceus*.

GENUS VII.—LACTARIUS, Fr.

Hymenophore contiguous with the stipe. Lamellæ unequal, membranaceous-waxy, rather rigid, containing a milky juice, the edge acute. Spores globose, white or sometimes yellowish. Fungi terrestrial.

- A. Lamellæ unchanged, milk at first white.
  - a. Pileus tomentose, 1, 2.
  - b. Pileus viscid, 3-5.
  - c. Pileus dry, 6-8.
- B. Milk colored from the first, 9.
- C. Lamellæ changing color, milk at first white.
  - d. Pileus viscid, 10, 11.
  - e. Pileus tomentose, 12.
  - f. Pileus dry, glabrous, 13-15.

A. *Lamellæ not changing color, milk white.*

a. *Pileus viscid when wet, the margin at first involute and tomentose.*

1. *L. SCRUBICULATUS*, Scop. Pileus fleshy, depressed, not zonate, luteous; the margin involute, bearded. Stipe hollow, ample, scrobiculate-spotted. Lamellæ thin, close, whitish; milk white changing to sulphur.

In moist woods. Pileus 3-5 in. broad, stipe 2-3 in. high, and about 1 in. thick. This species is readily recognized by its spotted stipe and the milk of the lamellæ promptly assuming a sulphur hue.

2. *L. CILIIFORMES*, Fr.—Pileus fleshy, soft, depressed, tomentose, not zonate, reddish buff; the margin fibrillose-woolly. Stipe stuffed, even pruinose, silky, not spotted, pallid. Lamellæ close, somewhat branched, pallid; milk acid, whitish.

In woods. Pileus 2-4 in. broad, stipe 1½-2 in. high, and ½-1 in. thick. The pileus is downy becoming fibrillose on the margin; the flesh is yellowish-white; the milk is sparse with a yellowish tinge.

b. *Pileus viscid when wet, pelliculose, the margin naked.*

3. *L. AFFINIS*, Peck.—Pileus fleshy, viscid, glabrous, depressed, pale ochraceous-yellow. Stipe equal, smooth, stuffed then hollow, concolorous. Lamellæ close, some of them forked, yellowish-white; the milk white acid. Spores white.

In woods and pastures. Pileus 3-4 in. broad, stipe about 2 in. long,

and 1 in. thick. The specimens I find appear to be nearer Prof. Peck's species than anything else; they are not zonate, and the stipe is commonly spotted.

4. *L. ZONARIUS*, Bull.—Pileus compact, umbilicate, even, viscid, with yellowish zones; the margin involute, naked. Stipe solid, short, elastic, even, yellowish. Lamellæ close, thin, whitish; milk white, acrid. Spores white, minutely echinulate, almost globose, .007 mm. in diameter.

In grassy woods. Pileus 2-3 in. broad, stipe  $1\frac{1}{2}$  in. high. Margin of the pileus always declined, and more or less flexuous; the stipe never spotted; the flesh white, unchanged and very compact.

5. *L. TRIVIALIS*, Fr.—Pileus fleshy, depressed, viscid, not zonate, lurid, expallent. Stipe hollow, stout. Lamellæ thin, close, white; the milk acrid, white. Spores white.

In hilly woods. Pileus 4-6 in. broad, stipe 2-4 in. long, and 1 in. thick. The pileus is of a dark color, sometimes with a tinge of flesh-color; the stipe is nearly white.

*c. Pileus dry, generally unpolished.*

6. *L. PERGAMENUS*, Fr.—White. Pileus fleshy, tough, convex, then plano-depressed, repand, not zonate, rugulose, glabrous. Stipe stuffed glabrous, changing color. Lamellæ adnate, very narrow, horizontal, crowded, branched, white, then straw-color; milk acrid, white.

In woods. Pileus 3-5 in. broad, stipe  $1\frac{1}{2}$ -3 in. long. Very similar to the next species, but the stipe longer, the pileus thinner and the lamellæ not arcuate.

7. *L. PIPERATUS*, Scop.—White. Pileus compact, umbilicate, then infundibuliform, nearly regular, not zonate, even, glabrous. Stipe solid, thick, very short. Lamellæ decurrent, close, arcuate, then ascending, narrow, dichotomous; milk abundant, acrid white.

In woods. Pileus 3-5 in. in diameter, stipe about 1 in. long. Milk very hot and peppery. Pileus generally quite infundibuliform; stipe very short and thick.

8. *L. VELLEREUS*, Fr.—White. Pileus compact, convex-umbilicate, tomentose, not zonate, the margin reflexed. Stipe solid, thick, pubescent. Lamellæ decurrent, distant, arcuate; milk scarce, white, acrid.

In woods. These three species may all be found together in the same woods; they are thought by some to be merely varieties of one and the same species; they are very much alike in their general appearance.

*B. Milk colored from the first.*

9. *L. DELICIOSUS*, Linn.—Pileus fleshy, convex, umbilicate, viscid, zonate, glabrous, somewhat orange-color, expallent, the margin glabrous. Stipe stuffed, then hollow, spotted. Lamellæ somewhat decurrent, saffron-color, but expallent and greenish when wounded; the milk aromatic, saffron-red.

In damp woods. Pileus 3-4 in. broad, stipe  $1\frac{1}{2}$ -3 in. long. The whole plant abounds with orange milk, and when bruised or old exhibits stains of green.

*C. Lamella pallid then changing to a darker color, finally white-pruinose; milk white.**d. Pileus viscid from the first.*

10. *L. CINEREUS*, Peck.—Pileus fleshy, at length expanded, centrally depressed, usually umbilicate, glabrous, viscid, light gray, with the disk sometimes a little darker. Stipe tapering upward, stuffed, concolorous. Lamellæ close white; the milk white acrid.

In woods. Pileus  $1\frac{1}{2}$ -3 in. broad, stipe 2-4 in. long. This seems to be a larger plant than Prof. Peck's, and I often find the pileus zonate, yet it does not seem to me to differ sufficiently to make a new species.

11. *L. VIETUS*, Fr.—Pileus fleshy, thin, at first somewhat umbonate, viscid, afterward appanate, umbilicate, even, not zonate, when dry finely silky, expallent. Stipe stuffed then hollow, fragile, livid. Lamellæ somewhat decurrent, thin, whitish; milk at first white then changing to gray, tardily acrid.

In humid woods. Pileus 2-4 in. broad, stipe 2-3 in. high. A very distinct species, thin, soft, fragile and various in form; the pileus sometimes infundibuliform, flesh-color or livid then gray.

*e. Pileus scaly, villous or pruinose.*

12. *L. DISTANS*, Peck.—Pileus fleshy, firm, convex or expanded, depressed, pruinose-tomentose, yellowish-tawny. Stipe very short, solid, firm, equal or tapering downward, pruinose, nearly of the color of the pileus. Lamellæ distant, somewhat arcuate, white or yellowish; milk white, mild.

In grassy ground. Pileus 2-4 in. broad, stipe 1-2 in. high. The pileus is sometimes irregular and excentric, and the cuticle often cracks into areas.

*f. Pileus polished, glabrous.*

13. *L. VOLEMUS*, Fr.—Pileus fleshy, compact, rigid, plano-depressed,

obtuse, dry, glabrous, golden-tawny, at length rimose-rivulose. Stipe solid, hard, thick, pruinose. Lamellæ decurrent, close, white then yellowish; milk abundant, sweet, white.

In woods, common. Pileus 3-4 in. broad, stipe  $2\frac{1}{2}$ - $3\frac{1}{2}$  in. long. Stipe irregular, tapering downward; milk sometimes yellowish; lamellæ becoming brownish on being bruised.

14. *L. SUBDULCIS*, Bull.—Pileus fleshy, thin, papillate, at length depressed, even, glabrous, not zonate, dry, reddish. Stipe stuffed then hollow, equal, somewhat pruinose, reddish. Lamellæ adnate, close, paler; milk white, rather mild.

In woods, common. Pileus 2-4 in. broad, stipe  $1\frac{1}{2}$ - $2\frac{1}{2}$  in. long. The whole plant is commonly a dark reddish color.

15. *L. CALCEOLUS*, Berk.—Pileus thin, depressed, brown-buff, the margin repand, the epidermis rimose. Stipe short concolorous. Lamella very few, distant, venose-connected, decurrent, white; milk white, mild.

“On the ground in woods, Waynesville,” Lea. Pileus about 3 in. across, stipe “half an inch in height and thickness.” Flesh white. An exceedingly curious species. The pilei in all the specimens found by Mr. Lea were “laterally confluent.”

#### GENUS VIII.—*RUSSULA*, Pers.

Hymenophore descending unchanged into the vesiculose trama. Lamellæ rigid, fragile, the edge acute. Spores round, often echinulate, white or yellowish. Fungi terrestrial.

A. Margin of the pileus not striate.

a. Lamellæ forked, 1, 2.

b. Lamellæ mixed, 3-5.

B. Margin of the pileus at length striate.

c. Lamellæ unequal, 6, 7.

d. Lamellæ equal, 8-10.

A. *Pileus compact, firm, the margin never striate.*

a. *Lamellæ mostly forked.*

1. *R. FURCATA*, Pers.—Mild, at length bitter. Pileus fleshy, rigid, gibbous plane then depressed and infundibuliform, even, with a silky luster, then becoming glabrous; the margin even, acute. Stipe stout, firm, even, tapering downward, white. Lamellæ adnate-decurrent, rather thick, somewhat distant, forked, white.

In woods, common. Pileus 4-5 in. in diameter, the stipe 3-4 in.

long, and about an inch thick. The pileus is commonly of a greenish hue, but sometimes brownish. The distinguishing feature is the many forked lamellæ. It is considered poisonous.

2. *R. SORDIDA*, Peck.—Pileus firm, convex, centrally depressed, dry, sordid white, sometimes clouded with brown. Stipe equal, solid, concolorous. Lamellæ close, white, some of them forked. Spores globose, .0076 mm. in diameter.

On the ground under beech trees in hilly woods. Pileus 3-5 in. broad, stipe 4-5 in. long, and  $\frac{1}{2}$ -1 in. thick. The taste is acrid, and the flesh changes color when bruised, becoming black or bluish-black; the whole plant turns black in drying. In its general appearance it resembles *Lactarius piperatus*, Scop.

*b. Lamella broadest and rounded at the apex, short and forked, mixed with the others.*

3. *R. LACTEA*, Pers.—Mild, milk-white. Pileus fleshy, compact, unpolished then rivulose; the margin straight, thin, obtuse, even. Stipe solid, compact, thick. Lamellæ free, thick, distant, rigid, some of them forked.

On the ground in beech woods. Pileus about 2 in. broad, stipe 1 $\frac{1}{2}$ -2 in. long, and 1-1 $\frac{1}{2}$  in. thick. The pileus is at first white, campanulate, dry; afterward it becomes alutaceous-white, a little rimose, convex-depressed and often excentric; lamellæ at length adnate, very broad, forked at base and apex.

4. *R. VIRESCENS*, Schæffl.—Mild. Pileus fleshy, firm, globose then expanded and umbilicate, innate-flocculose or areolate-verrucose; the margin straight, obtuse, even. Stipe spongy-solid, stout, somewhat rivulose, whitish. Lamellæ free, rather crowded, unequal, forked, whitish.

In woods. Pileus 3-4 in. broad, stipe 1-2 in. long. Pileus often unequal, always dry, the cuticle breaking up into areas, of a greenish hue, sometimes tinged with yellow or purple.

5. *R. LEPIDA*, Fr.—Mild. Pileus fleshy, compact, convex, then depressed, unpolished, silky or rimose-scaly, exspallent; the margin patent, obtuse, not striate. Stipe solid, compact, even, white or rose-color. Lamellæ rotundate, rather thick, close, many of them forked, white.

In beech woods. Pileus about 3 in. broad, stipe 3 in. long, and 1 in. thick. Pileus rosy-red, the disk becoming whitish.



*B. Pileus fleshy, the margin at length commonly striate or sulcate.*

*c. Lamellæ with short and forked ones intermingled with the longer.*

6. *R. INCARNATA*, n. sp.—Mild. Pileus fleshy, firm then very fragile, convexo-umbilicate then expanded and depressed, moist, sordid-flocculose; the margin acute, not striate; the flesh thin, white. Stipe solid, nearly equal, white. Lamellæ adnate, distant, broad, the alternate ones dimidiate or mostly very short, white then pale flesh-color. Spores white, oblique, apiculate, smooth,  $.008 \times .0055$  mm.

On the ground under beech trees. July, August. Pileus 3-4 in. in diameter, stipe about 2 in. long, and  $\frac{3}{4}$  of an inch thick. The pileus is at first of a sordid color, brownish on the disk. The whole plant when mature takes on a sordid fleshy hue and becomes exceedingly fragile.

7. *R. FÆTENS*, Pers.—Acrid, fetid. Pileus bullate, then expanded and depressed, rigid; the cuticle adnate, viscid; the disk fleshy; the margin broadly membranaceous, at first inflexed, tuberculose-sulcate. Stipe stout, stuffed, then hollow, whitish. Lamellæ attached, very unequal and forked, venose anastomosing, whitish, at first exuding drops of water.

In woods common. Pileus 4-5 in. in diameter, stipe 3-4 in. long, and about 1 in. thick. Generally rancid and stinking, but sometimes fragrant; pileus of a dirty yellow; lamellæ white or yellowish, sordid when bruised.

*d. Lamellæ almost all of the same length and simple.*

8. *R. DECOLORANS*, Fr.—Mild. Pileus fleshy, firm, spheric then expanded or depressed, polished; the cuticle thin, expallent; the margin thin, even. Stipe spongy-solid, elongated, cylindric, rugose-striate, white changing to cinereous. Lamellæ attached, forked, thin, close, white then yellowish. Spores white then yellow,  $.0083$  mm.

In woods. Pileus 3-4 in. broad, stipe 3-4 in. long. Pileus of a uniform color, orange-red then yellow and expallent; when fully grown the margin is striate.

9. *R. NITIDA*, Pers.—Nauseous, rather fetid. Pileus a little fleshy, becoming rigid, convexo-plane then depressed, shining, discoid; the margin thin, from the first striate and tuberculose; the flesh white. Stipe stuffed, soft, white-pallid. Lamellæ attached and seceding, thin, close, white then yellow, naked, shining. Spores white then yellow.

In woods. Pileus 1-2 in. broad, stipe 1-2 in. long and  $\frac{1}{2}$  an inch thick. Rather small, rigid-fragile, often unequal. Pileus commonly

from dilute or sordid purplish becoming yellowish, often plicate-striate to the middle.

10. *R. LUTEA*, Vent.—Mild. Pileus a little firm, plano-depressed; the cuticle viscid, expallent; the flesh white; the margin even. Stipe stuffed then hollow, soft, white. Lamellæ narrow, free, close, venose-connected, egg-yellow. Spores yellow.

In beech woods. Pileus  $1\frac{1}{2}$ - $2\frac{1}{2}$  in. broad, stipe 1- $1\frac{1}{2}$  in. long. An elegant plant; pileus from a beautiful yellow becoming pale. The plant I have so referred has the lamellæ at first white and the stipe yellow like the pileus; it may be a new species.

*Note*.—The *Russulæ* form a very natural assemblage related to *Lactarii*, but differing from them in the absence of the milky juice. But various *Russulæ* exude drops of water, especially in wet weather. The species are quite difficult of determination, particularly on account of their variable colors.

#### GENUS IX.—*CANTHARELLUS*, Adans.

Hymenophore contiguous with the stipe, descending unchanged into the trama. Lamellæ thick, fleshy-waxy, in the form of folds, somewhat branched, the edge obtuse.

##### *a. Plant egg-yellow.*

1. *C. CIBARIUS*, Fr.—Egg-yellow. Pileus fleshy, firm, at first repand, glabrous, at length turbinate. Stipe solid, tapering downward. Lamellæ thick, distant, concolorous. Spores white, oval,  $.0076 \times .0050$  mm.

In woods. Pileus 1-3 in. broad, stipe 1-2 in. long, and about  $\frac{1}{2}$  an inch thick. This is the famous Chantrelle, esteemed as a delicacy from the most ancient times. It is not common with us; but is occasionally met with along with its not distant relative *Craterellus lateritius*, Berk. The latter is distinguished from the former by the hymenial surface being even or merely wrinkled, not lamellose.

2. *C. MIXOR*, Peck.—Pileus fleshy, thin, convex, then expanded and depressed, egg-yellow. Stipe slender, subflexuous, equal, smooth, stuffed or hollow, concolorous. Lamellæ very narrow, distant, sparingly branched, yellowish. Spores white,  $.007 \times .004$  mm.

On the ground in open woods. Pileus 1-2 in. broad, stipe 1-2 in. long. My specimens are rather of a brownish yellow. The pileus is much thinner, and the stipe more slender than in *C. cibarius*; the two are clearly distinguishable.

*b. Plant orange or red.*

3. *C. AURANTIACUS*, Wulf.—Nearly orange color. Pileus fleshy, soft, depressed, somewhat tomentose. Stipe stuffed, unequal. Lamellæ close, straight, dichotomous, of a rather deeper color. Spores white.

In woods. Pileus 2-3 in. broad, stipe 2 in. long. This species is distinguished by its straight and crowded dark orange lamellæ.

4. *C. CINNABARINUS*, Schw.—Cinnabar-red. Pileus plane, then depressed or somewhat infundibuliform, glabrous; the margin inflexed and more or less irregular. Stipe solid, curved or crooked, unequal, glabrous. Lamellæ rather thick, distant, decurrent. Spores cinnabar-red, oblique, .0083×.0056 mm.

Very abundant in summer. Growing on hillsides in woods. Pileus  $\frac{3}{4}$ -1 $\frac{1}{2}$  in. in diameter, stipe 1-2 in. long. The whole plant together with its spores is a bright cinnabar color. Inside the flesh is white. This beautiful plant was first found in Carolina, by the celebrated De Schweinitz; he says it is common also in Pennsylvania. I am indebted for a copy of the description to Mr. W. C. Stevenson, of the Academy of Sciences, Philadelphia.

GENUS X.—MARASMIUS, Fr.

Fungi tough, dry, marcescent, reviving when wet. Lamellæ tough, the edge acute and entire.

1. *COLLYBIA*.—Pileus fleshy-tough, at length coriaceous; the margin at first involute. Stipe somewhat cartilaginous; the mycelium floccose.

A. Stipe solid or stuffed, villous.

a. Stipe strigose at the base, 1, 2.

b. Stipe naked at the base, 3, 4.

B. Stipe hollow, rooting.

c. Stipe woolly below, glabrous above, 5, 6.

d. Stipe velvety or pruinose, 7, 8.

C. Stipe short, insititious.

e. Stipe glabrous, shining, 9, 10.

f. Stipe velvety or pruinose, 11, 12.

*A. Stipe solid or stuffed, fibrous within, the external cartilaginous cuticle villous.*

*a. Stipe woolly or strigose at the base.*

1. *M. URENS*, Bull.—Acrid. Pileus fleshy then coriaceous, convexo-explanate, glabrous, even, at length wrinkled or rivulose. Stipe

fibrous, solid, rigid, pallescent, mealy with white flocci and white-villous at the base. Lamellæ free, joined together behind, pale or yellowish changing to brownish, at length remote, distant, firm.

In woods on oak trunks and branches and on the leaves. Pileus  $\frac{3}{4}$ -1 $\frac{1}{2}$  in. in diameter, stipe 2-3 in. long. Stipe stuffed with crisp fibres, externally covered with subreticulate flocci. Pileus alutaceous or reddish.

2. *M. PERONATUS*. Bolt.—Acrid. Pileus coriaceo-membranaceous, convexo-plane, obtuse, opaque, at length lacunose; the margin striate. Stipe fibrous-stuffed, villous-corticate, yellow then reddish; the base peronate-strigose. Lamellæ attached-seceding, rather thin, somewhat crowded, pallid then reddish.

In woods, among the leaves. Pileus 1-2 $\frac{1}{2}$  in. broad, the stipe 2-3 in. high, and 2 lines thick. Stipe finally hollow and compressed; the villous cuticle seceding when rubbed; the tomentum at the base luteous or white. The younger pileus pale reddish, when fully grown alutaceous.

*b. Stipe naked at the base.*

3. *M. OREADES*, Bolt.—Somewhat fragrant. Pileus fleshy, tough, convex then plane, somewhat unbonate, glabrous, expallent. Stipe solid, equal; the cuticle villous-interwoven, pallid; the base naked. Lamellæ free, broad, distant, white-pallid.

Growing in circles and series throughout the summer. Pileus  $\frac{1}{2}$ -1 $\frac{1}{2}$  in. broad, the stipe 2-3 in. long. The pileus when wet reddish or tawny, and the margin striate, when dry cream color. This is the Champignon of Europe. It is not so abundant in this country, but may be observed growing gregariously in rich grassy lands throughout the summer. It withers up in the dry weather, reviving and flourishing with the rains. It is famous for the rich flavor it imparts to soups and gravies. When dried it may be kept for years without losing any of its aroma or goodness.

4. *M. PLANCUS*, Fr.—Mild. Pileus fleshy-tough, plano-depressed, obtuse, even, expallent. Stipe hollow, soon compressed; the cuticle white villous; the base somewhat tapering, naked. Lamellæ seceding-free, distant, linear, darker.

In woods, rare. Pileus about 1 in. broad, the stipe 2-3 in. long. The pileus somewhat repand, becoming reddish; stipe tough, twisted, compressed above, especially when thickened, pallid. Lamellæ brownish.

*B. Stipe rooting, definitely tubular, plainly cartilaginous.*

*c. Stipe woolly below, glabrous above.*

5. *M. PRASIOSMUS*, Fr.—Ill-scented. Pileus somewhat membranaceous, tough, campanulate-convex then explanate, obtuse, rugulose. Stipe hollow; above pallid, glabrous; below thickened, pallid then reddish or brown, somewhat tomentose. Lamellæ attached, rather close, white.

Upon leaves in oak woods. Pileus  $\frac{1}{2}$ -1 in. in diameter, the stipe 2-3 in. long and a line thick. The pileus whitish, the disk often darkened, the stipe tough, dilated at the base, incurved and adhering to the leaves; odor alliaceous, strong, persistent.

6. *M. FUSCO-PURPUREUS*, Pers.—Pileus a little fleshy, convexo-plane somewhat umbilicate, expallent. Stipe hollow, glabrous, dark purple; the base reddish-strigose. Lamellæ annulate-attached, at length free, distant, reddish.

In woods among the leaves of beech. Smaller when cæspitose, larger when simple. Pileus  $\frac{1}{2}$ -1 in. broad, stipe 1-3 in. long. Pileus dark purple when dry alutaceous.

*d. Stipe velvety or pruinose throughout.*

7. *M. PYRROCEPHALUS*, Berk.—Pileus a little fleshy, convex then plane, umbilicate, striate-plicate, red-brown. Stipe hollow, densely velvety, brown, pale at the apex. Lamellæ adnate, lax, rather distant, somewhat ventricose, white then pallid.

In woods, growing among leaves and on rotten wood. Pileus  $\frac{1}{2}$ -1 in. in diameter, the stipe 2-3 in. long. This is one of Mr. Lea's new species; my specimens agree perfectly except the size, but I judge by the concluding remark in Mr. Berkeley's description, that this is variable.

8. *M. ERYTHROPUS*, Fr.—Pileus a little fleshy, convex then plane, obtuse, even, growing pale, finally rugose. Stipe hollow, striate, glabrous, dark red, somewhat pruinose when dry; the base white-strigose. Lamellæ seceding-free, broad, lax, venose-connected, entire, whitish.

In beech woods, among the leaves and on trunks. Pileus  $\frac{1}{2}$ -1 in. broad, stipe  $1\frac{1}{2}$ - $2\frac{1}{2}$  in. long. Pileus varying in color, commonly white or pallid. Stipe firm, terete, paler at the apex; finally uniform in color, somewhat compressed, villous inside. Lamellæ loose, crisp, connected by veins.

*C. Stipe short, without a root, insititious (i. e. attached at the base by a tubercle or by flocci).*

*e. Stipe glabrous, shining.*

9. *M. CALOPUS*, Pers.—Pileus a little fleshy, tough, convexo-plane or depressed, even, at length rugose. Stipe hollow, equal, glabrous, shining, reddish-brown. Lamellæ emarginate-attached, thin, white.

Growing on sticks, the roots of grasses, etc. Pileus  $\frac{3}{4}$ -1 $\frac{1}{2}$  in. in diameter, the stipe 2-3 in. long. The younger pileus even, red-brown, soon changing to white.

10. *M. ANOMALUS*, Peck.—Pileus a little fleshy, tough, convex, even, reddish-gray. Stipe hollow, equal, glabrous, pallid above, red-brown below. Lamellæ rotundate-free, close, narrow, whitish or pallid.

Growing on sticks among leaves in woods. Pileus 1-2 in. broad, stipe 2-3 in. long. This is a very beautiful *Marasmius*; it grows quite large with us.

*f. Stipe velvety or pruinose.*

11. *M. FAGINEUS*, n. sp.—Pileus a little fleshy, convex then plane or depressed, at length somewhat repand, rugose-striate. Stipe short, hollow, pubescent, thickened upward; the base somewhat tuberculose. Lamellæ short-adsnate, somewhat crisped, close, pale-reddish.

Growing thickly over the bark at the base of living beech trees. Pileus  $\frac{3}{4}$ -1 $\frac{1}{2}$  in. broad, stipe  $\frac{1}{2}$ -1 in. long. Pileus reddish-pallid or alutaceous, the stipe of the same color, the lamellæ a little paler.

12. *M. OPACUS*, B. & C.—Whitish. Pileus a little fleshy, convex, rugulose, opaque, pulverulent. Stipe pulverulent, furfuraceous below. Lamellæ attached, distant, ventricose.

On leaves and twigs. Pileus 1-2 in. across, stipe 1-1 $\frac{1}{2}$  in. long. The pileus is convex or slightly depressed around a central umbo, and opaque not pellucid, it is dirty white and scarcely striate or sulcate; the stipe is of the same color as the pileus. The species is nearly allied to *M. ramealis*, Bull., but the stipe is more elongated, and is not darker at the base. I am indebted to Mr. Wm. C. Stevenson, of the Philadelphia Academy of Sciences, for the original description.

II. MYCENA.—Pileus somewhat membranaceous; the margin at first straight and appressed. Stipe horny, hollow, tough, dry; the mycelium rhizomorphous.

- D.* Pileus campanulate or convex.  
*g.* Stipe glabrous, shining, 13.  
*h.* Stipe velvety or mealy, 14, 15.  
*E.* Pileus soon umbilicate, 16, 17.  
*D.* Pileus campanulate or convex.  
*g.* Stipe glabrous, shining.

13. *M. CAMPANULATUS*, Peck.—Pileus membranaceous, convex or campanulate, dry, glabrous, plicate-sulcate, ochraceous-red, the disk a little darker. Stipe horny, hollow, glabrous, shining, blackish-brown. Lamellæ attenuate-attached or nearly free, distant, whitish.

Growing on dead leaves in woods, common throughout the summer. Pileus  $\frac{1}{2}$ – $\frac{3}{4}$ ths of an inch in diameter, the stipe 2-3 in. long. This is a very elegant species, flourishing abundantly, and growing quite rank in our rich woods. I find specimens sometimes with a pinkish tint.

*h. Stipe velvety or mealy.*

14. *M. CLAVÆFORMIS*, Berk.—Pileus submembranaceous, convex tough, white. Stipe tapering downward; below velvety, brown; above white, furfuraceous. Lamellæ long decurrent, broad in front, distant, whitish inclining to flesh-color.

On dead sticks in woods. Pileus 2 lines broad, stipe 1 in. long. The stipe is attached by a minute bulb. The species is remarkable for its very decurrent lamellæ. It is one of the new species of Lea's catalogue.

15. *M. NIGRIPES*, Schw.—Pileus membranaceous, campanulate, umbonate, striate, somewhat pellucid, pure white. Stipe somewhat bulbous, black, white farinose. Lamellæ adnate, arcuate, rather broad, pure white, growing pale.

Growing among leaves and on the ground in woods. Stipe  $1\frac{1}{2}$  in. in length, black but wholly covered over with a white meal which may be easily rubbed off. It is closely related to *M. alliaceus*, Jacq., but is inodorous. I am indebted to Mr. Stevenson for the copy of the original description.

*E. Pileus soon umbilicate.*

16. *M. ROTULA*, Scop.—Pileus membranaceous, a little convex, um-

bilicate, plicate. Stipe horny, hollow, shining, glabrous, blackish. Lamellæ few, broad, distant, joined behind to a free collar, whitish.

Upon trunks and leaves. Pileus  $\frac{1}{2}$  an inch or less in breadth, the stipe 1-2 in. long. Pileus whitish and of a uniform color or the disk darker; the stipe is whitish at the apex.

17. *M. CAPILLARIS*, n. sp.—Pileus membranaceous, convex, umbilicate, sulcate. Stipe capillary, very long, glabrous, shining, black with a pallid apex. Lamellæ adnate to a free collar, equal, numerous, not distant, pallid.

Growing on leaves and sticks. Pileus 1-2 lines in diameter, the stipe 2-2 $\frac{1}{2}$  in. long. The pileus is of a grayish or brownish-pallid color; it is sulcate with 16-20 furrows which correspond to as many lamellæ underneath; the stipe is very long and scarcely thicker than a hair. Its place is between *M. rotula* and *M. graminum*; it differs from the latter in its umbilicate pileus, and from the former in its capillary stipe; it is closely related to both by the free collar.

#### GENUS XI.—LENTINUS, Fr.

Pileus fleshy-coriaceous, tough, or in the fleshy kinds hardened when mature, persistent. Lamellæ thin, unequal, membranaceous; the edge serrate or lacero-dentate. Spores even, white.

A. Pileus almost entire, the stipe evident.

a. Pileus scaly, 1, 2.

b. Pileus villous, 3, 4.

c. Pileus glabrous, 5-7.

B. Pileus dimidiate, sessile, 8-10.

A. *Pileus almost entire, the stipe evident.*

a. *Pileus scaly.*

1. *L. TIGRINUS*, Bull.—Pileus fleshy-coriaceous, thin, orbicular, umbilicate, whitish; scales innate, hairy, blackish. Stipe slender, not striate, scaly; the apex somewhat veiled. Lamellæ attenuate decurrent, very narrow, white becoming yellowish. Spores elliptic, .0066  $\times$  .0033 mm.

On wood of oak. Pileus about 2 in. broad, stipe 1-2 in. long. Pileus thin, the margin at length split; stipe dirty white. When fresh very tender, when dry coriaceous.

2. *L. SILEXATUS*, Berk.—Pileus a little fleshy, at first somewhat conic, at length hemispheric, broken up into scales, silky-virgate, reddish-brown; the margin sulcate. Stipe short, solid, furfureous, concolor-



ous. Lamellæ distant, rather broad, thickish, emarginate behind pallid.

Growing out of the cracks in fence rails, in spring. Pileus  $\frac{3}{4}$  of an inch or less in breadth, stipe  $\frac{3}{4}$  of an inch long. The margin of the pileus is deeply sulcate, with the interstices darker, which gives it a very neat appearance; the stipe is often slightly attenuated downward. This is one of Mr. Lea's discoveries.

*b. Pileus villous.*

3. *L. LECOMTEI*, Fr.—Pileus fleshy-tough, infundibuliform, reflexed, hairy, tawny. Stipe short, hairy. Lamellæ serrate, crowded, pallid.

On logs and stumps. Pileus infundibuliform and more or less irregular, 1-3 in. broad.

4. *L. STRIGOSUS*, Fr.—Pileus fleshy-tough, unequal, somewhat depressed, strigose-hirsute, tawny-reddish. Stipe excentric, strigose-hirsute. Lamellæ decurrent, pallid.

On logs and stumps. Pileus 1-3 in. broad. Very closely related to the preceding species, but differing in the villous stipe, the shorter and more crowded hairs of the pileus and the broader lamellæ irregularly torn.

*c. Pileus glabrous.*

5. *L. OMPHALODES*, B. & C.—Pileus fleshy-tough, thin, infundibuliform, glabrous, whitish. Stipe slender, thickened upward, fibrillose and spongy at the base. Lamellæ entire, narrow, decurrent, white.

On rotten sticks on the ground. Pileus 1-2 $\frac{1}{2}$  in. across, the stipe  $\frac{3}{4}$  1 in. long. Pileus in the larger specimens more or less irregular. This is not the *L. omphalodes*, Fr. My specimens are much larger than those described in the "Notices," but they agree so well otherwise that I could not make a new species. The color is not given by Berkeley & Curtis.

6. *L. CÆSPITOSUS*, B. & C.—Remarkably cæspitose. Pileus plane, tough, alutaceous, clothed with close-pressed, brownish-red fibrils; the margin incurved. Stipe flexuous, tough, striate, grayish-white, fibrillose, solid, formed of fibres. Lamellæ entire, white, long-decurrent.

In woods on the ground. Pileus 1 $\frac{1}{2}$ -2 in. across, the stipe 3 in. high, and 2 lines thick. A very curious species, easily distinguished from its allies by its entire lamellæ.

7. *L. COCHLEATUS*, Pers.—Tough, flaccid. Pileus fleshy, tough, irregular, somewhat lobed or contorted, glabrous, reddish. Stipe solid,

firm, sulcate, glabrous, reddish. Lamellæ close, serrate, fleshy-white. Spores nearly globular, .004 mm. in diameter.

About the base of old stumps. Pileus 1-1½ in. broad, the stipes of variable length. Usually very much tufted with the stipe confluent below.

*B. Pileus dimidiata, sessile.*

8. *L. URSINUS*, Fr.—Sessile, imbricate. Pilei fleshy-tough, eared-ascending, even, brown-reddish, when mature brown-tomentose below; the margin glabrous, entire. Lamellæ broad, torn, whitish.

Upon rotten trunks of beech. Pileus 1-2 in. long, and about 1 in. wide. Pileus quite thick, at first glabrous, expallent, ear-form.

9. *L. VULPINUS*, Fr.—Sessile, imbricate-multiplex. Pilei fleshy-tough, conchate, connate behind, longitudinally costate-corrugate, floccose-serupose, alutaceous; the margin incurved, entire. Lamellæ broad, torn, white. Spores nearly globose, .0015 mm. in diameter.

Upon old trunks of elm. Pileus 1-2 in. long, and about an inch broad. The spores abundant, powdering the plants.

10. *L. PELLICULOSUS*, Fr.—Sessile, imbricate. Pileus tough, membranaceous, reniform, very thin, strigose, brown-tawny; the margin naked, involute. Lamellæ broad, torn, pallid.

Upon rotten trunks late in autumn. Pileus 2-4 in. long, and 1-3 in. broad. Pileus strigose with a dense hairy coat like the skin of some animal.

GENUS XII.—*PANUS*, Fr.

The whole fungus fleshy-coriaceous, tough, drying up; the texture fibrous, radiating into the hymenium. Lamellæ concrete with the hymenophore, unequal, at length coriaceous; the edge wholly entire.

*A. Pileus plainly stipitate.*

*a. Lamellæ decurrent, 1, 2.*

*b. Lamellæ determinate, 3, 4.*

*B. Pileus sessile or nearly so, 5, 6.*

*A. Pileus plainly stipitate.*

*a. Lamellæ decurrent.*

1. *P. CONCHATUS*, Fr.—Pileus fleshy tough, thin, unequal, excentric and dimidiata, cinnamon then expallent, at length scaly. Stipe short, unequal, pubescent at the base. Lamellæ lineately decurrent, somewhat branched, white-fleshy then ochraceous. Spores white.

On trunks and branches of beech. Pileus 2-4 in. broad, stipe less than an inch in length. Always known by its conchate form and tough substance. It is not hirsute or villous like *Lentinus lecomtei*.

2. *P. DEALBATUS*, Berk.—Pileus coriaceous-soft, flabelliform, sometimes lobed, umber, striate. Stipe lateral, rather long, compressed or channeled, dilated above. Lamellæ decurrent, distinct, umber. Spores white.

On branches of elm. Pileus  $\frac{1}{2}$ -1 in. broad, the stipe an inch or less in length. The pileus and stipe when dry are white and minutely cracked, as if whitewashed; a dark border encircles the pileus, and the lamellæ are brown with a white edge. When moist the pileus is tough and pliable, umber-brown and striate. Sometimes the stipe is forked, and each division produces a pileus. There are few prettier fungi than this.

*b. Lamellæ determinate.*

3. *P. STIPITICUS*, Bull.—Pileus coriaceous, reniform, cinnamon then expallent; the cuticle seceding into furfuraceous scales. Stipe lateral, short, dilated upward. Lamellæ determinate, thin, close, reticulate-connected, cinnamon. Spores white,  $.0046 \times .0025$  mm.

On stumps, trunks and branches, everywhere, very common, persisting from autumn to spring. Pileus 1-1 $\frac{1}{2}$  in. broad, stipe about  $\frac{1}{4}$  of an inch long. Gregarious or cæspitose; pileus semiorbicular, the margin entire or lobed and involute. Taste styptic. This is distinguished from *Polyporus rhipidium* by its different hymenium.

4. *P. FARINACEUS*, Schum.—Pileus somewhat coriaceous, flexuous, cinnamon-umber; the cuticle seceding into a whitish-lavender scurf. Stipe lateral, short, concolorous. Lamellæ determinately free, distinct, rather pale. Spores white.

Upon trunks of hickory. Pileus  $\frac{3}{4}$ -1 $\frac{1}{4}$  in. broad, stipe about  $\frac{1}{4}$  of an inch long. The pileus is brown or blackish with a dense white pubescence. What I have found grew out of the cracks in the hickory bark.

*B. Pileus sessile or nearly so.*

5. *P. ANGUSTATUS*, Berk.—Pileus fleshy-coriaceous, thin, spatulate or flabelliform, minutely pubescent, white, dirty white or yellowish. Stipe extremely short or none. Lamellæ very narrow, close, decurrent, white or yellowish. Spores white.

In woods on old logs, common. Pileus  $\frac{3}{4}$ -1 $\frac{1}{2}$  in. long by  $\frac{1}{2}$ -1 in.

wide above, tapering downward to a narrow nearly sessile base. This and *deulbatus* are two fine new species first discovered by Mr. Lea.

6. *P. dorsalis*, Bose.—Pileus fleshy coriaceous, at first resupinate, afterward expanded, sessile, somewhat reniform, tomentose, luteous, expallent. Lamellæ broad, rather distant, orange-tawny. Spores colored like the lamellæ.

On stumps and trunks. Pileus  $1\frac{1}{2}$ -3 in. broad. Often imbricate and sessile or sometimes slightly stipitate. This I have no doubt is the same plant as *Agaricus nidulans*, Fr. I have observed it carefully in every stage and it agrees perfectly with the figure and description in Fries' *Icones*, except the substance is leathery and persistent, not putrescent.

#### GENUS XIII.—TROGIA, Fr.

Lamellæ fold like, crisped, the edge obtuse. Spores white.

1. *T. crispa*, Pers.—Tough, cupular-reflexed, lobed, villous, reddish-yellow. Lamellæ fold-like, forked, crisp, whitish or lavender.

Upon branches of beech, etc., rather scarce; late in autumn and during the winter. Pileus  $\frac{1}{2}$ -1 in. broad, sometimes whitish in color, sessile.

#### GENUS XIV.—SCHIZOPHYLLUM, Fr.

Pileus not fleshy, dry. Lamellæ coriaceous, flabelliform-branched, joined above by a tomentose pellicle, bifid, the edge longitudinally split. Spores white.

1. *S. commune*, Fr.—Pileus adnate behind, somewhat extended, simple and lobed. Lamellæ gray then brown-purplish, the two divisions of the edge spreading or revolute. Spores nearly globose, very small, .0025 mm. in diameter.

Growing upon trunks and branches; very common, in this region, seeming to flourish best in the mild wet weather of winter. Pileus  $1\frac{1}{2}$  in. broad, white or gray, tomentose, sessile or with a short lateral stipe; the margin even or variously lobed and split. It grows in all the regions of the earth.

#### GENUS XV.—LENZITES, Fr.

Pileus corky or coriaceous; the texture dry, floccose. Lamellæ coriaceous, firm, of like texture with the pileus. Spores white.

1. *L. betulina*, Linn.—Pileus dimidiate, sessile, persistent, corky-

coriaceous, obsolete zonate, tomentose, pallid. Lamellæ straight, somewhat branched, anastomosing, sordid white.

On stumps and logs in autumn, persisting till the following spring. Common. Pileus 2-4 in. broad, projecting 1-2 in. Solitary or often much imbricated and confluent; the pileus deeply and concentrically grooved, clothed with dense pubescence or coarse velvety down, grayish, yellowish or brownish, sometimes with distinct colored zones, often green with minute Algae. Lamellæ at first thick, somewhat porose, sordid; afterward thinner, the edge acute becoming yellowish.

2. *L. VIALIS*, Peck.—Pileus coriaceous, sessile dimidiate, obscurely zonate, somewhat tomentose, brown or grayish-brown, the margin cinereous. Lamellæ thin, abundantly anastomosing, pallid, cinereous-pruinose on the edge.

Very common on railroad ties. Pileus 1-3 in. in breadth, projecting nearly an inch. Often much imbricated and confluent. The plants are commonly much blackened by the grease and dirt of the passing trains. I have a suspicion that this fungus is not different from *Dædalea pallido-fulva*, Berk.

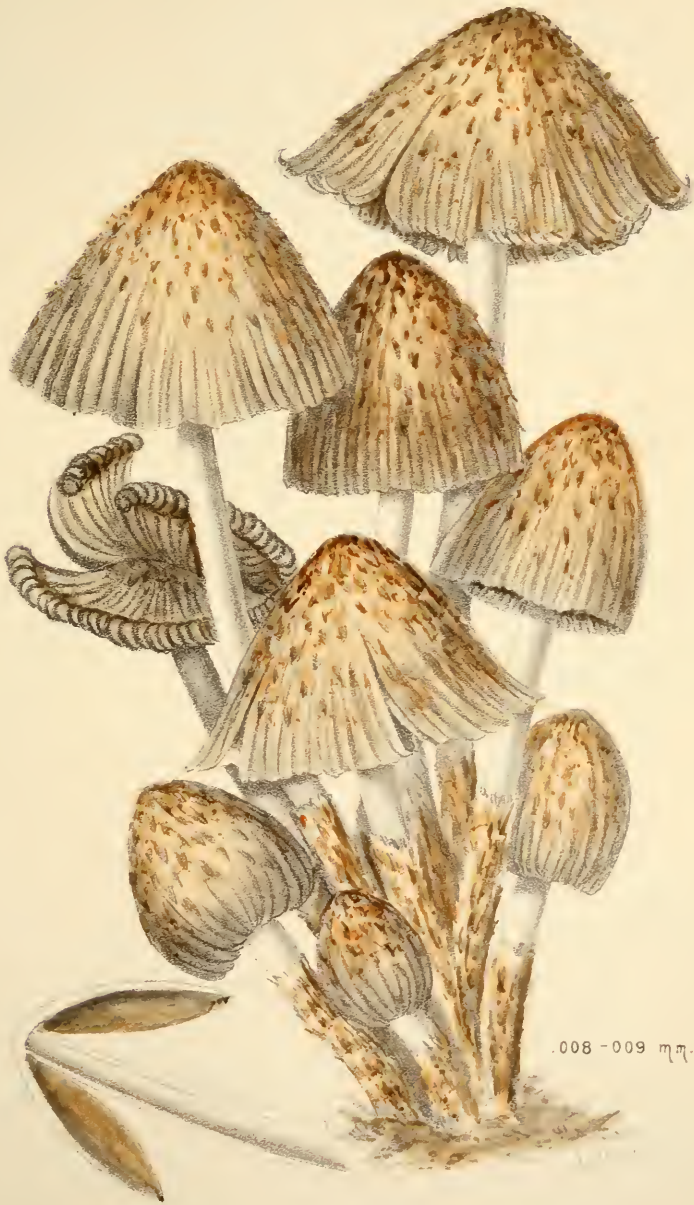
3. *L. SÆPIARIA*, Schæff.—Pileus dimidiate, sessile, coriaceous, hard, zonate, strigose-tomentose, rough, bright-brown; the margin yellowish. Lamellæ rather thick, branched, anastomosing, yellowish.

This plant which properly grows on pine wood, I have only seen on white poplar stumps. Pileus 1-3 in. broad, projecting nearly an inch. Often confluent, deeply zoned; substance coriaceous, fibrous, of a fine ocher or rhubarb color. Hymenium composed of brownish plates, tolerably regular, but here and there slightly branched.

NOTE.—*Lenzites cookei*, Berk., and *L. cratagi*, Berk., which are found in this region, are considered by Prof. Chas. H. Peck to be only forms of the Protean species *Dædalea confragosa*, Bolt. To this opinion, from my own observation, I am willing to subscribe, I have in my possession, of my own collecting, forms representing the three genera, *Lenzites*, *Trametes*, and *Dædalea*.

[TO BE CONTINUED.]





COPRINUS SQUAMOSUS, MORG.







.0083 X .0056 mm.

HYGROPHORUS LAURÆ, MORG.



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THE  
Mycologic Flora of the Miami Valley, O.

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By A. P. MORGAN.

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*Tomlinson's*  
17: 5-10. 1884



THE MYCOLOGIC FLORA OF THE MIAMI VALLEY, O.

By A. P. MORGAN.

[Continued from vol. vi., p. 199.]

ORDER II.—POLYPOREI.

Hymenophore inferior, porose. Pores bearing the basidia and cystidia on their inner surface; basidia 4-sporous at the apex.

TABLE OF GENERA OF POLYPOREI.

A. Tubules forming a distinct stratum.

1. BOLETUS.—Tubules easily separable from one another.
2. POLYPORUS.—Tubules not separable from each other.

B. Tubules sunk in the substance of the pileus.

3. TRAMETES.—Pores round, obtuse, entire.
4. DÆDALEA.—Pores sinuous, labyrinthiform.
5. FAVOLUS.—Pores alveolar, elongated.

C. Pores superficial.

6. MERULIUS.—Pores formed by reticulate folds.
7. POROTHELIUM.—Pores immersed in discrete warts.
8. SOLENIA.—Pores in discrete tubules.

GENUS I.—BOLETUS, Dill.

Tubules in a porose stratum without a trama, easily separable from each other, and from the hymenophore. Spores normally fusiform. Fungi terrestrial, fleshy, putrescent, stipitate; the stipe central.

SERIES I.—EUCHROI.

Tubules colored from the first, not white or gray.

A. Tubules ferruginous.

1. B. PIPERATUS, Bull.—Pileus convexo-plane, glabrous, a little viscid, reddish-yellow or brownish. Stipe slender, even, fragile, concolorous, compressed, the base yellow. Tubules decurrent, ferruginous; the pores large, angular. Spores brown, elliptic, .007—.008×.004 mm.

On the ground in open woods, in autumn; rare. Pileus 1-3 in. broad, stipe 1-3 in. long, and  $\frac{1}{4}$ - $\frac{1}{2}$  of an inch thick. This species is at once distinguished by its peppery taste; the pileus is moist or even viscid, when young; the flesh is yellowish.

*B. Tubules yellow. pores the same color*  
*a. Flesh changing to blue.*

2. *B. CHRYSENTERON*, Bull.—Pileus convexo-plane, soft, floccose-sealy, brownish or reddish; flesh yellow, red beneath the cuticle. Stipe nearly equal, rigid, fibrose-striate, scarlet or yellow. Tubules nearly adnate; the pores large, angular, unequal, greenish-yellow. Spores olive, fusiform, .012—.013×.004 mm.

In woods about the roots of trees and in mossy places, in spring and early summer; common. Pileus  $1\frac{1}{2}$ -3 in. broad, stipe 2-3 in. long, and  $\frac{1}{4}$ - $\frac{1}{2}$  of an inch thick. The pileus is often areolate-rimose, and then the cracks are scarlet; the color is some shade of red, olive or yellow; it is sometimes nearly glabrous; the flesh is yellow, changing slightly to blue when cut or broken; the stipe is slender, more or less streaked with red, and often crooked.

3. *B. RADICANS*, Pers.—Pileus pulvinate, dry, subtomentose, cinereous or olivaceous, then reddish-yellow; the margin thin, involute. Stipe tapering downward and rooting, even, yellow with a reddish bloom, darker when this is rubbed off. Tubules adnate; pores unequal, large, yellow. Spores olive, fusiform, .011—.013×.005 mm.

On the ground in woods, in summer: rare. Pileus 2-2 $\frac{1}{2}$  in. broad, the stipe about 2 in. long and  $\frac{1}{2}$  an inch thick. The pileus is quite firm and dry, becomes reddish or brownish yellow and nearly glabrous; minute reddish scales are sprinkled over the yellow surface of the stipe; the latter tapers downward to a point which penetrates the ground a little distance; the flesh is pale yellow, but I have not observed any bluish tinge, although this is said to appear in the European species.

4. *B. MUTABILIS*, n. sp.—Pileus compact, then soft, convex, then expanded and depressed, dry, subtomentose, brown. Stipe stout, solid, flexuous, somewhat sulcate, yellowish beneath the brown-punctate scales. Tubules adnate or somewhat decurrent; the pores large, angular, unequal, some of them compound, yellow changing to greenish-yellow. Spores olive, fusiform, .012—.013×.0055 mm. Flesh yellow changing to blue when broken. (See Plate I.)

In shady woods, in summer: not uncommon. Pileus  $2\frac{1}{2}$ -4 in. in diameter, and  $\frac{3}{4}$ -1 in. thick, the tubes occupying about one half the thickness; stipe 2-3 in. long, about  $\frac{1}{2}$  in. thick in the middle, and increasing in thickness above and downward. The flesh in both the stipe and pileus is a beautiful bright yellow, which changes promptly,

to blue when broken. A shade of yellow sometimes appears beneath the brown of the pileus, and as the plants grow old, the pileus becomes blackish, glabrous and shining.

*b. Flesh unchanged.*

5. *B. SUBTOMENTOSUS*, Linn.—Pileus pulvinate-expanded, soft, dry, villous-tomentose, somewhat olivaceous, concolorous beneath the cuticle. Stipe stout, somewhat costate sulcate, under a lens punctate-scabrous. Tubules adnate; the pores large, angular, yellow. Spores olive, fusiform, .012—.013×.005 mm.

In woods about old stumps and logs, in summer and autumn; common. Pileus  $1\frac{1}{2}$ -3 in. broad, stipe 2-3 in. long, and  $\frac{1}{4}$ - $\frac{1}{2}$  an inch thick. In size and habit this species very much resembles *B. chrysenteron*; when the pileus is rimose, the cracks are of the same color as the flesh or the cuticle, and not red; the flesh is white or pallid, growing yellow by exposure.

6. *B. AURIPORUS*, Peck.—Pileus broadly convex, dry, most minutely tomentose, grayish-brown, sometimes tinged with red. Stipe equal, firm, solid, smooth. Tubules plain, or nearly so, adnate or somewhat decurrent; the pores medium, round, bright golden yellow. Spores olive, fusiform, .012×.005 mm. Flesh white, unchangeable.

In woods in summer; scarce. Pileus 2-3 in. broad, stipe 2-4 in. long, and  $\frac{1}{4}$ - $\frac{1}{2}$  an inch thick. The plant I have so referred has a slight greenish tinge in the white flesh next the pores in the section; the stipe is red above and yellow below.

*C. Tubules yellow, the pores red.*

7. *B. MAGNISPORUS*, Frost.—Pileus firm, pulvinate, tomentose, golden yellow. Stipe slender, long, yellow above and red below. Tubules scarcely adnate, greenish-yellow; pores minute, even, cinnabar-red. Spores .016—.017×.006 mm.

In woods, in summer; rare. Pileus  $2\frac{1}{2}$   $3\frac{1}{2}$  in. broad, stipe 4-5 in. long. The tomentum of the pileus is sometimes brownish-yellow; the flesh is greenish-yellow, changing to blue when cut or broken.

8. *B. VERMICULOSTUS*, Peck.—Pileus broadly convex, dry, smooth, or most minutely tomentose, grayish-brown tinged with red. Stipe equal, solid, smooth, paler than the pileus. Tubules plane or slightly convex, free; the pores small, round, yellow, brownish-orange, becoming almost black. Spores fusiform .011—.014×.004mm. Flesh white, changing to blue.

In low, damp places in woods, in summer; rare. Pileus 3-4 in. broad, stipe 3-4 in. long, and  $\frac{1}{2}$   $\frac{3}{4}$  of an inch thick. I found my specimens in very dry weather, and they were quite firm and not infested by the larvæ of insects. In the younger specimens there is some red on the stipe and within; the pileus becomes thick and the pores change to blackish as the plant grows old.

SERIES II.—TEPHROLEUCI.

Tubules at first white or gray.

*D. Changing to brown.*

9. B. STROBILACEUS, Scop.—Blackish-umber. Pileus pulvinate, imbricated with thick floccose scales. Stipe equal, veiled, sulcate at the apex. Tubules adnate; the pores large, angular, whitish-brown. Spores blackish-brown, nearly globose, .010—.013 mm. in diameter.

On the ground in dry woods, in summer; common. Pileus 2-4 in. broad, stipe 3-4 in. long, and  $\frac{1}{2}$   $\frac{3}{4}$  of an inch thick. In this species the scales are imbricate, and the tubules are adnate by their whole length. The flesh when cut or broken becomes reddish or blackish.

10. B. FLOCCOPTS, Vahl.—Cinereous, at length blackish. Pileus pulvinate, soft, covered with an areolate-fasciculate, scaly-squarrose tomentum; veil silky thick, annular appendiculate. Stipe stout, umber-tomentose below, lacunose above. Tubules abbreviated behind; the pores large, white gray. Spores blackish, nearly globose, .009—.010 mm. in diameter.

On the ground in dry woods, in summer; common. Pileus 3-5 in. broad, the stipe 4-5 in. long, and  $\frac{3}{4}$  1 in. thick. This species is distinguished by the tomentum raised into thick, erect, pointed tufts, and by the tubules being depressed around the stipe. These black *Boleti* are abundant in our woods, and probably there is hardly enough difference between them to warrant two species. They seem to be scarce in Europe; they are the *Strobilomyces* of Berkeley.

*E. Changing to sordid.*

11. B. SCABER, Fr.—Pileus pulvinate, glabrous, viscid when wet, at length rugulose or rivulose; the margin at first curtained. Stipe solid tapering upward, rough with fibrous scales. Tubules free, convex, white then sordid; the pores minute, round. Spores pale brown, fusiform, .014—.015  $\times$  .0055 mm.

In hilly woods in summer; rare. Pileus 3-5 in. broad, the stipe 3-5 in. high, and  $\frac{1}{2}$  1 in. thick. The few depauperate specimens I have



thus far found in this locality scarcely reach the smallest of these dimensions. No species is more abundant in the mountains; it is there the common *Boletus*. Its colors are various, from gray to orange and brown; it is easily recognized by its shaggy stipe.

12. *B. SORDIDUS*, Frost.—Pileus pulvinate, somewhat tomentose. Stipe solid, somewhat flexuous, striate, smaller as it enters the pileus, generally greenish at the apex. Tubules long, nearly free, white, then sordid; the pores large, angular. Spores dirty-brown, fusiform, .011—.013X.0055 mm.

In damp woods, in summer and autumn; not uncommon. Pileus 2-3 in. broad, stipe 2½-3 in. long, and about ¼ of an inch thick. The flesh is white, sometimes tinged with red and green; the tubules change to bluish green when bruised. This is no doubt Mr. Frost's plant, but our specimens are much finer than his typical ones. His description is rather imperfect, but the agreement of the spores and otherwise is very close.

*F. Changing to flesh-color.*

13. *B. FELLEUS*, Bull.—Pileus pulvinate then expanded, soft, glabrous, even, brownish or reddish-gray. Stipe solid, tapering upward and reticulate. Tubules adnate, convex, elongated; the pores angular, white then flesh-color. Spores rose-color, fusiform, .016X.005 mm.

In dry woods in summer; common. Pileus 4-6 in. broad, stipe 4-6 in. long, and about 1 in. thick. The bright rosy spores at once distinguish this common species; the dimensions given are about those of the plants met with in this region; the flesh is white or pale flesh-color; the taste is bitter.

14. *B. GRACILIS*, Peck.—Pileus convex, dry, smooth or minutely tomentose, ochraceous-brown. Stipe slender, equal or tapering upward, solid, marked with fine elevated lines which anastomose and form very long narrow reticulations. Tubules plane, depressed about the stipe or nearly free; the pores small, round, whitish then pale flesh-color. Spores flesh-color, fusiform, .013—.014X.0055 mm.

On the ground in woods, in summer; not common. Pileus 1½-2½ in. broad, stipe 3-5 in. long, and ¼-½ an inch thick. This plant is much more slender than *B. felleus*, and the character of the reticulations on the stipe quite different. Spores that I have kept for some time are somewhat ferruginous in tint. The specimens in this region were all sent me by Mr. Meyncke, of Brookville, Ind.

*G. Changing to yellow.*

15. *B. CASTANEUS*, Bull.—Pileus convexo-expanded or depressed, firm, velvety, cinnamon. Stipe stuffed then hollow, tapering upward from a somewhat bulbous base, velvety concolorous. Flesh white, not changing color. Tubules free, short, white; the pores minute, round. Spores yellow, subelliptic, with an oblique apiculus, .008—.010×.0055 mm.

In hilly woods, in summer; common. Pileus 2-2½ in. broad, stipe 2½-3 in. long, and ½-¾ of an inch thick at the base. The chestnut color varies from pale to dark; the texture is quite dry, not fleshy or juicy; the tubules finally take on the pale yellow color of the spores.

16. *B. EDULIS*, Bull.—Pileus pulvinate, glabrous, moist, brownish. Stipe stout, reticulate, brownish-pallid. Tubules semi-free, elongated; the pores minute, angular, white then yellow or greenish. "Spores large, greenish ochre."

On the ground in woods, in summer; rare. Pileus 3-6 in. broad, stipe 4-6 in. long, and 1-1½ in. thick. The flesh is white, turning a little reddish near the epidermis, at first compact, then softer. It is a stout, fleshy *Boletus*, said to be delicious eating. It is thought to be the *Suillus*, which, on the testimony of Pliny, his countrymen were in the habit of fetching from Bithynia; it is the modern *Porcino* which is sold in strings, during the winter, in every market place throughout Italy.







LVM

012 - 013  
X 0055 mm.

BOLETUS MUTABILIS, MORG.









8191-111

THE MYCOLOGIC FLORA OF THE MIAMI VALLEY,  
OHIO.

By A. P. MORGAN.

[Continued from Vol. VII, p. 10. Plate I.]

GENUS II. POLYPORUS, FR.

LIBRARY  
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Hymenophore descending in a trama between the pores; the pores hence connate with the substance of the pileus and not separable from each other. Fungi mostly lignatile and persistent.

I. MESOPUS.

1. Carnosi.
2. Lenti.
3. Subcoriacei.

II. PLEUROPUS.

1. Lenti.
2. Suberoso—  
lignosi.

III. MERISMA.

1. Carnosi.
2. Lenti.
3. Caseosi.
4. Suberosi.

IV. APUS.

A. Anodermei.

1. Carnosi.
2. Lenti.
3. Spongiosi.

B. Placodermei.

4. Suberosi.
5. Fomentarii.
6. Lignosi.

C. Inodermei.

7. Stupposi.
8. Coriacei.

V. RESUPINATI.

A. Pores colored.

B. Pores white.

I. MESOPUS.

Stipe vertical, simple, concolorous at the base.

I. CARNOSI. Pileus fleshy; terrestrial.

1. *P. ovinus*, Fr. Pileus fleshy, fragile, deformed, becoming scaly, whitish. Stipe short, unequal, white. Pores minute, round, equal, white, then citron-colored.

On the ground in woods in autumn; rare. Pileus 2—4 inches broad, fleshy, thick, compact but fragile, very irregular in shape; stipe short and thick, an inch or more in length, sometimes tuberous; edible, with a pleasant amygdaline taste.

2. *P. leucomelas*, Pers. Pileus fleshy, somewhat fragile, de-

formed, silky, scaly, sooty black. Stipe stout, unequal, subtomentose, concolorous. Pores rather large, unequal, cinereous or whitish.

On the ground in woods in autumn: rare. Pileus 2—5 inches broad. Stipe one and one-half inches or more in length. Pileus and stipe here and there changing to black; flesh soft, marbled, pinkish when exposed to the air; pores becoming black in drying; a curious esculent species.

3. *P. flavo-virens*, B. & Rav. Pileus fleshy, tough, subinfrumbiliform, more or less irregular, subtomentose, dirty yellow, with obscure zones of greenish-yellow, the margin thin, involute; substance white. Stipe solid, more or less excentric, greenish-yellow. Pores medium, decurrent, angular, irregular, becoming lacerate, whitish, then greenish-yellow.

On the ground in woods in autumn; rare. Pileus 3—5 inches across; stipe one to one and one-half inches long. The pileus is more or less irregular, varying from orbicular to reniform and lobed; the pores are extremely decurrent, extending down the stipe sometimes almost to the base; it is distinguished by its peculiar greenish-yellow color, though the substance inside is white.

II. LENTI. Pileus coriaceous, not zonate; truncigenous.

4. *P. lentus*, Berk. Pileus fleshy, tough, then coriaceous, umbilicate, minutely scaly, pale ochraceous. Stipe short, incurved, hispid and furfuraceous, concolorous. Pores decurrent, irregular, white.

On the dead branches of fallen trees. Pileus 1—2 inches broad; stipe one-half to one inch long. Pileus at first scaly and reddish-brown, at length nearly smooth and ochraceous; stipe covered by the pores nearly to the base; pores large, rather deep, roundish or subquadrate.

5. *P. brunnalis*, Pers. Pileus fleshy-tough, then coriaceous, subumbilicate, villous and sooty, becoming glabrous and pale. Stipe slender, hirsute and scaly. Pores oblong and angular, thin, acute, denticulate, white.

On dead trunks and branches, in late autumn and winter. Pileus one to three inches broad; the stipe one to two inches long; there

exists a form with the pores small and round, with thick dissepiments.

6. *P. arcularius*, Batsch. Pileus tough, then leathery, convex, subumbilicate, brown, scaly, then glabrous and yellowish; the margin strigose. Stipe short, somewhat scaly, brown-gray. Pores rhombic-oblong, thin, rather large, entire, whitish.

On dead trunks and branches, common in spring. Pileus one to two inches broad; stipe an inch or less in length; pores whitish or tawny, quite large and elongated, with thin dissepiments, measuring as much as 1.5x.5 mm.

III. SUBCORIACEI. Pileus hard and dry from the first, then corky or coriaceous; context ferruginous; terrestrial.

7. *P. Montagnei*, Fr. Ferruginous. Pileus corky, soft, deformed, azonate, covered with a seceding scurfy tomentum. Stipe short, unequal. Pores short, ample, round, obtuse, entire, concolorous.

On the ground in woods; rare. This is a larger and more showy species than the others in this section. It is given on the the faith of Berkeley in Lea's Catalogue.

8. *P. parvulus*, Klotsch. Pileus coriaceous, umbilicate, zonate, velvety, cinnamon, then whitish. Stipe short, cinnamon. Pores large, cinnamon, lacerate.

On the ground in woods; rare. Pileus an inch or less in diameter; stipe about half an inch long. This is the *P. connatus*, Schw., of Lea's Catalogue, the pilei being frequently grown together; the two are considered identical by Fries. It is distinguished from the following species by its canescent pileus and the larger pores.

9. *P. subsericeus*. Peck. Pileus coriaceous, subumbilicate, zonate, silky-shining, with close radiating fibers, ferruginous. Stipe slender, tomentose, concolorous. Pores small, angular, short, subconcolorous.

On the ground in woods; rare. Pileus an inch or less in breadth; the stipe half an inch in length. This is the *P. splendens*, Peck, of the 26th Report. My specimens are identical with those received from Prof. Peck. It is distinguished by its thin, silky-striate, shining pileus.

## II. PLEUROPUS.

Stipe ascending, simple, excentric or lateral, lignatile.

I. LENTI. Pileus tough-fleshy, azonate; pores short; context pallid.

a. *Stipe blackish at the base.*

10. *P. radicans*, Schw. Pileus fleshy-tough, pulvinate, depressed, sooty-pale, subtomentose. Stipe excentric, long, tapering downward, rooting, black below. Pores somewhat decurrent, very large, obtuse, equal, white.

On the ground near old stumps, in autumn; common. I find this plant, as Berkeley says, of various sizes, from the small plant, which Schweinitz describes, to five inches or more across, with the stipe six inches or more in length the long, tapering stipe penetrates the earth to a depth of several inches, the tip being always attached to some portion of an old root. The pileus is brown or blackish and more or less tomentose; the upper part of the stipe is colored as the pileus, whitish at the top; the lower rooting portion is black and more or less crooked or deformed. The pores are very large, averaging .65 mm. in diameter. *P. Morgani*, Frost, appears to me to be this same plant

11. *P. picipes*, Fr. Pileus fleshy, coriaceous, then rigid, tough, even, glabrous, depressed on the disc or behind. Stipe excentric and lateral, equal, firm, at first velvety, then naked and punctate, black. Pores decurrent, round, small, white, then reddish yellow.

In woods on old logs; common. Very variable in size; pileus very thin but tough, three to six inches or more across, often lobed, the color varying from pale to chestnut, especially on the depressed disk.

12. *P. varius*, Fr. Pileus fleshy-tough, thin, becoming woody, glabrous, subvirgate, deformed, depressed on the disc or behind. Stipe excentric and lateral, even, glabrous, gradually cinereous-blackish downward. Pores decurrent, minute, short, round, unequal, whitish, then cinnamon.

On trunks and branches in woods. The specimens referred to this species are few in number and very variable in appearance; they probably include the *P. fissus*, of Berkeley, together with larger forms.

13. *P. elegans*, Bull. Pileus at first uniformly fleshy, but soon hard and woody, explanate, even, glabrous, of one color. Stipe excentric or lateral, even, glabrous, pallid, the base abruptly black and rooting. Pores plane, minute, subrotund, yellowish white or pallid.

On trunks and branches in woods; rare. Pileus from two to four inches broad, the stipe variable an inch, more or less. The pileus soon becomes hard and woody; it does not thin out toward the margin as in the preceding; the color is a pale ochre or orange, not different on the disk, which is scarcely depressed. The var. *nummularius*, Fr., is smaller, thinner, somewhat regular in outline; the stipe equal, eccentric; the pileus scarcely an inch across.

b. *Stipe concolorous at the base.*

14. *P. rhipidum*, Berk. Pileus cæspitose, coriaceous, reniform, concentrically sulcate, alutaceous-white. Stipe lateral, short, dilated upward. Pores small, angular, denticulate, whitish.

On old trunks in woods; rare. Pileus one-half to three-fourths of an inch broad; stipe one-fourth of an inch or more in length. This curious species exactly resembles *Panus stypticus*, excepting in the character of the hymenium. It was first described from the Ohio specimens sent by Mr. Lea; it has been found in New York and is common in the Southern States; it has also been found in Ceylon, Brazil and Australia.

II. SUBEROSO-LIGNOSI, Pileus thick, hard, azonate, stipe stout, vertical, concolorous at the base; pores long.

15. *P. lucidus*, Leys. Pileus corky, then woody, flabelliform, sulcate, rugose, laccate, shining, at first yellow, then reddish chestnut. Stipe lateral, equal, concolorous. Pores determinate, long, minute, white, then cinnamon.

In low, wet places, about the base of trees and stumps; common. Pileus 3—5 inches broad, the stipe variable; as it grows in this region, the stipe is always more or less deformed and often wanting; the pilei, when sessile, are then sometimes imbricated and connate.

III. MERISMA.

Out of a common trunk or tubercle are unfolded numerous

pileoli, which have arisen by divisions of the primary pileus. These are the largest and most showy of all Fungi.

I. CARNOSI. Pileus fleshy, firm, floccose-fibrous, azonate; autumnal.

16. *P. anax*, Berk. Very much branched, fibrous, fleshy, a little tough; pileoli very numerous, recurved and imbricate, fibrous-tomentose, dusky gray; stipes thick and concretescent, white. Pores large, unequal, angular, white. Spores white, subelliptic, .007— .008 mm. long.

At the base of oak trees and stumps in autumn; common. It branches out from a thick, single stem at the base, and forms a large head of branches and pileoli 10 to 20 inches in diameter; the branches terminate in numerous leafy pileoli of various forms and sizes, imbricating, confluent and recurved; the flesh is white, like the pores. The species does not appear to differ from *P. frondosus* Fr., except in the large, irregular pores; both are probably forms of the ancient *Fungus intybaceus*.

II. LENTI. Pileus, fleshy-tough, then coriaceous, more or less zonate, fibrous within; autumnal.

17. *P. giganteus*, Pers. Imbricato-multiplex, fleshy-tough, then subcoriaceous. Pileoli dimidiate, very broad, flaccid, subzonate, rivulose, bright brown, depressed behind. Stipes from a common tuber, connate, ramosc. Pores minute, subrotund, pallid, at length lacerate.

On the ground about the base of old stumps; not rare. It forms large tufts, one to two feet or more in breadth, branched in an imbricated manner; pileoli various in form, the surface granulated with minute brown flocci, the disk depressed, at length black; pores dirty brown when bruised.

18. *P. Berkeleyi*, Fr. Imbricato-multiplex, fleshy-tough, becoming hard and corky. Pileoli very large, subzonate, finally tomentose, alutaceous. Stipes short or none, arising from a long and thick common base. Pores rather large, irregular, angular, pale alutaceous.

Growing out of the ground usually near trees or stumps; not uncommon. The pileoli are sometimes nearly a foot in breadth and few in number, or they are smaller and more numerous. A speci-

men before me, consisting of 15 to 20 lobes and pileoli, has a breadth of 15 inches and a height of one foot; the common stipe usually penetrates the ground some distance. The original specimen from the herbarium of Berkeley, described by Fries, appears to have been a single large segment or pileolus (Nov. Symb., p. 56). Fries styles it "Nobilissimus inter omnes mihi cognitos Polyporos." Miss Banning's *P. Beatiei* seems scarcely different, except in texture.

19. *P. distortus*, Schw. "Pilei confluent, distorted or ear-shaped, cervine, with the pores on all sides; pores minute, rather soft, white, growing pallid." Schw.

"Pilei numerous, subdimidiate, distorted, ear-form or orbicular; covered all over by the pores, which are white, becoming pale, minute, sinuate, rather soft, and which often grow upon the margin of the pileus, rendering it thick and porose, and run down on the spongy, coriaceous stipes. Frequently the fungus is found destitute of a pileus, being everywhere porose and club-shaped, or cylindrical." Fries.

This polymorphous species I observe not uncommonly growing about the roots of the stumps in newly-cleared lands. I am unable to see that it is an imperfect form of any other species.

III. CASEOSI. Pileus cheesy, at first watery-soft, afterward dry and fragile; growing in spring and summer, but short-lived and soon crumbling to pieces.

20. *P. sulphureus*, Bull. Cæspitose-multiplex, juicy-cheesy, soon growing pale. Pileoli imbricate, undulate, nearly glabrous, reddish-yellow. Pores minute, plane, sulphur-yellow. Spores white. .0058x.0076 mm.

On old logs, stumps and even the decayed portions of standing trees; very common. Forming large tufts, 1—2 feet or more in breadth; pileoli various in form, but in their fresh state readily distinguished by the sulphur-colored pores, though the bright colors are soon gone, and the whole pales out and crumbles to pieces.

21. *P. Cincinnatus*, Morg. Consisting of numerous caespitose-connate, imbricated, more or less stipitate pileoli. Pileoli very broad, reniform, undulate and rugose, nearly glabrous, reddish-

yellow, subzonate toward the margin. Pores minute, unequal, somewhat angular, milky-white. Spores white .0037x.0055 mm.

Growing on the ground about the base of trees in damp woods. The whole mass is four to six inches in height, spreading upward and outward all around, with numerous pileoli symmetrically disposed, to a diameter of 12 to 16 inches across the upper surface. The common stipe rests bluntly on the ground, scarcely rooting. The single pileoli are 3—8 inches broad, with an extent of 2—5 inches, each stipe an inch or less in length; the thickness about one-half an inch, thinning out to the edge.

IV. SUBEROSI. Pileus corky or coriaceous, persistent, tenacious; texture floccose, fomentarious; truncigenous.

22. *P. graveolens*, Schw. Corky or woody and extremely hard, very closely imbricated and connate, forming a subglobose or polycephalous mass. Pileoli innumerable, inflexed and appressed, plicate, brown. Pores concealed, very minute, round, pale brown; the dissepiments thick and obtuse.

In woods, on old dead trunks; not uncommon. This remarkable fungus consists of innumerable pileoli, forming a subglobose or elongated mass 3—6 inches in diameter, and often many inches in length, especially on standing trunks. When fresh and growing it has a varnished or resinous appearance, and often purplish or reddish tints, with a paler margin. The substance within is ferruginous, rather soft and floccose, but covered by a very hard brown crust. The pores are brown, but lined with an extremely minute white pubescence. The pileoli are so closely imbricated and appressed as almost or entirely to conceal the pores. I am unable to separate from this the *P. conglobatus* of Berkeley; this latter Fries states to be a species of *Trametes* (Nov. Symb., p. 67), while he refers *P. graveolens* to the *Merismoidei*, l. c. p. 62. It is called by people "Sweet Knot," but I am unable to verify the popular notion concerning its wonderful fragrance, perceptible at a great distance from the tree on which it grows. When fresh, it has a strong and disagreeable odor, as described by Schweinitz.



IV. APUS.

Pileus sessile, adnate, dimidiate; lignatile.

*A. ANODERMEI*. Pileus at first more or less fleshy and watery or juicy, without a distinct cuticle.

I. CARNOSI. Pileus cheesy, at first watery-soft, fragile, flocculose; pores white.

23. *P. lacteus*, Fr. White. Pileus fleshy-fibrous, fragile, triquetrous, pubescent, azonate; the margin inflexed, acute. Pores thin, acute, dentate, at length labyrinthiform and lacerate.

In woods, on trunks, especially of beech. Commonly small and thin, about an inch in width, but sometimes transversely elongated; steep and gibbous behind, becoming at length smooth and unequal.

24. *P. fragilis*, Fr. Whitish, brown spotted to the touch. Pileus fleshy-fibrous, fragile, plano-depressed and reniform, rugose, convex beneath. Pores thin, long and flexuous, intricate.

In woods, on very rotten wood; rare. Pileus 2—3 inches in breadth, projecting an inch or more, and about an inch in thickness. The specimens so referred were at first white and very fragile; in handling and drying they have become brown and brittle.

25. *P. cæsius*, Schrad. White, here and there with a bluish tinge. Pileus fleshy, soft, tenacious, unequal, silky. Pores small, unequal, long and flexuous, dentate, lacerate.

In woods, on sticks; rare. Pileus  $\frac{3}{4}$ — $1\frac{1}{2}$  inches broad and long, simple or subimbricate, sometimes sub-stipitate. The color assumed by my specimens is a bluish-gray. The pores are rather small and become toothed and lacerate.

26. *P. delectans*, Peck. White, becoming yellowish. Pileus fleshy-fibrous, firm, simple or subimbricate, azonate, subtomentose. Pores large, unequal, at first subrotund and obtuse, then thin, angular and dentate. (Plate 1.)

In woods, on fallen trunks; common. Pileus two to four inches in breadth, with a projection of one to two inches, or, confluent, several inches in width. The stratum of pores is about half the thickness of the pileus.

27. *P. destructor*, Schrad. Pileus watery-fleshy, effuso-reflexed, fragile, rugose, subundulate, brownish-whitish, zonate within. Pores long, roundish, dentate or lacerate, white.

On old logs; rare. My specimens so referred are 3—5 inches in width and project about an inch. But it is said to be extremely variable in form, being often wholly resupinate. The *P. hybridus*, Sow., or "dry rot" of ships built of British oak, is thought to be but a form of this species.

II. LENTI. Pileus fleshy, tough, soft, elastic, villous-tomentose; pores colored.

28. *P. nidulans*, Fr. Pileus fleshy, very soft, subpulvinate, villous, then smooth, azonate, reddish-gray, of the same color within. Pores long, medium, unequal, angular, tawny-reddish.

On fallen trunks and branches, especially of hickory. Pileus  $1\frac{1}{2}$ —3 inches in breadth. Readily distinguished by its peculiar softness and color.

29. *P. fumosus*, Pers. Pileus fleshy, corky, firm, azonate, silky, becoming glabrous, sooty-pallid, dilated-adnate behind; within, fibrous and subzonate. Pores minute, short, round, entire, whitish-smoky, darker when rubbed.

On stumps, near the ground, especially of willow. Cæspitose and imbricated, the pileus attaining a breadth of 3—4 inches, the smoky tint more or less prevalent, larger and smoother than the next.

30. *P. adustus*, Willd. Pileus fleshy-tough, thin, villous, cinereous-pallid, effuso-reflexed behind. Pores minute, short, round, obtuse, whitish, pruinose, soon cinereous-brown, the marginal ones obsolete.

This is one of the commonest of Polyperi, and is found on trunks of every kind. The typical form, *villous*, and with the margin *straight*, is seldom met with; a form velvety, isabelline in color, thin and coriaceous when dry, like *P. isabellinus*, Schw., is common; the pileus is sometimes subzonate toward the margin; it occurs with the margin undulate, rugulose and even crisp; but in all the forms, the minute burnt brown pores prevail. *P. fumosogriseus*, C. & E., is a resupinate form of this species growing on butternut.

31. *P. dichrous*, Fr. Pileus fleshy-tough, thin, soft, effuso-reflexed, even, silky, white. Pores short, minute, round, obtuse, brown-cinnamon.

On trunks of all kinds; } common. Pileus an inch or two in breadth, and projecting an inch or less, but often effused and laterally confluent to the extent of several inches. A beautiful species. The hymenium is waxy, whence it has given rise to another genus, *Glæoporus conchoides*, Mont. The hymenium varies in color, being oftener a *pale cinnamon* in this region; occasionally I find a specimen with the dark purplish pores and narrow ferruginous margin of *P. nigro-purpurascens*, Schw.

32. *P. nivosus*, Berk. Pileus fleshy, tough, moderately thick, effuso-reflexed, laterally confluent, azonate, glabrous, snowy white. Pores minute, angular, acute, entire, whitish.

In woods on fallen sticks and branches; rare. Pileus  $\frac{3}{4}$ — $1\frac{1}{2}$  inches in breadth, more or less imbricated, and often laterally confluent, always extensively effused and sometimes with a very narrow reflexed margin; the pores are very small and angular; the color of the fresh and growing specimen is snow white, but in drying, it takes on an alutaceous hue, sometimes with greenish or brownish discolored spots. My specimens are identical with specimens of the species received from Mr. J. B. Ellis, of New Jersey. I am indebted to Mr. W. C. Stevenson, of the Philadelphia Academy of Sciences, for a copy of the original description.

III. SPONGIOSI. Pileus at first wet and spongy, when dry, firm and elastic (or hardened), fibrous within.

*a. Context Colored.*

33. *P. endocrocinus*, Berk. Pileus large, thick, spongy-fibrous, strigose-bristly, dark brown, the substance within of a rich saffron. Pores medium, thin, angular, lacerate, golden brown.

On decayed spots in standing trunks of hickory. Pileus, 3—6 inches in breadth. The few specimens I have met with were much deformed; but I judge it belongs here in the place where Fries assigns it, Nov. Symb., p. 55. I do not find any stipe.

34. *P. Pilotæ*, Schw. Crimson orange. Pileus very large, pulvinate or subungulate, nearly glabrous, spongy, fibrous, becoming hard and corky; the substance within uneven, zonate. Pores long, medium, at first round and thick, then thin and angular.

In woods on old logs; rare. Pileus 4—6 inches, or sometimes

nearly a foot in diameter. The color of the specimens varies greatly with the age; they are at first, and when perfectly fresh, of a gorgeous crimson-orange; then the surface of the pileus grows paler through orange to alutaceous; and the hymenium grows darker through brownish crimson to dark brown; the substance varies to reddish and pale wood-color, and is remarkably zonate. This is the *P. hypococcinus* of Berkeley, in Lea's Catalogue, according to Fries in the *Novæ Symbolæ*. Schweinitz seems to have found it but once, and his specimens had evidently lost their brilliancy; while Mr. Berkeley's description is based upon the notes and careful observations of Mr. Lea. This is certainly one of the most magnificent of fungi, both in size and color.

35. *P. cuticularis*, Bull. Pileus thin, spongy, fleshy, then dry, appanate, hirsute and tomentose, rusty brown, becoming blackish; within loosely parallel-fibrous; the margin fibrous-fimbriate, incurved. Pores minute, long, pallid, then ferruginous.

In woods on old trunks; common. Pileus 2—4 inches in diameter and rather thin. More or less imbricated and concrescent, obsoletely zonate, unequal and somewhat triangular, inflexed when dry; the tomentum strigose or velvety. Pores in the fresh specimens cinereous, pruinose, glittering when turned in the light. Spores very abundant, Indian yellow, .0056 mm. in length.

*b. Context White.*

36. *P. galactinus*, Berk. White. Pileus simple or subimbricate, spongy-fleshy, soft, becoming hardened, strigose-tomentose, zonate within; the margin incurved. Pores minute, round, entire.

In woods on rotten logs; common. Pileus 2—4 inches in width, somewhat pulvinate, thick, and sometimes gibbous behind, at first fleshy, soft and fragile, but drying quite hard, the margin curving inward; the color is commonly a milky white, but sometimes this is modified by sordid or smoky tints. The pores in the fresh plant are extremely minute, with thick dissepiments, and the hymenium has a silky luster; in the dried specimens they appear larger, thin, and somewhat angular, but always entire. There is little if any difference between this and *P. undulatus*, Schw.

37. *P. pubescens*, Schum. Pileus fleshy-tough, then corky, soft,

convex, subzonate, pubescent, white within and without; the margin acute, at length yellowish. Pores short, minute, nearly round and plane.

On stumps and old trunks; not common. Pileus  $1\frac{1}{2}$  inches or more in breadth, usually much imbricated and laterally confluent. My specimens differ in color from the type, being rather brownish, especially on the margin; they may be the *P. Sullivantii*, Mont., which Prof. Peck considers as not specifically distinct.

B. *PLACODERMEI*. Pileus covered with a contiguous crust, azonate or concentrically sulcate; persistent.

IV. *SUBEROSI*. Pileus at first somewhat fleshy and juicy, afterward hardened, covered by a rather thin crust; autumnal and somewhat persistent.

38. *P. dryophilus*, Berk. Pileus large, thick, unguulate, fleshy, then corky, uneven, scabrous, ferruginous-yellow, canescent. Pores small, irregular, angular, entire, ferruginous, the mouth whitish.

Growing at the base of living oak trees, and also on oak logs. Pileus 3—5 inches in breadth,  $1\frac{1}{2}$ —2 inches thick. The pileus is commonly very irregular and unequal, the surface uneven, with elevations and depressions; the ferruginous color prevails throughout, whitened externally by a subtle canescence or glaucescence. It is rather corky from the first, becoming hard and brittle.

39. *P. resinusus*, Schrad. Pileus fleshy, then corky, flocculose-pruinose, reddish brown; the cuticle adnate, rigid, rivulose, resinaceous; within azonate, pallid. Pores minute, equal, pallid.

On old trunks in autumn; very common. Pileus usually 4—7 inches in breadth, though specimens a foot in diameter are met with; often imbricate and sometimes zonate.

V. *FOMENTARII*. Pileus dry, covered with a hard, horny crust; perennial, yearly adding new strata.

a. *Context Colored.*

40. *P. reniformis*, Morg. Pileus sessile or substipitate, reniform or dimidiate, ascending, concave above and convex below; the surface ferruginous, concentrically sulcate and subzonate; the margin thin and acute. Pores minute, ferruginous, the mouth whitish.

Growing about the base of old stumps; common. Pileus 3—6

inches in breadth, and about 1 inch thick at the base. This species seldom makes but the growth of a single year; when more than one year's growth is made, a new stratum of hymenophore is interposed between the successive strata of tubules as in *P. vegetus*, Fr.

41. *P. applanatus*, Pers. Pileus horizontal, explanate, obsoletely zonate, pulverulent or glabrous, cinnamon then canescent; the cuticle crustaceous, rigid, at length fragile; within very soft, loosely floccose; the margin tumid, white then cinnamon. Pores minute, subferruginous; the mouth whitish, changing to brownish when rubbed.

On old stumps and logs; very common. Pileus from 4 or 5 inches to 1 foot in diameter, and 1 to 2 inches in thickness, flattened out and not at all unguulate, as in the next species. The pores are distinctly stratified, and it often occurs with a growth of several years.

42. *P. fomentarius*, Linn. Pileus unguulate-pulvinate, thick, glabrous, remotely concentrically sulcate, opaque, sooty, then canescent; within soft, floccose, ferruginous-tawny; cuticle thick, very hard, persistent; the margin glaucous-pruinose. Pores very long, minute, distinctly stratified, at first glaucous-pruinose, afterward ferruginous.

This species is common in the Eastern States on trunks of beech and birch; in this region it must be extremely rare, as I never met with a specimen, though it is in Lea's Catalogue. Pileus 3—5 inches in width, and 2—3 inches high, in shape much like a horse's hoof. The cuticle is very hard, brownish gray, with cinerous and dark zones; the margin generally rather acute, and the surface of the pores concave; the substance within spongy, tawny, yielding the best of amadou. The pores are distinctly stratified and at first are whitish, glaucous or yellowish-gray, at length ferruginous. It differs decidedly in form from the preceding species, with which it was once included.

43. *P. rimosus*, Berk. Pileus pulvinate-ungulate, much dilated, deeply concentrically sulcate, cinnamon, then brown or blackish and exceedingly rimose; context very hard, fibrous-radiating, tawny-ferruginous; the margin broad, pruinose-velvety, rather

acute. Pores minute, indistinctly stratified, tawny-ferruginous, the mouths rhubarb color.

On decayed spots of the trunks and branches of the living trees of the common locust (*Robinia*); common. Pileus from 3 or 4 inches to a foot in diameter, and 2 inches or more in thickness. The annual increments are distinguished by the deep concentric furrows on the upper surface, rather than by distinct strata of pores; the marginal band is of the same rhubarb color as the pores, while the older bands become cracked and brown or blackish. This is a most elegant *Polyporus*; the species was founded on specimens from New Holland, and it has been found in South Africa. How far eastward it extends, I am unable to say, but should judge that it ranged with the *Robinia*. I am disposed to think it is the *P. igniarius* of Schweinitz, N. A. Fungi. For the identification of the species I am indebted to Dr. M. C. Cooke, of London.

44. *P. salicinus*, Fr. Pileus woody, very hard, undulate, glabrous, the largest part resupinate; the margin short, obtuse, spreading, cinnamon, then canescent. Pores minute, round, ferruginous-cinnamon.

Growing commonly on old logs of the American Ash; often many feet in extent, with the narrow upper margin seldom more than an inch in thickness, and soon becoming brown and blackish. The fresh pores exhibit an elegant satiny luster when turned in the light.

45. *P. supinus*, Fr. Pileus woody, hard, effuso-reflexed, pallid; the margin obtuse; the substance within ferruginous. Pores minute, round, obtuse, cinereous-brown.

On the branches of an old Peach tree. Pileus roundish and mostly effused, an inch or two in diameter, or confluent for several inches on the under side of a branch, half an inch in thickness; the older portions turning blackish. A fine gray tomentum overspreads the surface and the pores, while the context beneath is ferruginous or brownish.

*b. Context White.*

46. *P. fraxinophilus*, Peck. Pileus subungulate, corky, woody, hard, concentrically sulcate and rimose; the margin obtuse, white;

context stratose, white, then subferruginous. Pores medium, unequal, nearly round, obtuse, white.

On living trees of the White Ash; common. Pileus 3—6 inches or more in breadth, and 2—3 inches thick. The pileus is commonly more or less irregular or deformed; it is distinctly stratified within and without, both the substance and the pores; the white margin changes to gray or cinereous, and finally to brown and blackish in the succeeding years; the white pores and substance become isabelline, and at length somewhat ferruginous. The pores are very large for this class of Polypori, averaging as much as .35 mm. in diameter; they are quite trametoid in appearance. It grows high up on the living trunk, on spots where branches have broken off.

47. *P. connatus*, Fr. Pileus corky, woody, effuso-reflexed, scalarimbricate, con crescent, villous, white or cinereous; the context and pores stratose. Pores minute, nearly round, white.

Growing at the base of Maple trees, between the roots, and often covered over by mosses; common. Pilei 2—5 inches in breadth, and often reflexed 2 or 3 inches. Our specimens are scarcely villous, but velvety, and glabrate; the white changes to an elegant cream color in drying. The dried specimens are light and corky, yet the plant is remarkably persistent, some specimens exhibiting the strata of many years.

VI. LIGNOSI. Pileus hard and woody, covered by a thin crust, more or less effused at the base; perennial, but not stratose.

48. *P. fraxineus*, Bull. Pileus corky, woody, glabrous, somewhat applanate, whitish, then reddish and brown, at first even, afterward concentrically sulcate-plicate, pallid within. Pores minute, short, reddish at first, as well as the margin covered with a white sebaceous down.

On trunks of the White Ash; rare. Pileus 2—4 inches in breadth, or confluent several inches. Solitary or imbricated, rugged, subzonate, dark red-brown; the margin, substance and pores pale reddish. Odor strong and penetrating.

49. *P. glomeratus*, Peck. Pileus corky, woody, effuso-reflexed, densely imbricate, con crescent, subtomentose, dark tawny, obscurely zonate. Pores small, angular, greenish yellow, with purple tints, the mouths with a silvery sheen.



In woods on old Maple logs; not common. The pilei are often effused to the extent of several feet, with a narrow irregular margin of half an inch or more. Greenish-yellow, olivaceous, and sometimes purplish tints are variously blended; and these likewise affect the substance and the pores.

50. *P. gilvus*, Schw. Pileus corky, woody, hard, effuso-reflexed, imbricate and concrescent, subtomentose, then scabrous and uneven, reddish yellow, then subferruginous, the margin acute. Pores minute, round, entire, brownish-ferruginous.

In woods on fallen trunks and branches; very common. Pileus 2—3 inches in breadth, and projecting 1—1½ inches. The pileus is first thin, of a bright reddish yellow, and velvety or subtomentose; afterward the form and surface is various. The pileus may remain thin, or it may become excessively thickened and subungulate; the surface soon becomes scabrous, and sometimes it is furnished with warty granules; it is often very uneven or scrupose. Specimens occur that are distinctly zonate. The reddish yellow of the growing margin soon changes to ferruginous, and very old specimens have assumed a canescence.

I am of the opinion that *P. gilvus*, Schw., *P. isidioides*, Berk., and *P. scruposus*, Fr., all pertain to the same species, and I am unable to separate them even as varieties; I think they are based on differences in the form and age of the specimens. I do not think it is ever "fleshy-tough" as appears to be assumed by Fries in the *Epicrisis*.

C. *INODERMEI*. Pileus from the first dry and firm, the cuticle thin and fibrous.

VII. *STUPOSI*. Pileus corky or coriaceous, azonate or the zones not differently colored, glabrate or appressed villous; the context fibrous or floccose.

a. *Context Colored.*

51. *P. radiatus*, Sow. Pileus corky, coriaceous, rigid, radiately wrinkled; at first velvety, tawny; afterward glabrate, ferruginous-brown; the margin spreading, repand. Pores minute, pallid, silvery-shining, at length ferruginous.

On decayed trunks; rare. Pileus 1—2 inches in breadth, very much imbricated and concrescent, always corky; the margin repand, radiate-rugose and subzonate.

52. *P. cinnabarinus*, Fr. Pileus corky, pubescent becoming glabrous, scarcely zonate, rugulose, cinnabar-red, expallent. Pores round, medium, entire, of a deeper red than the pileus.

On trunks of all sorts, especially Cherry; common. Pileus 2--4 inches in breadth, convex above and plane beneath. The younger plants and the growing margin are pubescent, the older portion becomes glabrous, and is wrinkled and pitted. It is recognized at once by its elegant color. It is given as a *Trametes* in the second edition of the *Epicrasis*.

*b. Context White.*

53. *P. molliusculus*, Berk. Whitish. Pileus corky, thin, radiately wrinkled, zonate, velvety-strigose; the margin often lobed; the context floccose, white. Pores medium, subrotund; then thin, acute and lacerate.

In woods on old trunks; common. Pileus 1½—3 inches in breadth, usually much imbricated, and usually effuso-reflexed; the zones of soft strigae are sometimes a little deeper colored. The dried plants are very light, and of an isabelline or alutaceous hue.

54. *P. fibula*, Fr. Whitish. Pileus coriaceous, soft, tenacious, velvety-hirsute, azonate, often radiate-rugose; the margin entire, acute; the context floccose, white. Pores rather small, round, acute, at length lacerate, becoming yellowish.

On fallen branches; rare. Pileus an inch or two in breadth, imbricate and variously conrescent, rather thick. Its substance is soft and light when dry, like the preceding, but it differs in its uniform and more conspicuous pubescence not arranged in zones.

55. *P. virgineus*, Schw. White. Pileus coriaceous, thin, tough, zonate, glabrous, radiately wrinkled, tuberculose; the margin thin, undulate; the context floccose-fibrous, white. Pores medium, round, entire; becoming thin, angular, acute.

In woods on old trunks; not common. The pilei have a peculiar habit of growing orbicular or with a helicoid or spirally imbricate arrangement, being attached by the center underneath; they vary in form, however, to reniform and dimidiate, and are sometimes substipitate. The dried specimens have the alutaceous hue of the related species.

56. *P. conchifer*, Schw. Whitish. Pileus coriaceous, very thin, concentrically sulcate, glabrous, commonly reniform or flabelliform

and substipitate. Pores medium, thin, acute, angulate, dentate, but scarcely lacerate.

In woods on sticks and fallen branches; common. A very singular species, and varying remarkably in form and size. It begins as a small cup, like a *Peziza*, furnished with a short, thick stipe, white without, and brown-zonate within; out of the edge of this cup, a very thin reniform or flabelliform pileus is developed, the cup appearing to be consumed in its growth; the pileus is commonly white or alutaceous, but sometimes the brown-zonate interior of the cup seems to be distributed in fragments over the surface. The pileus is rather small, not often exceeding an inch, sometimes lobed, extremely thin, and marked with faint concentric furrows.

57. *P. bififormis*, Fr. Whitish or alutaceous. Pileus coriaceous, flexible, tough, subzonate, with innate radiating fibers; the context fibrillose, concolorous. Pores very large, simple, compound, or confluent, round, elongated and flexuous; the dissepiments dentate, then lacerate; the hymenium finally resolved wholly into teeth.

In woods on old logs; common. Pileus in its perfect form 2—3 inches wide and projecting 1½—2 inches, often imbricated and laterally confluent. It is often found with the pilei much effused, and more or less deformed, forming a thick, irregular mass with large and much lacerated pores. In the fresh, well-developed pileus, the alternate paler zones are quite conspicuous. The pores are large and irregular from the first, and the dissepiments are dentate. The older plants might be taken for an *Irpex*.

VIII. CORIACEI. Pileus coriaceous, villous, banded with concentric zones commonly differently colored.

58. *P. hirsutus*, Wulf. Pileus corky-coriaceous, convexo-plane, hirsute with rigid hairs, uniform in color, but zonate with concentric furrows, whitish. Pores round, obtuse, whitish or brownish.

On wood of all sorts; very common. Pileus 2½—3½ inches in breadth, reniform, often imbricate, marked with conspicuous furrows and villous bands of the same color, the margin sometimes darker. Pores entire, with thick dissepiments, commonly brownish, but sometimes whitish.

59. *P. velutinus*, Fr. Pileus corky-coriaceous, plane on both sides, soft-velvety, slightly zonate, white, at length yellowish; the margin extenuate, acute. Pores round, minute, thin, white.

In woods on old trunks and branches; not common. Pileus 1—2 inches in breadth, with a few delicate, pale, yellowish or brownish zones on its surface, and a fine short pubescence, rendering it soft-velvety to the touch. The younger plants are moist and somewhat spongy, but become hardened and corky. The pores become angular in drying, and the thin dissepiments are sometimes lacerate; they also assume a sordid or yellowish hue.

60. *P. zonatus*, Fr. Pileus corky-coriaceous, convex, tuberculose and gibbous behind, subzonate, villous, opaque; the margin whitish. Pores minute, round or angulate, obtuse, whitish.

On trunks and branches of sugar maple; rare. Pileus 1½—2½ inches in breadth, cinereous, gray or ochraceous, villous, tuberculose at the base. It is thicker than the following species and lacks its shining zones; it more nearly resembles the forms of *P. hirsutus* with white pores.

61. *P. versicolor*, Linn. Pileus coriaceous, thin, rigid, applanate, depressed behind, even, velvety, shining, variegated with zones of different colors. Pores minute, round, acute and lacerate, white, afterward becoming pallid or yellowish.

On trunks of all kinds; one of the most common Polypori. Cæspitose, and densely imbricated, exhibiting a remarkable play of colors from gray or ochraceous to red, blue and various shades of brown. It is readily distinguished by its coriaceous rigid substance and by its shining zones of many colors.

62. *P. pergamenus*, Fr. Pileus coriaceous, thin, rigid, applanate, contracted at the base, tomentose, subzonate, virgate with innate radiating fibers. Pores at first small, irregular, dentate, purplish; soon lacerate into plates and bundles of teeth, and changing in color to pale or yellowish brown.

In woods on trunks of all kinds; very common. Pileus varying greatly in shape and size, sometimes effuse, reflexed and dimidiate, but when well developed, more or less attenuate at the base, and obovate, reniform and flabellate; the margin thin and inflexed; the color whitish or subochraceous. "Immensæ confusionis mater," like the related *P. abietinus*, Dick. "Non exstat vero facilius distincta species, si modo semel vegetum rite observaveris nec in speciminibus exoletis et siccis species distinctas quæras." *P. laceratus*, Berk., and *P. elongatus*, Berk., are among its numerous synonyms.

[TO BE CONTINUED.]



SPORES .007 M.M.



PORES

POLYPORUS DELECTANS PECK



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*From the Journal of the Cincinnati Society of Natural History, October, 1885.*

8.168-175

*THE MYCOLOGIC FLORA OF THE MIAMI VALLEY,  
OHIO.*

BY A. P. MORGAN.

[Continued from Vol. VIII, p. 110.]

GENUS II. POLYPORUS, FR. (Continued).

V. RESUPINATI.

Pileus none, the fungus therefore absolutely resupinate; the pores placed immediately upon the wood or the mycelium, seldom with an interposed subiculum.

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A. PORES COLORED.

a. *brown or blackish.*

63. *P. SPISSUS*, Fr. Widely effused, perennial, very hard, immersed, cinereous-brown; the margin very narrow, inflexed. Pores minute, angular, obtuse, entire.

In woods on the underside of hard trunks and branches, such as Hickory; common. Of a hard woody texture and sometimes effused to an extent of many feet; in specimens more than a year old, the annual strata are very distinct. The pores are brown within but the mouths are cinereous; they measure .16 mm. in average diameter.

64. *P. OBLIQUUS*, Pers. Widely ambient, annual, hard, very thick, uneven, pallid then brown and blackish; commonly encircled with an erect crested border. Pores long, oblique, minute, obtuse, angular.

On dead standing trunks of Ironwood (*Ostrya*); not common. Of a woody texture, very thick and uneven, and in its perfection of the elegant chocolate-brown color that Mr. Berkeley speaks of in the Cuban Fungi. The growth does not decorticate the *Ostrya* but the long oblique pores penetrate to the wood and seem to involve the bark in their substance. The pores at first are lined with a minute whitish down which gives the pale color to the surface; their average diameter, including the dissepiments, is .18 mm., but the latter are very thick.

65. *P. NIGER*, Berk. Effused, hard, rather thick, even, black; the border slightly raised, pubescent, dark brown. Pores minute, round, thin, umber within, the mouth very minutely black-tomentose.

On rotten trunks; rare. Elongated and altogether resupinate except at the very edge, where it is slightly raised, dark brown and pubescent; the substance where it is not quite obsolete, dark brown. Inside of the tubes dark brown but the hyphenium jet black.

66. *P. ENTUS*, Pers. Effused, even, firm, dry, bright brown; the border thin, depressed, concolorous. Pores very small, thin, angular, acute, unequal.

In woods on old branches; rare. The whole fungus composed of a thin stratum of pores closely adnate to the wood and of a uniform clear brown color throughout. The pores themselves are larger than in the preceding species but the dissepiments are very thin so that the average diameter is about the same, .17 mm.

b. *ferruginous or cinnamon.*

67. *P. FERRUGINOSUS*, Schrad. Effused, thick, firm, uneven,



tawny, when mature brownish-ferruginous, with a sterile border. Pores medium, very long, subrotund and lacerate, cinnamon.

In woods on trunks and branches; common. The younger specimens are tawny and the older brownish; it is distinguished by its unequal thickness and consequent interrupted and uneven surface. The pores are commonly oblique and very long, measuring .21-.24 mm. in diameter.

68. *P. CONTIGUUS*, Pers. Effused, thick, firm, glabrous, submarginate, cinnamon when young; the margin villous from the first. Pores rather large, equal, obtuse, entire.

A resupinate form growing commonly on the underside of dead and dry stems of Papaw, (*Asimina*), is rather doubtfully referred to this species; the same is found on the bark of *Ailanthus*. The pores are large .38 mm. in diameter, angular, with thin dentate dissepiments.

*c. red or purplish.*

69. *P. PURPUREUS*, Fr. Widely and irregularly effused; mycelium mucedinous, flocculose, white, creeping through the surface of the rotten wood. Pores short, minute, unequal, scattered interruptedly or conglomerate, purple-lilac.

On bark and wood of Sugar Maple; rare. Thin and delicate, occurring in straggling patches, with groups of purple pores on the white mycelium. Some of the preserved specimens have bleached out white. It is *P. lilacinus*, Schw.

70. *P. ATTENUATUS*, Peck. Effused, thin, even, coriaceous, seceding, pinkish-ochre; the border pubescent, whitish. Pores minute, subrotund, thin, acute.

In woods on old trunks; not rare. Effused sometimes for many inches. The minute pores are spread evenly over the very thin whitish subiculum, which is separable from the matrix. The pores might, perhaps, be called subangular as well as subrotund; they measure about .14 mm. in diameter. This is a very beautiful species; it may be *P. vinctus*, Berk.

71. *P. RUFUS*, Schrad. Effused, coriaceous, thin, adnate, even, glabrous, determinate, dark red. Pores minute, thin, acute.

On old prostrate trunks; common. Specimens which agree with it quite well in color are doubtfully referred to this species; they appear rather humid, and the substance consequently rather fleshy to come under the designation *coriaceous*; the pores too, when fresh, are obtuse, though they may be called *thin* when dry. *P. hematodes*, Rostk. is said to be the same thing.

*d. yellowish.*

72. *P. VITELLINUS*, Schw. Widely effused, loosely adnate, thick, uneven, soft and fleshy, vitelline, with a byssine margin. Pores very large, elevated, unequal, thin, angular.

On very rotten wood. A soft and fleshy fungus of unequal thickness and large unequal pores. The color is very elegant and persists even in drying; the egg-yellow pervades the whole mass. The long pores vary from round to angular and even sinuous. Strings of yellow mycelium penetrate the rotten wood beneath.

73. *P. XANTHOLOMA*, Schw. Widely effused, closely adnate, even, smooth, dry; the border rather broad, velvety, yellowish. Pores minute, unequal, subrotund, obtuse, pale yellowish.

Common in woods. Effused often to the extent of many inches or even several feet on the underside of sticks or smaller branches lying somewhat up from the ground and keeping it dry. The border is sometimes "elegantly luteous" and therefore of a deeper yellow than the pores but this is not always the case. The pores at first are pale, maturing into a rich cream-color; they are mostly roundish but vary to oblong and sub-sinuous; the dissepiments are thick and obtuse; they average .16 mm. in diameter.

74. *P. BOMBYCINUS*, Fr. Effused, silky-membranaceous, loosely adherent, sordid yellowish, with a cobwebby-velvety border. Pores ample, angulate.

On an old rotten log of Sugar Maple; rare. A very distinct and singular species. It first appears as subrotund byssine spots, soon forming in the center a porose hymenium, these then become confluent into a soft rather thick membrane. The pores originate as little pits sunk in the mycelium out of which they are wholly developed, being at first subrotund, then growing firmer they become angular and sometimes flexuous. The dried specimens have taken on a brownish hue and the dissepiments are very thin, dentate and lacerate. *P. subiculosus*, Peck, seems not much different from the primordial state of this species.

*e. cinereous.*

75. *P. CINEREUS*, Schw. Widely effused, adnate, firm; the border narrow, thin white-fimbriate. Pores small, unequal, subrotund, obtuse, cinereous.

In woods on the lower side of old logs; common. The whole of a uniform ashen hue except the minute whitish fringe of the border. The

growing specimens are somewhat moist, but they shrink little in drying and become quite firm. The pores measure about .20 mm. in diameter. It is an elegant species.

B. PORES WHITE.

f. *minute, round, obtuse.*

76. P. VITREUS, Pers. Effused, subundulate, indeterminate, whitish, subhyaline; the mycelium a tough, separable, subcoriaceous membrane. Pores minute, round, long, obtuse, entire.

Upon rotten prostrate trunks of Beech; rare. A very remarkable species, which has given rise to other genera; *Poria vitrea*, Pers.; the sterile leathery mycelium without any pores, *Xylostroma candidum*, Pers. The stratum of long pores is soft as if fleshy; it is often interrupted or the pores collected in nodules. The *Xylostroma* is usually found between the bark and the wood.

77. P. OBDUCENS, Pers. Effused, incrusting, innate, firm, white, formed wholly of the pores. Pores minute, crowded, equal, distinctly stratified, the older strata pale alutaceous.

On the underside of old trunks; common. The first year it consists of a thin white separable stratum of crowded pores, which, however, in drying takes on the pale alutaceous color of the succeeding years. It is rather humid when young and differs decidedly from *P. vulgaris*, which is always dry and inseparable.

78. P. VULGARIS, Fr. Widely effused, thin, dry, closely adnat., even, white; the border soon glabrous. Pores firm, crowded, small, round, nearly equal.

On wood of all sorts; common. Consisting of a thin dry stratum of minute pores, sometimes on hard dry wood. The variety *flavus*, Fr., is not uncommon and the *white* and *yellow* sometimes occur in the same specimen; this is probably *P. pulchellus*, Schw. The pores are roundish with rather thick dissepiments; they measure about .16 mm. in diameter.

g. *small, angular, acute.*

79. P. MUCIDUS, Pers. Effused, rather thick, somewhat immersed, soft, white, becoming pallid; the border indeterminate, byssine. Pores medium, unequal, lacerate, received in a crustaceous mycelium.

Upon old rotten wood; rare. At first soft and somewhat fleshy. Pores becoming thin, angulate and torn, measuring about .20 mm. in diameter.

80. P. MOLLUSCENS, Fr. Effused, thin, soft, white; the border

byssine, fibrillose-radiating. Pores in the center or collected here and there, small, thin, round, unequal, lacerate, becoming pallid.

Upon rotten wood, leaves, etc. Thinner and much more delicate than the preceding; to be distinguished by its pores scattered in patches upon a byssine mycelium with a fibrillose border.

81. *P. VIRIDANS*, B. & Br. Effused, crustaceous-adnate, thin, at first white, afterward, when dry, pale green: the margin pulverulent-tomentose. Pores minute, angular, the dissepiments thin.

In woods on the lower side of old trunks; rare. This is a very beautiful species. It is at first and when growing all white, but in drying the pores take on a pale green tint, leaving, however, a pure white sterile border, elegantly puberulent and fimbriate. It is at first a little humid and seems to be furnished with a subcoriaceous subiculum, which is closely adnate to the wood. The thin dissepiments of the pores are in no wise toothed or torn. The pores measure about .18 mm. in diameter.

82. *P. GORDONIENSIS*, B. & Br. Effused, membranaceous, very thin, separable, persistently white; the margin shortly fimbriate. Pores minute, unequal, angulate: the dissepiments very thin, fimbriate-denate.

In woods on old trunks of Elm; rare. At first apparently somewhat fleshy, when dry, becoming extremely thin and delicate. The dried specimens scarcely show the elegantly fringed teeth of the pores. It was first found in Great Britain on Fir; it is recorded in the New York Reports by Prof. Chas. H. Peck.

*h. large, angular, unequal.*

83. *P. VAPORARIUS*, Pers. Effused, innate; the mycelium creeping in the wood, floccose, white. Pores large, angulate, white, becoming pallid, crowded together into a contiguous, firm, persistent stratum.

On bark and wood of all kinds; common. This is an extremely variable species in its appearance. The pores at first are angular and about .32 mm. in diameter; their dissepiments soon break and the pores become compound and labyrinthiform. In a very oblique position it, at first sight, appears a Hydnum, but the teeth are terete and a close inspection shows they are pores split on one side. There is no border, but a thin white mycelium creeps close in the surface of the wood and bark. The white color soon becomes stained and rusty. *P. papyraceus*, Schw., growing on dead grapevines, is said not to be different.

84. *P. TENUIS*, Schw. Long and longitudinally effused, forming a thin subseparable white-palish equable membrane, the margin somewhat sterile and whitish. Pores quite large, subflexuous, shallow, pallid.

“On a dead stick.” This is given on the faith of Berkeley, in Lea’s

catalogue; I have never met with anything I could so refer. The original habitat, given by Schweinitz, is on the fibrous inner bark of Chestnut.

85. *P. CANDIDISSIMUS*, Schw. Effused; the mycelium, a very thin, bombycine, but separable membrane. Pores very large, at length oblique, and with the membrane pure white.

In woods on the bark of an old Hickory log, effused for many feet. At first, when fresh and growing, quite soft and fleshy; the pores very large and angular, at first shallow, lengthen and become oblique. The pores present an uneven surface, or are grouped in patches upon the firm membrane. It resembles most *P. molluscus*, but the pores are very much larger. The pure white color is very marked.

*i. superficial, distant, punctiform.*

86. *P. CORTICOLA*, Fr. Very broadly effused, equable, firm, white or palish; the mycelium interwoven into a naked subcoriaceous stratum. Pores naked, superficial, commonly obsolete, punctiform.

Upon barks. On account of their habit altogether similar, there are embraced under this name many different forms. Perhaps all are only degenerations of other species; the substerile pores differ greatly in the degree of their evolution.

GENUS II.\* MYRIADOPORUS, Peck.

Hymenium cellular, porous. Pores of the surface shallow, open; the others imbedded in the hymenium, variously directed, short, closed, inseparable from each other, and from the hymenophore.

The pores do not, as in *Polyporus*, form vertical parallel tubes, but rather cells or short tubes variously directed, so that a vertical section of the hymenium, as well as a horizontal one, is porous. Fries mentions such a structure in the *Elenchus* I, 123; he describes it well, as follows: "In hoc contextus <sup>t</sup>itus *cellulosus*, incompletos poros format, eosque includit, unde totus fungus extus intusque vesiculosus!"

I. *M. ADUSTUS*, Peck. Resupinate, effused, thick, subcoriaceous, uneven; the subiculum thin, floccose, whitish. Hymenium thick, grayish black externally, varying to whitish internally, substratose; pores or cells minute, roundish, unequal.

In woods on the underside of an old trunk. Effused to the extent of several inches, about 2 mm. in thickness, the hymenium occupying much the larger part of the thickness. The genus is founded upon this species and *Polyporus induratus*, Peck, 31st Report, p. 37, so that at present there are but two described species.



J. Morgan *Ann. Entom. Soc. Amer.* vol. 7: 1-8

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THE MYCOLOGIC FLORA OF THE MIAMI VALLEY.

BY A. P. MORGAN.

[POLYPOREI.—Concluded.]

Genus III. TRAMETES, Fr.

Pores subrotund, obtuse, entire, often unequal in depth, sunk into the substance of the pileus; the trama, hence, contiguous and similar with the substance of the pileus.

Fungi lignatile.

*a. Pores small or minute.*

1. *T. SCUTELLATA*, Schw. Pileus corky, dimidiate and sub-ungulate, or more commonly suborbicular, and attached by the apex, white then brown and blackish. Hymenium concave, white-pulverulent, with a somewhat elevated sterile margin: pores long, punctiform, with very thick obtuse dissepiments.

On stumps and old dry trunks, the scutellate form especially on the underside of rails in fences: common. Scarcely exceeding an inch in breadth, and usually about half an inch. The dimidiate pileus becomes rugged and uneven, and changes to brown and blackish, retaining, however, the white margin; sometimes concentric furrows and folds are found upon it. There are all stages between the dimidiate and the scutellate forms. The pores average about .22 mm in diameter, but the dissepiments, which are always included in the average, are as broad as the pores. This is the *T. Ohiensis*, Berk.

2. *T. RIGIDA*, B. and Mont. Pileus corky, undulate, by far the greater part resupinate: the margin short, acute, subzonate, tawny-brown. Pores medium, round, equal, obtuse, whitish.

In woods, on the lower side of old trunks; not uncommon. Often all resupinate and effused for a foot or more, the narrow margin seldom projecting half an inch. The pores are long, round and very regular, measuring about .33 mm. It is an elegant species.

3. *T. SERIALIS*, Fr. Pileus stipiteo-corky, effuso-reflexed, seriatly elongated, narrow, confluent, rugose and serobiculate, with appressed hairs, brownish-yellow, the margin white. Pores obtuse, minute, unequal, white.

On the underside of an old trunk; no doubt rare. Mostly resupinate, and confluent to the extent of a foot or more, the margin reflexed scarcely half an inch. Perennial, and the first year all white, but these older specimens are cinereous and brownish. Readily distinguished from *T. rigida* by its minute, unequal pores. My specimens are two years old.

*b. Pores large, unequal.*

4. *T. SEPIUM*, Berk. Pileus coriaceous, normally subtriquetrous and porrect behind, finely tomentose, pale wood-color, with darker zones. Pores very large, subflexuous, pallid: the dissepiments rather thin, but entire.

On trunks and branches in woods, but more especially on the dry rails and boards in fences. Pileus about half an inch in width, but often effuso-reflexed, and laterally confluent to the extent of several inches, also sometimes wholly resupinate. The context is thin and coriaceous. The largest pores at first are subrotund, with rather thick dissepiments, but these at length become thin and flexuous; they measure about .7 mm. in diameter. It is the *Dac-dalea sepium*, Berk. of Lea's Catalogue: but it may be well to say that the genus *Tremetes* was not at that time established.

5. *T. PALLIDO-FULVA*, Berk. Pileus corky-coriaceous, rather thin, subimbricate, azonate, minutely pubescent, tawny. Pores at first subrotund, unequal, obtuse; at length becoming lacerate and elongated, the dissepiments often sublamellate

In woods on trunks, especially of Sugar Maple. Pileus 1-2 inches in breadth, and projecting as much as an inch. Often confluent, and much imbricate or effused and resupinate. An elegant resupinate form, with a thin edge, and a wide, sterile border grows



on the bark of the White Ash; it resembles the following species, except in color; it may be the *Polyporus cervinus* of Persoon. This may be the same as the *Lenzites vialis*, Peck, which grows so abundantly on the Oak railroad ties, but they differ greatly in color.

6. T. MOLLIS, Smfdt. Resupinate, determinate, woody-pallid, at length brownish; the margin at length revolute; and the underside pubescent, umber. Pores ample, unequal and lacerate.

On the bark of the dead branches of Sugar Maple, in the tops of fallen trees. Discrete and separable from the matrix, although wholly resupinate, but the margin free all around and often involute and clothed on the under side with spongy down. Pores very large .42 mm, subrotund and elongated, flexuous. From an inch or two in length or breadth, elongated to several inches or even a foot. A very elegant species. My specimens are gray becoming brownish, umber on the underside; they answer well to the description of *P. cervinus* in Berkley's Outlines.

Genus IV. D.EDALEA, Pers.

Pores firm, when fully grown sinuous and labyrinthi form; in other respects wholly like *Trametes*.

a. *Pileus corky*.

1. D. AMBIGUA, Berk. White. Pileus corky, horizontal, explanate, reniform, sessile, azonate, finely pubescent, becoming glabrous. Pores from round to linear and labyrinthiform, the dissepiments always obtuse and never lamellate.

On old trunks of Sugar Maple; common. It begins its growth in Spring as round white nodules; specimens gathered in Summer are often thick and convex or gibbous; it finishes its growth along in Autumn, when it has become flattened out, depressed above and with a thin margin. I have indeed, however, specimens two years old in which the growth of the first year is wholly inclosed by that of the second year. There is sometimes a distinct round stipe as much as half an inch in length and oblique to the pileus, but more commonly the pileus is sessile by a somewhat circular base. When fresh and growing it is of a rich cream color, with a soft velvety feeling and a pleasant fragrance; the color of the mature specimens is well described by Berkeley as *dealbatus*, whitewashed; while older-weathered specimens become wood colored and brownish. The surface is usually quite smooth and even, not at all zonate, but

sometimes there are one or two concentric furrows toward the margin; I have specimens that are tuberculose and others that are very rugged and uneven. It varies greatly too in size; I have perfect specimens from one to seven inches in diameter, though it is commonly 3-5 inches in width.

I have diagnosed the species as appears to me the typical form in this region, retaining Mr. Berkeley's name as exceedingly appropriate. I consider *Trametes lactea*, Berk. and of course *T. incana*, Berk. to be the same thing with the pores all subrotund. Fries evidently had a Trametoid form when he changed the name to *Trametes ambigua*. (Nov. Symb. p. 96.) I think that *D. glaberrima*, B. & C. and *Lenzites glaberrima*, B. & C. are not specifically different; and so far as description goes *Trametes elegans*, Fr. and *T. centralis*, Fr. must be very closely related species. I have no doubt that when this elegant fungus is well known it will be found to have appeared under many different names.

2. *D. AUREA*, Fr. Golden-yellow. Pileus corky-coriaceous, gibbous, velvety, subzonate, uniform in color; the substance yellow. Hymenium from porose, narrowly sinuate and labyrinthiform, yellow.

Upon trunks of oak; rare. Pileus triquetrous, about 2 inches in breadth, the margin tumid. It is said to vary considerably in its color and in the hairiness of the surface.

3. *D. CONFRAGOSA*, Bolt. Pileus corky, a little convex, subzonate, uniform in color, reddish-brown, wood-color within. Pores from subrotund and flexuous to narrowly labyrinthiform and lacerate, cinereous-pruinose then reddish-brown.

On the dead branches of standing trees of *Cratægus tomentosa*, rarely on other wood. This is another protean fungus which appears under many different names. See Peck, 30th Report p. 71. The form commonly met with here is the *Lenzites Cratægi*, Berk. of Lea's Catalogue. It grows attached by the apex to the underside of the branches with the orbicular hymenium downward; occasionally I find it dimidiate on the trunk. The pileus varies from 1½ to 3 inches in diameter; it is brown zonate and concentrically furrowed and often radiately rugulose or sulcate. The pores at first are essentially trametoid; they become oblong and flexuous at maturity, and lenzitoid only in old and weathered specimens. The form, *Trametes rubescens*, A. & S., with linear straight pores is rarely met with on branches in wet woods.

B. *Pileus coriaceus*.

4. D. UNICOLOR, Bull. Pileus coriaceous, villose-strigose, cinereous, with zones of the same color. Pores labyrinthiform, flexuous, intricate, acute, at length lacerate-dentate.

In woods on trunks of all sorts; common. Pileus 2-3 inches in breadth and projecting an inch or more, usually more or less connate and imbricate; older specimens become gray and yellowish with more marked zones and concentric furrows and ridges. The pores are whitish-cinereous or sometimes brownish; they are soon broken up into irregular plates and teeth. I occasionally meet with specimens extensively effused and nearly resupinate.

Genus V. FAVOLUS, Fr.

Hymenium reticulate cellulose or alveolate. Alveoli radiating, formed of densely anastomosing lamellæ: elongated. Spores white. Fungi epixylous.

1. F. CANADENSIS, Klotsch. Pileus fleshy-tough, thin, reniform, fibrillose-scaly and tawny, becoming pale and glabrous. Stipe eccentric or lateral, very short or obsolete. Alveoli angular, elongated, whitish; the dissepiments becoming thin, rigid and dentate. Spores oblong, .012x007 mm.

In woods on fallen branches, especially of Hickory, common. Pileus 1-2½ inches in breadth, sessile or with a very short stipe. Specimens with an eccentric stipe resemble *Polyporus lentus*, Berk., but the pores are much larger than those of this species. This is undoubtedly the *Polyporus Boucheanus*, Kl. of Lea's Catalogue, as is confirmed in the Notices of Berkeley under No. 44; but Fries, in the Novae Symbolae, seems to indicate that these American forms are not his species, and certainly the description in the Epicrisis does not apply to our plant. Specimens from New England gathered by me are glabrous, or scantily fibrillose, and may be the *F. Alutaceus*, B. and Mont.; they are, no doubt, what is meant by *Polyporus Boucheanus*, var. *peponinus*, B. and C., in the Notices of N. A. Fungi, under No. 44. The original description of Klotsch was based upon a single specimen in the herbarium of Hooker, and it applies remarkably well to our plants, except that the pileus is sometimes lobed as in *F. Alutaceus*, B. and Mont.

Genus VI. MERULIUS, Haller.

Hymenophore formed out of a mucedinous interwoven mycelium, covered by a soft-waxy contiguous hymenium; the surface of

the latter reticulate with obtuse folds, incompletely porous, at length gyrose and obsolete dentate. Fungi epixylous.

*a. Pileus sessile, dimidiate.*

1. *M. RUBELLUS*, Peck. Pilei sessile, confluent and imbricated, repand, thin, convex, somewhat tenacious, subtomentose, glabrate, red becoming pale. Hymenium whitish or reddish; the folds much branched, porose-anastomosing. Spores white, elliptic, .004-.005 mm. long.

In woods on old trunks and branches; not uncommon. Pileus 1-3 inches in breadth, or confluent several inches. This is a very beautiful species, never resupinate or effuso-reflexed as the following ones, but always sessile and more or less confluent and imbricated; the color varies from flesh-color to deep red, fading out with age; the hymenium is commonly an elegant cream-color, but sometimes it is pure white, and occasionally it is tinged with red. This is most likely the *M. incarnatus*, Schw., of Lea's Catalogue, but specimens compared with those of this species in Schweinitz's herbarium were declared to be different: furthermore, in the N. A. Fungi, Schweinitz insists that his species is incorrectly referred to *Merulius*, and is a *Cantharellus*.

*b. Pileus effuso-reflexed, with a determinate border.*

2. *M. TREMELLOSUS*, Schrad. Resupinate; then free or reflexed, fleshy-tremellose, tomentose, white, the margin dentate radiate. Folds porose, various in form, reddish. Spores white, a little curved, .004-.005 mm. long.

In woods on old trunks and branches; common. Substance cartilaginous-gelatinous, the younger fungus all resupinate, orbicular, pallid, with a radiate and free border; at length becoming reflexed sometimes to the extent of an inch, and much confluent and even imbricated; in drying, the color changes to alutaceous, and that of the hymenium to brownish.

3. *M. CORIUM*, Fr. Resupinate-effused, soft, subpapyraceous; the border at length free, reflexed, villous underneath, white. Hymenium reticulate-porose, flesh-color or pale alutaceous.

In woods on bark of Sugar Maple; rare. My specimens are an inch or more in breadth and 3-5 inches long, with a very narrow reflexed border; at first they were nearly white, but in drying have taken on a fleshy tint. In the Handbook of British Fungi, the spores are said to be vivid orange, oval, .006 mm. long.

c. *Resupinate-effused, with a byssine border.*

4. *M. HIMANTIOIDES*, Fr. Effused, bombycine, very soft, fibrous-silky underneath; the border byssine. Folds porose, then gyrose: dirty yellowish, then subolivaceous.

On rotten wood of Beech; rare. The whole of a silken texture, loosely adherent and variable in form; the margin loosely tomentose. The folds at length poriform, crisp, flexuous; the color gray, violaceous, olivaceous, dirty yellow, etc.

5. *M. MOLLUSCUS*, Fr. Effused, thin, soft, membranaceous; the margin byssine white. Folds porose-gyrose, flesh-color.

On rotten wood of Sugar Maple; rare. Extensively effused for several feet along the side and underneath a rotten log, forming a soft loosely adhering membrane, the color fleshy or creamy-white. The dried specimens are orange or brownish and the folds in some places shrunken into ridges and tubercles.

6. *M. PORINOIDES*, Fr. Crustaceous-adnate, thin; the border byssine, white. Folds poriform, distant, dirty yellow.

On rotten wood of Oak; rare. Effused to the extent of 2 or 3 inches, crustaceous, thin, persistent; younger specimens are all villous and white; the pores are round or linear and flexuous.

Genus VII. *POROTHELIUM*, Fr.

The fungus composed wholly of the interwoven mycelium, resupinate-expanded and submembranaceous; from which project papillæ at first distinct, soon porose-opened, at length elongated and tubular.

1. *P. FIMBRIATUM*, Pers. Effused, membranaceous, tenacious, white; the border with a fringe of terete lacinia. Warts of the pores hemispheric, superficial, at first and on the border distinct, afterward confluent in the middle.

On the lower side of logs and wood of all sorts: common. A very elegant fungus. Widely effused and membranaceous, with a white fringed margin. The mass of the pores becomes crowded and confluent, while only the marginal ones remain distant and distinct; yet the hymenium never looks like that of a *Polyporus*.

Genus VIII. *SOLENTIA*, Hoffm.

Receptacle none, tubules membranaceous, subcylindric, discrete and free from each other; the mouth connivent.

1. *S. FASCICULATA*, Pers. Gregarious, subfasciculate, clavate-cylindric, somewhat silky, white.

On old bark of Beech; rare. Tubules in my specimens 1-2 mm. long, crowded and somewhat fasciculate; in its younger state granuliform, soon annuliform, at length becoming cylindric and enlarged upward; externally silky with appressed hairs.

2. *S. OCHRACEA*, Hoffm. Scattered, clavate-cylindric, tomentose, ochraceous, white within.

On rotten wood of Maple; rare. Tubules less than a millimeter in length, about .6 mm. in my specimens, and covered with short rigid hairs; they do not seem scattered to the naked eye, but the lens shows that they are not crowded. The species is closely related to *S. anomala*, Pers. but the tubules of the latter rest upon a distinct floccose subiculum, while the mycelium of the former is scarcely apparent.

Journ. Acad. Sci. Philad. 10.

The Mycologic Flora of the Miami Valley, O.

7-17

1887

THE MYCOLOGIC FLORA OF THE MIAMI VALLEY,  
OHIO.

By A. P. MORGAN.

(Read by Title, March 1, 1887.)

Continued from Vol. IX., p. 8.

Class I.—Hymenomycetes.

Order III.—Hydnei.

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Hymenium inferior or amphigenous, effigurate from the first and definitely but variously protuberant into aculei, teeth, tubercles, crests and papillæ.

By far the greater part of the species are resupinate-effused.

TABLE OF GENERA OF HYDNEI.

*A. Hymenium aculeate or dentate.*

1. HYDNUM. Aculei subulate, discrete at the base.
2. IRPEX. Teeth acute, joined together at the base.

*B. Hymenium tuberculata, wrinkled, etc.*

3. RADULUM. Hymenium of rude, deformed, obtuse tubercles.
4. PHLEBIA. Hymenium in crowded folds and wrinkles.
5. GRANDINIA. Hymenium granulose, the granules globose or hemispheric.
6. ODONTIA. Hymenium of warts penicillate multifid at the apex.
7. KNEIFFIA. Hymenium strigose-exasperate with rigid

Genus I.—Hydnum, Linn.

Hymenium inferior, aculeate; aculei subulate, discrete at the bas

\* *Pileus stipitate.*

- I. MESOPUS. Stipe central.
  - a. Pileus fleshy, 1-3.
  - b. Pileus coriaceous, 4
- II. PLEUROPUS. Stipe lateral, 5.
- III. MERISMA. Much branched, 6-8.

OUT 25, 1904

\*\* *Stipe wanting.*

- IV. APUS. Pileus sessile.  
 c. Pileus fleshy, 9-11.  
 d. Pileus coriaceous, 12-14.
- V. RESUPINATI. Pileus none.  
 e. Subiculum thick, fleshy, 15.  
 f. Subiculum waxy, 16, 17.  
 g. Subiculum membranaceous, 18-24.  
 h. Subiculum crustaceous, 25-30.

I. MESOPUS. Pileus entire, simple, the stipe central.

All the species are terrestrial and grow chiefly in pine woods; this will account for their scarcity in the Miami Valley which is notable for the absence of evergreen woods.

*a. Pileus fleshy.*

1. H. INFUNDIBULUM, Sow. Pileus fleshy-fibrous, tough, infundibuliform, unequal, even, brown. Stipe unequal, pallid, with a tapering base. Aculei decurrent, white, then bay.

In woods, rare. Pileus 4-6 inches in diameter, the stipe 2-3 inches in length and an inch thick.

2. H. REPANDUM, Linn. Pileus fleshy, fragile, more or less repand, nearly glabrous, pallid. Stipe deformed, pallid. Aculei unequal, concolorous.

In rich woods, common. Pileus 3-5 inches broad, stipe 3-4 inches long. The pileus is sometimes floccose-pruinose; the color varies from whitish to yellowish or a fleshy tinge, but it is unchangeable.

8. H. DIFFRACTUM, Berk. Pileus fleshy-tough, thick, glabrous, alutaceous. Stipe obese, alutaceous. Aculei equal, pale alutaceous.

In dry woods, rare. Pileus about 3 inches broad, the stipe 2 inches in height. The pileus and stipe are of a tough, fleshy substances, and at length becomes much cracked and split. A remarkably rigid species when dry.

*b. Pileus coriaceous.*

4. H. ZONATUM, Batsch. Ferruginous. Pileus equally coriaceous, thin, expanded, more or less infundibuliform, zonate, becoming glabrous, radiate-rugose; the margin paler and sterile underneath. Stipe slender, nearly equal, floccose, with a tuberous base. Aculei slender, pale, then ferruginous.



In oak woods, rare. Pileus 1-2 inches broad, the stipe less than an inch in length.

II. PLEUROPUS. Pileus more or less dimidiate, the stipe lateral.

5. H. ADUSTUM, Schw. Pileus variable in shape from orbicular and entire to dimidiate and reniform, coriaceous-tough, whitish or pale yellowish. Stipe ascending, unequal, subcentral or lateral. Aculei at first pallid or yellowish, then changing to brown or blackish.

In woods on fallen sticks and branches, not rare. Pileus 2-3 inches broad, the stipe an inch or less in length. The pileus in very thin, velvety or nearly smooth, more or less zonate, sometimes brown-zonate. The stipes are sometimes concrescent, with separate or more or less united lobed and overlapping pilei.

III. MERISMA. Very much branched or tuberculiform and immarginate.

6. H. CORALLOIDES, Scop. Very much branched, pure white; finally changing to yellowish and the whole plant expanding into attenuate intricate branches. Aculei unilateral, subulate, entire.

In woods on old trunks, common. A very showy plant, sometimes a foot or more in extent, when fully developed consisting of numerous intricate branches with the spines pendent from the lower sides. It is said to be edible.

7. H. ERINACEUS, Bull. Fleshy, elastic-tough, pendulous, tuberculose, immarginate, white, changing to yellowish, fibrillose, lacerate above. Aculei very long, straight, equal, pendulous.

In woods on old trunks, not rare. Of a rounded form 4-8 inches in diameter, sometimes with the rudiment of a lateral stipe; appearing solid but when broken open it is found to be a mass of interlacing branches. The spines are remarkably long, from 1-2 inches or more.

8. H. STRATOSUM, Berk. Pilei resupinate, with a narrow lobed border, consisting of repeatedly branched rigid brown processes, which are clothed above with gray or ferruginous tow-like fibers. Aculei rather long, rigid, sharply acuminate, brown varying to cinereous, at length stratose.

On a dead trunk (*Lea*). Pilei spreading for 3 or 4 inches over the matrix. "This is one of the most remarkable species with which I am acquainted." "I do not know any other species with which it can be compared." (*Berkeley* in *Lea's Catalogue*.) This appear

to be a rather doubtful production; there is no record of its ever having been found again, and Mr. Berkeley does not enumerate it in the Notices of N. A. Fungi. I have never met with anything that would answer to it in any way.

IV. *APUS*. Pileus sessile, dimidiate, marginate, often effuso-reflexed.

*c. Pileus fleshy.*

9. *H. CIRRHATUM*, Pers. Pileus fleshy, expanded, pallid, cirrhate-fibrillose above with scattered decumbent abortive aculei; the margin fimbriate, incurved. Aculei very long, a little tough, equal.

In woods on old trunks, rare. Simple or imbricated, the single pilei somewhat reniform and 1-2 inches in breadth; the spines half an inch or more in length. It varies in color, being white, yellowish and rufescent.

10. *H. PULCHERRIMUM*, B. and C. Pileus fleshy fibrous, alutaceous, hirsute; the margin thin, entire, incurved. Aculei short, crowded, equal.

In woods on old trunks, common. Imbricated and laterally confluent, the single pilei 2-4 inches in breadth and projecting 2-3 inches. The color varies from white through alutaceous to yellowish; the texture is fibrous with a fibrous-hirsute surface; sometimes there is a faint zonate arrangement of the fibers of the surface. The spines scarcely exceed a quarter of an inch in length; they take on a rufescent hue in drying.

11. *H. SEPTENTRIONALE*, Fr. Fleshy-fibrous, tough, pallid. Pilei innumerable, plane, scalariform, connate behind into a thick solid body, the margin straight, entire. Aculei crowded, slender, equal.

In woods on standing trunks, rare. The masses of pilei arranged one above another and fused together behind are sometimes a yard or more in extent; the single pilei are 2-6 inches in breadth and project 3 inches or more, the spines are about half an inch in length. This magnificent *Hydnum* "the largest of the genus," grows even more luxuriantly with us than in Sweden.

*d. Pileus coriaceous.*

12. *H. GLABRESCENS*, B. and Rav. Pilei effuso-reflexed, coriaceous, thin, velvety then glabrate, concentrically sulcate, brownish; the margin even. Aculei crowded, long, slender, rufous.

In woods on trunks and branches, common. Pilei imbricated and confluent sometimes to the extent of several inches, the single pilei 1-3 inches in width and projecting an inch or more. The color is a pale or dark brown, drying to brownish alutaceous; when fresh it has a pleasant fragrance. The spines are longer than the thickness of the pileus and yet scarcely reach an eighth of an inch, they are somewhat compressed and are nearly obsolete around the margin.

13. H. FLABELLIFORME, Berk. Pilei sessile, spatulate flabilliform, laterally confluent, coriaceous, tawny, hirsute, concentrically sulcate. Aculei crowded, very long, ochraceous flesh-color.

In woods on trunks and branches, common. The pilei are attached by a narrow base or sometimes substipitate, not effuso-reflexed as in the preceding and the following species; they are often laterally confluent above and separate at the base, an inch or thereabouts in length, concentrically sulcate or subzonate and longitudinally crisped and wrinkled. The spines are twice as long as the thickness of the pileus.

14 H. OCHRACEUS, Pers. Pilei effuso-reflexed, coriaceous, thin, zonate, ochraceous. Aculei very small, ochraceous flesh-color.

In woods on fallen sticks and branches, common. Usually largely resupinate with a long and narrow reflexed margin not half an inch in width; often it occurs wholly resupinate, it then has a narrow, pale, thick tomentose border.

V. RESUPINATI. Pileus none. Fungi absolutely resupinate, the aculei straight or oblique according to the situation.

*e. Subiculum thick, fleshy.*

15. H. CASEARIUM, Morg. <sup>n. sp.</sup> Subiculum fleshy-cheesy, thick, extensively effused, white. Aculei waxy, crowded very long, subulate, terete, whitish then pale alutaceous.

On the lower side of an old hickory trunk. Effused for several feet, the subiculum nearly half an inch in thickness, contracting in drying and becoming hard and rimose. The aculei are 2-4 lines long, oblique, more or less fused together below.

*f. Subiculum waxy or subgelatinous.*

16 H. XANTHUM, B. and C. Subiculum effused, at first white and tomentose, then waxy. Aculei distant, compressed, sometimes divided, lemon-yellow.

On hard wood in damp places. Effused for an inch or two. The aculei are often cleft, the tips when fully developed are white and tomentose

17. *H. UDUM*, Fr. Subiculum effused, thin, somewhat gelatinous, agglutinate, glabrous, flesh-color then watery-yellowish. Aculei close, unequal, forked and fimbriate, concolorous.

On rotten wood of Elm. Very extensively effused sometimes for many feet. The aculei very unequal and more or less fused together and the waxy, uneven subiculum remind one of *Radulum*. Different patches of flesh-color and yellowish are usually to be seen at the same time in the same specimen. The dried specimens take on a brownish hue.

*g. Subiculum byssine or membranaceous.*

18. *H. OHIENSE*, Berk. Subiculum effused, membranaceous, separable, pale yellow. Aculei somewhat fasciculate, long, very acute, of a watery pale brown,

On rotten trunks and branches. Effused for several inches, membranaceous and partially separable from the matrix. The aculei are 1-2 lines long and very slender at the apex.

19. *H. BYSSINUM*, Schw. Subiculum byssine, very thin, pulverulent, somewhat evanescent, ochraceous then bay; the border fibrillose. Aculei long, distant, subflexuous, very acute, concolorous.

On rotten wood. It is not circumscribed by a regular border, but fibrils radiate irregularly from the edge of the subiculum. The aculei from a thick base elongate to a very sharp point.

20. *H. ALBOVIRIDE*, Morg. <sup>n. of /</sup> Subiculum membranaceous fibrillose, creeping extensively, white. Aculei crowded, very long, subulate, terete, entire, olivaceous.

On the underside of old logs. The white filmy subiculum runs over the wood and bark and over the leaves and sticks beneath; here and there are olive colored cushions of spines an inch or more in extent, leaving large white naked spaces. The aculei are 2-3 lines long and taper gradually to a fine point; they are darker after drying.

21. *H. PHTHYOPHILUM*, B. and C. Subiculum effused, byssoid, very thin, farinaceous. Aculei compressed, ochraceous, denticulate or divided at the apex.

On dead wood. Effused in small patches. The teeth are rather crowded on the thin subiculum; on the surface of them are minute granules.

22. *H. ISCHNODES*, Berk. Subiculum membranaceous-fibrillose, creeping extensively, white. Aculei scattered, distant, subulate, slender, becoming darker.

On wood and bark of *Juglans*. The subiculum is composed of a thin membrane of interwoven threads with thicker branched fibrils beneath. The aculei occur in patches with abundant naked space; in places there are only the thick fibers creeping over the matrix. This is an elegant resupinate species, its color all white when fresh.

23. *H. FALLAX*, Fr. Subiculum irregularly effused, thin, villose-furfuraceous, white. Aculei close, deformed, incised, yellowish or whitish.

On the underside of old Oak logs. Irregularly effused even for several feet, mostly white but yellowish here and there in spots and patches. The aculei are short minute and quite irregular.

24. *H. MUCIDUM*, Fr. Subiculum very broad, membranaceous, soft, separable, white, the margin and underside villous. Aculei close, long, acicular, slender, flaccid, equal, concolorous.

Upon very rotten wood. The subiculum, a long and wide membrane, soft and tomentose beneath, and sometimes yellowish. The aculei are 2-4 lines or more in length, terete and tapering to a fine point.

*h. Subiculum crustaceous or farinaceous.*

25. *H. FUSCO-ATRUM*, Fr. Subiculum crustaceous, thin, at first glaucous, flocculose, pruinose; afterward glabrous, ferruginous, fuscous. Aculei short, conic-subulate, acute, cervine, then blackish.

On rotten wood of Beech. In its younger state, somewhat orbicular  $\frac{1}{2}$ -1 inch broad, the margin often byssine; afterward becoming confluent and broadly effused. Aculei rather short and not much crowded.

26. *H. ALUTACEUM*, Fr. Subiculum longitudinally effused, crustose, adnate, glabrous, pale ochraceous, the border naked. Aculei minute, close, equal, acute.

On bark and wood of Beech and Maple. Effused for several inches, and separate from but closely adnate to the matrix. The aculei are very minute and close, and grow out to the very edge of the subiculum.

27. *H. NYSSÆ*, B. and C. Subiculum effused, copiously pulverulent, alutaceous. Aculei long, crowded, subulate, acute, often pencilled at the tip, concolorous.

On wood and bark. Effused for several inches with scarcely any border. The aculei are pubescent, with some long hairs at the apex.

28. H. FARINACEUM Pers. Subiculum effused, indeterminate, mealy-crustaceous, white; the border more or less flocculose. Aculei slender, rather distant, very acute, entire, concolorous.

On old Beech bark. Effused for an inch or more. The subiculum is a very thin, white, mealy stratum, closely adnate to the matrix. The aculei are minute, sharp pointed and not crowded.

29. H. NUDUM, B. and C. Subiculum innate or nearly obsolete, farinaceous, pale ochraceous. Aculei minute, short, distant, subulate, concolorous.

On wood and the inner bark of Sugar Maple. The subiculum is nearly the color of the wood, and the aculei in some places seem to be growing on the wood; but there is usually a tinge of color to indicate the presence of the subiculum, though the fibers of the wood may be quite distinct.

30. H. SUBTILE. Fr. Subiculum very tender, innate in spots, glabrous, watery, whitish. Aculei distant, acute or incised, concolorous.

On bark and wood. Subiculum indeterminate, evanescent, whitish, somewhat hyaline. Aculei very short, minute, falling away to the touch.

#### Genus II. — IRPEX, Fr.

Hymenium inferior, dentate; the teeth seriatly or reticulately arranged, and connected together at the base by folds, which are lamellate or porose. Fungi lignatile.

I. APUS. Pileus sessile or effuso-reflexed, marginate.

1. I. CRASSUS, B. and C. Pilei thick, corky, white, finely pubescent, effuso-reflexed behind, and laterally concrescent. Teeth lamellately arranged, compressed, unequal in length, concolorous.

In woods upon trunks, not rare. I have seen it growing on a standing trunk in an elongated mass of imbricated pilei several feet in extent, after the manner of *Hydnum septentrionale*. The single pilei are  $1\frac{1}{2}$  to  $2\frac{1}{2}$  inches in width, and project an inch or two. The lamellate arrangement of the teeth is very plain, those next the margin are short, broad and flat, those farther behind are very long and narrow, a half inch or more in length. This is one of the most elegant species of this genus.

2. *I. LACTEUS*, Fr. Pileus effuso-reflexed, coriaceous, villous, concentrically sulcate, white, teeth close, seriatly arranged, acute, more or less incised, white.

On trunks of Oak, rare. Pileus, nearly an inch in width and projecting about half an inch, but the pilei are usually more or less confluent. The teeth are short, denticulate, and often with a concentric rather than a lamellate arrangement.

3. *I. TULIPIFERÆ*, Schw. Pileus very extensively effused, shortly reflexed, villous, azonate, white. Teeth porose, connected at the base, irregular, denticulate and incised, white.

On trunks and branches of Liriodendron, Hickory, etc., very common. By far the greater part resupinate, with a long and narrow reflexed margin, often on both edges. It remains a long time porose, the dentate dissepiments finally lengthen into flat irregular teeth. It was first described by Fries as a Polyporus, and this is what it should have been allowed to remain.

II. RESUPINATI. Pileus none; wholly resupinate.

4. *I. FUSCESCENS*, Schw. Coriaceous membranaceous, olivaceous then cervine, at first orbicular, then confluent and extensively effused, with a narrow fimbriate border. Teeth irregular, unequal, compressed, setulose, cervine.

On dry Oak branches; very common. Effused along the under side of a branch sometimes for several feet. The hymenium is sinuose-plicate, the folds broken into very unequal and irregular teeth, varying from narrow and pointed to broad, flat, and even sinuous; it is invested with minute brownish bristles: these are the "ascis prominulis fuscis", of Schweinitz's description; they are of the same nature as those which occur in some species of Stereum (Hymenochæte). Old weathered specimens became cinnamon or brownish, and these are said to be *I. cinnamomeous*, Fr.

5. *I. LACTICOLOR*, B. and C. Membranaceous, separable, widely effused, the border byssine, white. Teeth compressed, dentate and lacerate at the apex, seriatly arranged, reddish ochraceous.

On dry Elm branches, rare. Effused for several inches on the under side, and more or less separable, with a white subiculum and a white byssine margin. The teeth are thin, flat, and coriaceous, and it seems to me best recognized as an Irpex. It is *Hydnum lacticolor*, B. and C.

6. *I. OBLIQUUS*, Schrad. Effused, crustose, adnate, white,

becoming pallid; the border byssine. Teeth arising from a porous base, compressed, unequal, incised, oblique.

Upon the bark of various trees, rare. Subiculum thin, closely adnate, at first porose, but the dissepiments then dentate; at length the teeth become altogether Hydroid.

Genus III.—RADULUM, Fr.

Hymenium amphigenous, tuberculose; tubercles rude, deformed, commonly elongated, obtuse, waxy, discrete, with no regular arrangement.

1. R. PALLIDUM, B. and C. At first orbicular, then confluent and effused, with a narrow reflexed tomentose margin, pallid. Tubercles terete, short, deformed, scattered or sometimes collected in lines or groups.

On the smooth bark of branches of Oak, Hickory, etc. The upper reflexed margin is usually very narrow but sometimes it projects as much as a quarter of an inch; on the lower side there is commonly a fimbriate border, through sometimes it is reflexed also.

2. R. ORBICULARE, Fr. *In autumn*, orbicular, confluent, white then yellowish, the border byssine; tubercles elongated, nearly terete, scattered or fasciculate. *In spring*, waxy, glabrous flesh color; tubercles softer and shorter as if worn off.

On dead trunks and branches of Carpinus. Effused, often for several feet, in a thick waxy stratum, presenting various inequalities of surface in the shape of warts, granules, tubercles, etc. It is scarcely typical on this matrix, but then Fries says of this species that of all resupinate fungi it is the most variable in form.

3. R. MOLARE, Pers. Widely effused, crustaceous, glabrous, pale wood color, becoming a little yellowish. Tubercles deformed, short, conic, glabrous, scattered or confluent in groups.

On old trunks of Elm, Hickory, etc. Effused for several feet in a thick waxy stratum, which, when dry is hard and crustaceous, the color is alutaceous or pale ochraceous.

Genus IV.—PHLEBIA, Fr.

Hymenium inferior or amphigenous, soft, waxy, glabrous, contiguous, from the first raised into wrinkles and crests, the wrinkles crowded, interrupted, persistent, the edge entire.

1. P. PILEATA, Peck. Pilei coriaceous, effuso-reflexed, zonate, subtomentose, purplish-brown. Hymenium brownish, stained with red or orange, the folds crowded and radiating.



On a hard, dry Ash log. Pilei more or less imbricated, and laterally confluent, projecting half an inch in my specimens, the folds frequently interrupted behind, and appearing like coarse papillæ, when dry suffused with a dull tawny bloom.

2. *P. MERISMOIDES*, Fr. Effused, flesh-colored, then livid, villous and white on the under side, the border orange, strigose. Wrinkles simple, straight, crowded.

On stumps and trunks commonly incrusting mosses, but also investing the rough bark, common. In incrusting the mosses outgrowths proceed from the surface as well as the margin. Effused in patches sometimes several inches in extent.

3. *P. RADIATA*, Fr. Subrotund, equal, glabrous on both sides, fleshy-red, the border radiate-dentate. Folds straight, seriate radiating.

On smooth bark and wood; common. Though originating in circular patches with the wrinkles radiating from the center, these patches soon become confluent often to the extent of a foot or more. This species is thinner than the preceding, is lighter colored, and is not villous next to the matrix. *P. cinnabarina*, Schw. does not appear to differ otherwise than in the color.

#### Genus V.—*GRANDINIA*, Fr.

Hymenium amphigenous, contiguous, waxy, papillose-warty or rather granulose. Granules globose or hemispheric, entire, obtuse, close, regular, glabrous, persistent.

1. *G. MUCIDA*, Fr. Waxy-mucid, effused, subinnate, reddish-yellow; the border determinate, somewhat radiating. Hymenium contiguous; granules close, rather large, unequal, hemispheric, soft.

On wood and bark of Beech, Elm, etc.; not rare. In an early stage subrotund, but soon widely confluent.

#### Genus VI.—*ODONTIA*, Fr.

Hymenium composed of interwoven fibers, which coalesce into papillose or aculeate warts, cristate-multifid or penicillate at the apex

1. *O. FIMBRIATA*, Pers. Effused, membranaceous, seceding, pallid, traversed by root-like fibers; the border fibrillose-fimbriate. Warts minute, in the form of granules, multifid at the the apex, rufescent.

On the underside of old trunks and branches lying on the ground; common. Effused for several inches or a foot or more. This is an elegant resupinate fungus. The thick root-like fibers run beneath and support the thin membrane, sometimes they run out free over the matrix. The "incarnate-rufous" color of the original description answers best to my specimens.

2. *O. HYDNOIDEA*, Schw. Widely effused, thick, fibrillose, subpulverulent, at length, hard as if corky, tawny-rufous. Warts aculeate, connate, fimbriate-fibrillose at the apex, concolorous.

On very rotten wood. Effused for several feet over the crumbling matrix. The substance at first is brittle and pulverulent but becomes quite hard and corky when dry: it has the "brick color" within and upon the matrix as observed in *O. lateritia*, B. and C. The hymenium appears as if composed of hydroid teeth fused together nearly to the apex often in groups; it becomes a little darker than the substance in drying.

#### Genus VII.—*KNEIFFIA*, Fr.

Hymenium amphigenous, contiguous, united but incomplete, similar, strigose-exasperate with rigid setæ which are scattered or fasciculate.

1. *K. CANDIDISSIMA*, B. and C. Regularly effused, agglutinate, thin, white, the border similar. Hymenium becoming covered with numerous granules which are apiculate with rigid setæ.

On the underside of twigs and branches; rare. At first forming a thin pure white stratum, looking like a *Corticium*, at length thickening and sprinkled with numerous granules. Occasionally it acquires a slight ochraceous tinge.

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THE MYCOLOGIC FLORA OF THE MIAMI VALLEY,  
OHIO.

By A. P. MORGAN.

(Read December 6th, 1887.)

Continued from Vol. X., p. 18.

Class I.—Hymenomyces.

Order IV.—Thelephorei.

Hymenium inferior or amphigenous, coriaceous or waxy, even, rarely costate or papillose. Sporophores 4-spored, rarely 1-spored.

TABLE OF GENERA OF THELEPHOREI.

*A. Growing on the ground and mostly stipitate.*

1. CRATERELLUS. Pileus entire, stipitate, fleshy or sub-membranaceous.
2. THELEPHORA. Pileus coriaceous, stipitate or sessile.
3. LACHNOCLADIUM. Pileus repeatedly branched, the branches filiform.

*B. Sessile or resupinate on trunks and branches of trees.*

4. STEREUM. Pileus coriaceous, effuso-reflexed; hymenium glabrous.
5. HYMENOCHETE. Pileus effuso reflexed or resupinate; hymenium setulose.
6. CORTICIUM. Wholly resupinate; the hymenium not setulose.

*C. Minute pezizoid plants, sub sessile.*

7. CUPHIELLA. Sub-membranaceous, cup-shaped.

Genus I.—CRATERELLUS, Fr.

Hymenium waxy-membranaceous, distinct but adnate to the hymenophore, definitely inferior, contiguous, glabrous, even or rugose; spores white.

Fungi growing on the ground, fleshy or membranaceous, furnished with an entire pileus, stipitate; allied to the Cantharelli.

*a. Tubæform, pervious to the base of the stipe.*

1. C. LUTESCENS, Pers. Pileus submembranaceous, tubæform, soon pervious, undulate, flocculose, fuscous. Stipe hollow, glab-

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rous, yellow Hymenium remotely costate, at first even, then rugose with interlaced veins.

In woods; rare. Pileus 2-4 inches broad, the stipe about two inches long The hymenium is yellow, varying to reddish, orange and bluish-gray. It has a strong spirituous odor.

2. *C. CORNUCOPIOIDES*, Linn. Pileus submembranaceous, tubæform, pervious, scaly, sooty black. Stipe hollow, glabrous, black. Hymenium even, at length slightly wrinkled, becoming cinereous.

In woods; not common. Pileus 1-2 inches across, but sometimes reduced to little more than a tube, the whole plant 1-3 inches in height.

*b. Infundibuliform, the stipe stuffed.*

3. *C. CANTHARELIUS*, Schw. Pileus tough-fleshy, subinfundibuliform, repand and often lobed, glabrous, vitelline. Stipe stuffed, glabrous, concolorous. Hymenium even, becoming a little wrinkled, vitelline or with a darker shade.

In woods; common. Pileus 2-4 inches in breadth, the stipe an inch or more in height. The pileus in the larger specimens is quite irregular, with the margin much folded or crisped and lobed. The color of the plant varies somewhat, being paler or reddish, and sometimes with a dusky shade. *C. lateritius*, Berk. is the same thing.

Genus II—THELEPHORA, Ehrh.

Hymenium inferior or amphigenous, contiguous with the hymenophore and similar to it, even or costate, and without an intermediate stratum. Fungi coriaceous, destitute of a cuticle, exceedingly varied in shape, terrestrial.

*a. Growing erect, the pileus entire or ramose-parted.*

1. *T. RADIATA*, Holmök. Pileus soft coriaceous, infundibuliform, entire, ferruginous then brownish, subfasciate; the disk with erect scales: the margin radiate-striate. Stipe central, short. Hymenium striate, somewhat pruinose, concolorous.

In wet places in woods; rare. Nearly an inch in height, the pileus  $\frac{3}{4}$  of an inch in diameter. The pileus has circular bands or zones upon its surface, and is distinctly radiate-striate with an entire margin.

2. *T. TEPHROLEUCA*, B. & C. Pileus soft-coriaceous, subinfundibuliform, more or less lobed, rugose, whitish. Stipe central, whitish or brownish. Hymenium striate, brownish below, pale above.

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On the ground in woods; rare. About an inch in height, the pileus half an inch or so across. The pileus is not deeply lobed, the lobes are variable in width; the hymenium is brownish next the stipe, fading to whitish toward the margin.

3. *T. MULTIPARTITA*, Schw. Brownish-cinereous. Pileus sub coriaceous, subinfundibuliform, many times parted and divided—even to the stipe; the laciniae dilated above and more or less incised. Stipe short, glabrous. Hymenium nearly even, glabrous, brownish, sometimes paler at the margin.

On the ground in woods; not uncommon. About an inch in height; the thin flat branches dilated above obtuse and multifid, disposed in funnel-shape and more or less confluent into a multipartite pileus; the hymenium mostly even or sometimes costate-plicate beneath the laciniae.

4. *T. ANTHOCEPHALA*, Bull. Subferruginous becoming brownish. Pileus soft-coriaceous, pubescent, parted into laciniae dilated and fimbriate above and whitish at the apex, or divided into irregular ramose erect branches. Stipe equal, villous. Hymenium even.

On the ground in woods; rare. An inch or more in height; stipe villous or tomentose, dividing above into several branches, which again are multifid with white apices.

5. *T. PALMATA*, Scop. Brownish-purple, pubescent, fetid. Pileus soft-coriaceous, very much branched; the branches palmate, flattened, sub-fastigiate, fimbriate and whitish at the apex. Stipe short, simple. Hymenium even.

On the ground in woods; common. 1-2 inches in height, often divided nearly to the base; the branches numerous, dilated and cuneiform at the apex. Readily distinguished when fresh and growing by the very disagreeable odor which it soon gives out after being gathered. The spores are irregular and spinulose, .008-.010 mm. in diameter.

6. *T. PTERULOIDES*, B. & C. Gregarious, bright ochraceous. Pileus repeatedly branched; the branches smooth, more or less flattened, acute and paler at the apex. Stipes variable in length, often several crowded together. Hymenium waxy, even.

On the ground in woods; rare. 1-2 inches high; divided and sub-divided into many branches; these covered by the smooth waxy hymenium.

7. *T. FILAMENTOSA*, B. & C. Cæspitose, crowded, pallid. Pilei divided into numerous smooth filiform branches, somewhat

flattened and fimbriate at the apex. Stipes crowded, short. Hymenium even.

On the ground in woods; rare. An inch or two in height. Consisting of several or many stems, closely crowded together, and arising out of a common mycelium, which immediately divide and sub-divide into innumerable thread-shaped branches.

8. *T. SCHWEINITZII*, Peck. Cæspitose, white or pallid. Pilei soft-coriaceous, much branched; the branches flattened, furrowed and somewhat dilated at the apex. Stipes variable in length, often connate or fused together into a solid base. Hymenium even, becoming darker colored.

On the ground in woods; very common. The pilei sometimes growing separately an inch or two in height, but usually growing together in tufts or sometimes fused into large masses 4-6 inches or more in extent. This is *T. pallida*, Schw. N. A. Fungi, No. 619.

*b. Pileate, dimidiate, horizontal, sub sessile or effuso-reflexed.*

9. *T. ALBIDO-BRUNNEA*, Schw. Spongy-corky, widely effused. Pilei at length narrowly reflexed, becoming sub-stipitate, sub-tomentose, brown. Hymenium nearly even, white.

Growing about the base of dead shrubs; not common. Long and broadly confluent, mostly resupinate; the distinct pilei rarely exceeding half an inch in length, irregularly subimbricate.

10. *T. MICHENERI*, B. & C. Pilei soft-coriaceous, umber, spongy-tomentose, convex, often laterally confluent. Hymenium even, bright ochraceous.

Growing on the ground and upon sticks and stones; rare. Consisting of a number of orbicular laterally confluent individuals an inch or so in length, each attached by a central point or ascending and incrusting the bases of dead shrubs and more or less effuso-reflexed. Thinner and more fragile than the preceding species.

11. *T. CUTICULARIS*, Berk. Pileus soft-coriaceous, purplish brown, sub-tomentose, imbricated and laterally confluent. Hymenium nearly even, pulverulent.

On the ground attached to wood, twigs, etc.; rare. Pilei  $\frac{3}{4}$  of an inch long, uneven, rugged, brown inclining to purple, with a pale margin; surface soft, clothed with matted down, zoncleless; odor strong and unpleasant.

*c. Resupinate, usually incrusting other substances, the form therefore variable.*

12. *T. CRISTATA*, Pers. Incrusting, rather tough, pallid, passing into ascending branchlets or lacidia, the apices subulate or

fimbriate. Hymenium on the even spots and sides of the branches, papillose.

Growing on mosses, grasses, etc., and running over leaves. There is no constant form; it is to be recognized by its whitish color and the awl-shaped or fringed branches and lobes.

13. *T. SPICULOSA*, Fr. Effused, byssine then fleshy, incrusting, brownish-purple; the border spiculose-branched; the apices penicillate, whitish.

Ascending the stems of herbs, in humid places; rare. Of a brownish color, effused, throwing out here and there radiating subulate spicules.

14. *T. SEBACEA*, Pers. Effused, fleshy-waxy, hardening, incrusting, tuberculose or stalactitious, whitish, with a similar border. Hymenium collapsing, flocculose-pruinose.

Incrusting various substances; common. Various in form, white, the border not fringed or penicillate.

#### GENUS III.—*LACHNOCLADIUM*, Lev.

Pileus coriaceous, tough, repeatedly branched; the branches slender or filiform, tomentose. Hymenium amphigenous.

Fungi slender and much branched, epixyloous or terrestrial.

1. *L. SEMIVESTITUM*, B. & C. Coriaceous, pale or sordid brown, tomentose. Pileus much branched from a slender stipe of variable length, expanded at the angles; the branches filiform, straight, somewhat fasciculate, glabrous at the tips and paler in color.

On rotten leaves and sticks in the ground; rare. Pileus 1-2½ inches in height, more or less flattened or expanded at the points of branching, the branches straight and slender, pubescent or finely tomentose, glabrate with age.

2. *L. MICHENERI*, B. & C. Coriaceous, pale brown, densely tomentose. Pileus arising from a dense tomentum, repeatedly irregularly forked and branched; the branches very slender and flexuous, with paler tips.

On old leaves and sticks; common. Pileus ½-1 inch in length, the branches very delicate, filiform and flexuous. The tomentum at the base is sometimes an "orbicular villous patch," sometimes an effused patch of mycelium of considerable extent, out of which arise several stems; it is often distributed in patches over the stem and branches even to the extremities. I think *L. subsimile*, Berk., can hardly be separated from this species.



3. *L. MERISMATOIDES*, Schw. Subcartilaginous, pale yellowish, minutely tomentose. Pileus very much branched from a short stipe; the branches numerous, straight, slender, dilated at the apex and somewhat fimbriate.

On the ground in woods; rare. Pileus 1-2 inches in height, the stipe branched from near the base; the branches long, slender, fastigate, soon flattened or angular and dilated at the apex. Where the pale yellowish tomentum disappears it leaves naked the reddish-brown subcartilaginous substance beneath. This is Schweinitz's *Clavaria merismatoides*, N. A. Fungi, No. 1044.

Genus IV.—*STEREUM*, Pers.

Hymenium definitely inferior, even, glabrous, separated from the cuticle of the pileus by an intermediate fibrillose stratum.

Fungi lignatile coriaceous or woody, subperennial, subzonate, entire and of definite shape.

I. *APUS*. Pileus sessile, at first resupinate, afterward commonly pileate-reflexed and adnate behind.

We have but this section.

*a. Pileus coriaceous, flexible.*

1. *S. RUGOSIUSCULUM*, B. & C. Soft-coriaceous. Pileus effuso-reflexed, becoming subreniform with a narrow base, glabrate, finely wrinkled, brownish; the margin paler and velvety. Hymenium even, dark brown; spores brown, subglobose, echinulate .010-.012 mm. in diameter.

On old trunks; rare. Pileus 1-2 inches in breadth, projecting  $\frac{3}{4}$  of an inch. The dark pileus is soft, smooth and pliant when fresh, contracting somewhat and becoming finely wrinkled when dry; the growing margin is pale and velvety-tomentose; the tomentum disappears on the older portions of the surface. It is possible this is the No. 638, *Thelephora atrata*, Sw. of Schweinitz's N. A. Fungi.

2. *S. VERSICOLOR*, Swartz. Coriaceous-membranaceous, thin. Pileus effuso-reflexed, becoming free, expanded, sessile with a narrow base, villous-tomentose, with numerous narrow concentric zones, variously colored; margin acute, entire or variously lobed and incised. Hymenium glabrous, even, pallid or pale yellowish.

On fallen trunks and branches of every kind of wood; very common. Pileus usually 2-3 inches in length and breadth, fan-shaped or somewhat reniform, subimbricate and often laterally connate. The colors are gray and ochraceous, varying to ferrugin-

ous and brownish. The tomentum sometimes disappears on the margin and in concentric bands on the surface; specimens ornamented by these concentric brown zones are the var. *fasciatum*, Schw. The hymenium at times has a fleshy tinge, at others it acquires a smoky or brownish hue. It is quite likely some of the forms here included may be referred to *S. lobatum*, Kunz., and some perhaps to other species.

3. *S. PURPUREUM*, Pers. Soft-coriaceous. Pileus effuso-reflexed, subimbricate, zonate, villous-tomentose, pallid or whitish. Hymenium naked, even, glabrous, purplish.

On old trunks of black cherry, etc.; not uncommon. Pileus projecting half an inch or more, usually much effused and densely imbricated, when dry becoming rigid, pallid or yellowish, with sometimes a black zone near the margin. Hymenium purple or lilac, changing to cinereous or sometimes to brownish.

4. *S. SPADICEUM*, Pers. Coriaceous. Pileus effuso-reflexed, villous, subferruginous; the margin rather obtuse, white. Hymenium even, glabrous, becoming brownish, reddish if rubbed when fresh and growing.

On old stumps and trunks; common. Pileus nearly an inch in length and breadth, mostly imbricate and confluent. The pileus is without distinct zones, the hymenium gradually acquires a smoky tint. We seem to have nearly the typical plant of this species.

5. *S. HIRSUTUM*, Willd. Coriaceous, rigid. Pileus effused and reflexed, strigose hirsute, subzonate, becoming pallid; the margin rather obtuse, yellow. Hymenium even, glabrous, naked, yellowish or variously colored.

On trunks and branches; common. Pileus about half an inch in length and breadth, confluent and subimbricate, but often sessile and fan shaped with a narrow base; both pileus and hymenium are at first pale yellowish; the hairy covering of the surface is arranged in faint concolorous zones. This is probably *Thelephora ramealis*, Schw., and perhaps also *Stereum molle*, Lev.

6. *S. RADIANIS*, Fr. Coriaceous, rigid. Pileus effused and reflexed, radiate-irrigate with innate fibres, pallid with bay zones, glabrate, shining. Hymenium even, glabrous pallid.

On trunks and branches; common. Pileus half an inch or more in length and breadth, effused and confluent, but often sessile with a narrow base and fan-shaped or reniform. Its peculiar marks are the innate fibrils radiating from the base and the crowded nar-

row zones of the surface. *Stereum complicatum*, Fr. seems to me a name applied to crisped and folded forms of both this and the preceding species.

7. *S. OCHRACEOFLAVUM*, Schw. Coriaceous-membranaceous, thin. Pileus effused and reflexed, strigose-hispid, white or pale yellow. Hymenium even, glabrous, pale yellow.

Attached to the underside of the smaller branches. Pileus reflexed scarcely more than  $\frac{1}{4}$  of an inch, effused and more or less confluent, scarcely zonate, often attached by the back and hanging free all around like a little cup or shield. Remarkable for the long hairs that invest the pileus. Specimens I have from the East are white as Schweinitz states, but those I have found in this region are pale yellow or ochraceous.

8. *S. SERICEUM*, Schw. Coriaceous-membranaceous, thin. Pileus effused and reflexed, silky-striate, subzonate, shining, pale alutaceous. Hymenium even, pallid.

Attached to the lower side of branchlets and twigs; not common. Pileus nearly half an inch in length and breadth, but commonly extensively effused and more or less confluent below or sometimes attached by a point and free all around. The surface presents a silky luster with faint zones; the striate appearance is caused by innate radiating fibrils. It is very distinct from *S. radicans*. It is *Thelephora striata*, Fr. of the Elenchus, but not *Stereum striatum*, Fr. of the Hym. Eur.

9. *S. BICOLOR*, Pers. Submembranaceous, soft. Pileus conchate-reflexed, azonate, villous becoming glabrous, dark brown. Hymenium thin, glabrous, white.

On old stumps and trunks; not rare. Pileus 1-2 inches in length and breadth, subimbricate, confluent at the base. Readily distinguished by the brown upper surface and the white hymenium.

10. *S. ALBOBADIUM*, Schw. At first resupinate, bright brown with a white border; soon confluent and effused with a narrow submembranaceous margin; the margin undulate or subpileate, thin, subzonate, brown. Hymenium bay brown, somewhat velvety.

On the lower side of branches; very common. It begins its growth with a number of orbicular brown spots having a white border, these enlarge and become confluent forming one resupinate specimen effused for several inches; then occasionally a narrow subpileate margin is turned back on one or both sides, this margin is very narrow scarcely ever reaching  $\frac{1}{4}$  of an inch in breadth. The

young growing hymenium is velvety with a minute pubescence, but it is not setulose; it becomes smoother and paler with age. It is *Thelephora albomarginata*, Berk. of Lea's Catalogue.

11. *S. DISCIFORME*, D C. Subcoriaceous, white. Pileus resupinate, determinate, disciform; the border thin, free, naked, marginate. Hymenium uneven, velvety.

On elm branches; rare. Forming round irregular white disks scarcely half an inch in diameter, with the margin free and raised up all around. The hymenium at first has a soft fine pubescence.

*b. Pileus corky or woody, rigid.*

12. *S. FRUSTULOSUM*, Pers. Woody, resupinate, tuberculose, crowded and as if confluent, then appearing broken into small pieces; the border absolutely marginate; around the edge and underneath dark brown or blackish. Hymenium convex, cinnamon becoming pallid, pruinose.

On very hard oak wood; common and abundant. The perfect hymenium facing the earth, at first pruinose, then pulverulent with the cinnamon spores; the part turned toward the light is sterile, pale and smooth. The apparent frustules are irregular in shape and of all sizes from half an inch in extent to minute fragments. They spread over the cut surfaces and sawed ends of the hardest and driest White Oak logs.

13. *S. SUBPILEATUM*, B. & C. Corky, rigid. Pileus effusoreflexed, zonate with concentric furrows, tawny changing to brown, tomentose; the margin undulate, obtuse. Hymenium even, pallid or whitish.

On old trunks of oak; common. Pileus 1-3 inches in breadth and projecting half an inch or more, but often effused and confluent to the extent of several feet. The large effused specimens are attached to the substratum by rough knobs and projecting points on the underside. This is a larger and finer species every way than *S. rugosum*, Pers., to which it was first referred.

14. *S. CANDIDUM*, Schw. Resupinate, rigid, thick, irregular in outline, submarginate; the margin and underside brownish. Hymenium uneven, subpulverulent, white.

On [the bark of living trees, in winter; common. Half an inch more or less in breadth. It forms small irregular white patches upon the outer surface of the bark. There is scarcely any margin. It is *Thelephora candidissima*, Schw. N. A. Fungi, No.

663. We have retained the name given in the Elenchus of Fries I., p. 189, which we suppose to be the original one in Syn. Car., No. 1061.

GENUS V.—HYMENOCHÆTE, Lev.

Coriaceous, dry. Hymenium even, beset with minute rigid setæ.

The hymenium with a common lens is velvety or pubescent, but with a moderate magnifying power of the compound microscope, the minute usually colored bristles are brought out distinctly to view.

I. APUS. *Pileus effuso-reflexed.*

1. H. RUBIGINOSA, Schrad. Coriaceous-rigid. Pileus effuso-reflexed, subfasciate, velvety, reddish; afterward becoming glabrous and brown; the intermediate stratum tawny-ferruginous, Hymenium ferruginous, velvety with minute bristles.

On hard wood of oak, beech, etc.; common. Pileus 1-2 inches in breadth and projecting  $\frac{1}{2}$  to  $\frac{3}{4}$  of an inch. The single pilei are often shell-form but frequently many are confluent and imbricate. It is thin rigid and brittle.

2. H. CINERASCENS, Schw. Coriaceous. Pileus effuso-reflexed, strigose-hirsute, subzonate, whitish or cinereous. Hymenium cinereous, sometimes with a smoky or purplish tinge, becoming pallid or whitish, velvety with minute pellucid bristles.

On trunks of Mulberry and Elm; not uncommon. Often occurring as small resupinate patches with a narrow reflexed margin, but sometimes extensively effused for several feet with pilei reflexed half an inch or more. It is sometimes found with pale yellowish zones. The delicate pellucid bristles appear to be true setae and not metuloids of Dr. Cooke's genus *Pentio-phora*.

3. H. CURTISII, Berk. Coriaceous, thin. Pileus effused and narrowly reflexed, pallid, glabrate; the margin ferruginous. Hymenium papillate, rugose, becoming rimose, ferruginous, the minute bristles few and scattered.

On branches and twigs of Oak; common. Appearing first as small orbicular peltate patches with a paler subbyssoid margin, these then become confluent and effused sometimes for several feet in length, with a very narrow reflexed margin on either edge. The growing specimens are a bright ferruginous, becoming dull with age.

II. RESUPINATI. *Wholly resupinate.*

4. H. UMBRINA, B. & C. Coriaceous, resupinate, adnate; the margin free and flexuous, but scarcely reflexed. Hymenium dark amber with a paler border, thickly beset with minute bristles.

On rotten wood and bark; rare. Effused irregularly for an inch or so, of a spongy texture, and somewhat separable from the substratum.

5. H. INSULARIS, Berk. Coriaceous, resupinate, closely adnate, with a narrow white byssine border. Hymenium reddish-brown, thickly clothed with minute bristles.

On branches of sugar maple; common. At first in small circular patches with an elegant white-fringed margin; these at length become confluent and effused for several inches. A very different thing from *Stercum albobadium* which though velvety exhibits no setulæ.

6. H. PURPUREA, Cooke and Morgan. Coriaceous-spongy, resupinate, closely adnate, with a byssine border. Hymenium purple, fading to pale brownish, velvety with minute bristles.

On bark of hickory; not rare. Irregularly effused for several inches, of a spongy texture, bright purple with a paler margin; the bright color soon fades to a pale or dull brownish or alutaceous.

7. H. CORRUGATA, Fr. Subeffused, closely adnate, soon grumous, pale cinnamon. Hymenium covered with ferruginous bristles, when dry very much cracked.

On branches of sugar maple, beech, etc.; common. Effused for many inches or even for several feet, forming a very thin closely adnate pale brown stratum.

8. H. SPRETA, Peck. Effused, thick, adnate, ferruginous. Hymenium somewhat uneven, beset with rather long slender setæ, at length cracking into frustulate areolæ.

On old wood; rare. Effused for several inches and much resembling the preceding species, but of a brighter color, thicker substance and with more delicate setæ.

## GENUS VI.—CORTICIUM, Fr.

Hymenium amphigenous, even or tuberculose, arising immediately out of the mycelium and without an intermediate stratum.

In the typical species the hymenium is fertile and swelling when wet, soft-fleshy, contracted by dryness and thence commonly

rimose-parted or if entire soluble. Fungi resupinate, lignatile, often sterile.

I. LOMATIA. Resupinate, but the border free, determinate, marginate, commonly from cupular expanded.

1. C. AMORPHUM, Pers. Waxy-pliant, subcoriaceous, cup-shaped then explanate, confluent, marginate, externally white-tomentose. Hymenium even, contiguous, becoming pallid; spores obliquely elliptic, apiculate, .025 x .017 mm.

On the bark of living trees of *Ostrya Virginica*; common. At first looking like a small *Peziza* from an eighth to a quarter of an inch in diameter, but at length irregularly confluent, sometimes to the extent of an inch or two, always preserving however the free border which is rolled inward when dry. It is *C. Oakesii*, B. & C.

II. HIMANTIA. Resupinate, effused, immarginate; the border and underside byssine-fibrillose or strigose-hairy.

Often sterile, then fibrillose; in its perfect state, the hymenium soft-waxy.

2. C. LACTEUM, Fr. Effused, membranaceous, milk-white; the border and underside loosely fibrillose. Hymenium waxy, of a deeper color, by dryness rimose-parted.

Upon wood and bark; common. Effused for several inches. Not often perfect.

3. C. AUBERIANUM, Mont. Effused, adnate, very thin, sub-membranaceous, snow-white, the border persistently floccose. Hymenium becoming pallid, pubescent with minute brown bristles.

On hickory bark. "Ohio, Lea." Berkeley, in Notices, No. 252. At first orbicular, the whole floccose-mealy, at length extensively effused and confluent. This must be a curious thing. I have never met with it.

4. C. RADIOSUM, Fr. Subrotund, membranaceous, adnate, underneath appressed fibrillose; the border fringed with white fibrile. Hymenium even, glabrous, alutaceous, contiguous.

On rotten wood; common. Several inches in extent.

5. C. FILAMENTOSUM, B. & C. Effused, membranaceous; border and underside soft-tomentose, fibrillose, pallid. Hymenium pulverulent, ochraceous or somewhat olivaceous.

On old wood and bark of elm. Subiculum consisting of soft tomentose threads, on which the ochraceous or olivaceous pulverulent hymenium forms a thin stratum.

6. *C. OLIVACEUS*, B. & C. Effused, membranaceous; the border and underside white-fibrillose. Hymenium yellow-olivaceous, pulverulent.

On old wood of elm. Subiculum consisting of white threads, which send out delicate filaments over the wood.

7. *C. ALBIDO-CARNEUM*, Schw. Effused, somewhat waxy, adnate; the border and underside byssine-fibrillose, white. Hymenium flesh-colored, pruinose, by dryness rimose.

On the smooth bark of branches of hickory. Long, confluent, but rather narrow; flesh-color in the center with an elegant fibrillose border.

8. *C. CÆRULEUM*, Schrad. Subrotund, then effused, adnate, at first tomentose, bright blue; the border byssine, blue changing to whitish. Hymenium soft, waxy, papillose, setulose then glabrate.

On branches of beech. Effused for several inches.

III. *LEIOSTROMA*. Agglutinate, and without a strigose or fibrillose border; for the mycelium passes at once into the hymenium which is closely attached to the substratum.

9. *C. CALCEUM*, Pers. Effused, agglutinate, waxy, very smooth, white; the border similar. Hymenium even, glabrous, when dry rimose and rigid.

Upon dry wood. Varying greatly in form; the color also varies to clay-color and brownish. The hymenium is somewhat broken up into small pieces.

10. *C. PUBERUM*, Fr. Widely effused, waxy, closely adnate, indeterminate, white or argillaceous. Hymenium even, velvety, with short bristles, by dryness rimose.

Upon old wood. Very much like the preceding species, but differing in the velvety-setulose hymenium.

11. *C. OCHRACEUM*, Fr. Widely effused, agglutinate, soft-waxy, glabrate; the border white, somewhat radiating, soon vanishing. Hymenium pallid, then ochraceous, sprinkled with golden-glittering atoms, at length naked, papillose or tuberculose, collapsed and rimose.

Upon old wood. Effused for several inches.

12. *C. SUBGIGANTEUM*, Berk. Widely effused, rigid, cream-colored, brownish toward the margin. Hymenium velvety then glabrous.



On bark of sugar-maple. At first cream-colored, then acquiring a brownish tint especially toward the margin, velvety in the younger part, smooth in the older.

13. *C. PORTENTOSUM*, B. & C. Widely effused, soft, thick, spongy, whitish-ochre, white within. Hymenium tuberculose, glabrous.

On very decayed wood. Forming a thick mass, spreading widely; the substance soft, white and spongy.

14. *C. CINEREUM*, Fr. Waxy, becoming rigid, confluent, agglutinate, lurid; the border similar. Hymenium sprinkled with a very thin cinerous pruina.

On bark or wood of hickory, beech, etc.; common.

15. *C. INCARNATUM*, Fr. Waxy, becoming rigid, agglutinate, indeterminate, the border radiating. Hymenium persistently bright colored, sprinkled with a very thin flesh colored pruina.

Upon bark and wood; common. The hymenium is bright red, orange, etc., retaining the color quite persistently.

16. *C. CONFLUENS*, Fr. Submembranaceous, indeterminate, agglutinate; the border radiate. Hymenium even, naked, hyaline, white when dry.

On bark of *Acer*, *Vitis*, etc. In small patches and widely effused; the border adnate, exceedingly delicate.

17. *C. COMEDENS*, Nees. Effused, innate, growing beneath the epidermis and throwing it off; flesh-colored, becoming pallid. Hymenium even, glabrous, when dry rimose.

On dry branches of *Ostrya*; distinguished by its peculiar way of growing upon the bark beneath the epidermis.

Subgenus. *HYPOCHNUS*. Corticia floccose-collapsing or furnished with a tomentose, subpulverulent hymenium.

18. *C. MOLLE*, Fr. Subrotund, floccose-fleshy, loosely interwoven, soft, glabrous, pallid, reddish-spotted; the underside villous, the border naked. Papillæ rather large, unequal.

On rotten wood. Hymenium loosely fibrillose and the surface not waxy.

#### GENUS VII.—*CYPHELLA*, Fr.

Fungi submembranaceous, cup-shaped, adnate behind, commonly stipitate-porrect, pendulous. Hymenium definitely inferior, similar, even or at length slightly wrinkled.

A genus formerly confused with the *Pezizas*, but different from them altogether, first in the lack of a heterogeneous disk, secondly in the absence of asci.

1. *C. GRISEOPALLIDA*, Weinm. Submembranaceous, globose then campanulate, sessile, pale gray, externally floccose. Hymenium even, glabrous.

On sticks, leaves and dead stems of herbs; not uncommon. About a line in diameter.

2. *C. GALEATA*, Schum. Soft-membranaceous, nearly sessile, obversely cup-shaped, then dimidiate, helmet-shaped, even, whitish; the margin entire. Hymenium finally rufescent, slightly wrinkled.

Upon mosses; not common. Two lines or more in diameter; gray when wet, snow-white when dry, finally becoming reddish-brown.

3. *C. PEZIZOIDES*,<sup>\*</sup> Zopf. Membranaceous, nearly sessile, globose then cup-shaped, clothed externally with long erect white hairs. Hymenium even brownish; spores obovate, .012-.013 mm. in length.

On old herbaceous stems; not common. Cupule pezizoid, scarcely pedicellate, about half a line in diameter. The long hairs are erect and connivent over the hymenium; they are hyaline and incrustated with crystals of calcium oxalate.

From the Journal of the Cincinnati Society of Natural History, July-October, 1888.

THE MYCOLOGIC FLORA OF THE MIAMI VALLEY,  
OHIO.

BY A. P. MORGAN.

(Continued from Vol. X, p. 202.)

Class I.—HYMENOMYCETES. (Concluded.)

(Read by Title August 7, 1888.)

Order V.—CLAVARIEI.

Hymenium not discrete from the hymenophore, amphigenous  
Fungi somewhat fleshy, vertical, simple or branched; never  
coriaceous or incrusting like those Thelephoræ which are similar  
in form.

As other fleshy fungi, very limited in number in this region.

TABLE OF GENERA OF CLAVARIEI.

1. CLAVARIA. Fungi fleshy, simple or branched.
2. CALOCERA. Fungi cartilaginous-gelatinous, horny when dry.
3. TYPHULA. Minute fungi, subclavate, with a filiform stipe.

Genus I.—CLAVARIA, Linn.

Fungi fleshy, branched or simple, subterete and without a distinct stipe. Hymenium contiguous, dry, homogeneous.

\* *Branched.*

- A. Spores white.
  - a. Terrestrial, 1-7.
  - b. Lignatile, 8, 9.
- B. Spores ochraceous.
  - c. Terrestrial, 10-13.
  - d. Lignatile, 14, 15.

\*\* *Simple.*

- e. Cæspitose, 16-18.
- f. Distinct, 19, 20.

I. RAMARIA. Branched, the branches tapering upward.

- A. *Spores white or pallid.*
  - a. *Growing on the ground.*

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OCT 25, 1904

1. *C. FLAVA*, Schaeff. Fragile. Trunk thick, fleshy, white, very much branched; the branches terete, even, fastigiatae, obtuse, yellow.

On the ground in woods; rare. Three to 4 inches high, with the trunk an inch in thickness. Spores pale or with a yellowish tint.

2. *C. BOTRYTES*, Pers. Fragile. Trunk very thick, unequal, very much branched; the branches turgid, unequal, somewhat wrinkled, the apices red.

In beech woods; rare. Three inches or more in height, the trunk 1-2 inches in thickness. Color variable white, yellow and flesh-color.

3. *C. MUSCOIDES*, Linn. A little tough, somewhat delicate, yellow, two or three times forked; the stipe slender; the branchlets crescent-shaped, acute.

In grassy woods; rare. One and one-half to 2 inches in height, the slender stems scarcely an eighth of an inch in thickness. A very pretty and delicate species.

4. *C. CRISTATA*, Pers. Tough, even, stuffed, white, the branches dilated upward, acutely incised, crested.

In woods growing on the ground among the old leaves; not uncommon. One to 2 inches in height. This is said to be an exceedingly variable species; our plant has the trunk white and the branches cinereous, but it is plainly this species.

5. *C. RUGOSA*, Bull. Tough, simple or sparingly branched, thickened upward, wrinkled, white; the branches deformed, obtuse.

In damp places in woods; rare. One to 2 inches in height; very variable in shape, sometimes simple and clavate, sometimes divided into 2-4 variously unequal branches. *C. fuliginosa*, Pers. is a sooty variety of this species.

6. *C. KUNZEL*, Fr. Somewhat fragile, caespitose from a slender base, very much branched, pure white; the branches elongated, crowded, repeatedly forked, fastigiatae, even, equal, compressed at the axils.

On the ground in woods; common. One and one-half to 2 inches in height. A beautiful species, growing in clusters, shining white.

7. *C. SUBTILIS*, Pers. Scattered, delicate, rather tough, whitish; the base glabrous, of equal thickness throughout; the branches few, forked, somewhat fastigiatae.

On the ground in woods; rare. One and one-half to 2 inches in height. Simple or with a few branches.

*b. Growing on trunks.*

8. *C. PYXIDATA*, Pers. Pallid then alutaceous and subrufescent. Trunk slender, glabrous, branched; the branches and branchlets all cup-shaped at the apex: the cupules proliferous-radiate at the margin.

On rotten wood; rare. Sometimes in clusters of considerable extent, 3-5 inches in breadth and height; the branchlets obconic, even: the cupules repeatedly verticillate-proliferous, the terminal ones dentate.

9. *C. CORONATA*, Schw. Pale yellow then fawn color, divided immediately from the base and very much branched; the branches divergent and compressed or angulate, the final branchlets truncate-obtuse at the apex and there encircled with a crown of minute processes. See Plate II, Fig. 1.

On rotten wood; common. Repeatedly dichotomously or verticillately branched and forming clusters sometimes several inches in height and extent. Resembling in form the preceding, but a distinct species.

*B. Spores ochraceous or cinnamon.**c. Growing on the ground.*

10. *C. AUREA*, Schaeff. Trunk thick, elastic, pallid, divided into stout, straight branches, which are dichotomously very much branched; the branchlets terete, obtuse, subdentate, yellow.

On the ground in woods; rare. Three to 4 inches high with the trunk an inch in thickness. Resembling *C. flava* but very distinct from it by reason of the differently colored spores.

11. *C. FORMOSA*, Pers. Trunk thick, elastic, whitish: the branches very much branched, elongated, orange rose-color; the branchlets obtuse, yellowish.

On the ground in woods; rare. Three inches or more in height, the trunk an inch in thickness.

12. *C. INCURVATA*, Morg. n. sp. Fragile. Trunk thick, fleshy, white; branches ochraceous, dichotomously very much branched; the branchlets spreading, somewhat flexuous, rugulose, the apices dentate. See Plate II., Fig. 2.

On the ground in woods; rare. Trunk white, an inch and a half in height and 1 inch thick; branches and branchlets ochraceous, 2-3 inches longer, with an extent of 3 or 4 inches. The peculiar feature is the spreading branches curving outward and upward.

13. *C. ABIETINA*, Pers. Very much branched, ochraceous. Trunk white-tomentose, rather thick; branches crowded, when dry longitudinally wrinkled; the branchlets straight, acute.

On the ground in woods; not rare. Two to 3 inches in height, the trunk short, less than half an inch in thickness. The branches are erect and very close together.

*d. Growing on trunks.*

14. *C. STRICTA*, Pers. Very much branched, pale yellowish, brownish when rubbed, the trunk rather thick; branches and branchlets straight, even, crowded and oppressed, acute.

On old trunks; common. Two to 3 inches in height. Fibrillose-rooting at the base; the trunk very short; the branches straight, erect, pressed close together.

15. *C. CRISPULA*, Fr. Very much branched, alutaceous then ochraceous, the trunk slender; branches flexuous, multifid, the branchlets divaricate.

On old trunks; common. One to 2 inches in height. Rooting at the base by long white fibrils; the trunk very short; the branches repeatedly forked and flexuous, even to the tips.

II. *SYNCORYNE*. Simple, cæspitose at the base or fasciculate

16. *C. FUSIFORMIS*, Sow. Cæspitose-connate, rather firm, yellow, soon hollow; clubs somewhat fusiform, simple and dentate, even, tapering to the base.

On the ground in grassy places; rare. Club 1-2 inches long, 1-2 lines thick above and tapering downward to the base. Readily distinguished by its yellow color, but it finally becomes brownish at the apex.

17. *C. VERMICULARIS*, Scop. Cæspitose, fragile, white; clubs stuffed, simple, cylindric, subulate.

On the ground in grassy places; rare. Clubs  $1\frac{1}{2}$ -3 inches in height, about a line in thickness, cylindric. Larger than the following species; often flexuous or incurved.

18. *C. FRAGILIS*, Holmsk. Fasciculate, very fragile, white below, tapering downward; clubs hollow, a little obtuse, variable.

On the ground in woods; rare. Varying much in size and thickness; sometimes attaining a height of 3 inches, but usually shorter, very slender and fragile. Commonly white, but sometimes yellowish, especially at the apex, but always white next the base.

III. HOLOCORYNE. Mostly simple, distinct at the base.

19. *C. PISTILLARIS*, Linn. Simple, large, fleshy, stuffed, obovate-clavate, obtuse, yellow, then rufescent.

On the ground in woods; rare. Very large, solitary or only a few together; the club attaining a length of 6 inches or more and a thickness of about an inch at the summit, the color rather variable growing darker with age.

20. *C. MUCIDA*, Pers. Gregarious, minute, simple or sparingly ramose-incised, even, naked, white, becoming yellowish, glabrous, substipitate.

On old damp logs; very common in all seasons. Usually growing on a thin greenish stratum, *Chlorococcus*, very small, scarcely exceeding half an inch in height.

Genus II.—CALOCERA, Fr.

Fungi gelatinous-cartilaginous, horny when dry, vertical, subcylindric, simple or branched, viscid, without a distinct stipe. Hymenium amphigenous, sporophores two-forked; spores oblong, curved.

1. *C. PALMATA*, Schum. Branched, tremellose-tough, orange-yellow, compressed, dilated upward, divided; the branchlets subterete, divaricate, obtuse.

On oak wood; rare. About half an inch in height, with a flattened stem, branched and forked toward the summit.

2. *C. CORNEA*, Batsch. Cæspitose, rooting, even, viscid, yellow-orange; clubs short, subulate, connate at the base.

On old wood: common. About one-quarter of an inch in height, consisting of many single individuals fused together at the base; rooting in the cracks of the wood and growing out of them.

3. *C. STRICTA*, Fr. Simple, solitary, elongated, blunt at the base, linear, yellow even when dry.

On old wood; common. One-half to 1 inch in length; encircled at the base by a white delicate tomentum. It differs from the preceding species in its scattered mode of growth and slender habit; two or three individuals occasionally spring from the same spot, but they are never extensively confluent. This is evidently the same species as *Clavaria albipes*, Mont., described in the *Annales des Sciences Naturelles*, October, 1842, p. 14. It was collected at Columbus, Ohio, by Mr. Sullivant and communicated to Montagne through Dr. Asa Gray. It appears as *Calocera albipes* in Berkeley's Notices N. A. Fungi under No. 303.

Genus III.—TYPHULA, Pers.

Fungi minute, tender; stipe filiform. either heterogeneous and distinct from the linear club, or springing from a sclerotoid hybernaculum. Hymenium waxy, sporophores forked, spicules elongated. Fungi epiphytal.

1. *T. MUSCICOLA*, Pers. Simple, filiform; the club cylindrical, obtuse, white, tapering into the slender, smooth stipe; hybernaculum even, pallid.

Growing on mosses; not uncommon. One-half to 1 inch in height. Our plant is smaller than the one described by Fries, but it is referred to this species by several authorities. It was also noted by Mr. Lea. Further than this the minute *Clavariæ* appear to be absent from the Miami Valley.

Order VI.—TREMELLINEI.

The whole fungus homogeneous, gelatinous, shrinking when dry, reviving when wet, traversed internally by branched filaments which terminate at the surface in sporophores; spores subreniform.

TABLE OF GENERA OF TREMELLINEI.

*a. Hymenium over the whole outer surface.*

1. *TREMELLA*. Gelatinous-distended, tremulous, immarginate, not papillate.
2. *EXIDIA*. Gelatinous-distended, tremulous, submarginate, papillose.
3. *NEMATelia*. Convex, immarginate, a firm nucleus covered by a thick gelatinous stratum.
4. *DACRYMYCES*. Gelatinous, homogeneous, conidia moniliform-concatenate, spores septate.

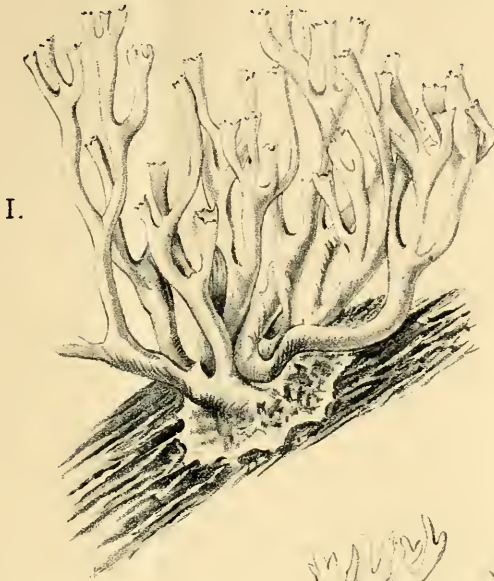
*b. Hymenium on one side only.*

5. *HIRNEOLA*. Cartilaginous-gelatinous, the hymenium superior.
6. *GUEPINIA*. Cartilaginous-gelatinous, stipitate, the hymenium unilateral.

Genus I.—*TREMELLA*, Dill.

Fungi distended with jelly, tremulous, immarginate, not papillate; sporophores globose, becoming four-parted, putting out from each part an elongated free spicule terminated by a simple spore.





1. ) *Clavaria coronata*, Schw.



I. MESENERIFORMES. Cartilaginous-gelatinous, foliaceous, naked.

1. T. FOLIACEA, Pers. Cæspitose, even, undulate, cinnamon-flesh-color, the base plicate.

On old trunks; common. Clusters 1-2 inches in height and sometimes several inches in extent. The lobes very thin, undulate and crisp when dry.

2. T. LUTESCENS, Pers. Cæspitose, very soft, undulate-gyrose, yellowish; the lobes entire, naked.

On fallen branches; common. Clusters  $\frac{1}{2}$  to 1 inch in breadth, whitish, then pale yellowish, very soft and watery, leaving little residue when dried.

II. CEREBRINE. Compact, then pulpy, subpruinose with the spores.

3. T. MESENERICA, Retz. Simple, ascending, rather tough, various in form, plicate-undulate, gyrose, orange color.

On oak branches; not common. Sometimes an inch or more in extent, but it varies exceedingly in size and shape, so that there is no constant form; it may easily be distinguished, however, by the orange color and the surface extremely sulcate-plicate and gyrose.

4. T. INTUMESCENS, Sow. Subcæspitose, rounded or conglomerate, soft, brown, becoming black when dry, somewhat twisted and lobed.

On dead branches of willow; common. An inch or two in extent, when fully grown it consists of numerous round, soft, pulpy lobes. It is black when dry, and resembles *Exidia glandulosa*, but there are no papillæ upon the surface.

5. T. VESICARIA, Eng. Bot. Erect, firm, gelatinous within, undulate and gyrose, pallid: spores oblong, curved, .010-012 mm. long.

On the ground encircling sticks, the bases of herbaceous stems, etc.; not uncommon. Often in shape of a hollow stem and branches 2-4 inches in height, becoming hard and horny when dry. It is *Guepinia helvelloidea*, Schw. N. A. Fungi, No. 1085.

6. T. ALBIDA, Huds. Ascending, tough, expanded, undulate, subgyrose, pruinose, whitish, becoming brownish when dry; spores oblong, curved, .008-.009 x .005 mm.

On old trunks in summer; common. An inch or two in height and confluent for several inches. Possibly our white Tremella is different from the European species.

Genus II.—EXIDIA, Fr.

Fungi distended with jelly, tremulous, somewhat inarginate, papillose; a colored gelatinous stratum inclosing the sporophores, the spicules of which are erumpent only at the apex.

1. *E. TRUNCATA*, Fr. Soft, distended with jelly, disk truncate-plane, glandular, black, shining, at length cavernous, punctate-scabrous underneath; stipe very short; spores oblong, curved, .012-.014 mm. in length.

On oak branches: common. An inch or less in height and breadth. When dry very thin and intensely black, the glands seldom apparent.

2. *E. GLANDULOSA*, Bull. Effused, nearly plane, thick, undulate, becoming black, spiculose with conic papillæ, the underside cinereous and somewhat tomentose; spores oblong, curved, .012-.014 x .005 mm.

On old trunks and branches; very common. Extremely variable in form and size; usually rather flattened and effused, sometimes for several inches. Sometimes becoming pallid on the underside or inside of trunks away from the light. The papillæ can be plainly seen with a common lens. In England it is called "Witch's Butter."

Genus III.—NEMATelia, Fr.

Fungi consisting of a firm fleshy nucleus, inclosed by a thick gelatinous stratum, fibrous-floccose within, the whole surface covered by the sporophores.

1. *N. NUCLEATA*, Schw. Effused, plane, somewhat gyrose and undulate, white, then rufescent; the nucleus small, hard, white; spores oblong, curved, .010 mm. in length.

On old trunks of *Acer saccharinum* under the bark and erumpent from the cracks: common. Effused sometimes for several inches, folded and wrinkled. The gelatinous portion shrinks to a mere membrane in drying, leaving the white grains, as large as mustard seed, quite conspicuous. This seems different from the European species which are termed "solid, not collapsing by dryness."

Genus IV.—DACRYMYCES, Nees.

Fungi gelatinous, homogeneous, traversed within by septate fibers; conidia moniliform-concatenate; sporophores at the apex of the filaments, clavate, two-forked when fully grown; spores septate.

1. *D. FRAGIFORMIS*, Nees. Rather compact, round, red, somewhat lobed and folded.

On old wood; common. Round, red, gelatinous, but quite firm; sometimes confluent for an inch or two, retaining the deep red color when dry. The threads are moniliform-septate, they are readily set free in water.

2. *D. DELIQUESCENS*, Bull. Roundish, rooted, convex, immarginate, yellowish: at length twisted and hyaline. Spores three-septate.

On old wood: rare. At first of a dirty yellowish color, then growing pallid, when dry, brownish-yellow.

3. *D. STILLATUS*, Nees. Roundish, convex, at length plicate, yellow, then orange, the color persistent. Spores multiseptate.

On old wood; rare. Distinguished from the former by its persistent bright color. I usually find the spores multinucleate.

4. *D. CHRYSOCOMUS*, Bull. Orbicular, golden-yellow; the younger spheric, immarginate, soon collapsed and pezizoid; at length flattened and persistently even. Spores multiseptate.

On old wood: not uncommon. Looking like a small *Peziza*, in which genus it was originally placed, but there are no asci. Spores multinucleate, .015 mm. in length.

5. *D. PELLUCIDUS*, Schw. Gyrose and variously lobed, the lobes thick and obtuse, somewhat pellucid, white. Spores three-septate, .012-.015 mm. in length.

On old trunks: not common. Large, an inch or two in length and breadth, and resembling a *Tremella* in form. In the dry state it becomes a thick, hard membrane, plicate-venose and pellucid.

#### Genus V.—*HIRNEOLA*, Fr. *Jew's Ear*.

Fungi cartilaginous-gelatinous, soft and tremulous when wet, but not distended with jelly; when dry coriaceous-horny, reviving again when moistened, but scarcely swelling. Hymenium superior; spores continuous, oblong, curved.

1. *H. AURICULA-JUDÆ*, Linn. Sessile, concave, flexuous, thin, at length black, venose-plicate on both sides, tomentose and olivaceous-cinereous underneath. Spores oblong, curved, .014-.016 mm. in length.

On old trunks and branches of Hickory and other wood; common and abundant. Often growing caespitously, 1-3 inches in height and breadth. The hymenium growing black in drying, the opposite

side becoming cinereous or olivaceous; the folds or veins become quite conspicuous.

2. *H. AURIFORMIS*, Schw. Substipitate, concave, flexuous, thin, venose, glauco fuscous; somewhat pubescent underneath. Stipe lateral short, twisted, sulcate-lacunose. Spores oblong, curved, .014-.016 mm. in length.

On trunks and branches of Walnut; common. Two to 3 inches in length and breadth. The hymenium does not grow black as in the preceding species, and the pubescent underside has a tawny or brownish hue.

Genus VI.—*GUEPINIA*, Fr.

Fungi cartilaginous-gelatinous, free, various in form, substipitate. Hymenium on one side only; sporophores linear, long-forked, bisporous; spores septate, curved.

1. *G. SPATHULARIA*, Schw. Nearly erect, stipitate, spatulate, the stipe and upper side cinereous-pubescent. Hymenium plicate, orange-yellow; spores curved, apiculate, three-septate, .010-.012 mm. in length.

On old wood; common. Growing caespitously and rooting in the cracks of the wood, often in a linear series, nearly an inch in height. The delicate nerves or folds of the hymenium are decurrent upon the stipe.

2. *G. ELEGANS*, B. & C. Nearly erect, stipitate. Pileus orbicular or fan-shaped, tawny as well as the stipe. Hymenium plicate, brownish-amber colored; spores curved, apiculate, three-septate, .015-.018 mm. in length.

On wood of Elm; not common. Growing caespitously, often lobed and confluent, nearly an inch in height. The fine pubescence is tawny or rufescent; the well-developed hymenium is plicate with decurrent folds and becomes blackish with age.

3. *G. PEZIZA*, Tul. Cupular, nearly sessile; glabrous both sides, yellow, adnate behind. Stipe slender. Hymenium superior; spores three-septate, .010-.012 mm. long.

On old wood; rare. Cup shaped, concave, 3-5 mm. broad. It looks like a small Peziza, and is not likely to be found except when collecting these small fungi.







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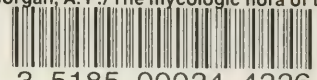




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