



November 2013

## Cortinarius Myxacium Notebook 1

L. R. Hesler

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Cotnamia

Smith suggests I check for clamps in  
hyphae of petiole in Myxaceae.

Cortinarius: Monographic Papers

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- Henry, R. Suite a l'étude des Cortinaires. Bull. Soc. Myc. Fr. 74:249-361. 1958.  
(Tom Campbell has a copy)

Murrill's Key to Alachua Cortinarius  
 (University of Florida, 1939, Mimeographed)

Rec Key:  
 Elsie M. Spar  
 55: 362-6  
 1939

MYXACIUM. Pileus and stipe slimy-viscid.

Pileus bay; stipe lilac..... Arnoldae  
*Pileus avellaneus-isabelline; stipe pallid* - - - - - *longisporus*  
 BULBOPODIUM. Pileus viscid; stipe dry, bulb  
 marginate.

Pileus pallid to isabelline; stipe very  
 short..... praebrevipes

Pileus violet-white; spores <sup>?</sup> (7-8 x 5) <sup>?</sup> μ... subglaucopus

Pileus sulfur-colored with testaceous center. subfulmineus

PHLEGMACIUM. Pileus viscid; stipe dry, clavate.

Pileus white with rosy-isavelline tint;  
 spores very warty..... subcommunis

Pileus violet-isabelline; spores uneven.  
 15 μ long..... *largiformis*  
 (sub *argus*)

Pileus isabelline to fulvous; spores smooth,  
 7-8 μ long..... subcaespitosus

Pileus avellaneous; spores subglobose..... ~~praebrevipes~~  
~~praereticus~~

Pileus avellaneous; spores ovoid..... Westii

INOLOMA. Pileus dry; stipe stout, clavate.

Pileus white; spores warty..... albidulus

Pileus lilac; spores smooth..... lilacinus

Pileus lavender; spores rough; odor fetid... camphoratus

Pileus pale-avellaneous; spores <sup>tuberculate; 10 x 5 μ; stipe tinted violet</sup> warty..... subargentatus

" " <sup>spores slightly verrucose; 12 x 6 μ; stipe white</sup>..... ~~verruculosus~~  
 Pileus ferruginous; spores smooth..... perferrugineus

DERMOCYBE. Pileus dry; stipe slender.

Pileus isabelline, tomentose..... subflavifolius

Pileus fulvous; stipe bluish..... hiemalis

Pileus yellowish-cinnamon; stipe yellow;  
gills yellow..... cinnamomeus

Pileus cinnamon-yellow; stipe yellow; gills  
blood-red..... semisanguineus

HYDROCYBE. Pileus hygrophanous, without  
annulus.

Pileus isabelline with fulvous disk..... subjuberinus

KEY TO SPECIES OF CORTINARIUS

OF SOUTHEASTERN UNITED STATES

by

L. R. Hesler

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December, 1955

SOUTHEASTERN CORTINARIUS

List of Species. Numbers in Hesler's December, 1955, Key are given.

264	acutus Fr.	23	callochrous Fr.
51	albiceps Murr.	194	campestris Murr.
50	albidiformis Murr.	131	camphoratus Fr.
181	albidulus Murr.	111	canescens Pk.
155	alboviolaceus Fr.	281	castaneus Fr.
176	amarissimus Murr.	116	castanellus Pk.
165	annulatus Pk.	261	castaneoides Pk.
140	anomalus Fr.	203	cinnabarinus Fr.
158	argentatus Fr.	202	cinnamomeus Fr.
35	arquatus (A. & S.) Fr. sensu Lange (as No. 20159)	55	citriniceps Murr.
177	armillatus Fr.	118	colymbadinus Fr.
6	Arnoldae Murr.	78a	<i>communis</i> Pk.
153	<del>asper</del> Pk. No. 22182	152	compressus A. H. Smith
36	<del>Atkinsonianus</del> Kauff.	38	corrugatus Pk.
53	atribadius Murr.	81	corruscans Fr.
259a	badius Pk.	102	<i>croceoceruleus</i> Fr.
63	balteatus Fr.	168	croceocolor Kauff.
112	Birchfieldii Murr.	267	cuspidatus (Murr.) Singer
218	bivelus Fr.	186	<i>cyanites</i> Fr.
115	bolaris Fr.	2	cylindripes Kauff.
42	Boudieri Henry	173	cylindrisporus Murr.
132	Brandlei Pk.	54	Davisii Murr.
233	<del>brunneofulvus</del> Fr. 94 <i>brevipis</i> Pk.	251	deceptivus Kauff.
40	caeruleescens Fr.	151	deflexus Murr.
41	caesiocyaneus Britz.	17	delibutus Fr.
172b	callisteus Fr.	231	distans Pk.
		223	duracinus Fr.
		4	elatior Fr.
		48	elegantior Fr.

- |     |   |     |   |
|-----|---|-----|---|
| 46  | <i>elegantioides</i> Kauff.                 | 227 | <i>livor</i> Fr.                                    |
| 70  | <i>equestriformis</i> Murr.                 | 11  | <i>longisporus</i> (Murr.) Singer                   |
| 274 | <i>erythrinus</i> Fr.                       | 18  | <i>luteobrunnescens</i> Smith                       |
| 217 | <i>evernius</i> Fr.                         | 138 | <i>malachus</i> Fr.                                 |
| 65  | <i>fimbriatus</i> Murr.                     | 201 | <i>malicorius</i> Fr.                               |
| 191 | <i>flammuliformis</i> Murr.                 | 222 | <i>mammosus</i> Kauff.                              |
| 185 | <i>flavifolius</i> Pk.                      | 200 | <i>melleipes</i> (Murr.) Singer                     |
| 283 | <i>flexipes</i> Fr.                         | 24  | <i>michiganensis</i> Kauff.                         |
| 269 | <i>gentilis</i> Fr.                         | 119 | <i>modestus</i> Pk                                  |
| 247 | <i>glandicolor</i> Fr.                      | 45  | <i>montanus</i> Kauff.                              |
| 34  | <i>glaucopus</i> Fr.                        | 235 | <i>Morrisii</i> Pk.                                 |
| 107 | <i>glutinosus</i> Pk.                       | 8   | <i>mucifluus</i> Fr.                                |
| 86  | <i>hebelomoides</i> Murr.                   | 10  | <i>mucosus</i> Fr.                                  |
| 243 | <i>hemitrichus</i> Fr.                      | 61  | <i>multiformis</i> Fr.                              |
| 198 | <i>hiemalis</i> Murr.                       | 100 | <i>mutabilis</i> Smith                              |
| 239 | <i>hinnuleus</i> Fr.                        | 9   | <i>muscigenus</i> Pk.                               |
| 183 | <i>humicola</i> (Quél.) Maire               | 248 | <i>nigrellus</i> Pk.                                |
| 257 | <i>iliopodius</i> Fr.                       | 271 | <i>nigrocuspidatus</i> Kauff.                       |
| 108 | <i>infractus</i> Fr.                        | 144 | <i>obliquus</i> Pk.                                 |
| 12  | <i>iodeoides</i> Kauff.                     | 276 | <i>obtusus</i> Fr.                                  |
| 13  | <i>iodes</i> B. & C.                        | 68  | <i>olivaceus</i> Pk.                                |
| 278 | <i>juberinus</i> Fr.                        | 78  | <i>oreades</i> Murr.                                |
| 113 | <i>lacticeps</i> Murr.                      | 277 | <i>paleaceus</i> Fr.                                |
| 109 | <i>laeticolor</i> Murr.                     | 178 | <i>perferrugineus</i> Murr.                         |
| 98  | <i>lanatipes</i> Pk. #                      | 280 | <i>periscelis</i> Fr.                               |
| 237 | <i>laniger</i> Fr. (19309)                  | 142 | <i>perviolaceus</i> Murr.                           |
| 96  | <i>lapidophilus</i>                         | 205 | <i>phoeniceus</i> var.<br><i>occidentalis</i> Smith |
| 69  | <i>largiformis</i> Murr.                    | 224 | <i>plumiger</i> Fr.                                 |
| 74  | <i>largus</i> Fr.                           | 67  | <i>porphyropus</i> Fr.                              |
| 159 | <del><i>liacinus</i> Pk.</del><br>No. 22074 | 33  | <i>praebrevipes</i> Murr.                           |
|     |   | 249 | <i>praepallens</i> Pk.                              |



Name as 19400.

- |       |  |      |  |
|-------|--|------|--|
| 182   | privigniformis Murr.                         | 104  | subcaespitosus Murr.   |
| (253) | privignus Fr.                                | 75   | subcamphoratus Murr.   |
| 1     | pseudo-salor Lange                           | 76   | subcommunis Murr.  |
| 125   | pulchrifolius var.<br>odorifer Hesler        | 89   | subfimbriatus Murr.  |
| 126   | pulchrifolius var.<br>typicus Smith          | 184  | subflavifolius Murr.   |
| 25    | purpurascens Fr.                             | 279  | subflexipes Pk.  |
| 139a  | pusillus Murr.                               | 49   | subfulmineus Murr.   |
| 192   | raphanoides Fr.                              | 56   | subglaucopus Murr.   |
| 225   | renidens Fr.                                 | 139  | subglobisporus Murr.   |
| 245   | rigens Fr.                                   | 268  | subjuberinus Murr.   |
| 127   | rimosus Pk.                                  | 95   | sublilacinus Murr.   |
| 72    | robustus Beardslee                           | 7    | <del>submarginellus Fr.</del><br><i>No. 21009 (in <u>Phlegmacium</u>, near <u>Cortinarius</u> Fr.)</i> |
| 37    | rubens Kauff.                                | 172a | <del>subnotatus Fr.</del><br><i>No. 22000</i>  |
| 130   | rubrocinereus Pk.<br><i>rusticus Karst.</i>  | 160  | subpulchrifolius Kauff.  |
| 14    | salor Fr.                                    | 161  | subpulchrifolius var.<br>microsporus var. nov.   |
| 204   | sanguineus Fr.                               | 26   | subpurpurascens Fr.  |
| 275   | scandens Fr.                                 | 226  | <del>subrigens Kauff.</del> <i>No. 21054</i>   |
| 27    | scaurus Fr.                                  | 114  | subrimosus Smith & Hesler  |
| 252   | scutulatus Fr. <i>(or Sm. 19690)? 20567?</i> | 135  | subtabularis Kauff.  |
| 206   | semisanguineus (Fr.)<br>Kauff.               | 210  | torvus Fr.   |
| 17    | sphaerosporus Pk.<br>(see delibutus Fr.)     | 265  | uraceus Fr.  |
| 5     | splendidus Pk.                               | 73   | variicolor Fr.   |
| 87    | squalidiformis Murr.                         | 71   | varius Fr.   |
| 147   | squamulosus Pk.                              | 64   | verruculosus (Murr.,) Singer   |
| 88    | straminipes Murr.                            | 19   | vibratilis Fr.   |
| 180   | subargentatus Murr.                          | 20   | vibratilis (large-spored<br>form)  |
| 117   | subaustralis Smith & Hesler                  | 124  | violaceus Fr.  |
|       |  | 44   | virentophyllus Kauff.  |

90	viscibadius Murr.	107a	No. 17195
52	Watsonii Murr.	164	No. 17218
195	Weberi Murr.	190	No. 17219
196	Weberianus (Murr.) Singer	30	No. 17220
272	Westii (Murr.) Singer	15	No. 17229
43	No. 9635	216	No. 17248
3	No. 12320	241	No. 17271
242	No. 12708	230	No. 17298 (# name as 21882?)
171	No. 13820	187	No. 17692 (# near 21845)
121	No. 13917	188	No. 17903
166	No. 13918	16	No. 18045
66	No. 14032	106	No. 18162
263	No. 14776	<del>122</del>	<del>No. 18570</del>
168a	No. 16416	122	No. 18571
179	No. 16426	154a	No. 18572
238	No. 16427	<del>213</del>	<del>No. 18575</del> brunneofulvus
15	No. 16564	207	No. 18582
47	No. 16565	162	No. 18586
21	No. 16566	186	<del>No. 18603</del> cyanites Fr.
77	No. 16568	189	No. 18606
197	No. 16617	<del>148</del>	<del>No. 18607</del>
110	No. 17062	143	No. 18612
133	No. 17068	32	No. 18640
128	No. 17072	211	No. 18646
134	No. 17118	141	No. 18653
172a	No. 17135	137	No. 18661
174	No. 17174	129	No. 18667
163	No. 17193	99	No. 18695
		254	No. 19011

209 No. 19012	<del>120 No. 19371</del>	105 No. 20949
212 No. 19170	255 No. 19378	92 No. 20999 (sp. nov.)
82 No. 19215	236 No. 19379	256 No. 21046
79 No. 19223	39 No. 19390	<del>236 No. 21054</del>
119 <del>No. 19224</del> <i>modestus</i> PK.	<del>253 No. 19400</del>	94 <del>No. 21599</del> <i>brevipis</i> PK.
219 No. 19252	83 No. 19401	232 <del>No. 21814</del> <i>distans</i> PK.
220 No. 19253	154 No. 19464	229 No. 21825 (sp. nov.) #
285 No. 19254	167 No. 19711	170 No. 21845 (near 17692.) #
258 No. 19256	270 No. 19720	146 No. 21882 (same as 17298?) #
100 <del>No. 19262</del> <i>mitabilis</i> Smith	156 No. 19814	150 No. 21942
101 No. 19275	35 No. 20159	228 No. 22016
<del>62 No. 19276</del>	22 No. 20198	250 No. 22049
262 No. 19279	246 No. 20233	159 <del>No. 22074</del>
193 No. 19280	59 No. 20234	103 No. 22089
221 No. 19281	215 No. 20235	91 No. 22119
<del>136 No. 19286</del>	282 No. 20247	60 No. 22142
260 No. 19288	102 <del>No. 20449</del> <i>crucioaerulus</i> Fr.	29 No. 22160
<del>244a No. 19298</del>	97 No. 20450	31 No. 22161
244 No. 19306	240 No. 20452	57 No. 22164
80 No. 19308	208 No. 20524	58 No. 22167 (sp. nov.)
237 <del>No. 19309</del> <i>c. laniger</i> Fr.	273 No. 20525	84 No. 22169
93 No. 19310 a pale form.	<del>249 No. 20537</del>	28 No. 22183
259 No. 19326	234 No. 20556	85 No. 22185
284 No. 19338	123 No. 20559	
199 No. 19341	145 No. 20560	
214 No. 19342	<del>No. 20567</del>	
266 No. 19347	254 No. 20579	
169 No. 19353	157 No. 20585	
	<del>175 No. 20596</del>	

*Hamula astragalina* Fr.

CORTINARIUS

Key to Subgenera

1. Pileus viscid..... 2
1. Pileus moist to dry but not viscid..... 4
2. Stipe viscid..... Myxacium
2. Stipe not viscid..... 3
3. Bulb of stipe <sup>at least</sup>marginate in young carpophores..... Bulbopodium p. 4
3. Stipe equal to clavate at first..... Phlegmacium p. 9
4. Pileus dry or at least not hygrophanous..... Inoloma p. 13
4. Pileus moist at first and at least subhygrophanous.. Hygrophanus p. 23

Myxadium

## Key to Species

1. Stipe essentially equal at first: Splendidi..... 2  
 1. Stipe clavate at first: Clavati..... 12  
     or *fulvone*
- (a) SPLENDIDI
2. Lamellae and stipe at first some shade of violet or blue.... 3  
 2. Lamellae and stipe at first not with these colors..... 7
3. Pileus at first with violet, lavender, or bluish tints..... 4  
 3. Pileus at first lacking these colors..... 6
4. Cheilocystidia present and forming a sterile band on  
 lamellae edges; spores coarsely warty.... 1. pseudosalor Lange  
 4. Cheilocystidia rare or absent, lamellae edges fertile;  
 spores minutely punctate-rough,..... 5
5. Spores 13-15 x 7-8  $\mu$ ..... 2. cylindripes Kauff.  
 5. Spores 9-10 (12) x 5-6 (7)  $\mu$ ..... 3. No. 12320
6. Pileus olive-ocher; spores with scattered, low, rounded  
 warts, 11-13.5 x 6.5-7 (8)  $\mu$ ..... 4. elator Fr.  
 6. Pileus tawny, orange, or reddish-brown; spores punctate-  
 rough, 14-17 x 7-9  $\mu$ ..... 5. splendidus Pk.
7. Spores, in side-view, turtle-shaped, coarsely tuberculate;  
 pileus more or less umbilicate; stipe lilac.. 6. Arnoldae Murr.  
 7. Spores, pileus, and stipe lacking these characters..... 8
8. Spores 9-11.5 x 5-6.5  $\mu$ , smooth or only minutely warty  
 even under high magnification; pileus margin pale, No. 21009  
 fibrillose..... 7. submarginalis Pk.  
 8. Spores larger, with low, rounded, coarse warts..... 9
9. Stipe with transverse scales, or bands; spores 11.5-15 x  
 6-8  $\mu$ , tuberculate; pileus pale straw to fulvous.....  
 ..... 8. mucifluus Fr.  
 9. Stipe lacking such bands..... 10
10. Lamellae at first yellowish, then clay to cinnamon; pileus  
 striate on margin; spores tuberculate..... 9. muscigenus Pk.  
 10. Lamellae at first whitish or pallid; pileus margin even..... 11
11. Pileus varying tawny, yellow-ocher, brown; spores almost  
 smooth to slightly wrinkled, 12-16 x 5.5-7  $\mu$ .....  
 ..... 10. mucosus (Fr.) Rick.  
 11. Pileus avellaneous-isabelline; spores 11.5-14 x 7-8  $\mu$ .....  
 ..... 11. longisporus (Murr.) Singer

→ Near corruceans Fr., in Phlegmacium.

(b) CLAVATI

- 12. Violaceous, blue, or lilac at least in some part of young  
carpophores..... 13
- 12. No violaceous, blue, or lilac colors..... 18
- 13. Taste bitter..... 12. iodioides Kauff.
- 13. Taste mild..... 14
- 14. Violaceous or lilac colors more or less throughout the  
carpophore..... 15
- 14. Violaceous or lilac colors confined either to the young  
lamellae or to base of stipe..... 16
- 15. Spores ellipsoid, 7-10 (11.5) x 5-7 (8) μ.... 13. iodes B. & C.
- 15. Spores globose to subglobose, 6-8 x 5-6 μ..... 14. salor Fr.
- 16. Young lamellae ivory-white, brown when mature; stipe white,  
base violaceous or lilac..... 15. Nos. 16564 & 17229; 16. No. 18045
- 16. Young lamellae caesius to dull violaceous; pileus yellowish,  
isabella or tawny..... 17
- 17. Pileus smooth (not scaly); stipe olivaceous; spores sub-  
globose, (6) 7-8.5 x 6-7 (8) μ..... 17. delibutus Fr.  
(= sphaerosporus Pk.)
- 17. Pileus disk minutely scaly; stipe whitish with yellowish  
zones below; spores ellipsoid, 8-10 x 4.5-5 μ.....  
..... 18. luteobrunnescens Smith
- 18. Taste bitter..... 19
- 18. Taste mild or farinaceous..... 20
- 19. Spores 6-7 μ long..... 19. vibratilis Fr.
- 19. Spores 8-10 μ long..... 20. vibratilis (large-spored form)
- 20. Taste mild or none; stipe dingy; spores 8-9 (10) x 4-5 μ....  
..... 21. No. 16566
- 20. Taste farinaceous; stipe white; spores 7-8 x 3.5-4.5 μ.....  
..... 22. No. 20198

# 22387 (w near)  
" 23324 "

Bulbopodium

## Key to Sections

- A. Lamellae at first violaceous, lilac, bluish or  
cinereous..... Violacei
- A. Lamellae at first yellow to green..... Luteifolii
- A. Lamellae not as in either of above choices..... Multiformes

Bulbopodium: Violacei

## Key to Species

1. Spores 7.5-10 (11)  $\mu$  long..... 2  
 1. Spores 9-15  $\mu$  or more long..... 14
2. Bulb depressed..... 3  
 2. Bulb not depressed or doubtfully so..... 4
3. Pileus 3-6 cm. broad, ocher-yellow to citron-yellow, disk  
 fulvous..... 23. callochrous Fr.  
 3. Pileus 8-14 cm. broad, violaceous to lilac.....  
 ..... 24. michiganensis Kauff.
4. Flesh and lamellae turning purplish when bruised..... 5  
 4. Flesh and lamellae not changing color when bruised..... 6
5. Pileus purplish to umber, these tints persisting, becoming  
 streaked clay color; stipe solid; spores echinulate-  
 warty..... 25. purpurascens Fr.  
 5. Pileus purplish, quickly fading to yellowish or brownish;  
 stipe becoming hollow; spores warty-reticulate.....  
 ..... 26. subpurpurascens Fr.
6. Lamellae at first violaceous, soon greenish or olivaceous  
 ..... 27. scaurus Fr.  
 6. Lamellae not becoming greenish or olivaceous..... 7
7. Pileus white, but appearing tinged violaceous from lamellae;  
 flesh and stipe white..... 28. ~~No. 22183~~  
 7. Pileus, flesh, and stipe not white..... 8
8. Pileus, flesh, lamellae, and stipe colors in the cinereous,  
 blue, or violaceous series..... 9  
 8. Pileus not with these tints (though other parts may display  
 these colors)..... 12
9. Spores coarsely tuberculate, distinctly reticulate; pileus,  
 flesh, lamellae, and stipe blue..... 29. No. 22160  
 9. Spores minutely punctate..... 10
10. Pileus, flesh, lamellae, and stipe cinereous..... 30. No. 17220  
 10. Pileus and other parts not cinereous..... 11
11. Pileus deep-violaceous, radiately rugose, flesh French gray;  
 stipe blue..... 31. No. 22161  
 11. Pileus, flesh, lamellae, and stipe deep violaceous.....  
 ..... 32. No. 18640
12. Flesh bitter; pileus pallid to pinkish-cinnamon- greenish  
 when dried; stipe short (2 cm.)..... 33. praebrevipes Murr.  
 12. Not with any of these characters; pileus grayish or tawny  
 to warm buff..... 13

probably sp. nov.  
 (spores are those of C. sphaerosperma Kauff.)



13. Flesh white, at times becoming yellowish; spores minutely rough (nearly smooth)..... 34. glaucopus Fr.
13. Flesh pale violaceous, fading to whitish; spores coarsely tuberculate..... 35. No. 20159  
(arquatus Fr. sensu Lange? cf. also No. 17677)
14. Spores 13-18  $\mu$  long..... 15
14. Spores not over 15  $\mu$  long, usually 10-14  $\mu$  long..... 16
15. Pileus at first tawny, becoming greenish-yellow except disk; flesh vinaceous-lavender, taste slight of potatoes; stipe vinaceous-lilac; cortina greenish-yellow..... 36. ~~Atkinsonianus Kauff.~~ *sp. nov.*
15. Pileus red to orange-fulvous; flesh whitish, taste bitter; stipe straw-yellow to whitish; cortina white or tinged red. .... 37. rubens Kauff.
16. Pileus zinc-orange to tawny, radiately corrugated..... 38. corrugatus Pk.
16. Pileus not with these characters..... 17
17. Pileus colors in the violaceous series..... 18
17. Pileus not violaceous..... 20
18. Bulb not white; pileus deep violaceous..... 39. No. 19390
18. Bulb white..... 19
19. Bulb not depressed; carpophore blue throughout; spores 12-14  $\mu$  long..... 40. caerulescens Fr.
19. Bulb depressed; carpophore silvery-violaceous; spores 10-12 (13)  $\mu$  long..... 41. ~~caesiocyanus Britz.~~
20. Pileus clay color, at times flesh violaceous under cuticle; stipe pale-lilac, then dingy-brownish..... 42. Boudieri Henry
20. Pileus at first pinkish-buff, finally darker, stipe whitish..... 43. No. 9635

2 more C. rubens but stipe & veil characters are very different.

No. 22210  
 (near Sm-43666)

Bulbopodium: Luteifolii

## Key to Species

1. Spores 8-10  $\mu$  long; stipe with bluish tints..... 2
1. Spores 9-12  $\mu$  or more in length..... 3
2. Lamellae at first bluish, soon greenish; flesh mild.....  
~~Spore 7-9  $\mu$  long~~..... 27. scaurus Fr.
2. Lamellae at first grayish-olive or citrine, becoming  
 greenish; flesh bitter. ~~Spore 9-12  $\mu$  long~~ 44. virentophyllus Kauff.
3. Stipe bluish <sup>pale</sup> ~~to quaker drab~~..... 4
3. Stipe not bluish..... 5
4. Flesh mild; bulb depressed..... 45. montanus Kauff.
4. Flesh bitter; bulb not depressed..... 44. virentophyllus Kauff.
5. Spores 15-19  $\mu$  long; pileus tawny, margin olive-ocher;  
 flesh tardily bitter..... 46. elegantioides Kauff.
5. Spores 10-15  $\mu$  long..... 6
6. Pileus drab with orange tints, margin grayish-olive then  
 brownish, becoming "dull Indian-purple" after storage;  
 flesh white, promptly vinaceous-gray when cut... 47. No. 16565  
 (orichalceus Fr.?)
6. Pileus yellow or yellowish, though the disk may not be  
 yellow; flesh unchanging when cut..... 7
7. Spores 12-15 (16) x 8-9  $\mu$ ; bulb not depressed, flesh mild...  
 ..... 48. elegantior Fr.
7. Spores 10-12 x (5) 7-8  $\mu$ ; bulb sub-depressed; flesh  
 slightly mawkish..... 49. subfulmineus Murr.

Bulbopodium: Multiformes

## Key to Species

1. Pileus white, whitish, or pallid, not darkening appreciably at maturity..... 2
1. Pileus colored, or if pallid then darkening at maturity... 3
2. Spores 6-9 x 3.5-4.5  $\mu$ , smooth (even under oil); taste mild or of radish..... 50. albidiformis Murr.
2. Spores 7-10.5 x 5-6  $\mu$ , tuberculate; taste mild or mawkish..... 51. albiceps Murr.
3. Spores 9-12  $\mu$  long..... 4
3. Spores 7-9 (10)  $\mu$  long..... 6
4. Spores entirely smooth or minutely wrinkled; pileus creameous, disk fulvous; taste of radish to bitter-astringent; stipe yellowish..... 52. Watsonii Murr.
4. Spores tuberculate; pileus with other colors; taste mild; stipe whitish..... 5
5. Pileus uniformly dark bay..... 53. atribadius Murr.
5. Pileus pale-lilac..... 54. Davisii Murr.
6. Spores conspicuously tuberculate..... 7
6. Spores entirely smooth or minutely wrinkled, not tuberculate..... 9
7. Pileus and stipe lemon-yellow..... 55. citriniceps Murr.
7. Pileus and stipe not yellow..... 8
8. Pileus and stipe silvery-violaceous or violaceous-white; taste mild..... 56. subglaucopus Murr.
8. Pileus clay color; taste of radish..... 57. No. 22164
9. Pileus vinaceous-lilac or purple-drab, becoming brownish-olive; lamellae at first ivory-yellow..... 58. No. 22167
9. Not with the above characters..... 10
10. Pileus 4-6 cm. broad..... 11
10. Pileus 5-10 cm. broad..... 12
11. Lamellae broad, at first white, finally clay color..... 59. No. 20234  
(multiformis?)
11. Lamellae narrow, at first pallid, finally cinnamon..... 60. No. 22142
12. Spores 7-9.5 x 4-5  $\mu$ ; pileus radiately wrinkled; stipe solid..... 61. multiformis Fr.
- ~~12. Spores 6.5-8 x 5-6.5  $\mu$ ; pileus smooth; stipe hollow..... 62. No. 19276~~

sp. nov.

discarded

Phlegmacium

## Key to Sections

1. Spores (9) 10-12  $\mu$  or more long (some 9-11  $\mu$ ) long..... Macrosporae  
 1. Spores 8-10 (11)  $\mu$  long or shorter..... Microsporae

Phlegmacium: Macrosporae

## Key to Species

1. Lamellae at first white or pallid; flesh white, unchanging 2  
 1. Lamellae at first colored..... 5  
 2. Pileus at first lilac, disk may become vinaceous-brown.... 63. balteatus Fr. (?)  
 2. Pileus not at first lilac..... 3  
 3. Pileus glutinous; taste mild; spores verrucose..... 64. verruculosus (Murr.) Singer  
 3. Pileus viscid, not glutinous; taste of radish; spores smooth or slightly wrinkled..... 4  
 4. Spores 10-14  $\mu$  long; pileus smooth..... 65. fimbriatus Murr.  
 4. Spores 9-11  $\mu$  long; pileus radiately corrugated.. 66. No. 14032  
 5. Flesh and lamellae changing to dark-purple when bruised... 67. porphyropus (A. & S.) Fr.  
 5. Flesh and lamellae not changing to dark purple when bruised..... 6  
 6. Pileus glutinous, olivaceous..... 68. olivaceus Pk.  
 6. Pileus viscid, not glutinous..... 7  
 7. Spores 13-17  $\mu$  long; stipe bearing a submembranous annulus. 69. largiformis Murr.  
 7. Spores 12  $\mu$  or less in length; lacking a submembranous annulus..... 8  
 8. Pileus yellowish, at least at first..... 9  
 8. Pileus not yellowish..... 10  
 9. Lamellae yellow then rusty; spores smooth..... 70. equestriformis Murr.  
 9. Lamellae vinaceous-lilac then tawny; spores coarsely tuberculate..... 71. varius Fr.

10. Lamellae at first bluish or lavender..... 11  
 10. Lamellae not at first bluish or lavender..... 13
11. Stipe pale violaceous..... 72. robustus Beardslee  
 11. Stipe dark lavender..... 12
12. Pileus smoky-olive with a violaceous tint, becoming  
 tawny-olive; spores tuberculate..... 73. varicolor Fr.  
 12. Pileus bluish-lavender, becoming tawny-olive; spores  
 minutely wrinkled..... 74. largus Fr.
13. Odor strong..... 75. subcamphoratus Murr.  
 13. Odor mild..... 14
14. Pileus whitish with a rosy-isabelline tint; spores  
 tuberculate..... 76. subcommunis Murr.  
 14. Pileus ochraceous-buff; spores punctate..... 77. No. 16568

Phlegmacium: Microsporae

Key to Species

1. Lamellae at first white or pallid..... 2  
 1. Lamellae not at first white or pallid..... 3
2. Flesh promptly very bitter..... 78. oreades Murr.  
 2. Flesh mild..... 79. No. 19223; 80. No. 19308
3. Lamellae at first buff or pale fulvous..... 4  
 3. Lamellae not at first buff or pale fulvous..... 14
4. Pileus some shade of yellow..... 5  
 4. Pileus without yellow tints..... 6
5. Pileus warm-buff, disk yellow; taste mild. 81. corruscans Fr.  
 5. Pileus ivory-yellow, stained chamois; taste bitter  
 ..... 82. No. 19215
6. Pileus ochraceous-buff or becoming so..... 7  
 6. Pileus not so colored..... 8
7. Stipe equal; lamellae subdistant..... 83. No. 19401  
 7. Stipe ovoid-bulbous; lamellae close..... 84. No. 22169
8. Universal veil leaving a volva-rim at base of stipe.....  
 ..... 85. No. 22185  
 8. No volva-rim present..... 9

- 9. Pileus whitish with a rosy-avellaneous tint..... 10
- 9. Pileus otherwise colored..... 11
- 10. Stipe whitish with a rosy-avellaneous tint, base slightly enlarged..... 76. subcommunis Murr.
- 10. Stipe pale violaceous, base with a well-defined bulb ..... 86. hebelomoides Murr.
- 11. Flesh pallid to brown; spores cylindric, 7-9 x 2.3-3.4 μ.. ..... 87. squalidiformis Murr.
- 11. Flesh white; spores not cylindric..... 12
- 12. Stipe stramineous; spores rough-punctate.....
- ..... 88. straminipes Murr.
- 12. Stipe otherwise colored..... 13
- 13. Stipe white, slightly enlarged downward; pileus pale-ochraceous; spores echinulate..... 89. subfimbriatus Murr.
- 13. Stipe violaceous, tapering downward; pileus uniformly bay-colored; spores smooth..... 90. viscibadius Murr.
- 14. Lamellae at first caesius, violaceous, or purplish..... 15
- 14. Lamellae at first yellowish or olivaceous..... 31
- 15. Pileus silvery-violaceous..... 16
- 15. Pileus otherwise colored..... 17
- 16. Odor strong, offensive, the more so on drying..... 91. camphoratus ~~var.~~ conu Kauff.
- 16. Odor fragrant..... 92. No. 20999
- 17. Pileus 2-6 (7) cm. broad..... 18
- 17. Pileus (6) 7-14 cm. broad..... 26
- 18. Taste of radish..... 19
- 18. Taste not of radish..... 20
- 19. Pileus and stipe deep heliotrope gray..... 93. No. 19310
- 19. Pileus and stipe pallid..... 94. No. 21599 brevis Pk.
- 20. Taste mawkish; pileus violaceous; spores minutely warty... .. 95. sublilacinus Murr.
- 20. Taste mild..... 21
- 21. Flesh whitish or pallid..... 22
- 21. Flesh neither whitish nor pallid..... 24
- 22. Stipe tinged violaceous, at least at apex.....
- ..... 96. lapidophilus Pk.; 97. No. 20450
- 22. Stipe white, no violet..... 23
- 23. Pileus light buff, then brown; spores echinulate.....
- ..... 98. lanatipes Pk.
- 23. Pileus smoke-gray, lutescent; spores nearly smooth ..... 99. No. 18695

*belongs in Inoloma.*

*belongs in Inoloma.*

24. Pileus light-drab, margin tinged lavender; spores *mutabilis* Sm.  
tuberculate, subreticulate..... 100. No. 19262
24. Pileus otherwise colored..... 25
25. Pileus light violaceous gray; stipe dingy brownish; spores  
minutely rough..... 101. No. 19275
25. Pileus gray-brown; stipe pale violaceous; spores coarsely  
tuberculate..... 102. No. 20149
26. Flesh blue when wet, white when dry... 72. robustus Beardslee
26. Flesh not blue when wet..... 27
27. Flesh white, pinkish-lilac when cut, purple when bruised;  
spores rough-punctate..... 103. No. 22089
27. Flesh unchanging when cut or bruised..... 28
28. Carpophores caespitose; pileus isabelline to fulvous;  
spores smooth..... 104. subcaespitosus Murr.
28. Not caespitose; pileus tawny..... 29
29. Margin of pileus pale vinaceous drab..... 30
29. Pileus streaked and spotted rusty-brown; spores coarsely  
tuberculate..... 105. No. 20949
- ~~30. Spores rough-punctate, subreticulate..... 106. No. 18162~~
30. Spores tuberculate, subreticulate..... 100. No. 19262
31. Pileus glutinous..... 32
31. Pileus viscid, not glutinous..... 33
32. Pileus 2.5-5 cm. broad, flesh yellowish; spores 6.5-8 x  
5-5.5  $\mu$ , punctate..... 107. glutinosus Pk.
32. Pileus 5-15 cm. broad, flesh white; spores 8-10 x 4-5  $\mu$ ,  
smooth or nearly so..... 107a. No. 17195
33. Lamellae at first sooty-olive; taste of radish, at times  
bitter..... 108. infractus Fr.
33. Lamellae at first some shade of yellow..... 34
34. Pileus bay, margin yellow; lamellae at first lemon-yellow;  
spores 5-6  $\mu$  broad..... 109. laeticolor Murr.
34. Pileus olive-brown; lamellae at first olive-yellow; spores  
6.5-8  $\mu$  broad..... 110. No. 17062

*croceocaulus Fr.*

*Discoidia*

Inoloma

## Key to Sections

1. Lamellae at first pallid to avellaneous (grayish-brown)..... Albidifolii p. 14
1. Lamellae at first caesius, violet, lilac, or purple to reddish purple-brown..... Canini p. 15
1. Lamellae at first cinnamon-buff, yellow, orange, clay color, alutaceous, olive-brown to dark rusty brown.. Annulati p. 18
1. Lamellae at first some shade of red to reddish-orange..... Sanguinei p. 22



Inoloma: Albidifolii

Key to Species

- 1. Spores (9) 10-12 μ long..... 2
- 1. Spores 6-9 (10) μ long..... 3
- 2. Stipe clavate-bulbous; pileus light buff then brownish with a drab tint; taste mild or slight.... 111. canescens Pk.
- 2. Stipe marginate-bulbous; pileus white, tinged violaceous; taste bitter..... 112. Birchfieldii Murr.
- 3. Stipe marginate-bulbous..... 4
- 3. Stipe equal or clavate-bulbous..... 5
- 4. Pileus white; odor none; lamellae broad.. 113. lacticeps Murr.
- 4. Pileus not white; odor fragrant; lamellae narrow..... 114. subrimosus Sm. & Hes.
- 5. Pileus and stipe with appressed, pinkish to cinnabar scales..... 115. bolaris Fr.
- 5. Not as above..... 6
- 6. Stipe 2-4 mm. thick, equal or tapering downward; pileus with a blackish umbo..... 116. castanellus Pk.
- 6. Stipe thicker..... 7
- 7. Pleurocystidia present; pileus clay to tawny..... 117. subaustralis Sm. & Hes.
- 7. Pleurocystidia absent..... 8
- 8. Taste of radish..... 9
- 8. Taste mild..... 10
- 9. Pileus old gold, tawny-olive to brown; tomentose or plush-like; stipe dingy olive..... 118. colymbadinus Fr.
- 9. Pileus gray brown, rimose, fibrillose; stipe gray-brown... 119. No. 19224
- ~~10. Pileus 2.5-3 cm. broad, pale pinkish cinnamon. 120. No. 19371~~
- 10. Pileus larger..... 11
- 11. Stipe tapering upward above bulb..... 121. No. 13917 (near pseudobolaris Maire)
- 11. Stipe equal above bulb..... 12
- 12. Flesh and stipe whitish, tinged violaceous..... 122. No. 18571
- 12. Flesh and stipe white, no violet..... 123. No. 20559

and 111a. Cort. rustions

modestus Pk. Overlooked

Inoloma: Canini

## Key to Species

1. Spores (9) 10-12  $\mu$  or more long..... 2  
 1. Spores 8-10  $\mu$  or less in length..... 16
2. Spores tuberculate..... 3  
 2. Spores punctate, wrinkled, or nearly smooth..... 6
3. Pileus and stipe dark-violaceous..... 124. violaceus Fr.  
 3. Pileus and stipe not so colored..... 4
4. Flesh fragrant, of ripe pears.....  
 ..... 125. pulchrifolius var. odorifer Hes.  
 4. Flesh not fragrant..... 5
5. Pileus whitish or pinkish-gray, not rimose.....  
 ..... 126. pulchrifolius var. typicus Smith  
 5. Pileus grayish-violaceous, becoming rimose.. 127. rimosus Pk.
6. Flesh and lamellae, when bruised, becoming vinaceous  
 lavender to vinaceous-lilac..... 128. No. 17072  
 6. Flesh and lamellae unchanging when bruised..... 7
7. Base of stipe equal or nearly so..... 129. No. 18667  
 7. Base of stipe clavate or ovoid bulbous..... 8
8. Pileus reddish-cinereous..... 130. rubrocinereus Pk.  
 8. Pileus otherwise colored..... 9
9. Pileus lavender, in age cinnamon-buff; odor foetid.....  
 ..... 131. camphoratus Fr. (~~# 12119~~)  
 9. Pileus not so colored; odor mild..... 10
10. Pileus brownish-lilac, with yellowish or brownish stains..  
 ..... 132. Brandlei Pk.  
 10. Pileus otherwise colored..... 11
11. Pileus pale-violaceous, drying darker..... 133. No. 17068  
 11. Pileus not drying darker..... 12
12. Pileus drying ochraceous-salmon..... 134. No. 17118  
 12. Pileus not so drying..... 13
13. Base of stipe abruptly bulbous..... 135. subtabularis Kauff.  
 13. Base of stipe clavate..... 14
- ~~14. Stipe dingy brown; pileus clay color to ochraceous-tawny..  
 ..... 136. No. 19286~~
14. Stipe not brownish..... 15

Discarded

15. Stipe plumbago-gray; pileus cinnamon-buff, tinged  
violaceous..... 137. No. 18661
15. Stipe violaceous, with silvery sheen..... 138. malachus Fr.  
(sensu Lange)
16. Spores subglobose..... 17
16. Spores narrower in relation to length..... 22
17. Spores tuberculate..... 18
17. Spores punctate or echinulate..... 19
18. Pileus avellaneous-isabelline; flesh white.....  
..... 139. subglobisporus Murr.
18. Pileus pale-violet, flesh dull-violet... 139a. pusillus Murr.
19. Pileus vinaceous-buff to tawny, with a silky or micaceous  
sheen; stipe apex violaceous..... 140. anomalus Fr.
19. Pileus and stipe not as above..... 20
20. Pileus 1.5-3.5 cm. broad..... 21
20. Pileus 7-12 cm. broad, fibrillose, cinnamon-buff; odor  
more or less pungent; stipe abruptly bulbous.. 141. No. 18653
21. Pileus pale dull-violet; odor mild; stipe equal.....  
..... 142. perviolaceus Murr.
21. Pileus clay to ochraceous buff; odor of radish; stipe  
clavate bulbous..... 143. No. 18612  
(near caesiifolius Smith)
22. Spores tuberculate-warty..... 23
22. Spores smooth to punctate, not tuberculate..... 28
23. Stipe with an oblique bulb..... 144. obliquus Pk.
23. Stipe clavate or ovoid bulbous..... 24
24. Bulb ovoid; pileus tawny with radial streaks and spots....  
..... 145. No. 20560; 146. No. 21882
24. Bulb clavate..... 25
25. Pileus scaly..... 26
25. Pileus fibrillose, at times glabrescent, not scaly..... 27
26. Pileus russet, becoming dark-brown; spores 6.5-7  $\mu$  broad..  
..... 147. squamulosus Pk.
- ~~26. Pileus cinnamon buff; spores 4.5-5.5  $\mu$  broad.. 148. No. 18607~~
- ~~27. Pileus avellaneous; spores 7.5-9 x 4.5-5.5  $\mu$ .. 149. No. 20537~~
27. Pileus pale ecru-drab; spores 6-7 x 4-5  $\mu$ ..... 150. No. 21942
28. Spores smooth, 7-8 x 5  $\mu$ ; pileus dark isabelline; stipe  
more or less equal..... 151. deflexus Murr.
28. Spores rough-punctate..... 29

Discarded  
(-) C. Burke (CS)

31. Odor strong; pileus lavender becoming cinnamon-buff --- 131. camphoratus Fr.

also # 22339

- 29. Spores 3.5-4 (4.4)  $\mu$  in diameter; base of stipe with a flaring bulb..... 152. compressus Smith
- 29. Spores broader; base of stipe ovoid to clavate-bulbous, or nearly equal..... 30
- 30. Pileus cinnamon-drab to brownish, with brown, fibrillose scales..... 153. asper Fr.
- 30. Pileus fibrillose to glabrescent, not scaly..... 31
- 31. Odor fragrant; abruptly bulbous; pileus pale-violaceous, fading..... 154. No. 19464
- 31. Odor mild..... 32
- 32. Pileus 2-5 cm. broad..... 33
- 32. Pileus 4-10 cm. broad..... 35
- 33. Pileus tinged violaceous, becoming ecru-drab, silvery-fibrillose..... 155. alboviolaceus Fr.
- 33. Pileus buff to wood-brown..... 34
- 34. Spores 8-10  $\mu$  long; lamellae subdistant; stipe base more or less equal..... 156. No. 19814
- 34. Spores 5-7  $\mu$  long; lamellae close; stipe base clavate..... 157. No. 20585
- 35. Stipe ovoid-bulbous; pileus silvery-violaceous to ecru-drab; lamellae narrow..... 158. argentatus Fr.
- 35. Stipe clavate-bulbous or nearly equal; pileus not as above; lamellae broad..... 36
- 36. Pileus and stipe light vinaceous-gray; lamellae dark heliotrope-gray..... 159. lilacinus Fr.
- 36. Pileus, stipe, and lamellae not as above..... 37
- 37. Pileus grayish or grayish-buff; lamellae at first purplish. 38
- 37. Pileus and lamellae not so colored..... 39
- 38. Spores 9-10 x 5-6.5  $\mu$ ..... 160. subpulchrifolius Kauff.
- 38. Spores 7-9 x 4-5  $\mu$ ..... 161. subpulchrifolius var. microsporus Smith
- 39. Pileus pale-violaceous, becoming brownish-lilac then brown, metallic-shining..... 162. No. 18586
- 39. Pileus not as above..... 40
- 40. Pileus brown, velvety-tomentose; lamellae at first violaceous..... 163. No. 17193
- 40. Pileus avellaneous, silvery-fibrillose; lamellae at first light cinnamon-drab..... 164. No. 17218

No. 22182

No. 22074

Inoloma: Annulati

## Key to Sub-sections

1. Spores globose, subglobose, or very broadly ellipsoid..... Sphaerospori
1. Spores longer in relation to their breadth..... Cinnamomei

Sphaerospori: Key to Species

1. Pileus with erect, fibrillose scales..... 2
1. Pileus appressed-fibrillose or appressed-scaly..... 5
2. Flesh white..... 3
2. Flesh yellow or yellowish-white..... 4
3. Odor of radish; pileus brownish-olive to old gold or yellow-ocher..... 165. annulatus Pk.
3. Odor mild; pileus cinnamon-buff..... 166. No. 13918
4. Flesh red in KOH, odor of radish; pileus margin yellow, central portion olive-ocher, disk blackish... 167. No. 19711
4. Flesh not red in KOH, odor mild; pileus saffron-yellow... 168. croceocolor Kauff.; 168a. No. 16416
5. Stipe with an oblique bulb; pileus pinkish-buff, streaked brownish..... 169. No. 19353
5. Stipe bulb clavate or none..... 6
6. Flesh white; pileus brown or tawny..... 170. No. 21845
6. Flesh not white..... 7
7. Lamellae at first pallid-brown; flesh cinnamon-buff to pallid..... 171. No. 13820
7. Lamellae olive or yellowish..... 8
8. Flesh pale yellowish-orange; lamellae at first yellow-ocher..... 172. No. 17135  
(near C. callisteus Fr.)
8. Flesh not as above..... 9
9. Flesh dingy-olive; lamellae at first olive-green or sulphine-yellow..... 172a. subrotatus Fr. No. 22000
9. Flesh apricot-yellow to yellow-ocher; lamellae at first yellow-ocher..... 172b. callisteus Fr.

Inoloma: AnnulatiCinnamomei: Key to Species

1. Spores 9-11  $\mu$  or more long..... Group I  
 1. Spores 7-9 (10)  $\mu$  or less long..... Group II

Group I

1. Spores cylindrical, 10-12 x 3-3.5  $\mu$ .. 173. cylindrisporus Murr.  
 1. Spores broader in relation to length..... 2
2. Spores tuberculate..... 3  
 2. Spores punctate, wrinkled, or nearly smooth..... 4
3. Pileus obtusely umbonate, fibrillose; lamellae close;  
 stipe more or less equal..... 174. No. 17174  
~~3. Pileus convex, canescent, lamellae subdistant, stipe  
 clavate to ovoid bulbous..... 175. No. 20596~~
4. Stipe lilac, with a marginate bulb.... 176. amarissimus Murr.  
 4. Stipe not lilac, clavate or bulbous (bulb, if present, not  
 marginate)..... 5
5. Stipe with cinnabar-red (scarlet) zones.. 177. armillatus Fr.  
 5. Stipe not as above..... 6
6. Pileus ferruginous, fibrillose; flesh isabelline; spores  
 smooth or minutely wrinkled..... 178. perferruginous Murr. (+22355?)  
 6. Pileus cinnamon, fibrillose-rimose; flesh white; spores  
 punctate..... 179. No. 16426

Overruled

Group II

1. Pileus white, pale-avellaneous, or stramineous..... 2  
 1. Pileus more darkly colored..... 3
2. Pileus pale whitish-avellaneous; lamellae subdistant.....  
 ..... 180. subargentatus Murr.  
 2. Pileus whitish or stramineous; lamellae crowded.....  
 ..... 181. albidulus Murr.
3. Spores tuberculate, coarsely warted..... 4  
 3. Spores minutely warty, punctate, wrinkled, or nearly  
 smooth..... 7
4. Pileus 2.5-5 cm. broad, fulvous to cinnamon-rufous..... 5  
 4. Pileus larger, yellowish to isabelline..... 6
5. Pileus fulvous; odor and taste mild..182. privigniformis Murr.  
 5. Pileus cinnamon-rufous; odor and taste of radish.....  
 ..... 183. humicola (Quél.) Maire
6. Pileus tomentose, isabelline to pinkish-cinnamon; stipe  
 up to 4 cm. long; lamellae at length ferruginous.....  
 ..... 184. subflavifolius Murr.  
 6. Pileus fibrillose or scaly, cream-buff to ochraceous;  
 stipe 5-10 cm. long; lamellae at length yellowish-  
 cinnamon to rusty..... 185. flavifolius Pk.
7. Spores 5-6 (6.5)  $\mu$  broad..... 8  
 7. Spores 4-5 (5.5)  $\mu$  broad..... 9
8. Pileus and stipe deep violet-plumbeous; flesh bluish;  
 spores 8-10  $\mu$  long..... 186. ~~No. 18603~~ *cyanites Fr.*  
 8. Pileus cinnamon-buff to clay color; stipe dingy; flesh  
 pallid or buff; spores 6.5-8  $\mu$  long..... 187. No. 17692
9. Either odor or taste or both of radish..... 10  
 9. Odor and taste mild, or not of radish..... 15
10. Pileus silky-virgate, silvery-whitish..... 188. No. 17903  
 10. Pileus not as above..... 11
11. Base of stipe more or less bulbous or clavate..... 12  
 11. Base of stipe equal or nearly so..... 13
12. Flesh of pileus olive; young lamellae zinc-orange.....  
 ..... 189. No. 18606  
 12. Flesh white; young lamellae not as above..... 190. No. 17219
13. Stipe satiny-white; lamellae subdistant.....  
 ..... 191. flammuliformis Murr.  
 13. Stipe brownish or olivaceous..... 14

*Smith says  
not workable  
discarded*

14. Pileus buffy citrine or medal bronze, disk scaly, margin  
rimose; spores minutely wrinkled..... 192. raphanoides Fr.
14. Pileus tawny-olive, silky; spores punctate.... 193. No. 19280
15. Pileus umbrinous; lamellae finally ferruginous.....  
..... 194. campestris Murr.
15. Pileus and lamellae not as above..... 16
16. Stipe base enlarged, at times bulbous..... 17
16. Stipe base equal or nearly so..... 19
17. Stipe satiny-white; pileus rosy-isabelline.. 195. Weberi Murr.
17. Stipe and pileus not as above..... 18
18. Pileus yellowish, disk darker, lamellae subdistant; stipe  
pallid..... 196. Weberianus (Murr.) Singer
18. Pileus cinnamon with a grayish sheen; lamellae close;  
stipe dingy downward, apex violaceous..... 197. No. 16617  
(*also # 22339 near this*)
19. Flesh white; stipe satiny-white with a bluish tint.....  
..... 198. hiemalis Murr.
19. Flesh yellowish, olivaceous, or buff..... 20
20. Lamellae at first cinnamon-buff; spores echinulate.....  
..... 199. No. 19341
20. Lamellae at first yellowish..... 21
21. Pileus glabrous, fulvous; stipe yellowish.....  
..... 200. melleipes (Murr.) Singer
21. Pileus silky, fibrillose, or scaly..... 22
22. Flesh olive-green; spores minutely wrinkled.....  
..... 201. malicorius Fr.
22. Flesh pale yellowish; spores minutely tuberculate.....  
..... 202. cinnamomeus Fr.



Inoloma: Sanguinei

## Key to Species

1. Pileus and stipe concolorous and some shade of red to ferruginous..... 2  
 1. Not as above..... 4
2. Spores tuberculate; pileus and stipe cinnabar-red..... 203. cinnabarinus Fr.  
 2. Spores punctate..... 3
3. Pileus blood-red to mahogany-red, fibrillose; odor and taste slightly of radish..... 204. sanguineus Fr.  
 3. Pileus basically whitish, but with pinkish-red scales; odor and taste mild..... 115. bolaris Fr.
4. Pileus and lamellae red; stipe yellowish..... 205. phoenicius var. occidentalis Sm.  
 4. Not as above..... 5
5. Pileus tawny-yellow to cinnamon-yellow; stipe yellowish; lamellae cinnabar-red to blood red..... 206. semisanguineus Kauff.  
 5. Pileus "Rood's brown"; stipe dingy; lamellae yellowish-orange becoming brown..... 207. No. 18582

Hygrophanus

## Key to Sections and Subsections

- |    |   |                      |
|----|---|----------------------|
| 1. | Stipe 4-8 mm. or thicker at the apex..... | 2                    |
| 1. | Stipe 3-5 mm. or less.....                | 3                    |
| 2. | Spores 9-11 $\mu$ long.....               | Crassi: Macrospori   |
| 2. | Spores 8-10 $\mu$ or less in length.....  | Crassi: Microspori   |
| 3. | Spores 9-11 $\mu$ long.....               | Graciles: Macrospori |
| 3. | Spores shorter.....                       | Graciles: Microspori |

Hygrophanus: Crassi: Macrospori

Key to Species

19252  
Not 19253 belongs here  
rather than on next pg. (?)

- 1. Stipe clavate..... 2
- 1. Stipe equal or nearly so; spores punctate *or wrinkled*..... 8
- 2. Lamellae at first dark-purplish, violaceous, drab, or brownish-drab..... 3
- 2. Lamellae at first not so colored; spores tuberculate..... 6
- 3. Spores tuberculate; lamellae at first brownish-drab..... 208. No. 20524
- 3. Spores rough but not tuberculate..... 4
- 4. Spores punctate..... 5
- 4. Spores minutely wrinkled; lamellae at first pale brownish with a violaceous tint..... 209. No. 19012
- 5. Lamellae at first dark-purplish, subdistant; stipe with a flaring annulus..... 210. torvus Fr.
- 5. Lamellae at first violaceous, close; stipe with an annular band..... 211. No. 18646
- 6. Lamellae at first some shade of cinnamon..... 7
- 6. Lamellae at first sayal brown; stipe with an inferior band..... 212. No. 19170
- 7. Pileus and young lamellae cinnamon; odor fragrant..... 213. No. 18575
- 7. Pileus ochraceous-buff, disk darker; young lamellae pinkish-cinnamon..... 214. No. 19342 (+ 22354?)
- 8. Spores fusoid to subcylindric, 9-12 x 3.5-4.5 μ; odor mild..... 215. No. 20235 (+ 19253?)
- 8. Spores broader; odor of radish..... 9
- 9. Lamellae at first yellow-ocher..... 216. No. 17248
- 9. Lamellae at first not as above..... 10
- 10. Lamellae at first violaceous-purple; flesh violaceous or brownish..... 217. evernius Fr.
- 10. Lamellae at first brownish; flesh dingy-whitish..... 218. bivelus Fr. (+ 22354?)

near Crassia fulvipes Fr.

Hygrophanus: Grassi: Microspori

## Key to Groups

1. Lamellae at first drab-gray..... Group I
1. Lamellae at first pallid..... Group II
1. Lamellae at first olive, yellow, umber, ochraceous-tawny, clay-color, cinnamon-buff, cinnamon, or dull brown..... Group III
1. Lamellae at first vinaceous, cinnamon-brown, or ferruginous..... Group IV
1. Lamellae at first caesius, violet, or lilac..... Group V

(dry), dark red-brown (wet)

## Group I: Key to Species

1. Spores wrinkled; stipe white tinged violaceous; pileus ochraceous-tawny..... 219. No. 19252; 220. No. 19253
1. Spores punctate; stipe apex silvery, elsewhere dark-lavender..... 221. No. 19281

(+ 22354?)

## Group II: Key to Species

1. Spores tuberculate; pileus cinnamon-brown, umbonate; stipe with fawn-colored zones..... 222. mammosus Kauff.
1. Spores punctate to nearly smooth, not tuberculate..... 2
2. Pileus 5-10 cm. broad..... 3
2. Pileus 2-5 cm. broad..... 4
3. Pileus glabrous, cinnamon-brown, flesh concolor; stipe tapering downward, white, without zones.. 223. duracinus Fr.
3. Pileus fibrillose, verona brown with a silvery tint; stipe clavate-bulbous, silvery-violaceous with zones or a band below..... 224. plumiger Fr.
4. Spores 6-7  $\mu$  long; stipe ochraceous or yellowish; in conifer woods..... 225. renidens Fr.
4. Spores 8-9 (10)  $\mu$  long; stipe pallid to white; in deciduous woods..... 226. subrigens Kauff.

76. 21054  
+ 22412

✓ This may belong in Group III

Hygrophanus: Crassi: Microspori

## Group III: Key to Species

1. Stipe or at least the apex tinged violaceous..... 2  
 1. Stipe not as above..... 6
2. Spores 8-10  $\mu$  long, tuberculate (minutely so in No. 21825) 3  
 2. Spores 6-8  $\mu$  long, punctate (minutely tuberculate in No. 21825)..... 4
3. Pileus 3-4 cm. broad, sooty-brown, subtomentose; lamellae broad; stipe 4-7 mm. in diameter..... 227. livor Fr.  
 3. Pileus 6-10 cm. broad, cinnamon-brown, appressed-fibrillose, appearing glabrous; lamellae narrow; stipe 10-13 mm. in diameter..... 228. No. 22016
4. Stipe equal; pileus pinkish-buff when dry..... 229. No. 21825 (sp. nov.)  
 4. Stipe clavate-bulbous..... 5
5. Pileus 4-6 cm. broad, canescent; stipe 3-6 cm. long..... 230. No. 17298  
 5. Pileus 6-10 cm. broad, appressed-fibrillose, radially streaked; stipe 7-12 cm. long..... 146. No. 21882  
*C. laniger*
6. Spores tuberculate (minutely so in No. 20556)..... 7  
 6. Spores punctate, echinulate, or wrinkled, not tuberculate. 10
7. Spores 6.5-8.5  $\mu$  long; lamellae distant..... 8  
 7. Spores 8.5-10  $\mu$  long; stipe longitudinally streaked..... 9
8. Pileus fibrillose-scaly; odor more or less spicy; stipe clavate; lamellae thick..... 231. distans Pk.  
 8. Pileus glabrous; odor mild; stipe more or less equal; lamellae thin..... 232. No. 21844 *distans Pk.*
9. Pileus chestnut; odor and taste mild; stipe a white band; spores coarsely tuberculate..... 233. brunneofulvus Fr.  
 9. Pileus cinnamon-brown; odor and taste alkaline; stipe lacking a band; spores minutely tuberculate.. 234. No. 20556 (22354?)
10. Pileus 4-7 (8) cm. broad..... 11  
 10. Pileus 1-4 (5) cm. broad..... 14 *laniger*
11. Pileus ochraceous-buff to ochraceous-orange; stipe equal; spores short-ellipsoid to subglobose..... 235. Morrisii Pk.  
 11. Not as above..... 12
12. Stipe clavate or clavate-bulbous..... 13  
 12. Stipe equal or nearly so; odor mild..... 236. No. 19379

Laniger Fr.

13. Spores 8-10 (a few 11)  $\mu$  long, wrinkled; odor of radish..... 237. ~~No. 19309~~  
 13. Spores 5.5-6.5  $\mu$  long, punctate; odor mild.... 238. ~~No. 16127~~  
 (near C. glabellus Kauff.)
14. Spores short-ovoid to subglobose, 6.5-8 x 5.5-6.5 (7)  $\mu$ ;  
 pileus honey-yellow..... 239. hinnuleus Fr.  
 14. Spores usually ellipsoid..... 15
15. Spores 5.5-7 (8)  $\mu$  long..... 16  
 15. Spores 8-10  $\mu$  long..... 19
16. Pileus honey-yellow, zonate; odor and taste alkaline.....  
 ..... 240. No. 20452  
 16. Pileus not as above; odor and taste not alkaline..... 17
17. Odor and taste of radish; stipe base rosy; pileus sayal  
 brown..... 241. No. 17271  
 17. Odor and taste mild, at least not of radish..... 18
18. Cheilocystidia present, 23-30 x 4-7  $\mu$ ..... 242. No. 12708  
 18. Cheilocystidia absent.....  
 ..... 243. hemitrichus Fr.; 244. No. 19306; 244a. No. 19298
19. Stipe fusiform-radicating; pileus cinnamon-rufous.....  
 ..... 245. rigens Fr.  
 19. Stipe not as above..... 20
20. Pileus rusty-fulvous, umbo black, margin striatulate.....  
 ..... 246. No. 20233 (22355)  
 20. Pileus brown, margin even..... 21
21. Lamellae subdistant to distant..... 247. glandicolor Fr.  
 21. Lamellae close or crowded..... 22
22. Pileus silky; spores echinulate..... 248. nigrellus Pk.  
 22. Pileus glabrous; spores punctate..... 249. praepallens Pk.

Hygrophanus: Crassi: Microspori

## Group IV: Key to Species

1. Spores 5-6  $\mu$  long, short-ovoid, punctate; pileus brown, drying in radial streaks; odor of radish; stipe streaked brown..... 250. No. 22049
1. Spores longer than above..... 2
2. Spores 6.5-8  $\mu$  long; pileus 2-4 cm. broad..... 3
2. Spores 8-10  $\mu$  long..... 4
3. Pileus pale brownish, tinged lavender, disk minutely and densely brownish scaly; flesh lavender; spores ovoid or subglobose, punctate..... 251. deceptivus Kauff.
3. Pileus dark grayish-brown, violaceous on margin, zoned as it dries; flesh white; spores ellipsoid, minutely tuberculate..... 252. scutulatus Fr.
4. Odor and taste of radish..... 5
4. Odor and taste mild..... 6
5. Spores 5.5-7  $\mu$  broad, punctate; pileus obtusely umbonate; stipe clavate..... 253. privignus Fr.
5. Spores 5-5.5  $\mu$  broad, wrinkled; pileus acutely umbonate; stipe equal..... 254. No. 19011
6. Spores rough..... 7
6. Spores smooth or nearly so..... 9
7. Pileus violaceous on margin, zoned as it dries..... 252. scutulatus Fr.
7. Not as above..... 8
8. Pileus brown, tomentose-velvety; stipe clavate-bulbous.... 163. No. 17193  
(also near No. 19400)
8. Pileus dingy, becoming pinkish-gray, silky; stipe ovoid-bulbous..... 253. No. 19400  
(also near No. 17193)
9. Lamellae at first brownish-violaceous; stipe equal..... 254. No. 20579
9. Lamellae and stipe not as above..... 10
10. Lamellae at first wood brown; flesh white; stipe clavate-bulbous..... 255. No. 19378
10. Lamellae at first vinaceous-gray; flesh watery-brown, tinged violaceous; stipe ovoid sub-bulbous... 256. No. 21046

Hygrophanus: Crassi: Microspori

## Group V: Key to Species

- |    |  |  |
|----|--|--|
| 1. | Spores tuberculate (minutely so in <u>C. scutulatus</u> ).....   | 2  |
| 1. | Spores punctate.....   | 3  |
| 2. | Pileus at first purplish-chestnut or smoky-umber, then wood-brown; odor mild; spores minutely tuberculate..... | 252. <u>scutulatus</u> Fr.                           |
| 2. | Pileus bay-brown, then tawny; odor spicy or slightly of radish; spores coarsely tuberculate.....               | 231. <u>distans</u> Pk.                              |
| 3. | Odor mild.....   | 4  |
| 3. | Odor fragrant or of radish.....  | 7  |
| 4. | Spores 6-8 (8.5) $\mu$ long.....   | 5  |
| 4. | Spores 8-10 $\mu$ long.....  | 6  |
| 5. | Pileus dark vinaceous-brown, glabrous, more or less umbonate; flesh watery-brown.....                          | 256. No. 21046<br>(near <u>C. deceptivus</u> Kauff.) |
| 5. | Pileus fawn-colored, tinged lavender, not umbonate; flesh at first lavender.....                               | 251. <u>deceptivus</u> Kauff.                        |
| 6. | Pileus sayal brown, tomentose-velvety.....   | 163. No. 17193                                       |
| 6. | Pileus brownish, glabrous.....   | 254. No. 20579                                       |
| 7. | Spores 6-7 $\mu$ long; odor and taste of radish; stipe pallid; pileus brownish.....                            | 250. No. 22049                                       |
| 7. | Spores 8-10 $\mu$ long.....  | 8  |
| 8. | Odor fragrant or spicy-aromatic; stipe 4-7 cm. long, clavate-bulbous, with a flaring annulus.....              | 210. <u>torvus</u> Fr.                               |
| 8. | Odor of radish; stipe 6-13 (20) cm. long, equal or tapering below, with annular shreds.....                    | 217. <u>evernius</u> Fr.                             |



Hygrophanus: Graciles: Macrospori

## Key to Species

1. Stipe long and slender, 5-9 cm. x 3-4 mm.; lamellae at first pallid; pileus umbonate-mammillate..... 257. iliopodius Fr.
1. Stipe 1.5-4 cm. long; lamellae not at first pallid; if umbonate, not mammillate..... 2
2. Spores 3.5-3.8  $\mu$  broad; pileus tawny-olive to buckthorn-brown..... 258. No. 19256
2. Spores broader..... 3
3. Spores 4.5-5  $\mu$  broad; pileus cinnamon-buff..... 259. No. 19326
3. Spores 6.5-7.5  $\mu$  broad; pileus and stipe blackish-chestnut..... 259a. badius Pk.

Hygrophanus: Graciles: Microspori

## Key to Groups

1. Lamellae at first drab..... Group I
1. Lamellae at first yellow..... Group II
1. Lamellae at first pallid to cinnamon buff, dull brown, cinnamon brown, tawny, rufous, orange, or ferruginous..... Group III
1. Lamellae at first vinaceous, cocoa-color, violet brown, lilac, violet, or caesius..... Group IV

## Group I: Key to Species

1. Pileus acutely umbonate, drab; flesh brown; lamellae close; stipe dingy..... 260. No. 19288
1. Pileus at most broadly umbonate, verona-brown; flesh white; lamellae subdistant; stipe apex silvery, elsewhere lavender..... 221. No. 19281

## Group II: Key to Species

1. Spores 6-7.5 x 3.5-4.5  $\mu$ ..... 261. castaneoides Pk.
1. Spores 7-10 x 4.5-6  $\mu$ ..... 2
2. Pileus, flesh, and veil tinged greenish to olive..... 262. No. 19279
2. Not as above..... 3
3. Pileus disk pinkish-buff, elsewhere paler, whitish in age, margin even; stipe whitish..... 263. No. 14776
3. Pileus rufous-cinnamon when wet, paler when dry, acutely umbonate, striatulate to disk; stipe yellowish..... 264. acutus Fr.

Hygrophanus: Graciles: Microspori

## Group III: Key to Species

1. Spores tuberculate, at times minutely so..... 2  
 1. Spores punctate or wrinkled, at times nearly smooth..... 5
2. Odor and taste of radish; pileus brownish with dark streaks; stipe often violaceous at apex and base..... 265. uraceus Fr.  
 2. Odor and taste mild..... 3
3. Pileus clay color, drying in radial streaks... 266. No. 1934  
 3. Not as above..... 4
4. Pileus umbonate, uniformly fulvous; spores minutely tuberculate..... 267. cuspidatus (Murr.) Singer  
 4. Pileus convex to plane, isabelline; spores coarsely tuberculate..... 268. subjuberinus Murr.
5. Odor and taste of radish; lamellae subdistant to distant.. 6  
 5. Odor and taste mild..... 8
6. Stipe 5-10 cm. long, tapering up or down, at times radicate..... 269. gentilis Fr.  
 6. Stipe 3-5 (6) cm. long..... 7
7. Pileus bister, drying in radial streaks; flesh pallid; all parts blue in KOH; spores punctate..... 270. No. 19720  
 7. Pileus sepia, not drying in streaks; flesh sepia; parts not blue in KOH; spores wrinkled..... 271. nigrocuspidatus Kauff.
8. Lamellae distant, broad, at first pallid then ferruginous; stipe white; spores smooth (?)... 272. Westii (Murr.) Singer  
 8. Lamellae crowded, close, or nearly subdistant..... 9
9. Stipe with violaceous tints, at least at apex..... 10  
 9. Stipe lacking violaceous tints..... 11
10. Stipe with a flaring collar; young lamellae snuff-brown...  
 ..... 273. No. 20525  
 10. Stipe lacking a collar; young lamellae pallid or pale-brownish..... 274. erythrinus Fr.

11. Pileus rusty-fulvous to yellowish-brown, margin  
striatulate..... 12
11. Pileus not as above..... 13
12. Lamellae narrow, at first pallid brownish; stipe fulvous;  
spores 6-7.5 (8)  $\mu$  long, wrinkled..... 275. scandens Fr.
12. Lamellae broad, at first clay color; stipe pale yellow;  
spores 8-10  $\mu$  long, punctate..... 276. obtusus Fr.
13. Lamellae at first brownish-gray; pileus watery-cinnamon  
fading to ochraceous-tawny..... 243. hemitrichus Fr.
13. Lamellae at first pallid to pallid-brownish..... 14
14. Pileus fuscous, fading; lamellae at first pallid; spores  
wrinkled..... 277. palaceus Fr.
14. Pileus chestnut-brown to watery-cinnamon, fading to  
ochraceous; lamellae at first pallid-brown; spores  
punctate..... 278. juberinus Fr.

Hygrophanus: Graciles: Microspori

## Group IV: Key to Species

1. Spores 6-7.5 x 3.5-4  $\mu$ ..... 279. subflexipes Pk.  
 1. Spores larger..... 2
2. Stipe violaceous or lavender, at least at apex..... 3  
 2. Stipe not so colored..... 5
3. Pileus dusky-drab; flesh and stipe grayish-lavender;  
 lamellae at first vinaceous-brown..... 280. periscelis Fr.  
 3. Not as above..... 4
4. Pileus and flesh dark-chestnut; stipe violaceous or pale  
 rufescent; lamellae at first violaceous.....  
 ..... 281. castaneus Fr.; 282, No. 20247
4. Pileus cinnamon-brown, densely white-fibrillose to scaly;  
 flesh violaceous then pallid-brownish; lamellae at first  
 walnut-brown with a purplish tint..... 283. flexipes Fr.
5. Odor and taste mild; pileus violaceous to bister, drying  
 in radial streaks..... 284. No. 19338
5. Odor and taste of radish; pileus brown, no violet  
 tints..... 285. No. 19254

Cortinarius Arnoldae Murrill

*My Yasin*

Murrill's description (Torrey Bot. Club Bul. 67:61.  
1940):

"Hymenophore covered with a thick, slimy universal veil resembling the white of an egg; pileus campanulate, not fully expanded, slightly umbilicate, solitary, 4 cm. broad; surface smooth, glabrous, uniformly badious, margin even, entire, incurved, lilac; context thin, pallid, <sup>< mawkish</sup> mawkish, odorless; lamellae adnate, arcuate, subdistant, inserted, entire, pale-lilac, becoming fulvous; spores pip-shaped from above, turtle-shaped from the side, coarsely tuberculate, deep-ferruginous, 15-17 x 6-7  $\mu$ ; stipe oblong-fusiform, smooth, glabrous, lilac, dirty-cremeous at the base, 9 x 1-1.5 cm.; annulus ample, white, cobwebby, attached 1 cm. from the apex of the stipe.

"Type collected by Lillian E. Arnold on the ground in a high hammock at Sugarfoot, near Gainesville, Fla., Sept. 29, 1938 (F 18352). A beautiful species, very rare, with spores shaped like a young box-turtle and covered with warts like a hop-toad. I have never seen a more glutinous agaric.

C. splendidus Peck is a near relative. "

CORTINARIUS CYLINDRIPES Kauff.

*Hyacinth*

Torrey Bot. Club Bul. 32:321. 1905

Pileus 3-6 cm. broad, finally campanulate to convex-expanding, at first very glutinous, lavender, then yellowish with a violaceous tinge, finally brownish-ochraceous, becoming radiately wrinkled, margin pellucid-striate. Flesh thick on the disk, thin on margin, violaceous, soon sordid-white; odor and taste mild. Lamellae adnate then emarginate, at first violaceous to lavender, then pale-cinnamon, medium broad, close to nearly subdistant, edges flocculose, faces somewhat wrinkled. Stipe (4) 6-10 cm. x 5-10 mm., equal, covered by a violaceous, glutinous universal veil, apex fibrillose, violaceous or pallid within, solid-stuffed. Cortina leaving a slight annulus.

Spores 13-15 x 7-8  $\mu$ , almond-shaped, punctate, inequilateral. Pleurocystidia and cheilocystidia none.

Habitat and Distribution. - On soil, in conifer and mixed woods, Tennessee and North Carolina, July-October.

Observations. - Pileus, flesh, and lamellae reddish-brown in 15% KOH.



Cortinarius ~~delibutus Fr.~~

~~cylindripes Kauff?~~  
~~splendens PK?~~  
muscigenus?



CORTINARIUS DELIBUTUS Fr.  
Epicr. Myc., p. 276. 1838

*Myxarium*

Pileus 3-6 cm., convex then expanded-depressed, at times obtusely umbonate, viscid to glutinous, appressed-fibrillose, rivulose, pellicle separable, at first "isabella color" with an "ecru-olive" margin, then "mustard yellow," finally "tawny olive," "buck-thorn brown," "yellow ochre" to "chamois," margin bordered with veil remnants, even. Flesh white, at times tinged violaceous, thick and firm on disk, thin on margin; odor and taste mild or of raw potatoes. Lamellae rounded-adnate to emarginate, at first "drab gray," then "wood brown" to "tawny-olive," rather broad, close to crowded, edges entire, faces slightly rugulose. Stipe 3-7 (12) cm. x 6-9 mm., with a glutinous sheath abruptly ending in a glutinous apical ring, apex caesius then white and furfuraceous, greenish brown below annulus, shining when dry, clavate base, spongy-solid then hollow. Cortina webby, white, leaving a superior band on stipe.

Spores (6) 7-8.5 x 6-7 (8)  $\mu$ , subglobose to ovoid, minutely warty, warts numerous, color in mass: "syal brown."

Habitat and Distribution. - On soil and among moss, in coniferous and mixed woods, Tennessee and North Carolina, August-November.



22168 - *Cotinarium delibutus* Fr.



Cortinarius delibutus Fr.



Cortinarius delibutus Fr.

?

CORTINARIUS ELATIOR Fr.

*Mycarium*

Epicr. Myc., p. 274. 1838

Illustration

Smith, Univ. Mich. Herb. Contr. No. 2, pl. 3. 1939

Pileus 4-8 cm. broad, somewhat conical then campanulate, finally plane, "olive-ochre," margin "cinnamon buff," disk "saya brown," glutinous, margin rugulose. Flesh pallid; odor and taste mild. Lamellae emarginate, pale bluish at first, finally "cinnamon-buff," moderately broad, close. Stipe 6-8 cm. x 9-12 (15) mm., whitish, the universal veil glutinous, tinged "pallid vinaceous drab," fusiform or tapering downward, solid.

Spores 11-13.5 x (5.5) 6.5-7 (8)  $\mu$ , amygdaliform, coarsely warty (*low, rounded, scattered warts*).

Habitat and Distribution. - On soil, under spruce in North Carolina, July; and under live-oak, Florida, December.

Observations. - Pileus, flesh, and lamellae reddish-brown in 15% KOH.



21040 - *Cortuarius elatior* Fr.

Myxarium

400040

CORTINARIUM GRISEOLURIDUS Kauff.

On soil, pine woods, Knox Co., Ken McFarland, October 24, 1975.

Pileus 4-5.5 cm broad, plano-convex, viscid, central portion "light Quaker drab", marginal half "pallid Quaker drab", viscid, virgate, even. Context thick on disc, thin on margin, pale violaceous, fading (when dry), finally near "olive ocher"; odor and taste mild (or taste slightly fungoid).

Lamellae adnate then adnexed to emarginate with a tooth, close, broad, not forking, lamellulae short and alternating, "syal brown" (young ones not seen).

Stipe 7-9 cm x 10-12 mm, tapering slightly upward above the clavate bulb, bulb 20-26 mm diameter, viscid, whitish at base and top, elsewhere "light Quaker drab", hollow. Veil fibrillose, remnants on stipe forming a superior ring (young stage not seen).

Spores (5.5)6-8.5 x 5-6  $\mu$ , ellipsoid to subglobose, rough.

For C. griseoluridus, Kauffman gives the spores 8-10 x 7-8.5  $\mu$ ; otherwise, there seems to be very close agreement.

CORTINARIUS IODEOIDES Kauff.

Agar. Mich. 1:335. 1918

Illustration:

Plate

Pileus 3-6 cm. broad, pellicle separable, convex, expanded nearly plane, subumbonate, viscid, "deep plumbago gray" when young, "pallid quaker drab" to "drab-gray" with splashes of violet when mature, silky, glabrescent, striate at maturity. Flesh thick on disk, thin on margin, pallid; odor mild, taste mild at first, but becoming bitter. Lamellae emarginate, seceding, "avellaneous" when young, "buckthorn brown" at maturity, broad, edges eroded. Stipe 4-8 cm. x 6-12 mm., white, violaceous at first, viscid to gelatinous, hollow, clavate.

Spores ellipsoidal, slightly rough, variable in size, 7-8 (9.5) x 5-5.5 (6.5)  $\mu$ .

Habitat and Distribution. - On soil, in deciduous and pine woods, Tennessee and North Carolina, September-November.





*Cortinarinus iodeoides* Kauffman

Photo by A. R. Shields

Aug. 1961



Cortinarius iodeoides Kauff.

CORTINARIUS IODES B. & C.

Ann. Mag. Nat. Hist. II. 12:423. 1853

*Myxarium*

Pileus 2-7 cm., convex, nearly expanding, obtusely umbonate, pellicle separable, viscid to glutinous, "dark plumbago gray," "varley's gray," "light violet gray," "deep vinaceous gray," "pale purplish gray," "deep grayish lavender," to "dark dull violet-blue," finally "honey yellow" on disk, glabrous or reticulate-fibrillose, even. Flesh "pallid quaker drab" to pale violaceous, medium-thick on disk, thin on margin; odor and taste mild. Lamellae adnate or adnate-decurrent, "plumbago gray" or "vinaceous gray" (young), finally "Rood's brown," "cinnamon brown," "mikado brown" or "verona brown," close, medium broad, edges even or eroded. Stipe 4-10 cm. x 3-10 mm., viscid, at first violaceous above and white below, finally white throughout, enlarged (clavate) at base, at times ventricose, stuffed then hollow. Veil glutinous-webby, leaving a superior, evanescent or somewhat persistent ring.

Spores 7-10 (11.5) x 5-7 (8)  $\mu$ , ellipsoidal to ovoid or subglobose, usually uniguttulate, minutely punctate-warty.

Habitat and Distribution. - On soil, in mixed and deciduous woods, Tennessee and North Carolina, August-October.



25719 - *Cortinarius iodes* B. + C.



Cortinarius iodes B. & C.



22050 - *Cortinarius iodes* B. + C.



Cortinarius iodes B. & C.



19175

Cortinarius iodes B. & C.



CORTINARIUS IODEOIDES Kauff.

Agar. Mich. 1:335. 1918

*Myricum*

Pileus 3-6 cm. broad, pellicle separable, convex, expanded nearly plane, subumbonate, viscid, "deep plumbago gray" when young, "pallid quaker drab" to "drab-gray" with splashes of violet when mature, fading, silky, glabrescent, slightly striate at maturity. Flesh thick on disk, thin on margin, pallid; odor mild, taste becoming bitter. Lamellae adnate to emarginate, seceding, vinaceous to "avellaneous" when young, "buckthorn brown" at maturity, medium broad, close, edges eroded. Stipe 4-8 cm. x 6-12 mm., violaceous at first, fading to whitish, viscid to gelatinous, hollow, clavate.

Spores 7-8 x 5-5.5  $\mu$ , ellipsoidal, slightly rough.

Habitat and Distribution. - On soil, in leaf-mold, in deciduous and conifer woods, Tennessee and North Carolina, September-November.

CORTINARIUS LONGISPORUS (Murrill) Singer

*Myriocium*

Agar. p. 553. 1949

Hebeloma longisporum Murr. Proc. Fla. Acad. Sci. 7:120-121.

"Pileus conic to broadly convex, 3 cm. broad; surface viscid, smooth, glabrous, avellaneous-isabelline, dark-isabelline on the disk, margin even, entire; context very thin except at the center, pallid, odorless, mild to slightly mawkish; lamellae sinuate, inserted, broad, ventricose, medium distant, entire, pallid when young; spores elongate, pipshaped, smooth, uniguttulate, about  $14 \times 7 \mu$ ; stipe equal, smooth, glabrous, viscid, pallid, shining, stuffed, 5-6 x 0.5-0.7 cm.

"Type collected by W. A. Murrill in mixed woods very near Gainesville, Fla., Oct. 29, 1938 (F 19201). Not found elsewhere."

Notes on Type

Pileus, flesh, and gills reddish brown in 15% KOH. Spores  $11.5-14 \times 7-8 \mu$ , ellipsoid, not pip-shaped, inequilateral, coarsely warty. Mature gills "sudan brown" when dried.

Discussion. - Singer (Agaricales, p. 553, foot-note) states that his study of the type indicates that this should be called Cortinarius longisporus (Murr.) Singer.

CORTINARIUS LUTEOBRUNNESCENS Smith

Lloydia 7:170. 1944

*Myxarium*

Pileus 3-4 cm. broad, convex, expanding, "raw sienna," viscid, radiately wrinkled. Flesh white, thick on disk, thin on margin; odor and taste mild. Lamellae adnexed-emarginate, white at first, finally "warm buff," medium broad, narrowed both ends, crowded, surface wrinkled. Stipe 4-5 cm. x 8-10 mm., viscid, white, fibrillose, slightly bulbous, solid.

Spores ellipsoidal, slightly rough, pale, 8-10 x 4.5-5  $\mu$ .

Habitat and Distribution. - On soil, in spruce woods, Tennessee, August.

CORTINARIUS MUCIFLUUS Fr.

*Myxarium*

Ic. Hymen., pl. 148, fig. 1. 1880

Pileus 3-6 cm. broad, convex, glutinous, at first pale or clay, then tawny, margin even. Flesh pallid; odor and taste mild. Lamellae adnate to emarginate, at first pallid to caesious, finally "cinnamon" or darker, medium close, broad, edges pale, slightly rough. Stipe 7-10 cm. x 6-9 mm., pallid then rusty, with a few transverse, pale zones below, glutinous, equal, solid.

Spores 11.5-15 x <sup>6</sup>8-8.5  $\mu$ , ellipsoidal to almond-shaped, inequilateral, coarsely warty. Pleurocystidia and cheilocystidia none.

Habitat and Distribution. - On soil, under rhododendron, Highlands, North Carolina, September 12, 1945.

Observations. - Seems close to C. collinitus var. olympianus Smith (Lloydia 7:175. 1944)

CORTINARIUS MUCOSUS (Fr.) Ricken  
Blätterp. Deutschl., p. 126. 1911

*Myriacum*

Pileus 4-11 cm. broad, glutinous, hemispheric then convex, finally expanded, often becoming upturned, "ochraceous buff," "mars yellow," "tawny," to "chestnut brown," at times with tawny streaks, margin at first incurved, even. Flesh whitish, thick on disk, thin on margin; odor and taste mild. Lamellae adnate, with a decurrent tooth, finally emarginate, broad to medium broad, close, at first pallid or whitish, finally "tawny," "raw sienna," to "saya brown," edges even. Stipe 4-7 cm. x 8-20 mm., equal or tapering upward, viscid or glutinous, white or pallid, solid or spongy. Universal veil white; cortina white, copious, often leaving a temporary, superior, annular-band.

Spores 12-16 x 5-7 (8)  $\mu$ , ellipsoid-subfusiform, almost smooth or with low, scattered wrinkles. Pleurocystidia and cheilocystidia none. Pileus, flesh, and gills dark-brown in 15% KOH.

Habitat and Distribution. - On soil, in conifer woods, Tennessee, Georgia, and Alabama, October-December.



24607 - *Cortinarius mucosus* (Fr.) Ricken



20239 - *Cortinarius mucosus* (Fr.) Ricken

CORTINARIUS MUSCIGENUS Pk.

*Muscigenus*

New York State Mus. Ann. Rept. 41:71. 1888

Illustration

Plate

Pileus 5-10 cm. broad, subglobose, then convex, finally expanded-wavy, more or less upturned, viscid or glutinous, "ochraceous tawny," "ferruginous" to "hazel," often with an orange tint, glabrous, appearing rough-punctate under lens, margin striate or faintly so when wet. Flesh whitish, thick on disk, thin on margin; odor and taste mild. Lamellae adnate then emarginate, broad (up to 10 mm.), ventricose, attenuated either end, close, "pinkish buff" or yellowish buff when young, "clay color" when mature, rugose on sides, edges denticulate. Stipe 4-10 cm. x 6-10 mm., viscid or glutinous up to cortina, whitish, fibrillose, equal base attenuated, solid. Cortina webby, soon forming an evanescent, superior annulus.

Spores almond-shaped, 13-18 x 7-9 (10)  $\mu$ , tuberculate-warty (warts low, rounded).

Habitat and Distribution. - On soil, in conifer woods, Tennessee and North Carolina, August-January.





Cortinarius muscigenus Pk.



Cortinarius muscigenus Pk.

CORTINARIUS PSEUDO-SALOR Lange

*Myarum*

Dansk Botanisk Arkiv 8 (No. 7):23. 1935

Illustration:

Plate

Pileus 3-6 cm. broad, hemispheric at first, finally expanded plane or nearly so, slightly and obtusely umbonate, glutinous, at first "deep vinaceous gray," "tawny olive" to "buckthorn brown" or "cinnamon brown" with splashes and areas of blue ("dark plumbago blue"), at times entirely blue except disk which remains "tawny olive," fading, pellicle separable, glabrous, margin pellucid-striatulate, incurved. Flesh medium on disk, thin on margin, concolor to pileus (brownish to bluish); odor and taste mild. Lamellae at first "deep vinaceous gray" to "dark heliotrope gray," finally "snuff brown," adnate-decurrent, sometimes emarginate, broad to medium broad, close, edges eroded to serrate. Stipe 5-12 (15) cm. x 5-12 mm., glutinous, varying whitish, "lilac gray," "dark heliotrope gray," "deep plumbago gray," "dark plumbago blue," "deep lavender," "bluish lavender," base white, flexuous or strict equal, with or without a slight bulb, hollow-stuffed, concolor (bluish) within. Cortina cottony, covered by heavy gluten, breaking to form a conspicuous, flaring evanescent collar.

Spores inequilateral, almond-shaped, tuberculate (scattered, low, rounded warts), 12-16 x 6.5  $\mu$ . Basidia

40-48 x 12-14  $\mu$ , sterigmata 6-8  $\mu$  long. Pleurocystidia none; cheilocystidia clustered, pyriform-clavate to inflated (balloon-shaped), 27-41 x 12-21  $\mu$ .

Habitat and Distribution. - On soil and in humus, in deciduous and mixed woods, Tennessee and North Carolina, June-November.



23722 - *Cortinarius pseudo-salor* Fange - x  $\frac{2}{3}$



Cortinarius pseudo-salor Lange

Index card + specimen lost?



Cortinarius pseudo-salor Lange



Cortinarius pseudo-salor Lange





20558 - *Cortinarius pseudo-salor* Sänge



24827 - *Cortinarius pseudo-salor* Sänge

CORTINARIUS SALOR Fr.

Epicr. Myc., p. 276. 1838

*Myxarium*

Pileus 3-5 cm. broad, convex, expanding plane, viscid, bluish-violet, fading, disk yellowish or brownish, margin paler, even. Flesh pale-bluish or whitish; odor and taste mild or none. Lamellae adnate, moderately broad, close, at first violaceous, finally "cinnamon" to "sage brown." Stipe 3-6 cm. x 5-10 mm., clavate, white, veil bluish, glutinous.

Spores 6-8 x 5-6  $\mu$  (Smith),\* broadly or short-ellipsoid to subglobose, minutely warty.

Habitat and Distribution. - On soil, in humus, deciduous woods, North Carolina, September 2, 1939.

Observations. - \*The spores of No. 12314 measure 6-8 x 4-5  $\mu$ , some globose, others subglobose, still others short-ellipsoid.



12317

Cortinarius salor Fr.

CORTINARIUS SPLENDIDUS Pk.

*Myxarium*

N. Y. State Mus. Ann. Rept. 29:42. 1878

Pileus 3-6 cm. broad, convex, broadly and obtusely umbonate, viscid, "tawny" to "amber brown," disk slightly darker, radiately plicate-wrinkled to disk, margin faintly striate, incurved. Flesh thin, pale tawny; odor and taste mild. Lamellae adnate to adnexed-emarginate, rather close, broad, slightly ventricose, at first pale violaceous, then "cinnamon buff" to "ochraceous-tawny," edges eroded. Stipe 6-10 cm. x 5-9 mm., viscid or glutinous, appressed white-silky, bluish-violet (beneath the white), fading, hollow, pallid-tawny within, tapering at base. Cortina whitish, tinged violaceous.

Spores <sup>14-17 x 7-9 $\mu$</sup>  ~~(12) 15-17 x (7) 8-10  $\mu$~~ , subvoid or almond-shaped, inequilateral, minutely warty (warts small, sharper than in related species).

Habitat and Distribution. - On soil, in conifer woods, Tennessee and North Carolina, July-<sup>Aug</sup> October.

CORTINARIUS VIBRATILIS Fr.

*Myxoc*

Epicr. Myc., p. 277. 1838

Fileus 3-9 cm. broad, convex-hemispheric, then convex, expanded and undulate, often broadly umbonate, glutinous, central portion "warm buff" to "maize yellow," disk "ochraceous buff," margin paler when young, concolor at maturity, sub-hygrophanous, glabrous, cuticle separable to disk, margin even. Flesh white, thick on disk, abruptly thin on margin, rather firm; odor slightly pungent, taste bitter. Lamellae adnate, then emarginate to adnexed, white, soon "pale ochraceous buff," finally "ochraceous buff" to "cinnamon" or "clay color," medium broad, broadest in middle, alternately long and short, edges nearly even or minutely rough. Stipe 5-13 cm. x 8-16 mm., glutinous, white, subequal or tapering slightly either way, or ventricose, clavate below, flexuous and curved, apex pruinose, stuffed, flesh bitter. Cortina white (brown from spores), arachnoid, superior.

Spores ellipsoid, slightly inequilateral or subreniform, smooth, yellowish under microscope, 6-7.5 x 4-5  $\mu$ ; color in mass: "clay color." (No. 20530, and others, are a large-spored form: spores 8-10 x 4.5-5.5  $\mu$ .)

Habitat and Distribution. - On soil, in deciduous and mixed woods, Tennessee and North Carolina, July-December.

Discussion. - Re: My No. 20530: Smith (1-16-56) says: "at most a distinct form, but I am not ready to describe it as yet."



Cortinarius vibratilis Fr.

20530 - *Cortinarius vibratilis* Fr.  
(large-spored form)





20903 - *Cortinarius vibratilis* Fr.



Cortinarius vibratilis Fr.

Myxarium

12320

Cortinarius  
in deciduous woods  
Highlands, N. C., Sept. 3, 1939

Photo

Pileus 3-8 cm. broad, hemispherical when young, expanding-convex or plane, glutinous, at first yellowish-brown with a violaceous tinge, finally "clay color," margin even. Lamellae violaceous at first, finally "clay color," adnate, becoming slightly emarginate, medium broad, medium close, sides slightly corrugate. Stipe 6-8 cm. x 5-10 mm., equal, at first blue, glutinous; veil glutinous. Spores more or less inequilateral and almond-shaped, smooth (or at times faintly rough?), 10-12 x 6-7 microns.



Cortinarius

*Myxocum*

Cortinarius sp. nov.

*Myrtilium*

(No. 16564)

Pileus 5-9 cm. broad, convex, expanding plane, viscid, "pinkish cinnamon" then "warm buff," glabrous, except margin (fibrillose from veil). Flesh firm, moderately thick, white; odor and taste mild. Lamellae ivory-white at first, finally "cinnamon buff," narrow, linear, crowded, edge eroded. Stipe 4-13 cm. x 8-15 mm., viscid when young, viscidness not apparent when mature, equal or sub-bulbous, often abruptly pointed below slight bulb, extreme base "Hays lilac" then "light pinkish lilac" to "light vinaceous-lilac," solid. Veil white, copious, leaving an apical "ring." Spores 8-9.5 x 4.5-4.8  $\mu$ , ellipsoidal, one or both ends acute, smooth, color in mass: "tawny olive" to "buckthorn brown," pale under 'scope. Growing in arcs ("fairy rings"), ring about 10 ft. diam.

Related to C. submarginalis Pk. See also #17195. + 17229

Smith says new! Would like to see it fresh before describing.

Great Smoky Mountains National Park, frondose woods, October.

Cortinarius

(No. 16566)

*Myxocium*  
(*clavate*)

see also 22387

Pileus 5-8 cm. broad, convex, viscid, "yellow ocher," disk "ochraceous-tawny to "cinnamon brown," marginal third radiately ribbed-rugose, appearing innately fibrillose (under lens). Flesh white, thin on margin, medium on disk, firm; odor fungoid, taste mild. Lamellae adnate-decurrent, crowded, "cinnamon buff" (young gills not seen), medium broad, edge wavy. Stipe 4-8 cm. x 1-2 cm., viscid, dingy, apex floccose, elsewhere fibrillose, glabrescent, equal or ventricose, solid. Veil webby, <sup>white</sup> leaving an evanescent apical ring. Spores ellipsoidal, 8-9.5 x 4.8-5.5 u, pale brown (under 'scope), near "cinnamon" (in mass), smooth. Pleurocystidia (~~none found~~). Cheilocystidia <sup>none</sup> ~~clavate~~, ~~inconspicuous, 22-30 x 8-9 u.~~

Smith says if stipe really viscid, it is probably new.

Great Smoky Mountains National Park, Tennessee,  
spruce woods, October.

Cortinarius

(No. 18045)

(see also No. 16564 and 17195)

*Myxacium*  
~~*Pilegmacium*~~

Pileus 5-9 cm. broad, convex, expanding, viscid-glutinous, "cinnamon buff" to "ochraceous buff," disk at times darker, appressed-fibrillose (under lens), often (when fresh) with a well-defined marginate white zone (remnants of veil), margin at times radiately rugulose. Flesh white, thick on disk, thin elsewhere; odor and taste mild. Lamellae adnexed to emarginate, ivory white at first, finally "buckthorn brown," crowded, thin, narrowed in front, medium broad behind. Stipe 5-9 cm. x 8-12 (16) mm., whitish, scattered-fibrillose, rarely equal, usually sub-bulbous or bulbous, bulb ovoid, base occasionally violaceous, often curved, solid. Veil white, webby breaking to leave a white band near the margin of the pileus, and an evanescent, apical ring on stipe. Spores fusoid-ellipsoid, smooth, 8-9.5 x 4-5 microns, "tawny olive" to "buckthorn brown" in mass. Cystidia none.

Great Smoky Mountains National Park, North Carolina,  
under spruce, October.

Check well in all ~~ref~~ respects with Sm. 19071,  
but no name yet (Smith: 1-16-'56)  
Dr M. Moser suggests I check C. variegatum  
(Pilegmacium).



Cortinarius





Cortinarius

Cortinarius

*Mycarium*

(No. 20198)

Pileus 3 cm. broad, viscid, glabrous, disk "cinnamon buff," elsewhere "light buff." Flesh firm, white; odor and taste farinaceous. Lamellae emarginate-decurrent, close, narrow, at first "light buff," finally "cinnamon buff," edge even. Stipe 4 cm. x 7 mm., clavate, viscid, white, solid. Spores 7-8 x 3.5-4.5 microns, ellipsoidal, smooth.

Great Smoky Mountains National Park, Tennessee, mixed woods, September.

CORTINARIUS NO. 22167 - Sp. nov.

Pileus 5-10 cm. broad, broadly flattened convex, viscid, colors variable or mixed: "Hays brown," "purple drab," "vinaceous-lilac" to "light grayish-vinaceous," becoming strongly tinged brownish olive, often laterally flattened from caespitose habit, even. Flesh hard to firm, thick, whitish, tinged violaceous, unchanging; odor and taste none. Lamellae narrowly attached, rounded adnate, becoming adnexed, at first white, soon "ivory yellow," gradually becoming "avellaneous" or darker, rather broad, close, edges even. Stipe 2.5-4.5 cm. x 15-25 mm., dry, emarginate-bulbous, bulb 3-4 cm. diameter, not depressed, often pointed below bulb, solid.

Spores 7-9.5 x 4.5-6  $\mu$ , fusoid, subinequilateral, minutely warty, in mass: near "sagal brown" (not matched).

Gregarious to caespitose.

Habitat and Distribution. - In deciduous woods, under oak, Tennessee, October.

Smith says a. Sp. nov.



22167 - *Cortinarius*

*Allegoria*

Pileus 4-8 cm. broad, convex, expanding plane or slightly upturned, "ochraceous buff," viscid, pellicle scarcely separable, silky-fibrillose, margin even. Flesh thick on disk, thin on margin, white; odor and taste of radish. Lamellae emarginate, at first "pinkish cinnamon," finally "cinnamon brown," unchanging, broad, ventricose, abruptly narrowed in front, close to nearly subdistant, edges minutely fimbriate. Stipe 4-8 cm. x 10-20 mm., whitish then dingy brown, equal above the bulbous base, bulb up to 2.5 cm. diameter, ovoid, not emarginate, fibrillose, easily splitting, spongy, dry. Cortina white; universal veil leaving a white, inferior band and heavy patches on pileus margin.

Spores 9-11 x 5-6  $\mu$ , ellipsoid, subinequilateral, punctate-warty, in mass: "ochraceous tawny." Pleurocystidia and cheilocystidia none.

Habitat and Distribution. - In deciduous woods, Tennessee, October.

Discussion. - Near C. crassus Fr. Has appearance of an Hebeloma, but lacks cystidia. *Smith says not close to C. crassus, & that notes do not seem to apply to the specimens!*



22169 - Cortinarius

CORTINARIUS NO. 22387

Pileus 4-7 cm. broad, semi-globose, then convex, viscid (nearly glutinous), glabrous, "raw sienna" to "Mars yellow," margin at times rugulose. Flesh white, firm; odor and taste mild. Lamellae adnate becoming adnexed, white or whitish when young, finally "pinkish buff" to "cinnamon buff," close, rather broad. Stipe 5-7 cm. x 9-12 mm., whitish, viscid, striate, subglabrous, bulbous, bulb at times submarginate, solid. Cortina white, copious, webby.

Spores 9-10 x 5-6  $\mu$ , slightly wrinkled or ~~smooth~~ or <sup>smooth,</sup> nearly ~~so~~, "tawny olive" in mass.

Habitat and Distribution. - In spruce woods, Tennessee, September.

Discussion. - Near No. 16566.



22387 - Cortinarius

all 16566



CORTINARIUS No. 22645

Pileus 4-8 cm. broad, convex, expanding, "clay color" to "syal brown," viscid to glutinous, becoming radiately rugulose. Flesh white, thick or medium thick on disk, thin on margin; odor and taste mild. Lamellae slightly emarginate-decurrent, pallid (not white) when young, becoming "cinnamon buff," rather broad, close or nearly crowded, edges eroded or rough. Stipe 4-7 cm. x 10-15 mm., viscid, whitish, becoming dingy, somewhat fibrillose, solid, sub-bulbous to slightly clavate. Veil white, webby.

Spores 8-10 x 4.5-5.5  $\mu$ , ellipsoid, ends somewhat pointed, rough-wrinkled. Pleurocystidia and cheilocystidia none.

Habitat and Distribution. - On soil, spruce woods, Tennessee, September.

Discussion. - Except for color shades this seems to be the same as No. 16566 (*Myxarium*).

*Myraecium*  
Cortinarius No. 23329  
on soil, under spruce  
Clingmans Dome, August 28, 1959

Photo

Pileus 5-8 cm. broad, hemispheric then convex, glutinous to viscid, near "Mars yellow," glabrous, at times radiately corrugate, not striate. Flesh white, thick, firm; odor and taste mild (at all stages). Lamellae emarginate, white, finally "cinnamon buff," close, broad. Stipe 5-8 cm. x 12-14 mm., whitish, with dingy fibrils, viscid, glutinous when young, base clavate-enlarged (25-30 mm.), solid. Veil white, webby.

Spores 8-9 x 4.5-6  $\mu$ , ellipsoid, wrinkled.

Near Nos. 16566 and 22387.



23329 - Cortinarius

(Myxacium)



23329

23329 - *Cortinarius*



23329 - *Cortinarius*

23482

Cortinarius  
conifer woods  
October 4, 1959

Fileus "tawny olive," disk pallid-yellowish, glutinous,  
radiately rugulose. Stipe glutinous, "deep grayish lavender,"  
cylindric.



29402

29402 - *Cortinarius*

35244

CORTINARIUS

PHOTO

On soil, Cades Cove, leg. Petersen, July 27, 1971

Pileus 2.5-6(7) cm, convex, expanded-umbonate, umbo obsolete, white to "ivory yellow" or "cartridge buff," disc nearly "cream color" at maturity, glutinous, glabrous. Context white from the first; thick on disc, thin on margin; odor and taste farinaceous, taste becoming slightly bitter.

Lamellae adnexed, white at first, finally "sage brown" to "snuff brown," close, narrow at first, becoming ventricose-broad, lamellulae alternating with long gills.

Stipe 4-7 cm long, 5-8 mm thick, viscid, white, equal above the clavate base, spongy to hollow. Cortina white-webby, leaving an evanescent apical ring.

Spores in deposit: "verona brown."



35876

CORTINARIUS (Myxacium)

Cades Cove, August 26, 1971

Pileus "light cadmium," glutinous. Context whitish; odor mild, taste (pellicle) slightly and slowly bitter.

Lamellae emarginate, violaceous then slowly brown, close, broad-ventricose, lamellulae numerous.

Stipe, clavate, viscid, pallid but streaked and stained light cadmium. Cortina evanescent and not observed, leaving a brown-stained apical zone (from spores).

Spores 7.5-10 x 6-7.5  $\mu$ , ovoid, at times ellipsoid, rough.

Cortinarius

37220

Cherokee National Forest, Tellico Plains, Tennessee, September 29, 1975

Pileus 3-3.5 cm broad, convex, convex-expanded, pale brownish with a buff tint (not matched), fibrillose, the fibril-ends recurved forming scurfy scales, viscid when wet, even. Context white, firm; odor raphanoid (to near raw potatoes), taste of raw potatoes soon becoming bitter.

Lamellae adnate, seceding, pallid brown, finally "snuff brown", close, broad, lamellulae alternating.

Stipe 4-5 cm long, 8-10 mm thick, clavate-bulbous (bulb 16-20 mm), somewhat viscid, pallid. Veil white, leaving a ring above, with about three bands below the annular zone, solid.

Spores "snuff brown" in deposit.

Cortinarius

39367

on wet soil, deciduous woods, Cherokee National Forest, Tellico Plains, Tennessee, leg. A. J. Sharp, September 29, 1975

Pileus 4.5-8 cm broad, convex, expanding-convex, "tawny olive" to "saya1 brown", not hygrophanous, viscid when wet, with appressed rather coarse fibrils, even, incurved. Context white, firm; odor and taste mild.

Lamellae adnate-adnexed, close, narrow (up to 5 mm), pallid-brownish at first, finally "saya1 brown", darker brown where bruised.

Stipe 5-11 cm long, 12-17 mm thick, base bulbous, the bulb subovoid to subellipsoid, up to 26 mm thick, white, staining brownish where bruised, scattered-fibrillose, apex white-silky, solid, somewhat viscid when wet. Veil white, rather sparse, fugacious.

Spore deposit (heavy): "snuff brown".