

THE THELEPHORACEAE OF NORTH AMERICA. XV¹

(CONCLUSION, WITH SUPPLEMENT AND GENERAL INDEX)

EDWARD ANGUS BURT

Mycologist and Librarian to the Missouri Botanical Garden

CORTICIUM

Corticium Persoon, Roemer Neues Mag. Bot. 1: 110. 1794; Obs. Myc. 1: 37. 1796; Fries, Gen. Hym. 15. 1836; Epicr. 556. 1838; Hym. Eur. 646. 1874; Berkeley, Outl. Brit. Fung. 272. 1860; Morgan, Cincinnati Soc. Nat. Hist. Jour. 10: 198. 1888; Sacc. Syll. Fung. 6: 603. 1888; Karsten, Vet.-Soc. Bidrag Natur och Folk 48: 408. 1889; Masee, Linn. Soc. Bot. Jour. 27: 117. 1890; Bresadola, I. R. Accad. Agiati Atti III. 2: 110. 1897; Ann. Myc. 1: 93. 1903; Engl. & Prantl, Nat. Pflanzenfam. (I: 1**): 118. 1898; Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 224. 1911; Rea, Brit. Basid. 14, 672. 1922.—Includes *Gloeocystidium* v. Höhnel & Litschauer, Weisner Festschr. Wien, 58. 1908, and Bourdot & Galzin, Soc. Myc. Fr. Bul. 28: 354. 1913.—Not *Gloeocystidium* Karsten, Finska Vet.-Soc. Bidrag Natur och Folk 48: 429. 1889. See Burt, Mo. Bot. Gard. Ann. 12: 247. 1926.—Includes *Vararia* Karsten, Finska Vet.-Soc. Bidrag Natur och Folk 52: 96. 1898; *Asterostromella* v. Höhnel & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 116: 773. 1907; Weisner Festschr. Wien, 58. 1908; Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 265. 1911.—Includes *Xerocarpus* and *Lyomyces* of Karsten, Finska Vet.-Soc. Bidrag Natur och Folk 48: 417, 418. 1889.—Includes in part *Hypochnus* Sacc. Syll. Fung. 6: 653. 1888, and Engl. & Prantl, Nat. Pflanzenfam. (I: 1**): 116. 1898.—Not *Hypochnus* Fries emend. Karsten, Rev. Myc. 3^o: 23. 1881. See Burt, Mo. Bot. Gard. Ann. 3: 203. 1916.

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Fructifications waxy, crustaceous or floccose, fleshy, cartilaginous, coriaceous or membranaceous, always resupinate, effused; hymenium even, or somewhat tubercular in a few species; basidia simple with 2-8 sterigmata, usually 4, the sterigmata not greatly thickened; basidiospores white, even—green in *C. atrovirens*; substance variously differentiated but not containing colored, stellate organs. Distinguished from *Peniophora* by not having cystidia.

The species described as belonging in *Corticium* upon publication of the genus are *Corticium polygonium*, *C. laeve*, *C. roseum*, *C. Sambuci*, *C. cinereum*, and *C. aurantium*, in the order given, no one of which was designated as the type species. *C. Sambuci* and *C. cinereum* are now included in *Peniophora* and *C. aurantium* in *Aleurodiscus*.

Von Höhnelt and Litschauer and Bourdot and Galzin have segregated under *Gloeocystidium* Karsten all species of *Corticium* which have gloeocystidia. I have not followed them in this, because I regard gloeocystidia as but one of the several differentiations of tissue which afford helpful distinctive characters for recognition of the species of this genus. In fact, I feel that closer observation of the tissues and structure of the fructification and accurate record of such structure should give important, and often decisive, characters of all the species. My own study has already gone so far in this direction that I attach but slight regard to a specific determination which is based merely upon obvious external characters and the substratum upon which growing. A sufficient objection to *Gloeocystidium* for the species which have gloeocystidia is that one of the two species upon which Karsten founded the genus is *Peniophora guttulifera*, a true *Peniophora* with no gloeocystidia whatever, and the other is *Odontia sudans*.

Asterostromella as a genus to include *Corticium investiens*, a species with helpful hyphal differentiation, is antedated by Karsten's *Vararia*, having *C. investiens* as its type species.

What was shown in the preceding part about the distribution of our species of *Peniophora* is true also for *Corticium*. Of the 107 species of *Corticium* herein presented, 46 are described as new species. The color of the exterior of the fructification and of its internal substance and the presence of tissues of somewhat unusual form have afforded a basis for the arrangement of our

species into 4 workable groups nearly equal in numbers, as presented in the following key to the species. Each of these groups is subdivided to such degree as seems desirable—largely by spore characters—into minor groups of so few species that the characters of the component species of any group may, and should, all be considered in determining the probable species of the specimen in course of identification. The extensive lists of specimens studied, with their localities where collected, and present preservation in published exsiccata and herbaria, afford material for checking up one's own determinations. Determinations as published should correct earlier tentative determinations communicated to my correspondents.

Throughout this work technical color terms are those of Ridgway's 'Color Standards and Nomenclature.' There was little knowledge available as to the color of specimens when growing, but since the time-consuming task of determination is usually with dried specimens collected many years ago and often more or less faded or yellowed, my record of the color of the dried specimens should be the more helpful to the chief users of this work.

Accounts of the species of the genera *Tremellodendron*, *Eichleriella*, *Sebacina* and *Septobasidium* were included to set off more sharply the true *Thelephoraceae* to which the species of these four genera are so similar in aspect that they were commonly known under their original names as species of *Thelephoraceae*. By treating these genera and *Lachnocladium* in the present work, the student had at hand a systematic account of all North American fungi of thelephoraceous aspect. The matter on those genera could otherwise have been included in my recent publications: 'Some North American Tremellaceae, Dacryomycetaceae and Auriculariaceae' and 'North American species of Clavaria.'

To all whose names have been recorded as collectors and contributors of specimens and to botanical institutions whose specimens are cited and which have afforded me facilities for the study of their herbaria I am deeply indebted. Without their aid but little could have been done.

KEY TO THE SPECIES

- I. Substance not appreciably colored, no gloeocystidia.
1. Hymenium white or whitish when growing 1-23
 - *With antler-shaped paraphyses or color change from yellow to white in fruiting 1, 2
 - **Spores globose or subglobose.
 - a. Imbedded spores (chlamydospores) usually present 3, 4
 - b. Imbedded spores not yet observed 5-9
 - ***Spores more elongated.
 - a. Spores large, more than 6 μ long 10, 11, 33
 - b. Spores small, hyphae incrustated or among obscuring mineral matter 12-16
 - c. Spores small, hyphae not incrustated 15-23
 2. Hymenium colored when dry and not known to be white at first—usually some shade of buff, yellow, red, brown or blue 24-56
 - *Spores globose or subglobose, less than 5 μ in diameter 24-26
 - **Spores globose or subglobose, more than 5 μ in diameter 27-29
 - ***Spores more elongated.
 - a. Spores very large, 10-18 μ long 30, 31
 - b. Spores large, 6-12 μ long 32-44, 90
 - c. Spores small, hyphae somewhat incrustated 12, 45-48
 - d. Spores small, hyphae not incrustated, fructifications separable 49
 - e. Spores small, hyphae not incrustated, fructifications closely adnate or only small pieces separable 50-56
- II. Gloeocystidia present or structure vesicular, or some tissue noteworthy, substance colored or not colored.
- *Gloeocystidia present or shown by vesicular structure or by colored, resinous-appearing masses 57-86, 107
 - a. Gloeocystidia not colored, elongated, imbedded spores numerous 57-58
 - b. Gloeocystidia not colored, elongated, lacking chlamydospores.
 - †Spores globose, subglobose or broadly ovoid 59-66
 - ††Spores more elongated 66-71, 79
 - c. Gloeocystidia not colored, pyriform to globose 72-79
 - d. Gloeocystidia colored, elongated 80-83
 - e. Gloeocystidia colored, subangular or globose, resinous-appearing 66, 84-86
 - **Distinguished by antler-shaped branching of some hyphae or paraphyses, or other branching of paraphyses, or unusual form of other tissues 1, 17, 23, 29, 36, 38-40, 60, 72, 76, 80, 87, 88, 92-94, 107
 - ***Numerous imbedded spores or other than basidiospores 3, 4, 11, 37, 57, 58
 - ****Spores green, even 105
 - *****Spores usually white but finally becoming ochraceous 34
- III. Substance colored, no gloeocystidia 87-106
- *Fructifications ranging from gray to drab.
 - a. With paraphyses having slender branches, spores small 87, 88
 - b. Paraphyses not noteworthy, spores larger, 7-10 μ long 89-91
 - **Fructifications ochraceous to wax-yellow and red.

- a. With some hyphae or paraphyses having antler-shaped or racemose branching. 92-94
 b. Tissues not having antler-shaped or racemose branching. 2, 95-99
 ***Fructifications darker, tending to brown and vinaceous.
 a. Parasitic species. 100-102
 b. Always saprophytic. 103, 104
 ****Fructifications green or blue. 105, 106

1. *Corticium paraphysatum* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, thin, closely adnate, white to pale cartridge-buff in the herbarium, even, velutinous, not shining, not cracked, the margin similar, thinning out; in section 45-75 μ thick, not colored, composed of somewhat scattered, deeply staining, clavate organs—probably basidia—immersed among great numbers of slender, erect, non-staining, branching organs which approach antler-form in branching and form the layer of paraphyses at the surface of the hymenium; no gloeocystidia; no basidia bearing sterigmata nor spores found.

Fructifications 1-5 cm. long, $\frac{1}{2}$ -2 $\frac{1}{2}$ cm. wide. Small fructifications become confluent.

Beneath prostrate, decaying, hardwood limbs of a frondose species. Cuba. Still immature in December.

Although the specimens at hand of *C. paraphysatum* are still so immature that it has not been possible to demonstrate their mature basidia and spores, the species is distinct from others of the genera *Aleurodiscus*, *Sebacina*, and *Corticium* which are known to me. It should be readily recognizable by its thin, closely adnate, white fructifications on small hardwood limbs and by the abundance of the non-staining paraphyses.

Specimens examined:

Cuba: Ceballos, *C. J. Humphrey*, 2848, type, and 2776, 2800 (in Mo. Bot. Gard. Herb., 63769, 63768, and 63770 respectively), and 2586; Omaja, *C. J. Humphrey*, 2698 (in Mo. Bot. Gard. Herb., 43063).

2. *C. sulphureum* Fries, *Epicr.* 561. 1838; *Hym. Eur.* 650. 1874; Berkeley, *Outl. Brit. Fung.* 274. 1860; *Sacc. Syll. Fung.* 6: 612. 1888.

Thelephora sulphurea Fries, *Syst. Mey.* 1: 452. 1821; *Elenchus*

Fung. 1: 204. 1828.—*Corticium croceum* Bresadola, I. R. Accad. Agiati Atti III. 3: 112. 1897; Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 242. 1911; Rea, Brit. Basid. 676. 1922.—An *Sporotrichum croceum* Kunze & Schmidt, Myk. Heft. 1: 81. 1817?—Not *Corticium sulphureum* Persoon, which is a synonym of *Hypochnus fumosus* Fries. See Burt, Mo. Bot. Gard. Ann. 3: 239. 1916.

Type: authentic specimen in Kew Herb.

Fructifications effused, fibrillose-byssoid, sulphur-yellow to wax-yellow when a sterile mycelium, becoming whitish throughout when forming the hymenium, the margin yellow or whitish, running out into sulphur-yellow to wax-yellow branching rhizomorphic strands; when fertile 200–300 μ thick in section, not appreciably colored, the hyphae loosely arranged, ascending, branching, $2\frac{1}{2}$ μ in diameter, rough-walled or somewhat incrustated with small crystals; no gloeocystidia; spores hyaline, even, 3×2 μ , copious.

Fructifications 3–10 cm. long, 2–4 cm. wide.

Under side of decaying *Fagus* and other species. Europe, Maryland, Missouri, Montana, and Idaho. Common in Europe but rare in North America. August to October.

The mycelium of *C. sulphureum* is conspicuous by its brilliant wax-yellow color, but in fruiting this yellow color is lost throughout the fructification, persisting only about the margin and in the rhizomorphic strands. By this curious character and by the pruinose or velvety hymenium one may distinguish *C. sulphureum* from *C. bicolor*. The International Botanical Rules afford no ground for the displacement by Bresadola of the well-established name *Corticium sulphureum* by *C. croceum*.

Specimens examined:

Sweden: authentic specimen from E. Fries (in Kew Herb.);

Femsjö, E. A. Burt, 2 gatherings; Stockholm, L. Romell, 151, 152.

Germany: *Brinkmann*, comm. by G. Bresadola.

Austria: Innsbruck, V. Litschauer; Tirol, V. Litschauer.

Maryland: Takoma Park, C. L. Shear, 1069.

Missouri: Meramec Highlands, F. P. McWhorter (in Mo. Bot. Gard. Herb., 57359).

Montana: Bernice, *E. E. Hubert*, comm. by J. R. Weir, 12008 (in Mo. Bot. Gard. Herb., 63368).

Idaho: Priest River, *E. E. Hubert*, comm. by J. R. Weir, 12021 (in Mo. Bot. Gard. Herb., 63376).

3. *C. punctulatum* Cooke, *Grevillea* 6: 132. 1878; Sacc. Syll. Fung. 6: 614. 1888; Masee, Linn. Soc. Bot. Jour. 27: 129. 1890.

Type: type distribution in Ravenel, *Fungi Am.*, 128.

Fructifications broadly effused, thin, somewhat hypochnoid, only fragments separable, white at first, becoming between pinkish buff and cream-color in the herbarium, punctulate at first, at length even and continuous in spots, fibrillose, the margin thinning out, concolorous, indeterminate; in section about $135\ \mu$ thick, not colored, with hyphae loosely interwoven, $4-4\frac{1}{2}\ \mu$ in diameter, not incrustated, occasionally nodose-septate; no gloeocystidia; spores imbedded in all regions of the fructification are probably chlamydo-spores; basidia bearing sterigmata or spores not demonstrated; spores at surface of hymenium hyaline, even, perhaps becoming minutely rough, $6 \times 4\frac{1}{2}-5\ \mu$, copious.

Fructifications up to 6 cm. long, 1-2 cm. wide.

On rotten pine logs and on small splinters and rubbish consolidated by the mycelium. New Jersey and South Carolina.

The punctulate hymenium of *C. punctulatum* is distinctive in the several specimens from the original collection now in three herbaria; the presence of imbedded spores in all regions of the fructification should prove another helpful character for the recognition of this species.

Specimens examined:

Exsiccati: Ravenel, *Fungi Am.*, 128.

New Jersey: Belleplain, *C. L. Shear*, 1248.

South Carolina: Aiken, *H. W. Ravenel*, 2334, type (in Kew Herb. and in Ravenel, *Fungi Am.*, 128).

4. *C. vellereum* Ellis & Cragin, *Jour. Myc.* 1: 58. 1885; Sacc. Syll. Fung. 6: 615. 1888; Masee, Linn. Soc. Bot. Jour. 27: 137. 1890; Wakefield, *Brit. Myc. Soc. Trans.* 5: 128. 1914.

Corticium Bresadolae Bourdot, *Rev. Sci. Bourb.* 23: 6. 1910; Bourdot & Galzin, *Soc. Myc. Fr. Bul.* 27: 233. 1911.

Type: in N. Y. Bot. Gard. Herb.

Fructifications widely effused, adnate, rather thick, tender, small pieces separable when moistened, white, cream-buff or pinkish buff, even, pulverulent or waxy, rarely cracked, the margin white, byssoid; in section 200–500 μ thick, not colored, composed of loosely interwoven, thin-walled, nodose-septate hyphae 3–5 μ in diameter and usually numerous chlamydospores; no gloeocystidia; basidiospores white in spore collection, even, subglobose, 5–7 \times 4½–6 μ ; chlamydospores of about the same dimensions.

Fructifications 3–10 cm. in diameter.

On bark and wood of frondose species decaying on the ground. In Europe, from Canada to Texas, westward to British Columbia and California, and in Mexico and Japan. July to March. Common.

C. vellereum is distinguished among our species of *Corticium* by the presence usually of very numerous chlamydospores and by the absence of gloeocystidia. This is true of *C. punctulatum*, but the latter is more hypochnoid in surface and occurs on pine.

Specimens examined:

Sweden: *L. Romell*, 404.

France: St. Priest, *H. Bourdot*, 15749, authentic specimen of *C. Bresadolae*.

England: Winchester, *F. Escombe*, comm. by E. M. Wakefield (in Mo. Bot. Gard. Herb., 4038).

Canada: *J. Macoun*, 652, comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 7457); Ottawa, *J. Macoun*, 8, 43, 180, and 281 (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 57455); St. Lawrence Valley, *J. Macoun*, 25.

New Hampshire: Chocorua, *E. A. Burt*.

Vermont: Middlebury, *E. A. Burt*; Abby Pond, Ripton, *E. A. Burt*.

Massachusetts: Magnolia, *W. G. Farlow*.

New York: Albany, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 59689); Hudson Falls, *S. H. Burnham*, 13 (in Mo. Bot. Gard. Herb., 44004); Ithaca, *G. F. Atkinson*, 22971; Jordan, *E. Brown*, 179 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61451); Van Cortland Park, New York

- City, *W. A. Murrill* (in *N. Y. Bot. Gard. Herb.*, and *Mo. Bot. Gard. Herb.*, 61429); Westport, *C. H. Peck*, 2 (in *N. Y. State Mus. Herb.*, T 24, and *Mo. Bot. Gard. Herb.*, 56070).
- Pennsylvania: State College, *L. O. Overholts*, 4811 (in *Mo. Bot. Gard. Herb.*, 56125).
- Georgia: Savannah, *C. J. Humphrey*, 5109 (in *Mo. Bot. Gard. Herb.*, 11953).
- Alabama: Auburn, *F. S. Earle*, 115 (in *N. Y. Bot. Gard. Herb.*, and *Mo. Bot. Gard. Herb.*, 61561).
- Texas: Quitman, *W. H. Long*, comm. by *C. J. Humphrey*, 2545 (in *Mo. Bot. Gard. Herb.*, 9920).
- Ohio: *C. G. Lloyd*, 3738, 3825; Linwood, *C. G. Lloyd*, 1880.
- Michigan: Ann Arbor, *C. H. Kauffman*, 11, 16.
- Wisconsin: Superior, *C. J. Humphrey*, 1548 (in *Mo. Bot. Gard. Herb.*, 10744).
- Illinois: River Forest, *E. T. & S. A. Harper*, 627, 629.
- Missouri: Upper Creve Coeur, *E. A. Burt* (in *Mo. Bot. Gard. Herb.*, 58345); St. Louis, *S. M. Zeller* (in *Mo. Bot. Gard. Herb.*, 55642); Valley Park, *E. A. Burt* (in *Mo. Bot. Gard. Herb.*, 44074).
- Kansas: Rooks County, *E. Bartholomew*, 2 specimens under the herbarium name *C. globiferum* (in *Burt Herb.*, and *Mo. Bot. Gard. Herb.*, 4848, 4849); Strong City, *G. G. Hedgcock*, comm. by *C. J. Humphrey*, 2541 (in *Mo. Bot. Gard. Herb.*, 11043); Topeka, *F. W. Cragin*, 560, type, 583 (in *N. Y. Bot. Gard. Herb.*).
- South Dakota: Black Hills, *J. R. Weir*, 10014 (in *Mo. Bot. Gard. Herb.*, 55795).
- Idaho: Priest River, *E. E. Hubert*, comm. by *J. R. Weir*, 11633 (in *Mo. Bot. Gard. Herb.*, 63306).
- Manitoba: Winnipeg, *A. H. R. Buller*, 720, 845 (in *Mo. Bot. Gard. Herb.*, 58984, 58993); *G. R. Bisby*, 1341, 1347 (in *Mo. Bot. Gard. Herb.*, 60550, 60557).
- British Columbia: *G. M. Dawson*, comm. by *W. G. Farlow* (in *Mo. Bot. Gard. Herb.*, 44690).
- California: Berkeley, *W. T. Horne*, comm. by *W. A. Setchell*, 1031 (in *Mo. Bot. Gard. Herb.*, 44239).
- Mexico: Guernavaca, *W. A. & E. L. Murrill*, 361, 371, comm. by

N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54464, 54459); Parral, Chihuahua, *E. O. Mathews*, 19 (in Mo. Bot. Gard. Herb., 44127).

Japan: Kogura Prov., Kozuka, *A. Yasuda*, 154 (in Mo. Bot. Gard. Herb., 62956).

5. *C. granulare* Burt, Mo. Bot. Gard. Ann. **10**: 187. 1923.

Type: in Mo. Bot. Gard. Herb.

Fructification effused, adnate, snow-white, pulverulent under a lens, very thin, only 15–30 μ thick, not bearing a continuous hymenium but consisting of bushy branched, suberect hyphal clusters standing out from the substratum and near together, with their main trunks up to 6 μ in diameter and short-celled; no cyrtidia nor gloecystidia; basidia simple, $15 \times 4\frac{1}{2}$ μ , with 4 sterigmata; spores hyaline, even, flattened on one side, $4-4\frac{1}{2} \times 3-4$ μ , copious.

Fructifications scattered along the substratum, 1–3 cm. long, 4–8 mm. wide.

On dead herbaceous stems. Hawaiian Islands, *F. L. Stevens*, 381, type (in Mo. Bot. Gard. Herb., 60603).

6. *C. ermineum* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, thin, closely adnate, white, not shining, not cracked, the margin similar, thinning out, fimbriate; in section 200 μ thick, not colored, with some hyphae densely arranged along the substratum but becoming suberect and more loosely arranged towards the hymenium, 3 μ in diameter, incrustated, not nodose-septate; no gloecystidia; spores hyaline, even, $7-9 \times 5-6$ μ , copious.

Fructifications up to 12 cm. long, 3 cm. wide.

On decorticated, very rotten wood of logs of *Thuja plicata* and spruce. Vermont and Idaho. August and October.

C. ermineum is distinct among our white species of *Corticium* by its ermine-white color, well-incrustated hyphae, large spores and occurrence on coniferous wood. *C. amylaceum* of France, of which I have a cotype, is a related species but thinner, more farinose, and less compact.

Specimens examined:

Vermont: Middlebury, *E. A. Burt*.

Idaho: Priest River, *E. E. Hubert*, comm. by J. R. Weir, 12026, type (in Mo. Bot. Gard. Herb., 63379).

7. *C. Berkeleyi* Cooke in Masee, Linn. Soc. Bot. Jour. 27: 133. 1890; Sacc. Syll. Fung. 11: 127. 1895.

Type: type distribution in Ravenel, Fungi Am., 225.

Fructifications broadly effused, thin, membranaceous-arachnoid, small pieces separable when moistened, whitish at first, becoming light buff to pinkish buff in the herbarium, even or minutely granular, not waxy nor shining, cracked, the margin thinning out, with hyphae interwoven; in section 100–200 μ thick, not colored, with hyphae nodose-septate, not incrustated, 4–5 μ in diameter along the substratum and sending out ascending, loosely arranged branches which become smaller and densely arranged in the hymenium; no gloeocystidia; basidia 4-spored; spores hyaline, even, subglobose and 4–8 \times 4–6 μ , or globose and 4–6 μ in diameter.

Fructifications 3–10 cm. in diameter.

On bark and wood of conifers—usually pine. Canada to Texas and in Michigan, Idaho, British Columbia, and New Mexico. April to November. Infrequent.

C. Berkeleyi probably covers large areas on bark of pine logs. It is white or very nearly white, with the hymenium barely continuous, spores globose or subglobose, and hyphae coarse and mostly erect, like those of *C. bombycinum* but with not as thick fructifications and a very inconspicuous margin in comparison with *C. bombycinum*.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 934; Ravenel, Fungi Am., 225, type distribution.

Canada: *J. Macoun*, 32; Lower St. Lawrence Valley, *J. Macoun*, 74.

Ontario: Ottawa, *J. Macoun*, 35.

New Hampshire: Chocorua, *W. G. Farlow*, 9.

Vermont: Middlebury, *E. A. Burt*.

New York: Newtonville, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 14854).

- North Carolina: Chapel Hill, *J. N. Couch*, comm. by *W. C. Coker*, 4257 (in *Mo. Bot. Gard. Herb.*, 57419).
- South Carolina: Aiken, *H. W. Ravenel*, in *Ellis*, *N. Am. Fungi*, 934.
- Georgia: Darien, *H. W. Ravenel*, in *Ravenel*, *Fungi Am.*, 225; Savannah, *C. J. Humphrey*, 5109 (in *Mo. Bot. Gard. Herb.*, 11953).
- Alabama: Montgomery County, *R. P. Burke*, 519 (in *Mo. Bot. Gard. Herb.*, 57305).
- Texas: Quitman, *W. H. Long*, comm. by *C. J. Humphrey*, 2545 (in *Mo. Bot. Gard. Herb.*, 9920).
- Michigan: Ann Arbor, *C. H. Kauffman*, 34.
- Idaho: Kooskia, *J. R. Weir*, 397 (in *Mo. Bot. Gard. Herb.*, 13544); Priest River, *J. R. Weir*, 6360 (in *Mo. Bot. Gard. Herb.*, 58449).
- British Columbia: Kootenai Mts., near Salmo, *J. R. Weir*, 478 (in *Mo. Bot. Gard. Herb.*, 63274).
- New Mexico: Clouderoft, *W. H. Long*, 19523 (in *Mo. Bot. Gard. Herb.*, 44767); Mogollen, *G. G. Hedgecock & W. H. Long*, comm. by *C. J. Humphrey*, 2559 (in *Mo. Bot. Gard. Herb.*, 9781).

8. *C. arachnoideum* Berkeley, *Ann. & Mag. Nat. Hist.* **13**: 345. *pl. 9, f. 3.* 1844; *Outl. Brit. Fung.* **273.** 1860; *Berk. & Curtis, Grevillea* **2**: 4. 1873; *Fries, Hym. Eur.* **649.** 1874; *Sacc. Syll. Fung.* **6**: 611. 1888; *Massee, Linn. Soc. Bot. Jour.* **27**: 135. 1890; *Bresadola, Ann. Myc.* **1**: 93. 1903.

Not probably *C. arachnoideum* as understood by *v. Höhnelt & Litschauer*, and *Rea*.

Type: in *Kew Herb.*

Fructifications effused, thin, arachnoid, tender, snow-white, forming an even hymenial pellicle in the older, more central portions, supported on the loosely arranged arachnoid subiculum which protrudes as a sterile, delicate, web-like margin; in section 100–200 μ thick, not colored, with hyphae very loosely interwoven, 3–4 μ in diameter, nodose-septate, not incrustated; no gloeocystidia; spores hyaline, even, globose, or subglobose, 4–6 μ in diameter or $6 \times 5 \mu$, $5 \times 4 \mu$, $4-4\frac{1}{2} \times 3-4 \mu$.

Fructifications 2–6 cm. long, 1–3 cm. wide.

On humus of leaf fragments and decaying wood, running over

mosses and lichens and on rotten wood. Rare in Europe, common in North America from Canada to Louisiana and westward to the Pacific, in the West Indies and the Hawaiian Islands. May to November.

C. arachnoideum is globose-spored and separated from *C. lacteum* by white color, more arachnoid subiculum, and thinner and less compact hymenium. *C. centrifugum*, which is common in Europe and infrequent in North America, has narrower spores than *C. arachnoideum*, is less arachnoid, more inclined to ashy white color, more widely effused, and on decaying wood preferably. Our American specimens of *C. arachnoideum* agree perfectly with those of Berkeley in Kew and with the Berkeley & Curtis specimens also determined by Berkeley.

Specimens examined:

Exsiccati: Brinkmann, Westfälische Pilze, 103; Ellis, N. Am.

Fungi, 411; Ell. & Ev., Fungi Col., 918.

Sweden: *L. Romell*, 77; Stockholm, *L. Romell*, 161.

England: on moss, 437, authentic specimen, perhaps type, *M. J. Berkeley* (in Kew Herb.).

Scotland: Glamis, *J. Stevenson* (in Berkeley Herb. of Kew Herb.).

Germany: Westphalia, *W. Brinkmann*, comm. by Bresadola, and in Brinkmann, Westfälische Pilze, 103 (in Mo. Bot. Gard. Herb., 63441).

Austria: Stubai, Tirol, *V. Litschauer*, under the name *Corticium centrifugum* var. *macrosporum*.

Canada: *J. Macoun*, 47, 63; Lower St. Lawrence Valley, *J. Macoun*, 12, 64, 89; London, Ontario, *J. Dearness*, 1146 (in Mo. Bot. Gard. Herb., 18762); Ottawa, *J. Macoun*, 400.

Newfoundland: Bay of Islands, *A. C. Waghorne*, 1014 (in Mo. Bot. Gard. Herb., 4813).

Massachusetts: Sharon, *A. P. D. Piguet*, comm. by W. G. Farlow, and 135, comm. by Farlow Herb. (in Mo. Bot. Gard. Herb., 59626).

Vermont: Middlebury, *E. A. Burt*, 4 gatherings.

New York: Albany, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 57509); Bolton, *C. H. Peck*, 17; Bolton Landing, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55769); East Galway, *E. A. Burt*; Ithaca, *G. F.*

- Atkinson*, 2125, 8054, 8240, 14356; *H. S. Jackson*, 18658; *C. Thom*, 14367; *Karner*, *H. D. House*, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 55193).
- New Jersey: Newfield, *J. B. Ellis*, in *Ellis*, N. Am. Fungi, 411, *Ell. & Ev.*, Fungi Col., 918, and 1374, comm. by *W. G. Farlow* (in Mo. Bot. Gard. Herb., 14652).
- Maryland: Takoma Park, *C. L. Shear*, 1029, 1105.
- North Carolina: Blowing Rock, *G. F. Atkinson*, 4325; Chapel Hill, *J. N. Couch*, comm. by *W. C. Coker*, 4235a (in Mo. Bot. Gard. Herb., 57418).
- South Carolina: *M. A. Curtis*, 2513 (in *Farlow* Herb.).
- Mississippi: Ocean Springs, *L. M. Underwood* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61482).
- Louisiana: Plaqueminas County, *A. B. Langlois*, 998.
- Illinois: Riverside, *E. T. & S. A. Harper*, 738.
- Montana: Hecla, *E. E. Hubert*, comm. by *J. R. Weir*, 11408 (in Mo. Bot. Gard. Herb., 63264); Missoula, *J. R. Weir*, 402 (in Mo. Bot. Gard. Herb., 11256); Rock Hill, *J. R. Weir*, 11963 (in Mo. Bot. Gard. Herb., 63224); Yellow Bay, *J. A. Hughes*, comm. by *J. R. Weir*, 7035 (in Mo. Bot. Gard. Herb., 55466).
- Idaho: Coolin, *J. R. Weir*, 11540 (in Mo. Bot. Gard. Herb., 63295); Ruby Creek, *E. E. Hubert*, comm. by *J. R. Weir*, 12009 (in Mo. Bot. Gard. Herb., 63369); Sandpoint, *E. E. Hubert*, comm. by *J. R. Weir*, 12024 (in Mo. Bot. Gard. Herb., 63377).
- Manitoba: Norway House, *G. R. Bisby*, 1465 (in Mo. Bot. Gard. Herb., 57912).
- Washington: Falcon Valley, *W. N. Suksdorf*, 725; Mt. Paddo, *W. N. Suksdorf*, 734; Sedro-Woolley, *C. J. Humphrey*, 1045 (in Mo. Bot. Gard. Herb., 10901).
- Oregon: Wallowa Lake, *C. L. Shear*, 798.
- California: Redding, *C. J. Humphrey*, 1045; Santa Catalina Island, *L. W. Nuttall*, 1092 (in Mo. Bot. Gard. Herb., 58871).
- Cuba: San Diego de los Baños, *Earle & Murrill*, 361, comm. by N. Y. Bot. Gard. Herb.
- Porto Rico: Rio Piedras, *J. A. Stevenson*, 6557 (in Mo. Bot. Gard. Herb., 55080).
- Hawaiian Islands: *F. L. Stevens*, 964 (in *Stevens* Herb., Mo. Bot. Gard. Herb., 60602, and *Burt* Herb.).

9. *C. portentosum* Berk. & Curtis, Grevillea 2: 3. 1873; Morgan, Cincinnati Soc. Nat. Hist. Jour. 10: 201. 1888; Sacc. Syll. Fung. 6: 636. 1888; Masee, Linn. Soc. Bot. Jour. 27: 129. 1890; Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 235. 1911.

Corticium diminuens Berk. & Curtis, Grevillea 2: 3. 1873; Sacc. Syll. Fung. 6: 631. 1888; Masee, Linn. Soc. Bot. Jour. 27: 158. 1890.—*Stereum portentosum* (Berk. & Curtis) v. Höhnel & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 116: 743. 1907.—*Corticium portentosum crystallophorum* Ell. & Ev. Torr. Bot. Club Bul. 24: 125. 1897.—*Corticium Aluta* Bresadola in v. Höhnel & Litschauer, Wiesner Festschr. Wien, 62. 1908.—An *Corticium grammicum* P. Hennings, Engl. Bot. Jahrb. 38: 106. 1905? Compare v. Höhnel & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 116: 743. 1907.

Type: in Kew Herb. and Curtis Herb.

Fructifications long and widely effused, thick, coriaceous-soft, small pieces separable when moistened, white, becoming light buff to warm buff in the herbarium, even, only rarely cracked, the margin often whitish, pubescent-villose; in section 150–1000 μ thick, colored like the hymenium, becoming zonate or stratose when thick, composed of very densely interwoven, tough hyphae about 1–2 μ in diameter, not incrustated, not nodose-septate, protruding in the hymenial surface as curved paraphyses; more or less numerous aggregations of mineral matter may be immersed in the substance; no gloecystidia; basidia few; spores hyaline, even, spherical, $4\frac{1}{2}$ –7 μ in diameter, few present usually.

Fructifications 4–12 cm. long, 2–4 cm. wide.

On bark and wood of logs of frondose species. In Europe, South Africa, throughout North America and the West Indies, in South America, and in the Philippine Islands. Common.

C. portentosum is well named and may be recognized by its large, whitish, coriaceous fructifications on frondose logs, which become zonate within in thick specimens, and have globose spores 6 μ in diameter, and the slender branches of the interwoven hyphae exceeding the basidia and forming the hymenial surface. This species was formerly confused in Europe with *Stereum alneum* and was communicated to me under this name by both Karsten and Bresadola. It also occurs from Lindblad in Kew

Herb. and from Blytt in Fries Herb. under the name of *Stereum odoratum*, from another specimen of which, determined by E. Fries, it differs by the elongated spores and occurrence on *Pinus* of the latter.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 718; Ell. & Ev., N. Am. Fungi, 1715; Ravenel, Fungi Car. 3: 31; de Thuemen, Myc. Univ., 2013, under the name *Corticium radiosum*.

Finland: Mustiala, P. A. Karsten, in de Thuemen, Myc. Univ., 2013; Vasa, P. A. Karsten, under the name *Stereum alneum*.

Sweden: Stockholm, L. Romell, 26, 159, both under the name *Stereum alneum*.

Germany: Feldkirch, Rick, comm. by Bresadola, under the name *Stereum alneum*.

Hungary: Kmet, comm. by Bresadola, under the name *Stereum odoratum*.

Italy: locality not stated, Bresadola, comm. under the name *Stereum alneum*; Trento, Bresadola.

France: Aveyron, A. Galzin, 14990, comm. by H. Bourdot, 15750.

Canada: Ontario, London, J. Dearness, 1287 (in Mo. Bot. Gard. Herb., 19057).

New York: Ithaca, G. F. Atkinson, 3406; Poughkeepsie, W. R. Gerard, 316 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61385).

Pennsylvania: Michener, type (in Kew Herb., and Curtis Herb., 3620); West Chester, Everhart, Haines, Jefferis & Gray, in Ellis, N. Am. Fungi, 718.

Florida: W. W. Calkins, in Ell. & Ev. N. Am. Fungi, 718, and (in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., 61488, and Burt Herb.); H. von Schrenk (in Mo. Bot. Gard. Herb., 44202); Cocoonut Grove, R. Thaxter, 99 (in Mo. Bot. Gard. Herb., 43926); Cutler Hammock, W. A. Murrill, 76, 252, 253, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 62101, 62129, and 62128, respectively); Miami, W. H. Long, 12290 (in Mo. Bot. Gard. Herb., 55051); Palm Beach, R. Thaxter, 15 (in Mo. Bot. Gard. Herb., 43928).

Alabama: Peters, type distribution of *Corticium diminuens*, in Ravenel, Fungi Car. 3: 31, and (in Curtis Herb., 4009); Mont-

- gomery County, *R. P. Burke*, 464 (in Mo. Bot. Gard. Herb., 57285).
- Louisiana: *A. B. Langlois*, 244, comm. by U. S. Dept. Agr. Herb.; St. Martinville, *A. B. Langlois*, 1762, 2098, and 1247, comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 44075), and 2438, type of *Corticium portentosum crystallophorum*.
- Texas: San Antonio, *W. H. Long*, 21187 (in Mo. Bot. Gard. Herb., 55132); Uvalde, *W. H. Long*, 21686 (in Mo. Bot. Gard. Herb., 55133).
- Kentucky: Mammoth Cave, *C. G. Lloyd*, 2568.
- Ohio: Cincinnati, *A. P. Morgan* (in Lloyd Herb., 2604, and under the name *Corticium subgiganteum*); Loveland, *D. L. James* (in U. S. Dept. Agr. Herb.); West Elkton, *L. O. Overholts*, 4208 (in Mo. Bot. Gard. Herb., 55637); Waynesville, *F. G. Lea*, the *C. ochraceum* of Lea's Cat. Plants of Ohio (in Berkeley Herb. at Kew).
- Indiana: Scottsburg, *J. R. Weir*, 369 (in Mo. Bot. Gard. Herb., 17771); Weirtown, *J. R. Weir*, 353 (in Mo. Bot. Gard. Herb., 9933).
- Wisconsin: Lake Geneva, *E. T. & S. A. Harper*, 848; Star Lake, *Miss Stucki*, 56.
- Missouri: Columbia, *B. M. Duggar*, 569.
- British Columbia: Sidney, *J. Macoun*, 24, 37, 86, 88, 105, 165 (in Mo. Bot. Gard. Herb., 5685, 55348, 8109, 11350, 55349, 20477); Squamish, *J. Macoun*, 537, 570 (in Mo. Bot. Gard. Herb., 55192, 55185); Vancouver Island, *J. Macoun*, 144, 295, 537 (in Mo. Bot. Gard. Herb., 18865, 55320, 55319).
- Mexico: Jalapa, *W. A. & E. L. Murrill*, 115, 191, 346, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 10854, 54437, 54481); Orizaba, *W. A. & E. L. Murrill*, 750, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54636).
- Bermuda: Paget Swamp, *H. H. Whetzel*, Abf (in Mo. Bot. Gard. Herb., 58910).
- Cuba: Baracoa, *L. M. Underwood & F. S. Earle*, 784, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 61556); Camaguey (in Mo. Bot. Gard. Herb., 56123); Havana Province, *Earle & Murrill*, 24, 103, comm. by N. Y. Bot. Gard. Herb.; Omaja, *C. J. Humphrey*, 2709, 2830 (in Mo. Bot. Gard. Herb.,

- 13740, 14847); Oriente, comm. by J. R. Weir 10617 (in Mo. Bot. Gard. Herb., 56235); Pinar del Rio Province, *Earle & Murrill*, 196, 201, 208, 295, 312, comm. by N. Y. Bot. Gard. Herb., *P. Wilson*, 11570, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 61494); Puerto Principe Province, *Earle & Murrill*, 582, 602, comm. by N. Y. Bot. Gard. Herb.; Santiago de Cuba Province, *Earle & Murrill*, 460, 467, comm. by N. Y. Bot. Gard. Herb.
- Porto Rico: Ponce, *F. S. Earle*, 117; Rio Piedras, *J. R. Johnston*, 982, 982a, 972a (in Mo. Bot. Gard. Herb., 9849, 61355, 61356), *J. A. Stevenson*, 3597, 5158 (in Mo. Bot. Gard. Herb., 12720, 6807); Utuado, *N. L. Britton & J. F. Cowell*, 999 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61492).
- Jamaica: *W. A. & E. L. Murrill*, 40, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 56288); Castleton Gardens and Chester Vale, *W. A. & E. L. Murrill*, 52, 314, respectively, comm. by N. Y. Bot. Gard. Herb.; Hope Gardens, *F. S. Earle*, 178, comm. by N. Y. Bot. Gard. Herb.
- Montserrat: Roches, *J. A. Shafer*, 915 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61473).
- Argentina: *R. Fries*, 138, comm. by L. Romell, 333.
- Philippine Islands: comm. by C. G. Lloyd, 11215 (in Mo. Bot. Gard. Herb., 58688).
- Africa: Natal, Durban, *P. A. van der Bijl*, 2, 36 (in Mo. Bot. Gard. Herb., 58800, 58834); Unkomaas, *P. A. van der Bijl*, 1151 (in Mo. Bot. Gard. Herb., 62079).

10. C. bombycinum (Sommerf.) Bresadola, I. R. Accad. Agiati Atti III. 3: 111. 1897; Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 233. 1911; Wakefield & Pearson, Brit. Myc. Soc. Trans. 6: 138. *text f.* 1919; Rea, Brit. Basid. 674. 1922.

Thelephora bombycina Sommerfelt, Fl. Lapp. Suppl. 284. 1826; Fries, Elench. Fung. 1: 211. 1828.

Type: in Sommerfelt Herb., in Univ. of Christiania Herb., a fragment in Burt Herb.

Fructifications irregularly effused, thick, membranaceous-soft, pieces separable, at first white, becoming pinkish buff to cream-buff in the herbarium, even or varying rough to a hydroid sur-

face, somewhat cracked, the margin and subiculum floccose to fibrillose and sometimes hirsute; in section 200–1000 μ thick, with the hyphae suberect, loosely interwoven, thick-walled, 4–5 μ in diameter, nodose-septate; no gloeocystidia; spores hyaline, even, 6–10 \times 5–6 μ .

Fructifications 3–10 cm. long, 2–3 cm. wide.

On bark of living and dead *Salix* and *Alnus* usually, but also on *Betula*, *Acer*, *Tilia*, *Populus*, and *Pinus*. In Europe and from Canada to Massachusetts and westward to Washington and Arizona, and in Texas. July to March. Uncommon.

C. bombycinum is a thick species with description somewhat suggestive of *C. cremoricolor*, but it does not crack radially, and tend to brown color like the latter, is more spongy and with more pelliculose hymenium and with a broader, thicker, and very conspicuous margin, and favors *Salix* as a substratum.

Specimens examined:

Exsiccati: Brinkmann, *Westfälische Pilze*, 11; Jaczewski, *Fungi Rossiae*, 232, under the name *Hypochnus Sambuci*; Romell, *Fungi Scand.*, 35, under the name *Corticium serum*.

Norway: Saltd, *Sommerfelt*, fragment of type comm. by L. Romell.

Sweden: Stockholm, *L. Romell*, 63, 64, 65, 201, 344, and in Romell, *Fungi Scand.*, 35; Upsala, *L. Romell*, two unnumbered specimens.

Russia: in Jaczewski, *Fungi Rossiae*, 232.

Germany: Lengerich, in Brinkmann, *Westfälische Pilze*, 11.

Austria: Feldkirch, *Rick*, comm. by Bresadola.

Canada: *J. Macoun*, 56, 60, in part, 157; Lower St. Lawrence Valley, *J. Macoun*, 30.

Ontario: Port Credit and Toronto, *J. H. Faull*, 655 and 380, respectively (in *Mo. Bot. Gard. Herb.*, 44943, 44948).

Vermont: Middlebury, *E. A. Burt*.

Massachusetts: on beams in cotton mill, *R. J. Blair*, 248, in part, comm. by L. O. Overholts, 3812a (in *Mo. Bot. Gard. Herb.*, 54995).

New York: Alcove, *C. L. Shear*, 1317; Clear Water, *G. F. Atkinson*, 5050; East Galway, *E. A. Burt*; Hudson Falls, *S. H. Burnham*, 14 (in *Mo. Bot. Gard. Herb.*, 44007); Kenwood, *S. H.*

Burnham, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 56048).

Texas: Quitman, *W. H. Long*, 12092 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61343).

Michigan: Ann Arbor, *C. H. Kauffman*, 18.

Minnesota: Princeton, *C. J. Humphrey*, 1030 (in Mo. Bot. Gard. Herb., 21779).

Washington: Bingen, *W. N. Suksdorf*, 905, 915.

Arizona: Flagstaff, *W. H. Long*, 19449 (in Mo. Bot. Gard. Herb., 55141).

11. *C. sociatum* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, small, closely adnate, very thin, white, becoming continuous and somewhat waxy at the center, even, barely cracked, the margin thinning out, with hyphae interwoven; in section 70–90 μ thick, not colored, with the hyphae loosely interwoven near the substratum, 3 μ in diameter, not incrustated, not nodose-septate; no gloeocystidia; basidia with 4 sterigmata; spores hyaline, even, $10\frac{1}{2}$ –12 \times 5–6 μ , copious; a few imbedded spores present.

Fructifications 2–10 mm. long, 1–3 mm. wide—24 on an area 9 cm. long, 2 cm. wide.

On bark of decaying logs of *Thuja plicata*. Manitoba and British Columbia. August.

C. sociatum is a white species belonging in the group with *C. arachnoideum*, *C. centrifugum*, and *C. pelliculare* but distinct by the many small fructifications arranged near together, large spores, and hyphae neither nodose-septate nor incrustated.

Specimens examined:

Manitoba: Norway House, *G. R. Bisby*, 1466 (in Mo. Bot. Gard. Herb., 61649).

British Columbia: Kootenai Mts. near Salmo, *J. R. Weir*, 529, type (in Mo. Bot. Gard. Herb., 21596).

12. *C. scutellare* Berk. & Curtis, Grevillea 2: 4. 1873; Sacc. Syll. Fung. 6: 634. 1888; Masee, Linn. Soc. Bot. Jour. 27: 128. 1890.

Type: in Kew Herb. and Farlow Herb.

Fructifications long and widely effused, thin, adnate, from white becoming cream-buff to warm buff in the herbarium, waxy, often granular, finally very much cracked into minute areolae, 1-3 to a mm., which flake away from the substratum—sometimes leaving some of the white subiculum on the latter, the margin thinning out; in section 120-250 μ thick, not colored, composed of suberect, interwoven, thin-walled hyphae $2\frac{1}{2}$ - $3\frac{1}{2}$ μ in diameter, incrusting in the subhymenial region so as to form a conspicuous subhymenial zone of mineral matter; no cystidia nor gloeocystidia; spores hyaline, even, $4-6 \times 2-3$ μ .

Fructifications 2-8 cm. long, 1-4 cm. wide.

On fallen decaying limbs of frondose species. New York to Louisiana and westward to Kansas, in the West Indies, Japan, and South Africa. June to January. Common in the southern states.

C. scutellare, when fully mature in the southern states, may be recognized at sight by the very numerous areolae wholly separated from one another by fissures, but less mature and more northern specimens may be cracked into more rectangular masses up to 2 cm. in diameter and more or less connected together. In such specimens the subhymenial zone of mineral matter is a helpful character, for this zone is constant and conspicuous when sections are examined and, together with the small spores, afford sharp distinctive characters.

Specimens examined:

New York: Albany County, *S. H. Burnham*, 29 (in Mo. Bot. Gard. Herb., 54484); Alcove, *C. L. Shear*, 998; Fort Ann, *S. H. Burnham*, 43, in part (in Mo. Bot. Gard. Herb., 54453); Hudson Falls, *S. H. Burnham*, 16, 35 (in Mo. Bot. Gard. Herb., 54499, 54451); Ithaca, *H. S. Jackson*, *C. Thom*, comm. by Cornell Univ. Herb., 18201 and 14371, respectively; Karner, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb. 54380), and *C. H. Peck*, comm. by N. Y. State Mus. Herb., T6 (in Mo. Bot. Gard. Herb., 54640); Meadowdale, *C. H. Peck*, comm. by N. Y. State Mus. Herb., T6 (in Mo. Bot. Gard. Herb., 54640); North Elba, *C. H. Peck* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 55973); Port Jefferson,

- C. H. Peck* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 55981).
- New Jersey: Newfield, *J. B. Ellis*, 418, 2052, 2475, and 2 unnumbered specimens comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 16061, 14255, 7657, 7456 and 44642, respectively).
- Pennsylvania: Philadelphia, *A. S. Rhoads*, comm. by L. O. Overholts, 2680 (in Mo. Bot. Gard. Herb., 5918); Trexlertown, *W. Herbst*, 40.
- District of Columbia: Takoma Park, *E. M. Williams* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55812).
- Virginia: Chain Bridge, *A. S. Rhoads*, comm. by L. O. Overholts, 3968 (in Mo. Bot. Gard. Herb., 54985).
- South Carolina: type (in Curtis Herb., 2473).
- Georgia: Tallulah Falls, *A. B. Seymour*, comm. by Farlow Herb., E (in Mo. Bot. Gard. Herb., 44610).
- Florida: *Mr. Curtiss*, comm. by W. G. Farlow.
- Alabama: Auburn, *Ala. Biol. Survey*; Montgomery, *R. P. Burke*, 6, 84, 143, 148, 239 (in Mo. Bot. Gard. Herb., 22316, 20508, 10673, 44907, 57104, respectively).
- Mississippi: Ocean Springs, *F. S. Earle*, 183 (in Mo. Bot. Gard. Herb., 4838).
- Louisiana: *A. B. Langlois*, 134, comm. by U. S. Dept. Agr. Herb.; St. Martinville, *A. B. Langlois*, aa, 856, 2632, and a specimen comm. by Lloyd Herb., 4128.
- Kentucky: Mammoth Cave, *C. G. Lloyd*, 2562.
- Indiana: Crawfordsville, *D. Reddick*, 9.
- Illinois: Glencoe, *E. T. & S. A. Harper*, 821.
- Missouri: Columbia, *B. M. Duggar*, 589.
- Kansas: Rooks County, *E. Bartholomew*.
- Jamaica: Chester Vale, *W. A. & E. L. Murrill*, 290, 329, 341, comm. by N. Y. Bot. Gard. Herb.; Hope Gardens, *F. S. Earle*, 192, comm. by N. Y. Bot. Gard. Herb.; Monkey Hill, *W. A. & E. L. Murrill*, 783, comm. by N. Y. Bot. Gard. Herb.; New Haven Gap, *W. A. & E. L. Murrill*, 766, comm. by N. Y. Bot. Gard. Herb.; St. Margaret's Bay, *A. E. Wight*, comm. by W. G. Farlow, 4 (in Mo. Bot. Gard. Herb., 44076).
- Japan: Shinokubi, Prov. Harima, *A. Yasuda*, 6 (in Mo. Bot. Gard. Herb., 55664).

Africa: Erhove, Zululand, *P. A. van der Bijl*, 26 (in Mo. Bot. Gard. Herb., 58824); Houtbos, Transvaal, *P. A. van der Bijl*, 1482.

13. *C. tuberculatum* Karsten, *Hedwigia* 35: 45. 1896; Krit. Öfvers. Finl. Basidsv. Tilläg 3: 29. 1898; Sacc. Syll. Fung. 14: 221. 1899; v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 115: 1561. 1906.

Type: authentic specimen or part of type in Burt Herb.

Fructifications orbicular or longitudinally effused, rather thick, somewhat membranaceous, small pieces separable when moistened, white at first, becoming light buff to warm buff in the herbarium, somewhat colliculose or tuberculate, waxy, the margin radiately fibrillose; in section 200–300 μ thick, not colored, with the hyphae densely interwoven in a narrow layer next to the substratum and then ascending obliquely and not crowded to the compact hymenial layer, $3\frac{1}{2}$ – $4\frac{1}{2}$ μ in diameter, somewhat incrustated in the type, not nodose-septate; no gloeocystidia; spores hyaline, even, 4 – $6 \times 2\frac{1}{2}$ – $3\frac{1}{2}$ μ , copious.

Pieces of fructification $2\frac{1}{2}$ cm. in diameter in the specimen seen.

On bark and wood of fallen branches of *Populus*, *Fraxinus*, and other frondose species. Finland, Pennsylvania to Wisconsin. Rare.

C. tuberculatum approaches *Radulum* in having a middle layer of loosely arranged, ascending hyphae and a somewhat colliculose surface and some small tubercles in the authentic specimen communicated to me by Karsten and which agrees closely with his description of the species. The general aspect somewhat resembles that of *Peniophora mutata*. The American gatherings cited below have a more even hymenium and hyphae not incrustated and are doubtfully referred to *C. tuberculatum*.

Specimens examined:

Finland: Mustiala, *P. A. Karsten*, probably part of type.

Pennsylvania: Trexlertown, *W. Herbst*, 77.

Michigan: East Tower, *J. R. Weir*, 370 (in Mo. Bot. Gard. Herb., 17074).

Wisconsin: Madison, *A. O. Stucki*, 44, comm. by Univ. Wis. Herb.

14. *C. crustaceum* (Karsten) v. Höhnel & Litschauer, K. Akad. Wiss. Wien Sitzungsber. **115**: 1566. 1906.

Xerocarpus crustaceus Karsten, Hedwigia **35**: 45. 1896.—
Stereum crustaceum Karsten in Sacc. Syll. Fung. **14**: 215. 1899.

Type: in Karsten Herb. and Burt Herb.

Fructifications effused, thin, crustaceous-adnate, somewhat grumose, not at all separable, white or whitish, even or somewhat granular, conforming to inequalities of the substratum, somewhat cracked; in section 40–100 μ thick, not colored, composed of densely arranged hyphae 2 μ in diameter, not well shown, with crystalline masses intermixed; no gloecystidia; spores hyaline, even, $4\frac{1}{2}$ –5 \times 3 μ , copious.

Fructifications 2–6 cm. long, 1–3 cm. wide.

On rough bark of *Acer*, *Crataegus*, *Populus*, *Salix*, *Ulmus*, and *Abies*. Finland and Canada to Florida. July to November. Probably common.

C. crustaceum is so similar in aspect to *Peniophora Sambuci* that it is necessary to distinguish it from the latter by the microscopic characters of sectional preparations. *C. crustaceum* has no cystidia, has more densely arranged hyphae and a good deal of obscuring crystalline matter intermixed.

Specimens examined:

Finland: Mustiala, *P. A. Karsten*, authentic specimen on *Populus*.

Canada: *J. Macoun*, 1, 2; St. Lawrence Valley, *J. Macoun*, 27, 49, 51.

Ontario: Ottawa, *J. Macoun* (in N. Y. State Mus. Herb., and Mo.

Bot. Gard. Herb., 55902), and 4.

Quebec: Hull, *J. Macoun*, 82.

Vermont: Middlebury, *E. A. Burt*.

West Virginia: Paw Paw, *C. L. Shear*, 1176.

Florida: Jacksonville, *W. W. Calkins*, comm. by Farlow Herb. (in Mo. Bot. Gard. Herb., 44637).

15. *C. pelliculare* Karsten, Finska Vet.-Soc. Bidrag Natur och Folk **48**: 411. 1889; Hedwigia **35**: 46. 1896; Sacc. Syll. Fung. **9**: 232. 1891; Bourdot & Galzin, Soc. Myc. Fr. Bul. **27**: 239. 1911.—Cf. v. Höhnel & Litschauer, K. Akad. Wiss. Wien Sitzungsber. **115**: 1556. 1906.

Type: fragment of type and authentic specimen in Burt Herb.

Fructifications broadly effused, thin, membranaceous, tender, small pieces separable, white when fresh, becoming ivory-yellow to cream-buff in the herbarium, even, somewhat cracked and showing a loose, cottony subiculum which extends out beyond the hymenium as a fimbriate, white margin; in section 100–300 μ thick, not colored, composed of loosely interwoven and ascending, thin-walled hyphae $2\frac{1}{2}$ – $3\frac{1}{2}$ μ in diameter, sparingly nodose-septate, rarely incrustated in the subhymenium; no gloeocystidia; spores hyaline, even, $4-6 \times 2-3$ μ .

Fructifications 2–6 cm. long, 1–3 cm. wide.

On decaying limbs of both coniferous and frondose species. In Europe and from New Hampshire to Pennsylvania, in Illinois, British Columbia to Mexico, and in Bermuda. June to December. Infrequent.

P. pelliculare has delicate white to creamy fructifications distinguishable from those of *C. lacteum* by the small spores not at all globose.

Specimens examined:

Exsiccati: Thümen, Myc. Univ., 1607, under the name *Corticium laeve*.

Finland: Mustiala, *P. A. Karsten*, fragment of type comm. by Karsten to Bresadola and by Bresadola to Romell and by Romell to Burt.

Sweden: *K. Starback*, authentic specimen comm. by Karsten; *L. Romell*, 319; *Femsjö*, *E. A. Burt*, two gatherings; Stockholm, *L. Romell*, 298A, 320.

New Hampshire: Chocorua, *W. G. Farlow*, C37 (in Mo. Bot. Gard. Herb., 43968).

Vermont: Middlebury, *E. A. Burt*.

New York: Albany, *H. D. House* (in N. Y. State Mus. Herb., and in Mo. Bot. Gard. Herb., 57490); Orient Point, *R. Latham*, 3 (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55700).

New Jersey: Belleplain, *C. L. Shear*, 1237; Newfield, *J. B. Ellis*, in Ell. & Ev. Fungi Col., 1207.

Pennsylvania: Bear Meadows, *L. O. Overholts*, 2890 (in Mo. Bot. Gard. Herb., 5717); Trexlertown, *W. Herbst*, 15.

Michigan: Ann Arbor, *C. H. Kauffman*, 19.

- Illinois: Helleydayboro, *C. J. Humphrey*, 1351 (in Mo. Bot. Gard. Herb., 59017); Port Byron, *E. T. & S. A. Harper*, 733.
- British Columbia: Kootenai Mts., Salmo, *J. R. Weir*, 456 (in Mo. Bot. Gard. Herb., 13043); Sidney, *J. Macoun*, 11 (in Mo. Bot. Gard. Herb., 5729).
- Washington: Bingen, *W. N. Suksdorf*, 879, 919.
- Arizona: Flagstaff, *W. H. Long*, 19491 (in Mo. Bot. Gard. Herb., 44738, 55135); First Valley Experiment Station, *W. H. Long*, 21119 (in Mo. Bot. Gard. Herb., 55136).
- Mexico: Chihuahua, Parral, *E. O. Mathews*, 2, 26 (in Mo. Bot. Gard. Herb., 44126, 44125); Guernavaca, *W. A. & E. L. Merrill*, 418, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb. 54512).
- Bermuda: on cornstalks, *S. Brown*, *N. L. Britton & F. J. Seaver*, 11248 (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb., 4809).

16. *C. Auberianum* Montagne in La Sagra, Hist. de Cuba 9²: 226. 1845; Syll. Crypt. 178. 1856; Sacc. Syll. Fung. 6: 616. 1888; Masee, Linn. Soc. Bot. Jour. 27: 135. 1890.

Type: part of type in Kew Herb.

Fructifications effused, orbicular at first, becoming longitudinally elongated, adnate, very thin, white, floccose-farinaceous, even, sometimes somewhat cracked, the margin thinning out, floccose; in section 45–120 μ thick, not colored, composed of suberect, branching, interwoven, thin-walled hyphae about 2 μ in diameter, not nodose-septate; no gloeocystidia; no cystidia; spores hyaline, even, flattened on one side, 4–5 \times 2–3 μ .

Fructifications at first 2–10 mm. in diameter, finally up to 10 cm. long, 1 cm. broad.

On small decaying, fallen twigs of frondose species. Vermont to Louisiana, and in the West Indies. August to March. Rare.

C. Auberianum may be recognized by its very thin, snow-white fructifications having a farinose hymenial surface, small spores, and slender, thin-walled hyphae throughout. No gloeocystidia are present nor coarse hyphae near substratum. The occurrence of several small fructifications near together when young is characteristic. The hyphae are probably somewhat incrustated, but this needs confirmation.

Specimens examined:

- Vermont: *E. A. Burt*, two gatherings.
 North Carolina: Blowing Rock, *G. F. Atkinson*, 4330.
 South Carolina: On *Carya*, Curtis Herb., 2497 (in Kew Herb.).
 Georgia: Tallulah Falls, *A. B. Seymour*, comm. by Farlow Herb.,
 DD (in Mo. Bot. Gard. Herb., 44595).
 Florida: Sands Key, *R. A. Harper*, 6 (in Mo. Bot. Gard. Herb.,
 54537).
 Louisiana: St. Martinville, *A. B. Langlois*, *Q*, *R*.
 Arkansas: Womble, *W. H. Long*, 19823, 19821, in part (in Mo.
 Bot. Gard. Herb., 8633, 17801).
 Bermuda: Walsingham, *H. H. Whetzel*, *Aat* (in Mo. Bot. Gard.
 Herb., 58718).
 Cuba: presumable part of type from Montagne to Berkeley (in
 Kew Herb.); Managua, *Earle & Murrill*, 26, comm. by N. Y.
 Bot. Gard. Herb.; San Antonio de los Baños, Havana Province,
Earle & Murrill, 46, comm. by N. Y. Bot. Gard. Herb.; San
 Diego de los Baños, Havana Province, *Earle & Murrill*, 332,
 comm. by N. Y. Bot. Gard. Herb.; locality not stated, *C. G.*
Lloyd, 430 (in Mo. Bot. Gard. Herb., 55176).

17. *C. galactinum* (Fr.) Burt, in Moffatt, Chicago Acad.
 Sci. Bul. 7: 137. 1909.

Thelephora galactina Fries, R. Soc. Sci. Upsal. Acta III. 1: 136.
 1851; Sacc. Syll. Fung. 6: 541. 1888; von Schrenk, Bot. Gaz.
 34: 65. 1902.—An *Corticium rigescens* Berk. & Curtis in Cooke,
Grevillea 20: 12. 1891?

Type: in Fries Herb. and Curtis Herb.

Fructifications long and broadly effused, becoming rather thick,
 coriaceous-soft, closely adnate, small pieces separable, white to
 cream-color, waxy, even, not cracked, the margin indeterminate,
 thinning out, with the hyphae interwoven; in section 200–1000 μ
 thick, not colored, composed of suberect, densely interwoven,
 hyaline hyphae about 1–2 μ in diameter, not incrustated; no gloeo-
 cystidia; curved ends of the hyphae or their branches form the
 surface of the hymenium and are about $\frac{1}{2}$ –1 μ in diameter; spores
 white in spore collection, 4–5 $\frac{1}{2}$ \times 2–3 μ .

† Fructifications 4–12 cm. long, 2–4 cm. wide.

On roots of living apple and blackberry plants, on the ground, and broadly effused on rotting logs of frondose and coniferous species. Canada to Texas and westward to the Pacific coast, in West Indies and in Japan. Throughout the year. Common.

C. galactinum resembles *C. portentosum* in aspect but has a more erect hyphal structure and is usually not at all strato-se and with substance not colored. Both species have a hymenial surface composed of fine, curved hyphal branches, but the spores of *C. galactinum* are smaller and ellipsoid and those of *C. portentosum* spherical. The mycelium of *C. galactinum* was collected as a parasitic root rot on the roots of young apple trees and blackberry bushes and developed mature fructifications. The collector's data on the type specimen of this species is "In radicibus ad latera fossarum."

Specimens examined:

Exsiccati: Ravenel, *Fungi Car.* 4: 15, under the name *Corticium calceum*.

Canada: *J. Macoun*, 26, 31, 111; Lower St. Lawrence Valley, *J. Macoun*, 4, 9, 35, 83.

Ontario: Lake Rosseau, *E. T. & S. A. Harper*, 638, 640; Nixon, *J. Dearness*, 1023 (in *Mo. Bot. Gard. Herb.*, 22732); Ottawa, *J. Macoun*, 56, 248, in part; Temagami, *H. von Schrenk* (in *Mo. Bot. Gard. Herb.*, 57053).

Maine: New Limerick, *H. von Schrenk*, 62 (in U. S. Dept. Agr. Herb. and Burt Herb.); Piscataquis County, *W. A. Murrill*, 1881 (in *N. Y. Bot. Gard. Herb.*, *Mo. Bot. Gard. Herb.*, 61423, and Burt Herb.).

New Hampshire: Chocorua, *W. G. Farlow* (in *Mo. Bot. Gard. Herb.*, 19544); North Conway, *L. O. Overholts*, 4555, 4584 (in *Mo. Bot. Gard. Herb.*, 55635, 55634).

Vermont: Grand View Mt., *E. A. Burt*; Little Notch, *E. A. Burt*; Middlebury, *E. A. Burt*, five gatherings.

New York: Arkville, *W. A. Murrill* (in *N. Y. Bot. Gard. Herb.*, and *Mo. Bot. Gard. Herb.*, 61362, 61363); Cranberry Lake, *A. H. W. Povah*, 772 (in *Mo. Bot. Gard. Herb.*, 3730); East Galway, *E. A. Burt*; Floodwood, *E. A. Burt*, *C. H. Peck*, 12; Forestburgh, *C. H. Peck*, comm. by N. Y. State Mus. Herb. (in *Mo. Bot. Gard. Herb.*, 56049); Freeville, *G. F. Atkinson*,

- 18186; Gansevoort, *C. H. Peck*, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 55982); Ithaca, *G. F. Atkinson*, 2869, 4898; Jenkinsville, *S. H. Burnham*, 40 (in Mo. Bot. Gard. Herb., 54452); Karner, *H. D. House*, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 55197); Lake Placid, *W. A. & E. L. Murrill*, 270 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61578); North Elba, *C. H. Peck*, 12, and (in N. Y. State Mus. Herb., T 26, and Mo. Bot. Gard. Herb., 54652); Oneida, *H. D. House*, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 57414); Pompey, *L. M. Underwood*, 25, 107, 357 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61432, 61431, 61575); West Fort Ann, *S. H. Burnham*, 13, in part (in Mo. Bot. Gard. Herb., 54505); White Plains, *L. M. Underwood* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61574).
- Pennsylvania: Mt. Gretna, *E. A. Burt*; State College, *L. O. Overholts*, 4711 (in Mo. Bot. Gard. Herb., 56116).
- Virginia: Woodstock, *C. L. Shear*, 1195.
- South Carolina: *H. W. Ravenel*, in *Ravenel, Fungi Car.* 4: 15, on pine, and type (in *Fries Herb.*, and *Curtis Herb.*, 1601).
- Florida: *W. W. Calkins* (in U. S. Dept. Agr. Herb., and *Burt Herb.*); *Starke, C. L. Shear*, 2904 (in Mo. Bot. Gard. Herb., 15311); Tallahassee, *E. Bartholomew*, 5708 (in Mo. Bot. Gard. Herb., 44255).
- Louisiana: Bogalusa, *C. J. Humphrey*, 5516; St. Martinville, *A. B. Langlois*, 607 (in U. S. Dept. Agr. Herb., and *Burt Herb.*), 1762, X.
- Texas: Houston, *H. W. Ravenel*, 268 (in U. S. Dept. Agr. Herb., and *Burt Herb.*).
- West Virginia: Eglon, *C. G. Lloyd*, 02643.
- Ohio: Cincinnati, *A. P. Morgan*, comm. by *Lloyd Herb.*, 2604.
- Illinois: on apple roots, *H. von Schrenk*; River Forest, *E. T. & S. A. Harper*, 655.
- Michigan: Mass, *C. J. Humphrey*, 1583 (in Mo. Bot. Gard. Herb., 10743); Three Lakes, *C. J. Humphrey*, 1602 (in Mo. Bot. Gard. Herb., 17883); Vermilion, *A. H. W. Povah*, 203 (in Mo. Bot. Gard. Herb., 15326).
- Missouri: Grandin, *H. von Schrenk* (in Mo. Bot. Gard. Herb.,

- 43022); St. Louis, on apple roots, *H. von Schrenk*, three gatherings.
- Arkansas: on blackberry roots, *G. M. Darrow* (in Mo. Bot. Gard. Herb., 63734); on apple roots, *H. von Schrenk*; Fordyce, *C. J. Humphrey*, 5812; Womble, *W. H. Long*, 19816, 19838, 19864, 21104 (in Mo. Bot. Gard. Herb., 8958, 8634, 8635, 55144).
- Colorado: Golden, *L. O. Overholts*, 1745 (in Mo. Bot. Gard. Herb., 54874).
- Montana: Como, *E. E. Hubert*, comm. by *J. R. Weir*, 11959 (in Mo. Bot. Gard. Herb., 63316); Evaro, *J. R. Weir*, 437 (in Mo. Bot. Gard. Herb., 14387); Rexford, *E. E. Hubert*, comm. by *J. R. Weir*, 11977 (in Mo. Bot. Gard. Herb., 63330).
- Idaho: Coeur d'Alene, *E. E. Hubert*, comm. by *J. R. Weir*, 12002 (in Mo. Bot. Gard. Herb., 63364); Coolin, *J. R. Weir*, 11504 (in Mo. Bot. Gard. Herb., 63285); Priest River, *J. R. Weir*, 15, and 133, 346 (in Mo. Bot. Gard. Herb., 12119, 7561), and *E. E. Hubert*, comm. by *J. R. Weir*, 12025 (in Mo. Bot. Gard. Herb., 63378); St. Maries, *J. R. Weir*, comm. by *C. J. Humphrey*, 2556 (in Mo. Bot. Gard. Herb., 13030), and *E. E. Hubert*, comm. by *J. R. Weir*, 11997 (in Mo. Bot. Gard. Herb., 63360).
- Manitoba: Winnipeg, *G. R. Bisby & I. L. Conner*, 1102 (in Mo. Bot. Gard. Herb., 59038).
- British Columbia: Kootenai Mts., near Salmo, *J. R. Weir*, 457, 500, 508, 531, 542 (in Mo. Bot. Gard. Herb., 9122, 21631, 20270, 23118, 14254).
- Washington: Chehalis, *C. J. Humphrey*, 6289 (in Mo. Bot. Gard. Herb., 10751); Lake Wilderness, *C. H. Kauffman*, 17 (in Mo. Bot. Gard. Herb., 4674); Renton, *C. J. Humphrey*, 6640; Sedro Woolley, *C. J. Humphrey*, 7568 (in Mo. Bot. Gard. Herb., 10775).
- Cuba: Ceballos, *C. J. Humphrey*, 2730 (in Mo. Bot. Gard. Herb., 9083).
- Porto Rico: Rio Piedras, *J. A. Stevenson*, 1195, 3224 (in Mo. Bot. Gard. Herb., 6949, 7734).
- Japan: Hiroto-Mura, Prov. Awaji, *A. Yasuda*, 24 (in Mo. Bot. Gard. Herb., 55662); Mt. Mikuma, Prov. Awaji, *A. Yasuda*, 17 (in Mo. Bot. Gard. Herb., 55661).

18. *C. calceum* Fries emend. Romell & Burt

C. calceum Fries, Epicr. 562. 1838, in part; Hym. Eur. 652. 1874, in part; Sacc. Syll. Fung. 6: 622. 1888, in part.—*Thelephora calcea* Fries var. *glebulosa* Fries, Elench. Fung. 2: 215. 1828.—Not *Peniophora glebulosa* Bresadola, Fungi Trid. 2: 61 pl. 170, f. 2. 1898.

Type: in Fries Herb. and a fragment in Burt Herb.

Fructifications broadly effused, very thin, closely adnate, not at all separable, floccose-membranaceous, white, sometimes becoming ivory-yellow in the herbarium, even, cracking to the substratum into small rectangular masses 1-4 to a mm., the margin farinose; in section 100-200 μ thick, not colored, with the hyphae erect, densely crowded together and interwoven, somewhat conglomerate, short-celled, 1-1½ μ in diameter, sometimes with algal cells imbedded; no gloeocystidia nor cystidia; spores hyaline, even, 3-5½ \times 1½-2 μ .

Fructifications 3-20 cm. long, 1-5 cm. wide.

Under side of decaying rails of *Pinus sylvestris* and *P. Strobus*, and on decaying wood of logs of *P. monticola* and *Thuja*. In Sweden and from Vermont and New Jersey to Idaho and British Columbia. July to November. Abundant when found.

Since *C. calceum* var. *glebulosum* is all that now remains under *C. calceum* after the segregation under other names of all other components, no confusion should result from the present proposed restriction of the species *C. calceum*. It may be added that the original description of *C. calceum* applies better to the emended species than to any of the other components withdrawn. Bresadola studied the Friesian type of *Thelephora calcea* var. *glebulosa* and identified it with *Peniophora glebulosa*, a species very common throughout Europe. He shared a portion of his Friesian type with me and accompanied it with notes on microscopic details in which he stated, "Cystidia adsunt sed collapsa." However, no cystidia are present in this fragment, nor in the type in Fries Herb., nor in ample collections of the species made by Romell and myself at the type station, Femsjö. I have not been able to recognize this species in the extensive series of Corticiums received from countries of Europe other than Sweden. Since the species is widely distributed and abundant in northern United

States, it is possible that it is a North American endemic species which became established in Sweden as an outlying station, comparable with cases of *Stereum rufum*, *Stereum Murrayi*, etc.

Specimens examined:

Exsiccati: Ell. & Ev., N. Am. Fungi, 2807, under the name *Corticium scutellare*; Ell. & Ev., Fungi Col., 104, under the name *Corticium scutellare*.

Sweden: Femsjö, *E. Fries*, type of *Thelephora calcea* var. *glebulosa* (in Fries Herb., and fragment in Burt Herb.), *L. Romell*, 185, 211, and *Romell & Burt*, two gatherings; Stockholm, *L. Romell*, 321, 322, 324, 325.

Canada: *J. Macoun*, 1, 34; Lower St. Lawrence Valley, *J. Macoun*, 57.

Vermont: Middlebury, *E. A. Burt*, two gatherings.

New York: Bolton, *C. H. Peck*, 9; Clearwater, *G. F. Atkinson*, 5046; Floodwood, *C. H. Peck*, 11; Ithaca, *G. F. Atkinson*, 941, 22972; Schuylerville, *C. H. Peck*, 20.

New Jersey: Newfield, *J. B. Ellis*, in Ell. & Ev., N. Am. Fungi, 2807, and in Ell. & Ev., Fungi Col., 104.

Pennsylvania: State College, *L. O. Overholts*, 4809 (in Mo. Bot. Gard. Herb., 56119).

Michigan: Mass, *C. J. Humphrey*, 1662 (in Mo. Bot. Gard. Herb., 17607).

Wisconsin: Lake Glencoe, *E. T. & S. A. Harper*, 853.

Idaho: Priest River, *J. R. Weir*, 40, 64, and 6350 (in Mo. Bot. Gard. Herb., 58387).

British Columbia: Kootenai Mts., near Salmo, *J. R. Weir*, 461, 463, 533 (in Mo. Bot. Gard. Herb., 9119, 12631, 20973).

19. *C. vescum* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, closely adnate, very thin, not at all separable, from white to pale drab-gray in the herbarium, even, not shining, not cracked, the margin thinning out, indeterminate; in section 20–30 μ thick, not colored, very compact, composed of very short, erect hyphae which terminate in basidia; no gloeocystidia; spores hyaline, even, allantoid, $4\frac{1}{2} \times \frac{1}{2}$ –1 μ .

Fructifications up to 6 cm. long, 3 cm. wide.

On decorticated pine limb completely decayed by a brittle, brown rot. Maryland and Alabama. October.

C. vescum looks like a thin, whitish or somewhat cinereous wash in water color on the surface of the weathered pine limb. No interwoven hyphal structure is visible under a lens, for the short basal hyphae start out vertically from the substratum and terminate in basidia packed closely together in the hymenium.

Specimens examined:

Maryland: Takoma Park, *C. L. Shear*, 961.

Alabama: Montgomery, *R. P. Burke*, 476, type (in Mo. Bot. Gard. Herb., 57294).

20. *C. incanum* Burt, n. sp.

Type: in Burt Herb.

Fructifications effused, very thin, closely adnate, not separable, becoming pearl-gray to mineral-gray in the herbarium, even, waxy, not cracked, the margin thinning out, indeterminate; in section 20–75 μ thick, not colored, composed of densely interwoven, hyaline hyphae 2½–3 μ in diameter, rarely nodose-septate, not incrustated; no gloeocystidia; basidia simple, with 4 short, blunt sterigmata; spores hyaline, even, about 3½–4 \times 1½–3 μ .

Fructifications 4–8 cm. long, 1–2 cm. wide.

On bark and wood of dead *Acer* and other frondose limbs. Canada to North Carolina. October and November.

C. incanum forms a thin, inseparable coating of mineral-gray color over bark and wood of frondose species usually. The aspect is so similar to that of common *Peniophora cinerea* that it is likely to be passed by as the latter, if examination of microscopic structure is not made.

Specimens examined:

Canada: *J. Macoun*, 36; Ottawa, *J. Macoun*, 32, 34.

Vermont: Middlebury, *E. A. Burt*.

New York: Karner, *H. D. House*, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 54384).

New Jersey: Belleplain, *C. L. Shear*, 1249, type.

North Carolina: Chapel Hill, *J. N. Couch*, 4225, comm. by W. C. Coker, under the name *C. ochraceo-niveum* (in Mo. Bot. Gard. Herb., 57412).

21. *C. canum* Burt, n. sp.

Type: in Burt Herb.

Fructifications effused, thin, hypochnoid, tender, not separable, whitish to pale pinkish buff in the herbarium, even, with the hymenium fibrillose under a lens rather than in the form of a continuous pellicle, the margin thinning out, arachnoid; in section 100–180 μ thick, not colored, composed of lax, loosely interwoven hyphae $2\frac{1}{2}$ μ in diameter, thin-walled, nodose-septate, not in-crustated, bearing a more compact hymenium; no gloeocystidia; spores hyaline, even, $3-4 \times 1\frac{1}{2}-2$ μ .

Fructifications 3–5 cm. long, $\frac{1}{2}$ – $1\frac{1}{2}$ cm. wide.

On decaying wood and bark of conifers. Canada to Louisiana and in Washington. September to October. Infrequent.

C. canum belongs in the group with *C. centrifugum* and *C. pelliculare* but differs from both in more hypochnoid structure and smaller spores. The hyphae are nodose-septate and not in-crustated.

Specimens examined:

Canada: *J. Macoun*, 13, type, and 86, in part.

New York: Ithaca, *G. F. Atkinson*, 2563.

Maryland: Takoma Park, *C. L. Shear*, 1063.

Louisiana: St. Martinville, *A. B. Langlois*, 168, comm. by Lloyd Herb., 3046.

Idaho: Coolin, *J. R. Weir*, 11101 (in Mo. Bot. Gard. Herb., 63391); Priest River, *J. R. Weir*, 21.

British Columbia: Salmo, Kootenai Mts., *J. R. Weir*, 447 (in Mo. Bot. Gard. Herb., 21800).

Washington: Hoquiam, *C. J. Humphrey*, 6375, 6413.

22. *C. centrifugum* (Lév.) Bresadola, Ann. Myc. 1: 96. 1903; v. Höhnel, Ann. Myc. 3: 188. 1905; Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 240. 1911.

Rhizoctonia centrifuga Lévillé, Ann. Sci. Nat. Bot. II. 20: 225. 1843.—*Hypochnus centrifugus* Tulasne, Fung. Carp. 1: 113. 1861; Sacc. Syll. Fung. 6: 654. 1888.—*Corticium decipiens* v. Höhnel & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 117: 1116. 1908.

Fructifications effused, very thin, arachnoid, forming a con-

tinuous hymenial pellicle, fragile, white, becoming pale olive-buff in the herbarium, even, the margin arachnoid or byssoid; in section 75–150 μ thick, not colored, with the hyphae loosely interwoven, thin-walled, not incrustated, usually 2–3 μ in diameter, sometimes with a few coarser and up to 6 μ in diameter along the substratum, only rarely nodose-septate; no gloeocystidia; spores hyaline, even, ellipsoidal, 4–8 \times 2½–4 μ .

Fructifications 2–6 cm. long, 1–3 cm. wide.

On decaying wood and leaves and fallen branches. Common in Europe, infrequent from Canada to Louisiana and westward to the Pacific and in the West Indies. June to February.

C. centrifugum is related to *C. arachnoideum* and *C. pelliculare*. Its more elongated spores, thinner and less arachnoid fructifications, and hyphae with only very few clamp connections separate it from *C. arachnoideum*, while *C. pelliculare* becomes more yellow in the herbarium, is likely to show some hyphal incrustation, and has rather smaller spores and a more compact hymenium. According to the original description *C. decipiens* differs by not having clamp connections but they are certainly present in the authentic specimen communicated by Litschauer.

Specimens examined:

Exsiccati: Ell. & Ev., Fungi Col., 309, under the name *Corticium arachnoideum*.

Sweden: *L. Romell*, 76; Stockholm, *L. Romell*, 60, 61, 168, 296, 348.

Germany: *W. Brinkmann*, comm. by Bresadola.

Austria: Klosterberg, Tirol, *V. Litschauer*, and another specimen under the name *C. decipiens*, determined and comm. by Litschauer.

Canada: Ottawa, *J. Macoun*, 49, 52.

Maine: Kittery Point, *R. Thaxter* (in Mo. Bot. Gard. Herb., 57606).

New Hampshire: Chocorua, *W. G. Farlow*; Shelburne, *W. G. Farlow*, 2.

New York: East Galway, *E. A. Burt*; Ithaca Flats, *C. O. Smith*, comm. by *G. F. Atkinson*, 8226; Karner, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 54350).

New Jersey: Newfield, *J. B. Ellis*, in Ell. & Ev., Fungi Col., 309.

- Pennsylvania: State College, *L. O. Overholts*, 3630 (in Mo. Bot. Gard. Herb., 54698).
- District of Columbia: Takoma Park, *C. L. Shear*, 1347.
- Louisiana: St. Martinville, *A. B. Langlois*, *ay.*
- Manitoba: Stony Mountain, *A. H. R. Buller*, 900 (in Mo. Bot. Gard. Herb., 58999); Winnipeg, *G. R. Bisby*, 1342 (in Mo. Bot. Gard. Herb., 60551).
- Washington: Bingen, *W. N. Suksdorf*, 914.
- Oregon: Corvallis, *S. M. Zeller*, 2066 (in Mo. Bot. Gard. Herb., 58767).
- California: Massack, *A. S. Rhoads*, 18 (in Mo. Bot. Gard. Herb., 56987).
- Jamaica: Castleton Gardens, *W. A. & E. L. Murrill*, 67, comm. by N. Y. Bot. Gard. Herb.; Chester Vale, *W. A. & E. L. Murrill*, 372, comm. by N. Y. Bot. Gard. Herb.

23. *C. Atkinsonii* Burt, n. sp.

Type: in Burt Herb.

Fructifications effused, adnate, thin, small pieces separable when moistened, white, even, waxy, not cracked, the margin thinning out, with hyphae interwoven; in section about 150 μ thick, not colored, composed of interwoven, branching, thin-walled, occasionally nodose-septate hyphae 3 μ in diameter, not incrustated, which have in the middle and subhymenial region an additional branched system of branches not more than 1 μ in diameter and bearing short acicular branchlets; no gloeocystidia; basidia simple, usually 4 sterigmata but rarely 5 or 6; spores hyaline, even, $4\frac{1}{2} \times 2-2\frac{1}{2}$ μ .

Fructifications 1-3 cm. long, 1-2 cm. wide.

On decaying, charred frondose wood and on *Populus*. New York and Louisiana. November and January.

C. Atkinsonii has snow-white color, waxy surface and small spores. The noteworthy character separating it from other white species is the system of delicate hyphal branches, so abundant in the middle and subhymenial regions of the fructification that they mask the outlines of the usual hyphae there and so fine that on first impression they seem to be the walls of collapsed hyphae. The mode of branching is not exactly that of *C. in-*

vestiens and *C. jamaicense* but a comparable type of hyphal differentiation. The great distance between the two stations leads me to suspect that *C. Atkinsonii* is more frequent than indicated by the collections in which the distinctive branching was observed.

Specimens examined:

New York: Altamont, *E. A. Burt*; Ithaca, *G. F. Atkinson*, 2558, type.

Louisiana: *A. B. Langlois*, 246, comm. by U. S. Dept. Agr. Herb.

24. *C. subnullum* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, closely adnate, very thin, cartridge-buff to olive-buff in the herbarium, hypochnoid, not forming a continuous hymenium but with the basidia in more or less connected tufts of about 3–5 to the mm., farinaceous, the margin similar; in section 30–45 μ thick, not colored, composed of loosely arranged, hyaline hyphae 2–2½ μ in diameter, thin-walled, not incrustated, not nodose-septate; no gloecystidia; spores hyaline, even, globose, 2½ μ in diameter, borne 4 to a basidium.

Fructifications 3–7 cm. long, 2–3 cm. wide.

On bark of decaying logs of *Populus* sp. British Columbia. July.

When *C. subnullum* becomes better known from additional collections, it may become necessary to transfer it to another genus, but the present gathering favors the view that it is a *Corticium* somewhat lacking basidia so that the hymenium becomes discontinuous. This character, occurrence on poplar bark, small spores, and general aspect of an olive-buff Hyphomycete are good distinctive characters.

Specimens examined:

British Columbia: Sidney, *J. Macoun*, 30, type (in Mo. Bot. Gard. Herb., 63776).

25. *C. crustulinum* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, thin, tender, separable, with the substance whitish, dry, soft and cottony, and the hymenium warm

buff in the herbarium, even, pelliculose, brittle, not shining, the margin whitish, continuous with the substance, fimbriate; in section $160\ \mu$ thick, not colored, composed of a layer next the substratum of loosely interwoven, hyaline, thin-walled hyphae $2\ \mu$ in diameter, nodose-septate, not incrustated, and of a compactly interwoven, thin hymenium; no gloeocystidia; basidia $6 \times 3\ \mu$, with 4 sterigmata; spores hyaline, even, subglobose, $3 \times 2-3\ \mu$, copious.

Fructifications 5 cm. long, 2-3 cm. wide.

On very rotten frondose wood. Porto Rico. July.

C. crustulinum is characterized by the loosely attached, whitish-margined fructifications with yellowish hymenium borne on a white, cottony substance. The small hyphae, small basidia, and small spores are good confirmatory characters. We have no closely related species.

Specimens examined:

Porto Rico: Rio Piedras, *J. A. Stevenson*, 2914, type (in Mo. Bot. Gard. Herb., 3130).

26. *C. tessulatum* Cooke, *Grevillea* 6: 132. 1878; Sacc. Syll. Fung. 6: 619. 1888; Masee, Linn. Soc. Bot. Jour. 27: 136. 1890.

Type: type distribution in Ravenel, *Fungi Am.*, 127.

Fructifications effused, adnate, thin, somewhat membranaceous, tender, small pieces separable, in the herbarium becoming naphthalene-yellow, with central parts light ochraceous buff, even, contracting greatly in drying, and cracking into rectangular masses 1-4 mm. in diameter separated by fissures 1-2 mm. wide, with some of the white silky subiculum clinging to the substratum, the margin whitish, fibrillose; in section $150-200\ \mu$ thick, not colored, composed of loosely interwoven, very thin-walled and collapsing hyphae $4\ \mu$ in diameter, abundantly nodose-septate, not incrustated; no gloeocystidia; spores hyaline, even, $4-4\frac{1}{2} \times 3\ \mu$, few found.

Fructifications 2-4 cm. in diameter.

On pine and spruce bark on the ground. Canada to South Carolina, and in Idaho and Arizona. May to October. Infrequent.

C. tessulatum is somewhat suggestive of *C. Berkeleyi* in aspect

but is colored differently, tending towards light ochraceous-buff in the more central parts of the fructification; this color, occurrence on old pine and spruce, the wide cracks from drying, and loose attachment to substratum and tendency to scale away from it of the rectangular masses of the dried fructification are helpful characters in recognizing the species. *C. illaqueatum*, occurring on *Castanea* in France, is closely related.

Specimens examined:

Exsiccati: Ravenel, *Fungi Am.*, 127, type distribution.

Canada: Lower St. Lawrence Valley, *J. Macoun*, 71, 75; Ontario, Temagami, *H. von Schrenk* (in *Mo. Bot. Gard. Herb.*, 57051).

Maine: Penobscot County, *W. A. Murrill*, 1821 (in *N. Y. Bot. Gard. Herb.*, *Burt Herb.*, and *Mo. Bot. Gard. Herb.*, 59676).

New Hampshire: Chocorua, *W. G. Farlow*, 10, and two other gatherings.

Vermont: Middlebury, *E. A. Burt*.

New York: Osceola, *C. H. Peck* (in *N. Y. State Mus. Herb.*, and *Mo. Bot. Gard. Herb.*, 59674, 59676).

Maryland: Takoma Park, *C. L. Shear*, 1066.

South Carolina: Aiken, *H. W. Ravenel*, in *Ravenel, Fungi Am.*, 127.

Idaho: Addie, *E. E. Hubert*, comm. by *J. R. Weir*, 11989 (in *Mo. Bot. Gard. Herb.*, 63352).

Arizona: Flagstaff, *W. H. Long*, 19494 (in *Mo. Bot. Gard. Herb.*, 44768, 44769); Interior Basin, San Francisco Peaks, *W. H. Long*, 21309, in part (in *Mo. Bot. Gard. Herb.*, 54890).

27. *C. Stevensonii* Burt, n. sp.

Type: in *Mo. Bot. Gard. Herb.*

Fructifications effused, rather thick, fleshy-membranaceous, small pieces separable, becoming cartridge-buff to cream-buff in the herbarium, perhaps white when growing, ceraceous, slightly colliculose, becoming somewhat cracked in drying, the margin narrow, similar; in section 400–450 μ thick, not colored, with an incrustated subhymenial zone, the hyphae 3–3½ μ in diameter, not nodose-septate, rather thick-walled and rigid, loosely interwoven and rising obliquely to the base of the compact subhymenium, conspicuously incrustated for a length of about 30 μ in the incrustated

zone and about $6\ \mu$ in diameter over the incrustation; no gloeocystidia; spores copious, hyaline, even, $6 \times 4\text{--}4\frac{1}{2}\ \mu$.

Fructifications in fragments 1–3 cm. long, 1–2 cm. wide.

On badly decayed frondose wood. Porto Rico. December.

This species resembles in aspect *Peniophora cremea* and *P. mutata*, and its hyphae are similarly coarse and loosely arranged but both cystidia and gloeocystidia are lacking. The incrustated zone at the base of the subhymenium is about $30\ \mu$ thick and very characteristic. Each hypha assumes incrustation upon entering this zone, has position parallel to the other hyphae, and is devoid of incrustation beyond the zone.

Specimens examined:

Porto Rico: Rio Piedras, Palo Seco, La Isabell Grove, *J. A. Stevenson*, 3523, type (in Mo. Bot. Gard. Herb., 6635).

28. *C. lacteum* Fries, Epicr. 560. 1838; Hym. Eur. 649. 1874; Sacc. Syll. Fung. 6: 610. 1888; Masee, Linn. Soc. Bot. Jour. 27: 132. 1890.—Not *C. lacteum* of Bresadola, v. Höhnelt & Litschauer, nor probably of Bourdot & Galzin, and Rea.

Thelephora lactea Fries, Syst. Myc. 1: 452. 1821; Elenchus Fung. 1: 205. 1828.—*Corticium pellicula* (Fr. ?) Karsten, Soc. pro Fauna et Fl. Fenn. Meddel. 11: 5. 1885.

Type: in Fries Herb.—the specimen determined by E. Fries. Authentic specimen in better condition in Kew Herb.—the cream-colored fructification collected by Lbd., Svex. Soderm, Oct.

Fructifications effused, thin, membranaceous, tender, small pieces separable, becoming cream-colored to cinnamon-buff in the herbarium, even, more or less cracked, the margin whitish, fibrillose; in section $150\text{--}300\ \mu$ thick, not colored, with the hyphae densely and longitudinally arranged along the substratum and then curving upward to the hymenium, $2\frac{1}{2}\text{--}4\ \mu$ in diameter, incrustated in the subhymenial region, occasionally nodose-septate; no gloeocystidia nor vesicular bodies; spores hyaline, even, subglobose, about $5\text{--}6\frac{1}{2} \times 5\text{--}6\ \mu$, pointed at the base.

Fructifications 3–8 cm. long, 2–5 cm. wide.

On decaying wood and limbs of coniferous and frondose species and on the ground. In Europe and in northern United States

and Canada from Massachusetts westward to the Pacific states. May to November. Occasional.

It has been necessary to depart from the conflicting concepts of *C. lacteum*, and base the species on the presumably oldest existing specimen collected and determined by Fries and preserved in his herbarium under the name of *Thelephora lactea*. Other and more recent specimens were referred by Fries to *Corticium lacteum*, the genus *Corticium* not being used by Fries until the publication of his 'Epicrisis.' These more recent specimens are of various species as might be expected, for the exact methods of the present day in the study of resupinate Hymenomycetes were not then used, and it is probable that these later specimens have caused the confusion in current concepts of *C. lacteum*. It is fortunate that one of these later specimens, named by Fries, agrees with the original specimen, is in better condition than the original specimen, and is preserved in Kew Herbarium where it is convenient for comparison. *C. lacteum*, as understood from these specimens, belongs in a group of species of similar aspect having globose spores about 6 μ in diameter. The other members of this group are *C. radiosum*, and *C. abeuns*. *C. pelliculare* has the same aspect as the others named but its spores are not globose. When one knows any one of the above group of species the other species should be readily recognized as they are found, for *C. lacteum* has rather coarse, loosely arranged, more or less granule-incrusted hyphae, and lacks gloeocystidia and vesicular bodies; *C. abeuns* has wholly immersed gloeocystidia of the usual kind; and *C. radiosum* has vesicular organs which are at first like those of *C. polyonium* but become much more inflated and with highly attenuated wall, and finally perhaps are shown only by vesicular spaces between the massed hyphae.

Specimens examined:

- Sweden: type, under the name *Thelephora lactea* (in Herb. Fries); Svex. Söderm., Lindblad, determined by E. Fries as *Corticium lacteum* (in Kew Herb.); Stockholm, L. Romell, 114, 179, 327.
- Finland: Mustiala, P. Karsten, comm. by Karsten under the name *Corticium pellicula* Fr.?
- France: Fautrey, determination as *Corticium lacteum* approved by Patouillard for Lloyd, comm. by C. G. Lloyd, 4368.

- Canada: *J. Macoun*, 29, and an unnumbered specimen from Ellis Herb., comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 44640); Ironsides, *J. Macoun*, 286 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61348); Lower St. Lawrence Valley, *J. Macoun*, 45, 47, 90; Ottawa, *J. Macoun*, 57, and 165 and 349 (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 56052, 55921).
- Vermont: Middlebury, *E. A. Burt*, 2 gatherings.
- Massachusetts: Magnolia, *W. G. Farlow*.
- New York: Albany, *H. D. House & J. Rubinger*, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 7462); Altamont, *E. A. Burt*; Freeville, *G. F. Atkinson*, 2586; Hague, *C. H. Peck*, 11; Ithaca, *G. F. Atkinson*, 2870, 14100; Sandlake, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55748); Warrensburg, *C. H. Peck*, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 55976).
- Pennsylvania: Carbondale, *E. A. Burt*.
- Alabama: Montgomery, *R. P. Burke*, 220 (in Mo. Bot. Gard. Herb., 57094).
- Ohio: Cincinnati, *A. P. Morgan*, comm. by Lloyd Herb., 2617.
- Michigan: Ann Arbor, *C. H. Kauffman*, 24, 38 (in Mo. Bot. Gard. Herb., 17172, 18617); New Richmond, *C. H. Kauffman*, 25, 33, 42 (in Mo. Bot. Gard. Herb., 17035, 20030, 22870).
- Wisconsin: Blue Mounds, *A. O. Stucki*, 37.
- Illinois: Peoria, *C. J. Humphrey*, 1990 (in Mo. Bot. Gard. Herb., 17518).
- Idaho: Bonanza, *G. G. Hedgcock*, comm. by C. J. Humphrey, 2557, in part; Coolin, *J. R. Weir*, 11574 (in Mo. Bot. Gard. Herb., 63302).
- Colorado: Uncompaghre National Forest, *G. G. Hedgcock*, comm. by C. J. Humphrey, 2546.
- British Columbia: Sidney, *J. Macoun*, 84 (in Mo. Bot. Gard. Herb., 55346).
- Washington: Chiquash Mountains, *W. N. Suksdorf*, 842; Seattle, *W. A. Murrill*, 151, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55727).
- California: Massack, *A. S. Rhoads*, 21 (in Mo. Bot. Gard. Herb., 56990).

29. *C. subgiganteum* Berkeley, *Grevillea* 2: 3. 1873; Sacc. Syll. Fung. 6: 632. 1888; Lyman, Boston Soc. Nat. Hist. Proc. 33: 151. *pl. 18, f. 2-21, pl. 26, f. 137.* 1907.

Peniophora subgigantea (Berk.) Masseé, Linn. Soc. Bot. Jour. 25: 142. 1889.—*Michenera artocreas* Berk. & Curtis, Linn. Soc. Bot. Jour. 10: 333. 1868; Sacc. Syll. Fung. 6: 653. 1888; Patouillard, Soc. Myc. Fr. Bul. 7: 42. *pl. 4, f. 1-5.* 1891; Essai Taxon. 67. 1900; Peirce, Torr. Bot. Club Bul. 17: 305. *pl. 110, f. k-n.* 1890; Lyman, Boston Soc. Nat. Hist. Proc. 33: 157. *pl. 18, f. 6-21, pl. 26, f. 137.* 1907.—An *Corticium gilvidum* Bresadola, Ann. Myc. 18: 46. 1920?

Type: in Kew Herb. and Farlow Herb.

Basidiosporic stage broadly effused, adnate, thick, membranaceous, separable in small pieces when moist, drying light buff to light ochraceous-buff, even, glabrous, not cracked, the margin whitish, sometimes buff when old; in section 500–1000 μ thick, not colored, with the hyphae densely interwoven, about 2–2½ μ in diameter, not incrustated, not nodose-septate; no gloeocystidia; paraphyses with pointed tips; basidia large with 4 sterigmata usually; basidiospores hyaline, even, globose or subglobose, 14–19 μ in diameter or 14–19 \times 12–16 μ .

Chlamydosporic or *Michenera* fructifications disk-shaped, concave, drying snuff-brown, cracked, the margin acute, thick, white on its elevated side; in section 1–2 mm. thick, composed of a thick basal layer of densely interwoven hyphae about 2 μ in diameter which terminate in sporiferous ends and branches densely crowded together in the concave layer at surface of the fructifications; sporophores consist of each a single chlamydospore terminating in a slender, flexuous, tapering terminal appendage up to 10–50 μ long; chlamydospores ovoid, even, 12–20 \times 10–15 μ .

Basidiosporic fructifications 2–15 cm. long, 1–4 cm. wide; *Michenera* fructifications 6–8 mm. in diameter.

On bark of dead limbs of *Acer rubrum*, *Magnolia*, and *Liriodendron*. In swamps in the Atlantic states from Canada to Cuba. July to February. Occasional.

Fructifications of the perfect stage bear some resemblance in general aspect to those of *C. portentosum* but are readily distinguished by the much larger spores. When growing on the

same twigs the perfect fructifications occur normally on the under side of the twigs with the imperfect ones opposite on the upper side.

Specimens examined:

Exsiccati: Ell. & Ev., N. Am. Fungi, 3102, under the name *Corticium ochroleucum* var. *resupinatum*.

Canada: Quebec, Hull, *J. Macoun*, 149; Ontario, Ottawa, *J. Macoun*, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 55802).

Maine: Kittery Point, *R. Thaxter*, comm. by G. R. Lyman.

New Hampshire: Chocorua, *W. G. Farlow* (in Mo. Bot. Gard. Herb., 55580); North Conway, comm. by L. O. Overholts, 5062 (in Mo. Bot. Gard. Herb., 56354).

Vermont: Middlebury, *C. G. Lloyd*, 10623 (in Mo. Bot. Gard. Herb., 44639).

Connecticut: near Moosup River, *J. L. Sheldon*, comm. by C. J. Humphrey, 2526 (in Mo. Bot. Gard. Herb., 18559).

New York: Karner, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55782).

New Jersey: Newfield, *J. B. Ellis*, comm. by Lloyd Herb., 1442, by Farlow Herb. (in Mo. Bot. Gard. Herb., 55584), and in Ell. & Ev., N. Am. Fungi, 3102.

Virginia: Clarendon, *W. H. Long*, 12715 (in Mo. Bot. Gard. Herb., 55060).

North Carolina: Transylvania County, *W. A. Murrill & H. D. House*, 423, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 56586).

South Carolina: Aiken, *H. W. Ravenel*, 1669, type (in Kew Herb. and Farlow Herb.).

Alabama: Auburn, *G. F. Atkinson*, 2364.

Cuba: *C. Wright*, type of *Michenera artocreas* (in Farlow Herb.).

30. *C. ceraceum* Berk. & Rav. in Ravenel, Fungi Car. Exs. 3. 29. 1855, without description; Masee, Linn. Soc. Bot. Jour. 27: 150. 1890; v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 116: 785. text f. 6. 1907.

Corticium molle Berk. & Curtis, Linn. Soc. Bot. Jour. 10: 336. 1868; Grevillea 1: 180. 1873.—Not *Corticium molle* Fries.—*C. armeniicum* Sacc. Syll. Fung. 6: 637. 1888.

Type: type distribution in Ravenel, *Fungi Car.* 3: 29.

Fructifications broadly effused, ceraceous-fleshy, drying membranaceous, small pieces separable when moistened, becoming cinnamon-buff to army-brown in the herbarium, even, shining, not cracking, the margin paler, narrow, with hyphae interwoven; in structure 100–400 μ thick, not colored, composed of erect, densely interwoven, agglutinate, thick-walled hyphae $2\frac{1}{2}$ –3 μ in diameter, not incrustated, rarely, if at all, nodose-septate; no gloeocystidia; spores hyaline, even, flattened on one side, 10 – $16 \times 4\frac{1}{2}$ – 7μ .

Fructifications 1–10 cm. long, 1–3 cm. wide; sometimes confluent over areas up to 1 m. long.

On decaying trunks of frondose species. New Jersey to Mexico, in the West Indies, and in South Africa. Throughout the year. Uncommon.

C. ceraceum varies in the thickness of its fructifications which are usually cinnamon to ochraceous-orange in color and sometimes become very large. The spores are so very large that they afford a good distinctive character but are most likely to be found in crushed preparations of the hymenium.

Specimens examined:

Exsiccatti: Ellis, *N. Am. Fungi*, 607; Ravenel, *Fungi Am.*, 453; *Fungi Car.* 3: 29, type distribution.

New Jersey: Newfield, *J. B. Ellis*, comm. by Lloyd Herb.

Virginia: Woodstock, *C. L. Shear*, 1193.

North Carolina: Biltmore Estate, *W. A. Murrill* (in *N. Y. Bot. Gard. Herb.*, and *Mo. Bot. Gard. Herb.*, 61351).

South Carolina: *H. W. Ravenel*, in Ellis, *N. Am. Fungi*, 607, and type in Ravenel, *Fungi Car.* 3: 29; Aiken, *H. W. Ravenel*, in Ravenel, *Fungi Am.*, 453; Black Rock, *H. W. Ravenel*, 1261 (in Curtis Herb.).

Alabama: Montgomery, *R. P. Burke*, 133 (in *Mo. Bot. Gard. Herb.*, 10951).

Louisiana: Lafayette County, *A. B. Langlois*, 1467; St. Martinville, *A. B. Langlois*, 41, comm. by Lloyd Herb., and 2709, and *G.*

Mexico: Orizaba, *W. A. & E. L. Murrill*, 789, comm. by N. Y. Bot. Gard. Herb. (in *Mo. Bot. Gard. Herb.*, 54615).

Cuba: *C. Wright*, type of *Corticium molle* B. & C. (in Curtis Herb., 202); Alto Cedro, *Earle & Merrill*, comm. by N. Y. Bot. Gard. Herb.

Africa: locality not given, *P. A. van der Bijl*, 13 (in Mo. Bot. Gard. Herb., 58810).

31. *C. Bambusae* Burt, n. sp.

Type: in Burt Herb., and Farlow Herb.

Fructifications small, becoming confluent, effused, adnate, very thin, tender, small pieces separable, cartridge-buff, even, not shining, somewhat cracked, the margin free in some places; in section 80–120 μ thick, not colored, with the hyphae about $2\frac{1}{2}$ μ in diameter, not incrustated, not nodose-septate, arranged longitudinally along the substratum and sending out lateral branches to form the hymenium; no gloeocystidia; basidia simple, 40×10 μ , with 4 sterigmata; spores hyaline, even, $14-18 \times 8-9$ μ , pointed at both ends, copious.

Fructifications 1–3 mm. in diameter, becoming confluent over an area 4 cm. long, $1-1\frac{1}{2}$ cm. wide.

On bamboo. West Indies and Venezuela. Very common.

The small, cartridge-buff fructifications clustered together and becoming confluent over the hard cortex of culms of bamboo and the unusually large spores are good distinctive characters for recognition of this species.

Specimens examined:

Trinidad: Maravel, *R. Thaxter*, type, comm. by W. G. Farlow, 19.

32. *C. cremoricolor* Berk. & Curtis, *Grevillea* 1: 180. 1873; *Sacc. Syll. Fung.* 6: 615. 1888.—*Massee*, *Linn. Soc. Bot. Jour.* 27: 133. 1890 (spelled *cremicolor*).

Type: in Kew Herb. and Farlow Herb., labelled *Corticium cremicolor* B. & C.

Fructifications broadly effused, rather thick, membranaceous, small pieces separable when moistened, becoming cream-colored and pinkish buff to wood-brown in the herbarium, cracking into areolae 2–3 mm. in diameter and with a distinctly radial arrangement of the principal cracks frequently, more or less colliculose with broad, slightly elevated granules, the margin narrow, fibril-

lose, sometimes radiate; in section 200–800 μ thick, not colored, with hyphae somewhat longitudinally interwoven and then ascending to a compact hymenium, 2–3 μ in diameter, rarely larger, not incrustated but mixed with more or less mineral matter; no gloeocystidia; spores hyaline, even, flattened on one side, 8–12 \times 5–8 μ .

Fructifications 2–10 cm. long, 1½–3 cm. wide, often confluent.

On bark of decaying *Quercus* and other frondose species. Throughout Canada and the United States. April to December. Frequent.

C. cremoricolor is so similar to *C. hydrians* in aspect that the much larger spores of *C. cremoricolor* afford the best character for separation of these two species. *C. cremoricolor* is less tubercular, however, thicker, and usually with cracks radiating from the center of the fructification. *C. anthracophilum* Bourd. is closely related in structure.

Specimens examined:

Canada: *J. Macoun*, 19.

Massachusetts: Cambridge, *L. M. Underwood*, 1001 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 57340).

New York: Ithaca, *H. S. Jackson*, comm. by Cornell Univ. Herb., 14391; Onondaga Valley, *L. M. Underwood* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61388).

New Jersey: Belleplain, *C. L. Shear*, 1247, Newfield, *J. B. Ellis*, comm. by Farlow Herb. (in Mo. Bot. Gard. Herb., 44636).

Pennsylvania: Ohio Pyle, *W. A. Murrill*, 1076, 1133 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61586, 61579); Reitz Gap, *L. O. Overholts*, 4633 (in Mo. Bot. Gard. Herb., 56118); State College, *L. O. Overholts & C. R. Orton*, comm. by L. O. Overholts, 4723 (in Mo. Bot. Gard. Herb., 56115); Trexlertown, *W. Herbst*, comm. by Lloyd Herb., 2227; Whitehaven, *G. F. Atkinson*, 8654.

Maryland: Takoma Park, *C. L. Shear*, 1075.

District of Columbia: Washington, *C. L. Shear*, 1240, 1259.

Florida: *W. W. Calkins*, comm. by Farlow Herb. (in Mo. Bot. Gard. Herb., 44633).

Alabama: *Peters*, type (in Kew Herb., and Curtis Herb., 5205).

Texas: Houston, *H. W. Ravenel*, 271, comm. by U. S. Dept. Agr.

- Herb. This is the *Corticium lactescens* of Cooke's Fungi of Texas; Quitman, *W. H. Long*, 12092 (in Mo. Bot. Gard. Herb., 55047).
- Ohio: *C. G. Lloyd*, 3821, comm. by Farlow Herb., 166 (in Mo. Bot. Gard. Herb., 55261), and 3821 and 3907.
- Indiana: Scottsburg, *J. R. Weir*, 376 (in Mo. Bot. Gard. Herb., 17186).
- Illinois: Christopher, *C. J. Humphrey*, 2092 (in Mo. Bot. Gard. Herb., 21145); Lombard, *E. T. & S. A. Harper*, 952.
- Michigan: Ann Arbor, *C. H. Kauffman*, 27; New Richmond, *Demmon*, comm. by A. H. W. Povah, 6 (in Mo. Bot. Gard. Herb., 20198), and *C. H. Kauffman*, 29 (in Mo. Bot. Gard. Herb., 20304).
- Wisconsin: Madison, *M. C. Jensen*, and another comm. by *C. J. Humphrey*, 2439 (in Mo. Bot. Gard. Herb., 43839 and 22376, respectively); Stevens Point, *C. J. Humphrey*, 1802 (in Mo. Bot. Gard. Herb., 17910).
- Minnesota: *Univ. Minn. Myc. Herb.*, comm. by *E. L. Jensen*, 8 (in Mo. Bot. Gard. Herb., 10565).
- Missouri: Bismarck, *L. O. Overholts* (in Mo. Bot. Gard. Herb., 58322).
- British Columbia: Sidney, *J. Macoun*, 12 (in Mo. Bot. Gard. Herb., 5730).
- New Mexico: Cienega Springs, *W. H. Long*, 21596 (in Mo. Bot. Gard. Herb., 55120); Cloudercroft, *W. H. Long*, 19665, 19523 (in Mo. Bot. Gard. Herb., 55044, 55045); Tyom Canyon, *W. H. Long*, 21895 (in Mo. Bot. Gard. Herb., 55119); Tyom Exp. Sta., *W. H. Long*, 21877 (in Mo. Bot. Gard. Herb., 55118).

33. *C. confluens* Fries, *Epicr.* 564. 1838; *Hym. Eur.* 655. 1874; *Berkeley, Outl. Brit. Fung.* 276. 1860; *Sacc. Syll. Fung.* 6: 626. 1888; *Massee, Linn. Soc. Bot. Jour.* 27: 133. 1890; *Bresadola, I. R. Accad. Agiati Atti III.* 3: 112. 1897; *Bourdot & Galzin, Soc. Myc. Fr. Bul.* 27: 252. 1911; *Rea, Brit. Basid.* 679. 1922.

Thelephora confluens Fries, *Syst. Myc.* 1: 447. 1821.—*Corticium confluens* var. *subcalceum* Karsten, *Rev. Myc.* 10: 74. 1888.

Fructifications effused, rather thick, waxy-membranaceous,

small pieces separable when moistened, whitish to cartridge-buff and light pinkish cinnamon in the herbarium, even, with few cracks, the margin indeterminate, thinning out; in section 200–500 μ thick, not colored, composed of ascending, densely interwoven and agglutinate, thin-walled hyphae $2\frac{1}{2}$ –3 μ in diameter, not incrustated, occasionally nodose-septate; no gloeocystidia; spores hyaline, even, ovoid, 5 – $9 \times 3\frac{1}{2}$ – 6μ , copious.

Fructifications 2–8 cm. long, 1–3 cm. wide.

On bark of fallen decaying limbs of *Betula*, *Alnus*, *Salix*, and other frondose species. In Europe, from Newfoundland to Louisiana and westward to Manitoba and Washington, in Mexico, the West Indies, Japan, and South Africa. April to December. Common.

C. confluens may be recognized among our species by its occurrence on frondose bark in closely adnate fructifications with somewhat the aspect of pale *Peniophora incarnata* but of different structure, which is distinctive by not being stratosed and by having the hyphae agglutinate, and by the presence of large spores. The authentic specimen from Karsten of *C. confluens* var. *subcalceum* has spores $9 \times 6 \mu$ and does not have cystidia, differing in both respects from the statement by Bresadola in *Ann. Myc.* 1: 102. 1903.

Specimens examined:

Sweden: *L. Romell*, 80, 81, 82, 83, 84.

Finland: Mustiala, authentic specimen, perhaps part of type of *Corticium confluens* var. *subcalceum* Karst. from Karsten.

Germany: Lengerich, *W. Brinkmann*, Westfälische Pilze, 13 (in *Mo. Bot. Gard. Herb.*, 63430).

Austria: Tirol, Hall, *V. Litschauer*; Stubai, *V. Litschauer*.

Italy: *G. Bresadola*.

Newfoundland: Bay of Islands, *A. C. Waghorne*, 983 (in *Mo. Bot. Gard. Herb.*, 63747).

Canada: Lower St. Lawrence Valley, *J. Macoun*, 65.

Ontario: Eastman's Springs, *J. Macoun*, 532; Ottawa, *J. Macoun*, 29; Woodstock, *E. Bartholomew*, 6713 (in *Mo. Bot. Gard. Herb.*, 57041).

New Hampshire: Camp, Ellis R., *Underwood & C.*, 22 (in *N. Y. Bot. Gard. Herb.*, Burt Herb., and *Mo. Bot. Gard. Herb.*, 61585); Chocorua, *W. G. Farlow*.

Vermont: Middlebury, *E. A. Burt*, 2 gatherings.

New England: *W. G. Farlow*.

Massachusetts: Waverly, *G. R. Lyman*, 164.

New York: Albany, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 57446, 57472, 57670, 59680); Altamont, *E. A. Burt*; East Galway, *E. A. Burt*; Hudson Falls, *S. H. Burnham*, 48 (in Mo. Bot. Gard. Herb., 54465); Ithaca, *C. H. Kauffman*, *C. O. Smith*, *Van Hook*, comm. by *G. F. Atkinson*, 14384, 8045, and 8048, respectively; Karner, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 54374, 55206); New York, *Class in Mycology* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61346); North Elba, *C. H. Peck*, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 56111); Oneida, *H. D. House*, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 59705); Seventh Lake, Hamilton County, *H. E. Stork*, 2 (in Mo. Bot. Gard. Herb., 56639); West Park, New York City, *F. S. Earle*, 1596 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61425); West Troy, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55781).

New Jersey: Belleplaine, *C. L. Shear*, 1255.

Pennsylvania: Carbondale, *E. A. Burt*; Germantown, *E. A. Burt*; State College, *L. O. Overholts*, 2620 (in Mo. Bot. Gard. Herb., 20278).

Maryland: Silver Springs, *D. G. Fairchild*, comm. by U. S. Dept. Agr. Herb.

District of Columbia: Takoma Park, *C. L. Shear*, 1354; Washington, *C. L. Shear*, 1238, in part.

Florida: Daytona, *R. A. Harper*, 9 (in Mo. Bot. Gard. Herb., 54536).

Alabama: Auburn, *F. S. Earle* & *C. F. Baker*, and 43 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61558).

Louisiana: Baton Rouge, *Edgerton* & *Humphrey*, comm. by *C. J. Humphrey*, 5729, 5733; St. Martinville, *A. B. Langlois*, *i*, *dh*, and 472 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 614788), and 1761a, comm. by *W. G. Farlow* (in Mo. Bot. Gard. Herb., 42600).

Illinois: Duquoin, *C. J. Humphrey*, 1309, 1394 (in Mo. Bot. Gard. Herb., 10324, 10352); Riverside, *E. T. & S. A. Harper*, 675.

Wisconsin: Blue Mounds, *Miss Stucki*, 12, 13.

Iowa: Ames, *H. H. Hume*, 3 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61583); Fort Dodge, *O. M. Oleson*, 438 (in Mo. Bot. Gard. Herb., 44077).

Manitoba: Winnipeg, *G. R. Bisby*, 62 (in Mo. Bot. Gard. Herb., 57898).

Washington: Puyallup, *C. J. Humphrey*, 7649.

Porto Rico: Campo Alegre, *J. A. Stevenson*, 6585 (in Mo. Bot. Gard. Herb., 55078).

Jamaica: Troy, *A. E. Wight*, 420, comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 14558).

Mexico: Guernavaca, *W. A. & E. L. Murrill*, 541, 543, 548, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54558, 54559, 54560).

Japan: Prov. Shinauo, *A. Yasuda*, 133 (in Mo. Bot. Gard. Herb., 62060).

Africa: Natal, Pietermaritzburg, *P. A. van der Bijl*, 583 (in Mo. Bot. Gard. Herb., 69371).

34. *Coniophora corrugis* Burt, Mo. Bot. Gard. Ann. 13: 310. 1926.

This species occurs on living trees, logs and dead limbs of conifers in forests of the Rocky Mountain region and from British Columbia to Arizona in the Pacific states. The fructifications are somewhat coriaceous, loosely attached to the substratum, and vinaceous in color. The spores in most specimens are colorless, even, $6-10 \times 4-7 \mu$, not copious—fully mature and colored in only one of the specimens received during 14 years.

35. *C. laetum* (Karst.) Bresadola, Ann. Myc. 1: 94. 1903; v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 115: 1552. 1906; Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 237. 1911.

Hyphoderma laetum Karsten, Rev. Myc. 11: 206. 1889; Sacc. Syll. Fung. 10: 530. 1892.—*Corticium hypnophilum* Karsten, Rev. Myc. 12: 126. 1890; Sacc. Syll. Fung. 9: 234. 1891.

Fructifications effused, thin, membranaceous-waxy, soft, small pieces separable when moist, orange-pink to rose color, fading in the herbarium to cartridge-buff, even, not cracked, the margin

thinning out, somewhat arachnoid; in section 100–200 μ thick, not colored, composed of interwoven, hyaline hyphae 5–8 μ in diameter, not incrusted, no clamp connections found; no gloeocystidia; spores hyaline, even, 6–12 \times 4–8 μ .

Fructifications 5 mm.–2 cm. long, 5–10 mm. wide.

On living mosses and on bark of dead *Alnus* and *Betula*. In Europe and in New York, Michigan, and North Dakota.

This species may be recognized by bright rose color when fresh, occurrence on living moss and dead alders, large spores, coarse hyphae, and absence of gloeocystidia. The three American specimens cited below seem referable to *C. laetum* except that their hyphae are more numerous and of smaller diameter—4–6 μ —than those of the European specimens with which compared. *Peniophora aurantiaca* has much the same aspect and occurs on *Alnus* also but has gloeocystidia and cystidia.

Specimens examined:

Sweden: *L. Romell*, 145.

Finland: Mustiala, authentic specimen of *C. hypnophilum* from Karsten.

Italy: specimen on *Alnus* of *C. laetum* collected and determined by Bresadola.

New York: Karner, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 44708).

Michigan: Isle Royale, *Allen & Stuntz*, 42, comm. by Univ. Wis. Herb.

North Dakota: *Brenckle*, comm. by V. Litschauer, 2.

36. *C. roseum* Persoon, Roemer Neues Mag. Bot. 1: 111. 1794; Fries, Epicr. 560. 1838; Hym. Eur. 650. 1874; Berkeley, Outl. Brit. Fung. 273. 1860; Sacc. Syll. Fung. 6: 611. 1888; Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 233. 1911; Coker, Elisha Mitchell Scientif. Soc. Jour. 36: 171. pl. 33, f. 3–5. 1921; Rea, Brit. Basid. 673. 1922.

Thelephora rosea Persoon, Syn. Fung. 575. 1801; Myc. Eur. 1: 131. 1822; Fries, Syst. Myc. 1: 451. 1821; Elench. Fung. 1: 203. 1828.—*Corticium roseolum* Masee, Linn. Soc. Bot. Jour. 27: 140. pl. 6, f. 2. 1890.—*C. polygonoides* Karsten, Soc. pro Fauna et Fl. Fenn. Meddel. 6: 12. 1881; Sacc. Syll. Fung. 6:

638. 1888; Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 232. 1911.—*Lyomyces polygonoides* Karsten, Finska Vet.-Soc. Bidrag Natur. och Folk 48: 419. 1889.—*Aleurodiscus roseus* (Pers.) v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 115: 1568. 1906.

Fructification effused, rather thick, adnate, somewhat membranaceous, small pieces separable when moist, drying pinkish buff to buff-pink, pruinose, finally cracked, the margin whitish, more or less byssoid; in section 200–280 μ thick, with the hymenial layer perhaps slightly colored, 2-layered, with the basal layer composed of longitudinally arranged, densely interwoven hyphae 3–3½ μ in diameter, not incrustated, the hymenial layer composed of erect hyphae, basidia, and slender, slightly brownish, short-branched paraphyses; no gloeocystidia; basidia at first exceeded by the paraphyses, finally protruding; spores hyaline, even, 6–12 \times 4½–8 μ .

Fructifications sometimes 2–3 mm. in diameter and becoming laterally confluent, more usually 1–10 cm. long, 1–3 cm. wide.

On bark and wood of logs and branches of frondose species such as *Populus*, *Betula*, *Alnus*, *Acer*, *Carya*, *Ulmus*, etc., rarely on coniferous wood. In Europe, from Canada to Alabama, westward to Manitoba and Washington, in New Mexico and Mexico, and in Japan. Throughout the year. Common.

C. roseum is well named, for its pale rose-color is distinctive and is confirmed, when sections are examined, by the slender, slightly brownish, short-branched organs which are probably paraphyses but have seemed to me when in young vigorous condition to have the branches tipped by very minute spherical bodies. *C. polygonoides* is the early stage with the paraphyses exceeding the young basidia.

Specimens examined:

Exsiccati: Ell. & Ev., Fungi Col., 609, under the name *Corticium incarnatum*; de Thümen, Myc. Univ., 2012.

Sweden: L. Romell, 47, 127, 146; Stockholm, L. Romell, 147.

Finland: Mustiala, P. A. Karsten, in de Thümen, Myc. Univ., 2012, and authentic specimen of *Lyomyces polygonoides*.

Austria: Stubai, Tirol, V. Litschauer.

Italy: Trient, G. Bresadola.

- England: Apthorpe, *Norths*, 12, type of *C. roseolum* (in Kew Herb.).
- Canada: *J. Macoun*, 85.
- Ontario: London, *J. Dearness*, D1078c (in Mo. Bot. Gard. Herb., 18666); Ottawa, *J. Macoun*, 135, 451.
- Maine: Freeport, *O. O. Stover*, comm. by P. L. Ricker.
- Vermont: Middlebury, *E. A. Burt*, 3 gatherings; Ripton, *E. A. Burt*, 2 gatherings; Smugglers' Notch, Mt. Mansfield, *E. A. Burt*.
- Massachusetts: Newton, *W. G. Farlow*; Willow Brook, *H. Webster*, comm. by Boston Myc. Club Herb., E.; Waverly, *G. R. Lyman*, 120, 164.
- New York: Alcove, *C. L. Shear*, 1204, 1313; Altamont, *E. A. Burt*; Ithaca, *G. F. Atkinson*, 2120, and *H. S. Jackson*, comm. by Cornell Univ. Herb., 14389; Minnewaska, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55980); Orient, *R. Latham*, 223 (in Mo. Bot. Gard. Herb., 44226); Poughkeepsie, *R. C. Poppey*, in Gerard Herb. (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61559); Syracuse, *L. M. Underwood*, 18 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 44312); White Plains, *L. M. Underwood* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61410).
- New Jersey: Newfield, *J. B. Ellis*, in Ell. & Ev., Fungi Col., 609.
- Pennsylvania: Center Hall, *E. West*, comm. by L. O. Overholts, 3659 (in Mo. Bot. Gard. Herb., 54700); State College, *J. Ellis*, comm. by L. O. Overholts, 5207 (in Mo. Bot. Gard. Herb., 56360).
- District of Columbia: Takoma Park, *C. L. Shear*, 953.
- North Carolina: *W. C. Coker*, 4703 (in Mo. Bot. Gard. Herb., 57424).
- Alabama: Auburn, *C. F. Baker* (in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., 61397, and Burt Herb.); Montgomery, *R. P. Burke*, 2, in part, 160, 305 (in Mo. Bot. Gard. Herb., 22073, 44961, 57195).
- Ohio: College Hill, *Aiken*, comm. by Lloyd Herb., 2341; Linwood, *C. G. Lloyd*, 1870; Preston, *C. G. Lloyd*, 1561.
- Indiana: Indianapolis, *H. von Schrenk* (in Mo. Bot. Gard. Herb., 19805).

- Illinois: Cairo, *E. Bartholomew*, 9234.
 Minnesota: Brickton, *C. J. Humphrey*, 1124 (in Mo. Bot. Gard. Herb., 10276).
 Iowa: Decorah, *E. W. D. Holway*.
 Missouri: Creve Coeur Lake, *F. P. McWhorter* (in Mo. Bot. Gard. Herb., 57334).
 Montana: Monarch, *J. R. Weir* (in Mo. Bot. Gard. Herb., 20736).
 Idaho: *J. R. Weir*, 366 (in Mo. Bot. Gard. Herb., 15165).
 Manitoba: River Park, *A. H. R. Buller*, 873 (in Mo. Bot. Gard. Herb., 58994); Stony Mountain, *A. H. R. Buller*, 897 (in Mo. Bot. Gard. Herb., 58989); Winnipeg, *A. H. R. Buller*, 936 (in Mo. Bot. Gard. Herb., 59025).
 Washington: Bingen, *W. N. Suksdorf*, 685, 720; Columbia River, W. Klickitat County, *W. N. Suksdorf*, 106.
 New Mexico: Mogollon, *G. G. Hedgcock & W. H. Long*, comm. by *C. J. Humphrey*, 2540 (in Mo. Bot. Gard. Herb., 21660).
 Mexico: Parral, Chihuahua, *E. O. Mathews*, 4 (in Mo. Bot. Gard. Herb., 44419).
 Japan: Sendai, *A. Yasuda*, 60 (in Mo. Bot. Gard. Herb., 56144).

37. *C. salmonicolor* Berk. & Broome, Linn. Soc. Bot. Jour. 14: 71. 1873; Sacc. Syll. Fung. 6: 620. 1888; Masee, Linn. Soc. Bot. Jour. 27: 122. 1890; Petch, Phys. and Dis. of Hevea brasiliensis, 209. 1911; Rorer, Trinidad Dept. Agr. Bul. 15: 1. f. 1, 2. 1917; Lee & Yates, Philippine Jour. Sci. 14: 657. pl. 1-7. 1919.

Necator decretus Masee, Kew Bul. Misc. Inf. 1898: 119. 1898; Sacc. Syll. Fung. 16: 1094. 1902.—*Corticium javanicum* Zimmermann, Centralbl. f. Bakt. Abt. 2, 7: 103. text f. 3. 1901.—*C. Zimmermanni* Sacc. & Syd. in Sacc. Syll. Fung. 16: 1117. 1902; 17: 169. 1905.

Type: in Kew Herb.

Fructifications broadly effused, thin, adnate, membranaceous-soft, separable when moist, pale ochraceous buff to orange-pink when fresh, fading in the herbarium to pale olive-buff and cartridge-buff, pulverulent, even, cracking a little in drying, the margin thinning out; in section 100-200 μ thick, composed of hyphae running longitudinally over the substratum and bearing

a broad layer of suberect, branching, loosely interwoven hyphae 4-7 μ in diameter, not incrustated, not nodose-septate; no gloeocystidia; basidiospores hyaline, even, 9-12 \times 6-8 μ . The conidia of the imperfect *Necator* stage are catenulate, 14-18 \times 7-8 μ , according to Masee.

Fructifications 2-20 cm. long, 1-3 cm. wide.

Parasitic on bark of branches 1-3 cm. in diameter and young trees of *Cacao*, *Citrus*, *Hevea*, *Amherstia*, tea and coffee plants in tropical regions, and on *Ficus* and pear and apple shoots in Florida and Louisiana. In West Indies, Philippine Islands, East Indies, and Ceylon.

C. salmonicolor is a species very destructive to important economic species of shrubs and trees, causing the Pink Disease where the climate is warm and moist for sufficiently long periods that the mycelium can run over the bark of young shoots and penetrate into the deeper tissues. Its parasitic occurrence on living woody plants, bright color, coarse hyphae, and large spores render it easy to recognize in tropical regions.

Specimens examined:

Florida: Gainesville, *J. Matz* (in Mo. Bot. Gard. Herb., 44822, 54934).

Louisiana: Baton Rouge, *C. W. Edgerton*, 702, 990a.

Porto Rico: Bayamon, *J. A. Stevenson*, 2827 (in Mo. Bot. Gard. Herb., 9689); Pueblo Vigo, *J. A. Stevenson*, 5436 (in Mo. Bot. Gard. Herb., 7820); Trujillo Alto, *J. A. Stevenson*, 3819, and *W. C. Drier*, comm. by *J. A. Stevenson*, 6770 (in Mo. Bot. Gard. Herb., 9059 and 55054, respectively).

Dominica: *W. Norwell*, comm. by *J. B. Rorer* (in Mo. Bot. Gard. Herb., 18560).

Trinidad: *J. B. Rorer* (in Mo. Bot. Gard. Herb., 20429); Guaico, *J. B. Rorer*, four gatherings (in Mo. Bot. Gard. Herb., 14023, 17934, 20295, 44770); Port of Spain, *J. B. Rorer* (in Mo. Bot. Gard. Herb., 9008).

Ceylon: a portion of 3 authentic specimens determined by Berkeley in Kew Herb. (in Mo. Bot. Gard. Herb., 8891), *T. Petch*, comm. by Kew Herb. (in Mo. Bot. Gard. Herb., 8890); Peradeniya, *T. Petch*, 8640 (in Mo. Bot. Gard. Herb., 56245).

38. *C. spretum* Burt, n. sp.

Type: in Burt Herb.

Fructifications effused, adnate, rather thick, somewhat coriaceous, cinnamon-buff in the herbarium, even, not shining, in drying cracking to the substratum into polygonal masses about 1 mm. in diameter, the margin similar, narrow, entire; in section 200–300 μ thick, colored like the hymenium, composed of ascending, densely interwoven, thin-walled hyphae 3–3½ μ in diameter, not incrustated, not nodose-septate; no gloeocystidia; slender paraphyses about 1 μ in diameter, with short branches near the tips, are present between the basidia; spores hyaline, even, 8–10 \times 5–6 μ .

Fructifications probably large, for received in fragments up to 5 cm. long, 2 cm. wide.

On decorticated wood of a decaying stump of *Fraxinus oregona*. Washington. September.

C. spretum has conspicuous fructifications resembling *Hymenochaete spreta* in aspect. The deeply cracked fructifications cinnamon-buff externally and throughout, large spores, slender paraphyses, and occurrence on ash stumps should enable the species to be recognized confidently.

Specimens examined:

Washington: Bingen, *W. N. Suksdorf*, 962, type.

39. *C. rubropallens* (Schw.) Masee, Linn. Soc. Bot. Jour. 27: 145. 1890.

Thelephora rubropallens Schweinitz, Am. Phil. Soc. Trans. N. S. 4: 168. 1832.—*Stereum rubropallens* (Schw.) Cooke, Grevillea 20: 35. 1891; Sacc. Syll. Fung. 11: 121. 1895.—Not *C. rubropallens* Bresadola, Ann. Myc. 1: 97. 1903, nor Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 258. 1911.

Type: in Schweinitz Herb. and probably in Farlow Herb. and Kew Herb.

“T. effusa, indeterminatim effigurata, ambitu marginibus latis-simis albis; versus centrum subroseo-incarnata, crebre sporidifera aut pulverulenta. Pelliculam efficit ex arcte intertextis filis. Ulnarem longitudinem explet.

“Longe lateque effusa in corticibus et lignis Bethlehem.”

—Schweinitz.

In section 100–150 μ thick, not colored, with the hyphae sub-erect, branched, rather loosely interwoven, about $2\frac{1}{2}$ –3 μ in diameter, not incrustated but bearing imbedded crystalline matter, with very slender, colorless, hair-like paraphyses protruding beyond the basidia and, in my opinion, with short branches near the tips; no gloeocystidia; spores noted by Masee as $8-9 \times 3 \mu$, and by Cooke as $6-7 \times 3 \mu$, none found in my preparations of the type.

I regret that a *Corticium* on *Fagus*, Ripton, Vermont, Nov. 4, 1896, which I misdetermined as *C. rubropallens*, relying too largely on general aspect and coloration in comparison with the type, and communicated to Bresadola, Romell, and Karsten under that name, should have led both Bresadola and Bourdot into error concerning *C. rubropallens*. The names of those specimens should be changed to *C. roseopallens* Burt, as described in the present work.

C. rubropallens belongs in the group of species with *C. rubrocanum*, *C. albido-carneum*, and *C. Atkinsonii*. Each species of this group lacks gloeocystidia and has the very slender and numerous paraphyses protruding beyond the basidia and masking the latter. The only recent gathering which I can now refer to *C. rubropallens* on the basis of agreement in internal structure is now white in herbarium condition and doubtful therefore. Its few spores are $9-10 \times 4 \mu$.

Specimens examined:

Pennsylvania: Bethlehem, *Schweinitz*, type (in Schweinitz Herb.).

Alabama: Montgomery, *R. P. Burke*, 118 (in Mo. Bot. Gard. Herb., 19557).

40. *C. rubrocanum* de Thümen, Myc. Univ., 409, with description. 1876; Torr. Bot. Club Bul. 6: 95. 1876; Sacc. Syll. Fung. 6: 632. 1888.

Type: type distribution in de Thümen, Myc. Univ., 409.

Fructifications broadly effused, thin, adnate, membranaceous, small pieces separable when moist, becoming tilleul-buff in the herbarium, hoary, glabrous, finally cracking at the center into polygonal masses 1–2 to a mm., the margin determinate or indeterminate and thinning out, of the same color; in section

100–150 μ thick, not colored or only very slightly in the subhymenium, with the hyphae longitudinally and densely interwoven next to the substratum, then becoming erect, bushy-branched in the hymenial layer, short-celled, of irregular outline, about 3–3½ μ in diameter, not incrustated but with some imbedded crystalline matter; paraphyses slightly brownish below, protruding beyond the basidia as very slender hairs about ½–1 μ in diameter with short lateral branches; no gloeocystidia; the only spore found is hyaline, even, $9 \times 3\frac{1}{2}$ μ but may not belong.

Fructifications 2–10 cm. long, 1–2 cm. wide.

On fallen twigs of *Quercus coccinea*. New Jersey to Louisiana. November to April. Not common.

P. rubrocanum is distinguished by its occurrence in thin, hoary, nearly white fructifications with a tint of pink on small fallen branches of oak, and by the absence of gloeocystidia and the presence of delicate hair-like paraphyses in the hymenial surface. Spore collections should be made to determine the spore dimensions, for the spores have not been retained well in any specimen examined. It is probable that *C. rubrocanum* will be found to be a synonym of *C. rubropallens* when the type of the latter can be studied more critically than by me twenty-six years ago.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 22; de Thümen, Myc. Univ., 409, type.

New Jersey: Newfield, *J. B. Ellis*, in Ellis, N. Am. Fungi, 22, in de Thümen, Myc. Univ., 409, and (in Mo. Bot. Gard. Herb., 4846, 44638).

South Carolina: *H. W. Ravenel*, 377, comm. under the name *C. Auberianum* by N. Y. Bot. Gard. Herb.

Alabama: Montgomery, *R. P. Burke*, 105 (in Mo. Bot. Gard. Herb., 11280).

Louisiana: Natchitoches, *G. D. Harris*, comm. by Cornell Univ. Herb., 5111; St. Martinville, *A. B. Langlois*, 1933

41. *C. cultum* Burt, n. sp.

Type: in Burt Herb.

Fructifications usually a thin, whitish, cottony mycelium along the sides of tunnels of a bark beetle but sometimes bearing a

hymenium and in those places effused, small, thin, closely adnate, somewhat membranaceous-fleshy, ivory-yellow when growing, fading to white in the herbarium, even, not cracked, the margin continuous with the sterile mycelium; in section 100–150 μ thick, not colored, composed of suberect, branching, densely arranged and somewhat interwoven hyphae 3–3½ μ in diameter, short-celled, occasionally nodose-septate; no gloeocystidia; basidia simple, cylindric, $27 \times 3\frac{1}{2}$ – $4\frac{1}{2}$ μ , with 4 knob-shaped sterigmata; spores hyaline, even, 6 – $8 \times 3\frac{1}{2}$ – $4\frac{1}{2}$ μ , copious; some imbedded spores present.

Fructifications 5–10 mm. long, 1–2 mm. wide.

In thick bark of coniferous logs on side walls of tunnels made by a bark-boring beetle. Idaho probably.

C. cultum is one of the species which should be considered in connection with the fungous flora of burrows of bark-boring insects. The term "ambrosia fungi" has been used for some other fungi growing in such places. The type specimen of *C. cultum* is scanty but well fruited. The species has not been received from any source as growing on the exterior of bark or wood.

Specimens examined:

Idaho: probably Idaho but only general locality stated, *J. R. Weir*, comm. by W. G. Farlow, type (in Mo. Bot. Gard. Herb., 44655).

42. *C. rubellum* Burt, n. sp.

Type: in Burt Herb.

Fructifications broadly effused, adnate, thin, somewhat membranaceous, small pieces separable when moist, vinaceous-fawn, becoming wood-brown in the herbarium, even, not waxy, the margin thinning out; in section 120–500 μ thick, not colored when thin but somewhat colored in thick fructifications and then stratose, with the hyphae arranged longitudinally and crowded together parallel with the substratum in each stratum, more loosely interwoven towards the hymenium, $2\frac{1}{2}$ –3 μ in diameter, not incrusted, rarely nodose-septate; no gloeocystidia; spores copious, hyaline, even, 6 – 9×5 – 6 μ , flattened on one side, with a small apiculus on the flattened side near the base.

Fructifications 5–10 cm. long, 1–5 cm. wide.

On decorticated wood of dead *Vitis* and on decaying bark of *Quercus Gambelii* and *Tilia*. Florida, Illinois, Colorado, and Manitoba. July to October.

C. rubellum differs from *C. rubicundum* in becoming finally stratoose and somewhat colored, having larger and more subglobose spores, and occurring on dead grape vines, oak, and basswood. The Florida specimen lacks spores and may be incorrectly referred here. *C. confluens* has similar spores.

Specimens examined:

Florida: New Smyrna, *W. A. Merrill*, 27, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 62081).

Illinois: Glencoe, *E. T. & S. A. Harper*, 941, type; River Forest, *E. T. & S. A. Harper*, 661.

Colorado: Deer Creek Park, *E. Bartholomew*, 9149, 9150.

Manitoba: Winnipeg, *A. H. R. Buller*, comm. by G. R. Bisby, 724 (in Mo. Bot. Gard. Herb., 58987).

43. *C. hydnans* (Schw.) Burt, n. comb.

Radulum hydnans Schweinitz, Am. Phil. Soc. Trans. N. S. 4: 164. 1832; Sacc. Syll. Fung. 11: 112. 1895.—*Corticium colliculosum* Berk. & Curtis, Grevillea 2: 3. 1873; Peck, N. Y. State Mus. Rept. 28: 52. 1876; Sacc. Syll. Fung. 6: 618. 1888; Masee, Linn. Soc. Bot. Jour. 27: 134. 1890.

Type: in Farlow Herb. and probably in Schweinitz Herb.

Fructifications long and widely effused, adnate, thin, membranaceous, small pieces separable when moistened, pinkish buff to cinnamon-buff in the herbarium, becoming more or less colliculose or somewhat tuberculate, cracking into polygonal masses 1–2 mm. in diameter, the margin whitish, with hyphae interwoven; in structure 100–300 μ thick, not colored, with the hyphae longitudinally arranged next the substratum and then ascending and interwoven to the hymenium, 2–3 μ in diameter, not incrustated; no gloeocystidia; spores hyaline, even, 5–8 \times 2½–3½ μ .

Fructifications 1–10 cm. long, 1–3 cm. wide.

On decaying frondose limbs on the ground. Canada to Texas and westward to Washington and British Columbia. April to November. Occasional.

C. hydnans is intermediate between *Corticium* and *Radulum* with granules rather too broad at base, too little elevated and too convex to be a typical *Radulum* in configuration, and yet always leading one to search for more raduloid teeth. It is well named as *C. hydnans* or by its later name *C. colliculosum*. It may be distinguished from *Radulum orbiculare* in doubtful cases by its lack of gloecocystidia.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 329 and 717 b, the latter under the name *Corticium subgiganteum*; Ravenel, Fungi Am., 126, 227, both under the name *Corticium calceum*; de Thümen, Myc. Univ., 605.

Canada: Gaspé, *J. Macoun*, 530.

Ontario: London, *J. Dearness*, 1178 (in Mo. Bot. Gard. Herb., 18773).

New Hampshire: North Conway, *A. S. Rhoads*, 7 (in Mo. Bot. Gard. Herb., 56893).

Vermont: Middlebury, *E. A. Burt*.

Massachusetts: *Sprague*, 96, type of *Corticium colliculosum* (in Curtis Herb., 5297).

New York: Albany, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 14834); Alcove, *C. L. Shear*, 1011, 1212, 1219; East Galway, *E. A. Burt*; Grand View, *H. von Schrenk* (in Mo. Bot. Gard. Herb., 42817); Ithaca, *H. S. Jackson*, comm. by Cornell Univ. Herb., 14390, and *W. H. Long* (in Mo. Bot. Gard. Herb., 62987); New Baltimore, *C. H. Peck*, comm. by N. Y. State Mus. Herb., T 30 (in Mo. Bot. Gard. Herb., 56071); Trenton Falls, *C. H. Peck*, comm. by N. Y. State Mus. Herb., T 9 (in Mo. Bot. Gard. Herb., 54572).

New Jersey: Newfield, *J. B. Ellis*, and (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61636) and in Ellis, N. Am. Fungi, 717 b, and de Thümen, Myc. Univ., 605.

Pennsylvania: Bethlehem, *Schweinitz*, type of *Radulum hydnans* (in Schweinitz Herb. and Farlow Herb.); Center County, *C. R. Orton*, comm. by L. O. Overholts, 2940 (in Mo. Bot. Gard. Herb., 8265); State College, *L. O. Overholts*, 3040 (in Mo. Bot. Gard. Herb., 5689); Trexlertown, *W. Herbst*, 3.

Maryland: Rock Creek, *C. L. Shear*, 1046.

- District of Columbia: Washington, *C. L. Shear*, 1261.
- North Carolina: Biltmore Estate, *W. A. Murrill* (in *N. Y. Bot. Gard. Herb.*, and *Mo. Bot. Gard. Herb.*, 61382).
- Georgia: Darien, *H. W. Ravenel*, in *Ravenel*, *Fungi Am.* 227.
- Florida: Gainesville, *H. W. Ravenel*, in *Ravenel*, *Fungi Am.*, 126.
- Louisiana: Baton Rouge, *Edgerton & Humphrey*, comm. by *C. J. Humphrey*, 5642; St. Martinville, *A. B. Langlois*, comm. by *U. S. Dept. Agr. Herb.*
- Texas: *Lindheimer*, 40 (in *Mo. Bot. Gard. Herb.*, 4819).
- West Virginia: Paw Paw, *C. L. Shear*, 1175.
- Kentucky: Crittenden, *C. G. Lloyd*, 2365, 3118.
- Ohio: Cincinnati, comm. by *Lloyd Herb.*, 2792; Loveland, *D. L. James*, comm. by *U. S. Dept. Agr. Herb.*
- Illinois: Glen Ellyn, *E. T. & S. A. Harper*, 955; River Forest, *E. T. & S. A. Harper*, 734.
- Michigan: Ann Arbor, *C. H. Kauffman*, 48 (in *Mo. Bot. Gard. Herb.*, 8083); Gogebic County, *E. A. Bessey*, 248 (in *Mo. Bot. Gard. Herb.*, 56613).
- Missouri: Grandin, *H. von Schrenk* (in *Mo. Bot. Gard. Herb.*, 43021).
- Nebraska: Long Pine, *C. L. Shear*, 1065.
- British Columbia: Yoho Valley, *J. Macoun*, 6.
- Washington: Bellingham, *J. R. Weir*, 545 (in *Mo. Bot. Gard. Herb.*, 5899).
- California: Santa Catalina Island, *L. W. Nuttall*, 402, in part (in *Mo. Bot. Gard. Herb.*, 57614).

44. *C. rubicundum* Burt, n. sp.

Type: in Burt Herb.

Fructifications broadly effused, rather thick, membranaceous, loosely attached, separable, drying buff-pink to light vinaceous-cinnamon, slightly tubercular, pruinose, the margin radiating, whitish; in section 200–500 μ thick, not colored, with a hymenial layer 60 μ thick borne on a broad layer reaching to the substratum and composed of interwoven, thick-walled, hyaline hyphae 3–4 μ in diameter, not incrustated, occasionally nodose-septate; no gloecystidia; basidia 4-spored; spores hyaline, even, 4–7 \times 3–4½ μ , copious.

Fructifications 6-8 cm. long, 2-5 cm. wide.

On bark of logs of *Tsuga canadensis*, *Picea* and *Pinus*. Canada, Colorado and Washington. September.

C. rubicundum has large, sheet-like, loosely attached fructifications with somewhat the aspect of those of *Peniophora velutina* but lacking cystidia. The thick, membranaceous, loosely attached fructification is suggestive of a resupinate *Stereum* but I have seen no *Stereum* of which this may be the resupinate stage. The occurrence on hemlock bark should help in identifying future gatherings.

Specimens examined:

Canada: Lake Rosseau, Ontario, *E. T. & S. A. Harper*, 637, type.

Colorado: near Mancos, *G. G. Hedgcock*, comm. by *C. J. Humphrey*, 2560.

Washington: Mt. Paddo, *W. N. Suksdorf*, 735, 736.

45. *C. granulatum* Burt, n. sp.

Type: in Burt Herb.

Fructifications effused, thin, closely adnate, central portions fawn-color, becoming wood-brown in the herbarium, dull rather than shining, with some scattered, small granules, not cracked, the margin fimbriate, fading from ochroleucous to whitish; in section 120-240 μ thick, not colored, with a narrow incrustated zone, the hyphae densely interwoven, 3 μ in diameter, somewhat incrustated, not nodose-septate; no gloeocystidia; basidia protruding slightly when mature, with 4 sterigmata; spores hyaline, even, 4-5 \times 2-3 μ .

Fructifications 3-5 cm. long, 1-2 cm. wide.

On very rotten wood of *Populus trichocarpa*. Idaho. September and October.

This species should be readily recognized by its color when fresh, somewhat granular hymenium, and occurrence on decaying poplar wood. The incrustation of the hyphae is a good available character for separation from *C. subceraceum* and *C. deflectens*.

Specimens examined:

Idaho: Priest River, *J. R. Weir*, 33, type, and 106.

46. *C. illaqueatum* Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 238. 1911.

Type: authentic specimens in Burt Herb.

Fructifications effused, adnate, membranaceous-thin, loosely attached to the substratum, small pieces separable when moist, becoming cream-buff in the herbarium, even, not cracked regularly, the margin somewhat arachnoid; in section 150–300 μ thick, not colored, composed of loosely interwoven, thin-walled hyphae 3–4 μ in diameter, nodose-septate, with some incrustation next to the substratum; no gloeocystidia; spores hyaline, even, $4\frac{1}{2}$ –6 \times 3 μ , borne 4 to a basidium.

Fructifications 1–3 cm. long, $\frac{1}{2}$ –1 $\frac{1}{2}$ cm. wide.

On bark of decaying *Castanea* and other frondose species. France and Louisiana. September to January.

C. illaqueatum has color somewhat like that of *C. ceraceum* and *C. hydnums* but is loosely attached to the substratum and has smaller spores than the former and does not crack in drying like the latter.

Specimens examined:

France: Aveyron, *H. Bourdot*, 16063, and *M. Galzin*, 12684, 12689, 15107, comm. by *H. Bourdot*, 18548, 16092, 12623.

Louisiana: St. Martinville, *A. B. Langlois*, 203.

47. *C. Rosae* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, adnate, rather thick, membranaceous, separable, drying Rood's brown, ceraceous, even, contracting in drying and cracking through the hymenial layer into rectangular masses 2–4 mm. in diameter and showing the thick, white, cottony subiculum in the crevices, the margin white, cottony; in section 400–600 μ thick, not colored, with the hyphae about 3 μ in diameter, more or less incrustated in the middle region, not nodose-septate, densely crowded together and arranged longitudinally in a broad layer along the substratum, then ascending obliquely and becoming densely interwoven in a thick hymenial layer; no gloeocystidia; spores hyaline, even, 4–7 \times 2 $\frac{1}{2}$ –3 μ as seen attached to the basidia.

Fructifications received in fragments 2–2 $\frac{1}{2}$ cm. long, 1 cm. wide—broken off on three sides.

On bark of dead wild rose—*Rosa* sp. British Columbia. February.

C. Rosae has thick fructifications which are conspicuous by their reddish brown color and prominent white margin. The occurrence on wild rose bushes should aid in recognition of the species. The loose attachment to the substratum by a broad layer of longitudinally arranged hyphae is suggestive of the genus *Stereum* but the specimens do not have the margin reflexed in the least degree; I know of no *Stereum* of which this may be the resupinate stage.

Specimens examined:

British Columbia: Sidney, *J. Macoun*, 275, type (in Mo. Bot. Gard. Herb., 63772) and another specimen of the same number comm. by J. Dearness (in Mo. Bot. Gard. Herb., 63773).

48. *C. apiculatum* Bresadola, *Mycologia* 17: 68. 1925.

C. areolatum Bresadola, *Mycologia* 17: 68. 1925.

Type: in Weir Herb.

Fructifications broadly effused, thin, membranaceous, tender, small portions separable when moistened, between ivory-yellow and cream color, even, contracting in drying and cracking into angular masses about 1 mm. in diameter more or less completely separated by fissures which show the floccose subiculum along their sides, the margin thinning out, fibrillose; in section 90–130 μ thick, not colored, composed of loosely interwoven, thin-walled hyphae $2\frac{1}{2}$ – $4\frac{1}{2}$ μ in diameter, with an occasional incrusting granule, occasionally nodose-septate; no gloecystidia; spores hyaline, even, $4\frac{1}{2}$ –5 \times $2\frac{1}{2}$ –3 μ .

Fructifications 2–5 cm. long, $1\frac{1}{2}$ –3 cm. wide.

On decaying branches of *Alnus tenuifolia*. Alabama to Idaho, and British Columbia to Mexico. October and December.

C. apiculatum belongs in the *C. lacteum* group of species. It should be recognized in its region by occurrence on *Alnus*, cream color, and small, somewhat elliptical spores. *C. areolatum* has a fructification with the areolate masses separated from one another by rather wide fissures but of same color as type of *C. apiculatum*, spores the same size, and fructification separable to the same degree—certainly not closely adnate.

Specimens examined:

Alabama: Montgomery, *R. P. Burke*, 199, 202, 671 (in Mo. Bot. Gard. Herb., 57075, 57078, 63102).

Missouri: near St. Louis, *L. O. Overholts*, 3167 (in Mo. Bot. Gard. Herb., 5711).

Idaho: Priest River, *J. R. Weir*, 23304, type (in Weir Herb.), and 23387, type of *C. areolatum* (in Weir Herb.).

British Columbia: Sidney, *J. Macoun*, 33 (in Mo. Bot. Gard. Herb., 6767).

Washington: Seattle, *W. A. Murrill*, 131, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55742).

Mexico: Jalapa, *W. A. & E. L. Murrill*, 123, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 10748).

49. *C. subceraceum* Burt, n. sp.

Type: in Burt Herb.

Fructifications broadly effused, adnate, membranaceous, separable when moist, tawny to hazel in the herbarium, even or with some small obtuse granules, waxy, not cracking, the margin somewhat fimbriate, whitish; in section 200–300 μ thick, not colored, 2-layered, the layer next to the substratum thick, composed of loosely arranged, suberect hyaline hyphae not incrustated, not nodose-septate, mostly 4–4½ μ in diameter but with a few up to 6 μ , the hymenial layer dense, thin, undulating; no gloeocystidia; spores hyaline, even, 4–4½ \times 2–2½ μ .

Fructifications 3–8 cm. long, 1–3 cm. wide.

On wood and bark of fallen frondose limbs, rarely on pine. July to October. Pennsylvania to Alabama and westward to Illinois. Infrequent.

C. subceraceum resembles in general aspect *C. ceraceum* but has small spores. This species should be compared with *Grandinia mucida* when the problem of the latter is being solved; the only European specimen of *G. mucida* which I have studied was shared with me by Bresadola and is distinct, having aspect of the illustration in Fries, *Icones Hym.*, pl. 195, f. 3.

Specimens examined:

Pennsylvania: Trexlertown, *W. Herbst*, 76, type, and an unnumbered specimen, both received under the name *Corticium laeve* of Herbst, *Fung. Fl. Lehigh Valley*.

Maryland: Takoma Park, *C. L. Shear*, 1275.

District of Columbia: *W. A. Murrill*, 1446 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61491).

North Carolina: Salem, *Schweinitz*, the *Thelephora aurantia* of Schweinitz, Fungi Car. and *Thelephora (Grandinia) mucida* of Schweinitz, Syn. N. Am. Fungi, 708 (in Schweinitz Herb.).

Alabama: Montgomery, *R. P. Burke*, 191 (in Mo. Bot. Gard. Herb., 57070).

Kentucky: Crittenden, *C. G. Lloyd*, 1684, 3123.

Ohio: *C. G. Lloyd*, 4177, 4179; Cincinnati, *C. G. Lloyd*, 4496; Madisonville, *C. G. Lloyd*, 0171.

Illinois: Cerro Gordo, *L. O. Overholts*, 3121 (in Mo. Bot. Gard. Herb., 5715); River Forest, *E. T. & S. A. Harper*, 658.

50. *C. roseo-pallens* Burt in Lyman, Boston Soc. Nat. Hist. Proc. 33: 173. pl. 20, f. 56-73. 1907.

Type: in Burt Herb.

Fructifications broadly effused, thin, adnate, membranaceous, tender, small pieces separable when moist, flesh-pink when fresh, fading to ivory-yellow in the herbarium, at first with the hymenium interrupted, at length continuous, waxy, even, the margin thinning out, with the hyphae interwoven; in section 100-200 μ thick, not colored, with the hyphae suberect, interwoven, more loosely arranged near the substratum, 3-3½ μ in diameter, not incrustated, occasionally nodose-septate; no gloeocystidia; basidia 4-spored; spores pale rose when first collected, fading to white, even, cylindric, slightly curved, 4-5 \times 1½-2 μ .

Fructifications 3-12 cm. long, 2-6 cm. wide.

On bark and wood of decaying logs of *Fagus*, *Populus*, *Quercus*, etc. Maine to Louisiana and in Missouri. October. Occasional.

This species may be recognized by its broadly effused, thin, flesh-pink or pale rosy salmon fructifications, fading upon drying to nearly white and by the small allantoid spores. In his discussion of a portion from my type, comm. to Bresadola under the name *C. rubropallens*, Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 258. 1911, regard their *C. subtestaceum* as a synonym and *C. incrustans* v. Höhn. & Litsch. as scarcely distinct. I have not seen specimens of the latter species and those of the former, communicated to me by Bourdot, are hardly convincing.

Specimens examined:

Maine: Kittery Point, *R. Thaxter*, comm. by W. G. Farlow, 7 (in Mo. Bot. Gard. Herb., 55291).

Vermont: Grand View Mountain, *E. A. Burt*; Middlebury, *E. A. Burt*; Ripton, *E. A. Burt*, type; Weybridge, *E. A. Burt*.

Massachusetts: Stony Brook, *G. R. Lyman*, 142; Waverly, *G. R. Lyman*, 142.

New York: Albany, *H. D. House*, 14.170 and *H. D. House & J. Rubinger* (in Mo. Bot. Gard. Herb., 44721, 8732); Ithaca, *G. F. Atkinson*, 2559a; Sylvan Beach, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 9089).

Louisiana: Lafayette, *A. B. Langlois*, 1764, comm. by W. G. Farlow.

Missouri: Creve Coeur, *B. M. Duggar* (in Mo. Bot. Gard. Herb., 44821).

51. *C. ochraceum* Fries, Epicr. 563. 1838; Hym. Eur. 652. 1874; Berkeley, Outl. Brit. Fung. 275. 1860; Sacc. Syll. Fung. 6: 624. 1888; Bresadola, Fungi Trid. 2: 60. pl. 170, f. 1. 1898; Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 256. 1911; Rea, Brit. Basid. 680. 1922.

Thelephora calcea var. *argillacea* Fries, Elench. Fung. 1: 215. 1828.

Type: in Fries Herb.

Fructifications broadly effused, closely adnate, rather thick, becoming pinkish buff to wood-brown in the herbarium, waxy, even or somewhat papillose, contracting in drying and cracking to the substratum into rectangular masses about $\frac{1}{2}$ –1 mm. in diameter, and showing sides of the fissures composed of firm, dense, agglutinate structure, the margin at first whitish, soon concolorous, thinning out; in section 300–500 μ thick, becoming somewhat zonate or stratose, not colored, composed of erect hyphae densely crowded, interwoven, and so closely glued together that the deeply staining lumen is the distinguishable part; gloeocystidia, if present at all, so similar to the hyphae in form and diameter that there is no indication of them except in aqueous mounts; spores hyaline, even, $4-6 \times 2\frac{1}{2}-3\frac{1}{2} \mu$.

Fructifications 3–10 cm. long, 1–4 cm. wide.

On decorticated and sometimes charred limbs on the ground of

Pinus Strobus and other conifers. In Europe and in Vermont, Alabama, Idaho, and Washington. September and October. Rare in North America.

C. ochraceum somewhat resembles in general aspect *C. lactescens* and is, in my opinion, related to the latter by hyphae in barely the beginning of differentiation into gloeocystidia. *C. ochraceum* of American plant lists is based on misdetermined specimens.

Specimens examined:

Sweden: Femsjö, *E. Fries*, type (in *Fries Herb.*); North Sweden, *L. Romell*, 403; Smöland, *E. Fries*, authentic specimen of *Corticium calceum* var. *argillaceum* (in *Fries Herb.*).

Austria: Innsbruck, Tirol, *V. Litschauer*.

Italy: on *Abies excelsa* in Alps Mts., *G. Bresadola*.

Vermont: Middlebury, *E. A. Burt*.

Alabama: Montgomery, *R. P. Burke*, 606 (in *Mo. Bot. Gard. Herb.*, 57471).

Montana: Rexford, *E. E. Hubert*, comm. by *J. R. Weir*, 12017 (in *Mo. Bot. Gard. Herb.*, 63373).

Idaho: Priest River, *J. R. Weir*, 59.

Washington: Hoquiam, *C. J. Humphrey*, 6373; Seattle, *C. J. Humphrey*, 6454, and *W. A. Murrill*, 135, comm. by *N. Y. Bot. Gard. Herb.* (in *Mo. Bot. Gard. Herb.*, 55737).

52. *C. furfuraceum* Bresadola, *Mycologia* 17: 69. 1925.

Type: in *Weir Herb.*

Fructifications broadly effused, closely adnate, thin, furfuraceous, ivory-yellow to pinkish buff in the herbarium, becoming somewhat cracked, the margin thinning out, pruinately; in section 60–140 μ thick, not colored, composed of suberect, thin-walled hyphae about 3 μ in diameter, somewhat collapsed and irregular in outline, indistinct, not incrustated; no gloeocystidia nor conducting organs; spores hyaline, even, 4–5½ \times 2½ μ .

Fructifications more than 10 cm. long, for broken off at both ends, 6 cm. wide.

On decaying wood of logs of *Abies grandis*, *Pinus monticola*, *P. contorta*, *P. ponderosa*, and *Larix occidentalis*. Montana, Idaho, Washington, and British Columbia. August and September. Probably common.

C. furfuraceum may be recognized on the substrata given by the very thin, closely adnate fructifications of ivory-yellow to pinkish buff color, which crack slightly by contraction in drying and have small spores.

Specimens examined:

Montana: Evaro, *J. R. Weir*, 439 (in Mo. Bot. Gard. Herb., 63714); Missoula, *J. R. Weir*, 401, 409 (in Mo. Bot. Gard. Herb., 11316, 63717).

Idaho: Coolin, *J. R. Weir*, 17211, type, 16764 and 16927 (in Weir Herb.).

British Columbia: Kootenai Mountains, near Salmo, *J. R. Weir*, 481, 501, 526 (in Mo. Bot. Gard. Herb., 63725, 63716, 63715).

Washington: Kalama, *C. J. Humphrey*, 6225.

53. *C. lividum* Persoon, Obs. Myc. 1: 38. 1796; Fries, Epicr. 563. 1838; Hym. Eur. 652. 1874; Berkeley, Outl. Brit. Fung. 275. 1860; Sacc. Syll. Fung. 6: 623. 1888; Masee, Linn. Soc. Bot. Jour. 27: 152. 1890; Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 253. 1911; Rea, Brit. Basid. 680. 1922.

Thelephora livida Persoon, Myc. Eur. 1: 148. 1822; Fries, Syst. Myc. 1: 447. 1821; Elench. Fung. 1: 218. 1828.—*Phlebia livida* (Pers.) Bresadola, I. R. Accad. Agiati Atti III. 3: 105. 1897.—*Grandinia ocellata* Fries, Epicr. 527. 1838; Hym. Eur. 626. 1874; Sacc. Syll. Fung. 6: 501. 1888.—An *Corticium hepaticum* Berk. & Curtis, Grevillea 1: 180. 1873?

Fructifications broadly effused, agglutinated, sometimes becoming rather thick, somewhat waxy-gelatinous, not separable, varied in color, gray or tinged reddish or bluish, becoming pale smoke gray, cinnamon-buff, and raisin-black in the herbarium, pruinose, even or sometimes radiately wrinkled or tuberculate by aggregations of imbedded crystalline matter, the margin thinning out, similar or whitish; in section 100–500 μ thick, not colored usually, rarely slightly brownish, composed of densely interwoven, suberect hyphae about 2–3 μ in diameter, with the walls gelatinously modified and glued together; no gloeocystidia; spores hyaline, even, 3–5 \times 1½–2 μ .

Fructifications 2–10 cm. long, 1–5 cm. wide.

On rotting logs, usually decorticated, of coniferous species,

more rarely on frondose logs. In Europe, Canada to Texas, and westward to British Columbia and California, and in Venezuela and East Indies. June to December. Probably common.

C. lividum may be recognized by its livid fructifications of gray, reddish, or bluish tinge and of somewhat gelatinous consistency, somewhat suggestive of those of *Peniophora gigantea* in aspect but destitute of cystidia. *C. hepaticum* seems to me referable to *C. lividum* but I need to study the type again in the feature of the slightly reflexed margin, which I now suspect may be that of a different species overrun by *C. lividum*. Since the tubercules of the *Grandinia ocellata* form are due to heaps of imbedded crystals, it has seemed to taxonomists that this species is a *Corticium* rather than a *Grandinia*.

Specimens examined:

Sweden: Femsjö, *L. Romell*, 214, *E. A. Burt*, 3 gatherings, *L. Romell*, comm. by Bresadola.

Austria: Steiermark, *N. Rechinger*, comm. & det. by *V. Litschauer*; Tirol, *V. Litschauer*.

Hungary: *Kmet*, comm. by Bresadola.

Italy: *G. Bresadola*.

England: Mulgrave Woods, *E. M. Wakefield* (in *Mo. Bot. Gard. Herb.*, 57115).

Canada: *J. Macoun*, 94, and 350, comm. by *W. G. Farlow* (in *Mo. Bot. Gard. Herb.*, 8269); *J. Dearness* (in *Mo. Bot. Gard. Herb.*, 56797); Ottawa, *J. Macoun*, 2, 46, 53.

New Hampshire: Chocorua, *W. G. Farlow*.

Vermont: Middlebury, *E. A. Burt*.

New York: Ampersand, *C. H. Peck* (in *N. Y. State Mus. Herb.*, and *Mo. Bot. Gard. Herb.*, 56102); Catskill Mts., *C. H. Peck* (in *N. Y. State Mus. Herb.*, and *Mo. Bot. Gard. Herb.*, 55792).

Pennsylvania: State College, *L. O. Overholts*, 3425 (in *Mo. Bot. Gard. Herb.*, 54471).

Maryland: Takoma Park, *C. L. Shear*, 1269.

Louisiana: St. Martinville, *A. B. Langlois*, comm. by *W. G. Farlow* (in *Mo. Bot. Gard. Herb.*, 44693), and comm. by *Ellis Herb.* (in *Burt Herb.*).

Texas: Silsbee, *W. H. Long*, 21227 (in *Mo. Bot. Gard. Herb.*, 55127).

- Wisconsin: Lake Geneva, *E. T. & S. A. Harper*, 839.
- Montana: Anaconda, *E. E. Hubert*, comm. by J. R. Weir, 12007 (in Mo. Bot. Gard. Herb., 63367); Como, *E. E. Hubert*, comm. by J. R. Weir, 11958 (in Mo. Bot. Gard. Herb., 63315); Evaro, *J. R. Weir*, 421 (in Mo. Bot. Gard. Herb., 14764); Kalispell, *E. E. Hubert*, comm. by J. R. Weir, 11972 (in Mo. Bot. Gard. Herb., 63333); Libby, *E. E. Hubert*, comm. by J. R. Weir, 11347, 11360, 12041 (in Mo. Bot. Gard. Herb., 63701, 63702, 63391); Missoula, *E. E. Hubert*, comm. by J. R. Weir, 11981 (in Mo. Bot. Gard. Herb., 63334); Radnor, *E. E. Hubert*, comm. by J. R. Weir, 11645 (in Mo. Bot. Gard. Herb., 63707).
- Idaho: Coeur d'Alene, *E. E. Hubert*, comm. by J. R. Weir, 11993 (in Mo. Bot. Gard. Herb., 63356); Priest River, *J. R. Weir*, 6364 (in Mo. Bot. Gard. Herb., 58373), and 13, 76, 84; Santa, *E. E. Hubert*, comm. by J. R. Weir, 11755, 12003, 12042 (in Mo. Bot. Gard. Herb., 63313, 63365, 63392).
- British Columbia: Kootenai Mts. near Salmo, *J. R. Weir*, 527 (in Mo. Bot. Gard. Herb., 20903); Sidney, *J. Macoun*, 85, 380 (in Mo. Bot. Gard. Herb., 63693, 63764); Vancouver Island, *J. Macoun*, comm. by J. Dearness, V 85 (in Mo. Bot. Gard. Herb., 22729).
- Washington: Kalama, *C. J. Humphrey*, 6138.
- Oregon: Philomath, *S. M. Zeller*, 2159 (in Mo. Bot. Gard. Herb., 58774).
- California: Requa, *R. Kelly*, comm. by A. S. Rhoads, 16 (in Mo. Bot. Gard. Herb., 56985).
- Venezuela: La Guayra, *A. F. Blakeslee*, comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 55294).
- East Indies: Batavia, *Rick*, comm. by Bresadola under the name *Phlebia livida* (Pers.) Bres.

54. *C. Overholtsii* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, closely adnate, thin, somewhat membranaceous, at first between pale salmon and pale grayish vinaceous, becoming tilleul-buff in the herbarium, even, pruinose, not cracked, the margin thinning out, somewhat fimbriate; in section 160 μ thick, not colored, composed of suberect, densely inter-

woven, conglutinate hyphae up to $3\ \mu$ in diameter, not incrustated, with wall gelatinously modified, the outline not well defined; no gloeocystidia; spores hyaline, even, $5-6 \times 2-2\frac{1}{2}\ \mu$, copious.

Fructifications $1\frac{1}{2}$ -3 cm. long, 1-2 cm. wide.

On thick bark of dead *Pinus rigida*. Pennsylvania. October.

C. Overholtsii has the livid color of *C. vinaceo-scabens* but nothing else in common with that species. In structural details it is related to *C. lividum* but does not have the appearance of dried cartilage or resin, characteristic of all specimens of the latter known to me.

Specimens examined:

Pennsylvania: Reitz Gap, *L. O. Overholts*, 4656, type (in Mo. Bot. Gard. Herb., 57155).

55. *C. Pseudotsugae* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, closely adnate, very thin, not at all separable, light buff in the herbarium, even, not shining, not cracked, the margin similar, thinning out, pulverulent; in section $45-55\ \mu$ thick, not appreciably colored, composed of densely interwoven hyphae about $1\frac{1}{2}$ - $2\ \mu$ in diameter, not incrustated, conglutinate; no gloeocystidia; basidia with 4 sterigmata; spores hyaline, even, $3-5 \times 2-3\ \mu$.

Fructifications 5-8 cm. long, 1-2 cm. wide.

On decorticated, decaying wood of *Pseudotsuga taxifolia* and *Tsuga canadensis*. New York and Idaho. August to November.

C. Pseudotsuga is almost exactly the avellaneous color of Saccardo's 'Chromotaxia.' This color, occurrence on hemlock, and very thin fructifications are the most available characters for recognition of the species.

Specimens examined:

New York: Freeville, *G. F. Atkinson*, 2627.

Idaho: Sandpoint, *E. E. Hubert*, comm. by J. R. Weir, 11617, type (in Mo. Bot. Gard. Herb., 63305).

56. *C. confine* Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 260. 1911.

Type: authentic specimen in Burt Herb.

Fructifications broadly effused, thin, closely adnate, pale pinkish buff to pale olive-buff in the herbarium, not shining, hypochnoid, rimose-granular into areas or granules about 2–3 to a mm., the margin thinning out, byssoid; in section 75–150 μ thick, not colored, composed of erect, thin-walled, hyaline hyphae $2\frac{1}{2}$ –3 μ in diameter, of irregular outline, collapsing, nodose-septate; no gloeocystidia; spores hyaline, even, $3\text{--}5 \times 2\frac{1}{2}$ μ , copious.

Fructifications 4–10 cm. long, 2–4 cm. wide.

On decaying frondose wood. France and Vermont. May to August.

This species is related to *Grandinia* by its granular aspect but the granules seem to have originated so largely from the cracking of the fructification to the substratum that I concur in the inclusion in *Corticium*. It has a more hypochnoid surface than *C. scutellare*.

Specimens examined:

France: Allier, *H. Bourdot*, 16064, 16065.

Vermont: Middlebury, Battell Ledge, *E. A. Burt*.

57. *C. analogum* (B. & G.) Burt, n. comb.

Gloeocystidium analogum Bourdot & Galzin, Soc. Myc. Fr. Bul. 28: 366. 1913.

Type: authentic specimen in Burt Herb.

Fructifications broadly effused, thick, adnate, fleshy-membranaceous, small pieces separable when moistened, becoming maize-yellow to chamois in the herbarium, somewhat colliculose, not cracked or but little cracked, not shining, the margin thinning out; in section 500–1000 μ thick, colored like the hymenium, becoming zonate or somewhat stratose, composed of hyphae 3–4 μ in diameter, densely interwoven, conglutinate and poorly defined, of great numbers of imbedded spores and gloeocystidia; gloeocystidia immersed in many zones or layers, $40\text{--}80 \times 6\text{--}8$ μ , becoming dissolved by potassium hydrate solution; imbedded spores subglobose, $5\text{--}6 \times 5$ μ , minutely rough, slightly colored in the deeper portions of the fructification, hyaline at the surface of the hymenium; spores on basidia not demonstrated.

Fructifications in fragments up to 8 cm. long, 3 cm. wide.

On decaying wood of *Quercus* and *Frazinus* in France, of *Quercus* in Maine, and of *Populus trichocarpa* in Idaho. July to October. Probably rare.

C. analogum has general aspect and color of *C. galactinum* and *C. portentosum* and structure related to that of *C. effuscatum*. The thick, stratoose fructifications, containing great numbers of imbedded spores and gloeocystidia, afford good additional distinctive characters. The Maine specimens are doubtfully referred here as a young first-stratum stage.

Specimens examined:

France: Aveyron, A. Galzin, 12435, authentic specimen, comm. by H. Bourdot, 16164.

Maine: Kittery Point, R. Thaxter & E. A. Burt.

Idaho: Priest River, J. R. Weir, 25.

58. *C. effuscatum* Cooke & Ellis, *Grevillea* 9: 103. 1881; Sacc. Syll. Fung. 6: 633. 1888; Masee, Linn. Soc. Bot. Jour. 27: 142. 1890; Lyman, Boston Soc. Nat. Hist. Proc. 33: 176. pl. 21, f. 74-95, pl. 22, f. 96-105. 1907.

Type: in Kew Herb.

Fructifications broadly effused, rather thick, membranaceous, small pieces separable when moistened, honey-yellow to russet when fresh, fading to cream-buff in the herbarium, even, pulverulent, the margin thinning out; in section 200-500 μ thick, composed of very densely arranged, suberect, interwoven hyphae about 2 μ in diameter, gloeocystidia, and chlamydospores; gloeocystidia flexuous, 40-150 \times 5-9 μ , starting from the substratum; imbedded chlamydospores very numerous, globose, 5-6 μ in diameter, sometimes comprising nearly the whole fructification; basidiospores hyaline, even, 6 μ in diameter.

Fructifications 3-10 cm. long, 2-4 cm. wide.

On under side of decaying wood and bark of frondose species. Newfoundland and Canada to Louisiana and westward to Washington. September to November. Widely distributed and common locally.

C. effuscatum is conspicuous when fresh by its large salmon to brick-red fructifications. It soon fades in the herbarium to the pallid or buff color assumed in the herbarium by many species and

must then be cautiously separated from *C. confluens* and *Hypochnus pallescens* which may have the same aspect. The very numerous imbedded chlamydospores and elongated gloeocystidia of *C. effusatum* are its characters for such separation.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 1208.

Newfoundland: Bay of Islands, *A. C. Waghorne*, 1014 (in Mo. Bot. Gard. Herb., 4805).

Canada: *J. Macoun*, 16; Lower St. Lawrence Valley, *J. Macoun*, 3. Ontario: Ottawa, *J. Macoun*, 455.

Quebec: Ironsides, *J. Macoun*, 280.

New Hampshire: Chocorua, *W. G. Farlow*, *E* (in Mo. Bot. Gard. Herb., 55001).

New York: Ithaca, *G. F. Atkinson*, 1002, 2113; North Greenbush, *H. D. House*, 14,236 (in Mo. Bot. Gard. Herb., 44735); Staten Island, *W. H. Ballou*; Tyre, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 57718); Westport, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 57770), and 1; White Plains, *W. H. Ballou*, 1, 2 (in Mo. Bot. Gard. Herb., 55623, 55628).

Pennsylvania: West Chester, *Everhart & Haines*, in Ellis, N. Am. Fungi, 1208.

District of Columbia: Washington, *C. L. Shear*, 1262.

Georgia: Tipton, *C. J. Humphrey*, 162.

Louisiana: *A. B. Langlois*, 249; St. Martinville, *A. B. Langlois*, *Z*.

Ohio: *C. G. Lloyd*, 3824.

Illinois: Bluff Lake, *L. H. Pammel* (in Mo. Bot. Gard. Herb., 60655).

Missouri: Creve Coeur, *E. A. Burt* (in Mo. Bot. Gard. Herb., 19458, 44071); Rose Hill, *L. H. Pammel* (in Mo. Bot. Gard. Herb., 60656); St. Louis, *L. H. Pammel*, comm. by Farlow Herb.; Upper Creve Coeur, *E. A. Burt* (in Mo. Bot. Gard. Herb., 54775).

Idaho: Priest River, *J. R. Weir*, 53.

British Columbia: Vancouver Island, Cedar Hill, *J. Macoun*.

Washington: Arlington, *C. J. Humphrey*, 7611 (in Mo. Bot. Gard. Herb., 10750); Kalama, *C. J. Humphrey*, 6160.

59. *C. abeuns* Burt, n. sp.

Type: in Burt Herb.

Fructification broadly effused, thin, membranaceous, tender, small pieces separable when moistened, whitish to ivory-yellow and cream-buff in the herbarium, even, not cracked or but little cracked, the margin whitish, thinning out, composed of interwoven hyphae; in section 100–240 μ thick, not colored, composed of somewhat erect, interwoven hyphae $2\frac{1}{2}$ –3 μ in diameter, not incrusted, and of slender gloeocystidia; gloeocystidia 30–60 \times 4–7 μ , numerous, immersed; spores hyaline, even, subglobose, 6–7 \times 4–6 μ , copious.

Fructifications 4–13 cm. long, 2–5 cm. wide.

On decaying coniferous wood, rarely on bark of frondose species. Maine to Alabama, in British Columbia and New Mexico, and in Japan and South Africa. July to October. Infrequent.

C. abeuns has the aspect of *C. lacteum* and *C. radiosum* and spores of nearly the same size as in these species but not quite as globose and further notably distinct from both by its slender, flexuous gloeocystidia.

Specimens examined:

Maine: Piscataquis County, *W. A. Merrill*, 1938 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 63765).

New Hampshire: North Conway, *W. H. Snell*, 626 (in Mo. Bot. Gard. Herb., 59293).

New York: Alcove, *C. L. Shear*, 1215; Freeville, *G. F. Atkinson*, 2595; Karner, *C. H. Peck*, comm. by N. Y. State Mus. Herb., T 7 (in Mo. Bot. Gard. Herb., 54557) and another specimen (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55784).

Alabama: Goldbranch, *J. R. Weir*, 10958 (in Mo. Bot. Gard. Herb., 63240); Montgomery, *R. P. Burke*, 229, type, and 471 (in Mo. Bot. Gard. Herb., 57100, 57289).

Wisconsin: Madison, *M. C. Jensen*, comm. by C. J. Humphrey, 617 (in Mo. Bot. Gard. Herb., 44785).

British Columbia: Sidney, *J. Macoun*, 490, 812 (in Mo. Bot. Gard. Herb., 55314, 62117); Squamish, *J. Macoun*, 496 (in Mo. Bot. Gard. Herb., 55184).

New Mexico: Datil National Forest, *W. H. Long*, 21046 (in Mo. Bot. Gard. Herb., 55145).

Japan: Awaji, *A. Yasuda*, 12, 80 (in Mo. Bot. Gard. Herb., 55660, 56311).

Africa: Houtbos, Transvaal, *P. A. van der Bijl*, 1495.

60. *C. ravum* Burt, n. sp.

Type: in Burt Herb.

Fructifications broadly effused, closely adnate, thin, not separable, becoming pale pinkish buff to light buff in the herbarium, even, not shining, becoming cracked at the center, the margin thinning out, concolorous; in section 45–150 μ thick, not colored, composed of densely arranged hyphae, interwoven near substratum but erect towards the hymenium, of numerous gloeocystidia, and of very slender paraphyses; gloeocystidia 20–80 \times 7–11 μ , the more ovoid ones nearer the substratum; paraphyses more or less numerous in the hymenial surface, very slender, hyaline, curved, $\frac{1}{2}$ –1 μ in diameter; spores white in spore collection, even, 6–8 \times 4–4 $\frac{1}{2}$ μ .

Fructifications up to 10 cm. long, 2 cm. wide, broken off at both ends.

On fallen frondose limbs. Florida to Louisiana, in Missouri, Cuba, and Brazil. August to February.

C. ravum has grayish fructifications closely resembling well-developed ones of *C. rubrocanum* in general aspect but distinct by gloeocystidia.

Specimens examined:

Florida: *C. G. Lloyd*, 4832.

Alabama: Montgomery, *R. P. Burke*, 126 (in Mo. Bot. Gard. Herb., 5282).

Louisiana: St. Martinville, *A. B. Langlois*, 1765 and *N*, type.

Missouri: Creve Coeur, *E. A. Burt* (in Mo. Bot. Gard. Herb., 44045).

Cuba: Omaja, *C. J. Humphrey*, 3056.

Brazil: Rio de Janeiro, *J. N. Rose*, 21462, comm. by N. Y. Bot. Gard. Herb.

61. *C. mexicanum* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb., and N. Y. Bot. Gard. Herb.

Fructifications adnate, small, circular, becoming confluent,

rather thick, fleshy-membranaceous, separable when moist, cream color to cream-buff in the herbarium, somewhat velvety or fibrillose, not cracked, the margin concolorous, fimbriate; in section $400\ \mu$ thick, not colored, with hyphae next to the substratum longitudinally and densely arranged, thick-walled, not incrustated, not nodose-septate, curving outward obliquely into the hymenium; gloeocystidia numerous in the hymenium and subhymenium, clavate or cylindric, $60\text{--}120 \times 9\text{--}12\ \mu$; spores few, even, hyaline, not seen attached to basidia, $9\text{--}11 \times 6\text{--}7\ \mu$.

Fructifications at first 2–3 mm. in diameter, becoming confluent into a mass 2 cm. long, 5 mm. wide.

On very rotten wood. Mexico. January.

On account of the loose attachment of the fructification to the substratum and the broad layer of longitudinally arranged hyphae it is possible that *C. mexicanum* may be the resupinate stage of a *Stereum*, but if so, it is distinct from any *Stereum* known to me.

Specimens examined:

Mexico: Xuchiles, near Cordoba, *W. A. & E. L. Merrill*, 1196, type, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54604).

62. *C. epigaeum* Ell. & Ev. Jour. Myc. 1: 88. 1885; Sacc. Syll. Fung. 6: 631. 1888.

Type: in N. Y. Bot. Gard. Herb.

Fructifications effused, thin, membranaceous, tender, small pieces separable when moistened, white, becoming somewhat pinkish buff in the herbarium, not cracked, the margin concolorous, thinning out; in section $175\text{--}250\ \mu$ thick, not colored, 2-layered, the layer next to the substratum about $75\ \mu$ thick, consisting of densely interwoven hyphae about $2\frac{1}{2}\text{--}3\ \mu$ in diameter, not showing characters clearly in the type; hymenial layer $100\text{--}150\ \mu$ thick, composed of densely arranged hyphae, gloeocystidia, and basidia; gloeocystidia elongated; spores hyaline, even, $5\frac{1}{2}\text{--}6 \times 5\ \mu$, confined to hymenial surface.

Fructifications 2–5 cm. long, 1–3 cm. wide.

On bare ground and rotten wood on the ground. New Hampshire to British Columbia, Washington, and Oregon. August to April. Rare.

C. epigaeum is characterized by white color, 2-layered structure, elongated gloeocystidia, and large, subglobose spores. It is related to *C. lactescens* but does not become stratoose nor cracked nor as hard and compact as the latter. The type specimen itself should be used for comparison rather than the specimens from widely separated localities which seem to me probably to be *C. epigaeum*.

Specimens examined:

New Hampshire: Chocorua, *W. G. Farlow* (in Mo. Bot. Gard. Herb., 13954).

New York: Karner, *H. D. House*, comm. by N. Y. State Mus. Herb., 14.160 (in Mo. Bot. Gard. Herb., 44705).

Ohio: Cincinnati, *C. G. Lloyd*, 4517.

Michigan: New Richmond, *C. H. Kauffman*, 20 (in Mo. Bot. Gard. Herb., 9905).

British Columbia: Hastings, *J. Macoun*, 129.

Washington: Bingen, *W. N. Suksdorf*, 896, 754.

Oregon: *Carpenter*, 100, type (in N. Y. Bot. Gard. Herb.).

63. *C. lactescens* Berkeley, Outl. Brit. Fung. 274. 1860; Fries, Hym. Eur. 650. 1874; Sacc. Syll. Fung. 6: 612. 1888; Massee, Linn. Soc. Bot. Jour. 27: 138. 1890; Bresadola, Ann. Myc. 1: 95. 1903; Wakefield, Brit. Myc. Soc. Trans. 4: 118. pl. 3, f. 6-8. 1913; Rea, Brit. Basid. 685. 1922.

Thelephora lactescens Berkeley in Hooker, Eng. Fl. 2^o: 169. 1836.—*Gloeocystidium lactescens* (Berk.) v. Höhnel. & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 116: 784. 1907; Bourdot & Galzin, Soc. Myc. Fr. Bul. 28: 366. 1913.—*Corticium Brinkmanni* Bresadola in Brinkmann, Westfälische Prov.-Vereins f. Wiss. u. Kunst Jahresber. 26: 128. 1898.

Type: in Kew Herb.

Fructifications broadly effused, rather thick, closely adnate, waxy-fleshy, small pieces separable, whitish to flesh color and buff-pink when fresh, becoming light buff to avellaneous in the herbarium, even, contracting greatly in drying and forming in thick fructifications very numerous short fissures with somewhat resin-colored sides, the margin whitish, narrow, when fresh exuding a watery white milk where wounded; in section 200-1000 μ

thick, pale avellaneous, becoming stratose when old and thick, with a narrow layer of hyphae arranged longitudinally along the substratum and the remainder of the fructification composed, according to age, of one or more strata of erect, agglutinated hyphae, basidia, and gloeocystidia; gloeocystidia very numerous, flexuous, $60-120 \times 4-9 \mu$; spores hyaline, even, flattened on one side, $4-8 \times 3-6 \mu$, copious.

Fructifications 4-10 cm. long, 1-4 cm. wide.

On decaying wood of logs of frondose species. In Europe, Canada to Louisiana, and westward to the Pacific states, in the West Indies, and in Mexico. Throughout the year. Widely distributed but not common.

C. lactescens is best recognized in thick stratose fructifications by their cracking into short and usually disconnected fissures, stratose and agglutinated structure, occurrence on frondose wood, very numerous gloeocystidia, and rather large spores.

Specimens examined:

Exsiccati: Berkeley, Brit. Fungi, 21.

Sweden: Stockholm, *L. Romell*, 176; Tyresö, *L. Romell*, *C.*

Germany: Westfalia, Lengerich, *W. Brinkmann*, part of type of *Corticium Brinkmanni* from Bresadola.

Austria: Innsbruck, Tirol, *V. Litschauer*, 2 specimens; N. Austria, *V. Litschauer*.

Italy: Trent, *G. Bresadola*; Pisa, *T. Archangeli*, comm. by Herb. Horti Pisani (in Mo. Bot. Gard. Herb., 44564).

France: Bois de Boulogne, Paris, *G. F. Atkinson*.

England: *M. J. Berkeley*, in Berkeley, Brit. Fungi, 21; West Farleigh, *M. J. Berkeley* (in Kew Herb.); West Walling, *M. J. Berkeley* (in Kew Herb.).

Canada: *J. Macoun*, 12, 20, 81; Hemlock Lake, Beechwood, *J. Macoun*, 450; Billings Bridge, *J. Macoun*, 55; Carleton Place, *J. Macoun*, 91; Lower St. Lawrence Valley, *J. Macoun*, 26, 32, 36; Ontario, Belleville, *J. Macoun*, 531.

Newfoundland: Bay of Islands, *A. C. Waghorne*, 477 (in Mo. Bot. Gard. Herb., 4833).

Maine: Kittery Point, *R. Thaxter* & *E. A. Burt*.

Vermont: Middlebury, *E. A. Burt*; Silver Lake, Leicester, *E. A. Burt*.

- Massachusetts: Arlington, *A. P. D. Piguet*, comm. by W. G. Farlow, 34.
- New York: Kirkville, *L. M. Underwood*, 55 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61566); Ithaca, *Thom*, comm. by Cornell Univ. Herb., 13725; Vaughns, Hudson Falls, *S. H. Burnham*, 26 (in Mo. Bot. Gard. Herb., 54492).
- North Carolina: Biltmore Estate, *W. A. Murrill* (in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., 61564, and Burt Herb.).
- Louisiana: Baton Rouge, *Edgerton & Humphrey*, comm. by C. J. Humphrey, 5650.
- Tennessee: Unaka Springs, *W. A. Murrill*, 623 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61565).
- Michigan: Mass, *C. J. Humphrey*, 1638 (in Mo. Bot. Gard. Herb., 14228).
- British Columbia: Sidney, *J. Macoun*, 76, 378, 496 (in Mo. Bot. Gard. Herb., 5752, 55316, 55317).
- Washington: Bingen, *W. N. Suksdorf*, 909, 911.
- Oregon: Corvallis, *S. M. Zeller*, 1771, 1905 (in Mo. Bot. Gard. Herb., 56848, 56881).
- California: Pasadena, *A. J. McClatchie*, 786 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61461).
- Mexico: Jalapa, *W. A. & E. L. Murrill*, 68, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 1682).
- Porto Rico: Rio Piedras, *J. A. Stevenson*, 3357, 5576 (in Mo. Bot. Gard. Herb., 7688, 11346).
- Grenada: Grand Etang, *R. Thaxter*, comm. by W. G. Farlow, 16.

64. *C. salmoneum* Burt, n. sp.

Type: in Burt Herb. and in Farlow Herb.

Fructifications broadly effused, adnate, rather thick, somewhat membranaceous, small pieces separable when moist, "orange-salmon" when fresh, becoming vinaceous-buff in the herbarium, even, somewhat velvety, not shining, not at all cracked, the margin similar, determinate, thinning abruptly; in section 360 μ thick, not colored, composed of densely interwoven hyphae 3-6 μ in diameter, thin-walled, not incrusted, glued together so that the outline is not clearly defined; gloeocystidia cylindric, up to 100 \times 8-9 μ , very numerous, confined to the hymenium; spores hyaline, even, 5 \times 3½ μ .

Fructifications 4-6 cm. long, $1\frac{1}{2}$ - $2\frac{1}{2}$ cm. wide, and broken off on three sides in the specimens seen. Probably large.

On bark of decaying frondose wood. West Indies.

This tropical species is somewhat related to *C. lactescens* but differs in not becoming cracked nor stratose and in having its gloecystidia of nearly equal length and arranged side by side in palisade manner in the hymenial layer.

Specimens examined:

Grenada: Chilly Brook, Grand Etang, *R. Thaxter*, type, comm. by W. G. Farlow, 16.

65. *C. Macounii* Burt, n. sp.

Type: in Burt Herb.

Fructifications widely effused, closely adnate, soft and fleshy when fresh, drying somewhat cartilaginous, small pieces separable when moistened, white, becoming ivory-yellow in the herbarium, even, sometimes cracking in drying, the margin thinning out; in section 60-150 μ thick, not colored, with the hyphae suberect, branching, $2\frac{1}{2}$ -3 μ in diameter; gloecystidia, or perhaps conducting organs, very slender, $30-90 \times 3-3\frac{1}{2}$ μ , starting from the substratum; spores hyaline, even, subglobose, slightly flattened on one side, $8-10 \times 6-9$ μ , pointed at base, copious.

Fructifications 3-8 cm. long, 1-2 cm. wide.

On decorticated, decaying pine wood. Canada, and perhaps New Hampshire and New York. October. Rare.

C. Macounii is much thinner than *C. Berkeleyi* and contracts in drying to a horn-like coating on the wood. The gloecystidia or conducting organs are distinctive but inconspicuous. The specimens from New Hampshire and New York are a little thicker than the Canadian specimens by the presence of a layer of hyphae densely arranged, parallel with the substratum.

Specimens examined:

Canada: Lower St. Lawrence Valley, *J. Macoun*, 86.

Quebec: Hull, *J. Macoun*, 368, type.

New Hampshire: Chocorua, *W. G. Farlow*.

New York: Ithaca, *G. F. Atkinson*, 14102.

66. *C. argentatum* Burt, n. sp.

Type: in Burt Herb.

Fructifications long-effused, thin, closely adnate, not at all separable, pale drab-gray, even, somewhat pruinose, becoming cracked, the margin similar or whitish, thinning out; in section 150 μ thick, colored buffy brown, composed of densely arranged, interwoven, erect hyphae and gloeocystidia; the hyphae about 3 μ in diameter, incrusting near the substratum; gloeocystidia very numerous in all regions, usually flexuous, 40–50 \times 8–12 μ , but some 6–12 μ in diameter in the form of spherical brown masses; spores hyaline, even, 4–6 \times 3 μ —few found and may not belong.

Fructification 10 cm. long, 1 cm. wide.

On under side of small branches of *Salix*. Nebraska. February. Apparently local.

C. argentatum has aspect so similar to *Peniophora cinerea* and *C. subcinerea* that microscopic examination of sections is necessary to separate it from these more common species. Distinguishing characters are the silvery color externally and brown color within and numerous gloeocystidia, some of which have the form of brown spherical masses such as occur in *Peniophora serialis*.

Specimens examined:

Nebraska: Long Pine, *C. L. Shear*, 1094, type.

67. *C. septentrionale* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications broadly effused, adnate, thin, small pieces separable when moist, drying snow-white, waxy, pulverulent, cracking by wide fissures into rectangular masses about 3 \times 2 mm., the margin similar, composed of interwoven hyphae; in section 150–200 μ thick, not colored, composed of hyphae loosely arranged below, suberect, bushy-branched, nodose-septate, 3–3½ μ in diameter, not incrusting; gloeocystidia flexuous, up to 45 \times 6 μ , sometimes capitate or moniliform at apex, confined to the hymenial layer; spores hyaline, even, cylindric, 6–8 \times 2–2½–3 μ , not numerous; basidia with 4 sterigmata.

Fructifications 5 cm. long, 2 cm. wide, broken off at both ends.

On decaying, weathered, frondose wood. Alabama and Manitoba. October.

Among the species having gloeocystidia *C. septentrionale* is

noteworthy by its snow-white color; the long spores and gloeocystidia with occasionally capitate or moniliform apex may be helpful, confirmatory characters.

Specimens examined:

Alabama: Montgomery Co., *R. P. Burke*, 672 (in Mo. Bot. Gard. Herb., 63092).

Manitoba: Winnipeg, *G. R. Bisby*, 1346, type (in Mo. Bot. Gard. Herb., 60556).

68. *C. stramineum* Bresadola, *Hedwigia* 39: (221). 1900; *Sacc. Syll. Fung.* 16: 193. 1902.

Gloeocystidium stramineum Bresadola in Brinkmann, *Westfälische Pilze*, 18; Bourdot & Galzin, *Soc. Myc. Fr. Bul.* 28: 361. 1913.—See Wakefield, *Brit. Myc. Soc. Trans.* 4: 341. 1918.

Type: type distribution in Brinkmann, *Westfälische Pilze*, 18.

Fructifications broadly effused, adnate, thin, somewhat membranaceous, small pieces separable when moist, becoming cartridge-buff to cream-buff in the herbarium, even, becoming somewhat cracked, the margin thinning out, pruinose, similar; in section 100–200 μ thick, not colored, composed of suberect, interwoven hyaline hyphae 2–3 μ in diameter, not incrustated, and of elongated gloeocystidia; gloeocystidia flexuous, tapering towards apex, 40–100 \times 4½–9 μ ; spores hyaline, even, 4–6 \times 2–3 μ , not copious.

Fructifications 2–8 cm. long, 1–3 cm. wide.

On bark of decaying *Alnus*, *Acer rubrum*, and *Carya*. In Europe, and from Canada to South Carolina and westward to British Columbia and in Mexico. September to January. Rare.

C. stramineum may be recognized among our species having gloeocystidia, by its thin, whitish to straw-colored fructification on *Acer rubrum*.

Specimens examined:

Sweden: *L. Romell*, 419.

Germany: Lengerich, Westphalia, *W. Brinkmann*, part of type from Bresadola.

Austria: Tirol, *V. Litschauer*, 4 specimens from Innsbruck, Klosterberg, Stubai, and Volders, respectively.

Canada: *J. Macoun*, 28; Ontario, Ottawa, *J. Macoun*, 18.

New Hampshire: Chocorua, *W. G. Farlow*, 31 and unnumbered specimen.

Vermont: Middlebury, *E. A. Burt*.

New York: Bronx Park, *L. M. Underwood* (in *N. Y. Bot. Gard. Herb.*, and *Mo. Bot. Gard. Herb.*, 61594); Ithaca, *G. F. Atkinson*, 3087; Karner, *H. D. House* (in *N. Y. State Mus. Herb.*, and *Mo. Bot. Gard. Herb.*, 54365, 54362).

New Jersey: Newfield, *J. B. Ellis*, comm. by *N. Y. Bot. Gard. Herb.*

Maryland: Takoma Park, *C. L. Shear*, 1338.

South Carolina: Hartsville, *W. C. Coker*, 3947 (in *Mo. Bot. Gard. Herb.*, 57415).

Kentucky: Crittenden, *C. G. Lloyd*, 3124.

Missouri: Creve Coeur, *F. P. McWhorter* (in *Mo. Bot. Gard. Herb.*, 57451).

British Columbia: Sidney, *J. Macoun*, 74, 80, in part (in *Mo. Bot. Gard. Herb.*, 5749, 5750).

Mexico: Orizaba, *W. A. & E. L. Merrill*, 763, comm. by *N. Y. Bot. Gard. Herb.*, 54634.

69. *C. Litschaueri* Burt, n. sp.

Type: in Burt Herb.

Fructifications broadly effused, adnate, thin, somewhat membranaceous, small pieces separable when moistened, between ivory-yellow and olive-buff in the herbarium, even, becoming somewhat cracked, not shining, the margin thinning out; in section 200 μ thick, not colored, composed of loosely interwoven, thick-walled hyphae 3 μ in diameter, nodose-septate, not incrustated; gloeocystidia flexuous, 45–120 \times 4½–6 μ , in all regions of the fructification; spores hyaline, even, cylindric, flattened on one side, 9–10 \times 3–3½ μ , four to a basidium.

Fragments of fructification 2 cm. long, 1–1½ cm. wide, broken off on three sides.

On bark of *Alnus* and apple. North Dakota and Oregon.

C. Litschaueri has the aspect of *C. stramineum* and occurs on a frequent substratum of the latter but the spores of *C. Litschaueri* are the larger and the hyphae are thicker-walled than those of *C. stramineum* and more like those of *P. cremea*.

Specimens examined:

North Dakota: *Brenckle*, comm. by V. Litschauer, 1, type.

Oregon: Corvallis, *S. M. Zeller*, 2219 (in Mo. Bot. Gard. Herb., 63029).

70. *C. protrusum* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications broadly effused, rather thick, dry, felty-membranaceous, separable, drying between light buff and cream color, even, conforming to irregularities of the substratum, not cracked, the margin a little paler than the hymenium, thinning out, with the hyphae interwoven; in section 500 μ thick, not colored, 2-layered, with (1) a broad layer next to the substratum of very densely and longitudinally arranged hyphae, and with (2) a somewhat more loosely arranged layer of interwoven, suberect, hyaline hyphae 4–4½ μ in diameter, not incrustated, and occasional gloeocystidia; gloeocystidia flexuous, up to 60 \times 4½–5 μ ; basidia 4-spored, not side by side and adhering together in a compact palisade layer but very numerous and protruding individually 6–15 μ ; spores attached to basidia are hyaline, even, 6 \times 2½–3 μ , tapering towards the base, not copious.

Fructification 6 cm. long, 5 cm. wide, broken off on one side and at one end—probably large.

On bark of a badly decayed frondose log in a moist virgin forest. Mexico. December.

C. protrusum has a large fructification of general aspect and color of that of *C. portentosum* and *C. galactinum* but softer than these, of quite different structure, and having gloeocystidia. The basidia protrude beyond the general level of the fructification in the manner of cystidia; the presence of spores at the apex shows convincingly their real nature.

Specimens examined:

Mexico: Jalapa, *W. A. & E. L. Merrill*, 157, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 10354).

71. *C. livido-caeruleum* Karsten, Notiz ur Sällsk. pro Faun. et Fl. Fenn. Förh. 9: 370. 1868; Finska Vet.-Soc. Bidrag Natur och Folk 25: 315. 1876; 48: 415. 1889; Icones Hym. Fenniae

3: 8. f. 75. 1889; Fries, Hym. Eur. 652. 1874; Sacc. Syll. Fung. 6: 623. 1888; Masee, Linn. Soc. Bot. Jour. 27: 152. 1890.

Gloeocystidium livido-caeruleum (Karst.) v. Höhnel & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 115: 1554. 1906; Bourdot & Galzin, Soc. Myc. Fr. Bul. 28: 355. 1913.—An *Corticium plumbeum* Fries, Hym. Eur. 653. 1874?

Type: studied from Karsten Herb. in Helsingfors by v. Höhnel & Litschauer, *loc. cit.*

Fructifications long-effused, agglutinate, waxy-soft, not separable, white at first, then darkening in spots, finally more or less completely slate-gray to dark plumbeous, white, pruinose, rarely cracked; in section 100–250 μ thick, colored within when mature by 1–3 bluish black layers whose color is unchanged in lactic acid mounts but becomes at first vinaceous and is then dissolved and the sections bleached by potassium hydrate solution; very young fructifications not colored within; hyphae about 3 μ in diameter, glued together so that the outline is not clearly shown; gloeocystidia elongated, flexuous, 30–60 \times 3–6 μ ; spores hyaline, even, $4\frac{1}{2}$ –6 \times $2\frac{1}{2}$ – $3\frac{1}{2}$ μ .

Fructifications 1–10 cm. long, 2 mm.–3 cm. wide.

Under side of decaying coniferous rails, boards, and shingles, recorded on *Abies*, *Pinus* and *Thuja*. In Europe and in Canada, Vermont, New York, Montana, and Manitoba. April to September. Infrequent.

The dark lead color of one or more layers in the interior of the fructifications and the destruction of the coloring pigment by seven per cent potassium hydrate solution, together with the presence of gloeocystidia, afford a group of characters by which *C. livido-caeruleum* may be confidently recognized. Karsten did not send me an authentic specimen of his *C. livido-caeruleum* but he sent a specimen with the same characters under the name *Corticium plumbeum* Fr.

Specimens examined:

Sweden: *L. Romell*, 107; Lappland, *L. Romell*, 409.

Finland: Mustiala, *P. A. Karsten*, under the name *C. plumbeum* Fr.

Austria: Tirol, Innsbruck, *V. Litschauer*; Stubai, *V. Litschauer*.

Canada: *J. Macoun*, 37.

Vermont: Middlebury, *E. A. Burt*, 2 gatherings.

New York: Altamont, *E. A. Burt*.

Montana: Fontaine, *E. E. Hubert*, comm. by J. R. Weir (in Mo. Bot. Gard. Herb., 63234); Missoula, *J. R. Weir*, 420 (in Mo. Bot. Gard. Herb., 14767), and *E. E. Hubert*, comm. by J. R. Weir, 11961 (in Mo. Bot. Gard. Herb., 63318); Trego, *E. E. Hubert*, comm. by J. R. Weir, 11975 (in Mo. Bot. Gard. Herb., 63331).

Idaho: Avery, *E. E. Hubert*, comm. by J. R. Weir, 11987 (in Mo. Bot. Gard. Herb., 63320).

Manitoba: Norway House, *G. R. Bisby*, 1462 (in Mo. Bot. Gard. Herb., 61644).

British Columbia: Kootenai Mts., near Salmo, *J. R. Weir*, 466 (in Mo. Bot. Gard. Herb., 14936).

72. *C. pilosum* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, becoming confluent, closely adnate, very thin, not separable, pale pinkish buff, becoming pale olive-buff and pale smoke-gray in the herbarium, even, not shining, but little or not at all cracked, the margin of the same color, thinning out; in section 30–75 μ thick, not colored, composed of densely interwoven, hyaline hyphae 2–2½ μ in diameter, not incrustated, of gloeocystidia, and of delicate, branching paraphyses; gloeocystidia near the substratum, spherical or pyriform, 16–30 μ in diameter or up to 30 \times 15 μ , narrower gloeocystidia may be present also; paraphyses with slender branching tips about 1 μ in diameter occur in the surface of the hymenium; spores hyaline, even, curved, 6–9 \times 3–4½ μ .

Fructifications becoming confluent over areas up to 8 cm. long and 1–2 cm. wide.

On bark of fallen limbs of *Alnus*, *Vitis*, and *Tsuga*. Georgia, Alabama and Missouri. October and April. Not common.

C. pilosum has general aspect and color suggestive of the *Peniophora cinerea* group of species but has no cystidia. The slender branching paraphyses have been noted also in *Peniophora phyllophila*, *C. albido-carneum*, *C. Atkinsonii*, and *C. jamaicense*. Perhaps *C. pilosum* is mature *C. albido-carneum*.

Specimens examined:

Georgia: Atlanta, *E. Bartholomew*, 8982, type (in Mo. Bot. Gard. Herb., 63463).

Alabama: Auburn, *Earle & Baker* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 63709, 61479); Montgomery, *R. P. Burke*, 16, 217, 350, 452, 613 (in Mo. Bot. Gard. Herb., 4738, 57089, 57221, 57275, 57443).

Missouri: Baden, *E. A. Burt* (in Mo. Bot. Gard. Herb., 18864).

73. *C. radiosum* Fries, *Epier.* 560. 1838; *Icones Hym.* 2: 97. *pl.* 198, *f.* 1. 1884; *Hym. Eur.* 649. 1874; *Sacc. Syll. Fung.* 6: 611. 1888; *Bresadola, I. R. Accad. Agiati Atti III.* 3: 110. 1897; *Rea, Brit. Basid.* 685. 1922.

Thelephora radiosa Fries, *Obs. Myc.* 2: 277. 1818; *Elench. Fung.* 1: 206. 1828; *Persoon, Myc. Eur.* 1: 130. 1822.—*Corticium pellicula* (Fr.) *Karsten, Soc. pro Fauna et Fl. Fenn. Meddel.* 11: 5. 1885.—*Corticium alutaceum* (Schrad.) *Bresadola, I. R. Accad. Agiati Atti III.* 3: 110. 1897; v. *Höhnel & Lit-schauer, K. Akad. Wiss. Wien Sitzungsber.* 115: 1556. 1906.—*Gloeocystidium alutaceum* (Schrad.) *Bourdot & Galzin, Soc. Myc. Fr. Bul.* 28: 367. 1913.—An *Thelephora alutacea* *Schrader, Spic. Fl. Germ.* 1: 187. 1794?

Type: type illustration is Fries, *Icones Hym.* 2: *pl.* 198, *f.* 1. 1884. No authentic specimen determined, by E. Fries as *Thelephora* (or *Corticium*) *radiosa* is known.

Fructifications broadly effused, thin, membranaceous, tender, small pieces separable, from whitish to ivory-yellow and cream-buff in the herbarium, even, but little cracked, the margin white, broad, radiating, fibrillose; in section 100–300 μ thick, not colored, composed of densely interwoven, ascending hyphae rather crowded together except where separated by vesicular bodies which become greatly inflated and thin-walled and are finally up to 20–60 \times 15 μ ; spores hyaline, even or slightly rough, subglobose, 4½–7 μ in diameter or 6 \times 4½–5 μ .

Fructifications 3–15 cm. long, 1–7 cm. wide.

On decaying wood of coniferous species usually. In Europe, Canada to Pennsylvania, and westward to Alaska, British Columbia, and Washington.

C. radiosum may be recognized by its occurrence on coniferous wood, whitish or ivory-yellow color, white fimbriate margin, subglobose spores about $6\ \mu$ in diameter, and presence of very large vesicular bodies when sections are examined. These bodies are often so inflated and with walls so tenuous that their location is shown by vesicular spaces between the otherwise crowded hyphae.

No authentic specimen of *C. radiosum* determined by E. Fries is known to be in existence, although there are four specimens so determined by Karsten in Herb. Fries; two of these specimens are *Peniophora laevis*, another is very immature but may be *Stereum odoratum*, while the fourth specimen, Karsten, No. 32, has globose spores $6-8 \times 5-6\ \mu$ but does not show vesicular bodies in my mount. However, these four specimens present the Karsten idea of *C. radiosum* as to aspect. The colored illustration of *C. radiosum* in Fries' *Icones*, pl. 198, f. 1, is excellent, and taken in connection with the good original description by Fries and his critical comment on the close resemblance to his *Peniophora laevis*, seems to me to afford a more secure foundation for the concept of this species as *C. radiosum* than as *Corticium alutaceum*, for Schrader's description of *Thelephora alutacea* consists of the following five words, viz., "Supra exalbida, subtus tomentosa nivea." This vague description is not supplemented by an illustration, and I have not been able to learn of the existence of an authentic specimen. Any statement as to synonymy in the case of resupinate Hymenomyces by mycologists of a former century is of slight value when a nice feature of internal structure is decisive.

Specimens examined:

Exsiccati: Ell. & Ev., Fungi Col., 1211, under the name *Corticium Petersii*.

Sweden: Femsjö, L. Romell, 177; Stockholm, L. Romell, 113, 178, 181.

Austria: Innsbruck, Tirol, V. Litschauer; Stubai, Tirol, V. Litschauer, 2 specimens—all as *C. alutaceum*.

Hungary: Tatra Magna, V. Greschik, from Bresadola, under the name *C. alutaceum*.

Canada: Lower St. Lawrence Valley, J. Macoun, 87; Ontario, Ottawa, J. Macoun, 133, 204.

- Vermont: Bethel, *P. Spaulding*, comm. by U. S. Path. & Myc. Coll., 2708; Middlebury, *E. A. Burt*, 2 gatherings.
- Massachusetts: Sharon, *A. P. D. Piguet* (in Farlow Herb., 127, and Mo. Bot. Gard. Herb., 55234).
- New York: Albany, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 59672); Constableville, *C. H. Peck*, comm. by N. Y. State Mus. Herb., T 3 (in Mo. Bot. Gard. Herb., 54556, 55774); Fort Ann, *S. H. Burnham*, 11 (in Mo. Bot. Gard. Herb., 54508); Freeville, *G. F. Atkinson*, 2585; Ithaca, *G. F. Atkinson*, 2527, 14186; Schuylerville, *C. H. Peck*, 19, and an unnumbered specimen (in N. Y. State Mus. Herb., 55772).
- New Jersey: Newfield, *J. B. Ellis* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 54450).
- Pennsylvania: Bellefonte, *L. O. Overholts*, 3729 (in Mo. Bot. Gard. Herb., 55098); State College, *C. R. Orton*, 2, comm. by L. O. Overholts (in Mo. Bot. Gard. Herb., 44041).
- West Virginia: Nuttallburg, *L. W. Nuttall*, in Ell. & Ev., Fungi Col., 1211.
- Tennessee: Elkmont, *C. H. Kauffman*, 89 (in Mo. Bot. Gard. Herb., 44990).
- Michigan: Ann Arbor, *C. H. Kauffman*, 36 (in Mo. Bot. Gard. Herb., 19327); East Lansing, *E. A. Bessey* (in Mo. Bot. Gard. Herb., 56178); New Richmond, *C. H. Kauffman*, 50 (in Mo. Bot. Gard. Herb., 18523).
- Missouri: Creve Coeur *L. O. Overholts* (in Mo. Bot. Gard. Herb., 42602).
- Arkansas: Fordyce, *C. J. Humphrey*, 2528 (in Mo. Bot. Gard. Herb., 14057).
- Washington: Bellingham, *J. R. Weir*, 546 (in Mo. Bot. Gard. Herb., 63744); Olympic Mts., comm. by W. G. Farlow, 3 (in Mo. Bot. Gard. Herb., 44588); Sedro-Woolley, *C. J. Humphrey*, 7483.
- British Columbia: Sidney, *J. Macoun*, 25 (in Mo. Bot. Gard. Herb., 5686).
- Alaska: Ketchikan, *J. R. Weir*, 329 (in Mo. Bot. Gard. Herb., 16437).

74. *C. vesiculosum* Burt, n. sp.

Type: in Burt Herb.

Fructifications broadly effused, closely adnate, thin, between ivory-yellow and cream color in the herbarium, waxy, even, not cracked, the margin thinning out; in section 150–240 μ thick, not colored, somewhat stratosed, with the 3 strata or layers of the type separated by narrow zones of hyphae glued together; hyphae about 2 μ in diameter, thin-walled, collapsing, poorly defined, densely interwoven; gloeocystidia up to $40 \times 8 \mu$; many vesicular bodies, presumably gloeocystidia, are present and are 5–7 μ in diameter—also larger vesicular spaces; spores hyaline, even, $4-8 \times 2\frac{1}{2}-4 \mu$, borne on protruding basidia having 4 sterigmata.

Fructifications in fragments up to 4 cm. long, $1\frac{1}{2}$ cm. wide.

On decaying, frondose wood. Canada and New York. October.

C. vesiculosum is colored like *C. radiosum* but is closely adnate, does not have a radiating, fibrillose margin, and has smaller spores.

Specimens examined:

Canada: *J. Macoun*, 71, type.

New York: East Galway, *E. A. Burt*.

75. *C. globosum* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, thick, adnate, spongy-soft, white, becoming cartridge-buff, somewhat granular, not waxy, cracked only rarely, the margin determinate, thick, with hyphae interwoven; in section 600–700 μ thick, grayish olive near the substratum, stratosed, each stratum composed of slightly colored, thin-walled, suberect, curving and branching hyphae $\frac{1}{2}-1 \mu$ in diameter, and of scattered, conspicuous, rather thick-walled, globose vesicular bodies 12–13 μ in diameter; no other gloeocystidia; no cystidia; spores hyaline, even, $3 \times 2 \mu$.

Largest fragments of fructifications are 3 cm. in diameter and 4 cm. long, 2 cm. wide.

On rotten frondose wood. West Indies. November. Probably local.

C. globosum forms thick, pulvinate fructifications suggestive in

aspect of those of resupinate *Stereum Murrayi* but soft and spongy when moistened. The abundant, slender, curving hyphae show structural relationship with *Corticium investiens* and *Hyphochnus pallescens*, but I find no antler-shaped branches either at the hymenial surface or in the interior. The globose vesicular bodies are conspicuous and a valuable distinctive character.

Specimens examined:

Cuba: Omaja, *C. J. Humphrey*, 2842.

Porto Rico: Rio Piedras, *J. A. Stevenson*, 5793, type (in Mo. Bot. Gard. Herb., 54690), and *J. A. Stevenson & R. C. Rose*, 6531 (in Mo. Bot. Gard. Herb., 55652).

76. *C. subalbum* Burt, n. sp.

Type: in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., an Burt Herb.

Fructifications effused, very thin, closely adnate, whitish to cartridge-buff in the herbarium, even, not shining, but little cracked, the margin similar, thinning out; in section 75 μ thick, not colored, composed of densely interwoven hyphae about 2 μ in diameter, and of very numerous gloeocystidia which are broadly ovoid to subglobose, up to 30 \times 15–18 μ , or 20 μ in diameter; very slender paraphyses with branched tips protrude slightly beyond the basidia; spores hyaline, even, 10½–13 \times 4–5 μ , copious.

Fructifications 3–5 mm. in diameter, clustered near together and becoming confluent in a mass 5 cm. long, 1½ cm. wide.

On small dead limbs of *Alnus*. Georgia and Alabama. November.

C. subalbum is distinct from other gloeocystidial species by thin, whitish fructifications, rather large spores, abundant gloeocystidia, and the slender paraphyses.

Specimens examined:

Georgia: Atlanta, *E. Bartholomew*, 8983 (in Mo. Bot. Gard. Herb., 63462).

Alabama: Auburn, *F. S. Earle*, 2300, type (in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., 63375, and Burt Herb.).

77. *C. vinososcabens* Burt, n. sp.

Type: in Burt Herb.

Fructifications broadly effused, adnate, rather thick, membranaceous, separable when moistened, vinaceous-buff or pale avellaneous when fresh, becoming deep purplish vinaceous where bruised, finally between pale olive-buff and pale pinkish buff in the herbarium, even, waxy, not cracking, the margin whitish, fimbriate; in section 150–450 μ thick, pale-colored, with a compact hymenial layer containing numerous thin-walled, vesicular bodies 15–75 \times 12–45 μ , and with a very broad supporting layer consisting of thin-walled, nodose-septate hyphae 2–3 μ in diameter, not incrustated and loosely arranged except in thick fructifications where 1 or 2 dense narrow zones are present between substratum and hymenial layer; basidia 2-spored; spores white in spore collection, even, subglobose, 6–9 \times 5–7 μ , slightly pointed at the base.

Fructifications 3–9 cm. long, 1½–3 cm. wide.

On bark of fallen trunk of *Abies rubra* and *Tsuga canadensis*. Vermont to Wisconsin. September and November. Rare.

C. vinoscabens dries a characteristic livid color, occurs on bark of conifers, and has large subglobose spores and a vesiculose hymenial layer. These vesicular organs are presumably gloeocystidia but so highly inflated that they appear empty under the microscope, and with their scanty cell contents adhering to the cell wall.

Specimens examined:

Vermont: Little Notch, Ripton, *E. A. Burt*, type.

New York, Karner, *H. D. House*, 14,210 (in Mo. Bot. Gard. Herb., 44730).

Wisconsin: Ladysmith, *C. J. Humphrey*, 1773 (in Mo. Bot. Gard. Herb., 14242).

78. *C. polygonium* Persoon, Roemer Neues Mag. Bot. 1: 110. 1794; Fries, Epicr. 564. 1838; Hym. Eur. 655. 1874; Berkeley, Outl. Brit. Fung. 276. 1860; Sacc. Syll. Fung. 6: 627. 1888; Masee, Linn. Soc. Bot. Jour. 27: 144. 1890; Bresadola, Ann. Myc. 1: 97. 1903; Rea, Brit. Basid. 684. 1922.

Thelephora polygonia Persoon, Syn. Fung. 574. 1801; Myc. Eur. 1: 132. 1822; Fries, Syst. Myc. 1: 444. 1821; Elench. Fung. 1: 222. 1828.—*Gloeocystidium polygonium* (Pers.) v. Höhnelt & Litschauer, Wiesner Festschr. Wien, 69. 1908;

Bourdot & Galzin, Soc. Myc. Fr. Bul. 28: 363. 1913.—*G. polygonium* (Pers.) var. *fulvescens* Bresadola, Mycologia 17: 69. 1925.

Fructifications orbicular, soon confluent and broadly effused, closely adnate, thin, pale ecru-drab to brownish drab, pruinose, even or somewhat tubercular, waxy, the margin whitish; in section 150–250 μ thick, not colored, composed of suberect, interwoven hyphae 3–5 μ in diameter, occasionally nodose-septate, and of pyriform gloeocystidia 10–25 \times 5–20 μ ; spores hyaline, even, cylindric, slightly curved, 7½–10 \times 2½–3 μ .

Fructifications 3–5 mm. in diameter, becoming by confluence up to 8 cm. long, 1–2 cm. wide.

On fallen branches of *Populus*. In Europe and in Colorado, Idaho, Manitoba, and Washington.

American specimens of *C. polygonium* are not as heavily pruinose as the European specimens which I have seen and may be recognized by the light grayish vinaceous color of the fructifications, occurrence on poplar bark, large, scattered gloeocystidia, and slender, cylindric spores.

Specimens examined:

Exsiccati: Cooke, Fungi Brit., 6; Romell, Fungi Scand., 128.

Sweden: Stockholm, *L. Romell*, 118, 119, and in Romell, Fungi Scand., 128, and *W. A. Murrill*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 61477); Svex, Söderm., *Lindblad*, from E. Fries (in Kew Herb.).

Germany: *Brinkmann*, comm. by Bresadola.

Austria: Tirol, *V. Litschauer*.

England: Batheaston, *C. E. B.*, in Cooke, Fungi Brit., 6.

Colorado: Geneva Creek Canyon, *F. J. Seaver & E. Bethel* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61474); Lake Eldora, *F. J. Seaver & E. Bethel* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 56793).

Idaho: *J. R. Weir*, 16824, type of *Gloeocystidium polygonium* var. *fulvescens* (in Weir Herb.); Coolin, *J. R. Weir*, 11551 (in Mo. Bot. Gard. Herb., 63703); Priest River, *J. R. Weir*, 14946 (in Mo. Bot. Gard. Herb., 56803).

Manitoba: *I. L. Conners & J. F. Higham*, comm. by G. R. Bisby, 394 (in Mo. Bot. Gard. Herb., 58969).

Washington: Bingen, *W. N. Suksdorf*, 719, 902.

79. *C. chrysocreas* Berk. & Curtis, *Grevillea* 1: 178. 1873; *Sacc. Syll. Fung.* 6: 618. 1888.

Corticium crocicreas Masee, *Linn. Soc. Bot. Jour.* 27: 151. 1890; v. Höhnel & Litschauer, *K. Akad. Wiss. Wien Sitzungsber.* 116: 776. 1907.—Not *C. crocicreas* Berk. & Curtis.

Type: type distribution in Ravenel, *Fungi Car.* 5: 27, under the name *Corticium crocicreas*.

Fructifications broadly effused, rather thick, closely adnate, not at all separable, apricot-yellow and olive-ocher to dark olive-buff, even or becoming somewhat papillate, cracked in drying, the margin thinning out, indeterminate; in section 120–300 μ thick, olive-ocher throughout, composed of erect, densely interwoven and conglutinate colored hyphae about 2 μ in diameter, of very numerous vesicular organs 15–21 \times 6–9 μ ; coloring matter of the sections becomes vinaceous upon treatment with potassium hydrate solution and the sections are finally bleached; spores white in a spore collection, even, 4½–5 \times 2½ μ .

Fructifications 3–8 cm. long, 1–3 cm. wide.

On wood and bark of decaying logs of frondose species. South Carolina to Louisiana and Missouri, in Mexico, in West Indies, and in Japan. July to April. Occasional.

C. chrysocreas has olive-ocher fructifications of the same color throughout which make it one of the most conspicuous species of the region bordering on the Gulf of Mexico. Several other Gulf species have a northern station in Missouri or Illinois. The vesicular structure in section is an important distinctive character for separation of this species from *Odontia Wrightii*, which has the same color and geographical range but angular granules in the hymenium.

Specimens examined:

Exsiccati: Ell. & Ev., *N. Am. Fungi*, 2021, under the name *Corticium crocicreas*—in some copies this, and in others a different species; Ravenel, *Fungi Car.* 5: 27, under the name *C. crocicreas*. South Carolina: *H. W. Ravenel*, *Curtis Herb.*, 2933, type (in *Kew Herb.*) and in Ravenel, *Fungi Car.* 5: 27.

Florida: *W. W. Calkins*, in some copies of Ell. & Ev., *N. Am. Fungi*, 2021; New Smyrna, *C. G. Lloyd*, 2072.

Alabama: *Peters*, 418 (under the name *C. crocicreas* in *Curtis Herb.*, 4027).

Mississippi: Hattiesburg, *C. J. Humphrey*, 5454.

Louisiana: Baton Rouge, *Edgerton & Humphrey*, comm. by *C. J. Humphrey*, 5601; St. Martinville, *A. B. Langlois*, *bm*, *H. 2612*, and 35—the last comm. by *Lloyd Herb.*, 2386—and 1950a, comm. by *W. G. Farlow* (in *Mo. Bot. Gard. Herb.*, 42601).

Missouri: Creve Coeur, *E. A. Burt* (in *Mo. Bot. Gard. Herb.*, 1757, 14199).

Mexico: Jalapa, *W. A. & E. L. Merrill*, 180, comm. by *N. Y. Bot. Gard. Herb.* (in *Mo. Bot. Gard. Herb.*, 44968).

Cuba: Baracoa, *L. M. Underwood & F. S. Earle*, 1210, comm. by *N. Y. Bot. Gard. Herb.*

Japan: Hida-Machi, Prov. Bungo, *N. Nakayama*, comm. by *A. Yasuda*, 96, under the name *Corticium Nakayamae* *Yasuda*.

80. *C. involucrum* Burt, n. sp.

Type: in *Burt Herb.*

Fructifications broadly effused, closely adnate, thin, somewhat gelatinous, not at all separable, drying olive-buff to snuff-brown, even, conforming to inequalities of the substratum, pruinose, not cracked except where bridging a depression, the margin indeterminate, thinning out; in section 60–80 μ thick when composed of 1 stratum, 120–150 μ when 2 strata are present, colored like the hymenium by the color of the numerous gloeocystidia, each stratum composed of erect, densely arranged hyphae and gloeocystidia; hyphae 3 μ in diameter, with outer wall somewhat gelatinously modified, clothed with short lateral branches up to 6 μ long which are clustered in an involucrel cup at the base of the basidium; gloeocystidia brownish-colored, irregular, flexuous, 30–45 \times 4–4½ μ , very numerous; basidia simple, bearing 4 spores; spores hyaline, even, spherical, 3–4 μ in diameter.

Fructifications 2–10 cm. long, 1–3 cm. wide.

Under side of decorticated, decaying logs of frondose species usually—one gathering on coniferous wood. Canada, New Hampshire, Vermont, and Cuba. September to December.

C. involucrum forms a thin brown coating on decaying wood, with aspect somewhat suggestive of a *Sebacina* or *C. lividum* but so near the color of the wood and so inconspicuous that it is probably often overlooked; the colored gloeocystidia are addi-

tional confirmatory characters which should identify the species. The hyphal structure is unique but not likely to be observed unless close study is made.

Specimens examined:

Canada: Ottawa, *J. Macoun*, 4, 23.

New Hampshire: Chocorua, *W. G. Farlow*, 7.

Vermont: Middlebury, *E. A. Burt*, type.

Cuba: Ceballos, *C. J. Humphrey*, 2793 (in Mo. Bot. Gard. Herb., 20200).

81. *C. luridum* Bresadola, Fungi Trid. 2: 59. pl. 169. 1898; Sacc. Syll. Fung. 16: 119. 1902.

Gloeocystidium luridum (Bres.) v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 116: 770. 1907; Bourdot & Galzin, Soc. Myc. Fr. Bul. 28: 360. 1913.

Type: part of type in Burt Herb.

Fructifications broadly effused, adnate, sometimes rather thick, small pieces separable when moistened, becoming cinnamon-buff to avellaneous in the herbarium, not shining, even, sometimes somewhat cracked with age, the margin similar; in section 150–300 μ thick, slightly colored, composed of densely arranged hyphae 2–3½ μ in diameter and not incrustated, which run parallel with the substratum in a narrow layer and then become erect and mixed with gloeocystidia in a broad layer which bears the hymenium; gloeocystidia numerous, slightly colored, flexuous, 50–100 \times 6–7 μ ; spores hyaline, even, 6–8 \times 3–5 μ .

Fructifications 3–4 cm. long, 1–4 cm. wide and broken off at both ends in the fragments received.

On bark and wood of frondose species. In Europe, Ohio, and Manitoba. Autumn. Rare.

C. luridum may be recognized among our species by its slightly colored gloeocystidia and resemblance in general aspect and color to *Peniophora velutina*. The spores were published by Bresadola as 10–17 \times 6–8 μ but I have found none so large in the specimen received.

Specimens examined:

Italy: Florentia, *Martelli*, type, from Bresadola.

Ohio: Preston, *C. G. Lloyd*, 1558.

Manitoba: Winnipeg: *A. H. R. Buller*, 744 (in *Mo. Bot. Gard. Herb.*, 57913).

82. *C. jamaicense* Burt, n. sp.

Type: in Burt Herb.

Fructifications broadly effused, adnate, thick, somewhat membranaceous, small pieces separable when moistened, becoming buff-brown to tawny olive in the herbarium, even, pulverulent, not cracked, the margin probably thick and entire but not well shown by the fragments; in section 150–600 μ thick, concolorous with the hymenium, composed of even, suberect hyphae 3 μ in diameter, of interwoven organs 2 μ in diameter with antler-shaped branching, of colored gloeocystidia, and of imbedded, globose, slightly colored, rough-walled spores 6–7 μ in diameter, very numerous in all regions; gloeocystidia becoming dark-colored, irregular, flexuous, 35–60 \times 5–7 μ , scattered throughout the fructifications, none found protruding; basidia simple, with 4 sterigmata; basidiospores spherical, hyaline, even, 6 μ in diameter as seen attached to basidia.

Fructifications received in fragments, of which the largest is 7 cm. long, 2 cm. wide.

On decaying wood. Jamaica. December to January.

The general aspect and antler-shaped branching of one kind of its hyphal components show relationship to *Hypochnus peniophoroides*, *H. pallescens*, *Stereum induratum*, *S. duriusculum*, *Asterostromella dura*, and *A. rhodospora*. Could I have found un-even basidiospores this species would have been included in *Hypochnus* near *H. pallescens* and *H. peniophoroides*; such basidiospores may eventually be demonstrated when this species becomes better known.

Specimens examined:

Jamaica: Cinchona, *W. A. & E. L. Murrill*, 456, type, comm. by N. Y. Bot. Gard. Herb.; Morce's Gap, *W. A. & E. L. Murrill*, 677, 740, comm. by N. Y. Bot. Gard. Herb.

83. *C. debile* Berk. & Curtis in Masee, *Linn. Soc. Bot. Jour.* 27: 131. 1890; *Sacc. Syll. Fung.* 11: 127. 1895.

Type: in Kew Herb. and Farlow Herb.

Fructifications broadly effused, thin, closely adnate, becoming pale ivory-yellow to buffy brown in the herbarium, even, waxy, not cracked, the margin whitish; in section $150\ \mu$ thick, yellowish by presence of numerous colored gloeocystidia, with the hyphae about $2\frac{1}{2}$ - $3\ \mu$ in diameter, with walls gelatinously modified and poorly defined, longitudinally arranged along substratum and then ascending to the hymenium; gloeocystidia somewhat colored, flexuous, 30 - 60×3 - $5\ \mu$; some colorless vesicular bodies present also; spores hyaline, even, subglobose, 4 - $5\ \mu$ in diameter in Burt preparation but noted by Masee as 7×3 - $4\ \mu$.

Fructifications 1-3 cm. in diameter.

Under side of decaying frondose limbs on the ground. Louisiana, California, West Indies, and Venezuela. June and December. Rare.

C. debile has gloeocystidia which are numerous and conspicuous by their yellowish color; these gloeocystidia and the brown fructifications afford good distinguishing characters.

Specimens examined:

Louisiana: St. Martinville, *A. B. Langlois*, *bb*, 2674 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 58327).

California: Preston's Ravine, Palo Alto, *W. A. Murrill & L. S. Abrams*, 1195, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55709).

Cuba: near Havana, *C. J. Humphrey*, 2963.

Porto Rico: Bayamon, *J. A. Stevenson*, 6762 (in Mo. Bot. Gard. Herb., 55053); Rio Piedras, *J. A. Stevenson*, 5620, and *J. A. Stevenson & R. C. Rose*, 6529 (in Mo. Bot. Gard. Herb., 44864, 55082); Martin Peña, *J. A. Stevenson*, 3719 (in Mo. Bot. Gard. Herb., 7091).

Jamaica: Constant Spring Hotel grounds, *W. A. & E. L. Murrill*, 26, comm. by N. Y. Bot. Gard. Herb.

Venezuela: *Fendler*, type (in Curtis Herb., 204).

84. *C. venosum* Berk. & Ravenel, *Grevillea* 1: 177. 1873; Sacc. Syll. Fung. 6: 620. 1888; Masee, Linn. Soc. Bot. Jour. 27: 147. 1890.

Type: in Kew Herb. and Farlow Herb.

Fructifications broadly effused, rather thick, waxy-gelatinous

when moistened, becoming vinaceous-brown in the herbarium, even; in section 500–600 μ thick, with a layer 300 μ broad towards the substratum composed of longitudinally and densely arranged hyphae, with the outer walls so gelatinously modified that only the stained lumen and contents of each hypha are now visible as to outline; hymenial portion zonate, composed of 2 layers, each containing numerous curved, slender, flexuous, deeply staining organs 30–75 \times 3–4 μ , which may be elongated gloeocystidia or perhaps basidia of the transversely septate kind; a few scattered, brownish spherical organs resembling gloeocystidia of *Peniophora serialis*; spores hyaline, even, 12–13 \times 4–5 μ , few seen and may not belong.

On decaying logs. South Carolina.

In the original description it was stated that there is a thin, tomentose subiculum composed of interwoven threads. If so, it is not retained in my mounts of sections from the specimens in Kew and Farlow Herbaria made 26 and 24 years ago respectively. I did not decide from the type specimens whether this species is a *Corticium* or *Stereum* having elongated gloeocystidia or an *Auricularia* with transversely septate basidia. I noted the presence of the word "*Auricularia*" on the specimen in Kew Herbarium but the species was published as a *Corticium*. My thin *Corticium argentatum* is of too different structure to be a synonym of this. While writing this account it occurs to me that the specimens distributed in Ellis, N. Am. Fungi, 1109, under the name *Phlebia spilomea*, should have been compared with a type of *C. venosum*.

Specimens examined:

South Carolina: Black Oak, *H. W. Ravenel, 1321*, type (in Kew Herb. and in Farlow Herb.).

85. *C. ochrofarctum* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, closely adnate, very thin, hypochnoid, tilleul-buff in the herbarium, even, not shining, not cracked, the margin whitish, thinning out, with hyphae interwoven; in section 100–150 μ thick, not colored, composed of hyphae and numerous scattered, spherical, ochraceous gloeocystidia; hyphae rather

loosely arranged near the substratum, suberect, incrusting, $4\frac{1}{2}$ μ in diameter under the incrustation and up to 6 μ over it, not incrusting and more densely arranged towards the hymenium; gloeocystidia in the form of brown or ochraceous, resinous, spherical or somewhat angular masses 9–20 μ in diameter; spores white in a spore collection, even, cylindrical, somewhat curved, $8 \times 2\frac{1}{2}$ μ .

Fructifications 2–6 cm. long, 5 mm.–3 cm. wide.

On decorticated, very rotten logs of *Populus trichocarpa*. Idaho. September.

The specific name *ochrofarctum* has reference to the colored, resinous gloeocystidia which are so large and so deep colored that they may be seen by inspection of the fructification with a lens and give, when so viewed, a minutely speckled appearance to the fructification. The large, coarsely incrusting hyphae are distinctive also. *C. coroniferum* is a related European species.

Specimens examined:

Idaho: Coolin, *J. R. Weir*, 11120, type, and 11122 (in Mo. Bot. Gard. Herb., 63695 and 63696 respectively).

86. *C. Tsugae* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, thin, dry, hypochnoid, downy, avelaneous, with the surface white-pruinose, even, not cracked, the margin similar, indeterminate; in section 30 μ thick, not colored, composed of hyphae and numerous colored gloeocystidia; hyphae hyaline, thin-walled, 3 μ in diameter, not incrusting, not nodose-septate, ascending from the substratum; gloeocystidia in the form of brown or ochraceous, resinous-appearing, subspherical masses up to 18 μ in diameter; not more than 4 sterigmata to a basidium demonstrated; spores hyaline, even, $6-7\frac{1}{2} \times 3-3\frac{1}{2}$ μ , copious.

Fructifications in fragments up to $2\frac{1}{2}$ cm. long, $1\frac{1}{2}$ cm. wide.

On very rotten wood of *Tsuga canadensis*. New Hampshire. September.

The color of the fructification of this species is so nearly that of the rotten substratum that close inspection is necessary to detect the presence of the fungus, whose color is probably due to the

gloeocystidia. This aspect, together with uncommon gloeocystidia and non-incrusted hyphae, are good distinctive characters.

Specimens examined:

New Hampshire: Chocorua, *W. G. Farlow*, 148, type (in Mo. Bot. Gard. Herb., 55248).

87. *C. subcinereum* Burt, n. sp.

Type: in Burt Herb.

Fructifications long-effused, closely adnate, thin, not at all separable, pale gull-gray to pale drab-gray, slightly granular, somewhat pruinose, becoming cracked in drying, the margin similar or paler, thinning out; in section 60–100 μ thick, slightly colored, with the hyphae densely interwoven, 1–2 μ in diameter, so grown together as to show structure indistinctly, but probably not nodose-septate nor incrusted; no cystidia nor gloeocystidia; branched paraphyses about 1 μ in diameter are present in the hymenium; spores hyaline, even, 5–8 \times 3–3½ μ .

Fructifications 2–10 cm. long, 1–2 cm. wide.

On bark of fallen, decaying limbs of *Betula*, *Cornus*, and *Syringa*. Canada, Massachusetts, and Kansas. February to October. Local.

C. subcinereum closely resembles *Peniophora cinerea*, *P. caesia*, and *C. argentea* in aspect but is distinct from each by its lack of cystidia and gloeocystidia.

Specimens examined:

Canada: Ottawa, *J. Macoun*, 37, type.

Massachusetts: Sharon, *A. P. D. Piguet*, comm. by *W. G. Farlow*, 8 (in Mo. Bot. Gard. Herb., 55289).

Kansas: Rockport, *E. Bartholomew*; Rooks County, comm. by *Lloyd Herb.*, 2301; Stockton, *E. Bartholomew*, 8620, 8702 (in Mo. Bot. Gard. Herb., 62491, 63749, and Burt Herb.).

88. *C. albido-carneum* (Schw.) Masee, Linn. Soc. Bot. Jour. 27: 142. 1890.

Thelephora albido-carnea Schweinitz, Am. Phil. Soc. Trans. N. S. 4: 169. 1832.—*Corticium albido-carneum* (Schw.) Ravenel, Fungi Car. 4: 14, was a misdetermination by Ravenel.

Type: in Schweinitz Herb., Farlow Herb., and Kew Herb.

Fructifications effused, small, becoming confluent longitudinally but very narrow, closely adnate, thin, becoming pale drab-gray to pinkish buff in the herbarium, pruinose, cracking transversely in drying, the margin paler; in section 60–120 μ thick, composed of 3 equal layers, of which that next to substratum consists of densely, longitudinally interwoven, slightly colored hyphae $1\frac{1}{2}$ –2 μ in diameter, not incrustated nor nodose-septate; the middle layer contains numerous pyriform bodies $12 \times 6 \mu$ which are presumably basidia; the outer layer is composed of bushy-branched paraphyses 3 μ in diameter with final branchlets and lateral prongs about $\frac{1}{2} \mu$ in diameter; detached spores 5–8 \times 3–4 μ , few present and may not belong.

Fructifications 6–10 mm. long, 1–2 mm. wide, becoming more or less confluent over areas up to 5 cm. long and 3 cm. wide.

In crevices of the bark of dead wood of wild species of *Vitis*. Pennsylvania, Virginia, and Michigan. February and May. Rare.

C. albido-carneum is a very rare species which has been collected but few times and in small quantity for critical study. The specimens seem immature and the tissues of the fructifications are so minute and the covering of paraphyses so troublesome that I have been unable to make out the detailed structure of the basidia. The plan of structure is suggestive of a *Sebacina* but I have been unable to demonstrate longitudinal septa in any of the pyriform organs. The somewhat smoky color of the sections, their 3-layered structure, and occurrence on bark of dead wild grape trunks are a combination of characters which should afford ready recognition of this species. The dates of collection of the specimens seem to indicate that the species may fruit in winter. If some of the pyriform organs are gloeocystidia, *C. pilosum* may prove not specifically distinct.

Specimens examined:

Pennsylvania: Bethlehem, *Schweinitz*, type (in Schweinitz Herb., Kew Herb., and Farlow Herb.).

Virginia: Arlington Farm, *C. L. Shear*, 2810 (in Mo. Bot. Gard. Herb., 15310).

Michigan: Paw Paw, *L. A. Hawkins*, comm. by *C. L. Shear*.

89. C. adhaesum Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, closely adnate, rather thick, not separable, between drab and deep olive-buff, somewhat granular, pulverulent, cracked at intervals of 1–2 mm., the margin abrupt; in section 250–350 μ thick, chamois-colored within, composed of densely arranged, thick-walled, erect and interwoven hyphae 3–3½ μ in diameter, not incrustated, not nodose-septate, conglutinate and not showing structure well; no gloeocystidia; spores hyaline, even, flattened on one side, 3½–6 \times 2½–3 μ , copious.

Fructifications 6 cm. long, 2 cm. wide.

On rough surface of badly decayed wood of a frondose species. Mexico and West Indies. Probably rare.

C. adhaesum is separated from the most of our species by having its fructifications colored within to such a degree that the thin sections are somewhat chamois-colored. The drab color of the hymenium and gluing together of the hyphae in sections are other distinctive characters.

Specimens examined:

Mexico: Jalapa, *W. A. & E. L. Merrill*, 64, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 16479).

Porto Rico: Rio Piedras, *J. A. Stevenson*, 5577 (in Mo. Bot. Gard. Herb., 11059).

Jamaica: *A. E. Wight*, comm. by W. G. Farlow, C 1, type (in Mo. Bot. Gard. Herb., 44005).

Trinidad: Port of Spain, *R. Thaxter*, comm. by W. G. Farlow, 22.

Grenada: Grand Etang, *R. Thaxter*, comm. by W. G. Farlow, 121.

90. C. leptaleum Ell. & Ev. in Millsp. & Nutt. Field Mus. Publ. Bot. 1: 170. 1896; Sacc. Syll. Fung. 14: 220. 1899.

Type: in N. Y. Bot. Gard. Herb.

Fructifications effused, adnate, membranaceous-soft, contracting in drying so that only one-half the original area is covered, cracking into masses 2–3 mm. in diameter and curling up from substratum so as to resemble cups of a *Peziza*, grayish white, becoming pinkish buff in the herbarium, pulverulent; in section 300 μ thick, composed of densely interwoven hyphae 3–3½ μ in diameter, incrustated in the subhymenium, only rarely nodose-septate; no gloeocystidia; spores hyaline, even, 8–10 \times 3–4 μ .

On under side of dead *Magnolia Fraseri*. West Virginia. April.

In the original description it is stated, "The membrane on which the hymenium stands where exposed on the incurved margin of the pezizoid areas is pale brown." Some twenty years ago at the time my sections of the type were made, I did not record whether the sections were colored within or not. They are now colorless but may have faded. The large spores preclude reference to *C. hydnans*.

Specimens examined:

West Virginia: *L. W. Nuttall*, 690, type (in N. Y. Bot. Gard. Herb.).

91. *C. laeve* Persoon, Roemer Neues Mag. Bot. 1: 110. 1794; Sacc. Syll. Fung. 6: 611. 1888; Bresadola, Ann. Myc. 1: 94. 1903; Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 232. 1911; Rea, Brit. Basid. 673. 1922.

Thelephora laevis Persoon, Syn. Fung. 575. 1801 (under *Corticium*); Myc. Eur. 1: 130. 1822.—*T. evolvens* Fries, Obs. Myc. 1: 254. pl. 4, f. 5. 1815; Syst. Myc. 1: 441. 1821; Elench. Fung. 1: 181. 1828.—*Corticium evolvens* Fries, Epicr. 557. 1838; Hym. Eur. 646. 1874; Sacc. Syll. Fung. 6: 604. 1888; Masee, Linn. Soc. Bot. Jour. 27: 118. pl. 6, f. 4. 1890.—Not *Corticium laeve* Fries, which is a *Peniophora*.

Type: in Herb. Mougeot, according to Bresadola in letter. Fragment of type from Quelet to Bresadola in Burt Herb.

Fructifications usually widely effused, rarely small and disk-shaped, very rarely slightly reflexed, thick, membranaceous, tender, small pieces separable when moist, becoming cream color and light pinkish cinnamon to wood-brown and drab in the herbarium, waxy, even, more or less undulate, sometimes coarsely tuberculate, cracking in drying and showing on the sides of the fissures a thick, crust-like hymenial layer of about the same color as the surface of the hymenium and connected with the substratum by a thicker layer of whitish floccose or loose tissue, the margin white, silky, radiating, but sometimes free when the fructifications are pezizaeform and 1-3 mm. in diameter; in section 200-500 μ thick, 2-layered, with the hymenial layer usually

somewhat colored but concolorous with the surface of the hymenium, very compact, supported by the broad layer of loosely arranged, obliquely ascending, thin-walled hyphae 3-4 μ in diameter, sometimes conspicuously guttulate, nodose-septate, not incrustated; no gloeocystidia; spores hyaline, even, 7-10 \times 4-6 μ , flattened on one side, tapering towards the pointed base, usually glued together on the flattened side at ends of the protruding basidia.

Fructifications 1-10 cm. long, 1-5 cm. wide, rarely only 1-3 mm. in diameter.

On bark of fallen decaying limbs of many frondose species. Europe and northern United States and Canada. Throughout the year. Very common.

C. laeve is a very common species on fallen limbs of poplar, maple, beech, etc., whose usually drab fructifications crack when dried and show the dark hymenial crust supported on a whitish subiculum. The absence of paraphyses and presence of spores 7-10 \times 4-6 μ , shaped like apple seeds and glued together in groups of 2-4, are important additional characters. In the large number of gatherings cited below there are only 2 American specimens which have a slightly reflexed margin and would be referred to *Stereum*, where the species really belongs.

Specimens examined:

Exsiccati: Brinkmann, Westfälische Pilze, 9; Cooke, Fungi Brit., 10; Ell. & Ev., Fungi Col., 221, under the name *Corticium glabrum*; Libert, Pl. Crypt. Ard., 20; Romell, Fungi Scand., 124; Sydow, Myc. Germ., 355, under the name *Peniophora laevis*; de Thümen, Myc. Univ., 1109.

Sweden: Svex. Söderm., Lindblad, authentic specimen of *C. evolvens* from Fries (in Kew Herb.); Stockholm, L. Romell, 89, 90, 91, 92, 93, 94, 95, and in Romell, Fungi Scand., 124.

Finland: Mustiala, P. A. Karsten, in de Thümen, Myc. Univ., 1109.

Germany: Brandenburg, H. Sydow, in Sydow, Myc. Germ., 355; Westphalia, W. Brinkmann, in Brinkmann, Westfälische Pilze, 9.

Austria: Innsbruck, Tirol, V. Litschauer, 3 specimens.

Italy: Trient, G. Bresadola, 3 specimens; Vallambrosa, Cavara, comm. by Bresadola.

- France: *A. Libert*, in *Libert*, *Pl. Crypt. Ard.*, 20; Paris, *Persoon*, original specimen of *C. laeve*, comm. by *Bresadola*; *Strassburg*, *L. Maire*.
- England: *E. M. Wakefield* (in *Mo. Bot. Gard. Herb.*, 58691); *Hampstead*, in *Cooke*, *Fungi Brit.*, 10.
- Canada: Lower St. Lawrence Valley, *J. Macoun*, 17, 50.
- Ontario: *Granton*, *J. Dearness*, 1040 E (in *Mo. Bot. Gard. Herb.*, 23107); *London*, *J. Dearness*, 945 h (in *Mo. Bot. Gard. Herb.*, 14252).
- Newfoundland: Bay of Islands, *A. C. Waghorne*, 517, 1027.
- New Hampshire: *Chocorua*, *W. G. Farlow*, 2 (in *Mo. Bot. Gard. Herb.*, 44594).
- Vermont: *Middlebury*, *E. A. Burt*, 5 gatherings, *Ripton*, *E. A. Burt*, 4 gatherings.
- New York: *Adirondack Mts.*, *G. F. Atkinson*, C; *Albany*, *H. D. House* (in *N. Y. State Mus. Herb.*, and *Mo. Bot. Gard. Herb.*, 14829, 19456); *Alcove*, *C. L. Shear*, 1210, 1214; *Altamont*, *E. A. Burt*; *Bronx Park*, *Class in Mycology* (in *N. Y. Bot. Gard. Herb.*, and *Mo. Bot. Gard. Herb.*, 61389); *Hague*, *C. H. Peck* (in *N. Y. State Mus. Herb.*, and *Mo. Bot. Gard. Herb.*, 56110), and 13; *Ithaca*, *C. O. Smith*, comm. by *G. F. Atkinson*, 8046, and *G. F. Atkinson*, d, 2813, 4899; *Lyndonville*, *C. E. Fairman*, 138 (in *Mo. Bot. Gard. Herb.*, 61438); *New York*, *F. S. Earle* (in *N. Y. Bot. Gard. Herb.*, and *Mo. Bot. Gard. Herb.*, 61677); *Newcomb*, *H. D. House* (in *N. Y. State Mus. Herb.*, and *Mo. Bot. Gard. Herb.*, 59666); *Oneida*, *H. D. House* (in *N. Y. State Mus. Herb.*, and *Mo. Bot. Gard. Herb.*, 59679, 59699); *Sylvan Beach*, *H. D. House* (in *N. Y. State Mus. Herb.*, and *Mo. Bot. Gard. Herb.*, 7461); *Syracuse*, *L. M. Underwood*, 51, 126 (in *N. Y. Bot. Gard. Herb.*, and *Mo. Bot. Gard. Herb.*, 61571, 61394), and in *Ell. & Ev.*, *Fungi Col.*, 221.
- District of Columbia: *Takoma Park*, *C. L. Shear*, 1038.
- Michigan: *Michigan Agricultural College*, *B. O. Longyear*, 9 (in *N. Y. State Mus. Herb.*, and *Mo. Bot. Gard. Herb.*, 55787).
- Missouri: *St. Louis*, *E. A. Burt* (in *Mo. Bot. Gard. Herb.*, 58334).
- British Columbia: *Sidney*, *J. Macoun*, 65, 77, 78 (in *Mo. Bot. Gard. Herb.*, 5743, 5753, 9778), and 35, 288, 319, 350, 424 (in *Macoun Herb.*); *Squamish*, *J. Macoun*, 318, 536 (in *Mo. Bot.*

- Gard. Herb.); Victoria, *J. Macoun*, 577 (in Macoun Herb.); Vancouver Island, *J. Macoun*, 419 (in Mo. Bot. Gard. Herb., 55315), and comm. by J. Dearness, V 35 (in Mo. Bot. Gard. Herb., 19573).
- Washington: Bingen, *W. N. Suksdorf*, 714, 755, 872, 886, 898, 899, 901, 955, 961; Olympia, *C. J. Humphrey*, 6293, 6330; Seattle, *A. M. Parker*, 177 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61475).
- Oregon: Seattle, *W. A. Merrill*, 988, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55703).

92. *C. investiens* (Schw.) Bresadola, I. R. Accad. Agiati Atti III. 3: 110. 1897; Ann. Myc. 1: 95. 1903.

Radulum? *investiens* Schweinitz, Am. Phil. Soc. Trans. N. S. 4: 165. 1832; Sacc. Syll. Fung. 11: 112. 1895.—*Vararia investiens* (Schw.) Karsten, Krit. Öfvers. Finl. Basidsv. Tilläg 3: 32. 1898.—*Asterostromella investiens* (Schw.) v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 117: 1083. 1908.—*Corticium alutarium* Berk. & Curtis, Grevillea 2: 4. 1873; Sacc. Syll. Fung. 6: 634. 1888; Masee, Linn. Soc. Bot. Jour. 27: 137. 1890.—*Thelephora subochracea* Peck, N. Y. State Mus. Rept. 46: 109. 1893; Sacc. Syll. Fung. 11: 116. 1895.—*Xerocarpus alutarius* (Berk. & Curtis) Karsten, Finska Vet.-Soc. Bidrag Natur och Folk 48: 418. 1889.

Type: in Schweinitz Herb., Farlow Herb., Fries Herb., and probably in Kew Herb.

Fructifications broadly effused, usually thin, tough, dry, adnate, small pieces separable when moist, warm buff to light orange-yellow, conforming to inequalities of the substratum, somewhat tomentose, not cracked, the margin thinning out; in section 150–600 μ thick, concolorous with the hymenium, composed of a few even-walled, hyaline hyphae $2\frac{1}{2}$ μ in diameter, and of a great number of yellowish, stiff hyphae with dichotomous and antler-shaped branching and short, acicular, prong-like terminal branchlets, which extend beyond the basidia in the hymenial surface; no gloeocystidia; basidia 4-spored; spores hyaline under the microscope but slightly straw-colored in the mass, even, 12×4 μ , tapering downward to the slender, apiculate base.

Fructifications 2-20 cm. long, 1-5 cm. wide.

On rotten logs and fallen branches of both frondose and coniferous species and sometimes running over fallen leaves and the ground. In Europe, throughout North America, West Indies, Venezuela, and in Japan. July to December. Very common.

C. investiens is readily recognized by chamois color and surface texture like that of chamois leather. Under the microscope the antler-shaped branching of its principal hyphal component is well shown. This mode of hyphal branching seems to me a useful specific character for the various other species which have it, e. g., *Lachnocladium brasiliense*, *Grandinia granulosa*, *Stereum induratum*, *S. duriusculum*, *Hypochnus peniophoroides*, *H. pallescens*, *Peniophora phyllophila*, *P. piliseta*, *P. mexicana*, and *Corticium jamaicense* but not of greater importance than other hyphal modifications which are useful specific characters, hence I can not accept as helpful Karsten's genus *Vararia*, of which the type species is *Corticium investiens*, nor its synonym *Asterostromella* of v. Höhnelt & Litschauer.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 517.

Sweden: Femsjö, *L. Romell*, 157, and *C. G. Lloyd*, 09149 (in Mo. Bot. Gard. Herb., 55619).

Hungary: *Kmet*, comm. by Bresadola.

Canada: *J. Macoun*, 91.

Ontario: Niagara, *J. Dearness*, D586 (in Mo. Bot. Gard. Herb., 3727); Temagami, *C. G. Lloyd*, 07633 (in Mo. Bot. Gard. Herb., 55618).

Maine: Kittery Point, *R. Thaxter* & *E. A. Burt*.

New Hampshire: Chocorua, *W. G. Farlow*; Shelburne, *W. G. Farlow*.

Vermont: Grand View Mt., *E. A. Burt*, 2 gatherings; Lake Dunmore, *E. A. Burt*; Little Notch, *E. A. Burt*; Middlebury, *E. A. Burt*.

Massachusetts: Lincoln, *A. B. Seymour*, T40 (in Mo. Bot. Gard. Herb., 12955); Magnolia, *W. G. Farlow* (in Farlow Herb.).

New York: Albany, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 6324, 54358, 54359); Alcove, *C. L. Shear*, 1121, 1123, 1203, 1322; Arkville, *W. A. Murrill* (in N.

- Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61361); East Galway, *E. A. Burt*; Floodwood, *E. A. Burt*, *C. H. Peck*, 4a; Fort Ann, *S. H. Burnham*, 25 (in Mo. Bot. Gard. Herb., 54495); Freeville, *G. F. Atkinson*, 2812; Gansevoort, *C. H. Peck* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 55974); Ithaca, *G. F. Atkinson*, 8200, 22758, 22763, 23278, and *C. J. Humphrey*, 548, 22563; Karner, *H. D. House*, 14.154, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 44711); Lake Placid, *W. A. & E. L. Murrill*, 282 (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 61673); North Elba, *C. H. Kauffman*, 6 (in Mo. Bot. Gard. Herb., 21464); North Greenbush, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55783, 56109); Oneida, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 57474, 59682); Onondaga Valley, *L. M. Underwood*, 11 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61580); Sandlake, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55779); Shokan, *C. H. Peck*, type of *Thelephora subochracea* (in N. Y. State Mus. Herb.); Snyders, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55780); Westport, *C. H. Peck*, 4.
- Pennsylvania: *Michener*, type of *Corticium alutarium* (in Curtis Herb., 6349); Bethlehem, *Schweinitz*, type of *Radulum? investiens* (in Schweinitz Herb. and Farlow Herb.) and under the name *Thelephora ochracea* of Schweinitz (in Curtis Herb. from Schweinitz Herb.); Ohio Pyle, *W. A. Murrill*, 1047 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61553); State College, *L. O. Overholts* (in Mo. Bot. Gard. Herb., 54701); Trexlertown, *W. Herbst*, 33, 42; West Chester, *Everhart & Haines*, in *Ell. N. Am. Fungi*, 517; no locality given, *H. Jackson*, *Gentry* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55809, 55905, respectively).
- Delaware: Newark, *H. S. Jackson*, B7.
- District of Columbia: Takoma Park, *C. L. Shear*, 960.
- Louisiana: St. Martinville, *C. J. Humphrey*, 2519 (in Mo. Bot. Gard. Herb., 42937).
- West Virginia: Eglon, *C. G. Lloyd*, 1408 (in Mo. Bot. Gard. Herb., 55610); Nuttallburg, *L. W. Nuttall*, 189, comm. by U. S. Dept. Agr. Herb.; Paw Paw, *C. L. Shear*, 1172.

- Ohio: *C. G. Lloyd*, 4197 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61593); Cincinnati, *A. P. Morgan*, the *Corticium ochraceum* of Morgan Herb., comm. by Lloyd Herb., 2639.
- Indiana: Millers, *E. T. & S. A. Harper*, 830.
- Michigan: Ann Arbor, *C. H. Kauffman*, 41 (in Mo. Bot. Gard. Herb., 22930); Whitmore Lake, *A. H. W. Povah*, 10 (in Mo. Bot. Gard. Herb., 9228).
- Montana: Trego, *E. E. Hubert*, comm. by J. R. Weir, 12039 (in Mo. Bot. Gard. Herb., 63389).
- Idaho: Priest River, *J. R. Weir*, 38; *E. E. Hubert*, comm. by J. R. Weir, 11998 (in Mo. Bot. Gard. Herb., 63361).
- British Columbia: Sidney, *J. Macoun*, 14 (in Mo. Bot. Gard. Herb., 5732); Vancouver Island, *J. Macoun*, comm. by J. Dearness, V148 (in Mo. Bot. Gard. Herb., 21138).
- Mexico: Orizaba, Barrio Nuevo, *W. A. & E. L. Murrill*, 762, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54646).
- Jamaica: Castleton Gardens, *W. A. & E. L. Murrill*, 123 (in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., 61365, and Burt Herb.); Cinchona, *W. A. & E. L. Murrill*, 648 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61458); Morces Gap, *W. A. & E. L. Murrill*, 734 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61466).
- Porto Rico: Rio Piedras, *J. A. Stevenson*, 3474 (in Mo. Bot. Gard. Herb., 6732).
- Venezuela: *Fendler* (in Curtis Herb., 190, under the herbarium name *Corticium xanthellum*).
- Japan: Nakada-mura, Prov. Awaji, *A. Yasuda*, 44 (in Mo. Bot. Gard. Herb., 56169).

93. *C. pectinatum* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb. and Farlow Herb.

Fructifications broadly effused, thin, closely adnate, not separable, warm buff to wood-brown in the herbarium, cracking into polygonal masses about 2 to the mm., not shining, the margin unknown; in section 60–90 μ thick, concolorous with the hymenium, composed of densely interwoven, colorless or slightly colored hyphae about 1 μ in diameter, not incrusted, not nodose-

septate, and of comb-shaped or antler-shaped branching, slightly colored masses of about 5–10 μ in diameter each and having many prongs; no gloeocystidia; basidia 6–12 \times 4–5 μ , immature, immersed in the antler-shaped paraphyses which form the surface of the hymenium; no spores found.

Fructification 1–6 cm. long, $\frac{1}{2}$ –1 $\frac{1}{2}$ cm. wide.

On bark of dead frondose limbs. Florida and West Indies. October to March.

C. pectinatum has the general aspect and color of *C. scutellare* and structure of *C. investiens* but with much smaller and more delicate hyphae and antler-shaped organs than the latter.

Specimens examined:

Florida: Cocoanut Grove, *R. Thaxter*, 76, type (in Mo. Bot. Gard. Herb., 43898); Royal Palm Hammock, *W. A. Merrill*, 131, comm. by N. Y. Bot. Gard. Herb., 63762).

Cuba: Omaja, *C. J. Humphrey*, 2596 (in Mo. Bot. Gard. Herb., 8730).

94. *C. racemosum* Burt, n. sp.

Type: in Burt Herb.

Fructifications broadly effused, closely adnate, thin, dry, not separable, drying cream-buff, even, not shining, becoming transversely cracked in the central portions, the margin thinning out, indeterminate, concolorous; in section 70–140 μ thick, colored cream-buff, composed of very densely arranged, erect, branching and interwoven hyphae 2–2 $\frac{1}{2}$ μ in diameter; no gloeocystidia; paraphyses in hymenial surface with tips branched sometimes racemosely, sometimes in antler-shaped manner, often irregularly, these branches about $\frac{1}{2}$ μ in diameter; spores hyaline, even, flattened on one side, 4–6 \times 2–3 μ .

Fructifications 2–12 cm. long, 1–4 cm. wide.

On bark and wood of decaying logs of *Thuja plicata*, *Larix occidentalis*, *Abies grandis*, and *Pseudotsuga taxifolia*. Idaho, British Columbia, and Washington. July to September.

The slender branched paraphyses of *C. racemosum* and lack of gloeocystidia locate this species in the group with *C. Atkinsonii*, *C. albidocarneum*, *C. rubropallens*, and *C. rubrocanum*. The antler-shaped branching of occasional paraphyses connects this species

with the *C. investiens* group also. *Radulum Pini-canadense* Schw. should also be considered here.

Specimens examined:

Idaho: Priest River, *J. R. Weir*, 39, type, and 137 (in Mo. Bot. Gard. Herb., 9852).

British Columbia: Salmo, *J. R. Weir*, 465 (in Mo. Bot. Gard. Herb., 11777).

Washington: Stanwood, *C. J. Humphrey*, 7360 (in Mo. Bot. Gard. Herb., 7825).

95. *C. subcontinuum* Berk. & Curtis, Linn. Soc. Bot. Jour. 10: 337. 1868; Sacc. Syll. Fung. 6: 635. 1888; Masee, Linn. Soc. Bot. Jour. 27: 128. 1890.

Type: in Kew Herb. and Farlow Herb.

Fructifications effused, adnate, rather thick, small pieces separable, becoming chamois-colored in the herbarium, ceraceous, even, sometimes cracking in drying but the cracks not running together, showing the Isabella-colored tissue on the sides of the cracks, the margin thinning out; in section 200–400 μ thick, Isabella-colored, 2-layered, with a broad layer next to the substratum of brown hyphae 2–3 μ in diameter, not incrustated, not nodose-septate; spores hyaline, even, subglobose, 3–4 μ in diameter or $4 \times 3 \mu$.

Fructifications recorded as "spreading for several inches." The fragmentary pieces in herbaria are 2–3 cm. long, 1 cm. wide.

On bark and decaying wood. Louisiana, Texas, and West Indies. February to June. Rare.

The fructifications of *C. subcontinuum* resemble in general aspect, thickness, and consistency those of *C. confluens*, but are of different structure from those of the latter and are sharply distinct by the colored substance of the interior. The Louisiana specimens are doubtfully referred to this species.

Specimens examined:

Louisiana: Ruston, *C. J. Humphrey*, 2532 (in Mo. Bot. Gard. Herb., 12495); St. Martinville, *A. B. Langlois*, 1761 b, comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 42598, and Burt Herb.) and 1761 a, in part.

Texas: locality not given, *C. Wright*, comm. by U. S. Dept. Agr. Herb., under the name *C. calceum*.

Cuba: *C. Wright*, 537, type (in Kew Herb. and Curtis Herb.);
 Omaja, *C. J. Humphrey*, 2575.
 Porto Rico: Rio Piedras, *J. A. Stevenson & R. C. Rose*, 6528 (in
 Mo. Bot. Gard. Herb., 55083).

96. *C. Murrilli* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications broadly effused, thick, soft, spongy, dry, flexible, separable in sheets which have the hymenium between light buff and cream-buff and the under side Van Dyke brown, hymenium velutinous, not cracked, the margin concolorous with the hymenium, tomentose; in section 600–900 μ thick, colored, with the hyphae of the under layer brown, loosely, longitudinally interwoven, rough, nodose-septate, 4–4½ μ in diameter, and with hymenial layer 75–450 μ thick with hyaline, interwoven hyphae; no gloecystidia; basidia simple, with 4 sterigmata; spores hyaline, even, cylindric, 25–35 \times 6–9 μ .

Fructification 7 cm. long, 3½ cm. wide in the piece seen which is broken off at one end and on one side.

On bark of decaying log of an apparently frondose species in a moist virgin forest. Mexico. December.

C. Murrilli is probably a species with large, soft, dry fructification separable from the bark in a pliant, sheet-like mass and having the hymenium buff color and the under side a rich Van Dyke brown. The very large spores are another distinguishing character. *C. Langloisii* is thinner and has smaller spores.

Specimens examined:

Mexico: Jalapa, *W. A. & E. L. Murrill*, 182, type, comm. by N. Y. Bot. Gard. (in Mo. Bot. Gard. Herb., 44967).

97. *C. subochraceum* Bresadola, *Hedwigia* 35: 290. 1896; *Sacc. Syll. Fung.* 14: 221. 1899.

Type: part of type in Burt Herb.

Fructifications broadly effused, closely adnate, very thin, not separable, becoming light pinkish cinnamon to wood-brown in the herbarium, glabrous, even, not shining, not cracking, the margin thinning out, whitish at first, becoming colored like the hymenium; in section 45–100 μ thick, only slightly colored in the hy-

menium and subhymenium but giving the color to the fructification, composed of densely interwoven, distinct hyphae $3-3\frac{1}{2} \mu$ in diameter, not incrustated, not nodose-septate; no gloeocystidia; spores hyaline, even, $3-4\frac{1}{2} \times 2-2\frac{1}{2} \mu$, copious.

Fructifications 1-8 cm. long, 1-2 cm. wide.

On bark and decaying wood of frondose species. Alabama, Louisiana, Nebraska, and Brazil. May and June.

C. subochraceum occurs on decaying frondose wood and bark in closely adnate, thin fructifications of wood-brown color due to the pale color of the superficial tissue. The spores were published by Bresadola as $6-8 \times 4-4\frac{1}{2} \mu$ and the hyphae as conglutinate, but in the original specimen from Bresadola the spores are copious, flattened on one side, and not larger than $4\frac{1}{2} \times 2\frac{1}{2} \mu$ and the hyphae not conglutinate.

Specimens examined:

Alabama: Auburn, *Earle & Baker* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 58325); Montgomery Co., *R. P. Burke*, 338 (in Mo. Bot. Gard. Herb., 57212).

Louisiana: St. Martinville, *A. B. Langlois*, *ab, w*, and 1345, comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 42603).

Nebraska: Lincoln, *C. L. Shear*, 1341.

Brazil: Blumenau, *A. Möller*, part of type from Bresadola.

98. *C. canadense* Burt, n. sp.

Type: in Burt Herb., Mo. Bot. Gard. Herb., and N. Y. State Mus. Herb.

Fructifications broadly effused, adnate, rather thick, membranaceous, small pieces separable when moistened, light buff, even, ceraceous, cracking but little in drying, the margin narrow, sulphur-yellow, with its hyphae interwoven; in section 600-800 μ thick, colored, stratose, the buried strata becoming fuscous; hyphae of each stratum 3 μ in diameter, not incrustated, occasionally nodose-septate, erect, loosely arranged below, forming a compact hymenium; no gloeocystidia; spores white in spore collection, cylindric, even, $4\frac{1}{2}-6 \times 1\frac{1}{2}-2 \mu$.

Fructifications 3-10 cm. long, 1-5 cm. wide.

On decaying wood of logs of *Pinus Strobus*. Canada and New Hampshire. July to September. Rare.

C. canadense has beautiful fructifications with buff hymenium and sulphur-colored margin. The occurrence on pine, stratose structure in section, and the buried strata fuscous in color afford more ample confirmatory distinctive characters than we usually find in resupinate species.

Specimens examined:

Canada: Ontario, Ottawa, *J. Macoun*, 26, type (in Burt Herb., N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55909).

New Hampshire: Chocorua, *W. G. Farlow* (in Mo. Bot. Gard. Herb., 6766), 8, and *E. A. Burt*.

99. *C. bicolor* Peck, Buffalo Soc. Nat. Hist. Bul. 1: 62. 1873; N. Y. State Mus. Rept. 26: 72. 1874; Sacc. Syll. Fung. 6: 630. 1888; Masee, Linn. Soc. Bot. Jour. 27: 157. 1890.

Type: in N. Y. State Mus. Herb.

Fructifications widely effused, thin, membranaceous, tender, small pieces separable when moist, white, becoming pale pinkish buff to cream color in the herbarium, even, continuous, not cracked, the subiculum wax-yellow throughout, byssoid, the margin yellow to wax-yellow, often running out into wax-yellow rhizomorphic strands; in section 200–300 μ thick, yellow near the substratum and usually throughout, color not changed by lactic acid but bleached by potassium hydrate solution; the hyphae loosely interwoven, delicate, $2\frac{1}{2}$ μ in diameter, somewhat rough or incrustated with small crystals; no gloeocystidia; spores hyaline, even, subglobose, 2 μ in diameter or 3×2 μ , copious.

Fructifications 3–8 cm. long, 2–3 cm. wide.

On under side of fallen limbs and decaying wood on the ground, usually on pine and other conifers but also on *Populus*. New Hampshire to New Jersey and in Montana and Washington. August to November. Uncommon.

C. bicolor is a beautiful species related to *C. sulphureum*, from which it constantly differs in occurring nearly always in fertile condition with a compact whitish, even hymenium borne on the brilliant, wax-yellow subiculum. The hyphae and spores are similar to those of *C. sulphureum*.

Specimens examined:

New Hampshire: Chocorua, *A. P. D. Piguet*, comm. by *W. G.*

- Farlow, 176, and *W. G. Farlow* (in *Mo. Bot. Gard. Herb.*, 55249 and 13630, respectively).
- New York: Karner, *H. D. House*, comm. by N. Y. State Mus. Herb., 14.152; Oneida, *H. D. House* (in N. Y. State Mus. Herb., and *Mo. Bot. Gard. Herb.*, 57452, 57476); Warrensburg, *C. H. Peck*, type (in N. Y. State Mus. Herb.) and (in N. Y. State Mus. Herb., and *Mo. Bot. Gard. Herb.*, 55771).
- New Jersey: Newfield, *J. B. Ellis*, 88, comm. by W. G. Farlow (in *Mo. Bot. Gard. Herb.*, 7944).
- Montana: Evaro, *J. R. Weir*, 419, 435 (in *Mo. Bot. Gard. Herb.*, 14768, 6707).
- Washington: Hoquiam, *C. J. Humphrey*, 6400.

100. *C. koleroga* (Cooke) v. Höhnel, *K. Akad. Wiss. Wien Sitzungsber.* **119**: 395. 1910; Burt, *Mo. Bot. Gard. Ann.* **5**: 123. *f. 1.* 1918.

Pellicularia koleroga Cooke, *Grevillea* **4**: 116, 134. 1876; *Pop. Sci. Rev.* **15**: 164. *pl. 135, f. a-c.* 1876; *Linn. Soc. Bot. Jour.* **18**: 461. 1881; *Sacc. Syll. Fung.* **4**: 149. 1886; Fawcett, G. L., *Porto Rico Agr. Exp. Sta. Ann. Rept.* **1910**: 35. 1911; *Jour. Agr. Res.* **2**: 231. *text f. 1-3.* 1914; *Porto Rico Agr. Exp. Sta. Bul.* **17**: 8. *pl. 1.* 1915.—*Erysiphe scandens* Ernst, A., *Estudios sobre las Deformaciones, Enfermedades y Enemigos del Arbol de Cafe in Venezuela*, 16. *pl. f. 5.* 1878.

Type: in Kew Herb.

The parasitic vegetative mycelium forms long, slender, mycelial strands of rather uniform diameter, whitish or pallid at first, finally fuscous, running along the branches and midrib and veins of the leaves, infecting the leaves and ramifying between the cells of the leaf parenchyma, finally emerging at many points on the under side of the leaf to form minute fructifications which give a mottled appearance to the leaf; fructifications soon laterally confluent into a thin, arachnoid, perforate membrane covering the under surface of the leaf between midrib and principal veins, drying pale smoke-gray, separable in small pieces, composed of loosely interwoven, hyaline or slightly colored, thin-walled, even, rigid hyphae $4\frac{1}{2}$ -6 μ in diameter, not nodose-septate, running parallel with the substratum, and about 1-3 hyphae thick, branching at right angles; basidia scattered along the hyphae, simple, ovoid, 10-

$12 \times 7-8 \mu$, with short sterigmata; spores hyaline, even, flattened or slightly concave on one side, $10-13 \times 3\frac{1}{2}-5 \mu$.

Mycelial strands in the specimens received are 35 cm. long and broken with the branch at the lower end, $\frac{1}{2}-1$ mm. in diameter, not swollen into sclerotia; fructifications 9 cm. long, 4 cm. broad, $30-45 \mu$ thick, more or less divided by the midrib and principal veins.

Parasitic on branches and leaves of the coffee plant. India, and the Antilles and neighboring regions of South America.

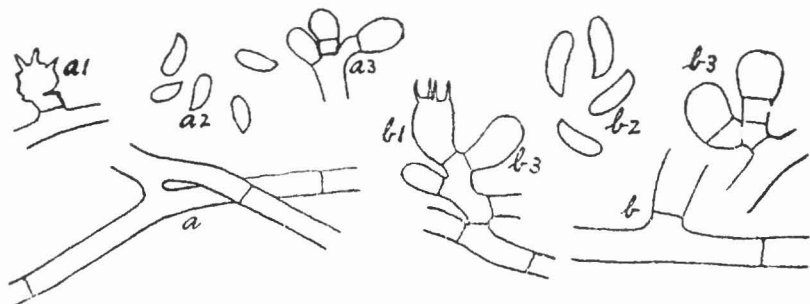


Fig. 1. *C. koleroga*. *a-a3*, from sketches by Miss Wakefield of structure of type in Kew Herbarium; magnification not stated but computed from spore dimensions at about 630. *a*, hypha; *a1*, collapsed basidium; *a2*, spores; *a3*, young basidia. *b-b3*, from Porto Rican specimen, $\times 870$. *b*, hypha; *b1*, basidium; *b2*, spores; *b3*, young basidia.

Specimens examined:

India: Mysore, preparation from the type (in Kew Herb.).

Porto Rico: Mayaguez, *F. L. Stevens*, 9488 (in Stevens Herb., and in Mo. Bot. Gard. Herb., 54510); *H. E. Thomas* (in Mo. Bot. Gard. Herb., 55397).

Colombia: *H. T. Dawe*, fragment (in Mo. Bot. Gard. Herb. from specimen in Kew Herb.).

Venezuela: *A. Ernst*, fragments showing mottled stage and continuous fructification respectively (in Mo. Bot. Gard. Herb. from specimens in Kew Herb., determined by Ernst as *Candelillo*, *Erysiphe scandens*); *H. Peltier*, comm. by U. S. Dept. Agr., Path. & Myc. Coll., 1713 (in Mo. Bot. Gard. Herb., 62168).

101. *C. Stevensii* Burt, Mo. Bot. Gard. Ann. 5: 125. text f. 2. 1918.

Hypochnopsis ochroleuca Noack, Boletim do Instituto Agronomico Sao Paulo em Campinas 9: 80. 1898.—*Hypochnus ochroleucus* Noack in Sacc. Syll. Fung. 16: 197. 1902; Stevens, Science N. S. 26: 724. 1907; Stevens & Hall, Ann. Myc. 7: 49–59. text f. 1–8. 1909.—Not *Corticium ochroleucum* Bresadola, Fungi Trid. 2: 58. pl. 167, f. 2. 1892.

Vegetative mycelium forms on the twigs roundish or oblong, chestnut-brown sclerotia 3–4 mm. in diameter, and also slender mycelial strands white when young, becoming chestnut-brown, running along the twigs and petioles to the leaves and fructifying there; fructifications at first downy and barely visible, soon thickening into a dirty pinkish buff, felty membrane covering the whole under side of the leaf and frequently separable from it as a

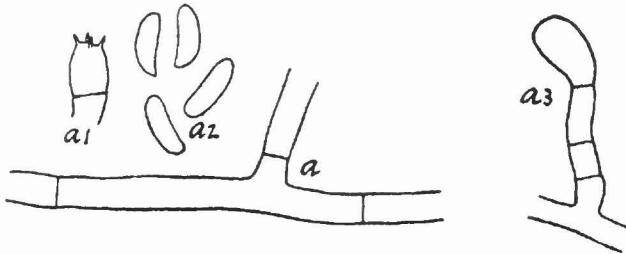


Fig. 2. *C. Stevensii*. From specimen from Trinidad, $\times 870$. a, hypha; a1, basidium; a2, spores; a3, young basidium.

whole by mere handling; hyphae hyaline or slightly colored, giving their color to the fructifications, even, thin-walled, not incrustated, not nodose-septate, $4\frac{1}{2}$ – $7\frac{1}{2}$ μ in diameter; basidia scattered along the hyphae on short lateral branches, simple, 11×7 – 8 μ , with four short sterigmata; spores hyaline, flattened or slightly concave on one side, 8 – 11×3 – 4 μ .

Fructification 11 cm. long, 3–4 cm. broad, 45–60 μ thick, unbroken over whole under surface of leaves; sclerotia 3–4 mm. in diameter; mycelial strands $\frac{1}{2}$ –1 mm. in diameter, many cm. long.

On apple, pear, and quince, in Brazil and southern United States, causing the leaves to dry and fall, and on *Codiaeum* in Trinidad.

This species differs from *Corticium koleroga* by having sclerotia and thicker, darker-colored, and more felted fructifications which are but feebly attached to the leaf and form an unbroken covering

over the whole under surface of the leaf from margin to margin. Fruiting specimens of this fungus have been available for study from only two localities, but these specimens agree in the characters stated above.

Specimens examined:

North Carolina: Horseshoe, *J. G. Hall*, comm. by F. L. Stevens, sclerotial stage on pear twigs; Mt. Airy, *F. C. Reimer*, comm. by F. L. Stevens, fertile stage on pear leaves.

Georgia: *A. L. Quaintance*, comm. by F. S. Earle, sclerotial stage on apple twigs.

Florida: *C. G. Lloyd*, sclerotial stage on pear twigs.

Texas: Dickson, *F. W. Mally*, comm. by U. S. Dept. Agr., sclerotial stage on pear twigs.

Trinidad: Diego Martei, *J. B. Rorer*, fertile stage on leaves of *Codiaeum variegatum* (in Mo. Bot. Gard. Herb., 44771); Petit Valley, *J. B. Rorer*, sclerotial and fruiting stages on leafy twigs of *Codiaeum variegatum* (in Mo. Bot. Gard. Herb., 11960, 19786, 19810, and 20062).

102. *C. vagum* Berk. & Curtis, *Grevillea* 1: 179. 1873; Sacc. Syll. Fung. 6: 616. 1888; Masee, Linn. Soc. Bot. Jour. 27: 148. 1890; Duggar, Mo. Bot. Gard. Ann. 2: 445. 1915; Peltier, Univ. Ill. Agr. Exp. Sta. Bul. 189: 285. 1915; Burt, Mo. Bot. Gard. Ann. 5: 128. *text f. 3.* 1918; Coker, *Elisha Mitchell Scientific Soc. Jour.* 36: 173. *pl. 33, f. 9, 10.* 1921.

Corticium vagum Berk. & Curtis var. *Solani* Burt in Rolfs, *Science N. S.* 18: 729. 1903; Colo. Agr. Exp. Sta. Bul. 91: 1-20. *pl. 1-5.* 1904.—*Hypochnus Solani* Prill. & Del. Soc. Myc. Fr. Bul. 7: 220. *text f.* 1891; Sacc. Syll. Fung. 11: 130. 1895.—*Corticium Solani* Prill. & Del. in Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 248. 1911.—*Corticium botryosum* Bresadola, *Ann. Myc.* 1: 99. 1903; Sacc. Syll. Fung. 17: 173. 1905; Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 248. 1911.—*Rhizoctonia Solani* Kühn, *Krankheiten d. Kulturgewächse*, 224. 1858; Duggar, Mo. Bot. Gard. Ann. 2: 424. 1915.

Type: in Kew Herb. and in Curtis Herb.

Vegetative mycelium saprophytic in the soil and in wood in contact with the ground, and parasitic as the *Rhizoctonia Solani* stage

in underground portions of various plants and forming at their surface underground minute sclerotia; fructification a thin, arachnoid, perforate membrane more or less separable, pale olive-buff to cream color; in structure 60–100 μ thick, composed of a few loosely interwoven hyphae running along the substratum and sending out short branches which bear the basidia; hyphae in contact with substratum may be slightly brownish, hyaline elsewhere, not incrusted, not nodose-septate, up to 6–10 μ in diameter, with branches smaller; basidia not forming a compact hymenium, 10–20 \times 7½–11 μ , with 4–6 sterigmata 6–10 μ long

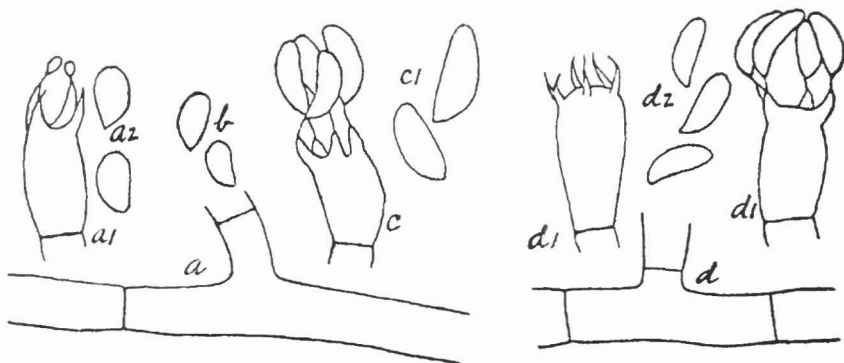


Fig. 3. *C. vagum*, \times 870. *a*–*a2*, from specimen on potato in Colorado. *a*, hypha; *a1*, basidium; *a2*, spores. *b*, spores of specimen on *Plantago* in Illinois. *c*–*c1*, from specimen on earth in Massachusetts. *c*, basidium; *c1*, spores. *d*–*d2*, from specimen on wood in British Columbia. *d*, hypha; *d1*, basidia; *d2*, spores.

and more or less swollen towards the basidium; spores hyaline, even, flattened on one side, 8–14 \times 4–6 μ .

Fructifications 5–15 cm. long on logs, 5–10 cm. broad; in a collar 1–10 cm. long, sheathing the base of living stems.

On bare earth, wood and bark lying on the ground, and on living stems of potatoes, beans, rhubarb, horseradish, tomatoes, *Amaranthus*, etc., at or near the ground. New Brunswick to Florida and westward to Vancouver and Washington, in West Indies, Europe, India, and Australia. Common.

Corticium vagum differs from *C. koleroga* and *C. Stevensii* in having its mycelium and sclerotia subterranean when parasitic, in having its fructifications at the surface of the ground or merely sheathing small herbaceous stems for only a few centimeters up from the ground and never spreading out on the under side of

broad leaves at a considerable distance above ground, by having larger hyphae, larger basidia, and the basidia with larger sterigmata which are more thickened in the lower portion and sometimes six to a basidium; the spores are somewhat larger in *C. vagum* also. The examination of the large amount of *C. vagum* which has come to hand does not afford ground for regarding the collar-like fructifications on small living herbaceous stems as worthy of varietal separation. As common as this species now is in the United States, it is rather surprising that a collection of it under some name has not been found in Herb. Schweinitz.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 330; Ravenel, Fungi Am., 132, 577
—the latter under the name *Zygodesmus pannosus*.

Sweden: Stockholm, L. Romell, 204.

Russian Poland: *Eichler*, comm. by Bresadola, portion of type of *Corticium botryosum* Bres.

New Brunswick: Campobello, W. G. Farlow, 3.

Canada: J. Macoun, 2, 84, 340.

Ontario: Ottawa, J. Macoun, 327.

Massachusetts: Brookline, G. R. Lyman, 180; Magnolia, W. G. Farlow.

New York: Albany, H. D. House & J. Rubinger (in Mo. Bot. Gard. Herb., 8734); East Galway, E. A. Burt, 2 collections; Ithaca, Van Hook, comm. by G. F. Atkinson, 8092; Karner, H. D. House, 14,162, and 3 other collections (in N. Y. State Herb. and Mo. Bot. Gard. Herb., 44709, 54349, 55199, 55203); Tripoli, S. H. Burnham, 13, in part (in Mo. Bot. Gard. Herb., 54506).

New Jersey: Belleplain, C. L. Shear, 1244; Newfield, J. B. Ellis, in Ellis, N. Am. Fungi, 330.

Pennsylvania: Carbondale, E. A. Burt; Trexlertown, W. Herbst, 95.

Maryland: Takoma Park, C. L. Shear, 1164, 1334.

District of Columbia: Takoma Park, C. L. Shear, 965, 1041 (the former in Mo. Bot. Gard. Herb. also).

South Carolina: Curtis Herb., 3240, type (in Kew Herb. and in Curtis Herb.); Aiken, H. W. Ravenel, in Ravenel, Fungi Am., 132, 577.

- Alabama: Montgomery, *R. P. Burke*, 170 (in *Mo. Bot. Gard. Herb.*, 43162).
- West Virginia: Paw Paw, *C. L. Shear*, 1171.
- Ohio: Cincinnati, *C. G. Lloyd*, 4508.
- Illinois: Urbana, *G. L. Peltier*, 14 collections, on living stems of beans, carrot, tomato, radish, rhubarb, horseradish, potato, winter vetch, spinach, *Amaranthus*, *Campanula*, and *Plantago major* (in *Mo. Bot. Gard. Herb.*, 6264, 8761-8765, 8816, 43836, 44677-44682).
- Montana: Evaro, *J. R. Weir*, 434 (in *Mo. Bot. Gard. Herb.*, 17725).
- Idaho: Coolin, *J. R. Weir*, 11545 (in *Mo. Bot. Gard. Herb.*, 63298). Priest River, *J. R. Weir*, 140, 89 in part (*Mo. Bot. Gard. Herb.*, 8197, 11349).
- Colorado: Fort Worth, *F. M. Rolfs*, 2 collections, on living stems of potatoes.
- Manitoba: Norway House, *G. R. Bisby*, 1475, 1477 (in *Mo. Bot. Gard. Herb.*, 61657, 61659).
- British Columbia: Sidney, *J. Macoun*, 4, 20, 83, 85, 87, 26, 154 (in *Mo. Bot. Gard. Herb.*, 5764, 5735, 7068, 7024, 7833, 55347, 55350, respectively) and 39a, 151, 172 (in *Macoun Herb.*); Vancouver Island, *J. Macoun*, V89, V90, V151, V154, V172 (in *Mo. Bot. Gard. Herb.*, 22815, 22927, 20357, 20507, 20728, respectively).
- Washington: Bingen, *W. N. Suksdorf*, 846, 852, 863.
- India: Ceylon, *T. Petch*, 5675 (in *Mo. Bot. Gard. Herb.*, 56035).
- Japan: Prov. Awaji, *A. Yasuda*, 111 (in *Mo. Bot. Gard. Herb.*, 57027).

103. *C. vinaceum* Burt, n. sp.

Type: in Burt Herb.

Fructifications effused, very thin, closely adnate, drying between light pinkish cinnamon and vinaceous-buff, even, not shining, not cracked, the margin similar, thinning out; in section 75-100 μ thick, colored near the substratum, with the hyphae 2½ μ in diameter, densely longitudinally interwoven and conglomerate, not incrusted, bearing a hymenium 25 μ thick; no gloecystidia; basidia not protruding; spores white in spore collection, even, subglobose, 7-8 \times 6-7 μ .

Fructifications 5–10 mm. in diameter, near together and becoming irregularly confluent over areas up to 4 cm. long, 1–2 cm. wide.

Under side of decaying coniferous plank. Alabama and Louisiana. March.

The distinguishing characters of this species are occurrence on coniferous wood in closely adnate, vinaceous fructifications, which are somewhat colored next to the substratum and have large spores.

Specimens examined:

Alabama: Montgomery, *R. P. Burke*, 271 (in Mo. Bot. Gard. Herb., 57156).

Louisiana: St. Martinville, *A. B. Langlois*, *df*, type.

104. *C. fuscostratum* Burt, n. sp.

Type: in N. Y. State Mus. Herb., Mo. Bot. Gard. Herb., and Burt Herb.

Fructifications broadly effused, thin, tender, forming a thin, fragile, cartridge-buff to pale smoke-gray hymenial pellicle on an arachnoid or fibrillose, wood-brown subiculum, the hymenium cracking into small polygonal masses about 1 mm. in diameter, the margin colored like the substance, fimbriate; in section 120–300 μ thick, wood-brown, with the hyphae pale brownish, $2\frac{1}{2}$ μ in diameter, nodose-septate, sometimes incrustated; no gloeocystidia; spores hyaline, even, flattened on one side, $3-4 \times 2$ μ .

Fructifications 3–6 cm. long, 2–3 cm. wide.

On bark of decaying *Pinus Strobus* and other conifers. Canada to Maryland and westward to British Columbia. August to December. Uncommon.

The fructifications of *C. fuscostratum* are characterized by a hymenial layer as thin, fragile, and cracked as that of *C. arachnoideum* or of *C. centrifugum* and a supporting layer underneath as colored as that of *C. subcontinuum*. Compare *C. ochroleucum* Bres. and *C. olivaceo-album*.

Specimens examined:

Canada: *J. Macoun*, 15; St. Lawrence Valley, *J. Macoun*, 29.

New York: Albany, *H. D. House*, type (in N. Y. State Mus. Herb., Mo. Bot. Gard. Herb., 63750, and Burt Herb.), and *H. D.*

- House & J. Rubinger* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 7766); Round Lake, *C. H. Peck*, (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 42930).
- Pennsylvania: Freeland, *C. R. Orton & G. E. Broadbent*, comm. by L. O. Overholts, 5166 (in Mo. Bot. Gard. Herb., 56359).
- Maryland: Takoma Park, *C. L. Shear*, 963.
- Michigan: East Tawas, *J. R. Weir*, 317 (in Mo. Bot. Gard. Herb., 6961); New Richmond, *C. H. Kauffman*, 86 (in Mo. Bot. Gard. Herb., 54327).
- Wisconsin: Star Lake, *J. J. Neumann*, comm. by H. von Schrenk (in Mo. Bot. Gard. Herb., 42734).
- British Columbia: Kootenai Mountains near Salmo, *J. R. Weir*, 503, 511 (in Mo. Bot. Gard. Herb., 63722, 5900).

105. *C. atrovirens* Fries, *Epier.* 562. 1838; *Hym. Eur.* 651. 1874; Berkeley, *Outl. Brit. Fung.* 274. 1860; *Sacc. Syll. Fung.* 6: 614. 1888; *Massee, Linn. Soc. Bot. Jour.* 27: 155. 1890; *Bresadola, Ann. Myc.* 1: 96. 1903; *Maire, Brit. Myc. Soc. Trans.* 3: 172. *pl.* 16. 1910; *Bourdout & Galzin, Soc. Myc. Fr. Bul.* 27: 243. 1911; *Rea, Brit. Basid.* 677. 1922.

Thelephora atrovirens Fries, *Elenchus Fung.* 1: 202. 1828.—*Lyomyces caerulescens* Karsten, *Finska, Vet.-Soc. Bidrag Natur och Folk* 37: 154. 1882.—*Hypochnus chalybaeus* Schroeter, *Krypt.-Fl. Schlesien* 3: 416. 1888.

Fructifications irregularly effused, thin, floccose-fibrillose or arachnoid, greenish glaucous blue to deep bluish gray-green, even, not cracked, the margin thinning out, with hyphae interwoven; in section 150–250 μ thick, colored like the hymenium, composed of long, slender, interwoven, colored hyphae 2–3 μ in diameter, not nodose-septate, not incrustated; no gloeocystidia; spores colored like the fructification, even, subglobose, 3–4 \times 2½–3½ μ , borne 4 to a basidium.

Fructifications 1–4 cm. long, 1–2 cm. wide.

On under side of decaying bark and fallen branches. In Europe, and from New Brunswick to South Carolina and in Illinois. September to December. Infrequent.

C. atrovirens is conspicuous by its fructifications blue-green in all parts. It is intermediate between *Corticium* and *Hypochnus*, being included in the former on account of the even spores.

Specimens examined:

Exsiccati: Sydow, Myc. Germ., 1432.

Finland: Mustiala, P. A. Karsten, authentic specimen of *Hypochnopsis caerulea*.

Germany: Brandenburg, P. Vogel, in Sydow, Myc. Germ., 1432.

Poland: Russian Poland, Eichler, comm. by G. Bresadola.

Great Britain: Coed Coch (in Berkeley Herb. of Kew Herb.).

New Brunswick: Campobello, W. G. Farlow.

Vermont: Middlebury, E. A. Burt, 2 gatherings.

Massachusetts: Beverly, C. W. Dodge & D. H. Linder, A (in Mo. Bot. Gard. Herb., 63451); Stony Brook, G. R. Lyman, 129.

New York: Cascadilla, A. J. Pieters, comm. by Cornell Univ.

Herb., 5256; Ithaca, G. F. Atkinson, 8202; Karner, H. D.

House, 14,205 and an unnumbered specimen (in Mo. Bot.

Gard. Herb., 44727, 54394); Syracuse, L. M. Underwood, 44

(in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 56088).

North Carolina: Blowing Rock, G. F. Atkinson, 4301.

South Carolina: Gourdin, C. J. Humphrey, 2586 (in Mo. Bot. Gard. Herb., 43119).

Illinois: Hallidayboro, C. J. Humphrey, 2125 (in Mo. Bot. Gard. Herb., 22086).

106. C. caeruleum (Schrad.) Fries, Epicr. 562. 1838; Hym. Eur. 651. 1874; Berkeley, Outl. Brit. Fung. 274. 1860; Berk. & Curtis, Grevillea 1: 178. 1873; Sacc. Syll. Fung. 6: 614. 1888; Masee, Linn. Soc. Bot. Jour. 27: 151. 1890; Bourdot & Galzin, Soc. Myc. Fr. Bul. 27: 232. 1911; Wakefield, Brit. Myc. Soc. Trans. 4: 119. pl. 3, f. 26. 1913; Coker, Elisha Mitchell Scientif. Soc. Jour. 36: 169. pl. 33, f. 1. 1921; Rea, Brit. Basid. 673. 1922.

Thelephora caerulea Schrader in De Candolle, Fl. Fr. 2: 107. 1815; Persoon, Myc. Eur. 1: 147. 1822; Fries, Elench. Fung. 1: 202. 1828.—*Auricularia phosphorea* Sowerby, Eng. Fungi, pl. 350. 1802.—*Thelephora Indigo* Schweinitz, Naturforsch. Ges. Leipzig Schrift. 1: 107. 1822.

Fructifications somewhat round, broadly effused, adnate, rather thick, membranaceous, separable when moist, indigo-blue to induline blue, even, somewhat velvety, the margin thin-

ning out, concolorous or whitish; in section 200–500 μ thick, thickening by becoming stratose, the outer stratum deep blue, the hyphae thick-walled, interwoven, nodose-septate, not incrustated, 3–4½ μ in diameter; no gloecystidia; spores even, 6–10 \times 4½–5 μ .

Fructifications 3–10 cm. in diameter.

On under side of decaying limbs of *Quercus* and other frondose species. In Europe, southern United States, Illinois, and Japan. August to November. Probably in quantity where found.

C. caeruleum is easily recognized by its deep blue color and occurrence on fallen oak limbs.

Specimens examined:

Exsiccati: Cavara, *Fungi Longobardiae*, 13; Cooke, *Fungi Brit.*, 221, and ed. II, 5; Libert, *Pl. Crypt. Ard.*, 22; Ravenel, *Fungi Am.*, 451; Ravenel, *Fungi Car.* 3: 27; de Thümen, *Myc. Univ.*, 1207; Westendorp, *Crypt. Belge*, 767.

Denmark: Skarup, *E. Rostrup*, in de Thümen, *Myc. Univ.*, 1207.

Italy: Cavara, in Cavara, *Fungi Longobardiae*, 13.

Belgium: in Westendorp, *Crypt. Belge*, 767.

France: Libert, in Libert, *Pl. Crypt. Ard.*, 22; Corrombles, *F. Fautrey*, comm. by Lloyd Herb.

England: Chichester, in Cooke, *Fungi Brit.*, ed. II, 5.

South Carolina: *H. W. Ravenel*, in Ravenel, *Fungi Car.* 3: 27; Aiken, *H. W. Ravenel*, *Fungi Am.*, 451.

Georgia: Atlanta, *E. Bartholomew*, 5679 (in *Mo. Bot. Gard. Herb.*, 44218).

Florida: Sanford, *C. L. Shear*, 5204 (in *Mo. Bot. Gard. Herb.*, 62164).

Alabama: Auburn, *F. S. Earle* (in Lloyd Herb., 3450, Burt Herb., and *Mo. Bot. Gard. Herb.*, 4851), *Earle & Baker*, comm. by A.B. Seymour (in *Mo. Bot. Gard. Herb.*, 16394); *G. L. Peltier* (in *Mo. Bot. Gard. Herb.*, 4684), *A. H. W. Povah*, 906 (in *Mo. Bot. Gard. Herb.*, 58692), and *F. A. Wolf* (in *Mo. Bot. Gard. Herb.*, 43983); Montgomery County, *R. P. Burke* (in *N. Y. Bot. Gard. Herb.*, and *Mo. Bot. Gard. Herb.*, 61562), and 14 (in *Mo. Bot. Gard. Herb.*, 16983).

Illinois: Anna, *C. J. Humphrey*, 1356 (in *Mo. Bot. Gard. Herb.*, 42932).

Arkansas: Womble, *W. H. Long*, 19769 (in Mo. Bot. Gard. Herb., 8961).

Japan: Sendai, *A. Yasuda* (in Mo. Bot. Gard. Herb., 58236).

EXTRA LIMITAL SPECIES

107. *C. paniculatum* Burt, n. sp.

Type: in Burt Herb.

Fructifications effused, thin, adnate, somewhat membranaceous, small pieces separable, pinkish cinnamon in the herbarium, even, not shining, not cracked, the margin narrow, thinning out, with hyphae interwoven; in section 200 μ thick, not colored, composed of loosely interwoven, hyaline hyphae 3 μ in diameter, not incrustated, not nodose-septate, and of irregularly arranged gloeocystidia or conducting organs up to 30–75 \times 3–6 μ , flexuous or irregular in form; paraphyses brownish, giving their color to the hymenium, paniculately branched, with the ultimate branches very slender, projecting beyond the basidia and forming the hymenial surface; basidia cylindric-clavate, 30–40 \times 4½–6 μ ; no spores found.

Fructifications 2 cm. long, 5 mm. wide, confluent longitudinally.

On small, decaying, frondose limbs. Paraguay. August.

C. paniculatum is distinguished among the Corticiums which have gloeocystidia by its pinkish cinnamon color and hymenial surface composed of conspicuous, somewhat colored, bushy-branched paraphyses.

Specimens examined:

Paraguay: Paraguari, *Malme*, 1081, type, comm. by L. Romell, 331.

SPECIES TOO INCOMPLETELY DESCRIBED FOR LOCATION AMONG PRECEDING SPECIES

108. *C. dendriticum* P. Hennings, *Hedwigia* 41: Beiblatt, 102. 1902; *Sacc. Syll. Fung.* 17: 168. 1905; v. Höhnel & Litschauer, *K. Akad. Wiss. Wien Sitzungsber.* 116: 742. 1907.

Type: in Berlin Herb.

“Carnoso-ceraceum, pallide carneum, dendroideo-ramosum vel radiato-effusum, margine sicco reflexo, albo-villosulo; hymenio

ceraceo, pruinoso carneo, sicco rimoso, basidiis clavatis, 2-4-sterigmatibus, $20-28 \times 7-8 \mu$; sporis subglobosis, subroseis, levibus, $4-5 \mu$.

"San Jose de Costa Rica auf Stämmen von Orangen.—H. Pittier.

"Der Pilz bildet fleischige, dendritisch verzweigte, fleischrothe Lager, derselbe soll eine Krankheit der Stämme verursachen. Mit *C. salicinum* Fr. und *C. sarcoides* Fr. verwandt."

Von Höhnel and Litschauer, in their study of the type specimen of *C. dendriticum*, found the spores $10-11 \times 8 \mu$, 4 sterigmata constantly, and the fructifications seated upon a lichen instead of directly on the trunk of *Citrus aurantium*.

EXCLUDED SPECIES

Corticium ferax Ell. & Ev. Am. Nat. 31: 339, 1897; Sacc. Syll. Fung. 14: 219. 1899.

Sections of the type specimen in Ellis Coll. in N. Y. Bot. Gard. Herb. show this to be a Hyphomycete. A specimen under this name collected on coniferous wood, Beaver Meadow, Hull, Quebec, was communicated by J. Macoun as the *Corticium ferax* Ell. & Ev. of Canadian Cryptogams, 246, Nat. Hist. Survey of Canada Herb.; this is *Peniophora glebulosa*.

SUPPLEMENT

Since the publication of the earlier parts, the following species have been received which were not included in those parts or require further notice.

ALEURODISCUS

See also account of species of *Aleurodiscus* by Lloyd, Myc. Writ. 6: Myc. Notes 62: 926. f. 1666-1688. 1920; 65: 1066. f. 2009-2012. 1921.

Aleurodiscus cerussatus (Bres.) v. Höhnel & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 116: 807. pl. 4, f. 1. 1907; Bourdot & Galzin, Soc. Myc. Fr. Bul. 28: 351. 1913.

Corticium cerussatum Bresadola, Fungi Trid. 2: 37. pl. 144, f. 3.

1892; I. R. Accad. Agiati Atti III. 3: 112. 1897; Sacc. Syll. Fung. 11: 126. 1895.—*Kneiffia cerussata* Bresadola, Ann. Myc. 1: 104. 1903.

Type: in Burt Herb., an authentic specimen which is probably a part of the type.

Fructifications effused, closely adnate, thin, waxy, white at first, becoming between pinkish buff and cream-buff in the herbarium, even, somewhat pruinose under a lens, cracking at right angles when old into masses about 3–4 to a mm., the margin similar, thinning out; in section 100–150 μ thick; not colored, composed of suberect, interwoven, densely crowded hyphae about 2 μ in diameter and of very numerous gloeocystidia; gloeocystidia flexuous, 40–60 \times 4–6 μ ; bottle-brush paraphyses form the hymenial surface; spores hyaline, even, 12–15 \times 7–8 μ .

Fructifications 1–7 cm. long, 2–10 mm. wide.

On old, weathered, coniferous wood. Europe, Manitoba, and Oregon. June to October.

C. cerussatus is distinguished from our other species of *Aleurodiscus* with the exception of *A. succineus*, by having both gloeocystidia and bottle-brush paraphyses and from the latter by being effused.

Specimens examined:

Italy: Trient, *G. Bresadola*, part of type probably.

Manitoba: Binscarth, *G. R. Bisby*, 1050 (in Mo. Bot. Gard. Herb., 59037); Winnipeg, *G. R. Bisby*, 65 (in Mo. Bot. Gard. Herb., 57899), and comm. by L. O. Overholts, 7027 (in Mo. Bot. Gard. Herb., 57475).

Oregon: Granite Pass, *J. R. Weir*, 8682 (in Mo. Bot. Gard. Herb., 36743).

A. disciformis (DC.) Patouillard, Soc. Myc. Fr. Bul. 10: 80. *text f.* 1894; v. Höhnelt & Litschauer, K. Akad. Wiss. Wien Sitzungsber. 116: 798. *pl. 1, f. 1.* 1907; Bourdot & Galzin, Soc. Myc. Fr. Bul. 28: 350. 1913; Rea, Brit. Basid. 671. 1922.

Thelephora disciformis De Candolle, Fl. Fr. 6: 31. 1915; Fries, Syst. Myc. 1: 443. 1821.—*Stereum disciforme* (DC.) Fries, Epicr. 551. 1838; Hym. Eur. 642. 1874; Patouillard, Tab. Anal. Fung. 112. *f. 250.* 1884.—*Peniophora disciformis* (DC.) Cooke,

Grevillea 8: 20. *pl. 122, f. 2.* 1879; Sacc. Syll. Fung. 6: 642. 1888.

Fructifications effused, disciform, rather thick, pale olive-buff to cartridge-buff in the herbarium, pulverulent to velutinous, even, becoming somewhat cracked, the margin free, narrow, somewhat elevated, somewhat ochraceous on the under side; in section 150–800 μ thick, not colored, composed of erect, densely arranged hyphae 3–4 μ in diameter, with a great deal of crystalline matter intermixed; paraphyses 4½–6 μ in diameter, cylindric, sometimes becoming irregularly swollen, sometimes somewhat moniliform toward the apex; spores hyaline, even, 15–20 \times 11–15 μ .

Fructifications ½–2½ cm. in diameter, or ½–2½ cm. long, ½–1 cm. wide.

On bark of *Quercus*. Europe, Mexico, and Africa. August to May.

A. disciformis is a species whose large fructifications resemble in aspect those of *A. candidus* although not as white as the latter and with paraphyses related in form to those of *A. amorphus*.

Specimens examined:

Austria: Vienna, *V. Litschauer*.

Italy: Trentino, *G. Bresadola*.

France: Aveyron, *M. Galzin, 9503*, comm. by H. Bourdot, 18550; locality not stated, *Mougeot* (in Farlow Herb.).

Mexico: locality not stated, *A. Dampf* (in Weir Herb.).

Africa: Union of South Africa, Stellenbosch, *P. A. van der Bijl, 658* (in Mo. Bot. Gard. Herb., 59358).

A. helveolus Bresadola, *Mycologia* 17: 71. 1925.

Type: in Weir Herb.

Fructifications erumpent, pulvinate to short-clavate, sessile, rugulose, waxy, somewhat gelatinous, Hay's brown, drying somewhat fuscous; hyphae hyaline, not incrustated, 4½–6 μ in diameter; no conducting organs; basidia simple, large, 45–80 \times 6–8 μ , with 2–4 sterigmata; spores hyaline, even, 18–21 \times 6–9 μ according to Bresadola; hymenium surrounds the clubs on all sides.

Fructifications about 2 mm. high and 1 mm. in diameter when moistened.

On bark of dead *Salix lasiandra*. Washington. November.

The dried fructifications of *A. helveolus* have some resemblance in aspect to those of *Stereum rufum* but swell on softening and rise to a height of 2 mm. above the bark. The paraphyses were described by Bresadola as "paraphysibus irregularibus, undulato-restrictis, moniliformibus, laevibus, 3-6 μ crassis, apice interdum subcapitatis" but they do not show clearly in my preparation.

Specimens examined:

Washington: Spokane, alt. 576 m., *J. R. Weir*, 16312, type (in Weir Herb.).

A. macrodens Coker, Elisha Mitchell Scientif. Soc. Jour. 36: 155. pl. 15, upper figs., pl. 31, f. 7-9. 1921.

Type: part of type in Mo. Bot. Gard. Herb.

"Forming irregular, often somewhat elongated patches about 2 mm. to 2 cm. long with well-defined margins and with much the aspect of *A. candidus*; surface minutely pulverulent, pure white, or pale cream when old and weathered; entire thickness only about 150-190 μ , the structure in section much obscured by very small crystals and the densely branched paraphyses. Basidia entirely embedded, 12-15 μ thick, irregular and bent, with 4 long, stout sterigmata, which only reach the surface by their tips. Spores commonly rectangular in outline, the surface set with a few large, irregularly placed, bluntly pointed spines which are up to 4 μ long; body of spore $11\frac{1}{2}$ -15 \times $18\frac{1}{2}$ -27 μ ."

On bark of living trees of *Fraxinus* and *Salix*. New Hampshire to North Carolina. May to December. Probably common.

"In passing the plant would be taken for *A. candidus*, but when examined is seen to be much thinner with the closely pressed margin not showing a dark underside. The spores are remarkable and unlike any others in the genus."

Specimens examined:

New Hampshire: Chocorua, *W. G. Farlow*, 1.

New York: Alcove, *C. L. Shear*, 1302, 1305; East Galway, *E. A. Burt*; Poughkeepsie, *W. R. Gerard*, 294, comm. by N. Y. Bot. Gard. Herb.

North Carolina: Chapel Hill, *W. C. Coker*, 4734, type, comm. by Univ. North Carolina Herb. (in Mo. Bot. Gard. Herb., 57427).

A. subcruentatus (Berk. & Curtis) Burt, Mo. Bot. Gard. Ann. 7: 237. 1920; Zeller, Mycologia 14: 179. 1922.

Stereum subcruentatum Berk. & Curtis, Am. Acad. Arts & Sci. Proc. 4: 123. 1858; Sacc. Syll. Fung. 6: 567. 1888.

Type: in Farlow Herb.

Fructifications small, sometimes effuso-reflexed, with the reflexed portion up to 1–2 mm. broad but more frequently resupinate, somewhat discoid, with the margin free all around and slightly elevated—in one fructification grown out so as to be attached by the vertex; upper side of reflexed pileus whitish at the margin, avellaneous nearer the substratum, somewhat radiately rugose, mealy; hymenium even, white or becoming pinkish buff; pulverulent; in section 500–1000 μ thick, not colored, composed of suberect, densely interwoven hyphae among a great amount of obscuring crystalline and mineral matter which is often in masses up to $45 \times 15 \mu$; hyphae about 2 μ in diameter; hymenial portion up to 600 μ thick, composed of several layers, containing more or less numerous imbedded spores resembling the basidiospores; paraphyses simple, filiform, probably torulose, about 2–3 μ in diameter, basidiospores copious at surface of hymenium, hyaline, even, somewhat flattened on one side, $12-18 \times 9-12 \mu$.

Fructifications 2–15 mm. in diameter.

On bark of *Tsuga Sieboldii* in Japan and on bark of living trunks of *Picea sitchensis* and Douglas fir in California and Oregon. August and September.

A. subcruentatus has hymenial surface and spores suggestive of *A. disciformis* but is a very distinct species by having its fructifications effuso-reflexed when on the bark of standing trunks, by occurrence on conifers, thick and zonate hymenial portion, and presence of imbedded spores.

Specimens examined:

Oregon: Corvallis, *S. M. Zeller*, 1809 (in Mo. Bot. Gard. Herb., 56330).

California: Requa, *W. H. Snell* (Mo. Bot. Gard. Herb., 55860) and *E. E. Hubert*, comm. by *J. R. Weir*, 9946 (in Mo. Bot. Gard. Herb., 56229).

Japan: *C. Wright*, 265, type, Fungi U. S. Pac. Expl. Exp. (in

Farlow Herb.); Mt. Akayu, Prov. Echègo, *A. Yasuda*, 22 (in Mo. Bot. Gard. Herb., 55659).

A. succineus Bresadola, *Mycologia* 17: 71. 1925.

Type: in Weir Herb.

Fructifications small, flattened, becoming disk-shaped by slight elevation of the margin, mouse-gray, pruinose, with the margin thick, entire, becoming free, under side pale; in section 500 μ thick, composed of densely arranged, ascending, thin-walled, hyaline hyphae 3–5 μ in diameter and of numerous gloecystidia; gloecystidia flexuous, 75–100 \times 8–10 μ ; paraphyses cylindric, of bottle-brush form, very numerous in the surface of the hymenium; basidia with 4 sterigmata; spores hyaline, even, ellipsoidal, 10 \times 5 μ .

Fructifications 1–3 mm. long, 1–2 mm. wide.

On old weathered wood of *Arbutus Menziesii*. Oregon. September.

A. succineus is readily recognized by its discoid fructifications which have both gloecystidia and bottle-brush paraphyses.

Specimens examined:

Oregon: Grants Pass, *J. R. Weir*, 8682, type (in Weir Herb.).

A. Zelleri Burt, n. sp.

Type: in Burt Herb.

Fructifications resupinate, gregarious, erumpent, pulvinate, convex, pinkish buff to tawny; in section about 600 μ thick, composed of a broad layer of erect, somewhat interwoven hyphae 3–3½ μ in diameter, not incrustated, bearing a hymenial layer; no cystidia; gloecystidia flexuous, 30–40 \times 4 μ , confined to the hymenial layer; basidia protruding, with 4 sterigmata; spores hyaline, even, 6–9 \times 4–4½ μ , copious.

Fructifications ½–1½ mm. in diameter, about ½ mm. thick—10 on an area about 1 cm. square.

On small dead twigs of a frondose species—perhaps *Alnus*. Oregon. December.

A. Zelleri may be recognized by its small, tawny, convex fructifications, erumpent from lenticels in the bark and having somewhat the aspect of a *Tubercularia*.

Specimens examined:

Oregon: Corvallis, *S. M. Zeller*, 6800, type.

CONIOPHORA

Coniophora corrugis Burt, n. sp.

Type: in Burt Herb.

Fructifications broadly effused, coriaceous-membranaceous, loosely attached, separable when moist, between fawn color and salmon-pink to russet-vinaceous, even when dry, somewhat wrinkled when moist, cracking in drying, the margin whitish, byssoid; in section 300 μ thick, not colored, with a broad layer next to the substratum of slender, loosely interwoven, thick-walled, nodose-septate hyphae about $3\frac{1}{2}$ –4 μ in diameter, not incrusted, and with a very compact hymenial layer; no gloeocystidia nor cystidia; basidia with 4 sterigmata; spores even, 6–10 \times 4–7 μ , usually hyaline but when fully mature some at least are colored.

Fructifications 2–10 cm. long, 1–3 cm. wide.

On logs and dead limbs and on living trees of *Pinus ponderosa*, *Abies lasiocarpa*, *Picea Engelmannii*, *Juniperus*, and *Ribes*. In mountain forests. Wyoming to Colorado and British Columbia to Arizona. May to October. Common.

This species is most likely to be referred to *Corticium*, for it does not produce spores copiously and the few found in preparations may be full-sized and hyaline. It was 14 years after the type collection was received before it was demonstrated from a more mature specimen that the spores become colored finally. Several other collections with hyaline spores were received in the interval. *C. corrugis* may be recognized among our alpine species by its occurrence on the hosts stated, somewhat coriaceous, loosely attached, vinaceous fructifications, and large spores. The occurrence on living trees, as noted by Dr. Weir on Idaho specimens, is almost sufficient to identify this species when so found. *C. corrugis* seems related to *C. polyporoidea*.

Specimens examined:

Exsiccati: Baker, Pacific Slope Fungi, 3570, under the name *Corticium corrugae* Burt.

Wyoming: Jackson Hole, *E. B. Payson*, 2369 (in Mo. Bot. Gard. Herb., 57369).

- Colorado: Arapahoe region, *B. M. Duggar* (in Mo. Bot. Gard. Herb., 63771); Tolland, *L. O. Overholts*, 1801 (in Mo. Bot. Gard. Herb., 43785, 54873), and *E. Bethel* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61447).
- Idaho: St. Joe National Forest, *J. R. Weir* (in Mo. Bot. Gard. Herb., 43759, 63761); Victor, *E. B. Payson*, 2353, 2362 (in Mo. Bot. Gard. Herb., 57358, 57362).
- British Columbia: Sidney, *J. Macoun*, 83 (in Mo. Bot. Gard. Herb., 55354).
- Washington: Mt. Paddo, *W. N. Suksdorf*, 732, type.
- Oregon: Austin, *J. R. Weir*, 5242 (in Mo. Bot. Gard. Herb., 55944).
- California: Mt. Shasta, *E. B. Copeland*, in Baker, Pacific Slope Fungi, 3570; Santa Barbara, *W. H. Morse*, comm. by C. J. Humphrey, 860 (in Mo. Bot. Gard. Herb., 19314).
- Arizona: Mt. Humphrey, near Flagstaff, *W. H. Long*, 21323 (in Mo. Bot. Gard. Herb., 55130); Peak Agassiz, near Flagstaff, *W. H. Long*, 19489 (in Mo. Bot. Gard. Herb., 44737, 55129).

C. flavomarginata Burt, n. sp.

Type: in Burt Herb.

Fructifications effused, thick, membranaceous, separable, when growing avellaneous, with the margin flavous, fading in the herbarium to pinkish buff with margin whitish, even or somewhat colliculose, velvety, the margin radiate-fimbriate; in section 500 μ thick, chamois-colored, becoming stratose, the hyphae suberect, densely arranged and interwoven, slightly colored, thin-walled, collapsing, 3–3½ μ in diameter, not incrustated, not nodose-septate; no cystidia nor gloeocystidia; spores slightly colored, even, cylindric, 12–15 \times 4½–6 μ .

Fructifications 1–3 cm. long, ½–3 cm. wide.

In crevices of the rough bark of large branches of *Quercus Garryana*. Washington. December and March.

The faded herbarium specimens of *C. flavomarginata* have aspect similar to those of *C. polyporoidea* but very different tissues and spores. The yellow margin of the thick, tan-colored fructifications composed of 3 strata, should make this species conspicuous in its region, and it is rather surprising that it has not been received except from Mr. Suksdorf.

Specimens examined:

Washington: Bingen, *W. N. Suksdorf*, 912, 913; *W. Klickitat County, W. N. Suksdorf*, 888, type, and 889.

C. Sistotremoides (Schw.) Massee

Thelephora Sistotremoides Schweinitz, *Naturforsch. Ges. Leipzig Schrift.* 1: 109. 1822.—*Corticium suffocatum* Peck, *N. Y. State Mus. Rept.* 30: 48. 1879.

Type: under the name *Odontia Sistotremoides* of Curtis Herb. in Farlow Herb. and probably also in Berkeley Herb. at Kew and Schweinitz Herb.

I was misled as to *C. Sistotremoides* in my presentation of the species in *Mo. Bot. Gard. Ann.* 4: 249. 1917, by having to base the work on the descriptions formerly published. I have since found in Farlow Herb. a piece 12×6 mm. of the authentic specimen from Schweinitz Herb. This specimen is in excellent preservation; a preparation from it wholly changes the concept of *C. Sistotremoides*, whose description should become:—

Fructifications effused, thin, membranaceous, not fleshy, somewhat separable, becoming sepia in the herbarium, even, not papillate; in section 200–300 μ thick, colored like the hymenium, composed of colored hyphae $4-4\frac{1}{2}$ μ in diameter, incrusting, not nodose-septate, loosely arranged and interwoven, rather irregular in form; no cystidia present or not distinguishable from immature basidia; spores colored, even, $9-10 \times 6$ μ .

Authentic specimen is on reddish brown coniferous bark.

The type specimen of *C. Sistotremoides* is darker than that of *C. suffocata* but not specifically distinct in my opinion. The account and distribution published for the latter in my earlier work applies to *C. Sistotremoides*. The descriptive matter published there for *C. Sistotremoides* should be struck out.

CRATERELLUS

Craterellus subundulatus Peck, *N. Y. State Mus. Bul.* 67: 27. 1903.

Thelephora subundulata Peck, *Torr. Bot. Club Bul.* 22: 492. 1895; *Sacc. Syll. Fung.* 14: 214. 1899.

Type: in *N. Y. Bot. Gard. Herb.*

Fructifications gregarious or cespitose; pileus thin, coriaceous-fleshy, depressed or subinfundibuliform, sometimes split on one side, slightly floccose-squamulose or fibrillose, grayish or grayish brown, becoming light drab in the herbarium, wavy or lobed on the margin, the lobes often overlapping; stem equal, solid, colored like the pileus; hymenium uneven or shallowly radiately venose, decurrent, drying light pinkish cinnamon; no setae nor cystidia; basidia with 4 sterigmata; spores hyaline, even, flattened on one side, $6-9 \times 4\frac{1}{2}-6 \mu$.

Fructifications when dried $1\frac{1}{2}-2$ cm. high; pileus 4-13 mm. in diameter; stem 8-14 mm. long, $1-1\frac{1}{2}$ mm. thick.

On ground under trees of *Fagus*. New York and Delaware. July and August.

Peck noted this species as related to *C. sinuosus*, from which it differs in smaller size, solid and darker-colored stem, and slightly smaller spores. The fructifications are apparently plentiful when found, for some 30 fructifications of various sizes comprise each gathering.

Specimens examined:

New York: New York Botanical Garden, New York, Peck & Earle, 1064 (in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., and Burt Herb.).

Delaware: Wilmington, A. Commons, 2718, type (in N. Y. Bot. Gard. Herb.).

C. turbinatus Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Pileus solitary, stipitate, coriaceous-corky, cylindric-turbinate, solid, with the margin erect, lobed, thinner, and the disk depressed, drying snuff-brown to Prout's brown, glabrous, even; flesh drying pale Saccardo's umber, and with a fragrant, pronounced odor, and taste not noteworthy; lamellae decurrent, distant, narrow, about 1 mm. broad in the dried specimen, thin, about 2-4 mm. apart, not connected nor with venose interspaces, concolorous with the pileus, with colored conducting organs in the subhymenial tissue; basidia simple, with at least 2 sterigmata demonstrated; spores slightly colored, even, globose, $5-6 \mu$ in diameter; stem not sharply differentiated from the pileus, solid, contracting abruptly below, glabrous.

Fructifications 10 cm. high; pileus 7 cm. high, 3-4 cm. in diameter, with lobes up to 3 cm. long; stem 3 cm. long.

On stump of *Quercus*. California. March.

I have seen of this species only a dried specimen which was collected by Lieutenant McWhorter at a military training camp and I am not sure that the species may not be transferred eventually to perhaps *Paxillus* on account of the thin lamellae, which are, however, very narrow and distant. The species is distinguished by its thick, solid, snuff-brown, glabrous fructifications drying with fragrant odor, by globose, colored spores, and by occurrence on an oak stump.

Specimens examined:

California: near Base Hospital, Camp Stewart, Palo Alto, *F. P. McWhorter*, type (in Mo. Bot. Gard. Herb., 57269).

Craterellus (?) *Zelleri* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Pileus fleshy when growing, thin, tubaeform, drying Prout's brown, with the erect, spreading margin deeply lacerate—in some cases to the stem and rarely splitting the stem on one side nearly to the ground; stem short, perforate, hollow, even, glabrous, Prout's brown; hymenium drying chamois to Naples yellow, even or reticulately plicate and with the larger pores subdivided into smaller, shallow pits more completely covering the under surface of the pileus but present also, although less well-developed, in patches on the upper side; no gloecystidia; basidia simple, with 6, or perhaps more, sterigmata; spores colored, even, $8-9 \times 4\frac{1}{2}-6 \mu$.

Fructifications up to 6 cm. high; pileus 3-4 cm. broad; stem 2 cm. long, 3 mm. thick.

On the ground in a dense forest. Oregon. March.

I have included this species in *Craterellus* because of the similarity of the subhymenial hyphae to the longitudinally arranged hyphae of the pileus and my inability to detect any evidence of an underlying hymenium. The aspect of the fungus is that of *Craterellus cornucopioides*. It is my opinion that this species will eventually be demonstrated to be a *Merulius* parasitic or saprophytic on the pilei of *Craterellus cornucopioides*. I know no *Merulius* to which this species is referable.

Specimens examined:

Oregon: Corvallis, *S. M. Zeller*, 2093, type (in Mo. Bot. Gard. Herb., 58770).

CYPHELLA

Cyphella alboviolascens (Alb. & Schw.) Karsten, Finska Vet.-Soc. Bidrag Natur och Folk 37: 133. 1882; 48: 400. 1889; Sacc. Syll. Fung. 6: 669. 1888; Bourdot & Galzin, Soc. Myc. Fr. Bul. 26: 225. 1910; Rea, Brit. Basid., 698. 1922; Pilat, Ann. Myc. 22: 211. 1924; Monogr. Cyphellacearum Czechoslov. 2: 45. pl. 1, f. 2. 1925.

Peziza alboviolascens Albertini & Schweinitz, Consp. Fung. 322. pl. 8, f. 4. 1805.—*Cyphella Curreyi* Berk. & Broome, Not. Brit. Fungi, 935, Ann. & Mag. Nat. Hist. III. 7: 379. 1861.

Fructifications gregarious or scattered, somewhat spherical at first, becoming flattened at the pore and somewhat hemispherical, white, densely villose, sessile or subsessile, soft throughout and easily sectioned, the margin inrolled; hairs white, rough, 6 μ in diameter, up to 120 μ long; hymenium concave, often violaceous; spores hyaline, even, flattened on one side, the convex side nearly subangular, 9–12 \times 6–9 μ .

Fructifications up to 1 mm. broad in American gatherings, up to $\frac{1}{2}$ mm. high.

On dead twigs of *Syringa vulgaris* and *Sambucus*. Europe and Maine. July to October.

C. alboviolascens differs from *C. Tiliae* by softer fructifications, shorter, nearly 3-angled spores, and shorter hairs. *C. villosa* is closely related.

Specimens examined:

Exsiccati: Sydow, Myc. Germ., 353.

Germany: Brandenburg, *P. Vogel*, in Sydow, Myc. Germ., 353.

Czecho-Slovakia: *A. Pilat*.

Maine: Kittery Point, *R. Thaxter* (in Mo. Bot. Gard. Herb., 58742, and Burt Herb.), comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 55573).

C. fasciculata (Schw.) Berk. & Curtis

Collections made on *Alnus oregana* extend the range of *C. fas-*

ciculata to Oregon. These specimens have the spores up to $8-10 \times 5-6 \mu$ —twice the diameter of the spores of specimens of eastern United States—and somewhat larger basidia, but their other characters are so similar to those of eastern specimens that it now seems best to refer them to *C. fasciculata*.

These specimens are:

Oregon: Corvallis, *F. D. Bailey* (in Mo. Bot. Gard. Herb., 44144, 44199).

C. galeata (Schum.) Fr.

To my description of this species in Mo. Bot. Gard. Ann. 1: 362. 1915, it should be added that the spores are tawny, rough to verrucose, $7-9 \times 6-8 \mu$, or subglobose, $8-10 \mu$ in diameter, according to Bourdot & Galzin, Soc. Myc. Fr. Bul. 26: 227. 1910, and Rea, Brit. Basid., 704. 1922.

C. marginata McAlpine, Fung. Dis. Stone-fruit Trees in Australia, 120. f. 229-232. 1902; Sacc. Syll. Fung. 17: 192. 1905; Zeller, Mycologia 14: 179. 1922.

Fructifications gregarious, fleshy-gelatinous, sessile, globose, somewhat ochraceous, drying drab and hoary, the pore distinct when full grown but nearly closed by the inrolled margin; hairs curved, honey-yellow, even, up to $120 \times 4 \mu$; basidia simple, $40-45 \times 6-8 \mu$, with 4 sterigmata; spores hyaline, even, $10-12 \times 6-7 \mu$.

Fructifications usually $\frac{1}{2}$ mm. in diameter, reported up to 1 mm. in diameter.

On small "die back" twigs of peach, almond, and apple. Australia and Oregon. July.

The small, grayish drab fructifications were very numerous on the small twigs received. Up to 30 were counted on an area 1 mm square.

Specimens examined:

Oregon: Corvallis, *S. M. Zeller*, 1830, 1831 (in Mo. Bot. Gard. Herb., 56334, 56335).

C. muscicola Fries, Syst. Myc. 2: 202. 1823; Hym. Eur. 663. 1874; Patouillard, Tab. Anal. Fung. 19. f. 31. 1883; Sacc. Syll. Fung. 6: 682. 1888.

Phaeocyphella muscicola (Fr.) Rea, Brit. Basid., 704. 1922; Pilat, Monogr. Cyphellacearum Czechoslov. 2: 67. text f. 16. 1925.

Fructifications gregarious, sessile or subsessile, cup-shaped, thin, membranaceous, the margin slightly downy, at length somewhat flaring; hymenium concave, even, snuff-brown with the copious spores; spores colored, even, spherical, 6-6½ μ in diameter, so copious that they conceal the basidia.

Fructifications up to 1 mm. in diameter in American specimens, equalling the diameter in height.

On mosses. West Indies. November.

I have seen no European specimens of this species but the single gathering from Grenada agrees well with the concept of the species as more definitely described by the recent European mycologists. The occurrence on mosses, ashy white, open cups which become slightly flaring at the margin, and brown hymenium and spores are distinctive characters.

Specimens examined:

Grenada: *R. Thaxter*, comm. by W. G. Farlow, 5.

C. patens A. L. Smith, Linn. Soc. Bot. Jour. 35: 10. pl. 1, f. 6-8. 1891; Sacc. Syll. Fung. 17: 192. 1905.

Type: in Brit. Mus. Herb. presumably.

"Sparsa, tubaeformis, dein elongata, fere ad basim fissa et expansa, margine superiore incurvata, circa 5 mm. longa, 2 mm. lata, extus flava tomentosa; hymenio brunneo, lamellis paucis angustis lamelliformis instructis; sporis globosis, minute asperulis, 5 μ diam., hyalinis.

"On bark of tree, Morne Niger Maron [Dominica]. Sept. 1892. No. 323.

"This species seems to form a transition between the forms with a rugulose hymenium such as *C. Malbranchei*, Pat., and genera with regular gills such as *Lentinus*; the incurving margin and the shape of the immature specimens have decided the placing it in *Cyphella*."

C. sessilis Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications gregarious, sessile, closely adnate, white, very thin, membranaceous-fleshy, applanate, even, ceraceous, the margin slightly elevated, narrow, white, fibrillose; in section $60\ \mu$ thick, not colored, with the hyphae ascending, thin-walled, $2-3\ \mu$ in diameter; no gloecystidia; basidia simple, $12 \times 4\frac{1}{2}\ \mu$, with 4 sterigmata; spores becoming pale-colored, even, $6-7 \times 3\frac{1}{2}-4\ \mu$.

Fructifications 200-400 μ in diameter.

On fallen palm leaves. Bermuda. January.

The small, circular fructifications are rather near together and numerous, 17 having been counted on an area 1 cm. square. They are adnate by the whole under surface, with the hymenium flat and bordered by the narrow, white, fibrillose margin. Most of the spores are hyaline; some, however, are somewhat colored. The aspect is that of a minute Discomycete.

Specimens examined:

Bermuda: *H. H. Whetzel, Ajj*, type, comm. by R. Thaxter (in Mo. Bot. Gard. Herb., 58708), and duplicate from H. H. Whetzel.

C. tela (B. & C.) Masee, Jour. Myc. 6: 179. pl. 7, f. 12, 13. 1891.

Peziza tela Berk. & Curtis, Grevillea 3: 156. 1875.—*Tapesia tela* (B. & C.) Sacc. Syll. Fung. 8: 373. 1889.—An *Peziza Dae-dalea* Schw.?

Type: in Farlow Herb. and Kew Herb., under the name *Peziza tela*.

“Gregarious on a dense white subiculum; cups minute, 150-180 μ diameter, subglobose; mouth at first small, becoming expanded, but the acute margin always remains more or less incurved; externally blackish brown, frosted with glistening crystals of oxalate of lime; hymenium concave, even, naked, blackish brown; basidia clavate, tetrasperous; spores subglobose or broadly pyriform, smooth, pale brown, 7 by 5 μ .

“On wood. Lower Carolina. (Type in Herb. Berk., Kew, No. 7724).

“The present species, owing to its dark color and gregarious habit, also being furnished with a dense, white, broadly effused,

superficial mycelium, suggests the genus *Peziza* when examined under a low power, but is a true *Cyphella*."

I have examined superficially the type of *Peziza tela* B. & C. in Farlow Herb. and the aspect is so similar to that of *Solenia poriaeformis* that Masseur's statement about the spores of *P. tela* being colored should be confirmed. I was unable to make such examination of the spores. The type of *Peziza Daedalea* Schw. has the same aspect as *P. tela*.

C. Thaxteri Burt, n. sp.

Type: in Burt Herb.

Fructifications very small, gregarious, stipitate, cup-shaped with the mouth open, drying between avellaneous and light pinkish cinnamon, merely farinose under a lens but really hairy when highly magnified, the margin inrolled when dry; hairs Isabella color, even, flexuous, $25-30 \times 4-4\frac{1}{2} \mu$; hymenium Isabella color; basidia simple, $16 \times 4-6 \mu$; spores ochraceous, even, $7-8 \times 5 \mu$; stem central, cylindric, with surface like the pileus.

Fructifications about $\frac{1}{4}$ mm. in diameter; stem about 140μ long, $60-80 \mu$ thick.

On bark. West Indies. November.

About 30 of the small, goblet-shaped fructifications are present on an area about $\frac{1}{2}$ cm. long, $\frac{1}{4}$ cm. wide. The farinose surface of the exterior of the cups and stem is probably due to granular matter on the hairs, but no trace of such matter is found when the hairs are examined in permanent glycerine mounts by the compound microscope.

Specimens examined:

Grenada: Grand Etang, *R. Thaxter*, type, comm. by W. G. Farlow.

HYPOCHNUS

Hypochnus albus Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, small, circular, closely adnate, very thin, snow-white, even, velutinous under a lens with the large cystidia, not shining, the margin similar; in section $30-60 \mu$ thick, not colored, composed of loosely interwoven, hyaline hyphae $1\frac{1}{2}-2 \mu$ in diameter, not nodose-septate, incrustated in the sub-

hymenium; no gloeocystidia; cystidia somewhat incrustated, 75–120 \times 9–15 μ , of greatest diameter at the base, usually seated on the incrustated zone, more rarely on the substratum; paraphyses delicate, branching in antler-shaped form; spores hyaline, globose, 7½ μ in diameter, even at first, finally minutely echinulate, borne 4 to a basidium.

Fructifications 1–4 mm. in diameter, 3 present on an area 12 \times 15 mm.

On bark of a frondose species among mosses and lichens in a moist, virgin forest. Mexico. January.

The small, white fructifications, conspicuous cystidia, antler-shaped paraphyses, and echinulate spores form a unique group of characters distinguishing *H. albus*. But for the echinulate spores this species could have been placed in *Peniophora* next to *P. phyllophila*.

Specimens examined:

Mexico: Orizaba, Nuevo, *W. A. & E. L. Merrill, 749a*, type, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54654).

H. epiphyllum (Schw.) Burt, n. comb.

Hydnum epiphyllum Schweinitz, Am. Phil. Soc. Trans. N. S. 4: 163. 1832.—*Hypochnus granulatus* (Peck) Burt, Mo. Bot. Gard. Ann. 3: 218. text f. 9. 1916, where additional synonymy is given.

Type: in Farlow Herb. from Schweinitz Herb. and probably in Schweinitz Herb. and at Kew, under the name *Hydnum epiphyllum*.

In Curtis Herb. of Farlow Herb. there are specimens of this species under the name *Hydnum epiphyllum*, collected in Alabama, *Peters, 1124*, and also under the herbarium name, *Odontia grandinia*, collector *Peters, 1116*.

H. filamentosus Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, small, closely adnate, very thin, hypoch-noid-arachnoid, Mars-brown but this color completely soluble in dilute potassium hydrate solution; hymenium not continuous and showing many ends of fibrils under a lens, the margin thinning out;

in section up to 90 μ thick in some places but with much thinner connecting portions and mycelial strands in the same section, colored but wholly bleached by action of potassium hydrate solution, the hyphae incrustated, 4–5 μ in diameter, often together in rope-like strands up to 18 μ in diameter with crystalline matter on the outer surface of the strands; basidia 15 \times 5 μ , with 4 sterigmata, protruding from the covering matter of the strands, few observed; spores attached to the basidia are hyaline (after treatment of the sections with potassium hydrate solution), subglobose, rough, 3 μ in diameter; no cystidia.

Fructifications 1–4 mm. in diameter, somewhat confluent for a length of 2 cm.

On small fragments of blackened, decaying wood of a frondose species—apparently on the under side next to the ground. Cuba. March.

The specimen upon which the description is based is scantily developed; collections with normal continuous hymenium will probably eventually be made. The distinguishing characters seem to be Mars-brown color, complete bleaching by potassium hydrate solution, numerous rope-like strands, hyphae thin-walled, incrustated, collapsing, and small subglobose spores.

Specimens examined:

Cuba: locality not stated, *C. G. Lloyd*, 424, type (in Mo. Bot. Gard. Herb., 55174).

H. fumosus Fr.

To the synonymy of this species in Mo. Bot. Gard. Ann. 3: 239. 1916, should be added *Odontia tenuis* Peck, N. Y. State Mus. Rept. 44: 134. 1891. Study of the type in N. Y. State Mus. Herb. shows the outer surface overrun with the intricate, branching, anastomosing, mycelial threads, and the spores white, minutely echinulate, 4–4½ \times 2½ μ —both characteristic of *H. fumosus*.

H. pallidofulvus (Peck) Burt, n. comb.

Zygodesmus pallidofulvus Peck, N. Y. State Mus. Bul. 105: 30. 1906; Sacc. Syll. Fung. 22: 1358. 1913.—*Hypochnus subferugineus* Burt, Mo. Bot. Gard. Ann. 3: 210. 1916.

Study of the type of *Zygodemus pallidofulvus* in N. Y. State Mus. Herb. shows the species to be an *Hypochnus* specifically the same as *H. subferrugineus*, which therefore becomes a synonym.

H. Rhacodium Berk. & Curtis in herb. under *Stereum*, n. sp.

Type: in Mo. Bot. Gard. Herb., Farlow Herb., and Kew Herb.

Fructifications effused, very thick, crust-like and brittle when dry and fuscous or dusky drab externally and throughout, colliculose, not cracked, the margin unknown; in section $1\frac{1}{2}$ –3 mm. thick, fuscous, composed (1) of a layer $\frac{1}{2}$ –2 mm. thick next to the substratum, fibrous and tow-like, composed of loosely interwoven, thick-walled, rigid hyphae up to $6\ \mu$ in diameter, not incrustated, rarely nodose-septate, and (2) of a crust-like hymenial portion, composed of 1 or 2 layers with hyphae erect, densely crowded, colored, 4 – $5\ \mu$ in diameter, not incrustated, not nodose-septate, bearing basidia; no gloeocystidia nor cystidia; basidia with at least 2 sterigmata demonstrated; spores concolorous with the hyphae, aculeate-tuberculate, somewhat angular, the body 6 – $7\ \mu$ in diameter.

Fructifications probably large—known from fragments up to 2 cm. long, $\frac{1}{2}$ cm. wide.

On under side of decaying logs of apparently a frondose species. Pennsylvania.

H. Rhacodium has the aspect of a thick, dark fuscous, effused *Hypoxyton*. The hyphae of the under layer are brittle when dry so that the hymenial crust is very likely to split away from the substratum through this brittle layer. The specimens in Kew and Farlow Herbaria, communicated by Michener through Curtis, consist of the hymenial crust. Michener's own specimen, now in the Mo. Bot. Gard. Herb., has the whole fructification to the woody substratum. This species is related to *H. umbrinus*.

Specimens examined:

Pennsylvania: *E. Michener*, type, No. 1435 to M. A. Curtis (in Mo. Bot. Gard. Herb., 5095, in Farlow Herb., and Kew Herb. as Curtis Herb., 4061, under the herbarium name *Stereum Rhacodium*).

H. subviolaceus Peck, N. Y. State Mus. Rept. 47: 151. 1894; Sacc. Syll. Fung. 11: 130. 1895.

Type: in N. Y. State Mus. Herb. and Mo. Bot. Gard. Herb.

Fructifications effused, closely adnate, very thin, violet-gray at first, becoming drab in the herbarium, even, velutinous, the margin whitish at first, fibrillose; in section 90 μ thick, colored, composed of suberect and interwoven, densely arranged, thin-walled hyphae 2 μ in diameter, some hyaline and many colored and bushy-branched; spores nearly hyaline, globose, rough or minutely aculeate, 4–4½ μ in diameter.

Fructification 2½ cm. long, 1½ cm. wide, broken off at both ends and on one side.

On badly decayed coniferous wood. Canada. September.

The aspect of *H. subviolaceus* is not hypochnoid but rather that of a very thin *Coniophora*. The occurrence on decorticated coniferous wood, drab color, system of bushy-branched, colored tissue in addition to, and somewhat masking, the usual hyphae, and the small nearly hyaline spores should aid in recognition of this species.

Specimens examined:

Canada: *J. Macoun*, type (in N. Y. State Mus. Herb.), and comm. by N. Y. State Mus. Herb., T 34 (in Mo. Bot. Gard. Herb.).

H. umbrinus (Fr.) Quelet, Fl. Myc. 2. 1888.

The above combination has priority over that in Mo. Bot. Gard. Ann. 3: 213. 1916, according to Wakefield, Brit. Myc. Soc. Trans. 6: 132. 1919. I have not access to a copy of the Quelet.

Upon reexamination of the sections in my preparation from the type of *Thelephora arachnoidea* Berk. & Br., I think that this is a *Septobasidium* as stated by Bresadola, Ann. Myc. 14: 241. This species should therefore be struck out in my work where given as a synonym of *H. umbrinus*.

Caldesiella viridis (Alb. & Schw.) Pat. Essai Taxon. 120. 1900; Rea, Brit. Basid. 651. 1922; Bourdot & Galzin, Soc. Myc. Fr. Bul. 40: 128. 1924.—*Odontia viridis* (Alb. & Schw.) Quelet, Fl. Myc. 434. 1888; Bresadola, I. R. Accad. Agiati Atti III. 3: 97.

1897.—*Hydnum viride* (Alb. & Schw.) Fries, Syst. Myc. 1: 421. 1821; Hym. Eur. 614, 1874.

This species has hypochnoid texture, color deep grape-green at first, fading to Vetiver green in the herbarium, and minutely echinulate spores slightly colored, about $3\frac{1}{2}$ – 5×3 – $3\frac{1}{2}$ μ . I have seen American collections from Vermont, Missouri, and British Columbia. The fructifications are sometimes so even that they might be referred to *Hypochnus*.

PENIOPHORA

Peniophora populnea (Peck) Burt, n. comb.

Stereum populneum Peck, N. Y. State Mus. Rept. 47: 145. 1894.

Type: in N. Y. State Mus. Herb. and Burt Herb.

Fructifications effused, often confluent, adnate, rather thin, small pieces separable when moist, brown tinged with liver color when fresh, becoming between Natal brown and Mars brown in the herbarium, not shining, somewhat colliculose, contracting in drying and cracking into angular masses $\frac{1}{2}$ – $1\frac{1}{2}$ mm. in diameter, the margin thin, radiate-dentate, pale, drying slightly free in some places; in section 250–300 μ thick, colored, 2-layered, with a broad layer next to the substratum composed of longitudinally arranged, crowded and densely interwoven, nearly hyaline hyphae $2\frac{1}{2}$ – 3 μ in diameter, and with an equal, colored hymenial layer composed of erect, densely crowded and interwoven, brownish hyphae and brownish paraphyses and cystidia; no gloeocystidia; cystidia heavily incrustated, very large, up to 60 – 100×20 – 25 μ , at the surface of the hymenium but not protruding; paraphyses hair-like, colored, slender, 1 – $1\frac{1}{2}$ μ in diameter, branching at or near the tips into 2 or 3 short branches; basidia cylindric, 70 – 90×3 – 4 μ , probably simple and with 4 very short sterigmata; spores hyaline, even, 12 – 15×4 μ .

Fructifications $3\frac{1}{2}$ cm. long, 3 cm. wide.

On bark of decaying *Populus tremuloides*. New York. August.

P. populneum should be recognized by its occurrence on poplar logs, liver color externally and colored substance, cracked hymenium, very large cystidia, and long and slender basidia. The

layer of hyphae longitudinally arranged along the substratum and the very long and slender basidia have made me question whether this species is not an *Auricularia* but I have been unable to demonstrate transverse septation in any of the basidia.

Specimens examined:

New York: Ray Brook, Essex County, *C. H. Peck*, type (in N. Y. State Mus. Herb., under the name *Stereum populneum*, and in Burt Herb.).

STEREUM

Stereum aculeatum (B. & C.) Burt, n. comb.

Thelephora aculeata Berk. & Curtis, *Grevillea* 1: 149. 1873; *Sacc. Syll. Fung.* 6: 523. 1888; Burt, *Mo. Bot. Gard. Ann.* 7: 232. 1920.

I now refer to *S. aculeatum* a small specimen received since the publication of the part on *Stereum*. This specimen has the component fructifications central-stemmed, laterally confluent, and resembling in aspect *S. pallidum*, but differing from the latter by the presence of gloeocystidia and the absence of cystidia; the spores are hyaline, even, $5 \times 3\frac{1}{2}$ -4 μ .

Fructifications 4 cm. high, $2\frac{1}{2}$ cm. wide.

On the ground. South Carolina and Missouri. June and August.

Specimens examined:

South Carolina: Santee Swamp, *H. W. Ravenel*, 764, type (Curtis Herb., 2009, in Kew Herb., and Farlow Herb.); Clemson College, *P. H. Rolfs*, 1835.

Missouri: locality not stated, *Dr. Emig*, comm. by J. R. Weir, 18820 (in *Mo. Bot. Gard. Herb.*, 58744, and Burt Herb.).

S. atrorubrum Ell. & Ev. *Acad. Nat. Sci. Philadelphia Proc.* 1890: 219. 1890; *Sacc. Syll. Fung.* 9: 225. 1891.

Type: in N. Y. Bot. Gard. Herb., and a fragment in Burt Herb.

“Fan-shaped or reniform, 1-3 cm. broad and long, coriaceous, thin, narrowed behind into a sessile base, hollow at first (about the same color as *S. complicatum*) and tomentose-pubescent with a few narrow faint zones, but when mature of a dull dark red (about the color of the pileus of *Pol. lucidus*) with the surface

glabrous and densely radiate-rugose, margin lobed and crisped and in some specimens proliferous, young hymenium yellow, becoming when old brick color when moist, paler when dry. In the mature state the 3-5 concentric zones are more distinct and slightly elevated. The specimens roll up in drying and become hard and brittle."

We have but very few strictly sessile or reniform species of *Stereum*, although sessile specimens of common effuso-reflexed species were described as distinct species; more collections of *S. atrorubrum* are needed to clear up this important character in this case. The upper surface of the fragment seen by me is now dusky brown to bone-brown, glabrous, shining, strongly radiately rugose and shallowly concentrically sulcate; hymenium even, glabrous, avellaneous; in structure about 800 μ thick, composed of (1) an intermediate layer of longitudinal, densely arranged, thick-walled, rigid hyphae 3-3½ μ in diameter, (2) bordered on the upper side by an opaque, brown layer 60 μ thick which gives the color to the pileus, and (3) curving on the lower side into a hymenial layer 300 μ thick; no cystidia, gloeocystidia, nor conspicuous conducting organs; spores up to $7 \times 2-2\frac{1}{2}$ μ present but may not belong for only 2 seen.

The date of the collection—May—and appearance of the hymenium suggest a specimen of the preceding season which has held over through the winter and may have had somewhat different characters when growing. The very dark-colored, strongly radiating rugose upper side of the pileus is noteworthy.

Specimens examined:

British Columbia: on old logs, *J. Macoun*, 86, type, a fragment examined.

S. radicans (Berk.) Burt, Mo. Bot. Gard. Ann. 7: 108. pl. 3, f. 16. 1920.

In a collection of this species from Porto Rico, in Mo. Bot. Gard. Herb., 7585, the spores have become slightly colored, showing that this species belongs in *Thelephora*. The species is really an intermediate between *Stereum* and *Thelephora*, having the dense, intermediate layer of *Stereum* and also vesicular gloeocystidia in the hymenial layer. The spores are still hyaline in 3 of the 4 gatherings which I have studied.

S. Underwoodii Burt, n. sp.

An *Stereum induratum* Berkeley, Linn. Soc. Bot. Jour. 16: 44. 1877?

Type: in Burt Herb.

Fructifications corky, not hard nor indurated, adnate, resupinate and effused, sometimes narrowly reflexed, the reflexed surface drab in the herbarium where young, nearly black where oldest, somewhat concentrically sulcate, fibrillose, not shining, the margin entire; hymenium warm buff to honey-yellow in the herbarium, even, velutinous; in section $\frac{1}{2}$ -2 mm. thick, colored warm buff to tawny olive throughout, stratose, composed of densely interwoven, colored, rigid hyphae $1\frac{1}{2}$ - $2\frac{1}{2}$ μ in diameter, highly branched and with many branches of more or less antler-shaped form; no cystidia, gloeocystidia, conducting organs nor imbedded spores; spores hyaline, even, 10×5 μ but may not belong, only 1 seen.

Fructifications effused over areas 6 mm.-5 cm. long, 6 mm.-2 cm. wide, the reflexed margin 2-3 mm. broad.

On bark of *Xolisima*. West Indies and Brazil. September and April.

This species has the antler-shaped branching of hyphae characteristic of *Hypochnus pallescens*, *H. peniophoroides*, *Asterostromella dura*, and *Stereum duriusculum*. The narrowly reflexed margin is well shown by the specimens from Jamaica and is important for location of *S. Underwoodii* in *Stereum*. The Brazilian specimen was received from Bresadola under the name *Stereum induratum* Berk.—a species known only from a single collection made by the Challenger Expedition in the East Indies and described as pileate, conchiform, 3 inches across, and very hard. *S. Underwoodii* is soft, not at all hard, and does not turn the edge of the razor in sectioning. I have not yet been able to study the type of *S. induratum*.

Specimens examined:

Jamaica: base of John Crow Peak, *L. M. Underwood*, 2432, type, comm. by N. Y. Bot. Gard. Herb.; Cinchona, *L. M. Underwood*, 3128, comm. by N. Y. Bot. Gard. Herb.

Brazil: Blumenau, *Dr. Möller*, comm. by Bresadola under the name of *Stereum induratum*.

THELEPHORA

Thelephora lutosa Schw. See Burt, Mo. Bot. Gard. Ann. 1: 216. 1914.

This rare species has been known only from the type collection from Salem, North Carolina. There is now an additional gathering by Dr. W. A. Merrill, 404, from Mountain Lake, Virginia, July 8-14, of which a specimen is in the Mo. Bot. Gard. Herb. The specimen grew in clay ground in mixed woods; a fragment of buried rotten wood is attached to the short, radicated base. This specimen does not necessitate any change in the description. In the dried fructification the soft, fine pubescence of the upper side, and cream color externally and within are distinctive characters. The older portion of the hymenium has assumed a light drab color with the spores, which are slightly colored, angular, $4-6 \times 4-4\frac{1}{2} \mu$.

TULASNELLA

Tulasnella calospora (Boud.) Juel, K. Svenska Vet.-Akad. Bihang till Handl. Afd. III. 23¹²: 23. 1897; Bresadola, Ann. Myc. 1: 114. 1903.

Prototremella calospora Boudier, Jour. de Bot. 10: 85. text f. 1-4. 1896.—An *Tulasnella rosella* Bourdot & Galzin, Soc. Myc. Fr. Bul. 39: 263. 1924?

Fructifications effused, very thin, waxy, whitish in the herbarium, somewhat perforate, the margin thinning out; in section 100-150 μ thick, with the hyphae about 3 μ in diameter, thin-walled; spores hyaline, even, fusiform, flexuous, $20-27 \times 3-3\frac{1}{2} \mu$, often with a lateral branch.

Covering as a cluster of small fructifications the terminal portions of dead mosses on an area 2 cm. long, about 1 cm. wide.

On wood in Europe, on dead mosses in Maine.

T. calospora has fructifications rather more membranaceous than those of our other species, and longer spores, which are noteworthy by having frequently a branch stand out at right angles from the body of the spore. I figured such a branched spore in Mo. Bot. Gard. Ann. 6: 258. text f. 3. 1919.

Specimens examined:

Maine: Kittery Point, *R. Thaxter* (in Mo. Bot. Gard. Herb., 57477).

VELUTICEPS

Veluticeps fusca Humphrey & Long, n. sp.

Type: in Humphrey Herb. and Mo. Bot. Gard. Herb.

Fructifications coriaceous-corky, resupinate, effuso-reflexed, or conchiform, laterally confluent, with the reflexed part somewhat concentrically sulcate, tomentose, at first nearly auburn or tawny, finally becoming dusky drab and weathering hoary, the margin clay-colored when young, entire, becoming somewhat crisped; hymenium plane, avellaneous, velutinous, thickly studded with protruding fascicles of colored hyphae which have the appearance of teeth of a *Hydnum* when little magnified; in section 1–3 mm. thick, wood-brown, composed of densely arranged, suberect and interwoven, rigid, colored hyphae $3\text{--}4\frac{1}{2}\ \mu$ in diameter, not incrustated, not nodose-septate; hyphal fascicles $12\text{--}25\ \mu$ in diameter, protruding through and beyond the hymenium up to $90\text{--}150\ \mu$ and composed of flexuous, parallel, colored hyphae $3\frac{1}{2}\text{--}7\ \mu$ in diameter; basidia simple, with 4 slender, conspicuous sterigmata up to $6\ \mu$ long; spores white, even, usually unequilateral, $9\text{--}10 \times 3\frac{1}{2}\text{--}4\ \mu$.

Confluent over areas up to 12 cm. long and 2–3 cm. wide, the reflexed margin 6–12 mm. broad.

On decorticated, decaying logs of *Pinus ponderosa*. Washington, Arizona, and New Mexico. October.

It is probable that *V. fusca* occurs more frequently than its few, widely separated, recorded stations indicate, for gatherings are likely to be referred by collectors to *Hydnum* on account of the superficial resemblance of the hymenial fascicles to teeth of *Hydnum*. The fructifications are large and conspicuous, somewhat resembling in aspect those of *Stereum sulcatum* but quite distinct by the hymenial fascicles.

Specimens examined:

Washington: Spokane, *J. R. Weir*, 611 (in Mo. Bot. Gard. Herb., 36749).

Arizona: Fort Valley Experiment Station, near Flagstaff, *W. H. Long*, 19688, type (in Mo. Bot. Gard. Herb., 20084).

New Mexico: Gila National Forest, near Pinos Altos, *G. G. Hedgcock* & *W. H. Long*, 9851, comm. by *C. J. Humphrey*, 2572 (in Mo. Bot. Gard. Herb., 11200).

AURICULARIACEAE

SEPTOBASIDIUM

Septobasidium mexicanum Sydow, Ann. Myc. 18: 154. 1920; Sacc. Syll. Fung. 23: 567. 1925.

"Omnino resupinatum, matrici arcte adhaerens, tenuissimum, centro circiter $\frac{1}{2}$ - $\frac{3}{4}$ mm. crassum, ca. 1-3 cm. longum, 1-2 cm. latum, ferrugineum, centro dein cinereo-ferrugineum, ad ambitum anguste sed distincte albido-cinereo fimbriatum, leve, haud rimosum; contextus ex hyphis flavo-brunneis crasse tunicatis 3-4 μ crassis sparse ramosis remote septatis compositus; basidia non visa.

"Hab. ad ramos vivos *Cupressi* spec., Mexico, 1918, leg. Reiche no. 46."

S. pedicellatum Patouillard, Jour. de Bot. 6: 61. text f. 1892; Burt, Mo. Bot. Gard. Ann. 3: 323. 1916.

Type: in Museum of Paris.

Since my account of this species I have studied specimens of both the Cuban collections distributed by C. Wright under the name *Thelephora pedicellata* and find that the collection, C. Wright, 798, distributed in Wright, 'Fungi Cubenses Wrightiani' is in condition to afford the structural details figured by Patouillard and therefore must be the type distribution of his species.

The general description of this species, which could not be given before, is:

Fructifications resupinate, dry, avellaneous, pulverulent, occurring in small, interrupted patches, each about 2-3 mm. in diameter; in structure 500-600 μ thick, colored, stratose, composed of 2 strata, each consisting of a hymenial crust supported on pillars or pedicels about 15 μ in diameter, with their component hyphae about 3 μ in diameter; probasidia borne at the surface of the hymenial layer.

On living bushes among, and on, mosses and lichens. Cuba.

S. pinicola Snell, Mycologia 14: 58. pl. 11-13. 1922; Overholts, Mycologia 16: 233. 1924.

Type: in Snell Herb., Mo. Bot. Gard. Herb., and Forest Path. Herb.

“Fructification resupinate, effused, coriaceous, in general circular in shape, more or less concentrically sulcate, separable from substratum, roughly tomentose to strigose, army-brown to Natal-brown when dry, the margin light drab to cinnamon-drab, strigose; in structure lacunar, spongy, 1–1.8 mm. thick, individual hyphae under the microscope clay-color to tawny olive, thick-walled, even, 3–3.5 μ in diameter, loosely interwoven so as to form a spongy structure with locules, branching to form a lighter colored hymenium about 80–110 μ thick; probasidia terminal or lateral, hyaline, pyriform to subglobose, 10–15 \times 15–17 μ , throughout hymenium; spore-bearing organs straight, hyaline, 54–66 \times 6–7 μ , 3-septate, growing from probasidia and projecting above hymenium; spores hyaline, simple, curved, 14–17.5 \times 3–3.5 μ , borne singly from each of 3 cells of spore-bearing organ, acropetally as far as observed.

“Fructification 3–60 mm. but more commonly 10–35 mm. in diameter, 1–1.8 mm. thick.”

On bark of living *Pinus Strobus* in New England, New York, and Pennsylvania, and probably co-extensive with the habitat of this host; also on *Pinus monticola* in Idaho. Found sporulating after prolonged moist and rainy period in August.

S. Spongia (Berk. & Curtis) Patouillard, Soc. Myc. Fr. Bul. 16: 181. 1900; Burt, Mo. Bot. Gard. Ann. 3: 339. *text f. 11.* 1916.

From several collections of this species made by Dr. J. A. Stevenson in Porto Rico and San Domingo, additional characters have been secured for completion of the description.

Fructifications on leaves and stems of *Citrus decumana* and *C. sinensis* dry, warm sepia to Benzo-brown; probasidia at the hymenial surface of a few filaments are hyaline, globose, 9 μ in diameter; spore-bearing organs straight, cylindric-clavate; spores simple, hyaline, curved, 9–10 \times 3–4 μ , observed on the outer cells of the organs.

Sterile fructifications have been received from Dr. A. T. Speare, collected on *Citrus*, at Okeechobee, Florida.

EXOTIC SPECIES

S. album Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications resupinate, effused, adnate, thick, fleshy, white, somewhat colliculose, pulverulent, contracting in drying and forming a few large fissures at 2-3 mm. apart, the margin somewhat tomentose; in structure 600-700 μ thick, not colored, composed of densely interwoven and ascending, even-walled, hyaline hyphae 3-4 μ in diameter, occasionally nodose-septate, not incrustated; no probasidia seen; spore-bearing organs straight, 3-septate, 75 \times 6 μ , confined to the outer 150 μ of the hymenium, only rarely reaching the surface and protruding; spores simple hyaline, even, 10-12-15 \times 7-9 μ , borne singly on the outer 3 cells of the spore-bearing organs so far as observed; surface of the hymenium composed of slender, hyaline, matted and coiled paraphyses or hyphal branches 2 μ in diameter.

Fructifications 1-3 cm. long, 1-1½ cm. wide.

On bark of dead, fallen branches of *Nothofagus*. New Zealand. December.

S. album somewhat resembles *Corticium portentosum* and is exceptional, if there is no error in the collector's data, by its occurrence on dead, fallen branches. The hymenial surface of coiled paraphyses, absence of probasidia, and hyphae extending from all parts of the substratum into the fructification without consolidation into supporting pillars are additional characters for recognition of the species.

Specimens examined:

New Zealand: Queenstown, Otago, *G. H. Cunningham*, 542, type, comm. by J. R. Weir (in Mo. Bot. Gard. Herb., 59315).

S. cinnamomeum Burt, n. sp.

Type: in Farlow Herb. and Mo. Bot. Gard. Herb.

Fructifications resupinate, effused, dry, hypochnoid, small pieces separable when moist, Brussels brown, somewhat colliculose, somewhat velutinous, the margin concolorous, with surface irregular, somewhat raduloid; in section 210 μ thick, colored, stratose, consisting of 2 strata, each composed of sub-erect, loosely interwoven, rigid hyphae 3 μ in diameter, colored

like the hymenium, not incrusted, not nodose-septate; probasidia spherical, $6\ \mu$ in diameter; spore-bearing organs numerous, cylindric, $30 \times 6\ \mu$; spores simple, hyaline, curved, $13 \times 3\frac{1}{2}\ \mu$.

Fructifications probably large, for the one seen covered an area $7\frac{1}{2}$ cm. long, 5 cm. wide.

On moss-covered bark of an apparently frondose species. Chile. December.

Distinguished by bright Brussels brown color, stratose structure consisting of 2 strata in the type, and absence of supporting pillars for the hymenial crust. The hyphae arise uniformly into the fructification from all points in the substratum.

Specimens examined:

Chile: Corral, *R. Thaxter*, *b*, type (in Farlow Herb., and Mo. Bot. Gard. Herb., 57896).

S. spiniferum Burt, n. sp.

Type: in Farlow Herb. and Mo. Bot. Gard. Herb.

Fructifications resupinate, effused, adnate, coriaceous, blackish brown (3) in the herbarium, not shining, surface somewhat veined and with the veins extended into occasional, cylindric teeth or spines 2–5 mm. long, $\frac{2}{5}$ mm. in diameter, extending obliquely from the veins and the hymenial surface in the marginal region, the margin fimbriate; in section $400\ \mu$ thick, colored, composed of loosely interwoven, rigid hyphae $4\frac{1}{2}\ \mu$ in diameter, concolorous with the fructification; probasidia 9–12 μ in diameter; no spores nor spore-bearing organs seen.

Fructification 9 cm. long, surrounding a living hardwood branch 12 mm. in diameter.

On living, frondose branches. Chile. November.

The veined hymenium of *S. spiniferum* locates this species in the group with *S. retiforme*. The extension of the veins in the form of large hydroid teeth is a unique character, if constantly present in future collections.

Specimens examined:

Chile: San Pedro, Concepcion, *R. Thaxter*, *a*, type (in Farlow Herb., and Mo. Bot. Gard. Herb., 57895).

TREMELLACEAE

EICHLERIELLA

Eichleriella mexicana Burt, n. sp.

Type: in Mo. Bot. Gard. Herb. and N. Y. Bot. Gard. Herb.

Fructifications coriaceous, separable, effuso-reflexed, with the reflexed portion narrow, snuff-brown, and concentrically sulcate on the upper side, fibrillose, the margin entire; hymenium light vinaceous-cinnamon in the herbarium, pruinose, even; in section $600\ \mu$ thick, (1) with the layer at surface of pileus and next to substratum up to $100\ \mu$ thick and having its hyphae Saccardo's umber, loosely interwoven, thick-walled, $3-4\ \mu$ in diameter, and (2) with a broad intermediate layer composed of densely interwoven, hyaline hyphae $4\ \mu$ in diameter which passes into (3) the hymenial layer composed of basidia and slender branched paraphyses bearing granules; basidia immersed about $30\ \mu$ below the surface of the hymenium, longitudinally septate, $16-21 \times 10-11\ \mu$; spores simple, hyaline, even, $12 \times 4-5\ \mu$.

Fructification resupinate over an area 4 cm. long, $1\frac{1}{2}$ cm. wide, and broken off at both ends; the reflexed portion 2 mm. broad.

On bark of a decaying, frondose limb. Mexico. December.

E. mexicana is related to *E. alliciens* but is thicker, browner above, with branched paraphyses bearing granules, and with larger spores.

Specimens examined:

Mexico: Guernavaca, W. A. & E. L. Murrill, 399, type (in Mo. Bot. Gard. Herb., 54547, and N. Y. Bot. Gard. Herb.).

SEBACINA

Sebacina (?) Cokeri Burt, n. sp.

Sebacina sp. Coker, Elisha Mitchell Scientif. Soc. Jour. 35: 157. pl. 47, 61, f. 1-5. 1920.

Type: in Univ. of North Carolina Herb. and Mo. Bot. Gard. Herb.

"Forming low, crowded and anastomosing, nodulated masses and pustules looking very like a Myxomycete; patches 9 cm. or more long and up to 1.5 cm. wide in our collection (probably quite indefinite as to size and form of area covered); height only up to

1 or 1.5 mm.; color a pallid creamy yellow or dusky cream; surface glabrous, shining unless getting rather dry. Texture succulent but not gelatinous in the usual sense, but firmly waxy. Fibers of the flesh slender and regular, about 1.5–2 μ thick, sparingly branched.

“Spores oval, flattened on one side, yellowish under microscope, very variable in size, 6.3–9 \times 7.7–12.2 μ , sprouting into threads by one or two germ tubes, which may arise at any point. Basidia oval, 13.7–14.4 \times 16.3 μ , irregularly four-celled, collapsing soon after formation of spores. Sterigmata much thickened upward, some very long and slender. Paraphyses slender, densely packed, curved over, and mostly branched a little at the ends, the branches crooked and rhizoid-like and more slender and set with very minute crystals. Much larger, roughly globular or angular crystals with slender, spine-like, hyaline projections also occur rather abundantly through the hymenium; they are mostly about 7–9 μ thick.

“This species is markedly distinct from all others we have seen. The peculiar color, pustulate, anastomosing form and plump spores and large crystals separate it easily from our other *Sebacinas*. The projections on the crystals do not seem to be of the same nature and after drying reappear very obscurely if at all. They may be the stubs of hyphae that took part in the formation of the crystals. So thickly interwoven are the tips of the paraphyses and so dense the little crystals that there is formed a distinct and darker crust over the surface.”

The thickest portion of the fructification has dried Dresden brown.

Specimens examined:

North Carolina: Chapel Hill, on under side of old, hard heart of an oak branch, February, *W. C. Coker*, 4116, type (in Mo. Bot. Gard. Herb., 56719).

S. fibrillosa Burt, n. sp.

Type: in Mo. Bot. Gard. Herb. and N. Y. Bot. Gard. Herb.

Fructifications effused, incrusting, adnate, rather thin, fibrillose-hypochnoid, drying whitish, somewhat velutinous, surface irregular and conforming to the elevations and depressions of the

surface upon which growing, the margin somewhat fimbriate; in section 200–400 μ thick, not colored, composed of densely interwoven, hyaline hyphae about $2\frac{1}{2}$ μ in diameter, with the wall gelatinously modified, much foreign matter present; cystidia not incrustated, cylindric, obtuse, $3\frac{1}{2}$ –7 μ in diameter, protruding up to 30 μ ; basidia longitudinally septate, pyriform, 15×9 μ , present in the surface of the hymenium; spores simple, hyaline, curved, 7 – $8 \times 3\frac{1}{2}$ –4 μ , copious.

Fructification 3 cm. long, 2 cm. wide.

Running over wood humus on the forest floor at 7000 feet altitude. Mexico. December.

S. fibrillosa is a small, whitish, incrusting species running over the irregular surface of wood humus. Its distinguishing character is the presence of cystidia, which are conspicuous and as distinct as in a *Peniophora*, and locate this species in the subgenus *Heterochaetella* of *Sebacina*.

Specimens examined:

Mexico: Tepeite River region, near Guernavaca, *W. A. & E. L. Murrill*, 515, type (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 54514).

S. lactescens Burt, n. sp.

Type: in Mo. Bot. Gard. Herb. and Farlow Herb.

Fructifications effused, rather thick when moist, thin when dry, gelatinous, separable, loosely attached, drying between drab and wood-brown, even, the margin thinning out; in section 1000 μ thick, not colored, composed of densely arranged, ascending and interwoven hyphae with walls so completely modified gelatinously that only the protoplasmic contents of the lumen can be followed; gloeocystidia somewhat colored, clavate, 54×5 – $7\frac{1}{2}$ μ , abundant in the hymenium; basidia longitudinally cruciately septate, 15×12 μ , immersed about 25–35 μ below the surface of the hymenium; spores hyaline, even, curved, 12×6 μ .

Fructifications 2 cm. long, $\frac{1}{2}$ –1 cm. wide.

Longitudinally confluent on the under side of a frondose limb. West Indies.

S. lactescens may be recognized by its wood-brown color when dry, gelatinous consistency, and numerous and conspicuous,

slightly colored gloeocystidia. The latter locate this species in the subgenus *Bourdotia* of *Sebacina*.

Specimens examined:

Grenada: Grant Etang, *R. Thaxter*, comm. by W. G. Farlow, 153, type (in Mo. Bot. Gard. Herb., 55236).

S. plumbescens Burt, Mo. Bot. Gard. Ann. 3: 241. 1916.

S. plumbea Burt, Mo. Bot. Gard. Ann. 2: 765. text f. 6, pl. 27, f. 20. 1915, but not of Bresadola & Torrend, Broteria 11: 87. f. 8. 1913.—*S. Burti* Trotter in Sacc. Syll. Fung. 23: 573. 1925.

S. murina Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, closely adnate, very thin, pallid mouse-gray and somewhat pulverulent when dry, even, the margin similar; in section 30 μ thick, not colored, composed chiefly of longitudinally septate basidia starting almost directly from the substratum, 15 \times 8 μ , and of immersed, white, incrustated masses up to 25 \times 7 μ as seen in lactic acid preparations, densely covered with spiculose granules which clothe a short, cylindric, flexuous, hyphal axis for each mass; spores simple, hyaline, even, 9 \times 6 μ .

Fructifications 5–6 cm. long, 1½–2 cm. wide.

On decorticated, weathered, badly decayed wood on mountain side at altitude 800–1500 feet. Mexico. January.

S. murina is noteworthy by the small, erect, cylindric, incrustated, white masses between its basidia. These masses are evidently homologous with the paraphyses of *S. calcea* but differ from the latter by being unbranched, as shown when their spiculose, incrustating matter is cleared away by potassium hydrate solution; the central axis of each mass then becomes visible as a cylindric, flexuous rod somewhat olivaceous in color in preparations stained with eosin and very similar in appearance then to the organs termed gloeocystidia by Bourdot & Galzin in the subgenus *Bourdotia* of *Sebacina*.

Specimens examined:

Mexico: Motzorongo, near Cordoba, *W. A. & E. L. Merrill*, 986, type, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54609).

S. polyschista Berk. & Curtis, n. sp., in herb. under *Corticium*.
Type: in Farlow Herb. and probably in Kew Herb.

Fructifications effused, rather thin, loosely attached to the substratum, separable, fleshy, avellaneous in the herbarium, even, cracking in drying and showing through the cracks the whitish, fibrous subiculum, the margin thinning out, whitish, arachnoid; in section 400–500 μ thick, slightly colored, with the hyphae near the substratum loosely interwoven, thick-walled, $4\frac{1}{2}$ –6 μ in diameter, not nodose-septate, not incrustated, and with the hymenial layer 200 μ thick, composed of densely interwoven hyphae 3 μ in diameter; no cystidia; basidia cylindric, apparently longitudinally septate, at the surface of the hymenium; spores hyaline, even, curved, $10 \times 4\frac{1}{2}$ μ .

On under side of limb of dead *Pyrus Malus*. South Carolina. July.

This species should be recognized by the avellaneous color of its fructifications which shrink greatly and crack in drying. It is related to *S. adusta*.

Specimens examined:

South Carolina: Society Hill, *M. A. Curtis*, 4950, type (in Farlow Herb.).

S. Sheari Burt, Mo. Bot. Gard. Ann. 2: 758. text f. 2. 1915.

This species was transferred to the genus *Heterochaete*, in Mo. Bot. Gard. Ann. 8: 377. 1921, under the name *Heterochaete Sheari* Burt.

EXOTIC SPECIES

S. africana Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, closely adnate, thin, fleshy-gelatinous, drying cartridge-buff, contracting in drying and cracking, even, not shining, the margin not present; in section 240 μ thick, not colored, composed of suberect, densely arranged hyphae with walls gelatinously modified, somewhat granule-incrustated; gloeocystidia not colored, flexuous, 75×4 –6 μ , confined to the hymenial region between the basidia; basidia pyriform, at the surface of the hymenium; spores simple, hyaline, curved, 6 – $7\frac{1}{2} \times 3$ μ .

Fructifications probably large, for specimen received is 9 cm. long, about 1 cm. wide, and broken off on all sides.

On decorticated, rotten, frondose log. South Africa. January.

S. africana resembles in aspect *Corticium ochraceum* but is a *Sebacina* in structure. It is further distinguished by its buff color, sparingly granule-incrusted, gelatinous-walled hyphae, small spores, and colorless, flexuous gloeocystidia which are in all respects like those present in some species of *Corticium* and *Peniophora*. The gloeocystidia locate *S. africana* in the subgenus *Bourdodia* of *Sebacina*.

Specimens examined:

South Africa: Knyna, Cape Colony, *P. A. van der Bijl*, 1342, type (in Mo. Bot. Gard. Herb., 63405).

TREMELLODENDRON

Tremellodendron simplex Burt, Mo. Bot. Gard. Ann. 2: 742. *pl. 26, f. 5.* 1915.

Another collection of this species, affording a more accurate description, consists of 2 infundibuliform fructifications with black, rugose, compressed stems; the pilei are olive-buff, even, glabrous; hymenium inferior, testaceous, with the margin olive-ocher.

Fructifications 3 cm. high; stem 2 cm. long, $1\frac{1}{2}$ mm. in diameter; pileus 1 cm. in diameter, about 1 cm. long.

This gathering was made at El Yunque, Cuba, in March, 1903, by *Underwood & Earle*, 1087A, and is now in N. Y. Bot. Gard. Herb.

T. tenax (Schw.) Burt, Mo. Bot. Gard. Ann. 7: 67. *pl. 11, f. 105, 106.* 1922.

Clavaria tenax Schweinitz, Am. Phil. Soc. Trans. N. S. 4: 182. 1832.—*Merisma tenax* (Schw.) Lévillé, Ann. Sci. Nat. Bot. III. 5: 157. 1846.—*Pterula tenax* (Schw.) Sacc. Syll. Fung. 6: 742. 1888.—*Tremellodendron Hibbardi* Lloyd, Myc. Writ. 6. Myc. Notes 65: 1049. *pl. 179, f. 1947.* 1921.

Type: in Schweinitz Herb. and a fragment in Farlow Herb.

Fructifications fascicled, with substance very tough, at length somewhat horn-like, soon ramose-divided from the base; branches

compressed, dilated at the apex into almost a membrane; branchlets minute, irregularly extended and then fimbriate. Color alutaceous red. Does not exceed an inch in height.

The specimen in Schweinitz Herb. is compressed, not fleshy when moistened, and has the hymenium fuscous; basidia longitudinally septate; spores hyaline, even, flattened on one side, $9 \times 5\frac{1}{2} \mu$. *T. tenax* has somewhat the aspect of some forms of *T. pallidum* but is readily separable from the latter by the very dark hymenium of *T. tenax*.

Specimens examined:

Massachusetts: West Roxbury, *Miss A. Hibbard*, under the name *T. Hibbardi* (in Mo. Bot. Gard. Herb., 58736).

Pennsylvania: Bethlehem, *Schweinitz*, type (in Herb. Schweinitz and Farlow Herb.).

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