State of Connecticut

State Geological and Natural History Survey

BULLETIN No. 15

SECOND REPORT

ON THE

HYMENIALES OF CONNECTICUT

By

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BULLETINS

OF THE

State Geological and Natural History Survey of Connecticut.

1. First Biennial Report of the Commissioners of the State Geological and Natural History Survey, 1903-1904.
2. A Preliminary Report on the Protozoa of the Fresh Waters of Connecticut; by Herbert William Conn.
3. A Preliminary Report on the Hymeniales of Connecticut; by Edward Albert White.
4. The Clays and Clay Industries of Connecticut; by Gerald Francis Loughlin.
5. The Ustilagineæ, or Smuts, of Connecticut; by George Perkins Clinton.
6. Manual of the Geology of Connecticut; by William North Rice and Herbert Ernest Gregory.
7. Preliminary Geological Map of Connecticut; by Herbert Ernest Gregory and Henry Hollister Robinson.
8. Bibliography of Connecticut Geology; by Herbert Ernest Gregory.
9. Second Biennial Report of the Commissioners of the State Geological and Natural History Survey, 1905-1906.
10. A preliminary Report on the Algæ of the Fresh Waters of Connecticut; by Herbert William Conn and Lucia Washburn (Hazen) Webster.
11. The Bryophytes of Connecticut; by Alexander William Evans and George Elwood Nichols.
12. Third Biennial Report of the Commissioners of the State Geological and Natural History Survey, 1907-1908.
13. The Lithology of Connecticut; by Joseph Barrell and Gerald Francis Loughlin. [Ready shortly.]
14. Catalogue of the Flowering Plants and Ferns of Connecticut growing without cultivation; by a Committee of the Connecticut Botanical Society.
15. Second Report on the Hymeniales of Connecticut; by Edward Albert White.

Bulletins 1, 9, and 12 are merely administrative reports, con-

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Botany.

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State Geological and Natural History Survey

BULLETIN No. 15

HARTFORD
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1910

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Second Report

on the

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Preface

Since the publication of Bulletin No. 3, on the *Hymeniales* of Connecticut, the writer has continued investigations on fleshy and woody fungi, confining his attention more especially, however, to the edible species of the *Agaricaceæ*. The results of the study of this group of plants form the basis of Parts I and II of this report.

In Part I may be found keys to the Connecticut species of *Agaricaceæ*. These keys are based upon the author's observations and notes; but, in some cases where specimens have not been personally collected, original descriptions have been used. Keys to the genera of *Agaricaceæ* may be found on pages 17, 18, 19, and 20, Bulletin No. 3, of the State Geological and Natural History Survey. Descriptions of the genera may also be found in the same Bulletin.

Part II considers in detail the chief characters of some edible species of mushrooms.

Part III consists of a list of species of *Hymeniales* not reported in Bulletin No. 3. Some of these species have been collected by the late Dr. L. F. Underwood and by Dr. F. C. Earle in Redding and vicinity, and these specimens may be found in the Cryptogamic Herbarium of Columbia University at Bronx Park, N. Y. Mr. C. C. Hanmer of East Hartford has continued collecting, and has kindly contributed the results of his work to this report. The writer has collected in Mansfield and vicinity. Fifty-three species not before reported from the state are here listed.

The specimens collected by the writer during the last three years, as well as many of those previously collected, were compared with many type specimens in the Cryptogamic Herbarium of Harvard University. The writer wishes to express his deep appreciation of the assistance given him in this work by Dr. W. G. Farlow and Dr. A. F. Seymour of the Department of Cryptogamic Botany of Harvard University. Several weeks

were spent by the writer in the comparison of specimens, and in consulting the excellent reference books in the University Library and in Dr. Farlow's private collection of literature on fleshy fungi.

The half-tones in this bulletin were made from photographs taken by the author.

Contents

Part I

Keys to Connecticut Species of Agaricaceae

AMANITA Pers.

Volva splitting regularly all around, leaving a free border at base of stem; cap naked, or with broad, membranous patches 1

Volva splitting regularly all around, closely embracing the bulbous stem; cap covered with scattered, thick warts 6

Volva broken up into wart-like scales; cap bearing mealy patches which soon disappear, or with small, hard, pointed warts; stem bulbous at first, but bulb soon disappearing 12

1. Gills yellow; cap red or orange, striate on the margin ..... *A. Caesarea*

Gills white 2

2. Each basidium producing two spores ..... *A. bisporigera*

Each basidium producing four spores 3

3. Cap viscid 4

Cap dry 5

4. Volva closely wrapping base of stem, persistent ... *A. verna*

Volva cup-like around base of stem, often remaining in the soil when plant is collected ..... *A. phalloides*

5. Stem bulbous; volva split in a circular manner, somewhat closely joined to the stem ..... *A. mappa*

Stem not bulbous; volva free, fitting closely around the stem; upper margin thin; lower part thick, giving stem a bulbous appearance ..... *A. spreta*

6. Cap red or yellow 7

Cap white, or slightly tinged with yellow 9

7. Cap 4 or more inches broad, covered with rough, white or yellow warts; margin slightly striate .... *A. muscaria*

Cap small, 1 to 2 inches broad 8

8. Margin of cap striate ..... *A. Frostiana*

Margin of cap not striate ..... *A. flavoconia*

9. Stem tapering below the bulb into a root-like prolongation 10

Stem ending abruptly below the bulb..... 11
10. Cap covered with large, pyramidal, hard warts; gills free from the stem.....*A. strobiliformis*
Cap covered with small, angular, floccose warts; gills adnexed .....*A. solitaria*
11. Volva not margined, tapering above into stem; cap thin .....*A. candida*
Volva forming a distinct margin which rolls towards the stem at the edge; cap often tinted with yellow, fleshy .....*A. cothurnata*
12. Plants of a distinct red-brown color.....*A. rubescens*
Plants white or yellow-brown..... 13
13. Cap white; bulb large, abrupt.....*A. abrupta*
Cap not white..... 14
14. Cap, volva, ring, and upper part of stem canary-yellow; stem only slightly bulbous.....*A. flavo-rubescens*
Cap yellow-brown; bulb medium, tapering....*A. velatipes*

AMANITOPSIS Roz.

Cap covered with thin scales; volva thick, fleshy *A. lepidota*
Cap not scaly..... 1
1. Cap with warts; volva quickly splitting into thread-like fragments.....*A. strangulata*
Cap not warty..... 2
2. Cap covered with a mealy substance; volva soon disappearing .....*A. farinosa*
Cap smooth; volva persistent..... 3
3. Volva short, cup-shaped; margin of cap only slightly striate .....*A. volvata*
Volva long, free from the stem but enclosing it in a sheath-like manner..... 4
4. Gills white; cap white or mouse-gray.....*A. vaginata*
Gills dingy; cap leaden-brown.....*A. vaginata* var. *livida*

LEPIOTA Fr.

Surface of stem and cap sticky.....*L. illinita*
Surface of cap and stem dry..... 1
1. Surface of cap smooth, shiny, white.....*L. naucinoides*
Surface of cap scaly or granular..... 2

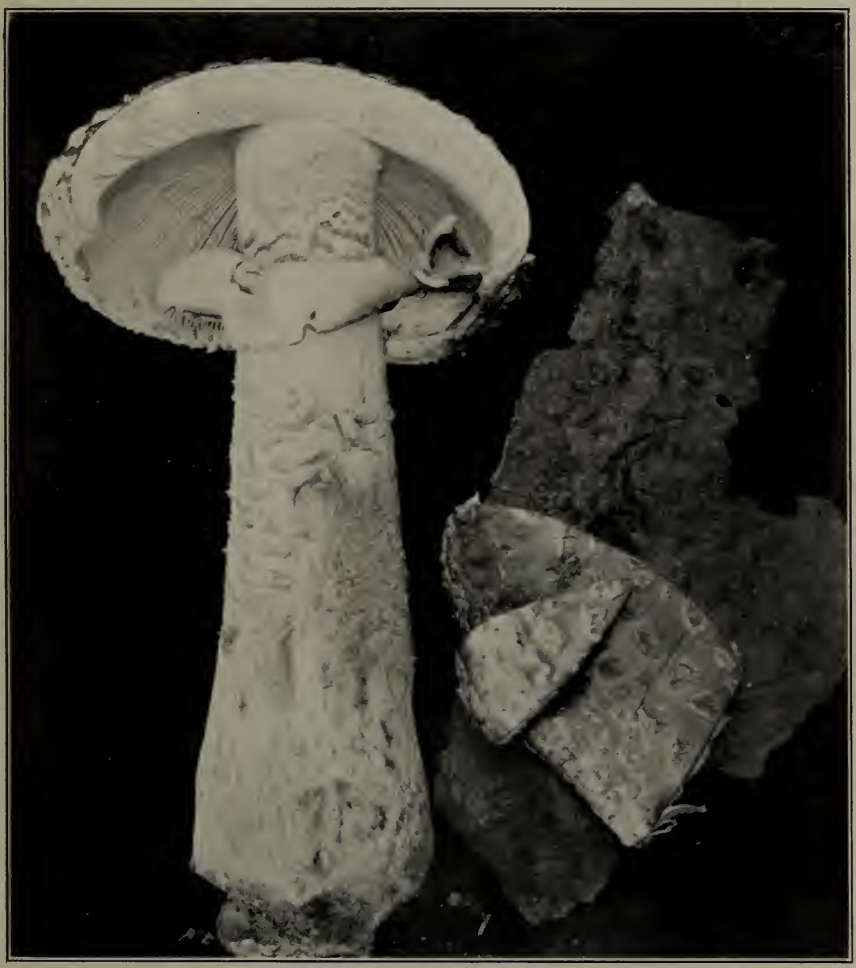

PLATE I. *Amanita rubescens.* Red Amanita. (Reduced one-third.)
Cap dull red, covered with thin, floccose, gray scales ; gills white ; stem cylindrical with prominent bulb ; volva quickly disappearing.

PLATE II. *Amanitopsis vaginata.* (Natural size.)
Cap thin, brown or nearly white, umbonate in center; margins deeply striate; stem 4 to 5 inches high, thicker at base; volva distinct.

PLATE III. *Lepiota naucinoides.* (Reduced one-third.)
Cap chalk-white, nearly globular before expanding, becoming oblate with age ; gills white, stem 1 to 3 inches long, thickened at base, tapering upward.

PLATE IV. *Marasmius oreades.* Fairy Ring. (Reduced one-fifth.)
Cap 1 to 1½ inches in diameter, thin, tough, brown, then tan-colored; stem 1½ to 2 inches long, equal, solid white, covered with down.

PLATE V. *Marasmius rotula.* (Natural size.)
Cap ¼ inch in diameter, membranaceous, umbilicate, plicate, white; stem slender, bony in texture, white or partly black.

PLATE VI. *Marasmius semihirtipes*. (Reduced one-third.)
Cap 1 inch to 1½ inches broad, convex, brown, striate on margins; stem equal, densely hairy at base.

2. Flesh changing to red where bruised; cap covered with red scales.....*L. americana*
Flesh not changing to red..... 3
3. Stem with movable ring.....*L. procera*
Stem with fixed ring..... 4
4. Surface of cap covered with many small, erect, pointed scales, light brown or olive-brown in color...*L. asperula*
Surface of cap not covered with small, erect, pointed scales 5
5. Surface of cap granular; plants red-yellow...*L. granulosa*
Surface of cap not granular..... 6
6. Surface of cap covered with a dense white veil of mealy down.....*L. farinosa*
Surface of cap with distinct, persistent scales..... 7
7. Stem covered with soft, floccose scales..... 8
Stem smooth; surface of cap cracking into numerous reddish scales in a crested manner.....*L. cristata*
8. Spores elliptical .....*L. clypeolaria*
Spores spindle-shaped.....*L. metulaespora*

MARASMIUS Fr.

Stems cohering into a somewhat solid mass...*M. cohaerens*
Stems separate and distinct..... 1
1. Plants succulent and fleshy.....*M. oreades*
Plants becoming dry and leathery..... 2
2. Flesh having odor and taste resembling that of onions .....*M. scorodonius*
Flesh without distinct odor and taste..... 3
3. Stem black, shining; cap thin, depressed in center *M. rotula*
Stem not black..... 4
4. Stem hairy below, smooth above..... 5
Stem smooth or slightly tomentose..... 6
5. Stem filled with dark, blood-colored juice.....*M varicosus*
Stem without colored juice, densely hairy below.....
M. semihirtipes
6. Gills permanently connected by veins.....*M. retiphyllus*
Gills not connected by veins; stem long and graceful; cap with striate margins.....*M. elongatipes*

TRICHOLOMA Fr.

Plants violet-tinted; stem bulbous; flesh white *T. personatum*
Plants not violet-tinted 1
1. Cap viscid 2
Cap not viscid 5
2. Stem stout, 3 to 6 inches long, 1 inch thick..*T. portentosum*
Stem slender, 1 to 4 inches long, ¾ inch thick 3
3. Cap brown or red-brown; gills becoming spotted with red as plants mature .....*T. transmutans*
Cap with no shade of red; gills never spotted with red 4
4. Cap yellow with black streaks .....*T. sejunctum*
Cap yellow or green-yellow without streaks....*T. equestre*
5. Plants with a strong odor resembling soap; flesh red .....*T. saponaceum*
Plants without strong odor 6
6. Cap covered with dark red hairs; flesh yellow...*T. rutilans*
Cap not red 7
7. Taste bitter; plants pure white .....*T. album*
Taste not bitter 8
8. Plants gray-brown or mouse-colored .....*T. terreum*
Plants white, tinted with yellow; center of cap darker .....*T. albo-flavidum*

COLLYBIA Fr.

Stem terminating in a long, tapering, pointed root *C. radicata*
Stem not terminating in a single root 1
1. Stem densely hairy; plants growing on stumps *C. velutipes*
Stem not densely hairy 2
2. Gills broad, distant 3
Gills narrow 5
3. Plants large and coarse; cap 3 to 4 inches broad; stem 3 to 4 inches long, ½ inch thick.....*C. platyphylla*
Plants smaller 4
4. Stem seldom over 1½ inches long, ½ inch thick *C. esculenta*
Stem 2 to 4 inches long .....*C. lacerata*
5. Stems united at base 6
Stems not united at base 7
6. Stem downy over its entire surface, long.....*C. confluens*
Stem downy only at base, short .....*C. acervata*

PLATE VII. *Collybia platyphylla.* (Reduced one-half.)
Cap 3 to 4 inches across; flesh thin, dark brown when young, becoming grey or dingy white with age; stem 3 to 4 inches long, ½ inch thick, equal.

PLATE VIII. *Collybia butyracea.* Buttery Collybia. (Reduced one-fifth.)
Cap 2 to 3 inches across, thick at center, becoming thin at margins, red-brown in color, becoming white with age, shining, soft to touch as if oiled ; stem 2 to 3 inches high, hollow.

PLATE IX. *Collybia zonata.* (Natural size.)
Cap ½ inch to 1½ inches wide, dark brown, covered with dense fibrils, uneven, forming distinct zones, membranaceous; stem even, 1½ to 2½ inches long.

PLATE XI. *Mycena lesiana.* (Reduced one-third.)
Cap ½ inch broad, rich golden yellow, deeply striate; stem 1 to 1½ inches long, equal, tufted, coated at base with dense hairs.

7. Plants often growing on other fleshy fungi; stem with distinct tuber at base.....*C. tuberosa*
Plants not growing on other fungi; stem without tubers 8
8. Stem grooved, striate with fibers..... 9
Stem not grooved..... 10
9. Stem even or narrowed towards the base; cap white, sometimes spotted with red.....*C. maculata*
Stem narrowed towards the top; cap red-brown, buttery to the touch.....*C. butyracea*
10. Stem covered with fibrillose tomentum; cap umbilicate .....*C. zonata*
Stem smooth..... 11
11. Stem white.....*C. strictipes*
Stem red or brown.....*C. dryophila*

MYCENA Fr.

Plants with a colored juice.....*M. haematopoda*
Plants without colored juice..... 1
1. Stem clothed with blue hairs at base; all parts of young plant tinged with blue.....*M. cyanothrix*
Stem not clothed with blue hairs at base..... 2
2. Gills and cap flesh-colored.....*M. sub-incarnata*
Gills and cap not flesh-colored..... 3
3. Surface of cap viscid or glutinous..... 4
Surface of cap not viscid..... 5
4. Cap gray or green-yellow; gills joined squarely to stem .....*M. epipterygia*
Cap brown or gray with dark lines; gills running down stem.....*M. vulgaris*
5. Cap yellow, deeply striate.....*M. lesiana*
Cap not deeply striate..... 6
6. Gills purplish with a darker toothed margin..*M. pelianthina*
Gills gray, turning pink with age, connected by veins .....*M. galericulata*

LACTARIUS Fr.

Plants with watery juice; cap tan-colored, clothed with close tomentum.....*L. aquifluus*
Plants with variously colored, milky juice, this milk sometimes disappearing with age..... 1

1. Milk white at first, usually acrid from the first..... 2
   Milk white at first, mild, or changing from mild to acrid 8
   Milk highly colored from the first..... 21
2. Cap viscid, margin incurved..... 3
   Cap not viscid..... 5
3. Cap dingy, green-gray; surface often zoned with darker blotches.....*L. blennius*
   Cap with no tinge of green..... 4
4. Gills yellow or pink; cap tinged with red, surface often zoned.....*L. torminosus*
   Gills white; cap yellow or pink, zoneless.....*L. trivialis*
5. Milk white, soon changing to sulphur-yellow *L. chrysorrheus*
   Milk permanently white..... 6
6. Stem solid..... 7
   Stem stuffed with fibers; gills squarely joined to the stem, very narrow, crowded.....*L. pergamenus*
7. Gills broad, distant; margin of cap or whole surface densely clothed with velvety tomentum..... 8
   Gills narrow, decurrent; surface of cap smooth; milk very acrid.....*L. piperatus*
8. Whole surface of cap minutely velvety-tomentose; soft to the touch, 2 to 5 inches broad.....*L. vellereus*
   Surface of cap smooth, margin inrolled and covered with tomentum, 3 to 5 inches broad.....*L. deceptivus*
   Surface of cap smooth, margin inrolled, extreme edge minutely silky, 1 to 2 inches broad.....*L. involutus*
9. Flesh having a strong, pleasant odor, especially when dry .....*L. camphoratus*
   Flesh odorless, or with a slight fragrance..... 10
10. Cap viscid..... 11
    Cap not viscid..... 15
11. Milk changing to sulphur-yellow.....*L. theiogalus*
    Milk permanently white..... 12
12. Gills white, soon changing to brick-red or salmon..... 13
    Gills not changing to red..... 14
13. Cap cinnamon-colored; milk sweet.....*L. quietus*
    Cap ashy or buff-gray; milk becoming somewhat acrid .....*L. fuliginosus*

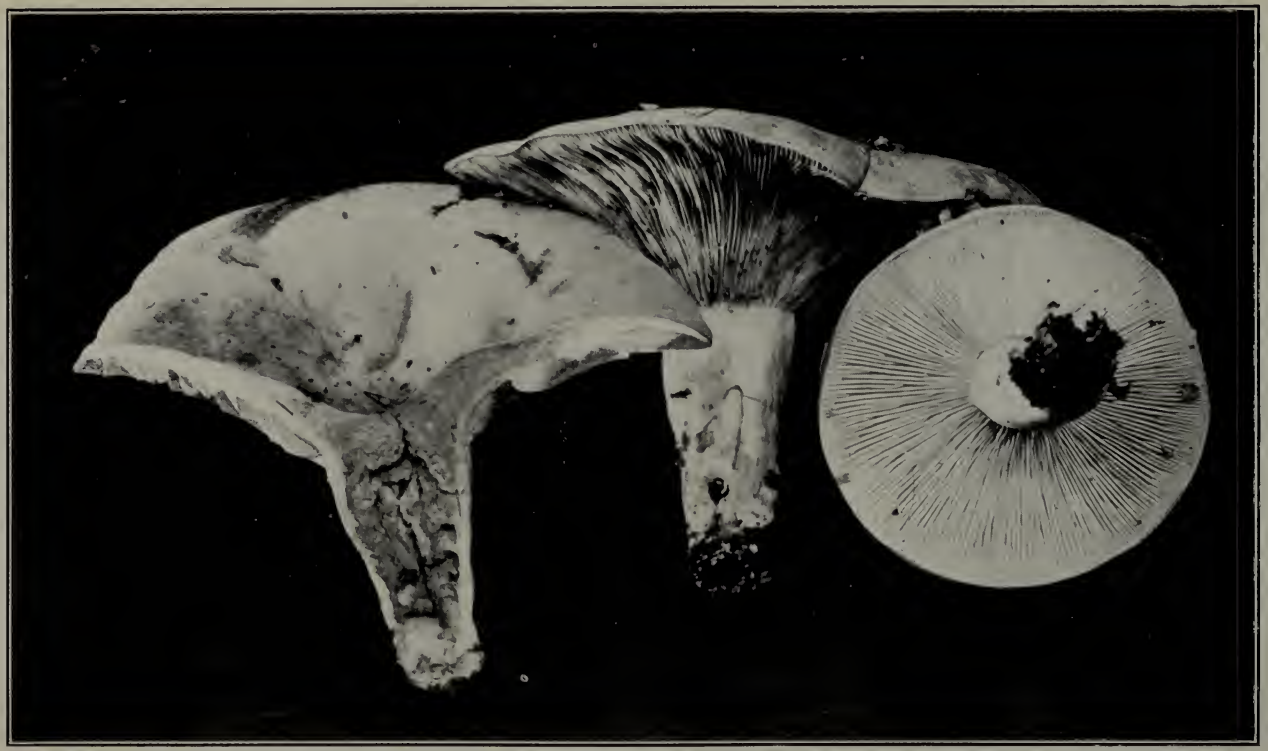

PLATE XII. *Lactarius torminosus.* (Reduced one-third.)
Cap 3 to 4 inches across, viscid when moist, pale flesh-color tinged with yellow; stem 1 to 3 inches long, solid; milkwhite, unchanging, acrid.

PLATE XIII. *Lactarius vellereus.* (Reduced one-half.)
Cap white, 3 to 6 inches across; flesh thick, rigid, tapering towards margins, which are inrolled when young; margins densely tomentose; stem 2 to 3 inches long, firm; milkwhite, scanty.

PLATE XIV. *Lactarius involutus.* (Reduced one-third.)

Cap white, 2 to 3 inches broad; flesh thick, equal nearly to margins, which are deeply inrolled when young, expanding somewhat with age; stem ½ to 1 inch long, equal, solid; milkwhite, very peppery.

14. Cap 3 to 6 inches broad, flesh-colored or clay-colored ..... *L. pallidus*
Cap 1½ to 2½ inches broad, smoky brown..... *L. fumosus*
15. Cap downy..... 16
Cap smooth..... 19
16. Cap gray; gills white, tinged with yellow; milk slightly acrid..... *L. griseus*
Cap not gray..... 17
17. Gills white, changing to salmon where wounded *L. lignyotus*
Gills not changing to salmon where wounded..... 18
18. Cap 3 to 5 inches broad, dark red-brown..... *L. corrugis*
Cap 2 to 3 inches broad, buff-colored..... *L. luteolus*
19. Gills narrow, close, white, tinged with red..... 20
Gills distant, white or cream-colored; stem ½ to 1 inch long, solid..... *L. hygrophoroides*
20. Cap ½ to 2 inches broad; milk scanty..... *L. subdulcis*
Cap 2 to 5 inches broad; milk copious..... *L. volemus*
21. Stem spotted in a pitted manner; milk yellow, changing to brick-red..... *L. deliciosus*
Stem not spotted..... 22
22. Milk saffron-yellow..... *L. chelidonium*
Milk not yellow..... 23
23. Milk dark red; cap the same color..... *L. subpurpureus*
Milk dark blue; cap indigo-blue..... *L. indigo*

RUSSULA Pers.

Plants with a strong fetid odor..... 1
Plants without fetid odor..... 2
1. Cap 3 to 5 inches broad; gills exuding watery drops ..... *R. foetens*
Cap 1 to 3 inches broad; gills not exuding watery drops ..... *R. pectinata*
2. Gills forked..... 3
Gills not distinctly forked..... 7
3. Cap green or yellow-green; taste tardily acrid; gills white 4
Cap red or rust-colored..... 5
4. Stem solid, firm; gills frequently forked..... *R. furcata*
Stem spongy; gills once or twice forked... *R. aeruginescens*

5. Cap somewhat depressed or funnel-shaped, blood-red; gills crowded, narrow, somewhat decurrent..*R. sanguinea*
Cap convex, then plane, not blood-red; gills crowded, broad, not decurrent..... 6
6. Taste slowly acrid; cap flesh-colored, becoming dingy-white .....*R. rosacea*
Taste not acrid; cap pale red or rust-colored...*R. depallens*
7. Margin of cap at first bent inward..... 8
Margin of cap not at first bent inward..... 10
8. Flesh changing to red when broken; cap becoming black .....*R. nigricans*
Flesh white, not changing color on exposure to air.... 9
9. Stem very short, white.....*R. brevipes*
Stem longer, gray-black.....*R. adusta*
10. Cap without viscid cuticle, absolutely dry, margin not grooved 11
Cap with viscid cuticle, especially in rainy weather, margin grooved or covered with wart-like swellings 16
11. Cap bright yellow.....*R. flavida*
Cap not yellow..... 12
12. Cap green or pallid with no tinge of red; gills white .....*R. virescens*
Cap not green, tinged with red, pink, or purple..... 13
13. Cap white or tinged with pink at margin.....*R. albella*
Cap not white..... 14
14. Taste very acrid; flesh white, somewhat red under cuticle .....*R. rubra*
Taste mild..... 15
15. Cap blood-red; stem 3 inches long, 1 inch thick....*R. lepida*
Cap dingy purple, turning olive-colored; gills yellow *R. olivacea*
16. Gills white..... 17
Gills yellow..... 19
17. Taste mild; cap clear yellow.....*R. citrina*
Taste acrid 18
18. Cap 1 to 1½ inches broad.....*R. fragilis*
Cap 3 to 4 inches broad.....*R. emetica*
19. Cap dark purple.....*R. atropurpurea*
Cap red or yellow..... 20

PLATE XV. *Russula sanguinea.* (Reduced one-third.)
Cap 2 to 4 inches wide, blood-red, becoming pale at margin, convex, then depressed ; flesh thick, white ; gills decurrent ; stem stout ; taste acrid.

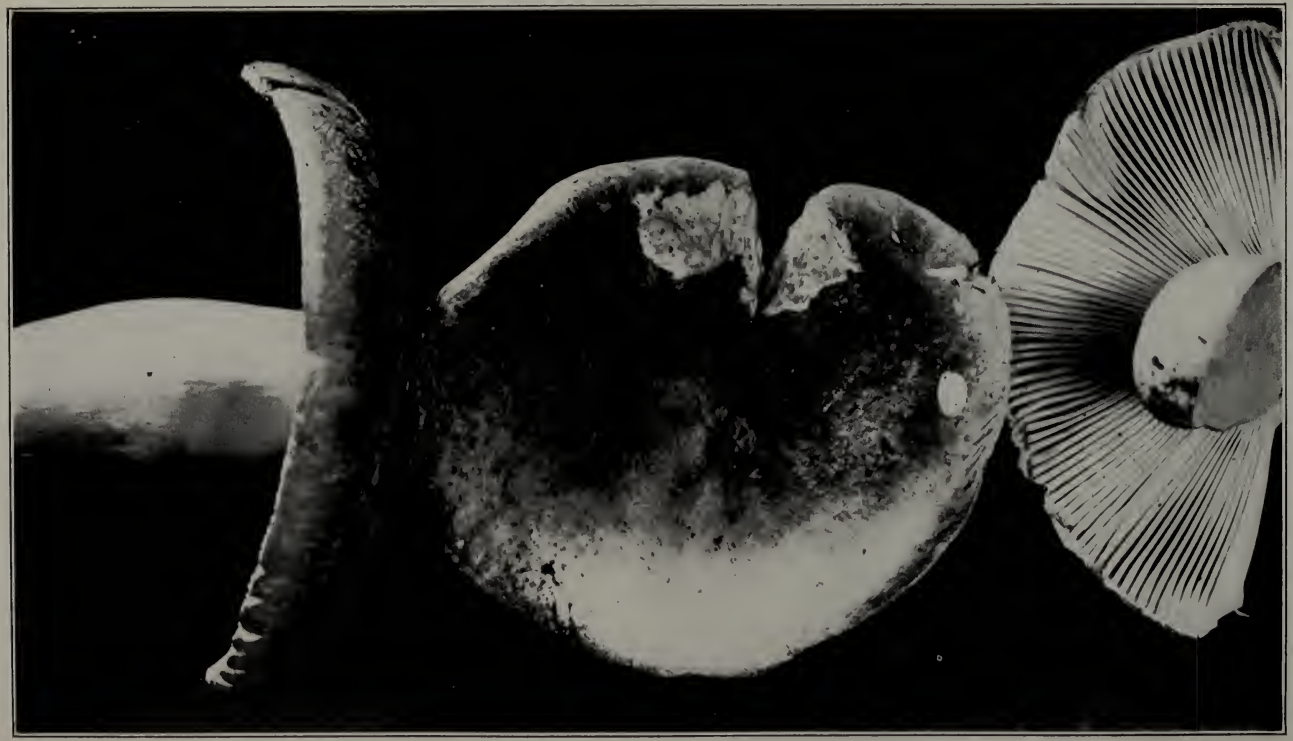

PLATE XVI. *Russula virescens.* Green Russula. (Reduced one-fourth.)
Cap 3 to 5 inches wide, globose at first, depressed with age; flesh thick, white; surface dry, green or dingy white; stem solid, white; taste mild.

PLATE XVII. *Russula decolorans.* (Reduced one-fourth)

Cap 3 to 4 inches wide, thick, orange red at first, becoming yellow with age, viscid when moist ; stem 1 to 3 inches long, cylindrical, white ; gills with yellow tinge ; taste mild.

20. Edge of gills lemon-yellow..... 21
Edge of gills not lemon-yellow..... 22
21. Cap lemon-yellow or orange.....*R. aurata*
Cap bright blood-red.....*R. alutacea*
22. Cap 1 to 2 inches broad..... 23
Cap 3 to 5 inches broad..... 24
23. Stem tapering upwards, stuffed or sometimes hollow *R. roseipes*
Stem equal, solid.....*R. Mariae*
24. Stem short, 1 to 3 inches long, thick and club-shaped *R. integra*
Stem elongated, 3 to 5 inches long, cylindrical *R. decolorans*

PLEUROTUS Fr.

Veil appendiculate around margin of young cap; cap variegated with dingy brown, spot-like scales..*P. dryinus*
No evidence of remnants of veil on margin of young cap 1
1. Gills extending down the stem (decurrent)..... 2
Gills not decurrent..... 5
2. Stem very short or absent..... 3
Stem distinct..... 4
3. Cap 1 to 3 inches broad, viscid when young, variously tinged with dark yellow-green, or red.....*P. serotinus*
Cap 3 to 5 inches broad, not viscid when young, yellow-white, becoming darker with age.....*P. ostreatus*
4. Spores in mass tinged with lilac; stem 1 to 2 inches long .....*P. sapidus*
Spores in mass pure white; stem ½ inch long or shorter, channeled.....*P. petaloides*
5. Stem 2 to 3 inches long, solid.....*P. ulmarius*
Stem often absent; when present, stuffed, becoming hollow .....*P. lignatilis*

HYGROPHORUS Fr.

Cap distinctly viscid..... 1
Cap viscid only when moist..... 4
Cap not viscid when moist..... 9
1. Cap white, then deep red; gills white, spotted with red .....*H. erubescens*
Cap not tinged with red..... 2

2. Cap, gills, and flesh, yellow.....*H. nitidus*
Cap white or dark gray..... 3
3. Cap white, covered with light yellow floccose scales at involute margin.....*H. chrysodon*
Cap dark gray, without scales on even margin *H. calophyllus*
4. Cap red, or tinged with red..... 5
Cap not red..... 8
5. Cap 2 to 4 inches broad, blood-scarlet; flesh of same color .....*H. puniceus*
Cap less than 2 inches broad..... 6
6. Cap distinctly conical.....*H. conicus*
Cap convex, becoming plane..... 7
7. Gills connected by veins; cap bright scarlet, becoming pale with age.....*H. coccineus*
Gills not connected by veins; cap red or red-yellow... *H. miniatus*
8. Gills distinctly decurrent.....*H. ceraceus*
Gills decurrent only by a tooth.....*H. chlorophanus*
9. Cap shining white.....*H. virgineus*
Cap not white..... 10
10. Cap gray.....*H. caprinus*
Cap yellow or buff.....*H. pratensis*

CANTHARELLUS Adanson.

Cap and stem tubular..... 1
Cap and stem solid..... 3
1. Cap thin, funnel-shaped; stem smooth..*C. infundibuliformis*
Cap fleshy 2
2. Surface of cap densely covered with floccose scales; cap yellow, elongated, funnel-shaped or trumpet-shaped *C. floccosus*
Surface of cap smooth, tan-colored.....*C. brevipes*
3. Plants red 4
Plants yellow or gray..... 5
4. Surface and flesh of plants deep blood-red..*C. cinnabarinus*
Surface of cap pink; flesh white.....*C. rosellus*
5. Cap dark gray; flesh thin; gills white.....*C. dichotomus*
Cap yellow or orange..... 6

PLATE XVIII. *Hygrophorus miniatus.* (Natural size.)
Cap ½ to 1 inch wide, convex, then umbilicate, crimson, becoming pale yellow; stem 1½ to 2 inches long, equal, crimson or yellow; gills yellow, thick, distant.

PLATE XIX. *Cantharellus floccosus.* (Reduced one-fifth.)
Cap vase-form, 1½ to 3 inches across, bright yellow at first with numerous darker floccose scales, becoming dull yellow-brown with age; flesh firm; stem short, solid; gills thick, blunt, forking.

6. Gills narrow, close; cap dull orange; margin curved downward ..... *C. aurantiacus*
Gills distant 7
7. Flesh fragrant; cap smooth, egg-yellow, margin elevated ..... *C. cibarius*
Flesh odorless; cap covered with brown scales.. *C. lutescens*

OMPHALIA Fr.

Plants bright golden-yellow, scattered on coniferous logs or twigs..... *O. scabriuscula*
Plants red-yellow..... 1
1. Plants usually growing in dense clusters on coniferous stumps, logs, or twigs; stem 1 inch long, 1 line thick *O. campanella*
Plants solitary or in small clusters; stem 1 to 2 inches long, ½ line thick..... *O. campanella,* var. *sparsa*

CLITOCYBE Fr.

Cap funnel-shaped..... 1
Cap not funnel-shaped..... 2
1. Cap pale red..... *C. infundibuliformis*
Cap pure white..... *C. adirondackensis*
2. Plants fragrant; cap tinged with green..... *C. odora*
Plants not fragrant..... 3
3. Plants bright, rich yellow; fleshy..... *C. illudens*
Plants not bright yellow..... 4
4. Cap white, tinged with brown or gray; stem distinctly thickened near the base..... *C. clavipes*
Cap violet or purple-tinted..... 5
5. Gills distinctly decurrent..... 6
Gills attached squarely to the stem, or decurrent only by a tooth..... 7
6. Cap dark purple; stem purple, streaked with white fibrils, equal, densely clothed with white hairs at base ..... *C. amethystina*
Cap pale yellow, with tints of purple; stem swollen in the middle..... *C. ochro-purpurea*
7. Stem bulbous, thickly clothed with white tomentum... *C. trullissata*
Stem not bulbous, slender, smooth..... *C. laccata*

LENZITES.

Plants growing on wood of deciduous trees..... 1
Plants growing on wood of coniferous trees....*L. sepiaria*
1. Cap obsoletely zoned; substance corky-coriaceous, rigid *L. betulina*
Cap distinctly zoned; substance leathery, easily bent.. *L. flaccida*

LENTINUS Fr.*

Cap with central stem..... 1
Cap shelving..... 4
1. Cap smooth.....*L. cochleatus*
Cap not smooth..... 2
2. Cap densely hairy, leathery.....*L. Lecomtei*
Cap variegated with darker squamules or scales, fleshy 3
3. Cap white, with black, hairy squamules.....*L. tigrinus*
Cap red-yellow, with darker, spot-like scales.....*L. lepideus*
4. Caps closely overlapping and joined at the base, surface coarsely hairy.....*L. vulpinus*
Caps less closely overlapping, often distinct, surface velvety, sponge-like.....*L. ursinus*

PANUS Fr.

Cap shelving; stem very short or absent..... 1
Cap not shelving; stem seldom in center..... 3
1. Taste becoming hot and astringent.....*P. stipticus*
Taste mild..... 2
2. Gills light gray; cap cinnamon-colored, covered with gray-white tomentum.....*P. farinaceus*
Gills rust-color; cap gray.....*P. salicinus*
3. Cap smooth, red-brown, becoming violet; stem 1 inch long .....*P. torulosus*
Cap with tufts of hairs over surface, red-yellow; stem very short or absent.....*P. rudis*

*The specimens of *Lentinus chrysopeplus* reported in Bulletin No. 3 have since been compared with Berkley and Curtis's type specimens in the Cryptogamic Herbarium of Harvard University, and are evidently very different. The specimens previously reported were evidently Dr. Peck's *Omphalia scabriuscula*. In regard to this species, Dr. Peck writes as follows: "I received from you this morning the specimens of a small yellow mushroom. I have compared them with our specimens of *Omphalia scabriuscula*, and I find no essential difference. Yours are a little smaller. I think them the same species."

PLATE XX. *Lentinus ursinus.* (Reduced one-fourth.)
Cap shelving, 2 to 4 inches broad, dark brown on older portion, becoming yellow-brown at margin; surface spongy with a dense tomemtum.

PLATE XXI. *Cortinarius corrugatus.* (Reduced one-third)
Cap 2 to 5 inches wide, deeply ridged or corrugated, nearly smooth at center, umbonate, dark brown in color; stem 3 or 4 inches long, stuffed.

PAXILLUS Fr.

Plants orange-yellow ..... *P. aurantiacus*
Plants not orange-yellow 1
1. Margin of cap strongly inrolled (involute) .... *P. involutus*
Margin of cap straight or slightly inrolled 2
2. Cap 2 to 4 inches broad, rust-color; gills adnate .... *P. atro-tomentosus*
Cap 1 to 2 inches broad, dingy yellow; gills decurrent at base ..... *P. panuoides*

CORTINARIUS Fr.

Plants small; cap 1 to 1½ inches broad ..... *C. vernalis*
Plants larger, seldom less than 2 inches broad 1
1. Plants some shade of red or yellow 2
Plants tinged with violet 9
2. Cap viscid 3
Cap not viscid 5
3. Cap coarsely corrugated ..... *C. corrugatus*
Cap not corrugated 4
4. Stem with a turbinate bulb at base, stuffed, then hollow ..... *C. turbinatus*
Stem not bulbous, solid, scaly ..... *C. collinitus*
5. Stem and cap scaly 6
Stem and cap not scaly 7
6. Cap fleshy throughout; gills crowded; stem stuffed, then hollow ..... *C. bolaris*
Cap thin at the margin; gills distant; stem solid .... *C. armillatus*
7. Stem with a more or less persistent ring ..... *C. flavifolius*
Stem with no ring 8
8. Cap cinnamon-colored; stem yellow; gills at first yellow ..... *C. cinnamomeus*
Cap scarlet or blood-red; gills of a similar color .... *C. cinnabarinus*
9. Cap viscid, sometimes spotted with white ..... *C. iodes*
Cap not viscid 10
10. Stem bulbous, then elongated and equal; color of cap changing from violet to brick-red ..... *C. torvus*
Stem constantly bulbous 11

11. Bulb depressed-emarginate.....*C. obliquus*
Base of stem club-shaped.....*C. violaceus*

PHOLIOTA Fr.

Plants growing in soil..... 1
Plants growing on wood..... 2
1. Cap 1 to 2 inches broad.....*P. praecox*
Cap 3 to 5 inches broad, even in the center, wrinkled in pits at the sides.....*P. caperata*
2. Cap less than 2 inches broad; surface torn into minute scales, dry; flesh thin.....*P. curvipes*
Cap more than 2 inches broad; flesh thick..... 3
3. Cap viscid..... 4
Cap not viscid, yellow-red, with darker, revolute scales *P. squarrosa*
4. Cap and stem densely covered with thick, dark brown scales .....*P. squarrosoides*
Cap and stem less densely covered with thin, red-yellow scales.....*P adiposa*

INOCYBE Fr.

Cap floccose, scaly; stem scaly.....*I. lanuginosa*
Cap covered with silky fibers..... 1
1. Stem smooth; cap longitudinally cracked when expanded .....*I. rimosa*
Stem covered with hairy fibers; cap never cracking.. *I. floccosa*

FLAMMULA Fr.

Plants large; cap more than 4 inches broad, dry, buff-color .....*F. magna*
Plants small 1
1. Cap viscid..... 2
Cap not viscid..... 3
2. Stem solid, yellow; cap yellow.....*F. polychroa*
Stem hollow or stuffed; cap brick-red.....*F. fusus*
3. Cap covered with silky threads near margin.....*F. alnicola*
Cap smooth..... 4
4. Cap pale yellow.....*F. flavida*
Cap cinnamon or tawny-orange.....*F. hybrida*

PLATE XXII. *Cortinarius violaceus.* (Reduced one-third)
Cap 2 to 4 inches wide, dark violet in color; stem 2 to 4 inches long, equal except bulbous base, violet colored; flesh similar in color.

PLATE XXIII. *Pholiota caperata.* (Natural size.)
Cap 2 to 5 inches broad, convex, yellow-brown, often roughened on surface with ridges or pits.

PLATE XXIV. *Pluteus granularis.* (Reduced one-third)
Cap 2 to 5 inches wide, convex, then expanded, dark brown, with surface broken into numerous small patches, surface also somewhat ridged or wrinkled.

PLATE XXV. *Pluteus cervinus.*

Cap 2 to 5 inches wide, campanulate, then expanded, gray, yellow-brown, or fawn-colored ; plants solitary or tufted.

PLATE XXVI. *Pluteus tomentosulus.* (Natural size.)
Cap 1 to 1½ inches wide, campanulate, becoming flat with age ; surface covered with a dense white tomentum.

GALERA Fr.

Plants growing in moss; gills connected by veins.... *G. hypnorum*
Plants not in moss; gills unconnected.....*G. tenera*

PLUTEUS Fr.

Surface of cap in young plants covered with silky fibrils 1
Surface of cap in young plants smooth or slightly wrinkled .....*P. admirabilis*
1. Plants large; cap 4 to 6 inches in diameter, fleshy..... 2
Plants small 3
2. Cap covered with a dense, dark brown tomentum in center, broken into granules near margin; gills white, then flesh-color.....*P. granularis*
Cap fibrillose, becoming smooth at disk; gills white, then flesh-color.....*P. cervinus*
Cap fibrillose, becoming wrinkled at disk; gills dark brown, fringed or toothed on the margins....*P. umbrosus*
3. Surface of cap wrinkled and darker at disk; stem white, tinged with blue or green, fibrillose....*P. salicinus*
Surface of cap not wrinkled..... 4
4. Stem smooth.....*P. longistriatus*
Stem covered with silky fibrils.....*P. tomentosulus*

ENTOLOMA Fr.

Stem solid..... 1
Stem hollow 2
1. Cap large, 4 to 6 inches broad; flesh white.....*E. grande*
Cap small, 1 to 2 inches broad; flesh pink....*E. Grayanum*
2. Cap with a distinct, central elevation (umbonate) *E. strictius*
Cap not umbonate.....*E. rhodopolium*

CLITOPILUS Fr.

Gills decurrent 1
Gills squarely joined to the stem, or slightly decurrent 5
1. Gills somewhat forked; taste very bitter..*C. noveboracensis*
Gills not forked; taste mild..... 2
2. Cap covered with a gray powder or bloom.....*C. prunulus*
Cap not covered with powder..... 3

3. Cap somewhat viscid when moist, often irregular; stem short.....*C. orcella*
   Cap not viscid..... 4
4. Cap 1 to 2 inches broad; gills dark gray; stem stuffed *C. popinalis*
   Cap 2 to 4 inches broad; gills white or pale gray; stem solid.....*C. abortivus*
5. Cap glabrous..... 6
   Cap silky, umbilicate, somewhat zoned.....*C. micropus*
6. Cap 1 inch broad; stem with a close white tomentum at base.....*C. unitinctus*
   Cap 1 to 3 inches broad, slightly fibrillose; often growing in greenhouses.....*C. tardus*

AGARICUS Linn.

   Stem terminating in an abrupt bulb.....*A. abruptus*
   Stem not distinctly bulbous..... 1
1. Cap thin..... 2
   Cap fleshy..... 3
2. Cap yellow-white, fibrillose-silky.....*A. comptulus*
   Cap white, brown in center, covered with minute brown scales.....*A. placomyces*
3. Gills narrow, rounded behind.....*A. Rodmani*
   Gills broad..... 4
4. Gills at first white; ring on stem large and thick *A. arvensis*
   Gills at first pink; ring more or less torn, often disappearing.....*A. campestris*

Varieties of *Agaricus campestris*

   Cap covered with red scales.....var. *praticola*
   Cap not covered with red scales..... 1
1. Cap brown or yellow-brown, covered with minute hairs var. *hortensis*
   Cap and stem brown, scaly.....var. *villaticus*

STROPHARIA Fr.

   Cap hemispherical at maturity; stem glabrous *S. semiglobata*
   Cap at first hemispherical, expanding at maturity; stem downy below the ring.....*S. stercoraria*

PLATE XXVII. *Hypholoma appendiculatum.* (Natural size.)
Cap 1 to 3 inches wide, dingy white with shades of yellow, fleshy when young, becoming leathery with age; margin of young cap fringed with remnants of the veil.

PLATE XXVIII. *Coprinus micaceus*. (Reduced one-third.)
Cap ½ to 1½ inches wide, campanulate, striate ; margin uneven ; flesh thin.

HYPHOLOMA Fr.

Surface of cap marked by strong wrinkles which radiate from the center..... 1
Surface of cap smooth..... 2

1. Cap brown; stem brittle, slightly mealy at the top... *H. hymenocephalum*
Cap gray, tinged with yellow; stem fleshy, smooth.... *H. rugocephalum*

2. Flesh fragile; remnant of veil often left on margin of cap..... 3
Flesh tough; margin of cap without remnants of veil 4

3. Cap brown, often shaded to ochre at margin; gills somewhat forked, umber-colored.....*H. subaquilum*
Cap gray-brown; gills not forked, white, then brown *H. appendiculatum*

4. Stem solid; flesh white.....*H. sublateritium*
Stem hollow; flesh yellow.....*H. fasciculare*

COPRINUS Pers.

Cuticle of cap separating into shaggy, concentric scales; stem with a well developed ring.....*C. comatus*
Cuticle not breaking into shaggy scales..... 1

1. Cap 2 to 4 inches broad, smooth, or covered with a few obscure scales; ring imperfect.....*C. atramentarius*
Cap less than 2 inches broad; ring absent..... 2

2. Cap covered with minute glistening scales.....*C. micaceus*
Cap smooth, very fragile.....*C. plicatilis*

PANAEOLUS Fr.

Stem solid; cap white.....*P. solidipes*
Stem hollow..... 1

1. Surface of cap ridged.....*P. retirugis*
Surface of cap smooth.....*P. campanulatus*

Part II

Some Edible Species of Agaricaceae

AMANITA Pers.

As noted in the preliminary report, this genus includes the most violently poisonous species to be found among the fleshy fungi. Therefore these species should be most carefully avoided by the amateur collector. Never should "button" forms be collected for eating, and by all means avoid white specimens. However, the following species of Amanita are classed as edible.

Amanita Caesarea Scop. Kingly Amanita. This is one of the most striking forms of the genus. It is found abundantly in open woods in Mansfield during July, and occasional specimens occur during the autumn months. Its large size, brilliant coloring, striate or lined margins, with the absence of warts or scales on the surface of the cap, serve as characteristics which distinguish it from its poisonous relatives. The characters of the species are so distinct that, when once positively identified, *A. Caesarea* is not likely to be confused with non-edible kinds. Unless positively identified, it might be possible to mistake this edible *Amanita* for two of its relatives, *A. Frostiana* and *A. muscaria.* The plants of the edible species, when small, resemble the former; while, in color, the edible species resembles the latter; but the floccose or compact scaly cap of *A. muscaria* should prevent confusing the two.

A. Caesarea has a distinct white volva or cup at the base of the stem. This is quite persistent, and is usually found on mature specimens. The stem and usually the gills are distinctly yellow. In the immature specimens, the gills are covered by a delicate yellow veil which falls around the stem as the cap expands. The stem is somewhat floccose or downy below the ring. The gills are not attached to the stem, and vary in color from white to deep lemon-yellow, the yellow shades appearing in the typical specimens. The flesh is white, with yellow or yellow-red tints as it approaches the outside.

Amanita rubescens Fr. (Plate I) is not liable to be confused with any poisonous species. Its characters are quite

distinct. The volva, or cup, is very fragile, and usually disappears as the plants approach maturity. The color of the whole plant is a dull red-brown, often changing with age to a fawn-color, thus very different from the brilliant red tints of *A. Caesarea.* When bruised or broken the flesh is quickly discolored and changed to red. The cap is quite large, ranging from three to five inches in diameter, and before maturity is covered by dense white scales, the remains of the universal veil. During rainy weather and frequently at maturity these scales disappear, leaving the surface smooth. The stem is often four or five inches long and frequently an inch thick, somewhat enlarged at the base, and surrounded at the top by the large white membranous ring, the remains of the partial veil. The gills are white or whitish, quickly discolored in handling, and are free from the stem. The species occurs in large numbers during the summer and autumn months.

Amanita strobiliformis Vitt. This species has never been collected by the writer, but is listed by Mr. C. C. Hanmer in his collection at East Hartford. The chief characters of the plant are a thick stem, enlarged at the base into a long, solid, scaly bulb resembling a beet; the cap appearing small at first, but gradually enlarging as maturity is reached. The flesh is white, with a strong odor of chloride of lime. This has been pronounced edible by Peck, McIlvaine, and Curtis.

AMANITOPSIS Roz.

In the genus *Amanitopsis* there are no species reported poisonous, but there is danger of mistaking some species of *Amanita* for *Amanitopsis. Amanitopsis* has the volva or cup at the base of the stem, but lacks the ring which is always present in *Amanita,* although in some species of *Amanita* it is so fragile that it quickly disappears, the plants at maturity therefore resembling *Amanitopsis.* The chief point for caution lies in determining whether or not a ring has been present on the stem before pronouncing any specimen an *Amanitopsis.* But one species is found in sufficient quantities to make the plants of much value for food.

Amanitopsis vaginata (Fr.) Roz. (Plate II) is one of the most frequent species, and is abundant in open woods from June

until October. Occasionally it is found in open fields and pastures. It is easily identified when once its characteristics are known. The cap varies in color from gray to brown; is from two to four inches in diameter; smooth and shining in the center, with an occasional fragment of the universal veil remaining on the surface. Near the margin the flesh becomes thin, and is marked by deep furrows with prominent ridges. The stem varies in length from three to six inches, and is from one-half to three-fourths of an inch thick. It tapers slightly towards the top, and is hollow, or stuffed with a pithy substance. The volva at the base of the stem is very characteristic; being moderately firm, it persists until the maturity of the cap, as a closely sheathing cup, split down one side. This volva separates easily from the stem; and, unless care is taken in gathering, the stem may be pulled out, leaving the volva in the soil. Great precaution must be observed that no remnants of a ring are present on the upper portion of the stem. The surface of the stem is usually covered by fine scales, but these may be so minute that the stem has a peculiar mealy appearance.

LEPIOTA Fr.

In this group are found some of the best edible species. They are not likely to be confused with *Amanita,* if precaution is taken to ascertain that there are no indications of a cup at the base of the stem. While there are many species in this genus, all of which are considered edible, but three occur in sufficient quantities to merit consideration.

Lepiota procera Scop. Parasol Mushroom. (Plate III, Bull. 3.) This is one of the best-known of the edible species, and has characteristics which serve to easily distinguish it. It is commonly found in pastures during the summer and autumn months, and often occurs on lawns, in thin woods, especially chestnut sprout-lands, and frequently in gardens. It has a bell-shaped cap, more or less elevated in the center, of a gray-brown color. In age the surface of this cap becomes more or less torn into shaggy scales, with the exception of the central elevation, which remains smooth and dark brown until maturity. The brittle stem, which may be from five to twelve inches high, is clothed with numerous small scales, terminating below with a

distinct bulb; at its upper end is a stout, narrow ring, which usually moves freely up and down the stem.

This is the most frequent Connecticut species of *Lepiota,* and is usually found growing singly, or sometimes in troops.

Lepiota americana Pk. is another species which has striking characters. During August it has been abundant, growing in immense clusters on the campus at the Connecticut Agricultural College. It is found around old stumps or in soil. The caps vary in width from one to three inches, and when immature are covered with a thin skin of red-brown color. At maturity this becomes torn into numerous scales except on the more or less prominent center, and the whole plant assumes a dark red-brown color. This red color is noticeable throughout the flesh, and grows darker as the plant nears maturity, or when bruised. This is one of the chief distinguishing characteristics. The stem is shorter and thicker than in *L. procera;* and the bulbous base, so distinct in the latter species, is frequently represented in *L. americana* only by a gradual swelling. Sometimes, however, the bulbous base is well defined. The ring on the stem is less permanent than in *L. procera,* the so-called "parasol mushroom," and frequently disappears as the plant reaches maturity. It is also less distinctly movable.

Lepiota naucinoides Pk. (Plate III). Some American mycologists have doubted whether *L. naucina* Fr. and *L. naucinoides* Pk. are specifically distinct; but without discussing the question the writer will adhere to the name given in Bulletin No. 3. No harm can possibly result to the epicure, since both species are edible. This fungus is frequently very abundant in old fields, about trees which have been heavily mulched, and on open lawns. The writer has found it so abundant that a half-bushel basket could be easily gathered at one time. The plants were unusually large, many of the caps measuring eight to ten inches in diameter. In some respects the plants resemble *Agaricus campestris,* the "pasture mushroom"; but the chalky white appearance of the cap and the absence of the brown gills on mature specimens serve as distinguishing characteristics. The amateur must use much caution in collecting, not to confuse the species with white forms of *Amanita.* After the plant is once determined, the danger is very slight. The cap is nearly globular

before expanding, becoming more or less flattened with age, and is usually white and smooth. The gills are at first white, later becoming dingy with the accumulation of spores. The stem is from one to three inches long, and has a thickened base which gradually tapers upward. It is covered with minute fibers when young, but becomes smooth at maturity.

This plant is considered equal to *Agaricus campestris* in point of edibility, and some predict that its cultivation will be equally feasible. The writer has enjoyed several meals, and has found the species a delicious one.

ARMILLARIA Fr.

But one known edible species occurs in this genus, but this has a wide distribution, and has characteristics which make it well known.

Armillaria mellea Vahl. Honey-colored Mushroom. (Plate IV, Bull. No. 3.) Grows about the bases of trees, either attached directly to the stump or growing in soil. Upon close examination the mycelial strands at the base of the stem are found to be closely interwoven; and these become closely connected with the root system of the trees in the vicinity. The plants usually occur in large clusters, the individual plants of which are closely joined. The plant varies much in size, and its chief characters are its honey color, its oval to convex cap, usually covered with sharp, erect, brown scales, which may, however, entirely disappear in moist weather, and its tough, elastic stem, which is uniform in thickness throughout, and more or less covered with floccose scales. The ring, which is usually quite thick, is joined to the stem near its apex. This varies much as regards thickness, often becoming very thin or entirely disappearing with age. This plant is of considerable economic importance, since it frequently attacks fruit trees, especially those whose physiological vigor is already weakened, and serious results follow.

Armillaria mellea is far from being one of the most desirable species for food, because of its tough, leathery consistency; however, when young, it is fairly tender.

MARASMIUS Fr.

This genus contains few desirable edible species, because of the tough and leathery nature of the plants. One species, however, is soft and succulent.

Marasmius oreades Fr. Fairy-ring Mushroom. (Plate IV.) Occurs frequently in lawns. The mycelium, or vegetative part of the fungus, seems to be perennial in the soil; and, as fast as the nutritive substances in the soil become absorbed, it dies. All the while, however, new mycelial strands are sent into fresh territory, so that after a while the fruiting bodies, or caps, appear in well-defined circles. Thus the name "Fairy Ring" is given to this and to several other fungi having similar habits of growth. The plant is commonly found during the summer months, and even after heavy frosts in autumn it has been found abundantly on the campus of the Connecticut Agricultural College. The cap is usually convex, then expanded, having a more or less well-defined elevation at the summit. It varies from one to two and a half inches in diameter. The flesh is thick, but inclined to be tough and leathery. This character, however, usually disappears somewhat with cooking, and the flavor is delicious. The stem is from one to one and a half inches long, and is everywhere clothed with a downy, hairy covering.

TRICHOLOMA Fr.

While this genus contains many species, few are listed as edible. Of the Connecticut species there are six thus considered, and of these *T. personatum* and *T. sejunctum* are the most desirable. The group is characterized by having no distinct ring or cup, but the immature plants are covered with a cobwebby veil, which soon disappears and may leave a slight ring on the stem. The gills are perhaps the most characteristic feature of these plants, being more or less strongly notched as they join the stem. Sometimes this notch is inconspicuous, and disappears entirely by the splitting of the gills with age; but as a rule it is quite prominent.

Tricholoma personatum Fr. Masked Tricholoma. (Plate V, Bull. No. 3.) This is considered one of the best edible species. It grows in open woods, under trees, on lawns, and in open fields. The writer has found this species most frequently

under sugar maple trees which stand along the borders of open fields. It is distinctly an autumnal species, seldom appearing before September. The plants are most frequently found singly, they sometimes occur in groups, but are rarely clustered. They are quite regular in shape, the cap being somewhat globular, with an inrolled margin when young, becoming flattened with age. The surface of the cap is very smooth, and is never mucilaginous or viscid, even in moist weather. The whole plant is fleshy, and dingy white or violet-colored throughout. The cap varies from two to five inches in diameter. The stem is short and thick with a somewhat bulbous base. It is solid when young, becoming filled with a pithy substance when mature. The gills are compact and rounded or notched at their junction with the stem. This species is in high repute as an edible species. Peck says, "My experience leads me to place it among first-class mushrooms." While *T. personatum* resembles some few other species, it cannot be mistaken for poisonous ones, and may be eaten without fear.

Tricholoma sejunctum Sow. This plant is abundant in the chestnut woodlands of the town of Mansfield, and is frequently reported from other parts of the state. Like *T. personatum,* it is a fall species, being most abundant in September and October. Like other members of this genus, the plants are brilliantly colored; in this species shades of yellow predominate. The cap is yellow or green-yellow in color, and more or less streaked with black threads over its surface. When young the plants are distinctly viscid, and at maturity still retain this character if the weather is moist. The cap is similar in size to that of *T. personatum,* but often more irregular in shape. The stem varies from one to three inches in length and from one-half to three-fourths of an inch in thickness. It is usually white, solid within, and frequently it is quite irregular in shape. The gills differ from those of the last species by being broad, distant, distinctly notched at the stem, and easily separating from it. The flesh is white and very tender.

COLLYBIA Fr.

The genus *Collybia* furnishes a large number of edible species. They occur abundantly throughout the season, some

species appearing in early spring, others in late autumn. As far as now known, the genus contains no harmful species. A few, however, become tough and leathery at maturity, and therefore have no food value.

Collybia platyphylla Fr. (Plate VII.) Of the Connecticut species reported, this is probably the most common edible one. The cap is white or gray-brown at maturity, the center often darker than the margin. In shape it is convex when young, becoming expanded, and frequently has an uprolled margin at maturity. The stem is short and thick in comparison with the diameter of the cap. The gills are broad and distant, often becoming torn or broken with age. The flesh is white, thick, and firm, but very liable to become quickly water-soaked in moist weather. It is also very frequently infested with the larvæ of insects. It is a large, coarse plant, resembling *Pluteus cervinus,* from which it may be distinguished by its distant gills. Also belonging, as it does, to the rosy-spored group, the gills of *P. cervinus* soon assume a dull brown color due to the accumulation of spores, while the gills of *Collybia platyphylla* remain white. It occurs on logs which are nearly decayed, and about the bases of decaying stumps. The writer has found the species in Mansfield as early as May 15th, and commonly throughout the summer, until the latter part of September.

Collybia radicata Relh. (Plate VI, Bull. No. 3) is an edible species not likely to be mistaken, if when collecting special notice is taken of the character of the stem. This is long, and thickened near the surface of the soil, tapering above as it approaches the cap, and also tapering below into a long root-like strand. This latter peculiarity gives the plant its specific name. The fungus is commonly found growing in deep leaf-mold, and is abundant throughout the season. The cap is thin, from two to four inches in diameter, convex to nearly plane, and is frequently elevated in the center. It is white or fawn-colored. The flesh is white and thin. The gills are white, thick, and distant, sometimes joined to the stem by a distinct notch similar to that noticed in the description of *Tricholoma,* but frequently the gills extend down the stem by a decurrent tooth.

Collybia velutipes Curt. This plant is of economic importance, not only because of its food value, but because of its

habitat. It occurs as a frequent parasite on living trees. The mycelium gains entrance to the tree through some wound, and makes a rapid growth within the host tissue, absorbing the nutritive substances. The fungus will grow on all wood tissues, tree trunks, decaying stumps, and soil filled with decaying wood tissue. Large clusters were found in Mansfield, growing in soil where a portable saw-mill had once been. The cap varies from light to dark brown, and in size is also variable. The plant grows in dense clusters, and the caps are often crowded and distorted because of this habit of dense growth. They vary from one-half inch to two inches in diameter. Their surface is usually very moist and viscid. As in *C. radicata,* the stem is the characteristic feature of the species. It is from one to three or four inches long and about one-fourth of an inch thick. When the habitat of the plant is a stump, this stem is usually curved. Its most striking character, however, is its dense covering of brown velvety hairs. The plant is occasionally found throughout the season, but is more abundant during the fall months.

Collybia esculenta Wulf. Described by Cooke as the best edible *Collybia.* It has never been collected by the writer. Mr. C. C. Hanmer of East Hartford reports the species. The plant is described by McIlvaine as —" small in size, cap one-half inch or more broad, ochraceous-clay, often becoming dusky, slightly fleshy, convex, then plane, orbicular, obtuse, smooth, even, or when old slightly striate. Flesh tough, white, savory. Stem one inch and more long, scarcely one-twelfth of an inch thick, or thread-like, and wholly equal, obsoletely tubed, tough, stiff and straight, even, smooth, slightly shining, clay-yellow, with a long perpendicular, commonly smooth, tail-like root. Gills adnexed, even decurrent, with a very thin, small tooth, then separating, very broad, limber, somewhat distant, whitish, sometimes clay-colored."

MYCENA Fr.

Like *Marasmius,* this genus contains few edible species. The small size of most of the species makes their use for food impracticable.

Mycena galericulata Scop., however, usually occurs in large numbers clustered on logs and stumps in woodlands. This is considered a desirable edible species. The cap is more or less

conical, often bell-shaped, and varies in color through the grays and browns. In size the cap is seldom over an inch in diameter. The gills are thin, with connecting veins, and are joined to the stem by a small decurrent tooth. This species is most abundant during the fall.

LACTARIUS Fr.

The writer has enjoyed more meals of the species of this genus than of any other in the group of fleshy fungi. In August, 1906, the author was to speak on "Mushrooms" at the Prospect House, Mt. Holyoke, Mass. On his arrival it was learned that the papers in near-by cities had announced that mushrooms gathered under his supervision would be served in the dining room of the hotel from August 9th to August 13th. The prospect of gathering mushrooms in sufficient quantities for from thirty to forty-five guests was almost appalling. This genus and *Cantharellus* came to the writer's aid, and furnished delicious edible fungi in sufficient quantities to meet all demands. As its name signifies, the genus is characterized by an abundance of milky juice in the tissue of the plants.

Lactarius volemus Fr. (Plate X, Bull. No. 3.) There is seldom a week in the summer months when this species is not abundant in the woods in the vicinity of Mansfield. It is seldom found in the deeper, thicker woodland, but delights in open chestnut sprout-land which has a southern exposure. The caps have an orange-brown color, quite characteristic of the species; and, when once learned, the plant is seldom mistaken. The surface of the cap is smooth, or slightly wrinkled in the center. The cap is quite symmetrical in shape, with a somewhat inrolled margin when young, becoming plane with age. Frequently the center becomes depressed, giving the cap a cup-like appearance. The flesh is white and firm, and filled with an abundance of white milk. This immediately darkens when exposed to the air, and becomes thick and stringy. In the older specimens this abundance of milk is frequently lacking. The gills are white, often tinted with the russet color of the cap, and these are quickly discolored when handled. They are usually squarely attached to the stem, but sometimes have decurrent lines running down the stem. The stem varies from one to four inches in length and from one-half

to three-fourths of an inch in thickness. It is firm and solid at first, becoming somewhat pithy at maturity. It is usually of a uniform thickness, but may taper somewhat towards the base. It is colored like the cap, although frequently it is a lighter shade of brown. This is considered by the writer the most delicious species belonging to the genus.

Lactarius corrugis Pk. is not distinct in many characters from *L. volemus.* Somewhat larger in size, the cap is of a darker shade of brown; the surface is usually more deeply corrugated, and the young specimens are covered with a close pubescence which gives the cap a velvety appearance in the sunlight. This plant has similar habitats to *L. volemus,* and the two plants have been found within a few feet of each other.

Lactarius piperatus (Scop.) Fr., Peppery Lactarius (Plate IX, Bull. No. 3), is another exceedingly common species. It grows in open woods in similar places to the other *Lactarii.* Its pure white color serves to make it a conspicuous object in the leaf-mold. Sometimes the cap does not appear above the surface, especially if the leaf-mold is thick, and the presence of the fungus is recognized only by an elevation of the leaves. The species is characterized by its pure white color, its thick fleshy cap, which becomes more and more funnel-shaped as it expands, its thick stem, and very close, narrow gills. This last feature serves to separate the species from *Lactarius deceptivus,* which it resembles. *L. deceptivus* has more distant, coarse gills. The gills in *L. piperatus* are more or less forked or divided into pairs. The milk is exceedingly acrid in young specimens. It is white and unchangeable when exposed to the air. This species is frequently gathered and eaten by the students of the Connecticut Agricultural College for their "steak and mushroom spreads." It loses its peppery character in cooking.

Lactarius deceptivus Pk. (Plate VIII, Bull. No. 3) is closely related to *L. piperatus,* from which it may be distinguished by a dense, wool-like growth of hairs along the inrolled margin of the cap, and by its coarse, distant gills. The cap varies from three to six inches in diameter, and in some cases the writer has seen specimens even eight inches across. It grows in similar localities with *L. piperatus.* The flesh is white and coarse in texture; milk white, unchangeable, with an acrid taste. The

plant is even more abundant than *L. piperatus.* It frequently becomes discolored with yellow stains, thus lacking the pure white color of *L. piperatus.*

Lactarius deliciosus (L.) Fr. is considered the most desirable of the edible species of *Lactarii,* but the writer has seldom found it in large quantities. In the vicinity of Mansfield it is usually found growing singly or in small, scattered patches. Its botanical characters are very striking. The cap varies from two to four inches in diameter; before maturity it is depressed in the center, and usually becomes deeply funnel-shaped with age. The color varies through red and yellow shades, frequently assuming a gray tint. The surface of the cap is smooth, slightly viscid, and more or less distinctly zoned. The margin of the cap is usually inrolled. The stem is quite short, from one to two inches in length; and striking features of the species are spots or pits of the same color as the cap which appear on the outside of the stem. The flesh of *L. deliciosus* is gray-white when freshly broken, becoming quickly stained with green, due to discoloration of the tissue caused by chemical changes in the milk. This milk is saffron-yellow when the flesh is first broken, but immediately changes in color.

RUSSULA Pers.

Members of this genus are viewed with suspicion by many people, while by others they are considered edible. One instance has come to the writer's attention where extreme nausea followed a meal of plants supposed to be *Russula alutacea.* It is probable that the species may have been confused with *R. emetica,* which often causes attacks of this kind. The genus contains some of the most brilliantly colored species to be found in the whole group of fleshy fungi. These colors vary much in shades of red, green, and yellow.

Russula alutacea Fr. The chief characteristics of this species are its mild taste and its yellow gills. This fungus is abundant in woodland during the summer and early fall. The cap varies from one and one-half to three inches in diameter, and is of a bright or a deep red color inclining to shades of purple. The surface is smooth in the center, but becomes ridged and uneven near the margin. It is covered with a somewhat viscid outer skin. The flesh is very white, and has the peculiar mealiness

characteristic of the genus. The gills are thick and broad and are usually connected by veins. In color they are frequently sulphur-yellow. They never lack the yellow tints.

Russula virescens (Schæff.) Fr. (Plate XVI.) This is considered the best edible species of the genus, and it is quite distinct from all the other species. The cap sometimes is bright green, but more frequently this bright color is quickly lost and the tint changes to a dingy gray. The cap is fleshy and nearly globular when young, expanding until nearly plane at maturity. The surface is smooth at first, but later becomes broken up into wart-like patches. The margin is blunt, even, and smooth, becoming torn and split with age. The flesh is white, and is mild in taste. The stem is short, smooth, white, and at first solid, but soon becomes spongy within. The whole plant is especially likely to be infested with the larvæ of insects. This whole genus seems especially liable to these insect attacks. The flavor of the uncooked flesh of *R. virescens* is considered preferable to all other species, and its crisp, mealy character recommends its use for salads.

PLEUROTUS Fr.

Most of the members of this genus are found growing on wood. As a rule, the reproductive bodies of these wood-dwelling fungi are slowly developed, and the tissue of which they are composed becomes somewhat tough and leathery. The genus contains one species, however, which is considered a great delicacy by the epicure.

Pleurotus ostreatus Jacq. (Plate XII, Bull. No. 3), if gathered before the caps are too old, is very tender and succulent. This so-called "Oyster Mushroom" receives its name, not from any flavor which resembles an oyster, but from its peculiar shape. The plant is not uncommon during the late summer and early fall on a variety of trees — elms, hickories, but more especially on dead and decaying maples. This species is especially common on street trees. The plants grow in characteristic masses, so closely joined that many of the caps become abnormally developed because of this crowded manner of growth. The individual plant is attached to the tree trunk by a very short stem, which is more or less hairy at the base. This stem is attached at one side of the cap. The cap is convex at maturity, with a smooth, moist, white

surface. This white color changes to a yellow brown. The flesh is white and firm. The gills are broad, running down the stem (decurrent), branching more or less at the base.

Pleurotus ulmarius Bull., the Elm Pleurotus, is also edible, but it is more tough and leathery than *P. ostreatus.*

HYGROPHORUS Fr.

This genus contains several edible species, and, so far as known, none have harmful properties. As the generic name signifies, the surface of the cap is always moist when young. The soft, somewhat waxy texture of the flesh of the cap and gills gives these plants distinguishing characteristics. Most of the species are small and somewhat fragile.

Hygrophorus pratensis (Pers.) Fr., the Pasture Hygrophorus, is one of the most common species. Although usually small, the flesh is thick and compact, furnishing considerable substance. The plants vary considerably in color, some being nearly white, others changing to shades of yellow and buff. When young, the cap is nearly hemispherical, but this expands to a convex form, varying considerably in shape. The gills are thick and coarse, extending down the stem (decurrent), their bases being connected by cross veins. The stem resembles the cap in color, but is usually of a lighter hue. It is thick, and as a rule tapers downward. The species is common throughout the summer in old fields, pastures, or thin woods.

Hygrophorus miniatus Fr. (Plate XVIII.) Passing through some wooded swamp or along some woodland stream, our attention may be called to a brilliant red fungus tinged with yellow, which is growing abundantly among the sphagnum moss. The writer has seen hundreds of plants growing within a small area. These are the Vermilion Hygrophorus. The cap is thin and fragile, distinctly convex when young, expanding somewhat at maturity. The surface may be smooth, but sometimes it is ridged and uneven. The gills are usually yellow, but frequently have the same reddish tints noticeable in the cap. They are not as coarse as in *H. pratensis,* and are usually attached squarely to the stem. The stem is slender and smooth, usually solid, but sometimes it becomes hollow in older specimens. It is colored like the cap.

CANTHARELLUS Adanson.

This genus contains many edible species, and is perhaps the best-known by the amateur collector. The striking colors of the plants and their blunt, branching gills make them especially conspicuous. All writers agree that they form a most desirable article of diet. The writer has observed that during comparatively dry weather the flavor is much better than during a rainy season, as there seems to be a tendency in *C. cibarius* and *C. aurantiacus* to become water-soaked and tasteless. Like many other edible species, these are also quite liable to become infested with larvæ, and need careful examination before preparation for the table. While the number of species is not large, the plants grow abundantly in rich leaf-mold in open woods.

Cantharellus cibarius Fr. (Plate XIV, Bull. No. 3.) This is considered one of the most desirable of the edible species. The cap is of a delicate yellow color, fleshy, with a thick, blunt margin, at first inrolled, then expanding at maturity, and later becoming somewhat uprolled, giving the center of the cap a sunken or vase-shaped appearance. The cap varies in diameter from two to three inches. The stem is rather short, is somewhat unequal, and frequently occurs at one side of the cap. The flesh is white, firm and solid. The gills are thick, distant, and more or less branched. They extend down the stem, and are colored like the cap. The plants may occur singly but are usually abundant within a limited range. The odor is suggestive of apricots, although in some specimens this is not noticeable.

Cantharellus aurantiacus Fr. This is similar in color to *C. cibarius,* but is very different in shape. The cap is fleshy, nearly plane when mature, and not depressed in the center like *C. cibarius.* The margin is somewhat inrolled even at maturity. The cap frequently attains a diameter of four or five inches. The gills are narrow, close, and repeatedly branched, and are colored like the cap or may be lighter. The stem has a similar color, tapers downward, and is from two to three inches in length. The flesh is firm, white, tinted with yellow. The writer has enjoyed several meals of this orange chanterelle, and has experienced no ill effects, although by some writers it is viewed with suspicion.

CLITOCYBE Fr.

From early spring until late fall some members of this genus may be found growing in leaf-mold or on fallen logs in the forests. The plants vary much in color and size. The colors range from pure white through the various shades of purple and violet, and a few are yellow. Many species have a depression in the center of the cap which gives them a more or less funnel-formed appearance. The stem is composed of rather stout fibers, so that it is not easily broken when the plants are pulled from the ground; and these fibers, extending into the cap, closely connect the two, so that the stem and cap are not easily separable as in *Lepiota.*

Clitocybe odora Bull. (Plate XVII, Bull. No. 3.) As the specific name signifies, this species is characterized by a strong odor which is not unlike the fragrance of water-lilies. It occurs abundantly throughout the season. The plants are small, the cap rarely being over two inches in diameter. It is pale green in color, with a thick, tough flesh. The gills are broad and close, similar to the cap in color. The stem is slender, shorter than the diameter of the cap, and dingy white in color.

Clitocybe laccata Scop. This is an exceedingly common species, occurring from early spring until late fall. The characteristics of the species are so striking that it is not likely to be mistaken for any non-edible species. The plant is very variable, however, in its characters, and Dr. Peck has described several varieties. The cap is thin, convex, the margin often becoming uprolled and torn at maturity, giving the plant an abnormal appearance. The surface of the cap is smooth, but sometimes it is densely covered with fine fibers. The color of the cap is usually lighter than that of the gills, the latter being often deeply tinged with purple or lavender. In moist weather the whole plant becomes more or less water-soaked. The gills frequently extend down the stem in the immature plant, but as the cap expands they are torn away from the stem and also become more or less torn otherwise. They frequently have a distinct tooth where they join the stem, and in this respect the plant resembles *Tricholoma.* The stem varies in height from one to four inches, is slender, and yellow-white in color.

CORTINARIUS Fr.

This genus is a member of the ochre-spored group, which group is easily distinguished by the red-yellow color of the gills, due to the accumulation of great masses of spores. Therefore the gills of *Cortinarius* are tinged with red or yellow, and this color deepens at maturity. In one or two species the gills are deeply blood-red in color. The chief distinguishing character of *Cortinarius* is a spider-web veil which surrounds the immature plant. As the cap expands, this veil is ruptured, leaving a more or less well-defined ring on the stem. This veil disappears at maturity, and young specimens are essential in the determination of species. Many of the plants are beautifully colored, *Cortinarius iodes* B. & C. being of an especially attractive dark violet color, curiously spotted with white. When immature the plant is very viscid, giving it a polished appearance. The number of species is large, and for the most part the species are most abundant in the autumn. During the last spring, however, *Cortinarius vernalis* was found abundantly in a grassy woodland road. Several of the most common species are considered edible.

Cortinarius violaceus (L.) Fr. (Plate XXII.) This fungus grows abundantly in the woods, and in color resembles *Tricholoma personatum,* but *C. violaceus* is usually a darker shade of violet, and has the gills rounded as they join the stem. The bulbous base of the stem also suggests *T. personatum.* The cap is convex when young, becoming nearly plane, is usually dry, and covered with fine tufts of hairs. The gills are distant and rather thick, and are colored like the cap, but become tinged with yellow-red as the spores accumulate. The stem is from three to five inches long and one-half inch or more in thickness, with a distinct bulbous base. The flesh is thick and solid, and inclined to be tough at maturity. This is considered one of the best edible species in the genus.

Cortinarius cinnamomeus (L.) Fr. (Plate XX, Bull. No. 3.) This occurs abundantly during September, and is another exceedingly attractive species; it is, however, very different in color from *C. violaceus. C. cinnamomeus* is characterized by shades of brown and red, the gills becoming deep blood-red at maturity. The cap varies from one to two and one-half inches in diameter. It is somewhat bell-shaped, with a distinct knot or

umbo in the center. The cap becomes expanded with age, until it is somewhat flattened. It is covered with a dense coat of fine fibrils. The flesh is thin, and of a similar color to the surface of the cap. The somewhat crowded gills are joined squarely to the stem. They are yellow at first, but are dark red at maturity. The stem is from two to four inches long, and about one-half inch in diameter, equal throughout, and is hollow, and colored like the cap.

Other species listed as edible are **C. collinitus** (Pers.) Fr., a plant yellow-brown in color, abundantly smeared over with a glutinous substance, especially in moist weather; and **C. armillatus** Fr., characterized by a distinct ring on the stem; both of which were found frequently in Mansfield during the season of 1906.

PHOLIOTA Fr.

The plants of this genus are similar to *Cortinarius* in the color of the spores. They also have the veil, but, unlike the spider-web veil of *Cortinarius,* this is thick and persistent. In the character of the ring they are similar to *Armillaria,* of the white-spored group. They are, however, quite distinct in other characters. Many of the Pholiotas grow on the trunks of trees. Frequently fungi having this habitat possess a peculiar bitter flavor. The Pholiotas are no exception to the rule, and, while some wood-growing species are delicious, others are too bitter to be eaten.

Pholiota praecox Pers. is one of the first edible mushrooms of the spring months. The writer has found it abundantly growing on lawns during the month of May. It continues abundant throughout the season. The cap is convex, white or cream-colored, becoming yellow with age. During wet weather the surface of the cap is slightly sticky, but when dry this character quickly disappears. The margin of the cap is at first inrolled and connected with the stem by a rather thick veil. This ruptures as the cap expands. The cap is seldom over two inches in diameter. The stem is long and slender, stuffed when young, but becomes hollow with age. The crowded gills are squarely attached to the stem, sometimes slightly extending down it (decurrent). They are white at first, then become yellow. The plants are small and delicate but usually occur abundantly.

Pholiota caperata Pers. (Plate XXIII.) Another species of this genus which is found growing on the ground is *P. caperata.* During the season of 1906 it was especially abundant in Mansfield, growing in open chestnut woodland. The cap is large, often five inches in diameter. It is yellow in color, and often roughened on the surface with ridges and pits. The flesh is thick and firm. The gills are thin, crowded, and somewhat saw-toothed on the margins.

Pholiota squarrosoides Pk. (Plate XXI, Bull. No. 3.) This is one of the most delicious of the edible fleshy fungi. It grows in large clusters on dead stumps, especially those of maple trees. The caps are convex, quite viscid when moist, and covered with dense scales scattered over the surface. As the caps mature, these scales separate somewhat, thus showing the white surface of the cap beneath. This gives the cap its peculiarly mottled appearance. The gills are close and compact, white at first, becoming cinnamon-colored with age. The stem is somewhat stout and densely covered with thick, white scales. These change, as the plants mature, to a dull yellow-brown color.

PLUTEUS Fr.

This genus belongs to the rosy-spored group, therefore the gills of fresh specimens soon assume a pink color, due to the accumulation of these spores. These plants are usually found growing on decaying tree trunks or other woody substances.

Pluteus cervinus Schaeff. (Plate XXV; Plate XXIII, Bull. No. 3.) This species is one of the most common members of the genus, and is one of the few edible species in the rosy-spored group. It is usually found in the woods growing singly, from early spring until late frost, but nowhere has the writer found it so abundant as along a wood road which has been heavily coated with sawdust. There was hardly a day throughout the entire season when a good supply of fresh plants could not be gathered; and mushrooms from this source not only supplied several of the families living on the campus of the Connecticut Agricultural College, but also furnished material for many "mushroom spreads" prepared by the students. One mushroom enthusiast took a large quantity of the sawdust and stored it in his cellar, that he might have a supply of fresh mushrooms throughout the winter.

Those which grow where there is an abundance of plant food are in large clusters; a single cluster frequently filling a four-quart measure. The cap is bell-shaped, becoming expanded with age, until it is nearly flat. Frequently the edges roll up at maturity, and when in clusters the cap becomes misshapen because of the density of growth. The color of the cap varies considerably. Frequently it is gray-brown or fawn-color, but often of a dark brown. The surface of the cap may be smooth or densely covered with fine fibrils. The whole plant resembles closely *Collybia platyphylla,* but lacks its general coarseness. The gills especially distinguish the two species. *Pluteus cervinus* has the gills close yet not crowded, broad, and free from the stem; these are at first white, then flesh-colored. The stem is symmetrical or slightly tapering upward; it is firm, solid, and either quite smooth or covered with fine fibrils similar to those of the cap. The color of the stem also varies with the color of the cap. The interior of the stem is filled with fine fibers which differ in substance from the flesh of the cap, therefore the two are easily separable.

CLITOPILUS Fr.

This genus resembles in many of its characteristics *Clitocybe* of the white-spored group. Most of the species are earth-growing; and, so far as now known, none of the species are harmful. Care must be taken, however, to distinguish the species from *Entoloma* of this same rosy-spored group. In *Entoloma* the gills have a distinct tooth where they join the stem (sinuate), while in *Clitopilus* the gills are joined squarely to the stem or extend down it in decurrent lines.

Clitopilus orcella Bull. The best edible species in this genus is *C. orcella.* It is also one of the most abundant fungi, growing commonly in open woods and grassy pastures throughout the summer months. The cap is often irregular in shape, is very fleshy, soft, plane or slightly depressed. It is white or yellow-white in color, slightly sticky or viscid when moist, becoming silky when dry. The flesh is solid, thick, white, and has a strong farinaceous odor and taste. The gills are close, decurrent, running down the stem, at first white, then flesh-colored. The stem is short, thick, solid, colored like the cap, somewhat thickened above, and is often at one side of the center (eccentric).

AGARICUS Linn.

Probably no genus is better known than *Agaricus,* because of its commercial importance. Fortunately the so-called "field mushroom" is not easily mistaken for other species, because of its striking characters.

Agaricus campestris Linn. (Plate XXIV, Bull. No. 3.) This species is frequently found in open fields and pastures during August and September. The writer has found that in pastures the plants can rarely be gathered, as they seem to be much sought for by the cattle.

Agaricus campestris has many varieties, but these are not strongly distinct, so that they are not usually distinguished by the amateur collector. This is the species which is much cultivated. Quite frequently it is found in greenhouses, growing in carnation beds or in lettuce beds, sending up abundant crops of "buttons" from time to time. The cap is at first hemispherical or convex, then expanding until at maturity it becomes nearly or quite plane. The margin is incurved, and joined to the stem by a partial veil, which on rupturing leaves a more or less well-developed ring on the stem. This ring is near the middle of the stem, and frequently disappears entirely as the plant matures. On other specimens it may be quite persistent. The surface of the cap is usually covered with fine, white, hair-like scales, and these with the outer layer of fungus threads separate easily from the flesh, so that the cap may be readily peeled. Frequently it is said that this is the criterion of an edible mushroom, but the test cannot be depended upon in all species. In color the cap is silvery white. The gills are close, and at first are a delicate pink, but this color soon changes as the plants mature until they assume a deep brown color. The stem is nearly equal throughout its length, but is sometimes thickened near the base; it varies in length from one and one-half to three inches, but is usually quite short. Within, it is stuffed with many fibers.

The following varieties are described in McIlvaine's "One Thousand American Fungi":

Var. *albus* Berk.—"A very common wild form."

Var. *griseus* Pk.—"Cap grayish, silky, shining."

Var. *praticola* Vitt.—"Meadow variety. Cap with reddish scales."

Var. *umbrinus* Vitt.—"Dark brown, stem short, minutely scaly."
Var. *rufescens* Berk.—"Cap reddish, minutely scaly. Flesh turning bright red when bruised or cut."
Var. *villaticus* Brond.—"Cap scaly; stem scaly."
Var. *hortensis* Cke.—"Cap brownish or yellow-brown. Cultivated."
Var. *Buchanni*—"Cap depressed in center."
Var. *elongatus*—"Long-stemmed variety."
Var. *vaporarius* Vitt.—"Greenhouse variety."

McIlvaine also says: "The *Agaricus campestris* is known the world over as the common mushroom. It is cosmopolitan, appearing in pastures and rich places, from spring and until long after severe frosts. It is the sweet morsel of gourmets. Indirectly it has done more damage than the viciousness of all other toadstools. It is by mistaking the young button forms of the deadly *Amanita* for the button forms of the common mushroom, that most cases of fatal mushroom poisoning are brought about. It is, also, usually the persons who think they know the mushroom and cannot be deceived, that get poisoned. If two rules are observed, danger can be avoided. (1) Never eat a fungus gathered in the woods believing it to be the mushroom. The typical *A. campestris* does not grow in the woods; species of *Agaricus* somewhat resembling it do. (2) Look at the gills; those of the mushroom are at first a light pink, which rapidly, as the plant matures, darkens to a dark brown, purplish-brown, or purplish-black. This is due to the ripening of the spores. Those of *Amanita* are constantly white."

HYPHOLOMA Fr.

This genus contains many edible species. The spores are similar in color to those of *Agaricus,* but the plants are easily distinguished. In rupturing, the universal veil does not leave a well-defined ring on the stem as it does in *Agaricus,* but the remnants of the veil remain attached to the margin of the cap, in many instances forming an appendiculate margin. In some instances young specimens show the ring quite distinctly, but all indications of it soon disappear.

In *Agaricus,* the cap easily separates from the stem, the substance of the flesh being different in texture, but in *Hypholoma*

the substance is the same throughout, therefore the stem and cap do not easily separate. The plants are more commonly found in the fall, but some species occur during the summer months.

Hypholoma appendiculatum Bull. (Plate XXVII.) This is a common species, and grows in great abundance on the lawns of the Connecticut Agricultural College during July and August. The mycelium seems to be perennial, for the plants have appeared in the same spots several years. It is one of the best edible kinds; the caps are very tender and are excellent in flavor. These plants grow in thick clusters on the ground or on decaying logs, and often cover a considerable area. The cap varies from one to three inches in diameter, and also varies in color from dingy white through various shades of brown and yellow. It is fleshy and membranous, becoming thin and leathery when dry. The cap is ovate at first, then expands with age. The margin of the young cap is fringed with the remains of the veil, but this disappears as the plants reach maturity. The stem is from two to three inches long and from one-twelfth to one-sixth of an inch thick. It is delicate, shredding into fibers when broken. The crowded gills are joined squarely to the stem, are at first white, then pink, and lastly dingy brown. The plant is a safe one to gather for food, for there is nothing with which it is likely to be confused.

Hypholoma sublateritium Schaeff. Brick-topped Hypholoma. (Plate XXV, Bull. No. 3.) This species is more frequent during the fall months than in summer. During the autumn of 1906 the writer found an immense number even after severe frosts. The plants are commonly found on decaying stumps, and always grow on decaying wood. During the last year the writer found an immense number of the plants apparently growing on the ground. Suspecting, from the peculiar radiating manner in which they grew, that they were attached to a tree stump, he found by careful examination that a stump had been dug out and the plants were growing from the larger roots which remained in the ground. The caps vary from two to four inches in diameter, and are of a yellow-red color, darker in the center and with pale margins. Frequently the plants are so densely clustered that the caps are abnormally developed. The plants are quite fleshy; the flesh being white

at first. becoming yellow with age. The stem varies in length, but is usually about three inches long. When growing from the side of stumps, it becomes variously curved. The gills are squarely jointed to the stem, and are more or less crowded. At first they are a green-yellow in color, but become dingy brown at maturity. The veil is often present on the young plants. These plants have long been considered edible, and the writer has eaten them frequently. However, when he was in Dr. Peck's laboratory a year ago, Dr. Peck called his attention to a letter he had just received, stating that two ladies had been taken ill after eating plants like the specimens sent. These plants were without doubt *Hypholoma sublateritium,* and from the symptoms it was suspected that the illness was caused by indigestion which followed a hearty meal of this fungus.

COPRINUS Pers.

This genus has but few species, so far as now known, and these are quite characteristic. Belonging, as it does, to the black-spored group, the gills are quickly coated with an abundance of jet-black spores. The gills are membranous at first, but quickly deliquesce into a fluid which becomes black because of the abundance of spores. The plants are commonly found on lawns, in flower beds, or on decaying stumps. They spring up very quickly during the night, and the sun's rays cause them to disappear. The plants vary much in size, some being very fragile, others firmer. Their delicate texture makes them all the more desirable for food.

Coprinus comatus Fr. Shaggy Mane. (Plate XXVI, Bull. No. 3.) The large, distinct, "shaggy" appearance of the cap of this species makes it especially noticeable. It is more abundant in late summer, but is occasionally found in June and July. The cap is larger, and the flesh is firmer in substance, than in other species of this genus. The cap is at first bell-shaped, expanding as it matures, until the margin finally becomes uprolled and more or less torn and split. The gills are very broad; white at first, they soon become tinged with pink, and finally become deep purple and dissolve into an ink-like substance. The stems are occasionally ten inches long and over a half-inch thick, but these are on plants growing in exceptionally rich soil. Ordinarily the

plants are smaller. The stems are hollow, and the ring is quite firm and occurs near the base of the stem. Atkinson, in his "Studies of American Fungi," gives an excellent and thorough description of this species, with splendid illustrations of the plants in all stages of their development.

Coprinus atramentarius (Bull.) Fr. Ink-cap. This plant is similar in its habitat to *C. comatus,* and sometimes the plants may be found growing side by side. The writer has found both along a shaded bank where ashes had been dumped. They also occur abundantly on very rotten stumps. The caps of this species are smaller and shorter than those of the shaggy mane, and they are usually entirely smooth, but are covered sometimes with delicate white fibrils or coarser scales. The surface of the cap is distinctly marked with fine lines which radiate from the center to the margin. The ring in this species is quite fragile and disappears quickly after the margin of the cap separates from the stem.

Coprinus micaceus (Bull.) Fr. Glistening Coprinus. (Plate XXVIII.) The cap of this fungus is coated with minute scales which glisten in the sunlight like particles of mica. The plant is found frequently during the spring and early summer around bases of trees or decayed stumps on lawns. It is seldom found as an isolated specimen, but grows in dense groups. In matured plants, the cap seldom has a diameter of over an inch and a half. In substance the cap and gills are much thinner than those of either the shaggy mane or the ink-cap. During a dry season the plants retain rather a firm texture, but in moist weather it shows the same character of quickly dissolving into an inky substance that is shown by other members of the family. The writer has gathered and eaten large quantities of this species, and has found the quality superior to any others of the family.

Part III

List of Species of Fleshy and Woody Fungi Reported since July, 1905

AGARICACEÆ Fries.

AMANITA Pers.

Amanita abrupta Pk. (abrupt).
Mansfield, July (479).*

Amanita cothurnata Atk. (booted).
Mansfield, July (378).

Amanita flavo-rubescens Atk. (reddish-yellow).
South Windsor, *Hanmer.*

Amanita Frostiana Pk., var. *pallida* Pk. (pale).
Redding, *Earle* (1111).

Amanita mappa Fr. (*mappa,* a napkin).
Mansfield, July (376).

Amanita solitaria Bull. (growing alone).
East Hartford, *Hanmer;* Redding, *Earle* (1046).

Amanita spreta Pk. (despised).
Mansfield, July, *Dr. C. Thom.*

AMANITOPSIS Roz.

Amanitopsis lepidota Earle (scaly).
Redding, *Earle* (926).

TRICHOLOMA Fr.

Tricholoma saponaceum Fr. (soapy).
Danielson, *Miss E. B. Scarborough.*

COLLYBIA Fr.

Collybia tuberosa Bull. (tuberous).
Mansfield, Aug. (390).

MYCENA Fr.

Mycena sub-incarnata Pk. (almost flesh-colored).
Mansfield, Aug. (440).

* Numbers in parentheses accompanying notices of plants collected in Mansfield refer to the numbers of specimens in the herbarium of fungi in Connecticut Agricultural College; those accompanying notices of plants collected by Earle refer to the numbers of specimens in the herbarium of fungi at Bronx Park.

Mycena lesiana Berk. (Lea).
Mansfield, Aug. (470).

LACTARIUS Fr.

Lactarius involutus Sop. (inrolled).
Rainbow, *Hanmer.*

RUSSULA Pers.

Russula aeruginescens Pk. (*ærugo,* rust of copper).
Redding, *Earle* (1211).
Russula albella Pk. (whitish).
Redding, *Earle* (1207).
Russula alutacea Fr. (leathery).
Mansfield, Aug. (443).
Russula decolorans Fr. (*decoloro,* to deprive of the natural color).
Redding, *Earle* (537, 1019); Mansfield, Aug. (470).
Russula fragilis Fr. (fragile).
Redding, *Earle* (670).
Russula integra Fr. (entire).
Redding, *Earle* (412).
Russula Mariae Pk.
Redding, *Earle* (347).
Russula nigricans Bull. (blackish).
Rainbow, *Hanmer.*
Russula olivacea Fr. (olivaceous).
Redding, *Earle* (418).
Russula pectinata Fr. (*pecten,* a comb).
Redding, *Earle* (349).
Russula rosacea Fr. (*rosa,* a rose).
Redding, *Earle* (1390).

PLEUROTUS Fr.

Pleurotus dryinus Pers. (δρῦς, oak).
Rainbow, *Hanmer.*

HYGROPHORUS Fr.

Hygrophorus chrysodon Fr. (golden-toothed).
Rainbow, *Hanmer.*

CANTHARELLUS Adanson.

Cantharellus aurantiacus Fr. (orange-yellow).
East Hartford, *Hanmer;* Mansfield, Aug. (427).

OMPHALIA Fr.

Omphalia campanella Balsch, var. **sparsa** Pk. (scattered).
East Hartford, *Hanmer.*

Omphalia scabriuscula Pk. (somewhat rough).
Mansfield, June (52).*

CLITOCYBE Fr.

Clitocybe adirondackensis Pk.
East Hartford, *Hanmer.*

LENTINUS Fr.

Lentinus cochleatus Fr. (*cochlea,* a snail-shell).
Mansfield, Aug. (430).

Lentinus ursinus Fr. (*ursus,* a bear).
Mansfield, Aug. (471).

INOCYBE Fr.

Inocybe floccosa Berk. (*floccus,* a lock of wool).
Redding, *Earle* (1034).

Inocybe rimosa Bull. (*rima,* a crack).
Redding, *Earle* (370, 653).

FLAMMULA Fr.

Flammula polychroa Berk. (many-colored).
East Hartford, *Hanmer.*

PLUTEUS Fr.

Pluteus granularis Pk. (sprinkled with grains).
Mansfield, Aug. (472).

Pluteus salicinus Pers. (*salix,* willow).
Mansfield, Aug. (433).

Pluteus longistriatus Pk. (marked with long striæ).
Redding, Earle (524).

Pluteus tomentosulus Pk. (somewhat woolly).
Mansfield, Aug. (475).

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* See note on page 22.

CORTINARIUS Fr.

Cortinarius flavifolius Pk. (yellow-leaved).
Ledyard, *Hanmer.*

Cortinarius obliquus Pk. (oblique).
Ledyard, *Hanmer.*

Cortinarius torvus Fr. (savage).
East Hartford, South Windsor, *Hanmer.*

Cortinarius vernalis Pk. (*ver,* spring).
Mansfield, May (443).

PHOLIOTA Fr.

Pholiota adiposa Fr. (*adeps,* fat).
East Hartford, South Windsor, *Hanmer.*

CLITOPILUS Fr.

Clitopilus prunulus Scop. (*prunus,* plum).
Redding, *Earle* (1164).

AGARICUS Linn.

Agaricus campestris L. (*campus,* a field), var. **praticola** Vitt. (inhabitant of meadows).
Mansfield, July (441).

Agaricus campestris, var. **hortensis** Cke. (belonging to a garden).
Greenhouse, East Hartford, *Hanmer.*

Agaricus campestris, var. **villaticus** Brond. (*villa,* a farm-house).
New Britain, *Hanmer.*

HYPHOLOMA Fr.

Hypholoma subaquilum Banning (somewhat dark-colored).
Mansfield, Sept. (448).

Hypholoma hymenocephalum Pk. (ὑμήν, membrane; κεφαλή, head).
South Windsor, *Hanmer.*

POLYPORACEAE Fr.

POLYPORUS Fr.

Polyporus Spraguei B. & C.
Bolton, *Hanmer.*

Polyporus perplexus Pk. (confused).
East Hartford, *Hanmer.*

Polyporus poripes Fr. (having a porous stem).
Warehouse Point, *Hanmer.*

Polyporus arcularius (Batsch) Fr. (*arcularius,* one who makes little boxes).
East Hartford, *Hanmer.*

Polyporus fissus Berk. (cleft).
Manchester, *Hanmer.*

Polyporus fumosus Fr. (smoky).
South Windsor, *Hanmer.*

MUCRONOPORUS.

Mucronoporus Everhartii Ell. & Gal. *Pyropolyporus Everhartii* Ell. & Gal.

HYDNACEAE Fr.

PHLEBIA Fr.

Phlebia radiata Fr. (*radius,* a spoke or ray).
East Hartford, *Hanmer.*

General Index

Index to Species