

# THE THELEPHORACEAE OF NORTH AMERICA V<sup>1</sup>

## TREMELLODENDRON, EICHLERIELLA, AND SEBACINA

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The group of fungi comprising the present part probably attains its greatest development both in form and numbers in the western continent where it culminates in the erect *Tremellodendron*, apparently confined to North America. This continent has five of the seven species of *Eichleriella*; it has twenty-six species of *Sebacina* against fifteen for the Old World.

The better-known species of these genera were originally described in *Thelephora*, *Stereum*, and *Corticium*, with which they conform so closely in general habit of growth and consistency of the fructification that it is impossible to separate them from the latter except by microscopic examination of preparations which show the mature basidia to be longitudinally cruciately septate. Collectors invariably roughly grade their findings of *Sebacina* as *Corticium*. The recognition of longitudinally septate basidia is not always easy with the aid of the microscope; for example, the fungus originally described as *Stereum Leveillianum* B. & C. has been studied critically at several times by experts without their observing the true structure of the basidia.

I regret that the present account of our species and their range in North America does not include all the material at hand. The Missouri Botanical Garden herbarium contains several hundred undetermined specimens of possible *Corticium*s which have been received during the last two years.

NOTE.—Explanation in regard to the citation of specimens studied is given in Part I, Ann. Mo. Bot. Gard. 1 : 202, 1914, footnote. The technical color terms used in this work are those of Ridgway, Color Standards and Nomenclature, Washington, D. C., 1912.

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I have looked through these collections very carefully to sort out, without examination now of everything by microscopic methods, just those specimens which ought to be studied at once for citation in this part, but some of the specimens most desirable for citation have undoubtedly been deferred for the present as probable *Corticiums*.

As it is really a nice microscopical task to recognize longitudinally septate basidia when they are not at their best, some notes, based on my experience, may be helpful. Species of *Tremellodendron* are the most easily recognized, for a little of the moistened and softened hymenium may be picked out with a scalpel, placed in a drop of water, stained with aqueous solution of eosin, 7 per cent potassium hydrate solution added, and then crushed down by pressure on the cover glass. In the detection of species of *Eichleriella* and *Sebacina*, thin vertical sections of the fructification are necessary. After the sections have been made turgid and clear by potassium hydrate solution, the latter should be drained off and the sections stained by merely a sufficient amount of solution of Gruebler's eosin soluble in alcohol, and mounted in water for temporary examination. It may be necessary to spread apart the tissues of the preparation somewhat by pressure upon the cover glass. If the preparation is to be preserved permanently in glycerin, a drop of dilute solution of sodium chloride should be run under the cover glass before the glycerin is added to insure a permanent stain by the Gruebler eosin.

Longitudinally cruciately septate basidia are simple and pyriform or subglobose when young, but so are the probasidia of *Septobasidium*, the possible storage organs of *Corticium polygonium*, and the basidia of some species of *Corticium*. The basidia of the latter are likely to form a layer at the surface of the fructification and are certainly simple if any can be detected bearing sterigmata and perhaps spores while still non-septate. In a fructification having longitudinally septate basidia, the hymenial surface is usually composed of paraphyses and of long, slender sterigmata arranged side by side; in this surface layer—but sometimes at a con-

siderable distance from the surface, as in *Thelephora Helvelloides* Schw.—is situated the layer of basidia. Only very rarely do the basidia of *Sebacina* or *Eichleriella* constitute the surface of the fructification.

If a fructification contains a palisade layer of deeply staining, pyriform bodies among or underneath the paraphyses and with no simple basidia in the surface layer, more or less prolonged examination of the pyriform bodies is likely to show longitudinal septa in some of them.

The three genera which comprise the present part of this monograph, are treated here by the writer, because their general habit and consistency conform so closely with *Thelephoraceae* having simple basidia, that they may be regarded as a connecting group, although belonging with the *Tremellaceae* by the structure of their basidia. Such of the species as were described in the past were described as *Thelephoraceae* or by authors with special knowledge of the *Thelephoraceae*; the taxonomic recognition of fungi of these genera seems likely to continue to fall in the future to students of the *Thelephoraceae*, for other mycologists will hardly care to glean for material of so few species among the many *Thelephoraceae* of similar aspect.

#### TREMELLODENDRON

*Tremellodendron* Atkinson, Jour. Myc. 8: 106. 1902; Saccardo, Syll. Fung. 17: 208. 1905.

The type species is *Merisma candidum* Schw.

Fructifications coriaceous, erect, pileate, branched or rarely simple; hymenium amphigenous or inferior; basidia longitudinally cruciately septate; spores white, even.

The species of *Tremellodendron* are indigenous to North America; none have been reported for other regions, so far as I am aware. The fructifications spring up on the ground in deep woods during wet weather in summer and early autumn, and have the general habit of *Thelephora vialis*, of branched *Clavarias*, or, very rarely, of simple clubs. In active vegetative condition the fructifications may be distinguished from species of *Clavaria* of similar habit by coriaceous and

tough consistency and by lack of brittleness. The longitudinally septate basidia afford a decisive character in all doubtful cases.

The specific distinctions between the more common species of this genus are based largely upon the form of mature and well-developed fructifications; very young, deformed, or fragmentary specimens can not be referred very confidently to their species.

### KEY TO THE SPECIES

- Fructifications branched when well developed. Simple forms may be present when very young or in the same colony with normal branched forms ..... 1
- Fructifications simple ..... 4
1. Fructifications normally caespitose, more or less grown together..... 2
1. Fructifications solitary or scattered..... 3
2. With pileate divisions flattened, grown together at many points of contact, forming rosette-like masses 2-15 cm. in diameter...1. *T. pallidum*
2. With the stems grown together into a main stem 2-10 mm. thick; pileate divisions cylindric, spreading, grown together at only few points of contact; the smaller divisions about 1½ mm. thick..... 2. *T. candidum*
2. Sometimes with both stems and pileate divisions grown together into compact bundles, usually merely closely caespitose and with the branches intricately intertangled; much slenderer than preceding species and with the habit of *Pterula*.....5. *T. merismatoides*
3. Stem about 1½ mm. thick, palmately few-branched; branches once or twice similarly branched, cylindric or subcylindric, often channelled on the upper side; basidia 15×9 μ; spores 9-15×4½-6 μ, pointed at the base only .....3. *T. Cladonia*
3. Stem about ½-1 mm. thick, sometimes with occasional, scattered, divergent branches from its side, dilated at the upper end, divided into a few, short, finger-shaped branches; basidia 20-24×12-14 μ; spores 14-16×6-7 μ, pointed at both ends, Known from Jamaica only.....4. *T. tenue*
4. Fructification dark orange, probably with medullary tissue pale as in all the preceding species; basidia subglobose, 10-12 μ in diameter .....6. *T. aurantium*
4. Fructification black with the exception of the hymenium; hymenium olive-ocher, amphigenous on the lower third of the fructification; basidia 11×7 μ. Known from Porto Rico only.....7. *T. simplex*

#### 1. *Tremellodendron pallidum* (Schw.) Burt, n. comb.

Plate 26, fig. 6.

*Thelephora* (*Merisma*) *pallida* Schw. Am. Phil. Soc. Trans. N. S. 4: 166. 1834.—*T. Schweinitzii* Peck, N. Y. State Mus. Rept. 29: 67. 1878; Saccardo, Syll. Fung. 6: 534. 1888.—*Tremellodendron Schweinitzii* (Peck) Atk. Jour. Myc. 8: 106. 1902.

Illustrations: Hard, Mushrooms *f.* 381.—Moffatt, Chicago Acad. Sci. Bul. 7: *pl.* 22. *f.* 1. 1909.

Type: in Herb. Schweinitz and a portion in Curtis Herb.

Fructification cespitose, erect, white or pallid, drying warm buff, stipitate by one to several or many stems which may be distinct below or arise from a common, swollen, basal mass; above, the stems branch into flattened, more or less furrowed, pileate divisions which grow together at surfaces of contact to form a somewhat cup-shaped or rosette-like mass; divisions in center of mass somewhat subulate at the apex, those at margin dilated and sometimes fimbriate, splitting when dry into sharp fibers or spicules; hymenium inferior, warm buff, best developed towards the base of the pileate divisions; basidia pyriform, longitudinally cruciately septate,  $12-15 \times 9 \mu$ ; spores from a spore collection, white, simple,  $10-12 \times 4\frac{1}{2}-5\frac{1}{2} \mu$ , and  $9-12 \times 4\frac{1}{2} \mu$  from an herbarium specimen.

Fructifications 2-10 cm. high, 2-15 cm. broad.

On the ground in deep woods. Canada to South Carolina and westward to Missouri. June to October. Common.

Full-grown and well-developed specimens are rosette-like and resemble *Thelephora vialis* when viewed from above but may have the pileate mass supported by many stems; small specimens with only a single stem do occur. The large specimens are apparently due to the conerescence of many small fructifications. In the large specimens the pileate divisions on the outside of the mass become broader and more flattened than those in the interior. The flattened form of the divisions of the pileus and their growing together at numerous points of contact are characters separating *Tremellodendron pallidum* from *T. candidum*. The small specimens, distributed as *T. pallidum* in published exsiccati, are often so immature and fragmentary that they cannot be distinguished from *T. candidum*.

Forms of *T. pallidum* which have the tips of pileate divisions split into sharp fibers or spicules are the *Thelephora cristata* and *T. serrata* of Schweinitz, 'Syn. N. Am. Fungi,' Nos. 621 and 623.

Specimens examined:

Exsiccati: Ravenel, Fungi Car. II, 29; Ellis, N. Am. Fungi, 510; Ell. & Ev., Fungi Col., 1208; Shear, N. Y. Fungi, 50.

- Canada, Ontario: London, *J. Dearness*, and also in Ell. & Ev., Fungi Col., 1208; Belleville, *J. Macoun*, 174, 230 (both in Can. Geol. Surv. Herb.).
- Maine: N. Parsonfield, *R. G. Leavitt*.
- Vermont: near Burlington, *L. R. Jones*, two collections; Middlebury, *E. A. Burt*, two collections.
- Massachusetts: *Sprague*, 773 (in Curtis Herb. under the name *Thelephora vialis*); Brookline, *S. Davis*.
- Connecticut: East Hartford, *C. C. Hammer*; and also No. 1567 (in Hammer Herb.).
- New York: Alcove, *C. L. Shear*, N. Y. Fungi, 50; Floodwood, *E. A. Burt*; Taughannock, *H. H. Whetzel*, Cornell Univ. Herb., 13600; Buffalo, *G. W. Clinton* (in U. S. Dept. Agr. Herb.); Tarrytown, *H. von Schrenk* (in Mo. Bot. Gard. Herb., 42800).
- New Jersey: Laning (in Mo. Bot. Gard. Herb., 701330, 701331, 701333); Newfield, *J. B. Ellis* (in Mo. Bot. Gard. Herb., 5162), and also N. Am. Fungi, 510.
- Pennsylvania: Bethlehem, *Schweinitz*, type (in Herb. Schweinitz, and a portion in Curtis Herb. and also the Nos. 621 and 623 of Schweinitz, 'Syn. N. Am. Fungi,' under the names *Thelephora cristata* and *T. serrata*, respectively); Trexlertown, *W. Herbst* (in Lloyd Herb.); Kittanning, *D. R. Sumstine*.
- Delaware: Newark, *H. S. Jackson*, B10.
- District of Columbia: Washington, *O. F. Cook*, 2, comm. by P. L. Ricker.
- Virginia: Great Falls, *C. L. Shear*, 1044.
- North Carolina: Blowing Rock, *G. F. Atkinson*, Cornell Univ. Herb., 10666, 10667, 10669, 10664 (of which the first two numbers and part of the third are in Cornell Univ. Herb. and part of the third and the last in Mo. Bot. Gard. Herb.).
- South Carolina: Ravenel, Fungi Car. II, 29.
- Ohio: *C. G. Lloyd*, 2346 (in Lloyd Herb.); Loveland, *D. L. James* (in U. S. Dept. Agr. Herb.).
- West Virginia: Eglon, *C. G. Lloyd*, 02601.
- Kentucky: *S. M. Price* (in Mo. Bot. Gard. Herb., 5141, 5144, 701332, 712372); Mammoth Cave, *C. G. Lloyd*, 1071.

Illinois: *H. C. Beardslee* (in Lloyd Herb., 2175); Newton's Ferry, *E. T. & S. A. Harper*, 441; Riverside, *E. T. & S. A. Harper*, 696.

Wisconsin: Blanchardville, Univ. of Wis. Herb., 52; Madison, *E. T. & S. A. Harper*, 881; *C. J. Humphrey*, 948 (in Mo. Bot. Gard. Herb., 44783).

Iowa: *T. J. Fitzpatrick* (in Lloyd Herb.).

Missouri: St. Louis, *N. M. Glatfelter* (in Mo. Bot. Gard. Herb., 701335, 701370, 701371); Cliff Cave, *J. B. S. Norton* (in Mo. Bot. Gard. Herb., 5126); Columbia, *B. M. Duggar*, 140; Creve Coeur, *Miss E. M. Briggs* (in Mo. Bot. Gard. Herb., 44756).

2. **T. candidum** Schw. ex Atkinson, Jour. Myc. 8: 106. 1902.  
Plate 26, fig. 3.

*Merisma candidum* Schweinitz, Naturforsch. Ges. Leipzig Schrift. 1: 110. 1822.—*Thelephora candida* Fries, Elenchus Fung. 168. 1828; Schweinitz, Am. Phil. Soc. Trans. N. S. 4: 166. 1834.

Type: in Herb. Schweinitz, Acad. Nat. Sci. Phila.

Fructifications cespitose, erect, coriaceous-soft, white, drying warm buff, stipitate; stem thick, palmately branched, with branches spreading, branching, cylindric or subcylindric; hymenium inferior on the main branches, often amphigenous on secondary branches; basidia longitudinally septate,  $10-12 \times 7\frac{1}{2}-9 \mu$ ; spores colorless, simple, even,  $7\frac{1}{2}-10 \times 4\frac{1}{2}-5\frac{1}{2} \mu$ .

Fructifications  $2\frac{1}{2}-5$  cm. high, 2-5 cm. broad; stem 2-10 mm. thick; smaller pileate branches about  $1\frac{1}{2}$  mm. thick.

On ground in open woods. Vermont to North Carolina and westward to Missouri. July to September. Infrequent.

The type of *T. candidum* has the dimensions given above for recent collections. In the original description Schweinitz noted that fructifications may attain a breadth of 15 cm.; at that time he had not given specific recognition to the large and common *T. pallidum* and it may be that the large specimens to which he referred were of the latter species. *T. candidum* is closely related to *T. pallidum* but contrasts with the latter in having consolidation between adjacent fructifications

confined to the main stems from the base upward to about the region of branching; from here the branches spread so that they grow together only rarely; furthermore, the branches are distinctly cylindric or subcylindric. The spores average a little shorter than those of related species.

Specimens examined:

Vermont: Lake Dunmore, *E. A. Burt*; Newfane, *C. D. Howe*.

Massachusetts: Woods Hole, *G. T. Moore*.

New York: Alcove, *C. L. Shear*, 1218; Fishers Island, *C. C. Hanmer*, 192, 193, 194 (all in Hanmer Herb.).

North Carolina: *Schweinitz*, type (in Herb. Schweinitz); Blowing Rock, *G. F. Atkinson*, Cornell Univ. Herb., 10662, 10668 (in Mo. Bot. Gard. Herb., 44775, 44776) and (in Cornell Univ. Herb., 10663).

Ohio: Granville, *H. L. Jones*.

Missouri: near St. Louis, *N. M. Glatfelter* (in Mo. Bot. Gard. Herb., 701336).

**3. T. Cladonia** (Schw.) Burt, n. comb. Plate 26, figs. 1, 2.

*Merisma Cladonia* Schweinitz, Naturforsch. Ges. Leipzig Schrift. 1: 110. 1822.—*Thelephora Cladonia* Fries, Elenchus Fung. 168. 1828; Epicr. 537. 1836–1838; Schweinitz, Am. Phil. Soc. Trans. N. S. 4: 166. 1834; Saccardo, Syll. Fung. 6: 535. 1888.—*Thelephora gracilis* Peck, Torr. Bot. Club Bul. 25: 371. 1898.

Type: in Herb. Schweinitz.

Fructifications solitary or gregarious, erect, coriaceous-soft, pallid, drying warm buff, sometimes with the older portions pale olive-gray, stipitate; stem cylindric, palmately branched into a few—often three—cylindric branches, each or some of which occasionally branch again in similar manner; branches arranged in a plane from flattened end of stem or branch or in a circle about the cylindric end of the stem which is then sometimes perforate and the branches often channelled; hymenium amphigenous, or inferior when the branch is channelled; basidia longitudinally septate, pyriform,  $15 \times 9 \mu$ ; spores colorless, simple, even, curved,  $9-15 \times 4\frac{1}{2}-6 \mu$ .



Fructifications  $2\frac{1}{2}$ -5 cm. high, 7 mm.-2 cm. broad; stem about  $1\frac{1}{2}$  mm. thick.

On ground in woods. Canada to Mississippi and westward to Missouri. August and September.

The fructification of this species is smaller than that of *T. candidum* and has but few branches, which are often arranged in a circle about the end of the stem so as to appear somewhat proliferous on the margin of an imperfect cup as in some species of the lichen, *Cladonia*—hence the specific name—or with the branches standing up side by side from the compressed apex of the main stem. Both forms of branching have been found so associated in the same collection as to preclude the possibility of regarding this difference as a basis for two species. The branches are so frequently in threes that "trifaria" was contemplated as a name for the species by one author.

Specimens examined:

Canada: *J. Macoun*, 78.

Vermont: Smugglers Notch, *L. R. Jones*; Middlebury, *E. A. Burt*; Brattleboro, *C. C. Frost* (in Univ. Vermont Herb.).

Massachusetts: *Sprague*, 871 (in Curtis Herb., 5762).

New York: Hague, *C. H. Peck*, 7; Ithaca, *G. F. Atkinson*, Cornell Univ. Herb., 7708.

Pennsylvania: Trexlertown, *W. Herbst* (in Lloyd Herb.).

District of Columbia: Takoma Park, *P. L. Ricker*, 822 (in Ricker Herb.).

North Carolina: *Schweinitz*, type (Herb. Schweinitz and a portion in Curtis Herb.); Blowing Rock, *G. F. Atkinson* (in Cornell Univ. Herb., 10665, 10008. A part of the latter number is in Mo. Bot. Gard. Herb., 44774).

Georgia: Tallulah Falls, *A. B. Seymour*, Farlow Herb., O, P, Q, R, U, W (in Mo. Bot. Gard. Herb., 44619, 44623-44625, 44628, 44630).

Alabama: *F. S. Earle*, 13, type of *Thelephora gracilis* (in Coll. N. Y. State).

Mississippi: Biloxi, *Mrs. F. S. Earle*, 32A.

Ohio: Cincinnati, *A. P. Morgan* (in Lloyd Herb., 32); Loveland, *D. L. James*.

West Virginia: Eglon, *C. G. Lloyd*, 02634.

Missouri: Creve Coeur, *E. A. Burt* (in Mo. Bot. Gard. Herb., 44755).

4. ***T. tenue*** Burt, n. sp.

Plate 26, fig. 7.

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

Fructifications scattered, erect, very slender, coriaceous-soft, drying warm buff, stipitate; stem equal, flexuous, drying somewhat twisted and flattened, becoming fibrillose, sometimes giving off two or three scattered, divergent, small branches, dilated above and divided in a few palmately arranged, finger-shaped branches; hymenium inferior on the dilated portion and branches; basidia longitudinally septate,  $20-24 \times 12-14 \mu$ ; spores colorless, simple, even, curved, pointed at both ends,  $14-16 \times 6-7 \mu$ .

Fructifications 2-3½ cm. high, 3 mm. broad; stem 1½-2½ cm. long, about ½-1 mm. thick.

On the ground in wet mountainous region, altitude 3000-5200 ft. Jamaica. December and January.

This species is characterized by its long and slender stem, few branches, and the largest basidia and spores of any species of the genus. The spores differ from those of the other species in being pointed at the apex.

Specimens examined:

Jamaica: Chester Vale, *W. A. & E. L. Murrill*, N. Y. Bot. Gard., Fungi of Jamaica, 400, type; Cinchona, *W. A. & E. L. Murrill*, N. Y. Bot. Gard., Fungi of Jamaica, 614.

5. ***T. merismatoides*** (Schw.) Burt, n. comb. Plate 26, fig. 4.

*Clavaria merismatoides* Schweinitz, Am. Phil. Soc. Trans. N. S. 4:182. 1834.—*Merisma Schweinitzii* Leveille, Ann. Sci. Nat. Bot. IV. 5:157. 1846.—*Lachnocladium merismatoides* (Schw.) Morgan, Cincinnati Soc. Nat. Hist. Jour. 10:193. 1888.—*Pterula merismatoides* (Schw.) Saccardo, Syll. Fung. 6:742. 1888.—*Thelephora merismatoides* Lloyd, Letter No. 26:2. 1909. Nomen nudum.—*Tremellodendron merismatoides* Lloyd, Letter No. 40:2. 1912. Nomen nudum.—*Thelephora pteruloides* Berk. & Curt., Hooker's Jour. Bot. 1:238. 1849; *Grevillea* 1:148. 1873.

Type: In Herb. Schweinitz, Acad. Nat. Sci. Phila.

Fructifications erect, cespitose or fasciculate, and sometimes with stems grown together, coriaceous, branched, pallid, drying with stems warm buff and branches tawny; branches few, rather straight, filiform, angular-terete; branchlets many, dilated and fimbriate at the apex, then splitting into spreading branchlets; hymenium glabrous, amphigenous; basidia longitudinally septate, pyriform,  $12-15 \times 8-9 \mu$ ; spores in preparations from herbarium specimens hyaline, even, simple,  $8-10 \times 4\frac{1}{2}-5 \mu$ .

Cluster of fructifications 2-5 cm. high, 2-3 cm. broad. Individual from cluster has stem 5-10 mm. long,  $\frac{1}{2}$ -1 mm. thick; branches about  $\frac{1}{4}$ - $\frac{1}{3}$  mm. thick.

On the ground in open woods. Massachusetts and New York to South Carolina and westward to Missouri. June to August.

This is a small species with the habit of a *Pterula* but with coriaceous structure and longitudinally septate basidia. The fructifications of a cluster may have their stems distant from one another by spaces equal to the diameter of the stems, but the branches interlock above; in other cases the fructifications are crowded closely together and united throughout their whole length. *T. merismatoides* may be distinguished from the preceding species by the smaller diameter of the stems and branches and from all the following species by its cespitose to fasciculate habit.

The collection from West Virginia, distributed as *Thelephora pteruloides* in Ell. & Ev., 'N. Am. Fungi,' 3415 and 'Fungi Col.,' 1117, has the hymenium composed of basidia standing side by side in a distinct palisade layer and the basidia not longitudinally septate in my opinion.

Specimens examined:

Massachusetts: near Boston, *Murray*, comm. by Sprague, 250 (in Curtis Herb. under the name *Thelephora pteruloides* B. & C.); Woods Hole, *G. T. Moore*, 58.

New York: Ithaca, *G. F. Atkinson*, 37; Fishers Island, *C. C. Hanmer*, 1478 (in Hanmer Herb.).

New Jersey: Haddonfield, *T. J. Collins* comm. by C. G. Lloyd.

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

Schweinitz); York County, *N. M. Glatfelter* (in Mo. Bot. Gard. Herb., 44742); Kittanning, *D. G. Sumstine*.

South Carolina: *M. A. Curtis, 1745* (the type and cotype of *Thelephora pteruloides* in Kew Herb. and Curtis Herb. respectively).

Ohio: Cincinnati, *A. P. Morgan*, Lloyd Herb., 2589 (determined by Morgan as *Thelephora filamentosa*).

Wisconsin: Lake Geneva, *E. T. & S. A. Harper, 842*.

Missouri: Meramec Highlands, *N. M. Glatfelter* (in Mo. Bot. Gard. Herb., 44743).

6. **T. aurantium** Atkinson, Ann. Myc. 6: 59. 1908.

Type: in Cornell Univ. Herb. but cannot be found at present.

"Plants simple, slender, 1-3 cm. long, 2-3 mm. stout, dark orange, tough. Basidia subglobose, 10-12  $\mu$ , longitudinally divided; sterigmata 4, long, slender, flexuous. Spores oboval-subelliptical, granular, then with an oil drop, 7-10  $\times$  5-6  $\mu$ , white, hyaline.—C. U. herb., No. 10684, ground, woods, along small stream crossing Boone Road, Blowing Rock, Blue Ridge Mts., N. C. G. F. Atkinson, Aug. 19-Sept. 22, 1901."

—Original description.

*T. aurantium* differs from the preceding species of *Tremellodendron* by its simple fructifications. I have seen no specimens referable here. Professor Atkinson had intended to make a negative from his type so that I could include a figure of the species, but, upon going to the envelopes labelled *T. aurantium*, he found that they contained—by error of a helper—*T. merismatoides* instead. The specimens of *T. aurantium* have not been found.

7. **T. simplex** Burt, n. sp.

Plate 26, fig. 5.

Type: in Mo. Bot. Gard. Herb. and in Farlow Herb.

Fructifications scattered, erect or suberect, drying hard, brittle, somewhat longitudinally wrinkled and sometimes compressed, black above, olive-ocher with the hymenium towards the base; hymenium amphigenous on the lower third of the fructification, olive-ocher, hyaline under the microscope, with surface consisting of colorless clavate paraphyses 5  $\mu$  thick,

and with basidia and spores at base of the paraphyses; basidia longitudinally septate;  $11 \times 7 \mu$ ; spores colorless, even,  $7\frac{1}{2} \times 5-6 \mu$ .

Fructifications about 2 cm. long, about 2 mm. thick.

In cane field. Porto Rico.

*T. simplex* is noteworthy by the column composed of longitudinally arranged, black hyphae, which extends the whole length of fructification and constitutes the whole, upper, sterile two-thirds of the fructification and is clothed by the ochraceous hymenium on the lower third. The specimens are broken off at the base, hence I cannot be sure that a stem was not originally present, but if present it would doubtless have been included in the packet. The general habit is that of a small *Geoglossum* or cylindrical *Xylaria*.

Specimens examined:

Porto Rico: *J. R. Johnston*, comm. by W. G. Farlow, type (in Mo. Bot. Gard. Herb., 5119).

#### EICHLERIELLA

*Eichleriella* Bresadola, Ann. Myc. 1:115. 1903.—*Hirneolina* as a section of *Sebacina* Patouillard, Essai Taxon. 24. 1900.—*Hirneolina* (Pat.) Saccardo, Syll. Fung. 17: 208. 1905.

Fructifications coriaceous, waxy or membranaceous, subgelatinous, cup-shaped or plano-concave, rarely pendulous, hymenium typically superior, discoid, inferior in pendulous forms, even or somewhat rugulose; basidia globose-ovoid, cruciately divided, with 2-4 sterigmata; spores hyaline, cylindrical, somewhat curved. It is a *Stereum* or *Cyphella* with tremellaceous hymenium.

The type species of the genus is *Eichleriella incarnata* Bres.

The original definition of *Eichleriella*, which is translated above, should be broadened to accurately describe our North American species, which are as coriaceous as *Stereum spadiceum*. All have the hymenium inferior. *Eichleriella gelatinosa* is our only species with subgelatinous hymenium.

But few species of this genus are known. Five species of *Eichleriella* have been recognized up to the present time in North America, three in Europe, and two in South America;

of our five, only one species, *Eichleriella Leveilliana*, ranges through the eastern United States; *E. spinulosa* occurs in both Europe and North America.

### KEY TO THE SPECIES

- Fructifications gray, small,  $\frac{1}{2}$ -2 mm. long,  $\frac{1}{2}$ -1 mm. broad, with habit of *Cyphella* ..... 1. *E. Schrenkii*  
 Fructifications the color of raspberries and cream, and peltate at first, 1-5 cm. long,  $\frac{1}{2}$ -1 $\frac{1}{2}$  cm. broad..... 2. *E. Leveilliana*  
 Fructifications ochraceous buff, 200-300  $\mu$  thick; hymenium even; known from Cuba and Brazil..... 3. *E. alliciens*  
 Fructifications wood-brown, with whitish margin; hymenium dry, with tubercules like *Radulum*..... 4. *E. spinulosa*  
 Fructification white at first, then clay-color, tomentose, soft and spongy,  $\frac{1}{2}$  cm. thick; hymenium gelatinous; known from Jamaica only..... 5. *E. gelatinosa*

1. **Eichleriella Schrenkii** Burt, n. sp. Plate 27, fig. 8.

Type: in Mo. Bot. Gard. Herb. and in Farlow Herb.

Fructifications gregarious, coriaceous, sessile, pezizoid, oblong or rotund, margin free and strongly inrolled, pubescent, smoke-gray; hymenium concave, pale smoke-gray to pallid neutral gray; basidia longitudinally septate, pyriform,  $22 \times 11 \mu$ ; spores white in collection on slide, simple, curved, pointed at base,  $12-19 \times 6-7\frac{1}{2} \mu$ .

Fructifications  $\frac{1}{2}$ -2 mm. long,  $\frac{1}{2}$ -1 mm. broad,  $\frac{1}{2}$  mm. thick.

On bark of dead limbs of *Prosopis* (mesquite). San Antonio, Texas. February.

The general habit of this fungus resembles that of very small specimens of *Corticium Oakesii*, of large species of *Cenangium*, or of a sessile *Cyphella*; from all of which *Eichleriella Schrenkii* is easily separated by its longitudinally septate basidia which show clearly in sectional preparations. The fructifications are much smaller than those of any other species of this genus heretofore described.

Specimens examined:

Texas: San Antonio, *H. von Schrenk*, type (in Mo. Bot. Gard. Herb., 42579), and also (in Mo. Bot. Gard. Herb., 42580).

2. **E. Leveilliana** (Berk. & Curtis) Burt, n. comb.

Plate 27, fig. 9.

*Corticium Leveillianum* Berk. & Curtis, Hooker's Jour.

Bot. 1: 238. 1849.—*Stereum Leveillianum* Berk. & Curtis, *Grevillea* 1: 163. 1873.

Type: type and cotype in Kew Herb. and in Curtis Herb., respectively.

Fructification coriaceous, soft, dry, rather thick, vinaceous fawn at first, whitening with age, resupinate-effused, with the margin free, sometimes narrowly reflexed, concolorous, minutely tomentose; hymenium composed of a surface layer about  $30\ \mu$  thick of paraphyses  $1\frac{1}{2}$ – $2\ \mu$  in diameter and of a layer of basidia under this; basidia longitudinally septate,  $10$ – $18 \times 6$ – $12\ \mu$ ; spores in spore collection, white, simple, curved, pointed at base,  $12$ – $16 \times 5$ – $6\ \mu$ .

Fructifications often 5 mm. in diameter at first, finally up to 1–5 cm. long,  $\frac{1}{2}$ – $1\frac{1}{2}$  cm. broad, about  $\frac{1}{2}$  mm. thick.

On dead limbs of several species. New York to Texas, Cuba, Jamaica, Central America, and Brazil. November to May.

This is a well-marked species upon which Berkeley made the following excellent graphic comment:

“At first forming little peltate orbicular spots, which, as they dilate, become closely attached to the matrix, with the exception of the margin, which is often free, soon confluent, soft, rather thick; of the colour of raspberries and cream. Hymenium often minutely pitted. Old specimens lose in great measure their ruddy hue, and are of a dead white.”

I have seen no specimens having the hymenium minutely pitted.

Specimens examined.

Exsiccati: Ravenel, *Fungi Car.* II, 35.

New York: Hudson Falls, *S. H. Burnham* (in Mo. Bot. Gard. Herb., 44009, 44170, 44194); Buffalo, *G. W. Clinton*.

South Carolina: *M. A. Curtis*, 1220, 92 (types and cotypes in Kew Herb. and Curtis Herb., respectively); *Ravenel*, *Ravenel*, *Fungi Car.* II, 35.

Georgia: Tallulah Falls, *A. B. Seymour*, *Farlow Herb.*, C (in Mo. Bot. Gard. Herb., 44608).

Texas: Austin, *W. H. Long*, 570, *Cornell Univ. Herb.*; San

Antonio, *A. B. Langlois*, *bd*; same locality, *H. von Schrenk* (in *Mo. Bot. Gard. Herb.*, 42576).

Cuba: San Diego de los Baños, *Earle & Murrill*, 296, 356 in part, *N. Y. Bot. Gard. Herb.*

Jamaica: Cinchona, *W. A. & E. L. Murrill*, *N. Y. Bot. Gard., Fungi of Jamaica*, 493.

Brazil: Blumenau, *A. Möller*, comm. by G. Bresadola; Matto Grosso Cuyaba, *G. Malme*, 599, comm. by L. Romell.

3. ***E. alliciens*** (Berk. & Cooke) Burt, n. comb.

Plate 27, fig. 10.

*Stereum alliciens* Berk. & Cooke, *Linn. Soc. Bot. Jour.* **15**: 389. 1876; Masee, *Linn. Soc. Bot. Jour.* **17**: 201. 1891.

Type: in Kew Herb.

Fructification coriaceous, resupinate, sometimes narrowly reflexed, separable, ochraceous buff, the margin slightly paler, the reflexed portion tomentose; structure in section, 200–300  $\mu$  thick, (1) with hyphae next to substratum ochraceous, loosely interwoven and protruded, 3  $\mu$  in diameter, similar to those on outer surface of reflexed portion, (2) with intermediate layer 100–180  $\mu$  thick, composed of longitudinally arranged hyphae 2  $\mu$  in diameter, (3) with hymenium composed of basidia 10  $\mu$  below the surface, imbedded in jelly through which rise a few filiform paraphyses or hyphae to the surface; hymenium even, ochraceous buff; basidia longitudinally cruciately septate, pyriform, 12–15  $\times$  9–10  $\mu$ ; spores colorless, simple, even, curved, 10–13  $\times$  3½–5  $\mu$ .

Fructifications of type described as several inches long, originally orbicular; Cuban specimen 1 cm. long, 1 cm. broad, reflexed side 1–2 mm. long, 1 cm. broad.

On dead wood in virgin forest. Cuba and Brazil. March.

The fructification resembles in habit and coloration that of a resupinate specimen of *Stereum hirsutum* with a very narrowly reflexed margin. The Cuban collection, of which but a single fructification was communicated to me, is much smaller than the Brazilian type and has the hyphae of the intermediate layer with gelatinously modified wall.

Specimens examined:



Brazil: San Antonio da boa vista, Rio Javary, *Traill*, 1, type (in Kew Herb.).

Cuba: San Diego de los Baños, Pinar del Rio Province, *Earle & Merrill*, 405, N. Y. Bot. Gard. Herb.

4. *E. spinulosa* (Berk. & Curtis) Burt, n. comb.

Plate 27, fig. 11.

*Radulum spinulosum* Berk. & Curtis, *Grevillea* 1:146. 1873.—*Radulum deglubens* Berk. & Broome, *Ann. and Mag. Nat. Hist.* IV. 15:32. 1875.—*Eichleriella deglubens* (Berk. & Br.) Lloyd, *Letter No.* 45:7. 1893; Wakefield, *Brit. Myc. Soc. Trans.* 4:305. 1914.—*Stereum rufum* of English authors but not *S. rufum* Fries.—*Radulum Kmetii* Bresadola, *I. R. Accad. degli Agiati Rovereto Atti* III. 3:102. 1897.—*Eichleriella Kmetii* Bresadola, *Soc. Myc. France* 25:30. 1910.

Type: in Kew Herb.

Fructifications longitudinally and broadly effused, wood-brown, coriaceous-soft, separable, with the margin whitish, finally narrowly reflexed on the upper side and tomentose, or with margin everywhere free and curved outward; hymenium wood-brown, dry, usually bearing tubercles singly or in small clusters, with pale tips; basidia longitudinally septate, clavate,  $25-36 \times 9 \mu$ , arranged between paraphyses with brown tips; spores simple, colorless, cylindric, curved,  $15-16 \times 6 \mu$ .

Fructifications range up to 6 cm. long by 1-2 cm. wide and may be larger by confluence, about  $700 \mu$  thick; tubercles about  $\frac{1}{2}$ -1 mm. long.

Alabama. On bark of dead *Populus trichocarpa*, Idaho, and Oregon. July to September.

This species is distinguished by having a hymenium with configuration of a *Radulum* and cruciate basidia. The tubercles are often simple and cylindric, sometimes deformed and multifold. The wide distribution and yet the extremely local occurrence of this species together with the absence, until recently, of observations on its basidia have resulted in a very interesting synonymy. It is remarkable that this species, which occurs on *Fraxinus*, *Populus*, etc., in several countries of Europe, should have been collected in the United

States in Alabama, Idaho, and Oregon only. I am greatly indebted to Mr. L. Romell for a preparation from the type of *Radulum spinulosum* which makes possible the reference to this species.

Specimens examined:

Sweden: Stockholm, *L. Romell*, 327, and three unnumbered collections.

Alabama: *Peters*, Curtis Herb., 4543, preparation from type (in Kew Herb.).

Idaho: Kaniksu National Forest, Priest River, *J. R. Weir*, 55.

Oregon: Eugene, *C. J. Humphrey*, 1103.

5. *E. gelatinosa* Murrill, n. sp. Plate 27, fig. 12.

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

Fructification coriaceous, effuso-reflexed, white when young, finally clay-colored, tomentose, soft to the touch, margin obtuse; context soft, spongy, zonate; hymenium tough, gelatinous, drying Hay's brown, even; basidia longitudinally septate,  $13 \times 11 \mu$ ; spores simple, colorless, even, flattened on one side,  $8-10 \times 6 \mu$ .

Reflexed portion of fructification  $1\frac{1}{2}$ -2 cm. long,  $2\frac{1}{2}$  cm. wide,  $\frac{1}{2}$  cm. thick.

On rotting wood in wet, wooded regions. Jamaica. December and January.

Only two collections of one fructification each were made. That of December 17 is a white, young specimen, with no basidia developed, which shows the general habit and early characters of the species, but would not have been determinable except for the later collection of January 12-14, which shows the darker coloration assumed at maturity. The thick, spongy, soft pileus of the mature fructification distinguishes this species from others known at present.

Specimens examined:

Jamaica: Troy and Tyre, Cockpit country, *W. A. Murrill & W. Harris*, N. Y. Bot. Gard., Fungi of Jamaica, 1087, type (in N. Y. Bot. Gard. Herb.), a portion in Burt Herb.; Blue

Hole, Priestman's River region, *W. A. Merrill*, N. Y. Bot. Gard., Fungi of Jamaica, 180, immature specimen.

#### SEBACINA

*Sebacina* Tulasne, L. R. and C., Ann. Sci. Nat. V. 15: 223-226. pl. 10. f. 6-10. 1872; Linn. Soc. Bot. Jour. 13: 35. 1873; Brefeld, Untersuch. Myk. 7: 102-106. pl. 6. f. 22-26. 1888; Patouillard, Essai Taxon. Hym. 24, 25. 1900 (with the exclusion of section *Hirneolina*).—*Exidiopsis* Brefeld, Untersuch. Myk. 7: 94. pl. 5. f. 20-22. 1888.—*Stypella* Möller, A., Bot. Mitth. a. d. Tropfen. 8, Protobasidiomyceten 166. pl. 4. f. 6, 7. 1895.

Fructification coriaceous, membranaceous or floccose, gelatinous, waxy or pulverulent, resupinate, with habit of *Corticium*; basidia longitudinally septate, close together or scattered, sometimes between bushy conidiophores; spores colorless, producing in germination a similar spore or a cluster of conidia.

The type species of the genus is *Corticium incrustans* Pers.

*Sebacina incrustans* occurs sometimes on the ground and incrusting herbaceous stems and various erect objects but is often on decaying wood; *S. Helvelloides* occurs on the ground and incrusting erect objects; *S. chlorascens* has been observed incrusting the mossy bases of living trees; the other species have been recorded only on dead wood and bark. A few members of this genus are thick and spongy and were originally included in *Thelephora*; usually the species are thin and *Corticium*-like in general habit and were in several instances published under *Corticium*. In the dried conditions some species of *Sebacina* may be tentatively recognized as such by having the hymenial surface glassy or resembling dried cartilage; but such a separation from *Corticium* is very uncertain, for some species of *Sebacina* dry with a dull, soft surface and some true *Corticiums* assume the appearance of dried cartilage in drying.

It seems probable that it will always be difficult to determine resupinate species of *Hymenomycetes*; it is not possible to do so from the descriptions alone of the earlier botanists. European authors have recently been enlarging such descrip-

tions by giving spore characters, dimensions of basidia, cystidia, and hyphae, and the presence or absence of clamp connections. Such additional characters may often be obtained quickly by microscopic examination of a portion of the fructification which has been teased out and crushed down in dilute potassium hydrate solution; by these helpful additional characters, some species may be recognized with reasonable accuracy, but there are comparatively few such species. Structure in section of the fructification affords important characters for the identification of resupinate species. In practical work with these species, a microscopical mount of a sectional preparation of a type specimen is the next best thing for purposes of comparison to having the type itself.

My method of determining a resupinate specimen is to observe closely its general habit and characters, such as consistency, adnation, thickness, surface, margin, substratum, and color. Color is an important character when given in terms of an adequate color standard. The color which the specimens retain in drying is often the only color character available; it is more constant, fortunately, than is commonly appreciated, for it has to be the color factor in the comparison of herbarium specimens. The preliminary observation may suggest that the species is one of several of somewhat similar habit which may be of the same genus or of various genera. The sectional preparations, which are now made, may present (*a*) a uniform, homogeneous arrangement of similar hyphae from substratum to hymenium, (*b*) dissimilar hyphae or organs distributed uniformly throughout the whole fructification, (*c*) a layered, heterogeneous arrangement of various types with the layers more or less sharply differentiated from one another, (*d*) a stratose arrangement having the first stratum extend from the substratum to the upper surface of the first hymenium, the second stratum a repetition of the first and borne on the first, and so on. Under *a* there are characteristic varieties of structure, constant for each species, such as all the hyphae in erect position extending from substratum to hymenial surface, or all interwoven, or all procumbent, and there are also constant

differences in regard to whether the hyphae are crowded close together or are loosely arranged. Under *c*, a conspicuous example would be one in which the layer next to the substratum is composed of longitudinally arranged hyphae (that is, parallel with the substratum) crowded closely together; from this layer, a few branches might extend outward at right angles to the first layer and form a layer of loosely arranged, erect hyphae — the second layer; the hyphae of the second layer might branch abruptly at its outer surface and bear a compact hymenial layer. Some species invariably form a loosely interwoven layer next to the substratum, and on the surface of this layer form a dense hymenial layer, as, for example, *Sebacina incrustans*, *S. chlorascens*, and *S. Helvelloides*. Sterile fructifications may frequently be determined by their general characters and structure in section.

The preparations which reveal structure in section, give also spores, basidia, paraphyses, and other organs. From the combination of general characters, structure in section, and details of spores and noteworthy organs, the species becomes manifest. Our species of *Sebacina* are described in accordance with this method in the following pages.

### KEY TO THE SPECIES

- |   |                           |
|---|---------------------------|
| Fructifications on the earth, running up and incrusting the bases of living stems and trunks as well as dead objects.....   | 1                         |
| Fructifications confined to bark and wood of dead branches and trunks...  | 2                         |
| 1. Sometimes passing into branches or ascending flaps; hymenial layer drying warm buff, 60–150 $\mu$ thick; paraphyses densely crowded and somewhat interwoven or adglutinated.....             | 1. <i>S. incrustans</i>   |
| 1. Pileate branches drying cream-color with a glaucous tint, imbricated, the apices spiculate or fimbriate; hymenial layer drying vinaceous brown, 140–240 $\mu$ thick.....                     | 3. <i>S. chlorascens</i>  |
| 1. Not forming free branches or flaps; hymenial layer 200–300 $\mu$ thick; paraphyses straight and rod-like; basidia 20–25 $\times$ 15 $\mu$ .....  | 4. <i>S. Helvelloides</i> |
| 2. Fructifications white or whitish when dry.....   | 3                         |
| 2. Fructifications not white.....   | 4                         |
| 3. Hymenium composed of unbranched, flexuous, even-walled, deeply staining, clavate organs 40–45 $\times$ 6 $\mu$ , in addition to few-branched paraphyses and basidia.....                     | 5. <i>S. Shearii</i>      |
| 3. Hymenium composed of paraphyses and basidia; fructification 300–400 $\mu$ thick; margin thick, not closely adnate to substratum.....   | 6. <i>S. macrospora</i>   |
| 3. Hymenium composed of basidia and paraphyses; fructification 50–150 $\mu$ thick, shining white at first; margin very thin and closely adnate.....   | 7. <i>S. calcea</i>       |
| 3. Hymenium composed of basidia and paraphyses; fructification 200–300 $\mu$ thick, dirty whitish; hyphae incrusting in upper two-thirds of fructification; margin thin and closely adnate..... | 8. <i>S. monticola</i>    |

4. Drying ochroleucous, basidia at or near the surface in tissue not sharply differentiated as a layer from tissue near substratum; much crystalline matter about 100  $\mu$  below surface. On *Alnus*, South Carolina .....9. *S. scariosa*
4. Drying some variety of brown..... 5
4. Drying fuscous to black..... 6
5. Drying cacao-brown (testaceous of Saccardo's 'Chromotaxia'); separable from substratum; resembling *S. incrustans* but with margin soon detached and spores  $6-7 \times 4\frac{1}{2}-5 \mu$ . On juniper, Alabama.....2. *S. deglubens*
5. Blue-purple when fresh, drying tawny olive to Saccardo's umber where directly on the wood; adnate to substratum; 30-45  $\mu$  thick; basidia  $7-10 \times 6-8 \mu$ ; spores  $6-7 \times 3-5 \mu$ .....10. *S. podlachica*
5. Drying cinnamon-brown; adnate to substratum; 100-140  $\mu$  thick; scattered paraphyses with bushy-branched, brown tops rise 45-60  $\mu$  above the basidia. On *Magnolia*, Delaware.....11. *S. cinnamomea*
6. Hay's brown when moist, drying fuscous, the margin pale cartridge-buff; separable from substratum; 500-600  $\mu$  thick. On *Populus*, Idaho.....12. *S. adusta*
6. Drying blackish plumbeous; adnate to substratum; 150-200  $\mu$  thick, the margin indeterminate. On *Populus*, Washington.....13. *S. plumbea*
6. Grayish when moist, drying dark mouse-gray and shining; adnate to substratum; 50-160  $\mu$  thick, the margin indeterminate. On very rotten wood, New England.....14. *S. atrata*

1. *Sebacina incrustans* Pers. ex Tulasne, Ann. Sci. Nat. Bot. V. 15: 225. pl. 10. f. 6-10. 1872; Linn. Soc. Bot. Jour. 13: 36. 1873. Plate 27, fig. 13.

*Corticium incrustans* Persoon, Obs. Myc. 1: 39. 1796.—*Thelephora incrustans* Persoon, Syn. Fung. 573. 1801; Fries, Syst. Myc. 1: 448. 1821.—*Thelephora sebacea* Persoon, Myc. Eur. 1: 155. 1822; Fries, Elench. Fung. 1: 214. 1828; Hym. Eur. 637. 1874; Saccardo, Syll. Fung. 6: 540. 1888.—*Corticium sebaceum* Masee, Linn. Soc. Bot. Jour. 27: 127. 1891.—*Merisma cristatum* Persoon, Syn. Fung. 583. 1801.—*Thelephora cristata* Fries, Syst. Myc. 1: 434. 1821; Hym. Eur. 637. 1874; Saccardo, Syll. Fung. 6: 539. 1888.—*Sebacina incrustans* Tul. ex Bresadola, in part (Hym. Hung. Kmet.), I. R. Acad. Sci. Agiati III. 3: 117. 1897.

Illustrations: Tulasne, loc. cit.—Persoon, Com. Fung. Clav. pl. 4. f. 4; Berkeley, Outlines Brit. Fung. pl. 17. f. 6; Brefeld, Untersuch. Myk. 7: pl. 6. f. 22-26. Hennings in Engl. & Prantl, Nat. Pflanzenfam. (I. 1 \*\*): 91. f. 59 C, D; Nees, System pl. 34. f. 256 B; Patouillard, Tab. Anal. Fung. f. 155; and Essai Tax. Hym. 25. f. 17 a, b; Soc. Myc. Fr. Bul. 5: pl. 7. f. 11.—See Saccardo, Syll. Fung. 20: 945 for references to some additional illustrations which I have not seen.

Type: authentic specimens of *Thelephora incrustans* and *Merisma cristatum* from Persoon in Kew Herb.

Fructifications coriaceous-fleshy, varied in form, creeping on the ground and ascending and incrusting small erect objects and forming little columns and free branches, the apices somewhat awl-shaped or fringed, or effused and resupinate on bark, whitish, drying warm buff; structure in section, 250–400  $\mu$  thick, (1) with a broad layer of very loosely interwoven rather stiff hyphae, 2–2½  $\mu$  in diameter, which divide above into fine branches and form (2) a densely interwoven layer about 60–150  $\mu$  thick with the basidia in the upper 40–90  $\mu$  among the very fine (1½  $\mu$  in diameter), densely crowded, somewhat interwoven filaments from the subhymenium; basidia longitudinally septate, ovoid or pyriform, 12–20  $\times$  9–14  $\mu$ ; spores colorless, simple, even, flattened on one side or curved, 12–14  $\times$  6–8  $\mu$ .

Fructifications 5–6 cm. long, 2–5 cm. wide, ascending objects 2–5 cm.; pileate flaps, when present, ½–1 cm. long.

On the ground in woods and incrusting objects, and resupinate on logs. Canada to Louisiana and westward to Missouri. June to October. Common.

*S. incrustans* is the common incrusting *Sebacina* of Eastern North America. It may usually be recognized at sight by coriaceous-fleshy consistency, occurrence on earth and running up and incrusting living objects, and pallid color. The thinner hymenial layer, paraphyses less rod-like in form, and finer and thinner-walled hyphae of layer next to the substratum afford structural characters separating specimens of this species from those of *S. chlorascens* and *S. Helvelloides*.

I exclude from the synonymy of *S. cristata*, *Clavaria laciniata* of Bulliard's 'Hist. Champ.' 1:208. pl. 415. f. 1, because in the absence of authentic specimens and observations in regard to spores and basidia, it is not certain that *C. laciniata* Bull. is *Merisma cristatum*. Bulliard's figures represent quite as well an incrusting European fungus communicated to me by Bresadola under the name *Thelephora fastidiosa* (Pers.) Fr., which has simple basidia and colorless echinulate spores. This species is the *Thelephora cristata*

of Patouillard's 'Tab. Anal. Fung.' No. 559, and *Cristella cristata* of his 'Essai Taxon. Hym.' f. 28. Patouillard notes that *Clavaria laciniata* is a synonym of the species which he figures. Because of the uncertainty as to whether figures of *Thelephora cristata* by European authors represent the true *Merisma* [*Sebacina*] *cristatum* Pers. or the echinulate-spored *T. fastidiosa* (Pers.), I have refrained from citing any illustrations except that of Persoon, of whose species I have studied an authentic specimen.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 513.

The specimen in Thuemen, Myc. Univ. 2009, under the name *Thelephora sebacea*, collected in France, is *Thelephora mollissima* Pers.

Europe: authentic specimens of *Thelephora incrustans* and *Merisma cristatum* from Persoon in Kew Herb.

Sweden: sterile specimen determined as *Thelephora cristata* by E. Fries (in Fries Herb.); Stockholm, L. Romell, 54.

Canada: J. Macoun, 5, 10.

Quebec: Hull, J. Macoun, 203, 313.

Ontario: near Ottawa, J. Macoun, 40 (in Can. Geol. Surv. Herb.); London, J. Dearness.

Maine: Portage, L. W. Riddle.

New Hampshire: Shelburne, W. G. Farlow (in Farlow Herb.).

Vermont: Middlebury, E. A. Burt, two collections.

Massachusetts: Williamstown, W. G. Farlow (in Farlow Herb.).

New York: Hudson Falls, S. H. Burnham, 2 (in Mo. Bot. Gard. Herb., 43995).

Pennsylvania: Michener, 5821 (in Curtis Herb.); Trexler-town, W. Herbst.

District of Columbia: Rock Creek, C. L. Shear, 793.

North Carolina: Asheville, H. C. Beardslee, 03126.

South Carolina: Ravenel, 1619 (in Curtis Herb.).

Louisiana: St. Martinville, A. B. Langlois, F, 2015; the same locality and collector, (3022 in Lloyd Herb.); Baton Rouge, Edgerton & Humphrey, 667.

Ohio: A. P. Morgan (in Lloyd Herb., 2655, 2656); Cincinnati,



*C. G. Lloyd*, 4198; Loveland, *D. L. James* (in U. S. Dept. Agr. Herb.).

Wisconsin: Blue Mounds, *E. T. and S. A. Harper*, 864, 879, 880; Madison, *W. Trelease* (in Mo. Bot. Gard. Herb., 5145, 44779); *C. J. Humphrey*, 2146 (in Mo. Bot. Gard. Herb., 44784).

Illinois: Riverside, *E. T. and S. A. Harper*, 698.

Missouri: Creve Coeur, *E. A. Burt* (in Mo. Bot. Gard. Herb., 44763).

2. *S. deglubens* (Berk. & Curtis) Burt, n. comb.

*Corticium deglubens* Berk. & Curtis, *Grevillea* 1:166. 1873.

Type: type and cotype in Kew Herb. and Curtis Herb.

Fructification resupinate, effused, coriaceous, separable, white beneath, drying about cacao-brown, the margin very narrow, white, byssoid, soon detached; structure in section 250–300  $\mu$  thick, (1) with a very loosely interwoven layer 180–200  $\mu$  thick, having hyphae  $1\frac{1}{2}$ –2  $\mu$  in diameter which branch and form (2) a very densely interwoven layer 80  $\mu$  thick with the basidia in the upper 30  $\mu$ , not quite reaching to the surface, among the very fine, densely interwoven filaments from the subhymenium; basidia longitudinally septate,  $15 \times 10$ –12  $\mu$ ; spores colorless, simple, even, flattened on one side,  $6$ – $7 \times 4\frac{1}{2}$ –5  $\mu$ .

On juniper, Alabama.

This fungus has the same type of structure which is found in resupinate specimens of *Sebacina incrustans*. It differs from the latter in having the hymenium darker, all the spores found in a sectional preparation a little smaller, and the hyphae of the layer next to the substratum a little smaller and more flaccid than those of *S. incrustans*, and the margin was described as soon detached. These differences may be merely the variation from specific type of a single collection, or they may be those of a subspecies of *S. incrustans* which has taken on the saprophytic life on dead wood, prevalent for most species of *Sebacina*. Until other collections, referable to *S. deglubens* are made, the former view appears the more probable.

Specimens examined:

Alabama: *Peters*, Curtis Herb., 4557, type (in Kew Herb.).

3. *S. chlorascens* Burt, n. sp. Plate 27, fig. 15.

Type: in Mo. Bot. Gard. Herb. and in Farlow Herb.

Fructification coriaceous, drying cream-color with glaucous tint, effused, ascending and incrusting the mossy bases of trees and forming imbricated, free, pileate, sterile branches, the apices spiculose or fimbriate; hymenium gelatinous, drying vinaceous brown, occurring in somewhat scattered spots on the lower portions of the fructification; structure in section 800  $\mu$  thick, with (1) a broad, spongy layer next to the substratum of loosely interwoven, rather rigid, even-walled hyphae  $2\frac{1}{2}$ –3  $\mu$  in diameter, which bear (2) a sharply differentiated hymenial layer 140–240  $\mu$  thick, composed of rod-like paraphyses 2  $\mu$  in diameter, between which occur basidia throughout the outer 60  $\mu$  of the layer; basidia longitudinally septate, pyriform, 15–18 $\times$ 12  $\mu$ ; spores simple, colorless, flattened on one side, 10–10 $\frac{1}{2}$  $\times$ 6–7  $\mu$ .

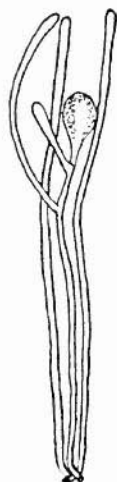


Fig. 1

*S. chlorascens*  
Paraphyses,  
basidium $\times$ 540.

Ascending objects 2–4 cm., 1–2 cm. broad; free branches up to 5 mm. long.

On mossy bases of living trees. Florida. Autumn.

As shown by the figures in pl. 27, the pileate branches of *S. chlorascens* do not resemble those of *S. incrustans*. The structure in section is different in every detail from that of specimens of the latter species and approaches more closely that of *S. Helvelloides*, but the fructification is thinner than that of the latter, has smaller basidia and spores, and the basidia distributed from the surface to about 60  $\mu$  below the surface, and forms free pileate branches.

Specimens examined:

Florida: Cocoanut Grove, *R. Thaxter*, 98, type (in Mo. Bot. Gard. Herb., 43923, and in Farlow Herb.).

4. *S. Helvelloides* (Schw.) Burt, n. comb. Plate 27, fig. 14.

*Thelephora Helvelloides* Schweinitz, Naturforsch. Ges. Leipzig Schrift. 1:108. 1822; Am. Phil. Soc. Trans. N. S. 4:168. 1834; Fries, Elenchus Fung. 1:193. 1828; Epier. 541. 1836-1838.—*Corticium Helvelloides* Masee, Linn. Soc. Bot. Jour. 27:153. 1891.—*Corticium basale* Peck, N. Y. State Mus. Rept. 43:69 (23). 1890.

Type: in Herb. Schw. and portions in Curtis Herb. and in Kew Herb.

Fructification coriaceous, spongy, effused, convex, closely adnate and incrusting, on ground in mosses and on bark at bases of living trees, at first whitish, drying honey-color to warm buff; structure in section, with (1) a very thick spongy layer next the substratum, of loosely interwoven, branched, rather rigid, even-walled, brownish hyphae,  $3-3\frac{1}{2}$   $\mu$  in diameter, which bear (2) a fertile layer 200-300  $\mu$  thick made up of great numbers of erect, straight, cylindric paraphyses 2  $\mu$  in diameter, between which occur the basidia at about 40-50  $\mu$  below the surface; basidia longitudinally septate, pyriform,  $20-25 \times 15$   $\mu$ ; spores colorless, simple, flattened or slightly curved on one side,  $12-13 \times 6$   $\mu$ .

Fructifications 3-15 cm. long and wide, drying about  $\frac{1}{2}$ -2 mm. thick to 9 mm. thick in type which covers a cushion of moss plants.

On ground and bark at bases of living trees. New York to North Carolina. July and August.

Specimens of this species have somewhat the habit of thick specimens of *Coniophora puteana* but are of very different structure. The abundant, erect, unbranched, cylindric paraphyses often 200  $\mu$  long which compose the greater part of the hymenium, and the large basidia are reliable characters for identifying *Sebacina Helvelloides* when sections are studied; the coarser and colored hyphae of the species give an additional character separating it from *S. incrustans* when the latter occurs strictly resupinate.

The type specimen is abnormal in thickness and ridged surface by running over and incrusting a bed of moss. The hanging rootlets referred to in the original description are

moss stems. The specific name is rather fanciful and misleading.

Specimens examined:

New York: Whitehall, *C. H. Peck*, type of *Corticium basale* (in Coll. N. Y. State); Aleve, *C. L. Shear*, 1221.

North Carolina: Salem, *Schweinitz*, type (in Herb. Schw., in Curtis Herb., and in Kew Herb.).

5. **S. Shearii** Burt, n. sp.

Plate 27, fig. 16.

Type: in Burt. Herb., and in Shear Herb.

Fructification coriaceous, effused, dull white, drying pale olive-buff, cracked, the margin determinate, entire; structure in section, 140–200  $\mu$  thick, with (1) a broad and dense layer next to the substratum of longitudinally arranged, slightly brownish, even-walled hyphae  $1\frac{1}{2}$ –2  $\mu$  in diameter, which branch and curve outward at a right angle and form (2) a fertile, less compact layer 60–75  $\mu$  thick of suberect, few-branched paraphyses 3  $\mu$  in diameter, of basidia at about 15–20  $\mu$  below the surface, and of scattered, even-walled, flexuous, cylindrical-ovate organs—perhaps gloeocystidia—40–45  $\times$  6  $\mu$ , not emergent above the surface; basidia longitudinally septate, pyriform, 15  $\times$  9  $\mu$ , with sterigmata 18  $\times$  3  $\mu$ ; spores colorless, simple, curved, 9–15  $\times$  4 $\frac{1}{2}$ –6  $\mu$ .



Fig. 2  
S. Shearii.  
Paraphysis  
at left.  
organ  $\times$  540.

Fructifications in crevices of bark at first, 2  $\times$  1 mm., at length, by confluence, 7 cm. long, 1 cm. broad.

On dead *Berberis vulgaris*. District of Columbia. October.

This species is well characterized by the presence in the hymenial layer of flexuous, even-walled organs, which are either latex or gloeocystidia, and by the broad layer of longitudinally arranged hyphae which shows relationship to *Eichleriella*, although the margin is not distinctly free. A few small granules are present on the hymenial surface but I do not know that they are a constant character.

Specimens examined:

District of Columbia: grounds U. S. Dept. Agr., Washington, *C. L. Shear*, 1238, type.

6. **S. macrospora** (E. & E.) Burt, n. comb.

*Corticium macrosporum* Ell. & Ev., Torr. Bot. Club Bul. 27: 49. 1900.

Type: in N. Y. Bot. Gard. Herb.; specimens from type collection in Lloyd Herb., and in Burt Herb.

Fructification coriaceous, appressed, thin, dull white, cracked, the narrow, white, cottony margin sometimes narrowly involute; structure in section, 300–400  $\mu$  thick, with (1) a very broad layer of longitudinally arranged and somewhat obliquely ascending crowded hyphae  $1\frac{1}{2}$   $\mu$  in diameter, colorless next to substratum but brownish in upper part of layer, which pass into (2) the hymenial layer 60–100  $\mu$  thick, consisting of erect, bushy paraphyses and of basidia; basidia longitudinally septate, pyriform to subglobose,  $15 \times 9$ –12  $\mu$ ; spores colorless, simple, flattened on one side or curved,  $10\frac{1}{2} \times 4\frac{1}{2}$ –6  $\mu$ .

Appearing at first in orbicular patches 3–5 mm. in diameter, at length confluent and up to 4 cm. long,  $1\frac{1}{2}$  cm. broad.

On pine (*Pinus Strobus*) limbs. Ohio. September.

This species is near *Sebacina calcea*, but the single collection which has been studied seems distinct from the latter by the thick, determinate margin, sometimes free and slightly upturned, by the greater thickness of the fructifications, by the brown hyphae of the middle region, and by walls of hyphae not gelatinously modified as in *S. calcea*. A relationship to *Eichleriella* is manifest in the broad layer of longitudinally arranged hyphae and in the tendency of the margin to be slightly free. The original description gives this species as on "*Fraxinus?*", but the limbs are *Pinus strobus*. The spores are not exceptionally large; the specific name was probably based on immature basidia.

Specimens examined.

Ohio: Linwood, *C. G. Lloyd*, 3113, type collection.

7. **S. calcea** (Pers.) Bresadola, *Fungi Tridentini* 2: 64. *pl.* 175. 1892. Plate 27, fig. 17.

*Thelephora calcea* Persoon, *Syn. Fung.* 581. 1801; *Myc. Eur.* 1: 153. 1822.—*Thelephora calcea* c. *albido-fuscescens*

Fries, *Elenchus Fung.* 1:215. 1828.—*Thelephora acerina* forma *Abietis* Fries, *Syst. Myc.* 1:453. 1821.—*Corticium Abietis* (Fr.) Romell, *Bot. Not.* 1895:72. 1895.—*Xerocarpus farinellus* Karsten, *Finska Vet.-Soc. Bidrag* 37:139. 1882.

Illustrations: Bresadola, *loc. cit.*; Patouillard, *Essai Taxon. Hym.* 25. f. 17b.

Fructification effused, closely adnate, crustaceous, slightly pulverulent, shining white at first, at length darkening in the central portion from earthen-buff to pale drab-gray, cracked, the margin much thinner and farinaceous; structure in section, 50–150  $\mu$  thick, (1) with hyphae next the substratum interwoven, 2  $\mu$  thick, the wall gelatinously modified, (2) hymenial layer 40–60  $\mu$  thick, composed of basidia and of paraphyses branched at the apex into very fine branches loaded with minute granules; basidia more abundant in the lower portion of the hymenial layer, longitudinally septate,  $14 \times 9 \mu$ ; spores colorless, simple, cylindric, curved,  $8-12 \times 4-5 \mu$ .



Fig. 3  
*S. calcea.*  
Paraphyses  $\times 540$ .

Fructifications 3–9 cm. long, 1–3 cm. broad.

On bark and wood of dead branches of spruce, pine, hemlock, white cedar, oak, ash, elm, maple, and elder. Canada, northern New England, and New York to Georgia, and in Washington. March to January—perhaps throughout the year.

As good distinctive macroscopic characters this species has: chalky white color with central portions ashy; powdery surface under a lens; thinness on drying and margin still thinner, so that it appears mealy under a lens rather than membranous. The fine branches and granules at the tips of the paraphyses show best in lactic acid preparations; potassium hydrate solution has a solvent action here. I have not been able to study an authentic specimen of *Thelephora calcea* Pers. and accept Bresadola's conclusion on this point.

Specimens examined:

Exsiccati: Romell, *Fungi Exs. Scand.* 129.

Austria: *G. Bresadola.*

Sweden: *L. Romell, 58, 59; Stockholm, L. Romell, Fungi Exs.*

Scand. These specimens are under the name *Corticium Abietis*.

Norway: Christiania, *M. N. Blytt* (in Herb. Fries and determined by Fries as *Corticium calceum*).

Finland: Mustiala, *P. A. Karsten*, under the name *Xerocarpus farinellus*.

Canada: *J. Macoun*, 30, 33.

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

Vermont: Middlebury, *E. A. Burt*, two collections; Ripton, *E. A. Burt*; Little Notch, Bristol, *E. A. Burt*.

New York: Alcove, *C. L. Shear*, 1134, 1208; Hague, *C. H. Peck*, 10; Clear Water, *G. F. Atkinson*, Cornell Univ. Herb., 5049.

Georgia: Tipton, *C. J. Humphrey*, 177; Savannah, *C. J. Humphrey*, 5106 (in Mo. Bot. Gard. Herb., 15081).

Washington: Bingen, *W. N. Suksdorf*, 695, 711, 763, 765, 864.

### 8. *S. monticola* Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructification coriaceous, resupinate, cracked, dirty whitish approaching pale smoke-gray, the margin closely adnate; structure in section 200–300  $\mu$  thick, with hyphae colorless, 3–4  $\mu$  in diameter, ascending obliquely from substratum to surface, densely crowded together, more interwoven and little incrustated in the lower third of the fructification, but more loosely arranged and heavily incrustated in the whole upper two-thirds, terminating in incrustated paraphyses which are either simple or 2–4-branched and with the hyphal body about  $2\frac{1}{2}$   $\mu$  in diameter under the incrustation; basidia about 40  $\mu$  below the surface of the hymenium, longitudinally septate, 15–20  $\times$  9–12  $\mu$ ; spores simple, colorless, even, cylindric, straight or curved, 9–10 $\frac{1}{2}$   $\times$  5–5 $\frac{1}{2}$   $\mu$ .

The portion of the fructification described is 5 cm. long, about 1 $\frac{1}{2}$  cm. wide.

On bark of log of *Picea Engelmanni*, altitude 8,500 ft., Pike's Peak, Colorado. August.

This species belongs in the group with *Sebacina calcea* and *S. macrospora*; it is distinguished from both of these by the

incrustation of its hyphae and by simpler paraphyses, which are either unbranched or with only about 2-4 branches not branching repeatedly and becoming so attenuated as to be nearly invisible except for the granules which they bear.

Specimens examined:

Colorado: Pike's Peak, *G. G. Hedgcock*, comm. by C. J. Humphrey, 2571, type (in Mo. Bot. Gard. Herb., 15157).

9. *S. scariosa* (Berk. & Curtis) Burt, n. comb.

*Corticium scariosum* Berk. & Curtis, *Grevillea* 2:3. July, 1873.—*Corticium secedens* Saccardo, *Syll. Fung.* 6:635. 1888.

Type: type and cotype in Kew Herb. and Curtis Herb., respectively.

“Forming a thin, oblong, membranous stratum, without any distinct border; hymenium pulverulent ochroleucous.”

—Original description.

Structure in section 300-600  $\mu$  thick, with hyphae 2  $\mu$  in diameter, branched, very loosely interwoven, extending from substratum to basidia, with walls gelatinously modified, imbedded in jelly, much crystalline matter about 90-120  $\mu$  below the hymenial surface; basidia at or near the surface, longitudinally septate, pyriform to subglobose, 12-15  $\times$  9-12  $\mu$ ; no spores found.

On alder, South Carolina.

The type specimens of this species have the general habit of *Peniophora gigantea*, which they also resemble in being separable and in cracking and peeling up from the substratum, but they are more lemon-yellow in color than specimens of the latter species. The structure in section is distinctive and suggestive of that of *Eichleriella alliciens*. Authors have sometimes confused *Corticium scariosum* B. & C. with *Corticium scariosum* B. and Br., published from Ceylon a few months later in the same year. The types of these fungi are not of the same genus, the American specimens having longitudinally septate basidia.

Specimens examined:

South Carolina: Society Hill, *M. A. Curtis*, 4916 (type and cotype in Kew Herb. and Curtis Herb.).



10. *S. podlachica* Bresadola, Ann. Myc. 1:117. 1903.

Type: in Bresadola Herb. and a portion in Burt Herb.

Fructification effused, closely adnate, described as "e pallido-caerulea caesio-hyalina," drying tawny olive to Saccardo's umber where directly on the wood; structure in section 30–45  $\mu$  thick, with hyphae 2  $\mu$  in diameter closely crowded together and rising obliquely from substratum to the surface; basidia in upper 15  $\mu$  of fructification among the hyphal filaments, longitudinally septate, pyriform, 7–10  $\times$  6–8  $\mu$ ; spores colorless, simple, even, curved, 6–7  $\times$  3–5  $\mu$ .

Covering areas 5 cm. long, 2 cm. broad.

On decaying coniferous wood, Massachusetts; on decaying beech wood, Russian Poland.

The Massachusetts collection was noted as blue-purple when fresh; in some places algae coating the wood have been covered by the fructification and the modified color of this algal layer is seen through the dried fructification; where the fungus coats the wood directly, the color of specimens which have been several years in the herbarium is the tawny olive. The American collection agrees closely with that communicated by Bresadola.

Specimens examined:

Russian Poland: on beech wood, *Eichler*, comm. by Bresadola, part of type.

Massachusetts: on coniferous wood, *W. G. Farlow*.

11. *S. cinnamomea* Burt, n. sp. Plate 27, fig. 18.

Type: in Burt Herb.

Fructification effused, coriaceous, dry, closely adnate, drying cinnamon-brown, the margin determinate, thick, entire; structure in section 100–140  $\mu$  thick, with (1) a layer 10–30  $\mu$  thick next to the substratum of longitudinally arranged, densely interwoven hyphae 2–2½  $\mu$  in diameter, which bear (2) the hymenial layer composed of basidia at the lower side of the layer, and of loosely arranged, highly branched, bush-



Fig. 4  
*S. cinnamomea*.  
Paraphysis  $\times 540$ .

shaped paraphyses with brown branches of zigzag form, which rise 45–60  $\mu$  above the basidia and give the characteristic color of the hymenium; basidia 15–20  $\times$  9–11  $\mu$ , longitudinal septation not positively made out; no spores found; paraphyses 75  $\mu$  long, trunk 1½–2  $\mu$  in diameter, sweep of branched top about 20  $\mu$ .

Fructification 4 cm. long, 1 cm. broad.

On limbs of dead *Magnolia glauca*. Maryland. December.

It is not certain that this fungus is a *Sebacina*, for none of its basidium-like organs show longitudinal septa, although in a very few there is arrangement of the protoplasm suggestive of such septation. The specimen is a little too immature for generic reference but is probably a young *Sebacina* in my opinion. The species is distinct from others in possible genera by cinnamon-brown color, paraphyses scattered as to trunks but with such brown, bushy-branched tops as to form a compact surface of the color stated.

Specimens examined:

Maryland: Takoma Park, *C. L. Shear*, 1339, type.

12. *S. adusta* Burt, n. sp.

Plate 27, fig. 19.

Type: in Burt Herb.

Fructification broadly effused, coriaceous, separable from the substratum, Hay's brown when moist, drying fuscous, the margin pale cartridge-buff, fibrillose-fimbriate; structure in section, 500–600  $\mu$  thick, composed of densely interwoven and obliquely ascending hyphae 3  $\mu$  in diameter, the walls not gelatinously modified, which bear the basidia at the surface of the hymenium; basidia longitudinally septate, pyriform, 12–16  $\times$  8–10  $\mu$ ; spores colorless, simple, curved, 10–12  $\times$  4–5  $\mu$ .

Fructification 12 cm. long, 4 cm. broad.

On decorticated trunk of *Populus trichocarpa*. Idaho. July to September.

In the single collection of this species which has been received the margin is everywhere closely applied to the substratum and shows no tendency towards becoming free or

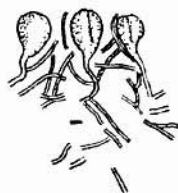


Fig. 5  
*S. adusta*.  
Basidia and  
hyphae  $\times$  540.

reflexed, hence the species must be included in *Sebacina*. The distinguishing specific characters are easy separation as an unbroken membrane of the moist fructification from the substratum, thickness of fructification, and position of the basidia at the surface of the hymenium.

Specimens examined:

Idaho: Kaniksu National Forest, Priest River, *J. R. Weir*, 12, type.

13. *S. plumbea* Burt, n. sp.

Plate 27, fig. 20.

Type: in Burt Herb.

Fructification effused, closely adnate, drying blackish plumbeous, pruinose, the margin indeterminate; structure in

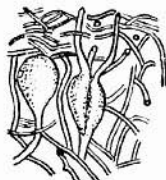


Fig. 6  
*S. plumbea*.  
Basidia and  
hyphae  $\times 540$ .

section, 150–200  $\mu$  thick, with (1) a broad layer next to the substratum containing much crystalline matter in the interspaces between the interwoven suberect hyphae 1½–2  $\mu$  in diameter, the wall gelatinously modified, and (2) a hymenial layer about 60  $\mu$  thick consisting of basidia, and of hyphae which branch and form a densely interwoven hymenial surface; basidia about 30  $\mu$  below the surface of

hymenium, longitudinally septate, pyriform, 15–18  $\times$  10–13  $\mu$ ; spores colorless, simple, even, curved, 13–15  $\times$  4½–6  $\mu$ .

Fructification 4–8 cm. long, ½–1 cm. broad.

On blackened wood of *Populus trichocarpa*. Washington. November.

The coloration and habit of specimens of this species agree closely with those of the European *Corticium plumbeum* Fr. which have been received from Karsten, but the internal structure is wholly different from that of the latter.

Specimens examined:

Washington: Bingen, *W. N. Suksdorf*, 862, type.

14. *S. atrata* Burt, n. sp.

Plate 27, fig. 21.

Type: in Burt Herb. and in Farlow Herb.

Fructification effused, somewhat gelatinous, closely adnate, grayish when moist, drying dark mouse-gray and shining, the margin thinning out and indeterminate; structure in section,

50–160  $\mu$  thick, with even-walled hyphae 3  $\mu$  in diameter, densely interwoven next to the substratum, then curving outward to form a hymenial layer 50–90  $\mu$  thick, consisting of erect, parallel, rod-like paraphyses 2  $\mu$  in diameter and of basidia about 30  $\mu$  below the surface of the hymenium; basidia longitudinally septate, pyriform, about  $18 \times 12$   $\mu$ ; spores colorless, simple, somewhat flattened on one side,  $8\text{--}10 \times 6\text{--}7$   $\mu$ .

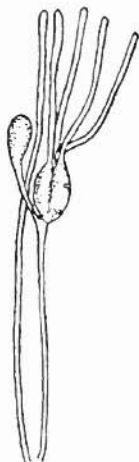


Fig. 7  
*S. atrata*.  
Paraphysis,  
basidia  $\times 540$ .

Fructifications  $2\frac{1}{2}$  cm. long,  $1\frac{1}{2}$  cm. broad.

On very rotten coniferous and frondose wood. New Hampshire and Massachusetts. May.

When bits of dried specimens of this species are moistened, they become softer and more gelatinous than is usual with those of other species of the genus, but walls of the hyphae do not show gelatinous modification in sectional preparations. The paraphyses are as noteworthy as those of *Sebacina Helvelloides*, being arranged close together side by side in a palisade layer. They are sometimes simple rods, sometimes divided into equal branches which rise side by side to the surface of the hymenium.

Specimens examined:

New Hampshire: Choerua, *W. G. Farlow*, two collections (of which No. *a* is in Mo. Bot. Gard. Herb., 44782).

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

(To be continued.)

## EXPLANATION OF PLATE

## PLATE 26

The figures of this plate have been reproduced natural size from photographs of dried herbarium specimens.

Fig. 1. *Tremelodendron Cladonia*. *a*, from specimen collected in Canada by J. Macoun, 78; *b*, collected at Hague, New York, by C. H. Peck, 7; *c*, collected at Cincinnati, Ohio, by A. P. Morgan, Lloyd Herb., 32.

Fig. 2. *T. Cladonia*, from the type of *Thelcphora gracilis*, collected in Alabama by F. S. Earle, 13.

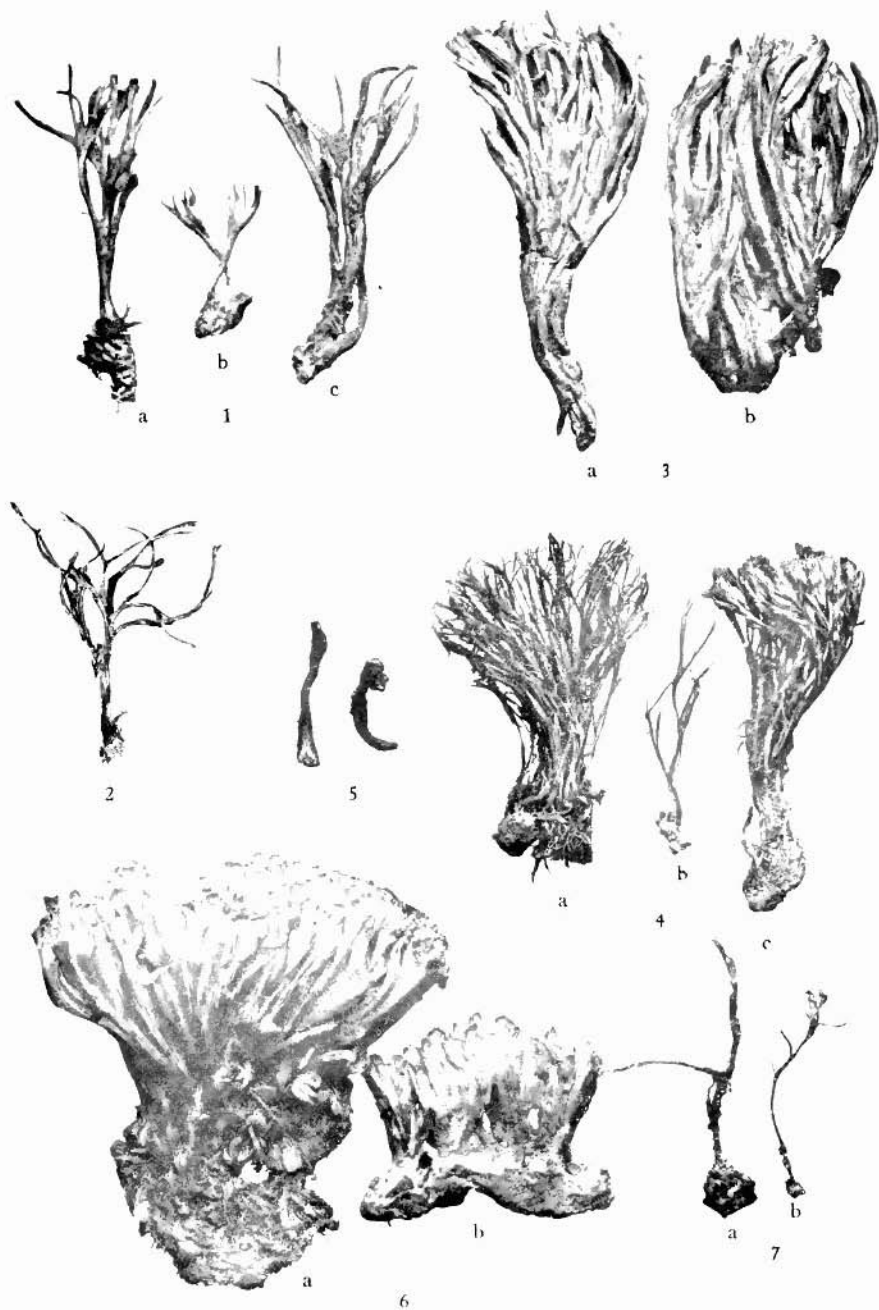
Fig. 3. *T. candidum*. Collected at Newfane, Vermont, by C. D. Howe. *a* agrees closely with the type and is my standard for comparison; *b* could be separated without fracture into three portions, each having form of *a*.

Fig. 4. *T. merismatoides*. *a*, from specimen collected at York County, Pennsylvania, by N. M. Glatfelter; *b*, single fructification from the cluster *a*; *c*, from a very fasciculate specimen having stems grown together and branches still fimbriate at apex, collected at Hadonfield, New Jersey, by T. J. Collins.

Fig. 5. *T. simplex*. From type collected in Porto Rico, by J. R. Johnston. The fructification on the right is inverted.

Fig. 6. *T. pallidum*. *a*, from specimen collected at Middlebury, Vermont, by E. A. Burt; *b*, from specimen in Mo. Bot. Gard. Herb., 712370, collected at St. Louis, Missouri, by N. M. Glatfelter. Both show the growth together of the flattened pileate divisions.

Fig. 7. *T. tenuis*. *a*, from type, collected at Chester Vale, Jamaica, by W. A. and E. L. Merrill, 400; *b*, from specimens collected at Cinchona, Jamaica, by the same collectors, 614.



BURT—THELEPORACEAE OF NORTH AMERICA

1 AND 2. TREMELLODENDRON CLADONIA.—3. T. CANDIDUM.—4. T. MERISMATOIDES.—  
5. T. SIMPLEX.—6. T. PALLIDUM.—7. T. TENUE.

## EXPLANATION OF PLATE

## PLATE 27

The figures of this plate have been reproduced natural size from photographs of dried herbarium specimens, except in the cases noted otherwise.

Fig. 8. *Eichleriella Schrenkii*. From the type collected at San Antonio, Texas, by H. von Schrenk. *a*, photograph of a piece of limb bearing many fructifications, and *b*, drawing of median longitudinal section of single fructification,  $\times 16$ .

Fig. 9. *E. Leveilliana*. From specimens collected at San Antonio, Texas, by H. von Schrenk.

Fig. 10. *E. allieicens*. From specimen collected at San Diego de los Baños, Cuba, by Earle and Murrill, 405, in part.

Fig. 11. *E. spinulosa*. From specimen collected at Priest River, Idaho, by J. R. Weir, 55.

Fig. 12. *E. gelatinosa*. From specimens collected in Jamaica by W. A. Murrill and W. Harris. *a*, upper surface of No. 180; *b*, type specimen, 1087, split longitudinally to show thickness of pileus and structure.

Fig. 13. *Sebaciaa incrustans*. *a*, from specimen collected at Middlebury, Vermont, by E. A. Burt; *b*, from specimen with pileate flaps, collected at Asheville, North Carolina, by H. C. Beardslee, 03126.

Fig. 14. *S. Helvelloides*. From specimen collected at Alceve, New York, by C. L. Shear, 1221. *a* shows upper surface; *b* is a vertical section from the same fructification to show thickness.

Fig. 15. *S. chlorascens*. From type specimen collected at Coconut Grove, Florida, by R. Thaxter, 98.

Fig. 16. *S. Shearii*. From type specimens collected at Washington, District of Columbia, by C. L. Shear, 1238.

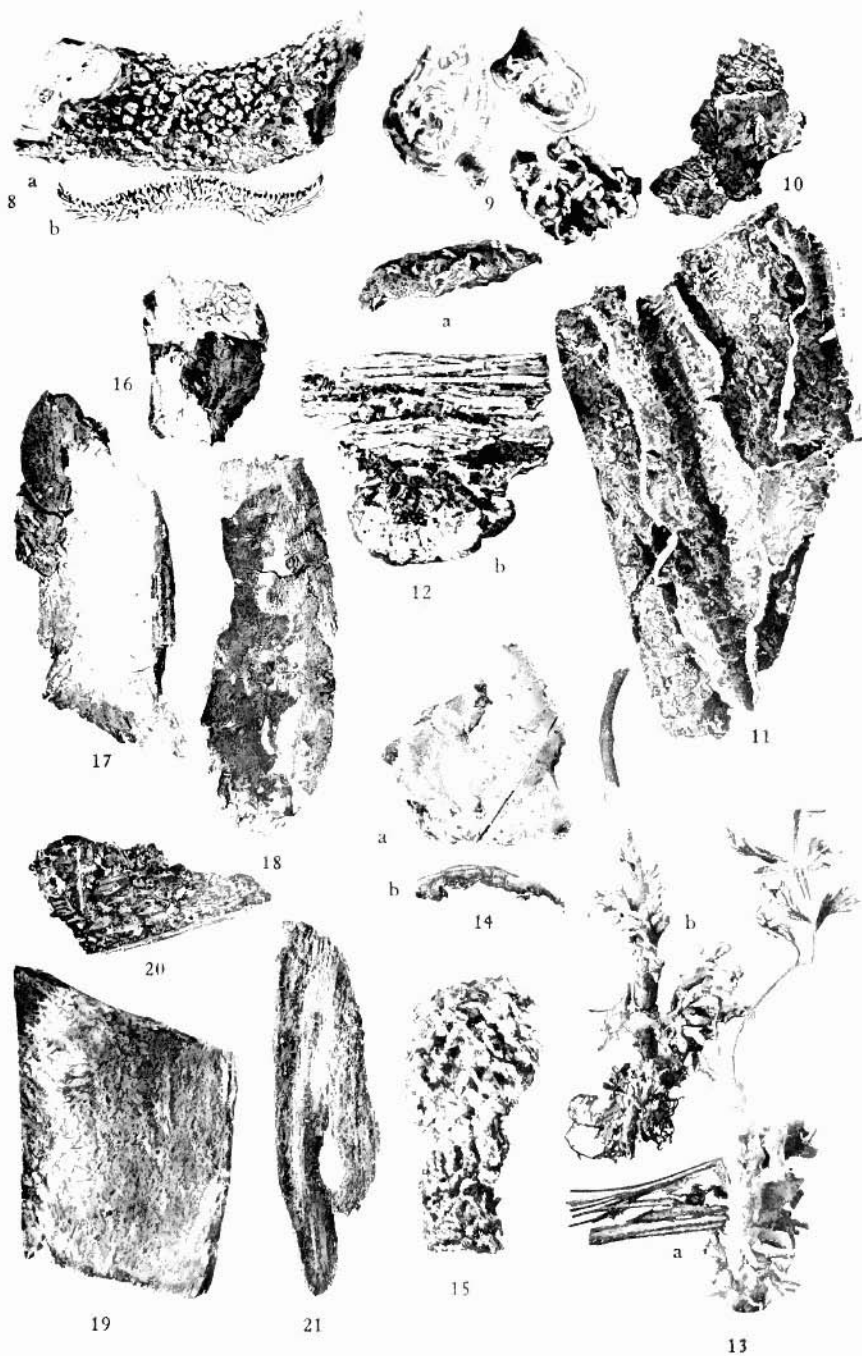
Fig. 17. *S. calcea*. From specimen on white cedar bark, collected at Middlebury, Vermont, by E. A. Burt.

Fig. 18. *S. cinnamomca*. From type specimen collected at Takoma Park, Maryland, by C. L. Shear, 1339.

Fig. 19. *S. adusta*. From type specimen collected at Priest River, Idaho, by J. R. Weir, 12.

Fig. 20. *S. plumbea*. From type specimen collected at Bingen, Washington, by W. N. Suksdorf, 862.

Fig. 21. *S. atrata*. From specimen collected at Choecorua, New Hampshire, by W. G. Farlow.



BURT—THELEPHORACEAE OF NORTH AMERICA

8. EICHLERIELLA SCHRENKII.—9. E. LEVEILLIANA.—10. E. ALLICIENS.—11. E. SPINULOSA.—  
 12. E. GELATINOSA.—13. SEBACINA INCRUSTANS.—14. S. HELVELLOIDES.—  
 15. S. CHLORASCENS.—16. S. SHEARII.—17. S. CALCEA.—  
 18. S. CINNAMOMEA.—19. S. ADUSTA.—20. S. PLUMBEA.—21. S. ATRATA.