

## THE BOLETACEAE OF NORTH AMERICA—II

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Most of the genera of the Boletaceae were treated in the first part of this article, which appeared in the January number of MYCOLOGIA. The remaining genus includes a comparatively large number of species, many of which are rather difficult to distinguish. Owing to the perishable nature of these plants, there are also many doubtful species. For other recent papers on this group, the student is referred to *Torreya* 8: 50-55, 197-200, 209-217. 1908, and to the *Bulletin of the Torrey Club* 35: 517-526. *pl.* 36-40. 1908. The last two articles, on "Boleti from Western North Carolina" and "The Boleti of the Frost Herbarium," were reprinted as *Garden Contributions* 111 and 114.

II. CERIOMYCES Battar. Fung. Hist. 62. *pl.* 29. 1755.

Not *Ceriumyces* Corda. 1837

*Leccinum* S. F. Gray, Nat. Arr. Brit. Pl. 1: 646. 1821. (Type species, *Boletus aurantiacus* Bull.)

*Tubiporus* Karst. Rev. Myc. 3<sup>o</sup>: 16. 1881. (Type species, *Tubiporus edulis* (Bull.) Karst.)

*Krombholzia* Karst. Rev. Myc. 3<sup>o</sup>: 17. 1881. Not *Krombholzia* Rupr. 1842. (Type species, *Krombholzia versipellis* (Fr.) Karst.)

*Versipellis* Quél. Ench. Fung. 157. 1886. (Type species, *Versipellis variegata* (Sw.) Quél.)

*Ixocomus* Quél. Myc. Fl. Fr. 411. 1888. (Type species, *Ixocomus badius* (Fr.) Quél.)

*Xerocomus* Quél. Myc. Fl. Fr. 417. 1888. (Type species, *Xerocomus impolitus* (Fr.) Quél.)

Hymenophore annual, terrestrial, centrally stipitate; surface dry, rarely viscid, glabrous or variously ornamented: context usually white or yellow, sometimes tinged with certain other colors, very rarely poisonous; tubes free or adnate, small, cylindrical, sometimes large and angular near the stipe: spores oblong-

ellipsoid, smooth, ochraceous to yellowish-brown: stipe solid, except in one or two species, even or reticulated, exannulate.

Type species, *Ceriomyces crassus* Battar.

Stem shaggy and lacerated, with reticulated furrows.

Pileus dry, tomentose or reddish-pilose.

1. *C. Russellii*.

Pileus viscid, glabrous.

2. *C. Betula*.

Stem smooth or reticulated with veins.

Tubes white, not stuffed when young and not turning blue when wounded, colored at maturity with the yellowish-brown spores; pileus glabrous. A few subtomentose species have whitish tubes when young.

Stem smooth, pileus white, smooth.

3. *C. albellus*.

Stem reticulated.

Pileus white, with deep chinks forming areolae.

4. *C. frustulosus*.

Pileus gray, smooth.

5. *C. griseus*.

Stem scabrous, pileus smooth, rarely white.

Stem conspicuously bright yellow near the base.

6. *C. chromapes*.

Stem entirely white or grayish-white.

7. *C. scaber*.

Tubes flesh-colored; cap small, floccose or squamulose.

Pileus adorned with appressed yellowish flocci; spores  $14-16 \times 5-6 \mu$ .

8. *C. conicus*.

Pileus adorned with conspicuous dark purple scales; spores  $9-12 \times 2-3 \mu$ .

9. *C. Vanderbiltianus*.

Tubes bright yellow, sometimes tinged with scarlet, unchanging at maturity or in dried specimens.

Stem smooth, pileus glabrous.

Stem 2 cm. thick; spores  $15 \times 6 \mu$ .

10. *C. flaviporus*.

Stem less than 1 cm. thick; spores  $10 \times 4 \mu$ .

11. *C. auriporus*.

Stem reticulated, pileus and stem covered with a bright yellow or scarlet tomentum or pulverulence.

12. *C. auriflammeus*.

Tubes some shade of yellow or brown, usually becoming darker with age. In *C. fumosipes*, *C. sordidus*, and *C. Roxanae*, the tubes are whitish when young.

Parasitic on species of *Scleroderma*.

13. *C. parasiticus*.

Found in clusters on roots and stumps of pine; pileus bright golden-yellow.

14. *C. hemichrysus*.

Found on the ground, rarely on wood much decayed and then not in clusters.

Tubes stuffed when young, their mouths usually white; pileus usually glabrous.

- Stem furfuraceous, lilac-gray; pileus and tubes chocolate-brown. 15. *C. eximius*.
- Stem smooth or reticulated; pileus and tubes of lighter color than above.
- Spores brownish-ochraceous,  $13-15 \times 4-5 \mu$ ; stem more or less reticulated. 16. *C. crassus*.
- Spores ferruginous-ochraceous,  $9-12 \times 4-5 \mu$ ; stem rarely reticulated at the top; pileus often olivaceous and spotted. 17. *C. affinis*.
- Tubes not stuffed when young.
- Pileus viscid, glabrous, small, yellow, sometimes more or less reddish-brown; stem not reticulated.
- Tubes brick-colored, flesh peppery, stem solid, yellow at the base. 18. *C. piperatus*.
- Tubes yellow, flesh mild.
- Stem hollow, glabrous. 19. *C. Curtisii*.
- Stem solid, dotted with yellow or red glandules. 20. *C. inflexus*.
- Pileus glabrous or subtomentose, not viscid.
- Stem reticulated, usually very distinctly so.
- Pileus, tubes, and stem tawny-brown. 21. *C. tabacinus*.
- Pileus yellow or brown, tubes yellow. 22. *C. retipes*.
- Pileus red.
- Stem bright lemon-yellow throughout; pileus without a bloom. 23. *C. speciosus*.
- Stem red below, yellow above; pileus with a bloom. 24. *C. Peckii*.
- Stem not reticulated, except in forms of *C. subtomentosus*.
- Pileus glabrous.
- Pileus red.
- Stem yellow, sometimes with red stains; entire plant quickly changing to blue at any point

- where touched. 25. *C. miniato-olivaceus*.
- Stem red, yellow  
at the top; flesh  
and tubes slowly  
turning blue  
when wounded. 26. *C. bicolor*.
- Pileus yellow or brown.  
Tubes changing to  
blue when  
wounded; stem  
glabrous. 27. *C. pallidus*.
- Tubes not changing  
to blue when  
wounded.  
Stem furfur-  
aceous, pale  
yellow;  
tubes pale  
yellow to  
greenish-  
yellow. 28. *C. subglabripes*.
- Stem rough  
with minute,  
stiff, black  
hairs; tubes  
brown to  
black. 29. *C. scabripes*.
- Pileus subtomentose; flesh  
usually spongy and  
drying readily.  
Tubes not changing  
to blue when  
wounded.  
Tubes whitish, be-  
coming yellow;  
mouths small,  
circular. 30. *C. Roxanae*.
- Tubes yellow;  
mouths large  
and angular, es-  
pecially near  
the stem. 31. *C. subtomentosus*.
- Tubes small, yel-  
lowish, becom-  
ing brick-red on  
drying or when  
bruised; pileus  
large, 9-13 cm.  
in diameter and  
3 cm. thick. 32. *C. tomentipes*.

Tubes changing to  
blue when  
wounded.

Tubes at first  
grayish-  
white, dis-  
colored later  
by the  
spores;  
stem blu-  
ish-green at  
at top.

Pileus con-  
spicuously  
reticulate-  
rimose. 33. *C. fumosipes*.

Pileus not re-  
ticulate-ri-  
mose. 34. *C. sordidus*.

Tubes yellow and  
large; stem and  
pileus usually  
red, the latter  
often cracked. 35. *C. communis*.

### 1. *Ceratomyces Russellii* (Frost)

*Boletus Russellii* Frost, Bull. Buffalo Soc. Nat. Hist. 2: 104.  
1874.

Described from specimens collected in New England by Rus-  
sell. This is a very handsome and well characterized species,  
closely allied to *C. Betula* but extending farther north in its range,  
being found in open deciduous woods from New England to Mis-  
sissippi and west to Wisconsin.

### 2. *Ceratomyces Betula* (Schw.)

*Boletus Betula* Schw. Schr. Nat. Ges. Leipzig 1: 90. 1822.

*Boletus Morgani* Peck, Bull. Torrey Club 10: 73. pl. 35. 1883.  
(Type from Kentucky.)

Described originally from North Carolina and afterwards found  
several times in that state, as well as in Georgia, Alabama, Ten-  
nessee, Ohio and Kentucky. When Schweinitz moved to Penn-  
sylvania, he doubtless confused *C. Russellii* with the plants he had  
collected in North Carolina. The two species are, however, quite

distinct, *C. Betula* having a smooth, perfectly glabrous, viscid, shining testaceous cap, while that of *C. Russellii* is dry and tomentose.

### 3. *Ceriumyces albellus* (Peck)

*Boletus albellus* Peck, Ann. Rep. N. Y. State Mus. 41: 77. 1888.

Described from Sandlake, New York, and also found in deciduous woods in Pennsylvania, District of Columbia, Virginia, West Virginia and Tennessee. The color of the cap, which is white or whitish, should at once distinguish it from nearly all other species of boleti.

### 4. *Ceriumyces frustulosus* (Peck)

*Boletus frustulosus* Peck, Bull. Torrey Club 24: 146. 1897

Described from specimens collected in open ground and on clay banks at Ocean Springs, Mississippi, and at Akron, Alabama, by L. M. Underwood. The deep chinks in the cap are very conspicuous in the type specimens. Young specimens recently collected in Mississippi by Mrs. Earle and in the District of Columbia by myself are doubtfully referred to this species, but they show the frustulose character very slightly.

### 5. *Ceriumyces griseus* (Frost)

*Boletus griseus* Frost; Peck, Ann. Rep. N. Y. State Mus. 29: 45. 1878.

?*Boletus flexuosipes* Peck, Bull. N. Y. State Mus. 2: 130. 1889.  
(Type from North Carolina.)

Described from specimens collected by Peck at Sandlake, New York. It occurs in open woods from New England to North Carolina, and is distinguished from *C. retipes*, to which it is very closely related, by its pure white tubes, those of *C. retipes* being decidedly yellow. The cap is gray and the stem usually whitish.

### 6. *Ceriumyces chromapes* (Frost)

*Boletus chromapes* Frost, Bull. Buffalo Soc. Nat. Hist. 2: 105. 1874.

A very attractive species, and one easily recognized by its stem, which is bright yellow near the base and finely scabrous over its entire surface. The cap is pale red and the tubes and most of

the stem white. Described from Vermont, and found commonly in open woods throughout eastern continental North America from Nova Scotia to Mississippi. I find also in the herbarium a handsome specimen of this plant mixed with certain of Baker's collections from Stanford University, California. S. Kawamura, in a recent number of the Botanical Magazine of Tokyo (22: (329). 1908), mentions this species as occurring in Japan, but I have not seen his specimens.

#### 7. *Ceriumyces scaber* (Bull.)

*Boletus scaber* Bull. Herb. Fr. *pl.* 132. *f.* 1. 1782.

*Boletus aurantiacus* Bull. Herb. Fr. *pl.* 236. 1784.

*Boletus niveus* Fr. Obs. Myc. 1: 111. 1815.

*Leccinum aurantiacum* S. F. Gray, Nat. Arr. Brit. Pl. 1: 646. 1821.

*Leccinum scabrum* S. F. Gray, Nat. Arr. Brit. Pl. 1: 647. 1821.

?*Boletus versipellis* Fries, Boleti 13. 1835.

*Krombholzia scabra* Karst. Rev. Myc. 3<sup>o</sup>: 17. 1881.

*Gyroporus scaber* Quél. Ench. Fung. 162. 1886.

Described from France and common in various habitats, especially in and near woods, throughout Europe and North America. It is one of the best known and most abundant of all the boleti. The scabrous stem and the unchanging white flesh and tubes should distinguish it, in spite of the variable colors of the cap. *Boletus versipellis* of Fries (Boleti 13. 1835) seems only a variety with reddish cap and appendiculate margin.

#### 8. *Ceriumyces conicus* (Rav.)

*Boletus conicus* Rav. Ann. Mag. Nat. Hist. II. 12: 430. 1853.

Known only from specimens collected by Ravenel in damp pine woods in South Carolina. The sporophore is small, having a conical cap adorned with appressed yellowish flocci, and the tubes are flesh-colored. I have examined the types at Harvard, and Dr. Farlow has kindly made for me an examination of their spores, which measure  $14-16 \times 5-6 \mu$ .

#### 9. *Ceriumyces Vanderbiltianus* (Murrill)

*Boletus Vanderbiltianus* Murrill, Torreya 8: 215. 1908.

Described from specimens collected by the writer on the roadside in thin oak woods in Pink Bed Valley, North Carolina. The

cap is small, subconical, ornamented with conspicuous dark purple scales; the tubes are salmon-colored near the margin, becoming incarnate as the spores mature. On seeing the types of *C. conicus*, I realized at once that it was closely related to the present species, but Dr. Farlow has assured me, after a careful microscopic examination, that the difference in the size of the spores is alone sufficient to distinguish the species, those of *C. conicus* being considerably longer and about twice as broad.

#### 10. *Ceriomyces flaviporus* (Earle)

*Boletus flaviporus* Earle, Bull. N. Y. Bot. Gard. 3: 297. 1905.

Described from specimens collected by C. F. Baker at Stanford University, California. It differs from *C. auriporus* in being much larger, and in having larger spores. The general appearance of the two species is very similar.

#### 11. *Ceriomyces auriporus* (Peck)

*Boletus auriporus* Peck, Ann. Rep. N. Y. State Mus. 23: 133. 1872.

*Boletus innixus* Frost, Bull. Buffalo Soc. Nat. Hist. 2: 103. 1874. (Type from Vermont.)

*Boletus caespitosus* Peck, Bull. Torrey Club 27: 17. 1900. (Type from Virginia.)

This very attractive species, the tubes of which retain their golden-yellow color on drying, was originally described from North Elba, New York. It occurs in thin dry woods and on shaded roadsides throughout the eastern United States, from New England to Alabama. The cap is usually reddish-brown and the stem is viscid if the weather is not too dry.

#### 12. *Ceriomyces auriflammeus* (Berk. & Curt.)

*Boletus auriflammeus* Berk. & Curt. Grevillea 1: 36. 1872.

This species is of great interest, being very rare and very beautiful. It was originally collected in North Carolina by Rev. M. A. Curtis and sent by him to Berkeley, who described it. Peck found one plant at Sandlake, New York, and it was also reported by Beardslee from Brookside, West Virginia. A number of fine



specimens have recently been collected in North Carolina by Dr. House, Miss Burlingham and myself. The description given by Berkeley is both incomplete and inaccurate, but the bright golden-yellow color of the pileus and stem should easily distinguish it. The mouths of a few of the tubes sometimes appear scarlet, especially on drying, but this character is not at all conspicuous. The stem is beautifully reticulated.

### 13. *Ceriumyces parasiticus* (Bull.)

*Boletus parasiticus* Bull. Herb. Fr. *pl.* 451. *f.* 1. 1789.

*Versipellis parasitica* Qué. Ench. Fung. 159. 1886.

*Xerocomus parasiticus* Qué. Fl. Myc. 418. 1888.

Distinct from all other boleti in being parasitic. If separated from the *Scleroderma* on which it grows, it might be confused with *C. subtomentosus*. It has been found in several places in New York and New England, as well as in Europe and Asia.

### 14. *Ceriumyces hemichrysus* (Berk. & Curt.)

*Boletus hemichrysus* Berk. & Curt. Ann. Mag. Nat. Hist. II. 12: 429. 1853. *Grevillea* 1: 35. 1872.

This very rare species was described from specimens collected by Ravenel in South Carolina on roots of *Pinus palustris*. It has since been collected in North Carolina, Alabama, New Jersey and New York, and always on roots or stumps of some species of pine. It is just possible that this is the plant found by McIlvaine in clusters on old stumps near Philadelphia and described by Peck as *Boletus fulvus*.

### 15. *Ceriumyces eximius* (Peck)

*Boletus robustus* Frost, Bull. Buffalo Soc. Nat. Hist. 2: 104. 1874. Not *Boletus robustus* Fries. 1851.

*Boletus eximius* Peck, Jour. Mycol. 3: 54. 1887.

Described from Brattleboro, Vermont, and found in thin woods and along roadsides from Nova Scotia to North Carolina and west to Pennsylvania and West Virginia. Its stem is very characteristic, being lilac-gray and furfuraceous, while the cap and tubes are chocolate-brown.

16. *CERIOMYCES CRASSUS* Battar. Fung. Hist. 62.*pl.* 29. 1775.

- Agaricus bulbosus* Schaeff. Fungi Bavar. 2: *pl.* 134. 1763.  
*Boletus edulis* Bull. Herb. Fr. *pl.* 60. 1781.  
*Boletus esculentus* Pers. Obs. Myc. 1: 23. 1794.  
*Leccinum edule* S. F. Gray, Nat. Arr. Brit. Pl. 1: 647. 1821.  
*Boletus separans* Peck, Ann. Rep. N. Y. State Mus. 25: 81. 1873.  
 (Type from Greenbush, New York.)  
*Boletus decorus* Frost, Bull. Buffalo Soc. Nat. Hist. 2: 103. 1874.  
 (Type from Brattleboro, Vermont.)  
*Boletus limatulus* Frost, Bull. Buffalo Soc. Nat. Hist. 2: 104.  
 1874. (Type from Brattleboro, Vermont.)  
*Boletus variipes* Peck, Ann. Rep. N. Y. State Mus. 41: 76. 1888.  
 (Type from Menands, New York.)  
*Suillus bulbosus* O. Kuntze, Revis. Gen. 3: 535. 1893.  
 ?*Boletus auripes* Peck, Ann. Rep. N. Y. State Mus. 50: 107.  
 1898. (Type from Port Jefferson, New York.)  
*Boletus Atkinsoni* Peck, Bull. N. Y. State Mus. 94: 20. 1905.  
 (Type from New York.)  
*Boletus nobilis* Peck, Bull. N. Y. State Mus. 94: 48. 1905.  
 (Type from New York.)

This species is abundant, well known, and widely distributed in temperate regions, and, like most species of this character, it has many varieties and has received many names. The sporophore is large, with glabrous, brownish cap, white or yellowish flesh, stuffed tubes that soon change from white to yellowish or brownish, and a stout stem that is usually more or less reticulated, especially above. In Peck's variety *clavipes*, the stem is reticulated to the base, and in *B. separans* of Peck the stem, as well as the cap, is brownish-lilac in color. Most of the other American forms included in the above synonymy may be referred either to the type form or to one of the two varieties just mentioned.

17. *Ceriomyces affinis* (Peck)

- Boletus affinis* Peck, Ann. Rep. N. Y. State Mus. 25: 81. 1873.  
 ?*Boletus leprosus* Peck, Bull. N. Y. State Mus. 2: 135. 1889.  
 (Type from North Carolina.)  
 ?*Boletus crassipes* Peck, Bull. Torrey Club 27: 19. 1900. (Type from Mt. Gretna, Pennsylvania.)

Described from Greenbush, New York, and found rather commonly in thin woods from Vermont to North Carolina and west to Indiana. This species is not generally well known, but it is easily recognized after having been once carefully observed. The types of *B. leprosus* are destroyed and *B. crassipes* was described from notes and drawings only, so I have doubtfully referred them to the present species, although I have little doubt that they belong here.

18. **Ceriumyces piperatus** (Bull.)

*Boletus piperatus* Bull. Herb. Fr. pl. 451. f. 2. 1789.

*Boletus ferruginatus* Batsch. Elench. Fung. f. 28. 1783.

*Leccinum piperatum* S. F. Gray, Nat. Arr. Brit. Pl. 1: 647. 1821.

*Boletus Sistotrema* Peck, Ann. Rep. N. Y. State Mus. 23: 133. 1872.

*Viscipellis piperata* Quél. Ench. Fung. 157. 1886.

*Xocomus piperatus* Quél. Fl. Myc. 414. 1888.

This species occurs throughout the northern United States and Europe in woods and open places near woods. It may be recognized by its rather small, yellow cap, acrid and peppery flesh, and brick-colored tubes.

19. **Ceriumyces Curtisii** (Berk.)

*Boletus Curtisii* Berk. Ann. Mag. Nat. Hist. II. 12: 429. 1853.  
Grevillea 1: 35. 1872.

*Boletus fistulosus* Peck, Bull. Torrey Club 24: 144. 1897. (Type from Auburn, Alabama.)

Described by Berkeley from specimens collected in pine woods in South Carolina by Curtis. Known to occur from North Carolina to Alabama and Mississippi. The yellow, viscid cap and slender, hollow stem should readily distinguish the species.

20. **Ceriumyces inflexus** (Peck)

*Boletus inflexus* Peck, Bull. Torrey Club 22: 207. 1895.

? *Boletus rubropunctus* Peck, Ann. Rep. N. Y. State Mus. 50: 109. 1898. (Type from Port Jefferson, New York.)

Described from specimens collected in open woods near Trexlertown, Pennsylvania, by Herbst. Difficult to distinguish from small forms of *C. scaber*, except by its yellow and smaller tubes.

21. **Ceriumyces tabacinus** (Peck)

*Boletus tabacinus* Peck, Bull. Torrey Club 23: 418. 1896.

Known only from specimens collected in clay along roadsides in Alabama. Its tawny-brown cap and stem, the latter reticulated, and its peculiar habitat should distinguish the species.

22. **Ceriumyces retipes** (Berk. & Curt.)

*Boletus retipes* Berk. & Curt. Grevillea 1: 36. 1872.

*Boletus ornatipes* Peck, Ann. Rep. N. Y. State Mus. 29: 67. 1878. (Type from North Elba, New York.)

An attractive and well-marked species occurring commonly in thin woods from Nova Scotia to Alabama and west to Wisconsin. The cap varies in color from yellow to brown, the flesh and tubes are yellow, and the yellow stem is beautifully reticulated to the base. It was first described by Berkeley from plants collected by Curtis in North Carolina. Peck referred his first collections in New York to this species in 1872, but afterwards separated them under the name *B. ornatipes*.

23. **Ceriumyces speciosus** (Frost)

*Boletus speciosus* Frost, Bull. Buffalo Soc. Nat. Hist. 2: 101. 1874.

Described from Brattleboro, Vermont, and found in thin deciduous woods from New England to North Carolina and Tennessee. It is a beautiful species, known by its apple-red cap, without bloom, and its brilliant yellow tubes and stem, the latter reticulated. *C. bicolor* and *C. Peckii* are closely related species.

24. **Ceriumyces Peckii** (Frost)

*Boletus Peckii* Frost, Peck, Ann. Rep. N. Y. State Mus. 29: 45. 1878.

*Boletus roseotinctus* Peck, Bull. Torrey Club 27: 612. 1900. (Type from North Carolina.)

This species occurs in rather open deciduous woods, especially along roads, and has been found from New England to North Carolina and west to Indiana. It was first described from specimens collected by Peck at Sandlake, New York. It is easily rec-

ognized by its red cap with a bloom like that of a peach. The tubes and upper part of the stem are yellow, the remainder of the stem red, and the whole stem, usually, reticulated. The stem of *C. speciosus* is entirely yellow and that of *C. bicolor* is not reticulated.

25. **Ceriumyces miniato-olivaceus** (Frost)

*Boletus miniato-olivaceus* Frost, Bull. Buffalo Soc. Nat. Hist. 2: 101. 1874.

*Boletus sensibilis* Peck, Ann. Rep. N. Y. State Mus. 32: 33. 1879. (Type from Gansevoort, New York.)

*Boletus glabellus* Peck, Ann. Rep. N. Y. State Mus. 41: 76. 1888. (Type from Menands, New York.)

Described from Brattleboro, Vermont, from specimens collected by Frost in the borders of woods. Cap vermilion, soon fading, tubes bright yellow, stem yellow with pink markings. This species is easily distinguished among the red boleti by its quick change to blue at any point, either outside or inside, where bruised or even touched with the fingers. It occurs from Maine to North Carolina, and is said to be poisonous.

26. **Ceriumyces bicolor** (Peck)

*Boletus bicolor* Peck, Ann. Rep. N. Y. State Mus. 24: 78. 1872.

*Boletus rubeus* Frost, Bull. Buffalo Soc. Nat. Hist. 2: 102. 1874. (Type from Brattleboro, Vermont.)

*Boletus squamulosus* Ellis, Bull. Torrey Club 6: 77. 1876. (Type from New Jersey.) Not *Boletus squamulosus* Rostk. *Boletus dichrous* Ellis, Bull. Torrey Club 6: 109. 1876.

A beautiful species with smooth, purplish-red cap, bright yellow tubes, and smooth, red or yellow stem. When broken, both flesh and tubes change to blue. It occurs in open woods from New England to North Carolina and west to Ohio. It was originally described from Sandlake, New York, from specimens collected by Peck.

27. **Ceriumyces pallidus** (Frost)

*Boletus pallidus* Frost, Bull. Buffalo Soc. Nat. Hist. 2: 105. 1874.

Described from Brattleboro, Vermont, and occurring in woods in the eastern United States from New England to Alabama. The cap and tubes are of a pallid color, the latter changing to blue when wounded.

28. *Cerionomyces subglabripes* (Peck)

*Boletus flavipes* Peck, Ann. Rep. N. Y. State Mus. 39: 42. 1887.

Not *Boletus flavipes* Berk.

*Boletus subglabripes* Peck, Bull. N. Y. State Mus. 2: 112. 1889.

*Boletus rugosiceps* Peck, Bull. N. Y. State Mus. 94: 20. pl. 20. f. 6-10. 1905. (Type from Port Jefferson, New York.)

Described from Caroga, New York, but found also in woods in Nova Scotia, Maine, Connecticut and Missouri. It is rather difficult to recognize because of the variable color of its cap, which is usually some shade of red or brown.

29. *Cerionomyces scabripes* (Peck)

*Boletus scabripes* Peck; White, Bull. Torrey Club 29: 555. 1902.

Known only from specimens collected by Miss V. S. White at Bar Harbor, Maine, in 1901. The types and field notes are at the New York Botanical Garden. A large species with reddish-brown cap, brown, adnate tubes, and the stem ornamented with numerous small black points. On drying, it is said to exude a black juice with strong odor.

30. *Cerionomyces Roxanae* (Frost)

*Boletus Roxanae* Frost, Bull. Buffalo Soc. Nat. Hist. 2: 104. 1874.

? *Boletus multipunctus* Peck, Bull. N. Y. State Mus. 54: 952. 1902. (Type from Bolton, New York.)

Described from Brattleboro, Vermont, and known also from Maine, Connecticut, New York, Pennsylvania and North Carolina, growing in the edges of woods. The cap is yellowish-brown, with minute, floccose tufts, which partially disappear with age; while the margin is rather unusual in often curving or rolling upward on drying.

31. *Cerionomyces subtomentosus* (L.)

*Boletus subtomentosus* L., Sp. Pl. 1178. 1753.

*Cerionomyces jujubinus procerus* Battar. Fung. Hist. 64. 1755.

? *Boletus communis* Bull. Herb. Fr. pl. 393B. 1788.

*Boletus crassipes* Schaeff. Fungi Bavar. pl. 112. 1763.

*Leccinum subtomentosum* S. F. Gray, Nat. Arr. Brit. Pl. 1: 647. 1821.

*Rostkovites subtomentosus* Karst. Rev. Myc. 3<sup>o</sup>: 16. 1881.

*Versipellis subtomentosus* Quél. Ench. Fung. 158. 1886.

*Xerocomus subtomentosus* Quél. Fl. Myc. 418. 1888.

? *Boletus alutaceus* Morgan; Peck, Bull. N. Y. State Mus. 2: 109. 1889. (Type from Kentucky.)

*Boletus illudens* Peck, Ann. Rep. N. Y. State Mus. 50: 108. 1898. (Type from Port Jefferson, New York.)

This widespread species, of general distribution in deciduous woods throughout Europe and temperate North America, has many varieties and has been assigned many names, a number of which do not appear in the above synonymy. As in certain other species of boleti, the stem may be either entirely even or more or less reticulated, which has led to confusion. *Boletus illudens*, for example, is a variety with coarse reticulations which has received several names in Europe. This species is of a spongy texture and may be dried in the sun. The cap is usually yellowish-brown or olive-tinted, with a distinct tomentum, and the large tubes and stem are yellow. *C. communis*, a closely related species, usually has more red both in cap and stem.

### 32. *Ceriomyces tomentipes* (Earle)

*Boletus tomentipes* Earle, Bull. N. Y. Bot. Gard. 3: 298. 1905.

This species suggests a gigantic *C. communis*. The tomentum on the cap and stem are peculiar, as is also the change in color of the tubes from yellow to brick-red. Described from specimens collected by C. F. Baker at Stanford University, California.

### 33. *Ceriomyces fumosipes* (Peck)

*Boletus fumosipes* Peck, Ann. Rep. N. Y. State Mus. 50: 108. 1898.

Described from Port Jefferson, New York, from specimens collected by Peck in woods during July. It has since been found abundantly in the mountains of North Carolina both by Atkinson and myself, and I have also collected it at Falls Church, Virginia. The species is peculiar in having a pale bluish-green band at the top of the stipe. The cap is very reticulate-rimose, and the tubes are grayish-white, afterwards discolored by the deep ochraceous-brown spores.

34. *Ceriomyces sordidus* (Frost)

*Boletus sordidus* Frost, Bull. Buffalo Soc. Nat. Hist. 2: 105. 1874.

Described from specimens collected by Frost on recent excavations in woods near Brattleboro, Vermont. Represented by four plants in the Frost herbarium, but rather difficult to connect with any specimens collected since. It has many characters in common with *C. fumosipes*, but is not reticulate-rimose. The cap is sordid, flesh white, tubes white, changing to bluish-green, and stem brownish, tinged with green above.

35. *Ceriomyces communis* (Bull.)

*Boletus communis* Bull. Herb. Fr. pl. 393A, C. 1788.

*Boletus chrysenteron* Bull. Herb. Fr. 328. 1791.

*Versipellis chrysenteron* Quél. Ench. Fung. 157. 1886.

*Xerocomus chrysenteron* Quél. Fl. Myc. 418. 1888.

*Boletus fraternus* Peck, Bull. Torrey Club 24: 145. 1897. (Type from Auburn, Alabama.)

*Boletus umbrosus* Atk. Jour. Mycol. 8: 112. 1902. (Type from Cayuga Lake, New York.)

This species is widely distributed and very common in woods and on mossy banks throughout the temperate regions of Europe and North America, and it has even been collected in certain parts of the Bahamas. As is the case with *C. subtomentosus*, a near relative, the sporophore is spongy-tomentose in texture and dries easily, although it is fleshy enough for food. The cap and stem are usually red, and the tubes yellow and large; the surface of the cap is soft, finely floccose, and often cracked. There are a number of varieties which are rather confusing at times.

## DOUBTFUL SPECIES

Most of these might doubtless be referred to well-known species if we knew more about them.

*Boletus badiceps* Peck, Bull. Torrey Club 27: 18. 1900. Described from notes and drawings made by McIlvaine from specimens collected in oak woods near Philadelphia, Pennsylvania. Types destroyed.



*Boletus Bakeri* Tracy & Earle, Pl. Baker. 1: 23. 1901. Described from specimens collected in moist aspen thickets in Colorado, at an elevation of 9000 ft. Too near *C. crassus* to be recognized as distinct without the discovery of better characters.

*Boletus cubensis* Berk. & Curt. Jour. Linn. Soc. 10: 304. 1868. Known only from plants collected on the ground in Cuba by Wright. The types at Kew are pressed flat and show little except the squamulose, spotted character of the surface and the copious spores, which are oblong-ellipsoid, smooth, yellowish-brown,  $17-21 \times 7\mu$ . Although probably distinct, it is highly desirable to get additional information from fresh specimens before incorporating it into the genus. A *Ceratomyces cubensis* has already been published by Patouillard for a plant in a different group of fungi.

*Boletus dictyocephalus* Peck, Bull. N. Y. State Mus. 2: 111. 1889. Described from notes and a single specimen collected by C. J. Curtis in North Carolina. Type not found.

*Boletus eccentricus* Peck, Bull. Torrey Club 27: 18. 1900. Described from notes and drawings made by McIlvaine from specimens collected in grassy places in woods at Mt. Gretna, Pennsylvania. Types destroyed.

*Boletus fulvus* Peck, Bull. Torrey Club 27: 19. 1900. Not *Boletus fulvus* Scop. Described from notes and drawings made by McIlvaine from twenty or thirty specimens collected on and about an old stump near Philadelphia, Pennsylvania. Types destroyed.

*Boletus guadalupensis* Pat. Bull. Soc. Fr. 16: 177. 1900. Described from specimens collected by Duss in Guadeloupe. Types not seen.

*Boletus ignoratus* Banning; Peck, Ann. Rep. N. Y. State Mus. 44: 73. 1891. Described from specimens collected near Baltimore, Maryland, by Miss M. E. Banning, who prepared a large manuscript volume, handsomely illustrated, on the fleshy fungi of Maryland, which she donated to the New York State Museum. Types not found.

*Boletus leptcephalus* Peck, Bull. Torrey Club 25: 371. 1898. Not *Boletus leptcephalus* Jacquin. Described from specimens collected by Earle in dry pine woods in Alabama. Too near *C.*

*crassus* to be recognized as distinct without the discovery of better characters.

*Boletus lignatilis* Berk. & Curt. Jour. Linn. Soc. **10**: 303. 1868. Known only from Berkeley's very brief description drawn from specimens collected on rotten wood in dense woods in Cuba. The types at Kew add nothing to the description.

*Boletus Morrisii* Peck, Bull. Torrey Club **36**: 154. 1909. Described from specimens collected in sandy soil under scrub oaks at Ellis, Massachusetts. It is closely allied to *C. crassus*, but is said to be well marked by its dotted stem. I have not seen the types.

*Boletus mutabilis* Morg. Jour. Cincinnati Soc. Nat. Hist. **7**: 6. pl. 1. 1884. Not *Boletus mutabilis* of Batsch and others. Described from Ohio. Types not seen. Peck's New York plants of this name are either *C. sordidus* or *Tylopilus felleus*.

*Boletus nebulosus* Peck, Ann. Rep. N. Y. State Mus. **51**: 292. 1898. Described from mature specimens collected on shaded roadside banks near Raybrook, New York. It has points in common with *C. sordidus* and *Tylopilus felleus*.

*Boletus Pocono* Schw. Trans. Am. Phil. Soc. **4**: 154. 1832. Described from specimens collected in beech woods in the Pocono Mountains, Pennsylvania. Types destroyed and description inadequate.

*Boletus radicosus* Bundy, Geol. Wisconsin **1**: 398. 1883. Bundy's specimens are not in existence.

*Boletus rimosellus* Peck, Bull. N. Y. State Mus. **2**: 127. 1889. Described from notes and one dried specimen collected by C. J. Curtis in North Carolina. Type not found.

*Boletus robustus* Fries, Nov. Symb. **1**: 46. 1851. Described from specimens collected by Oersted in volcanic soil on the Irasi volcano, Costa Rica. The drawing made by Oersted represents an undeveloped specimen, which might be almost any species. The specimens preserved in spirit could not be found at Copenhagen.

*Boletus rubinellus* Peck, Ann. Rep. N. Y. State Mus. **32**: 33. 1879. Described from Gansevoort, New York. The description and the type plants indicate points in common with *C. communis* and *C. piperatus*, and it is desirable to study fresh specimens before deciding whether it should be kept distinct or referred to one of these species.

*Boletus subpunctipes* Peck, Bull. N. Y. State Mus. 116. Bot. 10: 19. 1907. Described from specimens collected in shaded, sandy soil near Menands, New York. Said to resemble *C. scaber* and *C. chromapes*.

*Boletus subsanguineus* Peck, Bull. Torrey Club 27: 17. 1900. Described from notes and drawings made by McIlvaine from specimens collected under beech trees near Philadelphia, Pennsylvania. Types destroyed. Specimens at Albany sent by Willcox from Washington, D. C., are *C. bicolor*.

*Boletus tenuiculus* Frost, Bull. Buffalo Soc. Nat. Hist. 2: 103. 1874. Described from Brattleboro, Vermont. The types are poor and the description brief.

*Boletus unicolor* Frost; Peck, Bull. N. Y. State Mus. 2: 100. 1889. Published by Peck from manuscript only. Frost's collection contains a single sheet with five poor specimens collected in pine woods and open sedgy places near Brattleboro, Vermont.

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