VOLUME 1 PART 1

NORTH AMERICAN FLORA

FUNGI

MYXOMYCETES

CERATIOMYXALES, LICEALES, TRICHIALES, STEMONITALES, PHYSARALES

GEORGE WILLARD MARTIN

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HAROLD WILLIAM RICKETT

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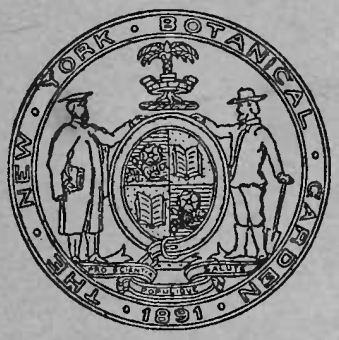

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ANNOUNCEMENT

NORTH AMERICAN FLORA is designed to present in one work descriptions of all plants growing, independent of cultivation, in North America, here taken to include Greenland, Central America, the Republic of Panama, and the West Indies, except Trinidad, Tobago, and Curaçao and other islands off the north coast of Venezuela, whose flora is essentially South American.

The work will be published in parts at irregular intervals, by the New York Botanical Garden, through the aid of the income of the David Lydig Fund bequeathed by Charles P. Daly.

It is planned to issue parts as rapidly as they can be prepared, the extent of the work making it possible to commence publication at any number of points. The completed work will form a series of volumes with the following sequence:

Volume 1. Myxomycetes, Schizophyta.

Volumes 2 to 10. Fungi.

Volumes 11 to 13. Algae.

Volumes 14 and 15. Bryophyta.

Volume 16. Pteridophyta and Gymnospermae.

Volumes 17 to 19. Monocotyledones.

Volumes 20 to 34. Dicotyledones.

The preparation of the work has been referred to a committee consisting of Dr. H. A. Gleason, Dr. H. W. Rickett, and Dr. Donald P. Rogers.

Dr. Francis W. Pennell, of the Academy of Natural Sciences of Philadelphia, and Dr. E. P. Killip, of the United States National Herbarium, have consented to act as an advisory committee.

Each author will be wholly responsible for his own contributions, being restricted only by the general style adopted for the work, which must vary somewhat in the treatment of diverse groups.

NORTH AMERICAN FLORA is published in parts of variable size; it is expected that four or more parts will be required for each volume. The subscription price for all parts published prior to 1936 is fixed at $1.50 for each part; for later parts the price varies with the number of pages. A limited number of separate parts will be sold at an advance of a third above the subscription price.

THE NEW YORK BOTANICAL GARDEN

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DIVISION FUNGI

By George Willard Martin

Chlorophyll lacking; nutrition heterotrophic. Assimilative phase varying from a single, uninucleate cell to an extensive, semi-naked, multinucleate plasmodium or to a mycelium composed of numerous branching and often anastomosing hyphae which may be continuous or septate. Reproductive phase sometimes involving the transformation of the entire assimilative thallus, but more commonly the production of specialized spore-bearing organs, these often organized into fructifications of characteristic form in which spore-formation may be associated with nuclear fusion and reduction.

Class MYXOMYCETES

By George Willard Martin

Assimilative phase a multinucleate mass of protoplasm, the plasmodium, naked or in part composed of a system of branching veins in which the active protoplasm is enclosed in an amorphous gelatinous sheath, immersed within the interstices of wood, bark, leaves, dung, soil, or litter, emerging to the surface before fructification and capable of movement within or on the substratum. Reproductive phase characterized by spores or spore-like cysts, sometimes borne on individual stalks, usually in the interior of spore cases, these seated on a horny, spongy, or calcareous base, the hypothallus. Spores, on germination, giving rise to one or more naked myxamoebae or flagellated swarm-cells. Under the influence of unfavorable conditions, the plasmodium sometimes transformed into a horny mass, the sclerotium, consisting of multinucleate cell-like units capable of resuming plasmodial characters under favorable circumstances.

Spores borne externally on individual stalks, each producing on germination a cluster of eight swarm-cells; hypothallus always well developed, giving rise to erect, often branched, and sometimes anastomosing extensions, the sporophores. Subclass 1. Exosporeae.

Spores borne internally in fructifications of characteristic form, each producing on germination one or two, rarely more, swarm-cells or myxamoebae; hypothallus occasionally prominent, usually inconspicuous, sometimes imperceptible. Subclass 2. Myxogastres.

Family 1. CERATIOMYXACEAE

With the characters of the order.

1. CERATIOMYXA Schroet. in E. & P. Nat. Pfl. 1[1]: 16. 1889.

Ceratium Alb. & Schw. Consp. Fung. 358. 1805. Not *Ceratium* Schrank, 1793.

With the characters of the family.

Type species, *Isaria mucida* Pers.

Fructifications minute, scattered, each composed of a single stalk with a cluster of branches at the tip; spores subglobose, 9–10 μ in diameter. 1. *C. sphaerosperma.*

Fructification usually larger, often extensive, the branches taking the form of erect pillars, or these becoming more or less extensively branched or anastomosing to form porose crusts; spores variable, but predominantly oval or elliptic, 10–13 × 6–7 μ. 2. *C. fruticulosa.*

1. Ceratiomyxa sphaerosperma Boedijn, Misc. Zool. Sumatr. 24: 1. 1927.

Minute, scattered, loosely gregarious, each fructification composed of a stalk bearing a cluster of arms at the tip, these unbranched or sparsely branched; spore-bearing spicules at the tips of the branches several times as long as those on the sides; spores subglobose, 9–10 μ in diameter; plasmodium unknown.

TYPE LOCALITY: Sumatra.
HABITAT: Dead wood and plant debris.
DISTRIBUTION: Panama Canal Zone; Costa Rica; the East Indies.
ILLUSTRATION: Mycologia 34: 697, *f. 1.*

2. Ceratiomyxa fruticulosa (Müll.) Macbr. N. Am. Slime-Moulds 18. 1899.

Byssus fruticulosa Müll. Fl. Dan. 12: 6. *pl. 718.* 1777.
Tremella hydnoides Jacq. Misc. Austr. 1: 145. 1778.
Clavaria puccinia Batsch, Elench. Fung. 139. 1783.
Clavaria byssoides Bull. Hist. Champ. Fr. 209. 1791.
Puccinia byssoides J. F. Gmel. Syst. Nat. 2: 1462. 1791.
Isaria mucida Pers. Neues Mag. Bot. 1: 121. 1794.
Ceratium hydnoides Alb. & Schw. Consp. Fung. 358. 1805.
Ceratium pyxidatum Alb. & Schw. Consp. Fung. 359. 1805.
Ceratium porioides Alb. & Schw. Consp. Fung. 359. 1805.
Ceratium aureum Link, Ges. Nat. Freunde Berlin Mag. 7: 39. 1815.
Corynoides byssoides S. F. Gray, Nat, Arr. Brit. Pl. 1: 654. 1821.
Ceratium arbuscula Berk. & Br. Jour. Linn. Soc. 14: 97. 1873.
Ceratium filiforme Berk. & Br. Jour. Linn. Soc. 14: 97. 1873.
Ceratium crustosum Berk. & Curt.; Berk. Grevillea 3: 62. 1874.
Ceratium fuscum Cooke, Grevillea 8: 60. 1879.
Ceratium roseum Cooke, Grevillea 8: 60. 1879.
Ceratium sphaeroideum Kalchbr. & Cooke, Grevillea 9: 22. 1880.
Ceratium mucidum Schroet. Krypt.-Fl. Schles. 3[1]: 101. 1885.
Ceratiomyxa mucida Schroet. in E. & P. Nat. Pfl. 1[1]: 16. 1889.
Ceratiomyxa porioides Schroet. in E. & P. Nat. Pfl. 1[1]: 16. 1889.
Ceratiomyxa plumosa Atk. Bot. Gaz. 19: 377. 1894.
Ceratiomyxa hydnoidea Kuntze, Rev. Gen. 3[3]: 507. 1898.
Ceratiomyxa caesia Jahn, Ber. Deuts. Bot. Ges. 36: 660. 1919.
Ceratiomyxa Freyana Meylan, Bull. Soc. Vaud. Sci. Nat. 56: 65. 1925.

Fructification white or yellowish, rarely pinkish, apricot, or bluish-green, arising from a broadly effused and sometimes fertile hypothallus as clusters of erect pillars which may remain unbranched or may branch in dendroid fashion, the branches varying from few, short and thick, to very numerous, filiform and anastomosing, rarely forming a fertile crust without erect

Order LICEALES

Spores in mass pallid, yellow or olivaceous to dingy-blackish, by transmitted light hyaline or subhyaline to smoky, never bright purplish. True capillitium lacking. Pseudocapillitium absent or present, often well developed and conspicuous.

Dictydine granules never present; portions of the sporangium wall not persisting as a preformed net.

Fructification of separate sporangia or small plasmodiocarps sometimes massed to form a pseudoaethalium; pseudocapillitium lacking or rarely rudimentary. — Fam. 1. LICEACEAE.

Fructification an aethalium, usually massive, sometimes small and sporangium-like; pseudocapillitium always present. — Fam. 2. RETICULARIACEAE.

Dictydine granules, i.e., deeply pigmented bodies on the sporangial walls and usually on the spores, always present; a portion of the sporangial wall remaining as a net enclosing the spore chamber (except in *Lindbladia*). — Fam. 3. CRIBRARIACEAE.

Family 1. LICEACEAE

Fructification of separate sporangia, small plasmodiocarps, or sporangia closely aggregated to form a pseudoaethalium. Capillitium lacking. Pseudocapillitium occasionally present.

Fructifications of separate sporangia or small plasmodiocarps; hypothallus horny, inconspicuous, often not apparent. 1. LICEA.
Fructifications densely clustered, forming a pseudoaethalium; hypothallus massive, spongy, forming a cushion or stalk. 2. TUBIFERA.

1. LICEA Schrad. Nov. Gen. Pl. 16. 1797.

Protoderma Rost. Monog. 90. 1874.
Protodermium A. Berl. in Sacc. Syll. Fung. 7: 328. 1888.
Orcadella Wingate, Proc. Acad. Phila. 1889: 280. 1889.
Protodermodium Kuntze, Rev. Gen. 867. 1891.
Hymenobolus Zukal, Oesterr. Bot. Zeits. 43: 73. 1893. Not *Hymenobolus* Dur. & Mont. 1845.
Hymenobolina Zukal, Oesterr. Bot. Zeits. 43: 133. 1893.
Kleistobolus Lippert, Verh. Zool.-Bot. Ges. Wien 44: Abh. 70. 1894.

Fructifications of small, sessile or stalked sporangia or of small plasmodiocarps. Capillitium lacking. Spores in mass usually dingy, pallid, ochraceous, olivaceous, or brownish, by transmitted light hyaline to subhyaline or rarely dark, smooth or spiny.

Type species, *Licea pusilla* Schrad.

Fructifications sessile.
- Dehiscence variable, but not circumscissile by a preformed lid.
  - Sporangia shining-black, many erect, spindle-shaped and attached by one of the narrow ends, so that they are more than twice as high as wide. *1. L. fimicola.*
  - Sporangia never erect.
    - Sporangia elongate, repent, dehiscent by a longitudinal slit into two equal portions. *2. L. biforis.*
    - Dehiscence not by a longitudinal slit.
      - Predominantly plasmodiocarpous, with occasional pulvinate sporangia. *3. L. variabilis.*
      - Predominantly pulvinate to subglobose, occasionally forming short plasmodiocarps.
        - Sporangiate, sessile on a constricted base; dehiscence irregular. *4. L. tenera.*
        - Pulvinate on a broad base; dehiscence by separation of the peridium along preformed lines.
          - Spores 13–17 μ in diameter. *5. L. pusilla.*
          - Spores under 13 μ in diameter.
            - Chestnut to pale tan; spores smooth, yellowish in mass. *6. L. castanea.*
            - Dark chestnut to black; spores minutely roughened, dingy in mass. *7. L. minima.*
- Dehiscence circumscissile by a preformed lid.
  - Sporangia dark gray, subgelatinous when fresh, drying rugose, black, and horny. *8. L. parasitica.*
  - Sporangia bright coppery-brown, the wall membranous. *9. L. Kleistobolus.*

Fructification stipitate.
- Stalk thick, relatively short; dehiscence irregular. *10. L. pedicellata.*
- Stalk slender, relatively long; dehiscence by a lid. *11. L. operculata.*

1. Licea fimicola Dearness & Bisby in Bisby, Buller & Dearness, Fungi Manit. 52. 1929.

Sporangia scattered or gregarious, spindle-shaped and then frequently erect to oval, or rounded and pulvinate, 0.1–0.5 mm. high, 0.05–0.2 mm. wide; peridium membranous, shining, smooth, reddish-purple at first, becoming black; dehiscence irregular or by a longitudinal slit; spore-mass dingy to dark; spores by transmitted light hyaline, smooth, with a thick wall and faint pinkish contents, 11–15 μ in diameter; plasmodium pale pink.

TYPE LOCALITY: Winnipeg, Manitoba.
HABITAT: On old dung in a culture chamber.
DISTRIBUTION: Known only from the type locality.
NOTE: This description is based upon reexamination of a portion of the type collection (*Dearness 6658*). A second collection (Man. Agr. Coll. 4047) is externally similar but has much larger and darker spores, up to 19 μ in diameter, with coarse fugaceous spines over part of the surface, often forming a reticulate pattern, and with scanty, but distinct capillitium-like extensions from the sporangium wall into the spore chamber. Pending further study, it is regarded as doubtfully referable to this species.

2. **Licea biforis** Morgan, Jour. Cinc. Soc. Nat. Hist. 15: 131. 1893.

Sporangia scattered, gregarious, sessile on a narrow base, ellipsoid or fusiform, compressed, occasionally branched, 0.2–0.5 mm. long and 0.05–0.1 mm. wide; walls firm, thin, smooth, glossy yellow-brown, opaque, with minute scattered granules on the inner surface; dehiscence by a longitudinal fissure dividing the peridium into two equal parts which remain attached at the base; spores yellow-brown in mass, very minutely roughened, almost colorless by transmitted light, globose, 9–12 μ in diameter; plasmodium watery-white, then grayish.

TYPE LOCALITY: Ohio.
HABITAT: Dead bark, especially the inner side while still attached to wood.
DISTRIBUTION: New York and Pennsylvania to Ontario and Kansas; Poland; eastern Asia.
ILLUSTRATIONS: Jour. Cinc. Soc. Nat. Hist. 15: *pl. 3, f. 1;* Lister, Mycet. ed. 3. *pl. 149, g–k;* Macbr. & Mart. Myxom. *pl. 15, f. 375, 376;* Univ. Iowa Stud. Nat. Hist. 14[8]: *pl. 6, f. 46.*

3. **Licea variabilis** Schrad. Nov. Gen. Pl. 18. 1797.

Licea flexuosa Pers. Syn. Fung. 197. 1801.
Tubulina flexuosa Poir. in Lam. Encyc. 8: 131. 1808.
Licea alutacea Wallr. Fl. Crypt. Germ. 2: 344. 1833.

Fructfication plasmodiocarpous, elongate to annulate, 0.3–1 mm. wide, 1–10 mm. in length, often branching or irregular or merely pulvinate, varying in color from bright ochraceous to dull black; hypothallus well developed, dull yellow; peridium of two layers, the inner thin, membranous, transparent, iridescent, the outer sometimes lacking or scanty, typically thick, dark, opaque; dehiscence irregular; spores pale olivaceous in mass, pallid under a lens, globose or slightly irregular or angular, thick-walled, with a thinner area of dehiscence, minutely spinulose, 12–15 μ in diameter; plasmodium dull yellow or rose.

TYPE LOCALITY: Germany.
HABITAT: Dead wood, especially of conifers, and old herbaceous stems.
DISTRIBUTION: Nova Scotia to Pennsylvania, west to Washington and Oregon; Europe.
ILLUSTRATIONS: Schrad. Nov. Gen. Pl. *pl. 6, f. 5, 6;* Lister, Mycet. ed. 3. *pl. 148, a–c;* Hattori, Myxom. Nasu *pl. 11, f. 2.*
EXSICCATI: Jaap, Myxom. Exs. *16, 75, 137, 160;* Hintikka, Myxogast. Fenn. *10.*

4. **Licea tenera** Jahn, Ber. Deuts. Bot. Ges. 36: 665. 1919.

Sporangia sessile on a constricted base, subglobose or ovoid, 0.1–0.5 mm. in diameter, bright yellow-brown or darker from superficial deposits; peridium transparent, yellow-brown when free from refuse matter; dehiscence irregular; spores pale olive-yellow by transmitted light, minutely spinulose, often with a thinner area on one side, 10–12 μ in diameter.

TYPE LOCALITY: Bavaria.
HABITAT: Dead wood and dung.
DISTRIBUTION: Ontario, Iowa, Kansas, Oregon; Europe.
ILLUSTRATIONS: Ber. Deuts. Bot. Ges. 36: *pl. 18, f. 4–6;* Lister, Mycet. ed. 3. *pl. 219, h–k.*

5. **Licea pusilla** Schrad. Nov. Gen. Pl. 19. 1797.

Tubulina pusilla Poir. in Lam. Encyc. 8: 131. 1808.
Physarum Licea Fries, Syst. Myc. 3: 143. 1829.
Protoderma pusilla Rost. Monog. 90. 1874.
Protodermium pusillum A. Berl. in Sacc. Syll. Fung. 7: 328. 1888.
Protodermodium pusillum Kuntze, Rev. Gen. 867. 1891.

Sporangia sessile, gregarious, globose-pulvinate on a constricted base, 0.2–1 mm. in diameter, dark purplish-brown, shining; peridium thin, dark, translucent; dehiscence from above into

lobes; spores dark olive in mass, light olivaceous-brown by transmitted light, smooth or nearly so, the wall thinner on one side, 13–17 μ in diameter; plasmodium watery-brown or dull yellow.

TYPE LOCALITY: Germany.
HABITAT: Dead wood.
DISTRIBUTION: Vermont, Pennsylvania, Ontario, North Carolina, Iowa; Europe.
ILLUSTRATIONS: Schrad. Nov. Gen. Pl. *pl. 6, f. 4;* Lister, Mycet. ed. 3. *pl. 149, a–c.*

6. **Licea castanea** G. Lister, Jour. Bot. 49: 61. 1911.

Sporangia scattered, sessile, subglobose to elongate-pulvinate, 0.2–0.9 mm. long, 0.2–0.4 mm. wide, chestnut or pale brown, smooth or wrinkled; sporangial wall somewhat cartilaginous, nearly colorless or pale brown, overlaid by a more or less continuous layer of brown granules; dehiscence along definite preformed sutures forming plates or lobes whose margins are often marked with a row of minute warts about 1 μ in diameter; spores olive-yellow in mass, almost colorless by transmitted light, smooth, the walls thinner on one side, 8–10 μ in diameter.

TYPE LOCALITY: Scotland.
HABITAT: Inner bark of trees.
DISTRIBUTION: New York; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 219, e–g.*

7. **Licea minima** Fries, Syst. Myc. 3: 199. 1829.

Phelonites minima Fries, Summa Veg. Scand. 459. 1849.
Tubulina minima Massee, Monog. 36. 1892.

Sporangia scattered or gregarious, sessile, pulvinate, angular, 0.1–0.4 mm. in diameter, umber or reddish-brown to nearly black; peridum opaque, breaking open along preformed sutures, forming segments with dotted margins, finally widely reflexed; spores reddish-brown in mass, paler, olivaceous by transmitted light, the wall thinner on one side, minutely roughened, 10–13 μ in diameter; plasmodium watery-drab or gray, then yellow.

TYPE LOCALITY: Sweden.
HABITAT: Dead wood, mainly of conifers; also on old fungi.
DISTRIBUTION: Eastern United States and Canada to Alabama and California; Europe; Japan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 148, d–f;* Hattori, Myxom. Nasu *pl. 22, f. 1.*
EXSICCATI: Thaxter, Rel. Farl. *406.*

8. **Licea parasitica** (Zukal) G. W. Martin, Mycologia 34: 702. 1942.

Hymenobolus parasiticus Zukal, Oesterr. Bot. Zeits. 43: 73. 1893.
Hymenobolina parasitica Zukal, Oesterr. Bot. Zeits. 43: 133. 1893.
Licea singularis Jahn, Ber. Deuts. Bot. Ges. 36: 665. 1919.
Orcadella parasitica Hagelst. Mycologia 34: 258. 1942.
Orcadella singularis Sant. Sv. Bot. Tidsk. 42: 46. 1948.

Sporangia solitary, scattered or gregarious, subglobose, pulvinate or occasionally somewhat plasmodiocarpous, 0.05–0.2 mm. in diameter, dark brownish-gray, opaque, glossy, typically opening by a well defined, smooth or areolate lid, or sometimes, when the lid is lacking, by apical and irregular dehiscence; wall thick, gelatinous, minutely papillose within, especially on the lid, the lower portion thickly charged with refuse matter; spores brown in mass, subglobose, smoky-brown on one side, pallid on the other, 11–16 μ in diameter; plasmodium sordid-rose.

TYPE LOCALITY: Austria.
HABITAT: On lichens and algae and on the bare bark of trees.
DISTRIBUTION: Vermont to West Virginia, Iowa, and Missouri, probably throughout temperate North America; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 217, h–k;* Macbr. & Mart. Myxom. *pl. 16, f. 397, 398.*

9. **Licea Kleistobolus** G. W. Martin, Mycologia 34: 702. 1942.

Kleistobolus pusillus Lippert, Verh. Zool.-Bot. Ges. Wien 44: Abh. 70. 1894. Not *Licea pusilla* Schrad. 1797.
Orcadella pusilla Hagelst. Mycologia 34: 258. 1942.

Sporangia gregarious, sessile, discoid, rarely subglobose, circular or ellipsoid in outline, 0.04–0.15 mm. in diameter, bright yellow-brown, sometimes opaque, especially at the base,

from waste deposits, the upper margin bordered by a minute row of tubercles; operculum thin, membranous, pellucid, iridescent, with a convex center bearing on its lower surface blunt, cylindrical outgrowths, with coarse tubercles toward the margin; capillitium none; spores lilaceous or pinkish in mass, nearly colorless under a lens, smooth, but often carrying granular deposits, mostly 9–13 μ in diameter; plasmodium watery-blackish-brown.

TYPE LOCALITY: Austria.
HABITAT: Wood, especially coniferous.
DISTRIBUTION: New York, Pennsylvania, Iowa, Colorado; Austria; Poland.
ILLUSTRATIONS: Bull. Acad. Polon. 1926: *pl. 20;* Macbr. & Mart. Myxom. *pl. 21, f. 555–558.*

10. **Licea pedicellata** (H. C. Gilbert) H. C. Gilbert; G. W. Martin, Mycologia 34: 702. 1942.

Hymenobolina pedicellata H. C. Gilbert, Univ. Iowa Stud. Nat. Hist. 16: 153. 1934.

Sporangia widely scattered, globose, stipitate or occasionally sessile, dark brown or black, 75–175 μ in diameter; stipe thick, furrowed, opaque, stuffed with waste material, dark or the color of the substratum, 100–250 μ in height; peridium membranous, granular within, continuous with the stipe and forming a distinct wall between stipe and sporangium, on drying becoming wrinkled and breaking up into irregular plates, the ridges marking the lines of dehiscence; spores globose, dark brown in mass, light brown by transmitted light, with a colorless area, contents rose-tinted, smooth or faintly warted, 12–14 μ in diameter.

TYPE LOCALITY: Milford, Iowa.
HABITAT: In moist chambers on bark from living trees.
DISTRIBUTION: Iowa, Minnesota.
ILLUSTRATION: Univ. Iowa Stud. Nat. Hist. 16: 154.

11. **Licea operculata** (Wingate) G. W. Martin, Mycologia 34: 702. 1942.

Orcadella operculata Wingate, Proc. Acad. Phila. 1889: 280. 1889.

Sporangia scattered, stalked, rarely sessile, urn-shaped or subglobose, dull brown or blackish, 0.1–0.3 mm. in diameter, with a membranous, yellow, iridescent or vernicose lid; total height 0.4–1 mm.; stalk subcylindric, attenuate above, rough, furrowed, nearly black; spores yellowish in mass, colorless by transmitted light, globose, smooth, 8-11 μ in diameter; plasmodium dull orange.

TYPE LOCALITY: Philadelphia, Pennsylvania.
HABITAT: Bark.
DISTRIBUTION: Maine, New Hampshire, Vermont, Pennsylvania, Minnesota, Iowa; Panama; Europe; Japan.
ILLUSTRATION: Lister, Mycet. ed. 3 *pl. 149, d–f;* Hattori, Myxom. Nasu *pl. 14, f. 1.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2497.*

2. TUBIFERA J. F. Gmel. Syst. Nat. 2: 1472. 1791.

Tubulina Pers. Neues Mag. Bot. 1: 91. 1794.

Sporangia cylindric or ellipsoid, connate on a thick, spongy hypothallus, forming a pseudoaethalium. Walls membranous, granular, persistent. Dehiscence apical. Capillitium lacking. Pseudocapillitium regularly present in one species, occasionally represented in the others as threadlike processes presumably derived from the walls of abortive sporangia.

Type species, *Stemonitis ferruginosa* Batsch.

Pseudocapillitium lacking.
  Hypothallus expanded; spores 6–8 μ in diameter. *1. T. ferruginosa.*
  Hypothallus stalk-like; spores under 6 μ in diameter. *2. T. microsperma.*
Pseudocapillitium present, appearing like a columella and frequently connected by strands to the wall of the sporangium. *3. T. Casparyi.*

1. Tubifera ferruginosa (Batsch) J. F. Gmel. Syst. Nat. 2: 1472. 1791.

Stemonitis ferruginosa Batsch, Elench. Fung. Contin. 1: 261. 1786.
Lycoperdon favaceum Schrank, Baier. Fl. 2: 667. 1789.
Sphaerocarpus cylindricus Bull. Hist. Champ. Fr. 140. 1791.
Sphaerocarpus fragiformis Bull. Hist. Champ. Fr. 141. 1791.
Tubifera cylindrica J. F. Gmel. Syst. Nat. 2: 1472. 1791.
Tubifera fragiformis J. F. Gmel. Syst. Nat. 2: 1472. 1791.
Tubulina fragiformis Pers. Neues Mag. Bot. 1: 91. 1794.
Tubulina coccinea Trent. in Roth, Catalecta Bot. 1: 243. 1797.
Licea Tubulina Schrad. Nov. Gen. Pl. 16. 1797.
Licea clavata Schrad. Nov. Gen. Pl. 18. 1797.
Tubulina fallax Pers. Obs. Myc. 2: 28. 1799.
Tubulina cylindrica DC. Fl. Fr. 2: 249. 1805.
Tubulina fragifera Poir. in Lam. Encyc. 8: 130. 1808.
Licea fragiformis Nees, Syst. Pilze Schw. 107. 1816.
Licea cylindrica Fries, Syst. Myc. 3: 195. 1829.
Licea iricolor Zoll.; Zoll. & Mor. Nat. Geneesk. Arch. Neêrl.-Ind. 1: 376. 1844.
Tubulina conglobata Preuss, Linnaea 24: 140. 1851.
Licea rubiformis Berk. & Curt. Proc. Am. Acad. 4: 125. 1859.
Tubulina nitidissima Berk. Jour. Linn. Soc. 18: 387. 1881.
Tubulina speciosa Speg. Atti. Soc. Critt. Ital. 3: 62. 1881.

Sporangia cylindric to ovoid, to 5 mm. tall and 0.4 mm. wide, usually crowded and angular from pressure, forming a pseudoaethalium to 15 cm. or more in extent, sometimes loosely clustered, pale umber to deep reddish-brown or purplish-brown; peridium thin, translucent, iridescent, persistent; dehiscence apical or, when the sporangia are closely compacted, by the breaking away of their tips as lids; hypothallus well developed, cellular to spongy, colorless or pallid until colored by the spores; spores umber-brown in mass, pallid by transmitted light, globose, reticulate over about three-fourths of the surface, 6–8 μ in diameter; plasmodium colorless or white, becoming rose, then brown, before fruiting.

TYPE LOCALITY: Germany.
HABITAT: Dead wood, leaves, or litter.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Batsch, Elench. Fung. Contin. 1: *pl. 30, f. 175 a,b;* Bull. Herb. Fr. *pl. 384, 470, f. 3;* Massee, Monog. *pl. 1, f. 1;* Lister, Mycet. ed. 3. *pl. 150, a–c;* Univ. Iowa Stud. Nat. Hist. **14**[8]: *pl. 6, f. 43;* Hattori, Myxom. Nasu *pl. 13, f. 5;* Hagelst. Mycet. N. Am. *pl. 12, f. 6.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2096;* Jaap, Myxom. Exs. *36;* Brândză, Myxom. Roum. II. 2: *42*(NY); *22*(IU); Hintikka, Myxogast. Fenn. *20;* Thaxter, Rel. Farl. *816.*

2. Tubifera microsperma (Berk. & Curt.) G. W. Martin, Mycologia 39: 461. 1947.

Licea stipitata Berk. & Rav.; Berk. & Curt. Proc. Am. Acad. 4: 125. 1860. Not *L. stipitata* DC. 1815.
Licea microsperma Berk. & Curt.; Berk. Grevillea 2: 68. 1873.
Tubulina stipitata Rost. Monog. 223. 1875.
Tubifera stipitata Macbr. N. Am. Slime-Moulds 157. 1899.

Sporangia angular-cylindric, to 4 mm. tall and 0.4 mm. wide, crowded into a subglobose or hemispheric pseudoaethalium upon a spongy, stem-like, sulcate hypothallus 2–6 mm. tall; peridium thin, translucent, evanescent; total height to 10 mm.; spores umber-brown in mass, reticulate over about two-thirds of the surface, globose, 4.5–5.5 μ in diameter; plasmodium white, then red.

TYPE LOCALITY: South Carolina.
HABITAT: Dead wood.
DISTRIBUTION: Widely distributed in temperate and tropical North America; Hawaii; South America; tropical Asia; Japan.
ILLUSTRATIONS: Rost. Monog. *pl. 1, f. 2;* Lister, Mycet. ed. 3. *pl. 150, d–e.*

3. Tubifera Casparyi (Rost.) Macbr. N. Am. Slime-Moulds 157. 1899.

Siphoptychium Casparyi Rost. Monog. Append. 32. 1876.

Sporangia angular, cylindric, brown, to 3 mm. tall and 0.4 mm. wide, closely compacted into a pseudoaethalium varying in extent from 5 mm. to 10 cm. or more; peridium firm, persistent, iridescent, granular; hypothallus pallid, spongy, broad, rather thin; pseudocapillitium

present in many sporangia as a columella-like central body, probably representing an abortive sporangium, sometimes a simple spine, more often connected with the wall by tubular processes or threads; spores umber-brown in mass, pale brown by transmitted light, reticulate over three-fourths of the surface, 7.5–9 μ in diameter; plasmodium white, changing to dull gray, then umber.

TYPE LOCALITY: Europe.
HABITAT: Dead wood.
DISTRIBUTION: Throughout North America; Europe; Japan.
ILLUSTRATIONS: Rost. Monog. Append. *f. 245;* Lister, Mycet. ed. 3. *pl. 150, f–h.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2092;* Brândză, Myxom. Roum. *23*(IU); Thaxter, Rel. Farl. *425.*

Family 2. RETICULARIACEAE

Fructification an aethalium, in *Alwisia* stalked and sporangium-like. Capillitium lacking. Pseudocapillitium always present in the form of simple or branched tubes, threadlike portions of internal walls, or frayed or perforated membranes. Spores brown or pallid in mass, subhyaline by transmitted light.

Aethalia stalked, sporangium-like, usually clustered; pseudocapillitium of rigid tubes projecting in brush-like fashion after dehiscence. 1. ALWISIA.
Aethalia sessile.
  Globose or subglobose, resembling puff-balls; pseudocapillitium of colorless, branching tubes. 2. LYCOGALA.
  Pulvinate or expanded, forming typical aethalia.
    Surface composed of tessellate plates representing lids of merged sporangia; pseudocapillitium of threads depending from the lids. 3. DICTYDIAETHALIUM.
    Surface not tessellate; pseudocapillitium of frayed or perforated membranes.
      Pseudocapillitium arising from the base of the aethalium as dendroid columns fraying out above and scantily attached to the upper part of the cortex. 4. RETICULARIA.
      Pseudocapillitium a uniform mass of perforated plates, sometimes with frayed margins, attached to all parts of the cortex. 5. ENTERIDIUM.

1. ALWISIA Berk. & Br. Jour. Linn. Soc. 14: 86. 1873.

Aethalia (sporangia) ellipsoid or obovate, clustered, stalked. Upper part of the peridium dehiscent, exposing a central brush-like cluster of stiff, bristle-like pseudocapillitial threads. Spores brownish.

Type species, *Alwisia bombarda* Berk. & Br.

1. Alwisia bombarda Berk. & Br. Jour. Linn. Soc. 14: 87. 1873.

Prototrichia bombarda Massee, Monog. 128. 1892.

Aethalia ovate-cylindric, dull reddish-brown or pallid, 1–1.5 × 0.5 mm., stipitate, the stalks coalescent, forming clusters of 4–8; total height about 4 mm.; peridium evanescent above, the lower half persisting as a cup; pseudocapillitium composed of a cluster of rigid, tubular threads, mostly unbranched except near the base of the cup, where they are attached, and protruding in brush-like fashion after dehiscence, nearly smooth or finely spinulose and often with bulbous enlargements, attached at the tips to the peridium before dehiscence; spores reddish-brown, faintly reticulate over two-thirds of the surface, 5–6 μ in diameter; plasmodium watery-white.

TYPE LOCALITY: Ceylon.
HABITAT: Dead wood.
DISTRIBUTION: Blue Mountains, Jamaica; Ceylon; the Malay Peninsula; Sumatra.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 151.*

2. LYCOGALA Micheli; Adans. Fam. Pl. 2: 7. 1763.

Galeperdon Weber; Wiggers, Prim. Fl. Holsat. 108. 1780.
Diptherium Ehrenb. Sylvae Myc. Berol. 26. 1818.

Fructification an aethalium. Peridium tough, externally vesiculose, traversed by interlacing tubular structures which pierce the homogeneous inner layer and merge with the tubes of the pseudocapillitium; pseudocapillitium of branched or simple tubes, variously sculptured or nearly smooth. Spores gray or pinkish in mass, colorless by transmitted light.

Type species, *Lycoperdon Epidendrum* L.

Aethalia large, mostly 2–4 cm. in diameter, sometimes larger; peridium hard, smooth, brittle. 1. *L. flavofuscum.*
Aethalia rarely over 12 mm. in diameter; peridium rough or warted, fragile.
Aethalia conic; peridial warts usually forming a coarse reticulate pattern. 2. *L. conicum.*
Aethalia subglobose; peridial pattern not markedly reticulate.
Pallid to blackish, 3–12 mm. in diameter; cortex minutely roughened to warted. 3. *L. Epidendrum.*
Dark brown to black, 2–5 mm. in diameter; peridium marked with black, scale-like warts, often tessellate. 4. *L. exiguum.*

1. Lycogala flavofuscum* (Ehrenb.) Rost; Fuckel, Jahrb. Nass. Ver. Nat. 27–28: 68. 1873.

Diphtherium flavofuscum Ehrenb. Sylvae Myc. Berol. 27. 1818.
Reticularia flavofusca Fries, Syst. Myc. 3: 88. 1829.
Lycogala repletum Morgan, Jour. Cinc. Soc. Nat. Hist. 18: 40. 1895.
Verrucosia corticola Teng, Contr. Biol. Lab. Sci. Soc. China 7: 124. 1932.
Lycogola corticolum Teng, Contr. Biol. Lab. Sci. Soc. China 8: 143. 1932.

Aethalia solitary or in small clusters of 2–5, often only partially separated, sessile and pulvinate or rounded or, when developing on an inferior surface, pyriform and short-stalked, mostly 2–4 cm. in their largest dimension, occasionally much larger, silvery gray or ochraceous to purplish-brown; surface smooth, somewhat glossy, or minutely areolate; cortex thick, brittle; stalk when present membranous, lacunose, colorless, strand-like; pseudocapillitium of nearly colorless, branching and anastomosing tubes, wrinkled and papillose or nearly smooth, 25–60 μ in diameter in the main branches, 10–25 μ in the smaller branches, the axils expanded, the ends free, rounded; spores buff in mass, colorless by transmitted light, globose, faintly reticulate, 6–7 μ in diameter; plasmodium pale pink, becoming buff, then pallid.

TYPE LOCALITY: Germany.
HABITAT: Dead wood or living trees, often at some distance above ground.
DISTRIBUTION: Throughout North America; South America; Europe; South Africa; China.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 155.*

2. Lycogala conicum† Pers. Syn. Fung. 159. 1801.

Lycogala nitidum Berk. & Br. Jour. Linn. Soc. 14: 81. 1873.
Lycogala atropurpureum Berk. & Br. Jour. Linn. Soc. 14: 82. 1873.
Dermodium conicum Rost. Monog. 284. 1874.

Aethalia conic, sessile on broad bases or occasionally subglobose, scattered or in small clusters of 2–3, sometimes imperfectly separated, 2–4 mm. tall, 1–2 mm. broad, yellowish-brown, marked with dark, vesiculose scales often arranged in a reticulate pattern, especially above; dehiscence apical; pseudocapillitium of scarcely branched, slender, hyaline tubes, minutely roughened or nearly smooth, 3–8 μ in diameter; spores globose, yellow-brown in mass, colorless by transmitted light, minutely reticulate, 5–7 μ in diameter; plasmodium rose or scarlet.

TYPE LOCALITY: Germany.
HABITAT: Dead wood.
DISTRIBUTION: Widely distributed from Pennsylvania to Florida west to Washington and New Mexico and south to Panama; Europe; Asia.
ILLUSTRATIONS: Jour. Cinc. Soc. Nat. Hist. 15: *pl. 3, f. 5;* Lister, Mycet. ed. 3. *pl. 157;* Hattori, Myxom. Nasu *pl. 23, f. 1.*

3. Lycogala Epidendrum (L.) Fries, Syst. Myc. 3: 80. 1829.

Lycoperdon Epidendrum L. Sp. Pl. 1184. 1753.
Mucor Lycogala Scop. Fl. Carn. ed. 2. 2: 496. 1772.
Mucor fragiformis Schaeff. Fung. Bavar. 4: 132. 1774.
Lycoperdon pisiforme Jacq. Misc. Austr. 1: 137. 1778.
Lycoperdon variolossum [sic] Huds. Fl. Angl. ed. 2. 645. 1778.
Galeperdon epidendrum Weber; Wiggers, Prim. Fl. Holsat. 109. 1780.
Lycoperdon chalybeum Batsch, Elench. Fung. 155. 1783.
Lycogala miniata Pers. Neues Mag. Bot. 1: 87. 1794.

* as "flavo-fusca."
† as "conica."

Reticularia rosea DC. Bull. Soc. Philom. 1: 105. 1798.
Lycogala ferruginea Schum. Enum. Pl. Saell. 2: 192. 1803.
Reticularia minuta Poir. in Lam. Encyc. 6: 184. 1804.
Reticularia punctata Poir. in Lam. Encyc. 6: 184. 1804.
Lycogala terrestre Fries, Symb. Gast. 10. 1817.
Lycogala affine Berk. & Br. Jour. Linn. Soc. 14: 81. 1873.

Aethalia scattered or crowded, subglobose to depressed-spherical or irregular from pressure, pinkish-gray or yellowish-brown to deep olivaceous or nearly black, 3–15 mm. broad; cortex warted with yellow to brownish-black scale-like warts or merely roughened, rather thin and fragile; dehiscence apical; pseudocapillitium composed of long, branching and anastomosing flattened tubes marked with conspicuous transverse folds and wrinkles, the main branches near the origin on the inner side of the cortex 12–25 μ in diameter, the secondary branches 6–12 μ in diameter, the numerous free ends clavate or obtuse; spores at first pinkish-gray in mass, changing to pale ochraceous or pallid, by transmitted light colorless, globose, reticulate, 6–7.5 μ in diameter; plasmodium coral-red.

TYPE LOCALITY: Europe.
HABITAT: Dead wood.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Bull. Herb. Fr. *pl. 503;* Rost. Monog. *pl. 1, f. 1, 7–12;* Lister, Mycet. ed. 3. *pl. 156;* Univ. Iowa Stud. Nat. Hist. **14**[8]: *pl. 7, f. 50;* Hattori, Myxom. Nasu *pl. 4, f. 6;* Hagelst. Mycet. N. Am. *pl. 16, f. 12.*
EXSICCATI: Ellis, N. Am. Fungi *334;* Ellis & Ev. Fungi Columb. *2530;* Jaap, Myxom. Exs. *17. 54;* Brândză, Myxom. Roum. *70*(NY); *82*(IU); Hintikka, Myxogast Fenn. *11;* Thaxter, Rel. Farl. *408.*

4. **Lycogala exiguum** Morgan, Jour. Cinc. Soc. Nat. Hist. **15**: 134. 1893.

Lycogala miniatum var. *β tessellatum* Lister; Penzig, Myxom. Buitenz. 77. 1898.
Lycogala epidendrum var. *tessellatum* G. Lister in Lister, Mycet. ed. 2. 203. 1911.
Lycogala epidendrum var. *exiguum* G. Lister; Minakata, Bot. Mag. Tokyo **27**: 415. 1913.

Aethalia scattered or gregarious, subglobose, small, 2–5 mm. in diameter; cortex yellow-brown, thickly covered with dark purplish or black scale-like patches, which may be nearly confluent and which are usually divided internally into numerous chambers; dehiscence beginning by an apical tear, soon irregular; pseudocapillitium composed of colorless, branching tubules arising from the inner portion of the cortex, somewhat wrinkled transversely, 2–10 μ in diameter; spores ochraceous in mass, by transmitted light colorless, marked with faint irregular warts and lines, 5–6 μ in diameter; plasmodium probably pink or red.

TYPE LOCALITY: Ohio.
HABITAT: Dead wood.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Morgan, Jour. Cinc. Soc. Nat. Hist. 15: *pl. 3, f. 6;* Hagelst. Mycet. N. Am. *pl. 13, f. 2.*
EXSICCATI: Brândză, Myxom. Roum. *83*(IU).

3. **DICTYDIAETHALIUM** Rost. Versuch 5. 1873.

Clathroptychium Rost. Monog. 225. 1875.

Fructification at maturity an aethalium, composed of numerous closely compacted sporangia whose walls disappear completely except for the thickenings at the angles which remain as pseudocapillitial threads depending from the angular tops of the sporangia, these forming a tessellated cortex.

Type species, *Reticularia plumbea* Fries.

1. **Dictydiaethalium plumbeum** (Schum.) Rost.; Lister, Mycet. 157. 1894.

Fuligo plumbea Schum. Enum. Pl. Saell. 2: 193. 1803.
Reticularia plumbea Fries, Syst. Myc. 3: 88. 1829.
Ostracoderma spadiceum Schw. Trans. Am. Phil. Soc. II. 4: 262. 1832.
Licea rugulosa Wallr. Fl. Crypt. Germ. 2: 345. 1833.

Licea applanata Berk. Lond. Jour. Bot. 4: 67. 1845.
Lycogala lenticulare Dur. & Mont.; Durieu, Expl. Sci. Algér. Bot. 1: 401. 1848.
Reticularia entoxantha Berk. Jour. Bot. & Kew Misc. 3: 201. 1851.
Reticularia lurida Berk. & Br. Jour. Linn. Soc. 14: 82. 1873.
Licea cinnabarina Berk. & Br. Jour. Linn. Soc. 14: 86. 1873.
Licea tenuissima Berk. & Br. Jour. Linn. Soc. 14: 86. 1873.
Dictydiaethalium applanatum Rost.; Fuckel, Jahrb. Nass. Ver. Nat. 27–28: 69. 1873.
Clathroptychium rugulosum Rost. Monog. 225. 1875.
Dictydiaethalium dissiliens Hazsl. Oesterr. Bot. Zeits. 27: 85. 1877.
Clathroptychium cinnabarinum Sacc. Michelia 1: 545. 1879.
Clathroptychium Berkeleyi Massee, Monog. 53. 1892.
Clathroptychium dissiliens Massee, Monog. 53. 1892.

Fructification an aethalium at maturity, the lids and upper portions of the component sporangia forming a firm, tessellated cortex, olivaceous, ochraceous-brown, or reddish-brown to nearly black or occasionally bright red, varying in extent from a few mm. to 10 cm. or more; pseudocapillitium of threads formed from the angles of the constituent sporangia, depending from the corners of the lids but not reaching the base, the balance of the sporangial walls completely evanescent below; spores ochraceous or clay-colored, rarely bright yellow in mass, almost colorless or pale yellow by transmitted light, minutely roughened, 9–10 μ in diameter; plasmodium pink or rose-colored.

TYPE LOCALITY: Denmark.
HABITAT: Dead wood.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Rost. Monog. *pl. 2, f. 25, 28–30;* Univ. Iowa Stud. Nat. Hist. 14[8]: *pl. 8;* Lister, Mycet. ed. 3. *pl. 152;* Hattori, Myxom. Nasu *pl. 9, f. 4, 5.*
EXSICCATI: Ellis, N. Am. Fungi *335;* Brândză, Myxom. Roum. *99*(NY).

4. RETICULARIA Bull. emend. Rost. Versuch 6. 1873.

Reticularia Bull. Hist. Champ. Fr. 83, in part. 1791.
Liceopsis Torrend, Bull. Soc. Port. Sci. Nat. 2: 63. 1908.

Fructification an aethalium. Pseudocapillitium arising from the base as flattened, membranous, dendroid processes fraying out into threads above and scantily attached to the cortex above, or free. Spores brown in mass.

Type species, *Reticularia umbrina* Fries.

Aethalia small, usually under 1 mm. in diameter, sessile, densely clustered and angular from pressure; sometimes free and then rarely stalked. 1. *R. lobata.*
Aethalia large, mostly 1–10 cm. in extent. 2. *R. Lycoperdon.*

1. Reticularia lobata Lister, Mycet. 161. 1894.

Liceopsis lobata Torrend, Bull. Soc. Port. Sci. Nat. 2: 63. 1908.

Aethalia small, 0.4–1.1 mm. in diameter, rusty-brown, densely clustered and often angular from mutual pressure, sometimes solitary, rarely with a short, strand-like stalk; cortex thin, somewhat iridescent; pseudocapillitium usually scanty, of brown membranes fraying out into threads; spores globose, coarsely reticulate over about two-thirds of the surface, smooth or with a fragmentary reticulation on the balance, 6–10 μ in diameter; plasmodium hyaline.

TYPE LOCALITY: England.
HABITAT: Dead wood.
DISTRIBUTION: Minnesota, Washington, Oregon; Europe; Japan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 154, d–f.*

2. Reticularia Lycoperdon Bull. Hist. Champ. Fr. 95. 1791.

Lycogala argentea Pers. Neues Mag. Bot. 1: 87. 1794.
Lycogala turbinata Pers. Syn. Fung. 158. 1801.
Lycogala punctata Pers. Syn. Fung. 158. 1801.
Fuligo Lycoperdon Schum. Enum. Pl. Saell. 2: 193. 1803.
Reticularia argentea Poir. in Lam. Encyc. 6: 183. 1804.
Strongylium fuliginoides Ditmar, Neues Jour. Bot. Schrad. 3[3]: 55. 1809.
Reticularia umbrina Fries, Syst. Myc. 3: 87. 1829.
Reticularia jurana Meylan, Bull. Soc. Vaud. Sci. Nat. 44: 297. 1908.

Aethalia pulvinate, 2–8 cm. broad, at first silvery-white, becoming brownish; hypothallus white, forming a conspicuous margin about the base, becoming inconspicuous when powdered by the spores; pseudocapillitium arising as erect plates from the base, branching in dendroid fashion with many expansions and ending in a mass of flattened, flexuous threads almost free from the cortex; spores rusty brown in mass, free, globose or turbinate, reticulate over about two-thirds of the surface, 8–9 μ in diameter; plasmodium creamy-white.

TYPE LOCALITY: France.
HABITAT: Dead wood.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Bull. Herb. Fr. *pl. 446, f. 4; pl. 476, f. 1;* Rost. Monog. *pl. 1, f. 3, 4, 6, 13;* Massee, Monog. *pl. 12, f. 311, 312;* Lister, Mycet. ed. 3. *pl. 154, a–c;* Hattori, Myxom. Nasu *pl. 14, f. 3.*
EXSICCATI: Brândză, Myxom. Roum. I. 1: *23; 45, 106*(NY); *20*(IU).

5. ENTERIDIUM Ehrenb. Jahrb. Gewächsk. 1²: 55. 1819.

Licaethalium Rost. Versuch 4. 1873.

Fructification an aethalium. Pseudocapillitium a uniform system of perforated plates, sometimes fraying into threads at the margins, arising from and attached to all parts of the cortex. Spores brown in mass.

Type species, *Enteridium olivaceum* Ehrenb.

Spores reticulate, free; aethalium large, pulvinate, yellow-brown to purple-brown. 1. *E. Rozeanum*.
Spores warted or spinulose, clustered; aethalium varying from subplasmodiocarpous to broadly expanded, dark olivaceous to brownish-black. 2. *E. olivaceum*.

1. Enteridium Rozeanum (Rost.) Wingate, Proc. Acad. Phila. 1889: 156. 1889.

Reticularia? Rozeana Rost. Monog. Append. 33. 1876.
Reticularia splendens Morgan, Jour. Cinc. Soc. Nat. Hist. 15: 137. 1893.
Enteridium splendens Macbr. N. Am. Slime-Moulds 151. 1899.

Aethalia pulvinate, solitary or gregarious, 0.5–6 cm. broad, reddish-brown or umber; cortex tough-cartilaginous, smooth or roughened; hypothallus white, usually forming a conspicuous ring about the base of the aethalium; pseudocapillitium a uniform network of anastomosing perforated plates arising from base and cortex and remaining attached, sometimes with frayed margins or lobes; spores brown in mass, pale brownish-yellow by transmitted light, distinctly reticulate over about two-thirds of the surface, the remainder finely warted, 7–9 μ in diameter; plasmodium watery-white, changing through rose to brown.

TYPE LOCALITY: Paris, France.
HABITAT: Dead wood.
DISTRIBUTION: Throughout North America; Europe; Japan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 153, e–g;* Univ. Iowa Stud. Nat. Hist. 14³: *pl. 6, f. 44;* Hattori, Myxom. Nasu *pl. 11, f. 1;* Hagelst. Mycet. N. Am. *pl. 16, f. 11.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *3298*; Brândză, Myxom. Roum. *24*(IU).

2. Enteridium olivaceum Ehrenb. Jahrb. Gewächsk. 1²: 57. 1819.

Reticularia versicolor Fries, Syst. Orbis Veg. 147. 1825.
Reticularia olivacea Fries, Syst. Myc. 3: 89. 1829.
Enteridium atrum Preuss, Linnaea 24: 142. 1851.
Reticularia applanata Berk. & Br. Ann. Mag. Nat. Hist. III. 18: 56. 1866. Not *R. applanata* Schw. 1832.
Licea olivacea Fuckel, Jahrb. Nass. Ver. Nat. 23–24: 338. 1870.
Licaethalium olivaceum Rost. Monog. 227, as syn. 1875.
Enteridium simulans Rost. Monog. Append. 40. 1876.
Enteridium Rostrupii Raunk, Bot. Tidssk. 17: 48. 1888.
Enteridium macrosporum Raunk. Bot. Tidssk. 17: 48. 1888.

Aethalium depressed, oval, elongate or broadly effused, 1 mm. to 5 cm. or more in extent, 0.6–3 mm. thick, smooth or rugulose, dark olive-brown or greenish-olive; hypothallus thin, membranous, transparent, often surrounding the fructification as a white margin; pseudocapillitium of thin, olivaceous, perforated plates; spores dark olivaceous in mass, pale olive or brown

by transmitted light, mostly in clusters of 2–20, occasionally free, distinctly warted on the free end, smooth elsewhere, flattened or angular from pressure, 10–12 μ in diameter; plasmodium rosy.

TYPE LOCALITY: Germany.
HABITAT: Dead wood, especially of conifers.
DISTRIBUTION: New Hampshire to New Jersey and west to Washington and California, rare in the east; Europe.
ILLUSTRATIONS: Massee, Monog. *pl. 1, f. 14–18;* Lister, Mycet. ed. 3. *pl. 153, a–c.*
EXSICCATI: Jaap, Myxom. Exs. *76.*

DOUBTFUL AND EXCLUDED SPECIES.

ENTERIDIUM LICEOIDES G. Lister, Guide Brit. Mycet. ed. 4.48. 1919. Reported from New Hampshire on the basis of a collection since referred to *Dianema corticatum* Lister.

ENTERIDIUM MINUTUM Sturgis, Mycologia 9: 329. 1917. Known only from the type collection, Colorado. Probably a small, pale phase of *E. olivaceum.*

Family 3. CRIBRARIACEAE

Sporangiate or, in one genus, varying to aethalioid. Sporangial wall membranous, dotted with numerous dark dictydine granules, some of which usually occur on the spores. Peridium fragile, fugacious except for net-like thickenings which typically remain as an enclosure about the spore chamber. Capillitium none. Spores yellow, brown, red, or purple in mass, pale by transmitted light.

Aethalioid, varying from closely massed sporangia to a pseudoaethalium or an aethalium; net lacking or rarely, in free sporangia, imperfectly developed. 1. LINDBLADIA.
Sporangiate; net well developed.
  Threads of the net short, meeting at usually thickened or expanded nodes. 2. CRIBRARIA.
  Main threads of the net longitudinal, subparallel, connected by delicate transverse threads. 3. DICTYDIUM.

1. LINDBLADIA Fries, Summa Veg. Scand. 449. 1849.

Hypothallus thick, spongy. Fructification varying from a pulvinate aethalium with a continuous cortex through a pseudoaethalium to a cluster of sessile or substipitate sporangia. Dictydine granules present. Net lacking or rarely, in sporangiate forms, imperfectly developed. Spores olivaceous in mass.

Type species, *Lindbladia Tubulina* Fries.

1. Lindbladia effusa (Ehrenb.) Rost.; Fuckel, Jahrb. Nass. Ver. Nat. 27–28: 68. 1873.

Licea effusa Ehrenb. Sylvae Myc. Berol. 26. 1818.
Aethalium melaenum Chev. Fung. Byss. Illust. 1: *pl. 32.* 1837.
Lindbladia Tubulina Fries, Summa Veg. Scand. 449. 1849.
Aethalium atrum Preuss, Linnaea 24: 141. 1851.
Licea spermoides Berk. & Curt.; Berk. Grevillea 2: 68. 1873.
Physarum caespitosum Peck, Ann. Rep. N.Y. State Mus. 26: 75. 1874.
Perichaena caespitosa Peck, Ann. Rep. N.Y. State Mus. 31: 57. 1879.
Tubulina spermoides Massee, Monog. 37. 1892.
Tubulina effusa Massee, Monog. 41. 1892.
Tubulina caespitosa Massee, Monog. 43. 1892.

Fructification aethalioid to sporangiate, on a dark, spongy, broadly effused and continuous hypothallus; aethalia pulvinate, dark olivaceous-brown to nearly black, covered with a thick cortex which may be merely roughened or may be tessellate; sporangiate forms varying from pseudoaethalia to densely clustered or, less commonly, gregarious sporangia, 0.3–0.7 mm. in diameter, bright olivaceous-brown to blackish, often more or less iridescent; entire fructification 2–20 cm. or more in extent, the membranes thickly dotted with dictydine granules, in the aethalioid forms remaining after dehiscence as a pseudocapillitium; net lacking or occasionally imperfectly developed as reticulate thickenings of the peridium in the sporangiate phase; spores olivaceous-brown in mass, pallid by transmitted light, globose, faintly warted, 6–7.5 μ in diameter; plasmodium nearly black.

TYPE LOCALITY: Germany.
HABITAT: Coniferous wood and sawdust.
DISTRIBUTION: Temperate North America in conifer forest areas; Europe; Ceylon; Japan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 137;* Univ. Iowa Stud. Nat. Hist. 14:[3] *pl. 6, f. 42,* [illegible] *7, f. 56.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2700;* Ellis & Ev. Fungi Columb. *1397;* Brândză, Myxom. Roum. *43, 44*(NY); *75, 76*(IU); Thaxter, Rel. Farl. *407.*

2. CRIBRARIA Pers. Neues Mag. Bot. 1: 91. 1794.

Sporangiate, globose or pyriform, usually stalked, sometimes sessile. Sporangial wall thickened above and sometimes below in net-like fashion, at maturity fugacious except for the net and often the cup-like lower portion of the sporangium. Dictydine granules present on the cup and net and usually on the spores.

Type species, *Cribraria rufescens* Pers.

Sporangia ochraceous or brown to dull black, sometimes with purplish or ferruginous shades but never bright red or purple.
- Sporangia sessile or sometimes short-stipitate, densely crowded or closely gregarious; net weak, easily detached. — 1. *C. argillacea.*
- Sporangia stipitate, gregarious or scattered; net persistent.
  - Cup lacking or rudimentary.
    - Cup replaced by firm ribs, usually 8–15, radiating from the tip of the stalk, occasionally partially connected by delicate membranes. — 2. *C. splendens.*
    - Cup entirely lacking or represented by a disk-like expansion at the tip of the stalk.
      - Sporangia minute, under 0.3 mm. in diameter; stalk long and slender, more than 6 times the diameter of the sporangium. — 3. *C. microcarpa.*
      - Sporangia larger, mostly 0.4–0.7 mm. in diameter; stalk stout, usually less than 6 times the diameter of the sporangium; cup often present. — 4. *C. intricata.*
  - Cup typically present and distinct.
    - Margin between the net and the cup not distinct, the perforated margin of the cup merging into the reticulations of the net. — 5. *C. macrocarpa.*
    - Margin between the net and the cup clearly defined.
      - Spores warted and reticulate; sporangia dark purplish-brown. — 6. *C. dictyospora.*
      - Spores warted, spinulose, or smooth.
        - Cup with concentric, more or less netted corrugations both inside and out; sporangia blackish. — 7. *C. atrofusca.*
        - Cup without concentric corrugations; sporangia rarely blackish.
          - Stalk relatively long, usually more than 4 times the diameter of the sporangium.
            - Aspect nut-brown, with copper-colored or violaceous shades; spores reddish in mass; sporangia under 0.3 mm. in diameter. — 8. *C. languescens.*
            - Aspect yellow-brown or ochraceous; spores ochraceous in mass; sporangia usually larger.
              - Stalk very long and slender; free ends few or lacking in the net. — 9. *C. tenella.*
              - Stalk relatively stout; free ends numerous in the net; cup often lacking. — 4. *C. intricata.*
          - Stalk relatively short, usually less than 4 times the diameter of the sporangium.
            - Sporangia minute, 0.1–0.3 mm. in diameter, bright yellow to orange; cup occasionally lacking. — 10. *C. minutissima.*
            - Sporangia larger.
              - Granules large, 2–2.5 μ in diameter; cup, net, and stalk brownish, rarely black. — 11. *C. piriformis.*
              - Granules smaller, 2 μ or less in diameter.
                - Aspect dull orange or ferruginous; net lax and irregular with flat nodes. — 12. *C. rufa.*
                - Aspect without ferruginous tints.
                  - Spore-mass bright yellow to bright ochraceous; meshes small; on wood. — 13. *C. aurantiaca.*
                  - Spore-mass dull ochraceous; meshes very large; on leaves or small twigs. — 14. *C. laxa.*

Sporangia bright red or purple to dark metallic purple.
- Sporangia very small, 0.1–0.3 mm. in diameter, deep purple, shining. — 15. *C. violacea.*
- Sporangia larger and paler.
  - Sporangia bright rose-purple.
    - Net regular, with small meshes; sporangia mostly 0.3–0.5 mm. in diameter. — 16. *C. elegans.*
    - Net irregular, meshes large; sporangia mostly 0.6–1.2 mm. in diameter. — 17. *C. purpurea.*
  - Sporangia brick-red to deep purplish-red; cup ragged, strongly ribbed, 1–1.5 mm. in diameter. — 18. *C. ferruginea.*

1. Cribraria argillacea (Pers.) Pers. Neues Mag. Bot. 1: 91. 1794.

Stemonitis argillacea Pers.; J. F. Gmel. Syst. Nat. 2: 1469. 1791.
Cribraria Micropus Schrad. Nov. Gen. Pl. 3. 1797.
Trichia argillacea Poir. in Lam. Encyc. 8: 55. 1808.

Sporangia dull ochraceous to olivaceous, globose to obovate, 0.5–1 mm. in diameter, sessile or short-stipitate, densely crowded or closely gregarious; peridium fugacious above except for a weak, easily detached net without nodal thickenings; lower portion remaining as a deep cup, usually membranous above, thicker below and marked with ribs or reticulations; dictydine granules small, 0.5–1.5 μ in diameter, irregular, brown; stalk, when present, usually short, sometimes up to 1 mm. long, furrowed, dark brown to black, arising from a well developed hypothallus; spores clay-colored in mass, pallid by transmitted light, 6–7.5 μ in diameter; plasmodium lead-colored.

TYPE LOCALITY: Europe.
HABITAT: Dead wood.
DISTRIBUTION: Throughout North America; Europe; South Africa.
ILLUSTRATIONS: Schrad. Nov. Gen. Pl. *pl. 2, f. 1–2;* Lister, Mycet. ed. 3. *pl. 138.*
EXSICCATI: Brândză, Myxom. Roum. IIb: *24*(NY); Ellis & Ev. N. Am. Fungi *2899;* Jaap, Myxom. Exs. *51, 136, 157, 198.*

2. Cribraria splendens (Schrad.) Pers. Syn. Fung. 191. 1801.

Dictydium splendens Schrad. Nov. Gen. Pl. 14. 1797.
Trichia splendens Poir. in Lam. Encyc. 8: 55. 1808.

Sporangia gregarious, globose, 0.3–0.7 mm. in diameter, ochraceous when filled with spores, dull or dusky brown when these are discharged, stipitate; stalk long, 3–4 times the diameter of the sporangium, subulate, erect or nodding, purplish-brown; hypothallus small; net brown, with large meshes, imperfectly defined, flattened nodes, and flattened threads; dictydine granules small; cup none, its place supplied by nine or ten distinct, firm ribs which radiate from the stipe and support the net, branching to blend with its reticulations, occasionally partially connected by a delicate, hyaline membrane; spores ochraceous in mass, colorless by transmitted light, smooth or nearly so, 6–7 μ in diameter; plasmodium lead-colored.

TYPE LOCALITY: Germany.
HABITAT: Dead wood.
DISTRIBUTION: Widely distributed in North America especially in regions of coniferous forest; Europe; Asia.
ILLUSTRATIONS: Schrad. Nov. Gen. Pl. *pl. 4, f. 5, 6;* Lister, Mycet. ed. 3. *pl. 141, e–h.*
EXSICCATI: Jaap, Myxom. Exs. *180.*

3. Cribraria microcarpa (Schrad.) Pers. Syn. Fung. 190. 1801.

Dictydium microcarpum Schrad. Nov. Gen. Pl. 13. 1797.
Trichia microcarpa Poir. in Lam. Encyc. 8: 54. 1808.

Sporangia scattered, yellow-ochraceous, globose, stipitate, nodding, 0.1–0.3 mm. in diameter; cup none, the net arising directly from the stalk, the meshes large, mostly rectangular, a few triangular; the nodes thickened, rounded, small, dark brown, granular; the connecting threads stout, transparent, with few or no free ends; stalk dark purplish-brown ,0.5–2 mm. long or more, furrowed, slender, tapering upward; spores ochraceous in mass, pale by transmitted light, minutely spinulose, 6–7 μ in diameter; plasmodium colorless or dingy.

TYPE LOCALITY: Germany.
HABITAT: Dead wood.
DISTRIBUTION: Throughout North America; Europe; Asia.
ILLUSTRATIONS: Schrad. Nov. Gen. Pl. *pl. 4, f. 3, 4;* Lister, Mycet. ed. 3. *pl. 145, d–h;* Hattori, Myxom. Nasu *pl. 15, f. 4.*

4. Cribraria intricata Schrad. Nov. Gen. Pl. 7. 1797.

Trichia intricata Poir. in Lam. Encyc. 8: 56. 1808.
Cribraria dictydioides Cooke & Balf.; Massee, Monog. 65. 1892.

Sporangia gregarious, globose, stipitate, nodding, dusky brown, 0.5–0.7 mm. in diameter; stalk 1.5–3 mm. long, slender, furrowed, tapering upward, dark brown; cup present or absent, when present varying from bowl-like and occupying the lower third of the sporangium, through shallow and saucer-like to a basal disk; net regular, the nodes dark, prominent, thickened, expanded, angular, each giving rise to 5–8 connecting threads and numerous free ends, the

meshes of medium size, often triangular; hypothallus conspicuous; spores ochraceous in mass, pallid by transmitted light, spinulose, 6–7 μ in diameter; plasmodium greenish, lead-colored, or brownish-black.

TYPE LOCALITY: Germany.
HABITAT: Dead wood.
DISTRIBUTION: Throughout North America, common; cosmopolitan.
ILLUSTRATIONS: Schrad. Nov. Gen. Pl. *pl. 3, f. 1;* Lister, Mycet. ed. 3. *pl. 143, a–e;* Hattori, Myxom. Nasu *pl. 15, f. 3.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2095;* Brândză, Myxom. Roum. *49*(NY).

5. **Cribraria macrocarpa** Schrad. Nov. Gen. Pl. 8. 1797.

Trichia macrocarpa Poir. in Lam. Encyc. 8: 55. 1808.
Cribraria tatrica Racib. Hedwigia 24: 170. 1885.
Heterodictyon Bieniaszii Racib. Hedwigia 28: 121. 1889.
Cribraria Bieniaszii Massee, Monog. 60. 1892.

Sporangia more or less closely gregarious, stipitate, yellowish-brown or bronze, pear-shaped or obovate, large, 0.8–1 mm. in diameter; stalk brown, furrowed, erect or often nodding, about equal to the sporangium or longer, arising from a thin, iridescent hypothallus; cup distinct, marked by numerous dark brown radiating ribs, iridescent, perforate above, deeply dentate, and merging gradually into the network, of which the dark nodes are more distinctly expanded about half way up, less so at the apex and below, the filaments exceedingly delicate, simple, with occasional free ends projecting into the small meshes; spores yellowish in mass, almost colorless by transmitted light, minutely roughened, 7–8 μ in diameter; plasmodium slate-colored.

TYPE LOCALITY: Germany.
HABITAT: Dead coniferous wood.
DISTRIBUTION: Widely distributed, especially in mountainous regions, but not common; South America; Europe.
ILLUSTRATIONS: Schrad. Nov. Gen. Pl. *pl. 2, f. 3, 4;* Lister, Mycet. ed. 3. *pl. 141, a–d;* Hattori, Myxom. Nasu *pl. 15, f. 6.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2900;* Thaxter, Rel. Farl. *389.*

6. **Cribraria dictyospora** Martin & Lovejoy; G. W. Martin, Jour. Wash. Acad. 22: 92. 1932.

Sporangia gregarious, stipitate, globose, erect or slightly nodding, hazel to dark purplish-brown, 0.4–0.8 mm. in diameter, 1–2 mm. tall; cup regular, occupying about one-third of the sporangial area, marked with irregular, dark, granular rays, the margin toothed; net rather fine-meshed, the nodes flat and angular, not greatly thickened, densely filled with large, dark granules making them appear black, the connecting threads narrow, with abundant, often branched, free ends, arising both from the nodes and from the connecting threads; stalk slender, two or three times the diameter of the sporangium, furrowed, pale at the apex, otherwise dark; spores orange-brown in mass, pale lilac by transmitted light, globose or somewhat angular, warted and covered with a coarse and often imperfect reticulum of 3–5 meshes to the hemisphere, 8–9 μ in diameter.

TYPE LOCALITY: Oregon.
HABITAT: Dead wood.
DISTRIBUTION: Known only from Oregon.
ILLUSTRATIONS: Jour. Wash. Acad. 22: 90. *f. 8, 9;* Macbr. & Mart. Myxom. *pl. 14, f. 365, 366.*

7. **Cribraria atrofusca** Martin & Lovejoy; G. W. Martin, Jour. Wash. Acad. 22: 92. 1932.

Sporangia loosely gregarious, globose or somewhat obovate or pyriform, usually erect, dark purplish-brown to nearly black, iridescent, shining, 0.4–0.6 mm. in diameter, 1–2 mm. tall; cup occupying about one-half of the sporangium, marked by slender, granular ribs radiating from the stipe and by broken, concentric, granular corrugations deposited on the inside and

outside, the margin bearing fine teeth and long, slender toothlike projections, these bearing the net and similar to its nodes; net regular, the nodes expanded, granular, dark brown, the connecting threads broad, their free ends few, arising both from nodes and connecting threads, the silvery peridium tending to persist; hypothallus small; stalk slender, furrowed, dark brown to nearly black, 0.6–1.8 mm. long; spores dark reddish-brown in mass, grayish-brown by transmitted light, finely verrucose, 7–8 μ in diameter.

TYPE LOCALITY: Colorado.
HABITAT: Dead wood.
DISTRIBUTION: Colorado, Oregon.
ILLUSTRATIONS: Jour. Wash. Acad. 22: 90. *f. 10–13;* Macbr. & Mart. Myxom. *pl. 15, f. 368–370.*

8. **Cribraria languescens** Rex, Proc. Acad. Phila. 1891: 394. 1891.

Cribraria cuprea Morgan, Jour. Cinc. Soc. Nat. Hist. 15: 142. 1893.

Sporangia gregarious or scattered, stipitate, small, 0.25–0.4 mm. in diameter, nut-brown or copper-colored, often with lilaceous or purplish tints or shades, to dark purplish-brown; stalk concolorous above, darker below, usually long, slender and tenuous, up to 10 times the diameter of the sporangium, sometimes relatively short; cup occupying the lower third or half of the sporangium, finely ribbed and dotted with dark granules, the margin nearly even; nodes large, flat, angular, more or less thickened; net varying from open to rather close, the threads slender, with few free ends; spores dull reddish or copper-colored in mass, pale by transmitted light, globose, nearly smooth, 6–7.5 μ in diameter; plasmodium red.

TYPE LOCALITY: New York.
HABITAT: Dead wood.
DISTRIBUTION: Widely distributed in North America; Europe; Asia; Africa.
ILLUSTRATIONS: Jour. Cinc. Soc. Nat. Hist. 15: *pl. 3, f. 11;* Lister, Mycet. ed. 3. *pl. 145, f. a–c;* Macbr. & Mart. Myxom. *pl. 14, f. 346, 347.*

9. **Cribraria tenella** Schrad. Nov. Gen. Pl. 6. 1797.

Cribraria elata Massee, Monog. 61. 1892.

Sporangia gregarious, globose, small, mostly 0.3–0.5 mm. in diameter, olivaceous or ochraceous, long-stipitate, nodding; stalk slender, dark brown or blackish, very long, reaching 6 mm. in length, weak and flexuous; cup variable, sometimes well defined, brown, costate, sometimes represented by the costae only, connected by a thin, transparent membrane, rarely obsolete; net well differentiated, the meshes small, irregular, the nodes small, black, prominent, rounded, connected by transparent threads, free ends usually few; spores olivaceous-ochraceous in mass, pallid by transmitted light, globose, almost smooth, 5–7 μ in diameter.

TYPE LOCALITY: Germany.
HABITAT: Dead wood.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Schrad. Nov. Gen. Pl. *pl. 3, f. 2, 3;* Lister, Mycet. ed. 3. *pl. 143, f–i.*

10. **Cribraria minutissima** Schw. Trans. Am. Phil. Soc. II. 4: 260. 1832.

Cribraria minima Berk. & Curt.; Berk. Grevillea 2: 67. 1873.
Cribraria microscopica Berk. & Curt.; Berk. Grevillea 2: 67. 1873.
Cribraria oregana H. C. Gilbert; Peck & Gilbert, Am. Jour. Bot. 19: 142. 1932.

Sporangia minute, scattered, stalked, erect, nut-brown or orange-brown, sometimes coppery, 0.1–0.3 mm. in diameter; cup variable, when fully mature separated from the net by a shallow constriction, more commonly the constriction not present, and the cup sometimes entirely lacking; nodes expanded but not thickened, bearing pale granules, the connecting threads flattened, free ends lacking; hypothallus none; stalk brown, one to four times the height of the sporangium; spores yellow in mass, pallid by transmitted light, minutely roughened, 6–8 μ in diameter.

TYPE LOCALITY: North Carolina.
HABITAT: Dead wood, often among mosses.
DISTRIBUTION: Widely distributed in the United States; Europe; Hawaii; Asia.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 140, d–h;* Hattori, Myxom. Nasu *pl. 15, f. 5.*

11. Cribraria piriformis Schrad. Nov. Gen. Pl. 4. 1797.

Cribraria intermedia Schrad. Nov. Gen. Pl. 4. 1797.

Sporangia gregarious, stipitate, 0.3–0.6 mm. in diameter, turbinate or pyriform to globose, erect, purplish-brown; stalk comparatively short, 0.5–0.7 mm. long, tapering upward, longitudinally furrowed, purple or brown; cup very well defined, occupying one-third of the sporangium, ribbed and marked with minute granular lines, flattened or even umbilicate below, the margin denticulate, dusky brown; net simple, the meshes large, triangular, with few free ends, the nodes thickened, slightly convex or flat, studded with large, dark granules up to 2.5 μ in diameter; spores dull yellow-brown in mass, pale ochraceous or salmon-tinted by transmitted light, with distinct, pallid warts, 5–7 μ in diameter.

TYPE LOCALITY: Germany.
HABITAT: Dead coniferous wood.
DISTRIBUTION: Widely distributed in North America, particularly in mountainous regions, but not common; Europe; Japan.
ILLUSTRATIONS: Schrad. Nov. Gen. Pl. *pl. 1, f. 2, pl. 3, f. 4, 5;* Rost. Monog. *pl. 2, f. 14, 24;* Lister, Mycet. ed. 3. *pl. 144.*
EXSICCATI: Brândză, Myxom. Roum. IIb: *26, 46, 47*(NY).

12. Cribraria rufa (Roth) Rost. Monog. 232. 1875.

Stemonitis rufa Roth, Fl. Germ. 1: 548. 1788.
Cribraria rufescens Pers. Neues Mag. Bot. 1: 91. 1794.
Cribraria fulva Schrad. Nov. Gen. Pl. 5. 1797.
Trichia rufescens Poir. in Lam. Encyc. 8: 55. 1808.

Sporangia scattered, subglobose or turbinate, stipitate, erect, dull brick-red or reddish-orange, 0.5–0.7 mm. in diameter; stalk about equaling the height of the sporangium or longer, dark brown or black; cup one-third to one-half the sporangium, the margin toothed, the wall ribbed and continuous with the open, wide-meshed net; net yellow or orange, the threads flattened, the nodes expanded but not thickened, bearing large, pale granules about 2 μ in diameter, free ends none; spores concolorous in mass, pale yellow by transmitted light, verruculose, 5–7 μ in diameter; plasmodium white.

TYPE LOCALITY: Germany.
HABITAT: Dead coniferous wood.
DISTRIBUTION: Widely distributed in the United States and Canada; Europe; Japan.
ILLUSTRATIONS: Schrad. Nov. Gen. Pl. *pl. 1. f. 1;* Lister, Mycet. ed. 3. *pl. 140, a–c.*
EXSICCATI: Jaap, Myxom. Exs. *15, 52;* Brândză, Myxom. Roum. *51, 98*(NY).

13. Cribraria aurantiaca Schrad. Nov. Gen. Pl. 5. 1797.

Cribraria vulgaris Schrad. Nov. Gen. Pl. 6. 1797.

Sporangia gregarious, globose, stipitate, nodding, yellowish or dusky, 0.4–0.7 mm. in diameter; stalk subulate, dark, 2–4 times the height of the sporangium; cup prominent, about one-third the height of the sporangium, brown, marked by delicate radiating veins, the margin denticulate, the teeth numerous, slender; net irregular, the nodes broad, flattened, branching and angular, the threads slender, with few free ends; dictydine granules small, 0.5–1 μ in diameter; spores bright yellow to bright ochraceous in mass, colorless by transmitted light, minutely punctate, 5–6 μ in diameter; plasmodium slate-gray or greenish.

TYPE LOCALITY: Germany.
HABITAT: Dead wood.
DISTRIBUTION: Throughout the United States and Canada; Europe; Asia.
ILLUSTRATIONS: Schrad. Nov. Gen. Pl. *pl. 1, f. 3–5;* Rost. Monog. *pl. 2, f. 21, 26;* Lister, Mycet. ed. 3. *pl. 142;* Hattori, Myxom. Nasu *pl. 15, f. 2.*
EXSICCATI: Brândză, Myxom. Roum. *53*(NY).

14. Cribraria laxa Hagelst. Mycologia 21: 298. 1929.

Sporangia closely gregarious, stipitate, erect, globose, 0.5–0.7 mm. in diameter, dark brown; stalk dark brown, furrowed, short, 0.7–1.4 mm. in height; cup occupying about one-third of the sporangium, strongly ribbed, with numerous cross veins connecting the ribs, between them a thin glistening membrane; net arising from the ribs, wide-meshed, the nodes large, thickened,

dark brown, crowded with granules, the connecting threads slender and lax with few free ends; hypothallus very broad; spores ochraceous in mass, pale by transmitted light, warted, 6–7 μ in diameter.

TYPE LOCALITY: Long Island, N. Y.
HABITAT: Dead leaves or small twigs.
DISTRIBUTION: New York and Pennsylvania.
ILLUSTRATIONS: Mycologia 21: *pl. 26, f. 4–6.*

15. **Cribraria violacea** Rex, Proc. Acad. Phila. 1891: 393. 1891.

Sporangia scattered or gregarious, stipitate, erect, deep purple, shining with metallic luster, 0.1–0.3 mm. broad, their total height 0.5–2 mm.; stalk long, two-thirds or more of the total height, slender, tapering upward, concolorous or darker; cup crateriform to urniform, rarely shallow, persistent, occupying one-half to two-thirds of the sporangium, marked with minute plasmodic granules; net open, the meshes few, irregular, the nodes flat, angular, broadly expanded; spores bright violet in mass, lilac by transmitted light, minutely warted, 7–8 μ in diameter; plasmodium violet-black.

TYPE LOCALITY: Philadelphia, Pa.
HABITAT: Dead wood, bark of living and dead trees, and on mosses.
DISTRIBUTION: Widely distributed in North America; cosmopolitan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 146, g–i;* Macbr. & Mart. Myxom. *pl. 14, f. 363, 364;* Hattori, Myxom. Nasu *pl. 23, f. 2.*

16. **Cribraria elegans** Berk. & Curt.; Berk. Grevillea 2: 67. 1873.

Sporangia gregarious, globose, stipitate, erect or nodding, 0.3–0.5 mm. in diameter, deep lilac or rose-purple; stalk long, slender, tapering upward, almost black, arising from a scanty hypothallus; calyculus about one-half the sporangium, finely ribbed, covered, especially above, with small purple granules, the margin toothed or perforate; net well developed, the meshes small, polygonal, the threads delicate, colorless, with many free ends, the nodes dark, numerous, rather prominent; spores purple in mass, pale violaceous by transmitted light, smooth, 6–6.5 μ in diameter.

TYPE LOCALITY: South Carolina.
HABITAT: Dead coniferous wood.
DISTRIBUTION: Widely distributed in the United States.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 146, d–f;* Macbr. & Mart. Myxom. *pl. 14, f. 361, 362.*

17. **Cribraria purpurea** Schrad. Nov. Gen. Pl. 8. 1797.

Sporangia gregarious, depressed-globose, stipitate, erect, large, 0.6–1.2 mm. in diameter, reddish-purple; stalk concolorous, furrowed, about twice the diameter of the sporangium in length, on a distinct hypothallus; calyculus persistent, occupying less than half the sporangium, obscurely ribbed and sometimes marked by concentric plications, the margin toothed; net poorly differentiated, the meshes and the flat, unthickened nodes irregular in form and size, the threads pale and broad, the free ends short and not numerous; spores rose-purple in mass, pale or colorless by transmitted light, nearly smooth, 5–7 μ in diameter; plasmodium scarlet.

TYPE LOCALITY: Europe.
HABITAT: Dead coniferous wood.
DISTRIBUTION: Widely distributed in the United States but not common; Europe; Japan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 146, a–c.*
EXSICCATI: Brândză, Myxom. Roum. IIb: *23, 50, 107* (NY).

18. **Cribraria ferruginea** Meylan, Ann. Cons. Jard. Genève 15–16: 319. 1913.

Sporangia crowded or gregarious, subglobose, brick-red to deep purplish-red, 1–1.5 mm. in diameter; stalk dark brown, furrowed, short, 0.5–1 mm. tall; cup about one-third the height of the sporangium, irregularly toothed at the margin, with prominent ribs united by a thin,

metallic membrane; net loose, irregular, the nodes angular, irregular, flat or scarcely differentiated, the threads slender; spores brick-red in mass, pallid by transmitted light, minutely warted, 5–7 μ in diameter.

TYPE LOCALITY: Switzerland.
HABITAT: Dead coniferous wood.
DISTRIBUTION: Tennessee, Oregon, New Mexico; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 219, a–d.*

3. **DICTYDIUM** Schrad. Nov. Gen. Pl. 11. 1797.

Sporangiate, the sporangia stalked, globose or depressed-globose. Peridium delicate, evanescent except for a net composed mainly of prominently longitudinal ribs extending from the base of the sporangium or the margin of the cup nearly or quite to the apex, joined by very slender transverse filaments, sometimes forming an irregular network at the apex or the base. Cup lacking or well developed, but shallow.

Type species, *Diclydium umbilicatum* Schrad.

1. **Dictydium cancellatum** (Batsch) Macbr. N. Am. Slime-Moulds 172. 1899.

Mucor cancellatus Batsch, Elench. Fung. Contin. **2**: 135. 1789.
Stemonitis cancellata J. F. Gmel. Syst. Nat. **2**: 1468. 1791.
Cribraria cernua Pers. Obs. Myc. **1**: 91. 1796.
Dictydium umbilicatum Schrad. Nov. Gen. Pl. 11. 1797.
Dictydium ambiguum Schrad. Nov. Gen. Pl. 13. 1797.
Trichia cernua Poir. in Lam. Encyc. **8**: 54. 1808.
Dictydium cernuum Nees, Syst. Pilze Schw. 120. 1817.
Heterodictyon mirabile Rost. Monog. 231. 1875.
Cribraria mirabilis Massee, Monog. 60. 1892.
Cribraria exilis Macbr. Bull. Nat. Hist. Univ. Iowa **2**: 378. 1893.
Dictydium longipes Morgan, Jour. Cinc. Soc. Nat. Hist. **15**: 143. 1893.
Dictydium anomalum Jahn; Meylan, Bull. Soc. Vaud. Sci. Nat. **44**: 295. 1908.
Dictydium mirabile Meylan, Bull. Soc. Vaud. Sci. Nat. **57**: 305. 1931.

Sporangia gregarious, often forming extensive fruitings, stipitate, depressed-globose, often umbilicate above, deep reddish-brown or brownish-purple; peridium largely fugacious, leaving thickenings in the form of stout longitudinal ribs connected by delicate transverse threads, so that the meshes are almost rectangular; stalk pale above, otherwise concolorous or dark, subulate, long, usually twisted at the top or sometimes shorter and nearly straight; cup present or absent, if present, usually shallow; net sometimes irregular, especially above; dictydine granules large, dark, on the net and the spores; spores reddish or purplish in mass, pale red by transmitted light, globose, nearly smooth, 5-7 μ in diameter.

TYPE LOCALITY: Germany.
HABITAT: Dead wood.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Batsch, Elench. Fung. Contin. **2**: *pl. 42, f. 232 a–c;* Schrad. Nov. Gen. Pl. *pl. 4, f. 1,2;* Rost. Monog. *pl. 2, f. 16–19, 22;* Jour. Cinc. Soc. Nat. Hist. **15**: *pl. 3, f. 12;* Lister, Mycet. ed. 3. *pl. 147;* Macbr. & Mart. Myxom. *pl. 15, f. 371, 372;* Hattori, Myxom. Nasu *pl. 10, f. 2;* Nat. Geog. Mag. 49[4]: *pl. 13.*
EXSICCATI: Ellis, N. Am. Fungi *1122;* Jaap, Myxom. Exs. *35, 159, 199;* Brândză, Myxom. Roum. I. 1: *19, 20;* II. 1: *56* (NY); *103* (IU).

Order TRICHIALES

Spores in mass bright-colored, yellow, orange, or red, hyaline or subhyaline by transmitted light. Capillitium always present, threadlike, usually sculptured, free or attached.

Capillitium of solid threads; attached to the sporangial walls.	Fam. 1. DIANEMACEAE.
Capillitium of tubular threads, free or attached to the base of the sporangium and often united into a net.	Fam. 2. TRICHIACEAE.

Family 1. DIANEMACEAE

Sporangiate or plasmodiocarpous, rarely short-stipitate. Peridium usually single or occasionally with a granular outer layer. Capillitium of solid threads, either coiled and hair-like or nearly straight, attached to the base or the peridium, simple or, if branched, the branching at wide angles, smooth or with minute sculpturing.

Capillitial threads very slender, hair-like, coiled, attached mainly to the base. 1. MARGARITA.
Capillitial threads usually stouter, with numerous attachments to the sporangial wall.
  Threads nearly straight, sparsely branched, not coiled about one another. 2. DIANEMA.
  Threads attached to the base and upper portion of the peridium, twisted about each other in between. 3. PROTOTRICHIA.

1. MARGARITA Lister, Mycet. 203. 1894.

Sporangiate and sessile, or plasmodiocarpous. Wall granular or translucent. Capillitium of simple or sparsely branched, coiled, slender, solid threads with occasional attachments to the wall.

Type species, *Physarum metallicum* Berk.

1. Margarita metallica (Berk.) Lister, Mycet. 203. 1894.

Physarum metallicum Berk. Mag. Zool. Bot. 1: 49. 1836.
Cornuvia metallica Rost. Monog. Append. 35. 1876.
Perichaena plasmodiocarpa A. Blytt, Forh. Vid.-Selsk. Christiania 1892[2]: 10. 1892.
Margarita pictoviana C. L. Moore, Proc. Trans. Nova Scot. Inst. 12: 196. 1910.

Sporangia scattered or clustered, sessile, globose or pulvinate, 0.2–1 mm. in diameter, or forming short plasmodiocarps; peridium thin, translucent, or thicker when encrusted with granular material, dull yellow, coppery or iridescent, opening irregularly above; capillitium of long, flexuous, simple or sparsely branched solid threads, marked by a row of minute tubercles running around the thread in a long spiral, with infrequent attachments to the peridial wall; spores yellow in mass, pale yellow to nearly pallid by transmitted light, delicately warted to distinctly spiny, 9–12 μ in diameter; plasmodium watery-white.

TYPE LOCALITY: England.
HABITAT: Rotten wood and bark of living trees.
DISTRIBUTION: Nova Scotia, New England, and New York to Washington and California; Chile; Europe; Asia; the Philippines.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 196;* Macbr. & Mart. Myxom. *pl. 16, f. 415, 416;* Hattori, Myxom. Nasu *pl. 14, f. 2.*

2. DIANEMA Rex, Proc. Acad. Phila. 1891: 397. 1891.

Plasmodiocarpous or sporangiate, and then sessile or substipitate. Wall membranous or cartilaginous. Capillitium of smooth or obscurely sculptured, simple or forked, slender threads, attached both to the base and to the sporangial wall. Spores pallid, free or united in clusters.

Type species, *Dianema Harveyi* Rex.

Spores free.
  Sporangiate, sessile or substipitate. 1. *D. Andersoni.*
  Pulvinate to plasmodiocarpous.
    Pulvinate, dull red or iridescent; capillitium scantily forked above, not penicillate. 2. *D. Harveyi.*
    Usually plasmodiocarpous, gray-brown; capillitial threads united above and below, penicillate. 3. *D. depressum.*
Spores clustered; plasmodiocarpous; wall opaque. 4. *D. corticatum.*

1. Dianema Andersoni Morgan; Macbr. N. Am. Slime-Moulds ed. 2. 239. 1922.

Sporangia subglobose, sessile or substipitate, 0.6–0.8 mm. in diameter, seated on a thin hypothallus; peridium membranous, iridescent, brown, with granular thickenings; capillitium scanty, arising from the thickened base, the threads slender, ascending, hyaline, or pinkish, sparsely branched, bearing occasional rounded enlargements, attached at the distal extremities to the peridium; spores free, globose, minutely warted, dull yellow in mass, pinkish by transmitted light, 10–12 μ in diameter.

TYPE LOCALITY: Comax, British Columbia.
HABITAT: Decayed wood.
DISTRIBUTION: British Columbia, Washington.

2. Dianema Harveyi Rex, Proc. Acad. Phila. 1891: 397. 1891.

Sporangia gregarious, sessile, depressed-pulvinate or plasmodiocarpous, dull red or brown, iridescent, 0.5–2 mm. in diameter; peridium thin, membranous, translucent, rupturing irregularly; capillitium of smooth, taut, sparsely forked threads, not anastomosing nor penicillate, running from base to top; spores free, yellow in mass, pale yellowish by transmitted light, spiny, 8–10 μ in diameter; plasmodium white.

TYPE LOCALITY: Orono, Maine.
HABITAT: Dead wood.
DISTRIBUTION: Maine, Colorado; Great Britain; Japan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 191, a–c;* Hattori, Myxom. Nasu *pl. 22, f. 4.*

3. Dianema depressum (Lister) Lister, Mycet. 204. 1894.

Cornuvia depressa Lister, Jour. Bot. 29: 264. 1891.

Pulvinate to plasmodiocarpous, flattened, 2–10 mm. in the longest dimension, about 0.3 mm. wide, gray-brown, glossy; peridium membranous, smooth or obscurely reticulate, translucent yellowish-gray or drab, marked on the inner side with the persistent attached ends of the capillitial clusters; capillitium usually abundant, of pale yellowish-gray threads, 1–2 μ thick, triangular in section, each angle bearing a row of minute tubercles, united above and below into penicillate clusters of mostly 3–6 threads, at length breaking away as an elastic web; spores mostly free, pale lilaceous-gray in mass, pallid by transmitted light, the greater part of the surface covered with a rather close reticulation, 7–9 μ in diameter; plasmodium white or rosy.

TYPE LOCALITY: England.
HABITAT: Dead wood.
DISTRIBUTION: Iowa, Colorado, Washington, Oregon; Europe; Japan; Australia.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 190;* Macbr. & Mart. Myxom. *pl. 16, f. 420–422.*

4. Dianema corticatum Lister, Mycet. 205. 1894.

Plasmodiocarps simple or branched, sometimes forming rings or close nets, less commonly shortened to pulvinate sporangia or forming a pseudoaethalium, 0.3–1 mm. or more in diameter, dull purplish-brown, with a more or less wrinkled surface; peridium of two layers, the outer cartilaginous, opaque, ochraceous-brown, granular, the inner membranous; capillitium usually sparse, of simple or scantily branched, slender, pale brown threads, variously headed and often spirally twisted or with the markings in long spirals; spores dull brown or pinkish in mass, pale or colorless by transmitted light, subglobose to broadly ellipsoidal, mostly clustered in groups of 2–6, bearing spines on the exposed side, 10–15 × 8–10 μ; plasmodium pink.

TYPE LOCALITY: Sande, Norway.
HABITAT: Dead wood, usually coniferous.
DISTRIBUTION: New Hampshire to Alberta and Washington, south to Pennsylvania and California; Europe; Australia.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 193;* Macbr. & Mart. Myxom. *pl. 21, f. 562.*

DOUBTFUL SPECIES

DIANEMA NIVALE (Meylan) G. Lister in Lister, Mycet. ed. 3. 254 (1925), is reported by Hagelstein from British Columbia and Washington on the basis of collections of *D. Andersoni*. The original description of *Lamprodermopsis nivalis* Meylan (Bull. Soc. Vaud. Sci. Nat. 46: 56. 1910), and Lister's description do not apply to the type material of *D. Andersoni* in the collection of the State University of Iowa.

3. PROTOTRICHIA Rost. Monog. Append. 38. 1876.

Sporangiate, sessile, rarely short-stipitate or subplasmodiocarpous. Peridium thin, transparent. Capillitium of solid threads, often twisted about each other in spirals, attached at the base of the sporangium and becoming subdivided above, the penicillate tips attached to the upper wall. Spores brown in mass, pinkish by transmitted light.

Type species, *Trichia metallica* Berk.

1. Prototrichia metallica (Berk.) Massee, Jour. Roy. Micr. Soc. 1889: 350. 1889.

Trichia metallica Berk. in Hook. f. Fl. Tasm. 2: 268. 1859.
Trichia flagellifer Berk. & Br. Ann. Mag. Nat. Hist. III. 18: 56. 1866.
Prototrichia flagellifer Rost. Monog. Append. 38. 1876.
Prototrichia elegantula Rost. Monog. Append. 39. 1876.
Prototrichia cuprea Massee, Jour. Roy. Micr. Soc. 1889: 351. 1889.
Prototrichia chamaeleontina Massee, Monog. 130. 1892.
Prototrichia Schröteri Meylan, Bull. Soc. Vaud. Sci. Nat. 53: 462. 1921.

Sporangiate, sessile or short-stalked, rarely subplasmodiocarpous, 0.5–2 mm. in diameter, orange-brown to dull brown, sometimes rosaceous; peridium thin, transparent, iridescent, bearing on its inner surface the persistent ends of the capillitial threads; capillitium of numerous brown, spirally banded threads, originating at the base and becoming subdivided as they ascend, the branches often spirally interwoven, sometimes anastomosing to form a network at the bases and tips, the extremities attached to the upper wall; spores orange-brown to brown in mass, pallid or pinkish by transmitted light, spiny, 10–13 (15) μ in diameter; plasmodium white.

TYPE LOCALITY: Tasmania.
HABITAT: Dead wood and bark, usually of conifers.
DISTRIBUTION: North Carolina; Alberta to Washington, Colorado, and California; Europe; Tasmania.
ILLUSTRATIONS: Massee, Monog. *pl. 5, f. 127–132;* Lister, Mycet. ed. 3. *pl. 195;* Macbr. & Mart. Myxom. *pl. 18, f. 478–480.*

Family 2. **TRICHIACEAE**

Plasmodiocarpous or sporangiate, sessile or stalked. Capillitium of tubular threads, simple, branched or united into a net, free, or attached at the base, nearly smooth or more commonly strongly sculptured in characteristic fashion.

Capillitial threads marked by warts, cogs, or spines or nearly smooth, very rarely by obscure spirals.
- Capillitial threads slender, mostly under 3 μ in diameter, warted, spiny, or nearly smooth. — 1. PERICHAENA.
- Capillitial threads coarser, mostly over 4 μ in diameter.
  - Peridium persistent; net not elastic; sporangia small, sessile, heaped. — 2. ARCYODES.
  - Peridium fugacious above the persistent, cup-like base; net elastic; sporangia usually stalked, rarely sessile or heaped. — 3. ARCYRIA.

Capillitial threads marked by spiral bands.
- Capillitium of short, free elaters, sometimes branched.
  - Spirals faint, irregular; some elaters nearly smooth; sporangia small, often heaped. — 4. OLIGONEMA.
  - Spirals distinct, usually regular. — 5. TRICHIA.
- Capillitium of long threads, more or less united into a net.
  - Spirals clearly marked. — 6. HEMITRICHIA.
  - Spirals fragmentary, more or less obscured by a reticulation. — 7. CALONEMA.

1. **PERICHAENA** Fries, Symb. Gast. 11. 1817.

Pyxidium S. F. Gray, Nat. Arr. Brit. Pl. 1: 580. 1821.
Ophiotheca Currey, Quart. Jour. Micr. Sci. 2: 241. 1854.

Sporangiate to plasmodiocarpous. Peridium double, the outer layer granular, occasionally calcareous, sometimes poorly developed, the inner membranous, closely attached. Capillitium of simple or branched tubular threads, slightly roughened, warted or spiny. Spores yellow, minutely warted or spinulose.

Type species, *Perichaena populina* Fries.

Spores free; usually on wood or dung.
- Fructifications predominantly plasmodiocarpous.
  - Plasmodiocarps dark reddish-brown, short, stout, curved, often ring-shaped; spores 7–10 μ in diameter. — 1. *P. chrysosperma.*
  - Plasmodiocarps dull yellow, pale brown, or dull, dark red-brown, long, slender, curved or net-like; spores 10–14 μ in diameter. — 2. *P. vermicularis.*
- Fructifications predominantly sporangiate.
  - Sporangia greatly flattened on a broad base, usually densely aggregated and angular from mutual pressure; dehiscence circumscissile. — 3. *P. depressa.*
  - Sporangia not greatly flattened.
    - Sporangia sessile, rarely stalked, reddish-brown to blackish; peridium not warted. — 4. *P. corticalis.*
    - Sporangia sessile or frequently stalked, dull yellow to yellow-brown; peridium frequently conspicuously warted. — 5. *P. minor.*

Spores loosely clustered in groups of 4–16; on leaves. — 6. *P. syncarpon.*

1. **Perichaena chrysosperma** (Currey) Lister, Mycet. 196. 1894.

Ophiotheca chrysosperma Currey, Quart. Jour. Micr. Sci. 2: 241. 1854.
Trichia Curreyi Crouan, Fl. Finist. 16. 1867.
Ophiotheca Wrightii Berk. & Curt.; Berk. Jour. Linn. Soc. 10: 349. 1868.
Cornuvia circumscissa Rost. Monog. 290. 1875.
Cornuvia Wrightii Rost. Monog. Append. 36. 1876.
Hemitrichia melano-peziza Speg. Anal. Soc. Ci. Argent. 12: 257. 1881.
Cornuvia dictyocarpa Krupa, Kosmos 11: 377. 1886.
Hemiarcyria melanopeziza A. Berl. in Sacc. Syll. Fung. 7: 449. 1888.
Ophiotheca circumscissa Massee, Monog. 131. 1892.
Arcyria melanopeziza Massee, Monog. 162. 1892.

Plasmodiocarpous, flexuous, arcuate or annular to subreticulate, occasionally shortened to spherical, 0.2–0.5 mm. in diameter, rarely stalked, ochraceous-brown to dark chestnut-brown or nearly black; peridium double, the outer layer composed of granular material, sometimes

incomplete or lacking except at the base, the inner thin, translucent; dehiscence irregular or areolate or sometimes, in the globose fruitings, circumscissile; capillitium of slender threads, variable in quantity, minutely to strongly spinulose; spores yellow in mass, spinulose, 7–10 μ in diameter; plasmodium white upon emergence, becoming brownish, pinkish-gray, or rose.

TYPE LOCALITY: England.
HABITAT: Dead wood, especially the inner bark of fallen branches, and dung of herbivorous animals.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 184;* Macbr. & Mart. Myxom. *pl. 16, f. 426–428; pl. 17, f. 429–432;* Hattori, Myxom. Nasu *pl. 14, f. 5.*
EXSICCATI: Jaap, Myxom. Exs. *80.*

2. Perichaena vermicularis (Schw.) Rost. Monog. Append. 34. 1876.

Physarum vermiculare Schw. Trans. Am. Phil. Soc. II. 4: 257. 1832.
Ophiotheca pallida Berk. & Curt.; Berk. Jour. Linn. Soc. 10: 350. 1868.
Ophiotheca umbrina Berk. & Curt.; Berk. Grevillea 2: 68. 1873.
Licea reticulata Berk. & Br. Jour. Linn. Soc. 14: 86. 1873.
Perichaena variabilis Rost. Monog. 295. 1875.
Perichaena Friesiana Rost. Monog. 296. 1875.
Perichaena reticulata Rost. Monog. Append. 35. 1876.
Perichaena confusa Massee, Monog. 117. 1892.
Ophiotheca reticulata Massee, Monog. 133. 1892.
Ophiotheca vermicularis Massee, Monog. 134. 1892.

Plasmodiocarpous, slender, usually 0.2-0.5 mm. across, pulvinate to elongate, flexuous, sometimes reticulate or annular, varying to subglobose and sporangiate on a constricted base, dull gray or dull ochraceous to dull reddish-brown; peridium thin, of two layers not always distinguishable, the outer granular, the inner membranous, papillate; capillitium usually abundant, the threads slender, irregular, minutely warted or spinulose; spores ochraceous-yellow in mass, pale yellow by transmitted light, minutely roughened, 10–14 μ in diameter; plasmodium watery-white, yellowish, or rose-red.

TYPE LOCALITY: North Carolina.
HABITAT: Dead herbaceous stems and leaves and bark.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 187, a–c;* Macbr. & Mart. Myxom. *pl. 16, f. 423–425.*
EXSICCATI: Ellis, N. Am. Fungi *726;* Jaap, Myxom. Exs. *120, 140.*

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3. Perichaena depressa Libert, Pl. Crypt. 378. 1837.

Stegasma depressum Corda, Ic. Fung. 5: 58. 1842.
Perichaena artocreas Berk. & Rav.; Berk. Grevillea 2: 68. 1873.
Perichaena irregularis Berk. & Curt.; Berk. Grevillea 2: 68. 1873.
Stegasma australe Ces. Hedwigia 13: 186. 1874.
Perichaena marginata Berk. & Br. Jour. Linn. Soc. 15: 84. 1876. Not *P. marginata* Schw. 1832.
Hemiarcyria applanata Cooke & Massee; Cooke, Grevillea 16: 20. 1887.
Perichaena australis A. Berl. in Sacc. Syll. Fung. 7: 422. 1888.
Perichaena applanata Massee, Monog. 116. 1892.
Ophiotheca irregularis Massee, Monog. 132. 1892.
Perichaena quadrata Macbr. N. Am. Slime-Moulds 184. 1899.

Sporangiate, depressed-pulvinate, crowded and polygonal by mutual contact, rarely scattered, 0.1–1 mm. in diameter, chestnut to dark purplish-brown or nearly black, sometimes hoary from evaporation residue or impregnated with crystalline lime; dehiscence circumscissile, by a definite preformed lid; capillitium of slender, branched, yellow threads 2–3 μ in diameter, minutely warted and often displaying numerous elliptic or globose expansions, usually abundant but sometimes rather scanty; spores deep yellow in mass, paler by transmitted light, minutely warted, 9–12 μ in diameter; plasmodium white or yellowish.

TYPE LOCALITY: Belgium.
HABITAT: Dead bark and wood, plant debris and dung of herbivorous animals.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 189;* Hattori, Myxom. Nasu *pl. 14, f. 6;* Hagelst. Mycet. N. Am. *pl. 14, f. 5.*
EXSICCATI: Ellis & Ev. Fungi Columb. *726, 1398;* Jaap, Myxom. Exs. *139.*

4. Perichaena corticalis (Batsch) Rost. Monog. 293. 1875.

Lycoperdon corticale Batsch, Elench. Fung. 155. 1783.
Sphaerocarpus sessilis Bull. Hist. Champ. Fr. 132. 1791.
Trichia fusco-atra Sibth. Fl. Oxon. 407. 1794.
Trichia gymnosperma Pers. Obs. Myc. 1: 63. 1796.
Trichia circumscissa Schrad. Nov. Gen. Plant. 19. 1797.
Licea circumscissa Pers. Syn. Fung. 196. 1801.
Physarum luteo-album Schum. Enum. Pl. Saell. 2: 199. 1803. Not *P. luteo-album* Lister, 1902.
Tubulina circumscissa Poir. in Lam. Encyc. 8: 131. 1808.
Perichaena abietina Fries, Symb. Gast. 11. 1817.
Perichaena populina Fries, Symb. Gast. 12. 1817.
Pyxidium sessile S. F. Gray, Nat Arr. Brit. Pl. 1: 580. 1821.
Perichaena marginata Schw. Trans. Am. Phil. Soc. II. 4: 258. 1832.
Licea pannorum Cienk. Jahrb. Wiss. Bot. 3: 407. 1863.
Perichaena fusco-atra Rost. Monog. 294. 1875.
Perichaena liceoides Rost. Monog. 295. 1875.
Perichaena Rostafinskii P. Karst. Bidr. Finl. Nat. Folk 31: 130. 1879.
Oligonema Broomei Massee, Jour. Roy. Micr. Soc. 1889: 346. 1889.
Lachnobolus pygmaeus Zukal, Oesterr. Bot. Zeits. 43: 136. 1893.
Perichaena ochrospora Peck, Ann. Rep. N.Y. State Mus. 54: 156. 1901.

Sporangiate, sessile, gregarious, subglobose, hemispheric or somewhat flattened, 0.2–1 mm. in diameter, varying to short-plasmodiocarpous or annulate or rarely short-stipitate, bright reddish-brown to nearly black, or hoary from evaporation residue; peridium double, the outer layer often impregnated with granular material, sometimes calcareous, the inner membranous; dehiscence unevenly circumscissile, varying to somewhat irregular; capillitium usually scanty, attached to the sporangial wall and the lid, occasionally lacking; spores golden-yellow in mass, bright yellow by transmitted light, minutely warted over all or about two-thirds of the surface, 10–14 μ in diameter; plasmodium watery-gray.

TYPE LOCALITY: Germany.
HABITAT: Dead wood and bark and the dung of herbivorous animals.
DISTRIBUTION: Throughout North America: cosmopolitan.
ILLUSTRATIONS: Grev. Scot. Crypt. Fl. *pl. 252;* Lister, Mycet. ed. 3. *pl. 186;* Hattori, Myxom. Nasu *pl. 14, f. 4.*
EXSICCATI: Jaap, Myxom. Exs. *40, 60, 98, 119;* Hintikka, Myxogast. Fenn. *13.*

5. Perichaena minor (G. Lister) Hagelst. Mycologia 35: 130. 1943.

Hemitrichia minor G. Lister, Jour. Bot. 49: 62. 1911.

Sporangia stalked or sessile, subglobose or pulvinate, 0.2–0.4 mm. in diameter, scattered or in small groups, dull yellow or yellowish-brown; sporangial wall membranous, pale yellow, minutely papillose or bearing granular deposits and often conspicuous, dark, rarely pale, warts; stalk, when present, black, varying from very short to twice the diameter of the sporangium; capillitium a loose, flaccid network, the threads 2–3 μ in diameter, with numerous expansions and constrictions, marked with numerous blunt spines or warts frequently so arranged as to give an impression of spiral bands, but no true spirals present; spores yellow in mass, pale yellow by transmitted light, globose, minutely warted, 9–11 μ in diameter; plasmodium watery-cinnamon.

TYPE LOCALITY: Japan.
HABITAT: Dead plant litter, bark of living trees, and dung of herbivorous animals.
DISTRIBUTION: New York, Ontario, Minnesota, Iowa, Kansas; Great Britain; Japan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 187, d–f.*

6. Perichaena syncarpon T. E. Brooks, Mycologia 38: 110. 1946.

Sporangia 0.05–0.8 mm. in diameter, scattered, gregarious, or crowded, sometimes forming pseudoaethalia up to 2 mm. in diameter, sessile on a broad base, pulvinate to subglobose or occasionally forming short plasmodiocarps, yellowish-brown or reddish-brown to black, often with a black margin; sporangial wall of two layers, the outer cartilaginous, firm, opaque, thickened with dark granular deposits, the inner layer adhering closely to the outer, usually inconspicuous, membranous, pale yellow, transparent, sometimes somewhat iridescent, without granular deposits; dehiscence into lobes along preformed ridges, or irregular; capillitium scanty, occasionally lacking, attached to the sporangial wall, consisting of sparingly branched yellow

threads 2–3.5 μ in diameter, marked with irregular, close-set constrictions and minute warts; spores golden-yellow in mass, pale yellow by transmitted light, adhering loosely in clusters of 4–16, spinulose, more strongly so on exposed surface, globose, 10–12 μ in diameter, varying to oval or irregular; plasmodium watery-tan to opaque tan, ochraceous, or pinkish.

TYPE LOCALITY: Geary County, Kansas.
HABITAT: Decaying leaves.
DISTRIBUTION: Known only from Kansas.

DOUBTFUL SPECIES

PERICHAENA PEDATA (A. & G. Lister) G. Lister, Jour. Bot. 75: 326. 1937. This species, occurring on dead leaves, has been reported from Quebec and Pennsylvania. There is nothing in the published description to suggest that it is any more than a minute, stalked phase of *P. chrysosperma*, as it was formerly regarded by its author.

2. ARCYODES O. F. Cook, Science 15: 651. 1902.

Lachnobolus Fries, Summa Veg. Scand. 457. 1849. Not *Lachnobolus* Fries, 1825.

Sporangia distinct, clustered, sessile or short-stipitate. Wall single, membranous, persistent, at least below, as a deep, irregularly lobed cup. Capillitium a loose, irregular, inelastic network, the threads spiny, warty or somewhat reticulate, attached at numerous points to the sporangial wall. Spores pallid.

Type species, *Licea incarnata* Alb. & Schw.

1. Arcyodes incarnata (Alb. & Schw.) O. F. Cook, Science 15: 651. 1902.

Licea incarnata Alb. & Schw. Consp. Fung. 109. 1805.
Physarum congestum Sommerf. Suppl. Fl. Lapp. 241. 1826.
Arcyria circinans Fries, Stirp. Fems. 83. 1826.
Perichaena congesta Fries, Syst. Myc. 3: 192. 1829.
Licea congesta Wallr. Fl. Crypt. Germ. 2: 345. 1833.
Lachnobolus circinans Fries, Summa Veg. Scand. 457. 1849.
Lachnobolus Sauteri Rost.; Fuckel, Jarhb. Nass. Ver. Nat. 27–28: 76. 1873.
Arcyria congesta Berk. & Br. Ann. Mag. Nat. Hist. IV. 17: 140. 1876.
Lachnobolus incarnatus Schroet. Krypt.-Fl. Schles. 3^1: 110. 1885.
Arcyria Hariotii Massee, Monog. 155. 1892.
Lachnobolus congestus G. Lister in Lister, Mycet. ed. 2. 246. 1911.

Sporangia subglobose, sessile, crowded and heaped, 0.4–0.8 mm. in diameter, pale copper-colored, fading to ochraceous; hypothallus inconspicuous, scanty, common to a cluster; peridium membranous, somewhat opalescent, persistent, irregularly dehiscent above, marked with minute warts and ridges; capillitium a non-elastic network of branched and anastomosing threads, mostly 3–4 μ in diameter, with numerous inflations, closely marked with warts and spines, ochraceous in mass, pallid by transmitted light; spores subglobose or angled by mutual pressure, pale pink or ochraceous in mass, pallid by transmitted light, smooth save for a few scattered warts, 7–8 μ in diameter; plasmodium white or rosy.

TYPE LOCALITY: Germany.
HABITAT: Dead wood.
DISTRIBUTION: New York, Ontario, Colorado, Oregon; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 183;* Macbr. & Mart. Myxom. *pl. 17, f. 443–445.*

3. ARCYRIA [Hill] Wiggers, Prim. Fl. Holsat. 109. 1780.

Nassula Fries, Summa Veg. Scand. 456. 1849.
Arcyria subg. *Arcyrella* Rost. Monog. 275. 1875.
Arcyrella Racib. Rozp. Akad. Umiej. 12: 80. 1884.
Heterotrichia Massee, Monog. 139. 1892.

Sporangia subcylindric, ovoid or globose, stipitate or sometimes sessile by a point. Peridium thin, fugacious above, typically separating by a definite line of dehiscence just above the base, the lower portion remaining as a persistent, cup-like or saucer-like calyculus, the margin

between the calyculus and the persistent peridium not distinct in some species. Stalk often packed with cellular vesicles resembling spores, but larger. Capillitium netted, elastic, frequently expanding to more than twice the height of the sporangium after the disappearance of the peridium, attached to the sides of the calyculus or merely to the center at the summit of the stipe and then breaking away freely, variously marked with half-rings, cogs, warts, spines, reticulations, or occasionally with inconspicuous spiral bands. Spores concolorous in mass, hyaline or bright-colored under the lens.

Type species, *Clathrus denudatus* L.

Persistent basal cup sharply distinguished from the fugacious upper part of the peridium.
- Spores mostly 9–11 μ in diameter; net loosely attached, coarse above, slender below. — 1. *A. ferruginea.*
- Spores under 9 μ in diameter; basal threads not conspicuously slender as compared with the rest of the net.
  - Capillitium almost free from the cup.
    - Fully expanded net usually erect; bright crimson, becoming brown with age. — 2. *A. incarnata.*
    - Fully expanded net spreading and drooping; colors dull or pale.
      - Dull crimson to reddish-brown; capillitium strongly spiny; spores 7–9 μ in diameter; fragments of the peridium frequently remaining attached to the expanded net. — 3. *A. Oerstedtii.*
      - Olivaceous-gray to yellow, rarely rosaceous; capillitium with short spines intermingled with other markings; spores 6–8 μ in diameter; peridial fragments rarely persisting.
        - Smoky olivaceous-gray to dull rosy-olivaceous. — 4. *A. magna.*
        - Pale ochraceous to buff. — 5. *A. nutans.*
  - Capillitium firmly attached to the cup.
    - Sporangia white, gray, or yellow.
      - Sporangia cylindric, pale gray to ochraceous or rarely dull greenish; stalks often united. — 6. *A. cinerea.*
      - Sporangia globose to short-ovate; stalks rarely, if ever, united.
        - Pale gray, almost white; usually on chestnut burs or leaves. — 7. *A. globosa.*
        - Bright ochraceous; on wood. — 8. *A. pomiformis.*
    - Sporangia pink, red, or reddish-brown.
      - Sporangia bright rose to pale salmon; small. — 9. *A. insignis.*
      - Sporangia bright red to brick-red, weathering to reddish-brown; larger. — 10. *A. denudata.*

Peridium persistent except above; cup not sharply distinguished.
- Sporangia large, bright yellow to olive-green, often touched with red; spores 9–11 μ in diameter. — 11. *A. versicolor.*
- Sporangia of medium size, ochraceous or brown; spores 7–8 μ in diameter. — 12. *A. occidentalis.*

1. Arcyria ferruginea Sauter, Flora 24: 316. 1841.

Arcyria dictyonema Rost. Monog. 279. 1875.
Arcyria intricata Rost. Monog. Append. 37. 1876.
Arcyria cinnamomea Hazsl. Oesterr. Bot. Zeits. **27**: 84. 1877.
Arcyria macrospora Peck, Ann. Rep. N. Y. State Mus. **34**: 43. 1883.
Arcyrella inermis Racib. Rozp. Akad. Umiej. **12**: 82. 1884.
Arcyria aurantiaca Raunk. Bot. Tidssk. **17**: 61. 1888.
Heterotrichia Gabriellae Massee, Monog. 140. 1892.
Arcyria clavata Čelak. f. Arch. Nat. Land. Böhmen **7**[5]: 29. 1893.
Arcyria nodulosa Macbr. N. Am. Slime-Moulds ed. 2. 252. 1922.
Arcyria ornata Widder, Verh. Zool.-Bot. Ges. Wien **73**: 160. 1923.

Sporangia stipitate, crowded or gregarious, at first ovoid or short-cylindric, 1–2 mm. tall, 0.5–1 mm. in diameter, dull orange to brick red or brown; capillitium sparsely attached at the center, concolorous, fading, forming a loose net, the threads 5–8 μ in diameter above, more slender below, marked by transverse bars, warts, and reticulations; calyculus large, wide, shallow, nearly smooth; hypothallus membranous, continuous, yellowish-brown; spores reddish in mass, pale ochraceous by transmitted light, minutely warted, 9–12 μ in diameter; plasmodium rose-red or cream.

TYPE LOCALITY: Austria.
DISTRIBUTION: Nova Scotia and Washington to South Carolina and California; Europe; Ceylon; South Africa.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 173;* Macbr. & Mart. Myxom. *pl. 18, f. 464, 465.*
EXSICCATI: Brândză, Myxom. Roum. *114*(NY); *68*(IU); Thaxter, Rel. Farl. *375.*

2. Arcyria incarnata (Pers.) Pers. Obs. Myc. 1: 58. 1796.

Stemonitis incarnata Pers.; J. F. Gmel. Syst. Nat. 2: 1467. 1791.
Trichia flexuosa Schum. Enum. Pl. Saell. 2: 209. 1803.
Arcyria lilacina Schum. Enum. Pl. Saell. 2: 212. 1803.
Arcyria adnata Rost. Monog. Append. 36. 1876.
Arcyrella irregularis Racib. Rozp. Akad. Umiej. 12: 83. 1884.
Arcyrella incarnata Racib. Hedwigia 24: 170. 1885.

Sporangia crowded, cylindric, stalked or nearly sessile, 1–2 mm. tall, 0.5–0.8 mm. broad, becoming greatly expanded, rosaceous to crimson, weathering to brown; peridium evanescent except for the shallow, saucer-like, inwardly roughened, usually plicate calyculus; stalk usually short, sometimes merely a point, concolorous or darker, filled with spore-like cells, arising from a dull red, inconspicuous, but often continuous hypothallus; capillitium loose, very elastic, expanding to twice the original height of the fructification or more, consisting of a network of rosy threads 3–5 μ in diameter, marked with transverse plates, cogs, and half-rings arranged in an open spiral, attached to the calyculus at the center only and breaking away freely; spores rosy in mass, colorless by transmitted light, marked with a few scattered warts, 7–8 μ in diameter; plasmodium white.

TYPE LOCALITY: Germany.
HABITAT: Dead wood.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 177;* Hattori, Myxom. Nasu *pl. 2. f. 2.*
EXSICCATI: Brândză, Myxom. Roum. *89*(NY); *69, 106, 107*(IU); Jaap, Myxom. Exs. *39;* Hintikka, Myxogast. Fenn. *1.*

3. Arcyria Oerstedtii Rost. Monog. 278. 1875.

Hemiarcyria fuliginea Cooke & Massee; Cooke, Grevillea 16: 74. 1888.
Arcyria fuliginea Massee, Monog. 169. 1892.

Sporangia crowded, stipitate, cylindric, 1.5–2 mm. tall, becoming arcuate, 4–6 mm. tall when expanded, dull crimson to reddish-brown; peridium evanescent except for a few small plates which may remain attached to the capillitium; cup shallow, plicate, papillose within; stalk short, weak, concolorous, filled with spore-like cells; capillitium a loose, very elastic net, scarcely attached, the threads concolorous, irregular, mostly 3–5 μ in diameter but often with numerous bulbous enlargements, marked with close-set, conspicuous spines, some reaching 3 μ in length; spores concolorous in mass, pale yellowish by transmitted light, minutely spinulose, 7–9 μ in diameter; plasmodium watery-white, then rosy.

TYPE LOCALITY: Denmark.
HABITAT: Rotten wood.
DISTRIBUTION: Maine to Washington, south to Louisiana, scattered, uncommon; Europe; Southern Asia; Japan; South Africa; Australia.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 180.*
EXSICCATI: Brândză, Myxom. Roum. III. 2: *32; 82*(NY); *67*(IU).

4. Arcyria magna Rex, Proc. Acad. Phila. 1893: 364. 1893.

Sporangia densely aggregated, stipitate, the clusters often several centimeters in extent, smoky-olivaceous-gray to dark cinereous or occasionally dull rose, cylindric, 1.5–2 mm. tall, 0.6–0.8 mm. in diameter, attaining a length of 5–12 mm. when fully expanded, then lax and drooping; calyculus small, translucent, shining, funnel-shaped; stalk 0.1–1 mm. tall, filled with spore-like cells; capillitium concolorous, nearly free and quickly breaking away, extremely elastic, the threads 3–4 μ in diameter, coarsely sculptured with half-rings, cogs, and spines; hypothallus membranous, continuous; spores concolorous in mass, colorless under the lens, minutely papillate, 6–8 μ in diameter.

TYPE LOCALITY: Philadelphia, Pa.
HABITAT: Dead wood.
DISTRIBUTION: New York to Oregon, Florida, and Kansas; rare.
ILLUSTRATIONS: Machr. & Mart. Myxom. *pl. 17, f. 446–449.*

5. Arcyria nutans* (Bull.) Grev. Fl. Edin. 455. 1824.

Trichia nutans Bull. Hist. Champ. Fr. 122. 1791.
Stemonitis nutans J. F. Gmel. Syst. Nat. 2: 1467. 1791.
Arcyria flava Pers. Neues Mag. Bot. 1: 90. 1794.
Stemonitis amoena Trent. in Roth, Catalecta Bot. 1: 222. 1797.
Trichia elongata Schum. Enum. Pl. Saell. 2: 209. 1803.
Arcyria alutacea Schum. Enum. Pl. Saell. 2: 212. 1803.
Arcyrella nutans Racib, Hedwigia 24: 170. 1885.

Sporangia crowded, cylindric, 1.5–2 mm. tall, 0.3–0.5 mm. broad, expanding to a length of 4–7 mm. and then lax and drooping, pale ochraceous to buff, short-stipitate or sessile by an acute base on an extensive membranous hypothallus; peridium fugacious, leaving a shallow, translucent, yellowish calyculus, spinulose-reticulate within; capillitium concolorous, extremely the elastic, scarcely attached at the base, the threads 3–4 μ in diameter, marked with spines, half-rings, and irregular reticulations; spores buff or ochraceous in mass, nearly colorless by transmitted light, with a few indistinct, scattered warts, 7–8 μ in diameter; plasmodium watery-white.

TYPE LOCALITY: France.
HABITAT: Dead wood.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Bull. Herb. Fr. *pl. 502, f. 3;* Lister, Mycet. ed. 3. *pl. 179;* Hattori, Myxom. Nasu *pl. 2, f. 3.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *1214;* Hintikka, Myxogast. Fenn. *2;* Brândză, Myxom. Roum. *71*(IU).

6. Arcyria cinerea (Bull.) Pers. Syn. Fung. 184. 1801.

Trichia cinerea Bull. Hist. Champ. Fr. 120. 1791.
Stemonitis cinerea J. F. Gmel. Syst. Nat. 2: 1467. 1791.
Arcyria albida Pers. Neues Mag. Bot. 1: 90. 1794.
Stemonitis glauca Trent. in Roth, Catalecta Bot. 1: 221. 1797.
Stemonitis digitata Schw. Trans. Am. Phil. Soc. II. 4: 260. 1832.
Arcyria trichioides Corda, Ic. Fung. 2: 23. 1838.
Arcyria Leprieurii Mont. Ann. Sci. Nat. IV. 3: 141. 1855.
Arcyria bicolor Berk. & Curt.; Berk. Jour. Linn. Soc. 10: 349. 1868.
Arcyria pallida Berk. & Curt.; Berk. Grevillea 2: 67. 1873.
Arcyria digitata Rost. Monog. 274. 1875.
Arcyria stricta Rost. Monog. Append. 36. 1876.
Arcyria Friesii Berk. & Br. Ann. Mag. Nat. Hist. IV. 17: 140. 1876.
Comatricha alba Schulzer, Oesterr. Bot. Zeits. 27: 167. 1877.
Arcyria Cookei Massee, Monog. 154. 1892.
Arcyria tenuis Schroet.; P. Henn. Hedwigia 35: 207. 1896.

Sporangia stipitate, scattered, gregarious, or united by their stalks into clusters of 2–20 or more, ovoid or subcylindric, rarely broadly ovate, 0.1–0.8 mm. in diameter, 0.3–4 mm. tall, pale gray or drab to pallid-ochraceous, rarely greenish; peridium fugacious except for fragments which not rarely remain attached to the expanded capillitium; calyculus concolorous, rather small, sulcate below; stalk slender, concolorous or darker, often nearly black, crowded with spore-like cells, more or less fused with others in clustered developments; capillitium firmly attached to the cup, the meshes close, the threads 2–4 μ in diameter, wider below, densely spinulose; spores pale gray or yellowish in mass, colorless by transmitted light, with a few scattered, inconspicuous warts, 6–8 μ in diameter; plasmodium white, less commonly gray or yellowish.

TYPE LOCALITY: France.
HABITAT: Dead wood, plant debris or the dung of herbivorous animals.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Bull. Herb. Fr. *pl. 477, f. 3;* Rost. Monog. *pl. 10, f. 182–185, 193;* Lister, Mycet. ed. 3. *pl. 176, a–e;* Hattori, Myxom. Nasu *pl. 2, f. 5.*
EXSICCATI: Ellis, N. Am. Fungi *1115;* Jaap, Myxom. Exs. *78, 118;* Brândză, Myxom. Roum. *87* (NY); Thaxter, Rel. Farl. *374.*

7. Arcyria globosa Schw. Schr. Nat. Ges. Leipzig 1: 64. 1822. Not *Arcyria globosa* Weinm. 1829.

Craterium globosum Fries, Syst. Myc. 3: 154. 1829.
Lachnobolus globosus Rost. Monog. 283. 1875.
Nassula globosa Fries; Rost. Monog. 283, as syn. 1875.

* As "Arscyria nutans."

Sporangia globose, stipitate, scattered or gregarious, 0.3–0.7 mm. in diameter, 0.5–1.5 mm. tall, white, pale ashy-gray or rarely pale yellowish; peridium thin, concolorous, the upper half fugacious, leaving the lower half as a deep, goblet-shaped calyculus; stalk 0.2–0.8 mm. tall, concolorous or somewhat darker, hollow, filled with spore-like cells; capillitium pallid, scarcely elastic, close-meshed, the threads 3.5–4.5 μ in diameter, marked with warts and sometimes indistinct reticulations and often bearing nodular swellings up to 10 μ in width; spores colorless, very minutely spinulose, with a few scattered warts, 7–8.5 μ in diameter.

TYPE LOCALITY: North Carolina.
HABITAT: Usually on dead chestnut burs; rarely on dead leaves or catkins.
DISTRIBUTION: Eastern United States wherever *Castanea* occurs, Washington (state); South America; Portugal; Ceylon; Japan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 176, g–i;* Macbr. & Mart. Myxom. *pl. 18, f. 466, 467;* Hattori, Myxom. Nasu *pl. 2, f. 6.*
EXSICCATI: Ellis, N. Am. Fungi *116, 1214;* Thaxter, Rel. Farl. *401.*

8. Arcyria pomiformis (Leers) Rost. Monog. 271. 1875.

Mucor pomiformis Leers, Fl. Herborn. 284. 1775.
Stemonitis pomiformis Roth, Fl. Germ. 548. 1788.
Stemonitis ochroleuca Trent. in Roth, Catalecta Bot. 1: 221. 1797.
Stemonitis lutea Trent. in Roth, Catalecta Bot. 1: 221. 1797.
Arcyria silacea Ditmar in Sturm, Deuts. Fl. Pilze 1: 15. 1813.
Arcyria lutea Schw. Schr. Nat. Ges. Leipzig 1: 63. 1822.
Arcyria ochroleuca Fries, Syst. Myc. 3: 181. 1829.
Arcyria globosa Weinm.; Fries, Syst. Myc. 3: 181, as syn. 1829. Not *A. globosa* Schw. 1822.
Arcyria Winteri Wettst. Oesterr. Bot. Zeits. 35: 199. 1885.

Sporangia scattered, gregarious, globose or broadly ovate, 0.3–0.7 mm. in diameter, 0.5–1 mm. tall, becoming 0.8–2 mm. tall when expanded, bright ochraceous; calyculus shallow, nearly smooth; stalk one-third to one-half the total height, ochraceous to pale brown, filled with spore-like cells; capillitium concolorous, attached, rather open, expanding laterally and longitudinally, the threads 3–5 μ in diameter, marked with spines and indistinct bands, sometimes with numerous, often clavate free ends; spores yellow in mass, faintly ochraceous by transmitted light, with a few scattered warts, 7–8 μ in diameter; plasmodium white.

TYPE LOCALITY: Germany.
HABITAT: Dead wood, sometimes bark of living trees.
DISTRIBUTION: Throughout North America; South America; Europe; Japan; South Africa.
ILLUSTRATIONS: Macbr. & Mart. Myxom. *pl. 18, f. 468–470;* Hattori, Myxom. Nasu *pl. 21, f. 5.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *3497;* Jaap, Myxom. Exs. *20;* Brândză, Myxom. Roum. *84*(NY); Thaxter, Rel. Farl. *378.*

9. Arcyria insignis Kalchbr. & Cooke; Kalchbr. Grevillea 10: 143. 1882.

Sporangia gregarious or clustered, or occasionally solitary, stipitate, bright rose to pale salmon, occasionally fading to yellowish, ovate or cylindric, 0.5–1.5 mm. tall; stalk rather short, 0.2–0.4 mm. in height, reddish, filled with spore-like cells; capillitium a close network of delicate threads usually with a few bulbous free ends, beset with transverse bands and spines arranged in a loose spiral, in part minutely spinulose to nearly smooth, attached to the calyculus; spores pinkish in mass, colorless under the lens, with a few scattered and inconspicuous warts, 6–8 μ in diameter; plasmodium watery-white.

TYPE LOCALITY: South Africa.
HABITAT: Dead wood and herbaceous stems.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 181.*
EXSICCATI: Thaxter, Rel. Farl. *376.*

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10. Arcyria denudata (L.) Wettst. Verh. Zool.-Bot. Ges. Wien 35: Abh. 535. 1886.

Clathrus denudatus L. Sp. Pl. 1179. 1753.
Mucor Clathroides Scop. Fl. Carn. ed. 2. 2: 493. 1772.
Embolus crocatus Batsch, Elench. Fung. Contin. 1: 265. 1786.

Trichia denudata Vill. Hist. Pl. Dauph. 3: 1060. 1789.
Trichia graniformis Hoffm. Veg. Crypt. 2: 3. 1790.
Trichia cinnabaris Bull. Hist. Champ. Fr. 121. 1791.
Stemonitis crocea J. F. Gmel. Syst. Nat. 2: 1467. 1791.
Trichia rufa With. Brit. Pl. ed. 2. 3: 478. 1792.
Arcyria punicea Pers. Neues Mag. Bot. 1: 90. 1794.
Arcyria conjugata Schum. Enum. Pl. Saell. 2: 215. 1803.
Stemonitis denudata Relhan, Fl. Cantabr. ed. 3. 574. 1820.
Arcyria vernicosa Rost. Monog. Append. 36. 1876.

Sporangia crowded or gregarious, stalked, ovoid or short-cylindric, tapering upward, 2–3 mm. tall, pompeian red to brick-red, weathering to brown; peridium evanescent except for the plicate calyculus; stalk dark or concolorous, striate, ascending from a small hypothallus, 0.5–1.5 mm. long; capillitium elastic, usually erect, bright red or carmine, fading to brown, the threads 3–4 μ in diameter, marked with a series of rather distant cogs or half-rings arranged spirally around the axis, attached to the whole inner surface of the calyculus, hence not deciduous; spores red or reddish-brown in mass, colorless by transmitted light, with a few scattered warts, 6–8 μ in diameter; plasmodium white.

TYPE LOCALITY: Italy.
HABITAT: Dead wood.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 174;* Nat. Geogr. Mag. 49[4]: *pl. 15;* Hattori, Myxom. Nasu *pl. 2, f. 1.*
EXSICCATI: Ellis, N. Am. Fungi *1114;* Brândză, Myxom. Roum. *30*(NY).

11. Arcyria versicolor Phill. Grevillea 5: 115. 1877.

Arcyria vitellina Phill. Grevillea 5: 115. 1877.

Sporangia crowded, stalked to nearly sessile, obpyriform, their total height 2–3.5 mm. before dehiscence, 1–2 mm. broad; peridium iridescent, olivaceous-yellow, clear yellow, or reddish to olivaceous-brown, dehiscent near the apex, the bulk of the membrane persisting as a deep, lobed, cup-like base; stalk strandlike, weak, filled with spore-like cells, usually rather short, sometimes a mere point, arising from a prominent, venulose hypothallus; capillitium strongly elastic, concolorous, scarcely attached, the threads 5–6 μ in diameter, spinulose or spiny-reticulate, rarely with faint bars; spores yellow to olivaceous-brown or dull red in mass, pale ochraceous by transmitted light, minutely spiny, 9–11 μ in diameter.

TYPE LOCALITY: California.
HABITAT: Dead coniferous wood.
DISTRIBUTION: South Dakota, Wyoming, Colorado, Idaho, Washington, Oregon, California; Europe; Japan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 175.*

12. Arcyria occidentalis (Macbr.) G. Lister in Lister, Mycet. ed. 2. 245. 1911.

Lachnobolus occidentalis Macbr. N. Am. Slime-Moulds 188. 1899.

Sporangia ovate to subcylindric, short-stipitate or sessile on a constricted base, at first rosy, then brown or ochraceous, closely gregarious or crowded and often distorted by pressure but rarely heaped; peridium thin, metallic, persistent or somewhat fugacious above, the sides persisting as lobes; calyculus scarcely differentiated, irregular, more or less ribbed or fluted; stalk, when present, up to 1.5 mm. long, concolorous or darker, hollow, filled with sporelike cells; capillitium a loose, inelastic net, sometimes scanty, with many free ends and inflations, the threads mostly 3–4 μ wide, marked with warts and low transverse cogs often simulating spirals; spores very minutely spinulose, with scattered larger warts, 7–8 μ in diameter; plasmodium white, then rosy.

TYPE LOCALITY: Iowa.
HABITAT: Dead wood.
DISTRIBUTION: Maine to Manitoba, south to Alabama and Nebraska. Calif Kowalski 1966
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 192;* Macbr. & Mart. Myxom. *pl. 18, f. 476, 477;* Hattori, Myxom. Nasu *pl. 2, f. 4.*

DOUBTFUL SPECIES

ARCYRIA VIRESCENS G. Lister, Jour. Bot. 59: 252. 1921. Reported from Iowa and Oregon. These reports are based on collections which probably represent greenish phases of *Arcyria Oerstedtii*.

ARCYRIA CARNEA G. Lister, Jour. Bot. 59: 92. 1921. Reported from Quebec, New York, and Pennsylvania. The specimens examined seem to represent small fruitings of other reddish species.

4. OLIGONEMA Rost. Monog. 291. 1875.

Fructification sporangiate, the sporangia densely crowded. Peridium membranous. Capillitium of short or long, simple or branched elaters, nearly smooth or obscurely sculptured with spirals and sometimes with spines, warts, or rings. Spores yellow.

Type species, *Trichia nitens* Libert.

Dull olivaceous; spores warted. 1. *O. fulvum.*
Dull to shining yellow; spores reticulate.
  Peridium granular, tough; sporangia elongate, erect, tending to be crowded in a single layer; spores with a nearly complete reticulation, the bands narrow. 2. *O. flavidum.*
  Peridium scarcely granular, delicate; sporangia irregularly globose, tending to be heaped; spores with incomplete reticulation, the bands often broad, pitted. 3. *O. Schweinitzii.*

1. Oligonema fulvum Morgan, Jour. Cinc. Soc. Nat. Hist. 16: 36. 1893.

Perichaena annulifera Boud. Bull. Soc. Myc. Fr. 18: 144. 1902.

Sporangia olivaceous-brown, sessile, clustered, subglobose or somewhat pulvinate or plasmodiocarpous, 0.3–1 mm. in diameter; peridium membranous, olivaceous-yellow, marked with clear, straight lines suggesting clusters of needle-shaped crystals, and with warts; capillitium scanty, tawny, the elaters simple or branched and with a few anastomoses forming rings, nearly smooth or marked with a few loose, irregular spirals or occasional rings, half-rings, or barbs, occasionally swollen, the tips obscurely apiculate, 40–300 μ long, 3–5 μ wide; spores globose, yellow, distinctly warted, 12–15 μ in diameter.

TYPE LOCALITY: Ohio.
HABITAT: Dead wood or old fungi.
DISTRIBUTION: Ohio; France.
ILLUSTRATIONS: Proc. Iowa Acad. 38: 105. *f. 11–14;* Macbr. & Mart. Myxom. *pl. 18, f. 486, 487;* Bull. Soc. Myc. Fr. 18: *pl. 8, f. 3.*

2. Oligonema flavidum *(Peck) Peck, Ann. Rep. N. Y. State Mus. 31: 42. 1879.

Perichaena flavida Peck, Ann. Rep. N. Y. State Mus. 26: 76. 1874.
Oligonema brevifila Peck, Ann. Rep. N. Y. State Mus. 31: 42. 1879.
Oligonema minutula Massee, Jour. Roy. Micr. Soc. 1889: 348. 1889.

Sporangia bright yellow, sessile, densely clustered, globose, subglobose, or elongate, becoming cylindric or obpyriform when massed, 0.2–0.5 mm. broad, 0.5–0.8 mm. tall; peridium thin, somewhat opaque, roughened or minutely papillate, with irregular fan-like markings, opening irregularly above; capillitium not usually abundant, of short to moderately long elaters, 10–300 μ long and 3–4 μ in diameter, irregular, swollen in places and occasionally branched, sculptured with minute warts arranged so as to form indistinct spirals, the apices generally blunt, sometimes ending in one or more points; spores globose, covered with a coarse-meshed, often irregular but usually complete reticulation, the bands narrow, with few pits, 13–15 μ in diameter; plasmodium watery-white, then yellow.

* As "flavida."

TYPE LOCALITY: Ohio.
HABITAT: Rotten wood in moist places; occasionally on moist soil.
DISTRIBUTION: New England to Ontario and British Columbia, south to North Carolina, Alabama, and California; Europe; North Africa.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 165, a–c;* Proc. Iowa Acad. 38: 105, *f. 1–3.*

3. Oligonema Schweinitzii (Berk.) G. W. Martin, Mycologia 39: 460. 1947.

Trichia nitens Libert, Pl. Crypt. Ard. Fasc. 3, *277.* 1834. Not *T. nitens* Pers. 1796.
Physarum Schweinitzii Berk. Grevillea 2: 66. 1873.
Oligonema nitens Rost. Monog. 291. 1875.
Trichia Kickxii Rost. Monog. Append. 40. 1876.
Trichia bavarica Thüm. Myc. Univ. *1497.* 1879.
Trichia pusilla Schroet. Krypt.-Fl. Schles. 3[1]: 114. 1885. Not *T. pusilla* Poir. 1808.
Oligonema bavaricum Balf. & Berl.; A. Berl. in Sacc. Syll. Fung. 7: 437. 1888.
Cornuvia nitens Rost.; Lister, Mycet. 173, as syn. 1894.

Sporangia bright yellow, shining, sessile, irregularly globose, 0.1–0.5 mm. in diameter, usually crowded in dense clusters and often superimposed; peridium thin, translucent, nearly smooth, with faint fan-like markings; elaters usually sparse, 3–4 μ in diameter, simple or branched, with faint, usually dextrorse, spiral markings, otherwise nearly smooth, sometimes with occasional rings, the apices often apiculate; spores irregularly and often incompletely reticulate, the meshes mostly large, the bands often broad and pitted, 12–17 μ in diameter; plasmodium yellow.

TYPE LOCALITY: Europe.
HABITAT: Rotten wood in moist places; occasionally on moist soil.
DISTRIBUTION: New England and southern Canada to Florida and California; Europe; North Africa.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 164, d–f;* Proc. Iowa Acad. 38: 105. *f. 4–7;* Macbr. & Mart. Myxom. *pl. 18, f. 481, 489.*
EXSICCATI: Brândză, Myxom. Roum. *112*(NY).

5. TRICHIA Hall. Hist. Stirp. Helv. 3: 114. 1768.

Sporangiate or subplasmodiocarpous, sessile or stipitate. Peridium membranous or cartilaginous. Capillitium elastic, of free, simple or sparsely branched elaters, acuminate at the tips and marked with 2–5 or rarely more spiral bands. Spores yellow, yellow-brown, or reddish.

Type species, *Trichia varia* Pers.

Subplasmodiocarpous to sporangiate, sessile, rarely short-stalked.
  Elaters with two spiral bands. 1. *T. varia.*
  Elaters with three or more spiral bands.
    Spores spinulose to minutely warted.
      Spores very large, 13–18 μ in diameter; sporangia dark purple to black. 2. *T. alpina.*
      Spores rarely exceeding 13 μ in diameter.
        Fructifications purple-brown to dark ochraceous; spores brown in mass. 3. *T. Macbridei.*
        Fructifications yellow to reddish-brown, rarely black; spores ochraceous in mass.
          Dark yellow-brown or blackish; wall thickened with granular deposits. 4. *T. contorta.*
          Bright yellow or olivaceous, shining; wall thin, membranous; rarely short-stalked. 5. *T. lutescens.*
    Spores more or less completely reticulate.
      Reticulations delicate. 6. *T. scabra.*
      Reticulations coarse.
        Elaters 6–8 μ in diameter; reticulations in the form of narrow bands, 2 μ high, sparsely pitted. 7. *T. favoginea.*
        Elaters 4–6 μ in diameter; reticulations in the form of pitted bands rarely over 1 μ high.
          Reticulation complete or nearly so; bands up to 1μ high. 8. *T. affinis.*
          Reticulation incomplete, sometimes reduced to pitted, wart-like ridges up to 0.5 μ high. 9. *T. persimilis.*
Sporangiate, stalked.
  Spores reticulate.
    Reticulations prominent, coarse; elaters with short tips. 10. *T. verrucosa.*
    Reticulations delicate, often incomplete; elaters with long-tapering tips. 11. *T. pusilla.*

Spores warted or spiny.
Elaters spiny. 12. *T. erecta.*
Elaters without spines.
Elaters of uniform thickness, with short tips. 13. *T. subfusca.*
Elaters tapering gradually from their centers to their long, slender tips.
Spore-mass ochraceous or brown; stalk brown, opaque. 14. *T. Botrytis.*
Spore-mass brick-red; stalk translucent when mounted. 15. *T. floriformis.*

1. Trichia varia (Pers.) Pers. Neues Mag. Bot. 1: 90. 1794.

Stemonitis varia Pers.; J. F. Gmel. Syst. Nat. 2: 1470. 1791.
Trichia olivacea Pers. Obs. Myc. 1: 62. 1796.
Trichia cordata Pers. Obs. Myc. 2: 33. 1799.
Trichia cylindrica Pers. Obs. Myc. 2: 33. 1799.
Trichia pyriformis Pers. Obs. Myc. 2: 33. 1799. Not *T. pyriformis* Hoffm. 1790.
Trichia nigripes Pers. Syn. Fung. 178. 1801.
Trichia craterioides Corda, Ic. Fung. 2: 21. 1838.
Trichia aculeata Čelak. f. Arch. Nat. Land. Böhmen 7^{5}: 34. 1893.

Sporangia gregarious or crowded, globose, obovoid or somewhat elongate, 0.5–0.9 mm. broad, sessile or with a short, black stalk, ochraceous, yellow-brown, or olivaceous, shining; hypothallus broadly expanded, horny, inconspicuous; capillitium of rather long, simple or rarely branched elaters, 3–5 μ in diameter, bearing two or rarely three irregular spiral bands, these prominent and narrow and in places remote, the apices acute, curved, about twice the diameter in length; spores yellow to orange-yellow in mass, dull, pale yellow by transmitted light, guttulate, delicately warted, 12–14 μ in diameter; plasmodium white.

TYPE LOCALITY: Germany.
HABITAT: Dead wood.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 164, a–c;* Macbr. & Mart. Myxom. *pl. 19, f. 499–501;* Hattori, Myxom. Nasu *pl. 4, f. 2.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2099;* Sydow, Myc. Germ. *549;* Jaap, Myxom. Exs. *19, 37, 55, 95, 117;* Brândză, Myxom. Roum. I. 1: *25*(NY); *57, 58*(IU); Thaxter, Rel. Farl. *424.*

2. Trichia alpina (R. E. Fries) Meylan, Bull. Soc. Vaud. Sci. Nat. 53: 460. 1921.

Trichia contorta var. *alpina* R. E. Fries, Ark. Bot. 6^{7}: 5. 1906.
Trichia cascadensis H. C. Gilbert; Peck & Gilbert, Am. Jour. Bot. 19: 145. 1932.

Fructifications sessile, sporangiate and pulvinate, or plasmodiocarpous, scattered or clustered, 0.5–0.7 mm. broad, dark chestnut or brownish-purple to black; peridium cartilaginous, the outer portion composed of granular deposits on an inner translucent, yellow or olivaceous layer; elaters bright yellow 6–8(–10) μ wide, marked with 3–6 spiral bands, often with warts between the bands; spores globose or somewhat irregular, spinulose, bright ochraceous to orange in mass, pale yellow by transmitted light, 14–18 μ in diameter; plasmodium orange-red.

TYPE LOCALITY: Sweden.
HABITAT: Dead wood and herbaceous stems, especially in the vicinity of melting snow banks in mountainous regions.
DISTRIBUTION: New England, Ontario, Washington (state) to California; Europe; Japan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 162, c,d;* Am. Jour. Bot. 19: *pl. 13, f. 8;* Hattori, Myxom. Nasu *pl. 3, f. 6.*
EXSICCATI: Jaap, Myxom. Exs. *138.*

3. Trichia Macbridei M. E. Peck; Peck & Gilbert, Am. Jour. Bot. 19: 145. 1932.

Sporangia closely gregarious or crowded on a strongly developed, dark hypothallus, purplish-brown to dark ochraceous, sessile, depressed-globose, oval or forming short, curved or annular plasmodiocarps 0.5–1 mm. broad; peridium somewhat iridescent, thin, translucent but finely granular, breaking irregularly; capillitium and spore-mass ochraceous-brown; elaters very long to very short in the same sporangium, simple, uneven, abruptly contracted to the

simple or bifurcate tips, marked throughout with scattered, blunt spines and warts, the spirals mostly 3–4, imperfectly developed, sometimes broken and replaced for a distance with half-rings; spores densely spiny, brown in mass, pale brown by transmitted light, 11–13 μ in diameter; plasmodium bright pink.

TYPE LOCALITY: Salem, Oregon.
HABITAT: Decaying logs of *Populus*.
DISTRIBUTION: Known only from Oregon.
ILLUSTRATIONS: Am. Jour. Bot. 19: *pl. 13, f. 7.*

4. Trichia contorta (Ditmar) Rost. Monog. 259. 1875.

Lycogala contortum Ditmar in Sturm, Deuts. Fl. Pilze 1: 9. 1813.
Perichaena contorta Fries, Syst. Myc. 3: 192. 1829.
Licea contorta Wallr. Fl. Crypt. Germ. 2: 345. 1833.
Hemitrichia contorta Rost.; Fuckel, Jahrb. Nass. Ver. Nat. 27–28: 75. 1873.
Trichia reniformis Peck, Rep. N. Y. State Mus. 26: 76. 1874.
Trichia inconspicua Rost. Monog. 259. 1875.
Trichia heterotricha Balf. f.; Cooke, Grevillea 10: 117. 1882.
Trichia advenula Massee, Jour. Roy. Micr. Soc. 1889: 336. 1889.
Trichia Andersoni Rex, Proc. Acad. Phila. 1891: 395. 1891.
Trichia iowensis Machr. Bull. Nat. Hist. Univ. Iowa 2: 133. 1892.
Trichia Rostafinskii Čelak. f. Arch. Nat. Land. Böhmen 7^6: 37. 1893.
Trichia pachyderma Čelak. f. Arch. Nat. Land. Böhmen 7^6: 38. 1893.
Trichia intermedia Čelak. f. Arch. Nat. Land Böhmen 7^6: 38. 1893. Not *T. intermedia* Massee, 1889.

Sporangia pulvinate or rarely short-stalked, to short-plasmodiocarpous, closely gregarious to scattered, 0.5–0.8 mm. wide, dull yellowish-brown to dark reddish-brown, occasionally blackish; wall membranous or cartilaginous, more or less thickened with granular material or rarely with lime; capillitium ochraceous or dull yellow in mass, the elaters simple or sometimes branched, 3–5 μ in diameter, bearing four or five even or irregular spiral bands, smooth or spiny or with long, spine-like processes formed by spirals freed from the elater, the ends often more or less swollen and tipped with one or two curved spines; spores bright ochraceous in mass, pale yellow by transmitted light, spinulose, 10–13(–14) μ in diameter; plasmodium watery-white.

TYPE LOCALITY: Germany.
HABITAT: Dead wood.
DISTRIBUTION: Temperate North America; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 162, a, b;* Hattori, Myxom. Nasu *pl. 3, f. 5.*
EXSICCATI: Brândză, Myxom. Roum. *111*(NY); *60*(IU); Thaxter, Rel. Farl. *421.*

5. Trichia lutescens Lister, Jour. Bot. 35: 216. 1897.

Oligonema furcatum Buckn.; Massee, Monog. 173. 1892. Not *Trichia furcata* Wigand. 1863.
Trichia contorta γ lutescens Lister, Mycetozoa 169. 1894.
Hemitrichia Karstenii var. *lutescens* Torrend, Bull. Soc. Port. Sci. Nat. 2: 61. 1908.

Sporangia globose or pulvinate, rarely short-stalked, scattered or in small clusters, shining olivaceous or bright yellow; wall yellow, membranous, without granular deposits, usually embossed with the impressions of the spores; capillitium of simple or branched, pale yellow elaters, 3–4.5 μ in diameter, marked with four or five distinct or faint spirals, tapering or blunt and bulbous at the tips; spores bright yelllow in mass, pale yellow by transmitted light, finely warted or spinulose, 10–14 μ in diameter; plasmodium watery-pink.

TYPE LOCALITY: Great Britain.
HABITAT: Dead wood.
DISTRIBUTION: New York to Virginia, California, and Mexico, rarely collected; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 161, c–e.*
EXSICCATI: Jaap, Myxom. Exs. Nachl. 1: *15;* 2: *11.*

6. Trichia scabra Rost. Monog. 258. 1875.

Trichia nitens Massee, Jour. Roy. Micr. Soc. 1889: 333. 1889. Not *T. nitens* Pers. 1796 nor *T. nitens* Libert, 1832.
Trichia minima Massee, Jour. Roy. Micr. Soc. 1889: 336. 1889.
Hemiarcyria Bucknallii Massee; Cooke, Grevillea 18: 27. 1889.
Arcyria Bucknalli Massee, Monog. 161. 1892.

Sporangia sessile, crowded upon a well-developed, dark hypothallus, globose or turbinate, 0.6–0.8 mm. in diameter, dull orange or golden-brown, smooth, shining; capillitial mass clear golden-yellow or rusty-orange, the elaters simple, long, 4–6 μ in width, bearing three or four closely wound, regular, spinulose spiral bands, the apices short, acuminate; spores golden-yellow in mass, yellow by transmitted light, the surface marked by a fine-meshed reticulum, 10–12 μ in diameter; plasmodium white.

TYPE LOCALITY: Europe.
HABITAT: Rotten wood or bark.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 159, c, d;* Hattori, Myxom. Nasu *pl. 4, f. 1.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2100;* Sydow, Myc. Germ. *548;* Jaap, Myxom. Exs. *18;* Brândză, Myxom. Roum. *77*(NY); *35*(IU); Wann & Muensch. N. Am. Myxom. *68.*

7. Trichia favoginea (Batsch) Pers. Neues Mag. Bot. 1: 90. 1794.

Lycoperdon favogineum Batsch, Elench. Fung. Contin. 1: 257. 1786.
Sphaerocarpus chrysospermus Bull. Hist. Champ. Fr. 131. 1791.
Stemonitis favaginea J. F. Gmel. Syst. Nat. 2: 1470. 1791.
Trichia chrysosperma DC. Fl. Fr. 2: 250. 1805.

Sporangia sessile, closely crowded, obovate, cylindric or angular from pressure, 0.6–0.7 mm. in diameter, 0.7–1.9 mm. tall, olivaceous-yellow, smooth and shining; peridium thin, translucent, persistent, opening somewhat stellately; capillitial mass golden-yellow, forming a continuous weft above the opened sporangia, the threads bright yellow, usually long, 6–8 μ in diameter, bearing four or five spiral bands, these smooth or with scattered, short spines and connected by lontitudinal striae, the apices short-tapering, about equal to the width of the elater; spores golden-yellow in mass, bright yellow by transmitted light, marked by a conspicuous reticulation, often more or less imperfect, the bands narrow and high, with pits lacking or, if present, usually not conspicuous, mostly 13–16 μ in diameter; plasmodium white, creamy, or yellow.

TYPE LOCALITY: Germany.
HABITAT: Dead wood.
DISTRIBUTION: Temperate North America; common in temperate portions of the old world.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 159, a, b;* Hattori, Myxom. Nasu *pl. 3, f. 3.*
EXSICCATI: Ellis, N. Am. Fungi *1112;* Brândză, Myxom. Roum. *31*(IU); Thaxter, Rel. Farl. *422.*

8. Trichia affinis De Bary; Fuckel, Jahrb. Nass. Ver. Nat. 23–24: 336. 1870.

Trichia intermedia Massee, Jour. Roy. Micr. Soc. 1889: 341. 1889.
Trichia Kalbreyeri Massee, Jour. Roy. Micr. Soc. 1889: 344. 1889.
Trichia pulchella Rex, Proc. Acad. Phila. 1893: 366. 1893.

Sporangia sessile, globose or obovoid, crowded on a membranous hypothallus or sometimes scattered in small groups or solitary, 0.5–1 mm. in diameter, ochraceous or rather dull golden-yellow; wall thin, membranous, transparent, pale yellow, marked with punctate lines; capillitium yellow, of long elaters, 4–6 μ in diameter, marked with 3–5 spiral bands, these smooth or minutely spiny, the apices short-apiculate; spores dull yellow or ochraceous in mass, clear yellow by transmitted light, marked by a coarse and nearly complete reticulation, and usually, in addition, by broken warts and lines, the bands usually broad, and distinctly pitted, 0.5–1 μ high, mostly 13–16 μ in diameter; plasmodium watery-white.

TYPE LOCALITY: Germany.
HABITAT: Dead wood.
DISTRIBUTION: Throughout North America; generally distributed in temperate regions, less common in the tropics.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 160, c, d;* Hattori, Myxom. Nasu *pl. 3, f. 2.*
EXSICCATI: Jaap, Myxom. Exs. *77;* Brândză, Myxom. Roum. *81*(NY).

9. Trichia persimilis P. Karst. Not. Sällsk. Faun. Fl. Fenn. 9: 353. 1868.

Trichia Jackii Rost. Monog. 258. 1875.
Trichia abrupta Cooke, Ann. Lyc. N. Y. 11: 404. 1877.
Trichia proximella P. Karst. Bidr. Finl. Nat. Folk 31: 139. 1879.
Trichia Balfourii Massee, Jour. Roy. Micr. Soc. 1889: 339. 1889.
Trichia sulphurea Massee, Jour. Roy. Micr. Soc. 1889: 339. 1889.

Sporangia sessile, irregularly globose or broadly clavate, 0.5–0.8 mm. in diameter, yellow-brown to tawny, sometimes iridescent, crowded on a thin hypothallus; peridium membranous, yellow; capillitium of long or short elaters, 4–6 μ in diameter, marked with four closely-set spiral bands, usually bearing short spines, the apices short, tapering, sometimes furcate or bifurcate; spores dull yellow or ochraceous in mass, bright yellow by transmitted light, marked by elongate warts forming an irregular or fragmentary reticulation, the bands broad, flat, and pitted, mostly 13–16 μ in diameter; plasmodium white.

TYPE LOCALITY: Finland.
HABITAT: Dead wood.
DISTRIBUTION: Throughout North America; temperate portions of the Old World; scarce in the tropics.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 160, a, b;* Nat. Geogr. Mag. 49[4]: *pl. 5.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2690;* Jaap, Myxom. Exs. *38;* Brândză, Myxom. Roum. *59*(IU); Thaxter, Rel. Farl. *423.*

10. **Trichia verrucosa** Berk. in Hook. f. Fl. Tasm. **2**: 269. 1859.

Trichia superba Massee, Jour. Roy. Micr. Soc. 1889: 345. 1889.

Sporangia stalked, rarely sessile, on a membranous hypothallus, pyriform or obovoid, often clustered on united stems, ochraceous, up to 0.8 mm. broad and 4 mm. tall; wall membranous, translucent, or somewhat thickened by granular deposits; stalk reddish-brown, weak, often flattened or procumbent; spores and capillitium bright ochraceous-yellow in mass; elaters long, cylindric, bearing 3–5 spirals, these smooth or bearing a few scattered spines, with short, tapering tips; spores bright yellow by transmitted light, coarsely and prominently reticulate, the bands narrow, minutely pitted and about 1 μ high, 12–16 μ in diameter; plasmodium white.

TYPE LOCALITY: Tasmania.
HABITAT: Dead wood.
DISTRIBUTION: Washington, Oregon, Mexico, Dominica; South America; Europe; Asia; Australia.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 161, a, b;* Macbr. & Mart. Myxom. *pl. 19, f. 512, 513.*

11. **Trichia pusilla** (Hedw.) G. W. Martin, comb. nov.

Lycoperdon pusillum Hedw. Samml. Phys. Naturg. **2**: 276. 1780. Not *L. pusillum* Batsch, 1789.
Arcyria decipiens Pers. Ann. Bot. Usteri **15**: 35. 1795.
Trichia fallax Pers. Obs. Myc. **1**: 59. 1796.
Trichia virescens Schum. Enum. Pl. Saell. **2**: 208. 1803.
Trichia cerina Ditmar in Sturm, Deuts. Fl. Pilze **1**: 51. 1814.
Trichia fulva Purton, Midl. Fl. **3**: 290. 1821. Not *T. fulva* With. 1793.
Trichia nana Zukal, Verh. Zool.-Bot. Ges. Wien 35: 334. 1885.
Trichia decipiens Macbr. N. Am. Slime-Moulds 218. 1899.
Trichia Stuhlmanni Eichelb. Verh. Nat. Ver. Hamburg III. **14**: 32. 1907.

Sporangia stalked, rarely sessile, turbinate, 0.6-0.8 mm. in diameter, shining olive or olivaceous-brown, up to 3 mm. in total height; peridium membranous, yellow, often translucent; stalk cylindric, furrowed, dark brown below, paler above, usually about 1 mm. long, filled with spore-like vesicles; capillitium and spores olivaceous-yellow in mass; elaters simple or branched, olivaceous, bearing 3–5 spirals, smooth, 4.5–5.5 μ wide in the center, tapering gradually to the long, slender tips; spores pale yellow by transmitted light, bearing a delicate reticulation over most of the surface, the balance minutely warted, 10–13 μ in diameter; plasmodium white or rose.

TYPE LOCALITY: Germany.
HABITAT: Dead wood.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Samml. Phys. Naturg. **2**: *unnumb. pl.;* Lister, Mycet. ed. 3. *pl. 158, a–d;* Macbr. & Mart. Myxom. *pl. 19, f. 519, 520;* Hattori, Myxom. Nasu *pl. 3, f. 1.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *3400;* Jaap, Myxom. Exs. *96;* Hintikka, Myxogast. Fenn. *18;* Brândză, Myxom. Roum. *75*(NY); *32, 33*(IU).

12. **Trichia erecta** Rex, Proc. Acad. Phila. **1890**: 193. 1890.

Sporangia stalked, scattered or loosely gregarious, sometimes in clusters of two or three, globose or turbinate, 0.5–0.7 mm. in diameter, nut-brown, the upper portion often displaying

broad, yellow bands arranged in a reticulate pattern, the yellow portion representing the inner peridium, the darker portion the granular thickenings constituting the outer peridium; total height 1–2 mm.; stalk cylindric, stout, 0.1–1 mm. high, 0.2–0.3 mm. thick, dark brown, opaque; mass of spores and capillitium bright yellow to orange-yellow; elaters 3.5–4 μ in diameter, bearing four spirals, coarsely spinulose; spores by transmitted light pale, minutely warted, 11–13 μ in diameter; plasmodium white.

TYPE LOCALITY: New York.
HABITAT: Dead wood.
DISTRIBUTION: New York to North Carolina and Quebec; Washington (state); Europe; Ceylon.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 158, e–g;* Macbr. & Mart. Myxom. *pl. 19, f. 514, 515;* Hattori, Myxom. Nasu *pl. 3, f. 4.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2496;* Brândză, Myxom. Roum. III. *2: 29; 78, 110*(NY).

13. Trichia subfusca Rex, Proc. Acad. Phila. 1890: 192. 1890.

Trichia Botrytis δ subfusca Lister, Mycet. 172. 1894.

Sporangia stalked, rarely nearly sessile, subglobose or pyriform, scattered or gregarious, occasionally united in pairs, dull tawny brown without lines of dehiscence, 0.4–0.8 mm. in diameter; stalk short, stout, dark brown or black, rarely exceeding the height of the sporangium; capillitium and spores bright straw-yellow; elaters cylindric, 4–6 μ in diameter, with four rather uneven, smooth spirals, ending in abrupt, often curved tips; spores yellow by transmitted light, minutely and closely warted, 11–15 μ in diameter; plasmodium chocolate-brown.

TYPE LOCALITY: New York.
HABITAT: Dead wood.
DISTRIBUTION: New England to Ontario, south to North Carolina; Washington (state); Europe; Asia.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 163, l–n;* Macbr. & Mart. Myxom. *pl. 19, f. 516–518;* Hattori, Myxom. Nasu *pl. 4, f. 4.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2495.*

14. Trichia Botrytis (J. F. Gmel.) Pers. Neues Mag. Bot. 1: 89. 1794.

Stemonitis botrytis J. F. Gmel. Syst. Nat. 2: 1468. 1791.
Trichia serotina Schrad. Jour. Bot. Schrad. 2: 67. 1799.
Sphaerocarpus fragilis Sow. Engl. Fungi, *pl. 279.* 1800.
Trichia Lorinseriana Corda, Ic. Fung. 1: 23. 1837.
Trichia purpurascens Nyl. Not. Sällsk. Faun. Fl. Fenn. 4: 126. 1859.
Trichia fragilis Rost. Monog. 246. 1875.
Trichia Carlyleana Massee, Jour. Roy. Micr. Soc. 1889: 329. 1889.

Sporangia stalked, rarely sessile or subplasmodiocarpous, turbinate or pyriform, 0.6–0.8 mm. in diameter, often clustered on united stalks, dull olive-yellow to reddish or purplish-brown; peridium double, the inner layer membranous, the outer composed of dark granular thickenings, often separating before dehiscence and forming areolae separated by the lighter inner wall; dehiscence irregular; stalk cylindric, dull yellow or dark reddish or purplish-brown, opaque, filled with amorphous material; total height 1–3 mm.; spores and capillitium dull yellow to ochraceous-brown; elaters simple or sometimes branched, bearing 3–5 smooth spirals, 4–5 μ in diameter at the center, tapering gradually to the long, slender, acuminate tips; spores pale by transmitted light, minutely warted, 10–12 μ in diameter; plasmodium purple-brown.

TYPE LOCALITY: Germany.
HABITAT: Dead wood.
DISTRIBUTION: Temperate North America; widely distributed in temperate regions.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 163, a–d, j, k;* Macbr. & Mart. Myxom. *pl. 20, f. 521, 522;* Hattori, Myxom. Nasu *pl. 4, f. 3.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2097;* Sydow, Myc. Germ. *450;* Jaap, Myxom, Exs. *56;* Brândză, Myxom. Roum. *109*(NY); *55, 56*(IU).

15. Trichia floriformis (Schw.) G. Lister, Jour. Bot. 57: 110. 1919.

Craterium floriforme Schw. Trans. Am. Phil. Soc. II. 4: 258. 1832.
Trichia lateritia Lév. Ann. Sci. Nat. III. 5: 167. 1846.
Trichia Decaisneana De Bary, in Rost. Monog. 250. 1875.
Trichia Botrytis var. *lateritia* G. Lister in Lister, Mycet. ed. 2. 217. 1911.

Sporangia stalked, rarely nearly sessile, on a red hypothallus, turbinate or pyriform, 0.6–1 mm. in diameter, separate or forming clusters with the stalks united, rosy-brown or purplish-red to nearly black; peridium double, the outer granular layer closely adherent to the inner membranous wall, but often separating in areolate fashion above before dehiscence, the lower portion tending to split into petal-like lobes which remain attached to the stalk; stalk furrowed, irregular, often flattened and repent, clear deep red, translucent when mounted, especially above; total height 1–5 mm.; spores and capillitium brick-red in mass, fading on exposure to brownish-orange; elaters simple, rarely branched, bearing 4–6 smooth spirals, 4–5 μ in diameter at the center, tapering gradually to the long, slender tips; spores pale red by transmitted light, very minutely warted, 10–12 μ in diameter; plasmodium variously reported as white, purple-brown, or black.

TYPE LOCALITY: New York.
HABITAT: Dead wood.
DISTRIBUTION: Maine to Washington, south to North Carolina and California; Puerto Rico; reported from all continents but Africa.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 163, f. e–i* (as *T. Botrytis*); Macbr. & Mart. Myxom. *pl. 20, f. 523.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2098* (as *T. fragilis* f. *Botrytis*); Jaap, Myxom. Exs. *56* (as *T. Botrytis*).

6. HEMITRICHIA Rost. Versuch 14. 1873.

Hyporhamma Corda, Ic. Fung. 6: 13. 1854. (Nomen confusum.)
Hemiarcyria Rost. Monog. 261. 1875.

Fructification sporangiate, stalked or sessile, or plasmodiocarpous. Peridium cartilaginous, tough and usually persistent below as an irregular cup, thinner and more or less fugacious above. Stalk, when present, solid or filled with spore-like vesicles or amorphous material. Capillitium of tubular threads, these ornamented with two or more usually conspicuous, spiral bands and united into a more or less elastic net, with or without free ends. Spores red, orange, or yellow in mass, bright and pale by transmitted light.

Type species, *Trichia clavata* Pers.

Fructification plasmodiocarpous.
  Plasmodiocarps large, netted, yellow; spores reticulate. 1. *H. Serpula.*
  Plasmodiocarps small, usually simple, dark; spores spinulose. 2. *H. Karstenii.*
Fructification sporangiate, rarely subplasmodiocarpous.
  Mass of spores and capillitium yellow, yellow-brown, or gray.
    Sporangia sessile or with very short stalks.
      Sporangia cylindric, copper-colored to reddish-brown. 3. *H. stipata.*
      Sporangia globose, without coppery tints.
        Peridium pale yellow; capillitium with 5–6 spirals; sporangia rather large. 4. *H. montana.*
        Peridium hyaline, iridescent; capillitium with 2–4 spirals; sporangia small to medium-sized. 5. *H. abietina.*
    Sporangia stalked, the stalks usually well developed.
      Stalk solid; capillitium densely spiny. 6. *H. intorta.*
      Stalk hollow, filled with spore-like vesicles; capillitium smooth or minutely roughened.
        Sporangia gray or ochraceous, *Arcyria*-like; spirals dextrorse (as in a "left-handed" screw). 7. *H. leiocarpa.*
        Sporangia yellow or brown; spirals sinistrorse (as in an ordinary screw).
          Stalk expanding upward, merging gradually with the vase-like base of the peridium; capillitium minutely roughened. 8. *H. clavata.*
          Stalk cylindric, sharply distinguished from the shallow, cup-like base of the peridium; capillitium smooth. 9. *H. stipitata.*
  Mass of spores and capillitium brick-red; sporangia usually clustered, their stalks united. 10. *H. Vesparium.*

1. Hemitrichia Serpula (Scop.) Rost.; Lister, Mycet. 179. 1894.

Mucor Serpula Scop. Fl. Carn. ed. 2. 2: 493. 1772.
Lycoperdon lumbricale Batsch. Elench. Fung. Contin. 1: 259. 1786.
Trichia spongioides Vill. Hist. Pl. Dauph. 1061. 1789.
Stemonitis lumbricalis J. F. Gmel. Syst. Nat. 2: 1470. 1791.
Trichia reticulata Pers. Tent. Disp. Fung. 10. 1797.
Trichia Serpula Pers. Tent. Disp. Fung. 10. 1797.

Trichia venosa Schum. Enum. Pl. Saell. 2: 207. 1803.
Trichia retiformis Payer, Bot. Crypt. *f. 574.* 1850.
Hyporhamma reticulatum Corda, Ic. Fung. 6: 13. 1854.
Hemiarcyria Serpula Rost. Monog. 266. 1875.
Arcyria Serpula Massee, Monog. 164. 1892. Not *A. Serpula* Wigand, 1863.

Frucification plasmodiocarpous, often covering several square centimeters, terete, branching freely and usually everywhere reticulate, bright yellow, rusty, or tawny; peridium thin, transparent, with irregular, longitudinal dehiscence; hypothallus like the peridium or a little darker, the margins between adjoining segments often separated by a black line; capillitium variable, a tangle of long, yellow threads, sparingly branched, free everywhere except below, spinulose, the free tips spiny, the spirals three or four, with traces of longitudinal striae; spores golden-yellow in mass, pale yellow by transmitted light, globose, coarsely reticulate, 11–16 μ in diameter; plasmodium white, then yellow.

TYPE LOCALITY: Austria.
HABITAT: Dead wood, leaves and plant litter.
DISTRIBUTION: Throughout North America, common; cosmopolitan.
ILLUSTRATIONS: Batsch, Elench. Fung. Contin. 1: *pl. 30, f. 174 a–c;* Lister, Mycet. ed. 3. *pl. 170, a–c;* Macbr. & Mart. Myxom. *pl. 20, f. 524–526;* Hattori, Myxom. Nasu *pl. 13, f. 2;* Hagelst. Mycet. N. Am. *pl. 14, f. 2.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2499;* Brândză, Myxom. Roum. I. 1: *28;* III. 2: *27; 73*(NY); *79*(IU); Thaxter, Rel. Farl. *400 a, b.*

2. **Hemitrichia Karstenii** (Rost.) Lister, Mycet. 178. 1894.

Hemiarcyria Karstenii Rost. Monog. Append. 41. 1876.
Hemiarcyria paradoxa Massee, Jour. Roy. Micr. Soc. 1889: 356. 1889.
Hemiarcyria obscura Rex, Proc. Acad. Phila. 1891: 395. 1891.
Arcyria paradoxa Massee, Monog. 160. 1892.
Arcyria Karsteni Massee, Monog. 168. 1892.

Fructification sessile, plasmodiocarpous, usually short, unbranched, 0.3–0.5 mm. broad, varying to pulvinate or subglobose, yellowish-brown to deep reddish-brown; peridium membranous, thickened with granular deposits and becoming cartilaginous; capillitium and spores yellow in mass, the threads bearing 4–6 spiral bands, often irregular, with expansions and rings; spores yellow by transmitted light, minutely warted, 10–14 μ in diameter; plasmodium watery-white.

TYPE LOCALITY: Finland.
HABITAT: Dead wood.
DISTRIBUTION: Ontario, Colorado, Montana, Washington; Europe; Asia.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 171;* Hattori, Myxom. Nasu *pl. 23, f. 3.*

3. **Hemitrichia stipata** (Schw.) Macbr. N. Am. Slime-Moulds ed. 2. 262. 1922.

Leangium stipatum Schw. Trans. Am. Phil. Soc. II. 4: 258. 1832.
Hemiarcyria stipata Rost. Monog. Append. 41. 1876.
Arcyria stipata Lister, Mycet. 189. 1894.

Sporangia crowded, short-stalked or nearly sessile, 1.5–2 mm. tall, erect or more or less superimposed, in fresh collections copper-colored or reddish, metallic, changing to a deep brown in older specimens, often with lavender or rose tints; hypothallus dark brown, common to a cluster of sporangia; stalk 0.1–1 mm. tall, brown, hollow, the cavity filled with spore-like cells; peridium evanescent above, breaking away until only a shallow disk-like calyculus remains, or sometimes persistent as four or five lobes where sporangia have been crowded; capillitium concolorous, somewhat elastic, forming a loose net, with bulbous thickenings and more or less frequent free ends, the threads 3–5 μ wide, marked with 3–4 spirals, these often obscure on portions of the net and projecting on the outside of curves to form pointed protuberances; spores pallid, globose, nearly smooth, often marked with very fine papillae appearing like concentric stippling under an immersion objective, with occasional larger warts, 6–8 μ in diameter.

TYPE LOCALITY: Pennsylvania.
HABITAT: Dead wood.
DISTRIBUTION: Throughout North America; Europe; Asia; Oceanica.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 178;* Macbr. & Mart. Myxom. *pl. 20, f. 527–529.*
EXSICCATI: Wann & Muensch. N. Am. Myxom. *70.*

4. **Hemitrichia montana** (Morgan) Macbr. N. Am. Slime-Moulds 208. 1899.

Hemiarcyria montana Morgan. Jour. Cinc. Soc. Nat. Hist. 18: 40. 1895.

Sporangia gregarious or clustered, globose or obovate, pale yellow, sessile on a constricted base or short-stalked, 0.5–1 mm. in diameter before dehiscence, expanding to 2 mm.; peridium thin, shining, translucent, or sometimes appearing dull and thicker from spore deposits, delicately reticulate within, breaking away in patches above but persisting below as more or less petaloid lobes; capillitium dense, elastic, bright ochraceous-orange, becoming duller with age, 6–8 μ in diameter, branching and anastomosing, with numerous free ends and vesicular enlargements, bearing five or six close-set, minutely spiny spirals; spores globose, bright ochraceous in mass, almost colorless by transmitted light, minutely spinulose, 10–13 μ in diameter.

TYPE LOCALITY: San Bernadino Mts., California.
HABITAT: Dead wood.
DISTRIBUTION: Colorado, Washington, California.
ILLUSTRATION: Jour. Cinc. Soc. Nat. Hist. 18: *pl. 2, f. 12.*

5. **Hemitrichia abietina** (Wigand) G. Lister in Lister, Mycet. ed. 2. 227. 1911.

Trichia abietina Wigand, Jahrb. Wiss. Bot. 3: 33. 1863.
Hemiarcyria Wigandii Rost. Monog. 267. 1875.
Arcyria Wigandii Massee, Monog. 163. 1892.
Hemitrichia ovata Macbr. N. Am. Slime-Moulds ed. 2. 261. 1922.

Sporangia closely gregarious or crowded, sessile or short-stalked, subglobose or turbinate, 0.3–0.7 mm. in diameter, shining yellow; peridium thin, iridescent, dehiscent above irregularly or by a lid, the basal portion remaining as a persistent cup; stalk, when present, ochraceous, 0.1–0.3 mm. long, filled with spore-like cells; capillitium an open network of sparingly branched and anastomosing yellow threads 3–5 μ in diameter, bearing 2–4 loose, irregular spirals, with a few inflated or rounded free ends; spores yellow in mass, pale yellow by transmitted light, distinctly spinulose, 9–13 μ in diameter; plasmodium rose.

TYPE LOCALITY: Germany.
HABITAT: Dead wood.
DISTRIBUTION: Maine to Oregon, south to Virginia and California; Europe; Japan; Samoa.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 168, c–e;* Macbr. & Mart. Myxom. *pl. 20, f. 530–532.*
EXSICCATI: Jaap, Myxom. Exs. *58.*

6. **Hemitrichia intorta** (Lister) Lister, Mycet. 176. 1894.

Hemiarcyria intorta Lister, Jour. Bot. 29: 268. S 1891.
Hemiarcyria longifila Rex, Proc. Acad. Phila. 1891: 396. 22 S 1891.

Sporangia gregarious, stalked, turbinate or pyriform, 0.3–0.7 mm. broad, golden-yellow; peridium thin, translucent, shining, opening irregularly above, the lower portion remaining as a deep cup; stalk dark red-brown, solid, rugulose, 0.5–0.7 mm. tall; capillitium consisting of a small number of long, orange-yellow threads, sparingly branched, but looped and intertwisted, 3–4 μ in diameter, bearing four or five even and regular, spinulose spirals, connected by conspicuous longitudinal striae; spores golden-yellow in mass, yellow by transmitted light, delicately warted, 8–10 μ in diameter; plasmodium watery-white.

TYPE LOCALITY: England.
HABITAT: Dead wood.
DISTRIBUTION: Massachusetts to Ontario, south to Pennsylvania and Iowa; Europe; Ceylon.
ILLUSTRATIONS: Jour. Bot. 29: *pl. 312, f. 3;* Lister, Mycet. ed. 3. *pl. 172, a, b.*

7. **Hemitrichia leiocarpa** (Cooke) Lister, Mycet. 177. 1894.

Hemiarcyria leiocarpa Cooke, Ann. Lyc. N. Y. 11: 405. 1877.
Lachnobolus Rostafinskii Racib. Rozp. Akad. Umiej. 12: 80. 1884.

Sporangia *Arcyria*-like, stalked, subglobose or ovate to cylindric, 0.4–0.7 mm. in diameter and up to 1.5 mm. tall, pale gray or ochraceous; sporangial wall fugaceous above, persistent

at the base as a fluted, shallow calyculus; stalk slender, cylindric, 0.5–1 mm. tall, concolorous or somewhat darker, filled with spore-like cysts; capillitium a loose net of branching and anastomosing, tubular, concolorous threads, 3–5 μ in diameter, bearing 3–5 prominent spirals, smooth or spiny; spores gray or ochraceous in mass, nearly colorless by transmitted light, faintly and sparsely warted, 7–9 μ in diameter.

TYPE LOCALITY: Maine.
HABITAT: Dead wood, mosses, leaves and dung.
DISTRIBUTION: Maine, Pennsylvania, Ontario, Oregon, Panama; South America; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 168, a, b* (globose form).

8. **Hemitrichia clavata** (Pers.) Rost.; Fuckel, Jahrb. Nass. Ver. Nat. **27–28**: 75. 1873.

Trichia clavata Pers. Neues Mag. Bot. **1**: 90. 1794.
Hemiarcyria clavata Rost. Monog. 264. 1875.
Arcyria clavata Massee, Monog. 165. 1892.
Hemiarcyria ablata Morgan, Jour. Cinc. Soc. Nat. Hist. **16**: 24. 1893.
Hemiarcyria funalis Morgan, Jour. Cinc. Soc. Nat. Hist. **16**: 26. 1893.

Sporangia stalked, gregarious or crowded, broadly clavate or pyriform, 1–2 mm. tall, olivaceous-yellow; peridium shining, dehiscent above, one-half to two-thirds remaining as a goblet-shaped calyculus, marked within by rather coarse papillae or broken reticulations; stalk rather short, attenuated downwards and merging gradually into the base of the sporangium above, hollow, filled with spore-like cells, yellow above, shading into reddish-brown below, arising from the thin, dark, reddish-brown hypothallus; capillitium yellow or somewhat olivaceous, somewhat elastic, the threads 4.5–6.5 μ in diameter, closely wound with four or five spirals, minutely roughened, with occasional free ends, these often swollen, obtuse or tipped with a broad-based apiculus 2–4 μ long; spores pale yellow by transmitted light, globose or subglobose, coarsely papillate, the papillae frequently elongated into ridges which form a more or less complete reticulation, 7–9 μ in diameter; plasmodium white.

TYPE LOCALITY: Germany.
HABITAT: Dead wood.
DISTRIBUTION: Throughout temperate North America; generally distributed in temperate regions. Reported from the tropics but all tropical collections examined have proved to be *H. stipitata*.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 167, a, e;* Macbr. & Mart. Myxom. *pl. 20, f. 536–538.*
EXSICCATI: Ellis, N. Am. Fungi *523;* Brândză, Myxom. Roum. *80*(IU); Thaxter, Rel. Farl. *398;* Jaap, Myxom. Exs. Nachl. **1**: *14.*

9. **Hemitrichia stipitata** (Massee) Macbr. N. Am. Slime-Moulds 207. 1899.

Hemiarcyria stipitata Massee, Jour. Roy. Micr. Soc. **1889**: 354. 1889.
Arcyria stipitata Massee, Monog. 163. 1892.
Hemiarcyria plumosa Morgan, Jour. Cinc. Soc. Nat. Hist. **16**: 23. 1893.

Sporangia stalked, scattered, rarely crowded, globose or turbinate, olivaceous-yellow, 1–3 mm. tall; hypothallus thin, dark reddish-brown; stalk dark reddish-brown, 0.5–2 mm. in length, slender, uniform in diameter and color, filled with spore-like cells; peridium thin, dull yellow, opening above, one-half or less persistent as a petaloid calyculus, finely papillate or delicately reticulate within; capillitium yellow, dense, netted, elastic, with few free ends, these obtuse, the threads 5–7 μ in diameter, with four or five spirals, smooth; spores globose, yellow, minutely spinulose or delicately reticulate, 7–8 μ in diameter; plasmodium yellow, turning red in fruiting.

TYPE LOCALITY: Java.
HABITAT: Dead wood.
DISTRIBUTION: Throughout temperate and tropical North America; cosmopolitan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 167, b, f* (as *H. clavata*); Macbr. & Mart. Myxom. *pl. 20, f. 539, 540.*
EXSICCATI: Brândză, Myxom. Roum. *72*(NY; as *H. clavata*); Wann & Muensch. N. Am. Myxom. *65* (as *H. clavata*); Thaxter, Rel. Farl. *398* (as *H. clavata*).

10. Hemitrichia Vesparium (Batsch) Macbr. N. Am. Slime-Moulds 203. 1899.

Lycoperdon vesparium Batsch, Elench. Fung. Contin. 1: 253. 1786.
Trichia piriformis Hoffm. Veg. Crypt. 2: 1. 1790.
Stemonitis vesparia J. F. Gmel. Syst. Nat. 2: 1470. 1791.
Trichia fragiformis With. Brit. Pl. ed. 2. 3: 480. 1792.
Trichia rubiformis Pers. Neues Mag. Bot. 1: 89. 1794.
Trichia chalybea Chev. Fl. Paris 1: 323. 1826.
Trichia Neesiana Corda, Ic. Fung. 1: 23. 1837.
Trichia Ayresii Berk. & Br. Ann. Mag. Nat. Hist. II. 5: 367. 1850.
Hemiarcyria rubiformis Rost. Monog. 262. 1875.
Arcyria rubiformis Massee, Monog. 158. 1892.
Hemitrichia rubiformis Lister, Mycet. 175. 1894.

Sporangia clustered or crowded, rarely single, clavate or subcylindric, 1–1.3 mm. tall, 0.5–0.7 mm. in diameter, stalked or occasionally sessile, dark wine-red to nearly black; peridium in perfect specimens glossy or shining metallic, opaque; dehiscence by a dome-shaped lid, the basal portion of the peridium remaining as a deep cup, the clusters, when empty, suggesting a wasp's nest, rarely irregular; stalk solid, often fused, forming large clusters, concolorous; capillitium of intertwisted threads, 5–6 μ in diameter, sparingly branched, marked by three or four spiral ridges, very spiny, the free tips acuminate, terminating in a spine, the whole mass deep red; spores brownish-red in mass, reddish-orange by transmitted light, warted, subglobose, 10–12 μ in diameter; plasmodium deep red to black.

TYPE LOCALITY: Germany.
HABITAT: Dead, usually rotten, wood; occasionally on leaves.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Batsch, Elench, Fung. Contin. 1: *pl. 30, f. 172 a–d;* Rost. Monog. *pl. 11, f. 201;* Lister, Mycet. ed. 3. *pl. 166;* Macbr. & Mart. Myxom. *pl. 20, f. 533–535;* Hattori, Myxom. Nasu *pl. 4, f. 5.*
EXSICCATI: Ellis, N. Am. Fungi *1113;* Jaap, Myxom. Exs. *57;* Brândză, Myxom. Roum. I. 1: *27;* III. 2: *28; 74*(NY); *81*(IU); Thaxter, Rel. Farl. *399.*

7. CALONEMA Morgan, Jour. Cinc. Soc. Nat. Hist. 16: 27. 1893.

Sporangia sessile, subglobose or irregular, crowded, sometimes superimposed. Peridium thin, dehiscence irregular. Capillitium of branching threads arising from the base and united into a network, the surface reticulately sculptured and marked with irregular rings and spirals. Spores yellow.

Type species, *Calonema aureum* Morgan.

1. Calonema aureum Morgan, Jour. Cinc. Soc. Nat. Hist. 16: 27. 1893.

Sporangia subglobose or turbinate, gregarious, crowded or heaped, and often irregular from mutual pressure, 0.3–0.6 mm. in diameter; peridium thin, golden-yellow, marked with intricate radiating veins; capillitium of branched and anastomosing tubular threads attached to the base, free above, and with obtuse or bulbous free tips, the surface reticulate-venose, and bearing rings or fragmentary spirals; spores yellow in mass, clear, bright yellow by transmitted light, coarsely reticulate, 13–15 μ in diameter.

TYPE LOCALITY: Ohio.
HABITAT: Decayed wood.
DISTRIBUTION: New Jersey to Minnesota, south to Florida and Arkansas.
ILLUSTRATIONS: Jour. Cinc. Soc. Nat. Hist. 16: *pl. 1, f. 21;* Lister, Mycet. ed. 3. *pl. 165, d–f;* Macbr. & Mart. Myxom. *pl. 20, f. 549–551.*

Order **STEMONITALES**

Spores in mass black or deep violaceous to ferruginous, rarely colorless. Neither peridium nor capillitium calcareous, lime rarely present, and then restricted to hypothallus, stipe, and columella. Capillitium thread-like, usually dark.

Spores white in mass, colorless by transmitted light; sporangia stalked, very minute. — Fam. 1. ECHINOSTELIACEAE.

Spores black, deep violet, or ferruginous in mass, usually distinctly colored by transmitted light.

- Sporangiate; outer wall of the sporangium gelatinous when moist; columella lacking. — Fam. 2. COLLODERMATACEAE.
- Sporangiate to aethalioid; outer wall of the sporangium membranous, never gelatinous, often fugacious; columella usually present. — Fam. 3. STEMONITACEAE.

Family 1. ECHINOSTELIACEAE

Sporangia globose, stalked, minute. Spores white or faint pinkish in mass, colorless or tinged with pink by transmitted light. Columella short, giving rise to a scanty capillitium.

1. **ECHINOSTELIUM** De Bary; Rost. Versuch 7. 1873.

With the characters of the family.
Type species, *Echinostelium minutum* deBary.

1. **Echinostelium minutum** De Bary; Rost. Monog. 215. 1874.

Sporangia stipitate, scattered or gregarious, globose, 40–50 μ in diameter, 0.3–0.5 mm. tall, pale pinkish or white; stipe hairlike, white, subulate, expanded below and filled with granular material; columella very short, not exceeding 10 μ in height; capillitium scanty, several times forked, with hooked free ends; spores pinkish or white in mass, pallid by transmitted light, nearly smooth, 7–8 μ in diameter; plasmodium colorless.

TYPE LOCALITY: Germany.
HABITAT: Dead wood, dung, and bark from living trees; common in culture.
DISTRIBUTION: New England to Minnesota, south to Panama; South America; Europe.
ILLUSTRATIONS: Rost. Monog. *pl. 4, f. 53, 54, 58, 68;* Lister, Mycet. ed. 3. *pl. 128, f–i;* Macbr. & Mart. Myxom. *pl. 21, f. 552, 553.*

Family 2. COLLODERMATACEAE

Sporangiate, limeless, the peridium double, the inner wall membranous, the outer gelatinous when moist, hard and brittle when dry. Capillitium a network of purplish threads arising from the base.

1. COLLODERMA G. Lister, Jour. Bot. 48: 312. 1910.

With the characters of the family.
Type species, *Didymium oculatum* Lippert.

1. Colloderma oculatum (Lippert) G. Lister, Jour. Bot. 48: 312. 1910.

Didymium oculatum Lippert, Verh. Zool.-Bot. Ges. Wien 44: Abh. 72. 1894.

Sporangia scattered or gregarious, sessile or forming short plasmodiocarps, rarely stalked, 0.3–1 mm. in diameter, olivaceous or purple-brown, glossy, sometimes seated on a brownish-purple hypothallus; peridium double, the inner layer membranous, firm, colorless, the outer layer, when moist, thick, gelatinous, hyaline, more or less encrusted with olivaceous granules, shrinking when dry to the base; stalk, when present, short, stout, dark brown; columella lacking; capillitium a network of purplish threads arising from the base of the sporangium, 2–4 μ thick below, very slender and colorless at the tips, often surrounded by a broken hyaline sheath; spores purplish-gray in mass, spiny, 11–13 μ in diameter; plasmodium purplish-brown.

TYPE LOCALITY: Austria.
HABITAT: Dead wood covered with mosses and lichens.
DISTRIBUTION: New Hampshire, Vermont, Pennsylvania, Oregon; Europe; Asia; Australia.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 214;* Macbr. & Mart. Myxom. *pl. 10, f. 220–222;* Hattori, Myxom. Nasu *pl. 8, f. 6.*

Family 3. STEMONITACEAE

Sporangiate to aethalioid. Peridium membranous, persistent or fugacious, never gelatinous. Columella usually present. Capillitium thread-like, branching and usually anastomosing, arising from the columella or from the base of the sporangium or aethalium. Hypothallus membranous, often common to a group of sporangia. Spores black, purplish-brown or ferruginous in mass.

NOTE: *Schenella* Macbr. (Mycologia 3: 39. 1911), with the single species *S. simplex* Macbr., if it is a myxomycete, would be placed in this family close to *Amaurochaete*. It is known only from the type collection, Yosemite Valley, California. Additional collections are necessary to establish its validity.

Fructification an aethalium.
- Capillitium arising from the base as numerous branching stalks, the tips of the branches free. — 1. AMAUROCHAETE.
- Capillitium composed predominantly of horizontal, branching threads, the tips of the branches united by many-chambered vesicles. — 2. BREFELDIA.

Fructification sporangiate, the sporangia scattered, clustered, or united into a pseudoaethalium.
- Wax present in the stalk and columella and often in the capillitium and wall. — 3. ELAEOMYXA.
- Wax not secreted.
  - Stalk and columella and usually hypothallus conspicuously calcareous. — 4. DIACHEA.
  - Lime not secreted.
    - Capillitium well developed.
      - Columella reaching to the apex and there expanding into a disk from which the capillitium depends. — 5. ENERTHENEMA.
      - Columella not expanding into a terminal disk at the apex of the sporangium, often not reaching the apex.
        - Peridium fugacious; branches of the capillitium arising from the total length of columella or, when the columella is lacking, from the base of the sporangium.
          - Ultimate branchlets of the capillitium united to form a surface net. — 6. STEMONITIS.
          - Ultimate branchlets of the capillitium not forming a surface net. — 7. COMATRICHA.
        - Peridium persistent; branches of the capillitium typically arising mainly from the tip of the columella.
          - Peridium breaking up into platelets which remain attached to the tips of the capillitium. — 8. CLASTODERMA.
          - Peridium as a whole long-persistent. — 9. LAMPRODERMA.
    - Capillitium scanty or lacking; sporangia minute. — 10. MACBRIDEOLA.

1. AMAUROCHAETE Rost. Versuch 8. 1873.

Matruchotia Skupiénski, Bull. Acad. Pol. 1924: 396. 1924. Not *Matruchotia* Boul. 1893.

Fructification aethalioid, depressed-pulvinate. Peridium evanescent, leaving after its disappearance a mass of irregular stalks and branches seated on a common, dark, membranous hypothallus. Spores black or brown.

Type species, *Reticularia atra* (Alb. & Schw.) Fries.

Capillitium and spores dark purplish-brown in mass; spores 8–10 μ in diameter, pale. — 1. *A. ferruginea.*

Capillitium and spores black in mass; spores larger.
- Capillitium soft, woolly, circinate. — 2. *A. Tubulina.*
- Capillitium rigid, irregular.
  - Spores warted or spinulose. — 3. *A. fuliginosa.*
  - Spores strongly reticulate. — 4. *A. trechispora.*

1. **Amaurochaete ferruginea** Macbr. & Mart.; G. W. Martin, Jour. Wash. Acad. **22**: 89. 1932.

Aethalium pulvinate, flat, attaining 7 cm. in length and 4 cm. in width; cortex fugacious; hypothallus shining, silvery at the margin where it extends beyond the border of the aethalium; capillitium arising from numerous rigid, irregular branches arising from the hypothallus, the threads dark brown, bearing numerous lighter brown, irregular, membranous expansions; spores bone-brown, cinnamon-drab, or benzo-brown in mass, pale reddish-brown by transmitted light, minutely warted, 8–10 μ in diameter; plasmodium white.

TYPE LOCALITY: Yosemite, California.
HABITAT: Coniferous wood and on grass and litter.
DISTRIBUTION: New York, Colorado, Washington, Oregon, California.

2. **Amaurochaete Tubulina** (Alb. & Schw.) Macbr. N. Am. Slime-Moulds ed. 2. 150. 1922.

Stemonitis Tubulina Alb. & Schw. Consp. Fung. 102. 1805.
Lachnobolus cribrosus Fries, Syst. Orbis Veg. 148. 1825.
Amaurochaete cribrosa Sturgis, Mycologia 9: 328. 1917.
Matruchotia splendida Skupiénski, Bull. Acad. Pol. 1924: 396. 1924.
Matruchotiella splendida G. Lister in Lister, Mycet. ed. 3. 165, by error? 1925.

Aethalium pulvinate, flattened, attaining 10 cm. in length; cortex thin, transparent, papillate, fragile, evanescent; hypothallus thin, glossy, long-persistent; capillitium arising from numerous columellae, dense, woolly, elastic, persistent, dull black; spores black in mass, dull olivaceous under the lens, minutely roughened, 13–15 μ in diameter; plasmodium at first hyaline, then rosy or ashen, finally black.

TYPE LOCALITY: Germany.
HABITAT: Coniferous wood.
DISTRIBUTION: Massachusetts, Pennsylvania, Washington (state), Oregon, California; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 217, a–c.*
EXSICCATI: Thaxter, Rel. Farl. *372* (as *Amaurochaete atra*).

3. **Amaurochaete fuliginosa** (Sow.) Macbr. N. Am. Slime-Moulds 109. 1899.

Lycoperdon fuliginosum Sow. Engl. Fungi, *pl. 257.* 1800.
Lycogala atrum Alb. & Schw. Consp. Fung. 83. 1805.
Strongylium atrum Sw. Sv. Vet.-Akad. Handl. **36**: 110. 1815.
Strongylium majus Fries, Symb. Gast. 9. 1817.
Reticularia Strongylium Schw. Schr. Nat. Ges. Leipzig **1**: 35. 1822.
Reticularia atra Fries, Syst. Myc. **3**: 86. 1829.
Amaurochaete atra Rost. Monog. 211. 1874.

Aethalium pulvinate to subglobose, attaining 8 cm. in extent; cortex at first shining, then dull black, fragile, early dissipated; hypothallus expanded, glossy purplish-black; capillitium irregular, rigid, with or without columellae, anastomosing and netted near the surface; spores black in mass, purplish by transmitted light, irregularly globose, spinulose, 12–15 μ in diameter; plasmodium creamy-white.

TYPE LOCALITY: England.
HABITAT: Coniferous wood.
DISTRIBUTION: New England and Ontario to Florida, Colorado and Washington; Europe; Japan.
ILLUSTRATIONS: Sow. Engl. Fungi, *pl. 257;* Alb. & Schw. Consp. Fung. *pl. 3, f. 3;* Lister, Mycet. ed. 3. *pl. 136, a–c.*
EXSICCATI: Brândză, Myxom. Roum. *97*(NY).

4. **Amaurochaete trechispora** Macbr. & Mart.; G. W. Martin, Jour. Wash. Acad. **22**: 89. 1932.

Aethalium pulvinate, flat, attaining 7 cm. in length; cortex dark, shining, faintly tuberculate; hypothallus broadly expanded, persistent, extending well beyond the border of the aetha-

lium, somewhat silvery, with yellowish stains; capillitium black, rigid, irregular, arising from numerous columella-like bases, branching and anastomosing irregularly; spores purplish-black in mass, lilaceous-brown by transmitted light, strongly reticulate, the bands narrow, dark and about 2 μ high, 13–15 μ in diameter.

TYPE LOCALITY: Temagami, Ontario.
HABITAT: On *Sphagnum* and leaves.
DISTRIBUTION: Known only from the type locality.
ILLUSTRATIONS: Macbr. & Mart. Myxom. *pl. 11, f. 239, 240;* Jour. Wash. Acad. **22**: 90, *f. 4, 5.*

2. BREFELDIA Rost. Versuch 8. 1873.

Fructification an aethalium, large, pulvinate, with a continuous cortex, arising from a broadly expanded hypothallus, broken up internally by irregular walls and numerous flattened, columella-like projections, the latter giving rise to the thread-like, netted capillitium, which bears inflated, multicellular vesicles at the nodes. Spores black in mass.

Type species, *Reticularia maxima* Fries.

1. Brefeldia maxima (Fries) Rost.; Fuckel, Jahrb. Nass. Ver. Nat. 27–28: 70. 1873.

Reticularia maxima Fries, Syst. Orbis Veg. 147. 1825.
Licea perreptans Berk. Gard. Chron. **1848**: 451. 1848.

Aethalium large, 4–30 cm. in its longest dimension, 5–15 mm. thick, borne upon a widespread, silvery, shining hypothallus, purplish-black, the peridium at first papillate, soon fugacious; capillitium abundant, the threads dark, netted, the nodes bearing multicellular vesicles, the whole borne upon, but often breaking away from the flattened and irregular, columellate basal strands; spores violet-black or fuscous in mass, purplish-brown by transmitted light, distinctly warted, 9–12 μ in diameter; plasmodium white.

TYPE LOCALITY: Europe.
HABITAT: Dead wood, usually of conifers.
DISTRIBUTION: Northern United States and Canada, across the continent; Argentina; Europe.
ILLUSTRATIONS: Macbr. N. Am. Slime-Moulds ed. 2. *pl. 21, 22;* Lister, Mycet. ed. 3. *pl. 136, d–g;* Macbr. & Mart. Myxom. *pl. 11. f. 244, 245.*
EXSICCATI: Jaap. Myxom. Exs. *33, 50;* Roum. Fungi Sel. *6707;* Brândză, Myxom. Roum. I. **1**: *21*(NY).

3. ELAEOMYXA Hagelst. Mycologia **34**: 593. 1942.

Sporangiate, stalked or sessile, limeless. Peridium membranous. Capillitium composed of branching and anastomosing purplish threads. Oil or wax present in the stalk, the columella, the sporangial wall, or the capillitium in the form of granules, globules, or inclusions.

Type species, *Diachea miyazakiensis* Emoto.

1. Elaeomyxa miyazakiensis (Emoto) Hagelst. Mycologia **34**: 593. 1942.

Diachea miyazakiensis Emoto, Proc. Acad. Japan **11**: 444. 1935.

Sporangia gregarious, stalked, ovate or subcylindric, blue or violet, iridescent, their total height 1–1.5 mm.; stalk cylindric or slightly swollen in the middle, brownish-black, 0.1–1 mm. long, 0.2–0.3 mm. thick; columella limeless, about half the height of the sporangium; capillitium arising from the columella, composed of dark, purplish-brown, branching and anastomosing threads, colorless at the tips and bearing in the axils nodules of pale orange or red, granular wax; spores dark violet-brown in mass, clear violet by transmitted light, warted, 7–10 μ in diameter.

TYPE LOCALITY: Japan.
HABITAT: Dead wood.
DISTRIBUTION: Ontario; Japan.

4. DIACHEA* Fries, Syst. Orbis Veg. 143. 1825.

Diachaeella Höhnel, Sitz.-ber. Akad. Wien 118: 436. 1909.

Sporangia globose or cylindric, stipitate or sessile. Peridium simple, thin, iridescent, tending to be persistent. Columella, and stipe when present, calcareous, rigid, thick, tapering upward. Capillitium limeless, of delicate threads united into a net, the tips attached to the peridium. Spores black or dark purple in mass.

Type species, *Stemonitis elegans* Trent.

Lime deposits white.
- Sporangia typically cylindric, stalked; spores faintly marked. — 1. *D. leucopodia.*
- Sporangia globose or nearly so.
  - Stalks usually equaling or exceeding the height of the sporangium.
    - Spores sparsely but distinctly spiny or warted. — 2. *D. bulbillosa.*
    - Spores bearing prominent wart-like protuberances, these often arranged in a coarse and imperfect reticulation. — 3. *D. splendens.*
  - Stalks short or lacking.
    - Spores spiny or warted, 7–11 μ in diameter. — 4. *D. radiata.*
    - Spores reticulate, 10–13 μ in diameter. — 5. *D. subsessilis.*

Lime deposits deep yellow or orange. — 6. *D. Thomasii.*

1. Diachea leucopodia† (Bull.) Rost. Monog. 190. 1874.

Trichia leucopodia Bull. Hist. Champ. Fr. 121. 1791.
Stemonitis elegans Trent. in Roth. Catalecta Bot. 1: 220. 1797.
Stemonitis leucostyla Pers. Syn. Fung. 186. 1801.
Stemonitis leucopodia DC. Fl. Fr. 2: 257. 1805.
Diachaea leucostyla Schw. Trans. Am. Phil. Soc. II. 4: 260. 1832.
Diachaea confusa Massee, Monog. 259. 1892.

Sporangia closely gregarious, stipitate, metallic blue or iridescent purple, cylindric or ellipsoidal, rarely globose, obtuse, subumbilicate below, 0.4–0.6 mm. in diameter, their total height 1–2 mm.; stalk stout, brittle, calcareous, snow-white, one-fourth to one-half the total height, tapering upward; hypothallus white, calcareous, venulose, usually forming a conspicuous network from which the sporangia arise, sometimes sparse; columella thick, tapering, blunt, white, calcareous, over half the height of the sporangium and often nearly reaching the top; capillitium of branching and anastomosing, flexuous threads, brown except at the pale extremities, arising from all parts of the columella; spores nearly black in mass, dull lilaceous by transmitted light, minutely roughened, 8–11 μ in diameter; plasmodium white.

TYPE LOCALITY: France.
HABITAT: Fallen leaves and sticks and often on living plants.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Bull. Herb. Fr. *pl. 502, f. 2;* Nat. Geogr. Mag. 49[4]: *pl. 9;* Lister, Mycet. ed. 3. *pl. 99, a–c;* Macbr. & Mart. Myxom. *pl. 10, f. 226–228;* Hattori, Myxom. Nasu *pl. 9, f. 1.*
EXSICCATI: Rav. Fungi Car. *80;* Ellis, N. Am. Fungi *336;* Ellis & Ev. Fungi Columb. *2118;* Sydow, Myc. Germ. *113;* Jaap, Myxom. Exs. *10, 28, 107, 151, 173;* Brândză, Myxom. Roum. I. 1: *9;* II. 1: *29;* III. 1: *16*(NY); *86*(IU); Thaxter, Rel. Farl. *390;* Wann & Muensch. N. Am. Myxom. *52.*

2. Diachea bulbillosa (Berk. & Br.) Lister, Jour. Bot. 36: 165. 1898.

Didymium bulbillosum Berk. & Br. Jour. Linn. Soc. 14: 84. 1873.
Diachaeella bulbillosa Höhnel, Sitz.-ber. Akad. Wien. 118: 437. 1909.

Sporangia gregarious, stipitate, subglobose or obovate, iridescent blue or purple, finally silvery, 0.3–0.5 mm. in diameter, their total height 0.8–1.2 mm.; stalk conic or subcylindric, expanded at the base, calcareous, white or brownish, usually longer than the sporangium; hypothallus often inconspicuous; columella white, calcareous, the lime, especially in tropical collections, often aggregated into crystalline nodules; capillitium lax, of purplish threads united into a net; spores dark in mass, violet-gray by transmitted light, sparsely and often irregularly but strongly warted, 7–11 μ in diameter; plasmodium white to deep yellow.

* Commonly written "Diachaea."
† As "leucopoda."

TYPE LOCALITY: Peradeniya, Ceylon.
HABITAT: Dead leaves and litter.
DISTRIBUTION: Massachusetts and Ontario south to Kansas, Florida, and Panama; Puerto Rico; Asia.
ILLUSTRATIONS: Sitz.-ber. Akad. Wien **118**: 437, *f. 34;* Lister, Mycet. ed. 3. *pl. 99, g, h;* Macbr. & Mart. Myxom. *pl. 10, f. 235;* Hattori, Myxom. Nasu *pl. 9, f. 3.*
EXSICCATI: Wann & Muensch. N. Am. Myxom. *53* (as *D. splendens*).

3. Diachea splendens Peck, Ann. Rep. N. Y. State Mus. 30: 50. 1878.

Diachea bulbillosa var. *splendens* G. Lister in Lister, Mycet. ed. 3. 103. 1925.

Sporangia gregarious, stipitate, globose, metallic-iridescent blue, 0.3–0.6 mm. in diameter, their total height 1–1.5 mm.; stalk subcylindric or conic, calcareous, usually equaling or exceeding the sporangium; hypothallus white, calcareous, venulose; columella white, limy, clavate, exceeding the center of the sporangium; capillitium a lax network of slender, brown threads; spores black in mass, pallid by transmitted light, marked with coarse, dark, wart-like protuberance and ridges arranged in a partial reticulation, 9–10 μ in diameter; plasmodium orange.

TYPE LOCALITY: North Greenbush, N. Y.
HABITAT: Leaves, herbaceous stems, and dead wood.
DISTRIBUTION: Massachusetts to Minnesota, south to Virginia and Kansas; Japan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 99, d–f;* Macbr. & Mart. Myxom. *pl. 10, f. 229, 230.*

4. Diachea radiata Lister & Petch; Farq. & Lister, Jour. Bot. 54: 130. 1916.

Sporangia gregarious or crowded, sessile or rarely short-stalked, hemispheric or globose, 0.4–0.5 mm. in diameter, iridescent gray or bronze, seated on or imbedded in a white hypothallus; peridium membranous, colorless, shining; stalk, when present, short, stout, furrowed, calcareous, white; columella white, calcareous, convex, conic or short-cylindric, sometimes lacking; capillitium a network of purple-brown threads radiating from the columella or from the base of the sporangium; spores pale violet-gray by transmitted light, distinctly warted or spinulose, 8-11 μ in diameter; plasmodium orange-yellow.

TYPE LOCALITY: Ceylon.
HABITAT: Dead leaves and stems.
DISTRIBUTION: Iowa, (?) Florida; Ceylon; Nigeria.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 211.*

5. Diachea subsessilis Peck, Ann. Rep. N. Y. State Mus. 31: 41. 1879.

Sporangia gregarious or crowded, stipitate or sessile, rarely plasmodiocarpous, greenish-gray varying to dull iridescent blue, 0.4-0.8 mm. in diameter, their total height 0.6-1 mm.; stalk conic, calcareous, not exceeding the sporangium in height, often much shorter or lacking, white, dull gray, or brownish; hypothallus netted, scanty, somewhat calcareous or limeless; columella very short, conic, rarely lacking; capillitium radiating from the columella, of branching and anastomosing threads, brown, with pale tips; spores dark in mass, pallid under the lens, spiny-reticulate, 10–13 μ in diameter; plasmodium yellow.

TYPE LOCALITY: Adirondack Mts., N. Y.
HABITAT: Dead leaves and wood.
DISTRIBUTION: Massachusetts to Ontario, Florida, and Colorado; Europe; Ceylon; Java.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 100;* Macbr. & Mart. Myxom. *pl. 10, f. 231, 232;* Hattori, Myxom. Nasu *pl. 9, f. 2.*
EXSICCATI: Jaap. Myxom. Exs. *152.*

6. Diachea Thomasii Rex, Proc. Acad. Phila. 1892: 329. 1892.

Sporangia gregarious to crowded, sessile or short-stipitate, globose, iridescent bronze or purple, 0.5–0.9 mm. in diameter, their total height 0.6–1.2 mm.; stalk, when present, short,

thick, tapering upward, densely charged with orange lime-granules; columella orange or deep yellow, rough, cylindric or conic, obtuse, attaining one-half the height of the sporangium; capillitium lax, of slender, rigid, branching and anastomosing, brown threads, radiating from all parts of the columella; hypothallus orange, venulose, sometimes continuous; spores brown in mass, pale violaceous by transmitted light, minutely warted, with conspicuous, scattered clusters of larger warts, 11–13 μ in diameter; plasmodium deep yellow.

TYPE LOCALITY: Cranberry, North Carolina.
HABITAT: Mossy bark of dead trees.
DISTRIBUTION: Pennsylvania, North Carolina, and Tennessee.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 101;* Macbr. & Mart. Myxom. *pl. 10, f. 233, 234.*

5. ENERTHENEMA Bowman, Trans. Linn. Soc. 16: 152. 1830.

Ancyrophorus Raunk. Bot. Tidsskr. 17: 92. 1888.

Sporangiate, stipitate, the stipe continued as a columella to the top of the sporangium and there expanding into a cup-like disk from which the capillitium depends. Peridium fugacious. Spores dark.

Type species, *Enerthenema elegans* Bowman.

Spores free.
- Fuscous to deep violaceous or subferruginous; spores minutely warted; apical disk small, 0.2 mm. in diameter or less. 1. *E. papillatum.*
- Black; spores coarsely warted; apical disk 0.3–0.5 mm. in diameter. 2. *E. melanospermum.*

Spores clustered in groups of 4–12. 3. *E. Berkeleyanum.*

1. Enerthenema papillatum (Pers.) Rost. Monog. Append. 28. 1876.

Stemonitis papillata Pers. Neues Mag. Bot. 1: 90. 1794.
Trichia notata Schum. Enum. Pl. Saell. 2: 211. 1803.
Arcyria atra Schum. Enum. Pl. Saell. 2: 215. 1803.
Stemonitis mammosa Fries, Syst. Myc. 3: 161. 1829.
Enerthenema elegans Bowman, Trans. Linn. Soc. 16: 152. 1830.
Comatricha papillata Schroet. Krypt.-Fl. Schles. 3[1]: 118. 1885.
Ancyrophorus crassipes Raunk. Bot. Tidsskr. 17: 93. 1888.

Sporangia globose, stalked, fuscous, becoming purplish or ferruginous after spore discharge, 0.4–0.7 mm. in diameter, 1–1.5 mm. tall; stalk black, opaque, attenuate above, about equal to the sporangium, extending as a columella to the top of the sporangium and there expanded as a small, shining, cupulate or funnel-shaped disk, the basal part of the sporangial wall often remaining attached to the stalk as a ring after dehiscence; capillitium depending from the apical disk, the threads long, dark, flexuous; spores free, olivaceous-fuscous in mass, grayish-brown by transmitted light, minutely warted, 10–12 μ in diameter; plasmodium watery-white.

TYPE LOCALITY: Germany.
HABITAT: Dead wood and bark, often of living trees.
DISTRIBUTION: Throughout the United States and Canada; north temperate regions, Chile and Australia.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 128a–e;* Macbr. & Mart. Myxom. *pl. 13, f. 305, 306;* Hattori, Myxom. Nasu *pl. 11, f. 4.*
EXSICCATI: Jaap, Myxom. Exs. *94;* Thaxter, Rel. Farl. *395.*

2. Enerthenema melanospermum Macbr. & Mart.; G. W. Martin, Jour. Wash. Acad. 22: 91. 1932.

Sporangia intense black, gregarious in small clusters of 3–12, these in larger aggregations, globose or oval, stalked, 0.8–1 mm. in diameter, 2 mm. or more tall; stalk black, shining, rather stout, attenuate upward and continued as a slender, unbranched columella capped with a large, shining, infundibuliform terminal disk to 0.5 mm. in diameter; capillitium dense, black, rather freely branched, arising from the terminal disk, the ends free; spores free, black in mass, dark olivaceous by transmitted light, coarsely warted, 11–14 μ in diameter.

TYPE LOCALITY: Three Sisters Mt., Oregon.
HABITAT: Dead wood.
DISTRIBUTION: Washington, Oregon, California.
ILLUSTRATIONS: Jour. Wash. Acad 22: 90, *f. 6, 7;* Macbr. & Mart. Myxom. *pl. 13, f. 307, 308.*

3. Enerthenema Berkeleyanum Rost. Monog. Append. 29. 1876.

Enerthenema syncarpon Sturgis, Colo. Coll. Publ. Sci. 12: 448. 1913.
Enerthenema papillatum var. *syncarpon* G. Lister in Lister, Mycet. ed. 3. 150. 1925.

Sporangia globose, stalked, jet-black, gregarious or scattered, 0.4–0.7 mm. in diameter, 0.8–1 mm. tall; stalk black, continued into the sporangium as a columella and tipped by a small, shining disk from which the capillitium depends; threads of the capillitium coarse, black, rough, sparsely branched, flexuous; spores in clusters of 4–12, bearing long spines on the exposed surfaces, nearly smooth elsewhere, globose when separated, 11–13 μ in diameter.

TYPE LOCALITY: South Carolina.
HABITAT: Dead wood.
DISTRIBUTION: New Hampshire, Massachusetts, New York, New Jersey, South Carolina, Colorado.
EXSICCATI: Thaxter, Rel. Farl. *396*.

6. STEMONITIS Gled. Meth. Fung. 140. 1753.

Sporangiate, the sporangia cylindric, stalked, gregarious or densely clustered. Stalk extending into the sporangium as a columella. Capillitium arising from the entire length of the columella, branching repeatedly, the final branches united into a surface net. Peridium fugacious at maturity, leaving the spore mass enclosed by the surface net. Spores black, fuscous, brown or ferruginous in mass, violaceous-brown to nearly colorless by transmitted light. Hypothallus membranous, usually well developed, often common to a cluster.

Type species, *Clathroidastrum obscurum, majus* Micheli.

Spores reticulate.
- Sporangia sessile or nearly so, connate below; spores prominently banded-reticulate, 11–13 μ in diameter. — 1. *S. trechispora.*
- Sporangia stalked; spores under 10 μ in diameter.
  - Sporangia fuscous to black; spores spiny-reticulate.
    - Clusters small, black, 3–5 mm. tall. — 2. *S. nigrescens.*
    - Clusters often large and conspicuous, deep fuscous, 7–25 mm. tall. — 3. *S. fusca.*
  - Sporangia paler, vinaceous or lilac, usually less than 7 mm. tall; fruiting in small, loose clusters.
    - Spores sharply and conspicuously banded-reticulate. — 4. *S. virginiensis.*
    - Spores faintly and irregularly banded-reticulate. — 5. *S. hyperopta.*

Spores warted, spiny, or nearly smooth.
- Spores united in clusters of 4 or more. — 6. *S. uvifera.*
- Spores free.
  - Sporangia separate at apex and base, connate between, with plate-like processes at the junctions of the capillitium. — 7. *S. confluens.*
  - Sporangia distinct, gregarious or closely appressed, but the capillitia of adjoining sporangia not united.
    - Capillitium open, with few branches; meshes of the surface net large, mostly over 20 μ in diameter.
      - Capillitium purplish-brown; meshes of the surface net mostly 20–50 μ in diameter. — 8. *S. splendens.*
      - Capillitium with red metallic reflections; meshes of the surface net mostly 30–100 μ in diameter. — 9. *S. Webberi.*
    - Capillitium dense; meshes of the surface net usually under 20 μ in diameter.
      - Spores nearly smooth, usually 7 μ or less in diameter.
        - Sporangia bright ferruginous, 7–20 mm. tall; spores 5–7 μ in diameter. — 10. *S. axifera.*
        - Sporangia pale ferruginous, 2–5 mm. tall; spores 4–5 μ in diameter. — 11. *S. Smithii.*
      - Spores distinctly warted or spiny, over 7 μ in diameter.
        - Fructifications purplish-ferruginous, closely fasciculate; capillitium bearing membranous expansions; columella often expanded at the tip. — 12. *S. flavogenita.*
        - Fructifications purplish-brown or drab; capillitium and columella not expanded.
          - Slender, acuminate, 7–10 mm. tall; columella dissipated some distance below the tip. — 13. *S. carolinensis.*
          - Stouter, blunt, 3–7 mm. tall; columella ending abruptly at the tip.
            - Net scantily developed above; usually on wood. — 14. *S. pallida.*
            - Net complete; usually on herbaceous stems or leaves. — 15. *S. herbatica.*

1. **Stemonitis trechispora** (Torrend) Macbr. N. Am. Slime-Moulds ed. 2. 159. 1922.

Stemonitis fusca δ trechispora Torrend, Broteria **7**: 81. 1908.

Sporangia small, irregular, sessile or nearly so, connate below, free above, 3–7 mm. tall; stalk, when present, black, very short, occasionally to 1 mm. high; columella black, slender, usually tortuous, not reaching the apex; capillitium usually open, irregular; surface net irregular, developed mainly above; spores black in mass, purple-brown by transmitted light, prominently but irregularly and often incompletely reticulate with raised bands, spiny where not reticulate, 11–13 μ in diameter; plasmodium white.

TYPE LOCALITY: Venezuela.
HABITAT: Leaves, mosses and twigs in wet areas.
DISTRIBUTION: Maine to Virginia and Washington; South America; Europe; Asia.
ILLUSTRATION: Macbr. N. Am. Slime-Moulds ed. 2. *pl. 20, f. 11.*

2. **Stemonitis nigrescens** Rex, Proc. Acad. Phila. **1891**: 392. 1891.

Stemonitis fusca γ nigrescens Torrend, Broteria **7**: 81. 1908.

Sporangia gregarious in small clusters upon a common hypothallus, erect, cylindric, stipitate, 3–5 mm. tall, black, becoming fuscous after the spores are shed; stalk black, short, 0.1–0.5 mm. long; columella reaching the apex, black; peridial net close-meshed, sometimes incomplete or disappearing early in the upper portion; spores black in mass, violet-brown by transmitted light, conspicuously spiny, the spines arranged in a small-meshed, reticulate pattern, 8–9 μ in diameter; plasmodium yellowish-green.

TYPE LOCALITY: Philadelphia, Pa.
HABITAT: Wood and bark, less commonly leaves and plant litter.
DISTRIBUTION: Known from widely scattered localities, from Pennsylvania to California, south to North Carolina and Arizona; Wales.

3. **Stemonitis fusca** Roth, Mag. Bot. Römer & Usteri 1^2: 26. 1787.

Trichia nuda With. Brit. Pl. ed. 2. **3**: 477. 1792.
Stemonitis fasciculata Pers. Obs. Myc. **1**: 56. 1796. Not *S. fasciculata* Pers. 1791.
Stemonitis maxima Schw. Trans. Am. Phil. Soc. II. **4**: 260. 1832.
Stemonitis dictyospora Rost. Monog. 195. 1874.
Stemonitis castillensis Macbr. Bull. Nat. Hist. Univ. Iowa **2**: 381. 1893.

Sporangia slender, cylindric, tufted, often in large colonies, on a brown, membranous hypothallus, 6–20 mm. tall, deep fuscous, becoming paler as the spores are shed; stalk black, shining, rather long, from nearly half the total height in the shorter fructifications to one-fourth or less in those that are taller; columella dark brown or blackish, reaching nearly or quite to the apex; capillitium arising from all parts of the columella, branching and anastomosing freely, the ultimate branchlets united into a close-meshed surface net; spores fuscous in mass, violet-brown by transmitted light, spinulose, the spines arranged in a reticulate pattern, 7.5–9 μ in diameter; plasmodium white.

TYPE LOCALITY: Europe.
HABITAT: Dead wood.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 118, a, e;* Macbr. & Mart. Myxom. *pl. 11, f. 249, 250;* Hattori, Myxom. Nasu *pl. 20, f. 1;* Nat. Geogr. Mag. **49**[4]: *pl. 7* (as *S. spendens*).
EXSICCATI: Ellis, N. Am. Fungi *1119;* Ellis & Ev. N. Am. Fungi *2697;* Brândză, Myxom. Roum. I. 1: *17; 68*(NY); Thaxter, Rel. Farl. *373.*

4. **Stemonitis virginiensis** Rex, Proc. Acad. Phila. **1891**: 391. 1891.

Comatricha dictyospora Čelak. f. Arch. Nat. Land. Böhmen **7**[5]: 49. 1893.

Sporangia cylindric or elongate-ovate, lilac-brown, 2-8 cm. tall, gregarious in small clusters on a common hypothallus; stalk black, shining, 0.5–2 mm. tall; columella reaching the apex, giving rise to a delicate capillitium, the ultimate branches united to form a small-meshed surface net; spores bright brown in mass, pale lilac-brown by transmitted light, marked by a sharp reticulation of narrow bands, 6.5–9 μ in diameter.

TYPE LOCALITY: Mountain Lake, Virginia.
HABITAT: Dead wood.
DISTRIBUTION: Widely but sparsely distributed in the United States; Europe.
ILLUSTRATIONS: Macbr. & Mart. Myxom. *pl. 11, f. 251, 252.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2896* (type).

5. **Stemonitis hyperopta** Meylan, Bull. Soc. Vaud. Sci. Nat. **52**: 97. 1918.

Comatricha typhina var. *heterospora* Rex, Proc. Acad. Phila. 1893: 367. 1893.
Comatricha typhoides β heterospora Lister, Mycet. 121. 1894.

Sporangia broadly cylindric or elongate-ovate, lilaceous-brown, 2.5–5 mm. tall, occurring in small, loose clusters; stalk short, 0.1–0.5 mm. tall, continued into the slender columella; capillitium a network of slender, flexuous, brown threads, the ultimate branchlets united to form a delicate surface net over the lower half or two-thirds of the sporangium; spores lilac-brown in mass, pale lilac by transmitted light, warted and faintly and often incompletely banded-reticulate, 5–7 μ in diameter; plasmodium watery-white.

TYPE LOCALITY: Eastern United States.
HABITAT: Dead wood.
DISTRIBUTION: Known from scattered collections from Maine to Washington, south to North Carolina and Iowa, and in Puerto Rico; South America; Europe; Japan. Cary Kowalski
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 125, d–f;* Macbr. & Mart. Myxom. *pl. 11, f. 253, 254;* Hattori, Myxom. Nasu *pl. 20, f. 6.*
EXSICCATI: Brândză, Myxom. Roum. *63, 101*(NY).

6. **Stemonitis uvifera** Macbr. N. Am. Slime-Moulds ed. 2. 161. 1922.

Sporangia slender, cylindric, more or less recumbent, deep fuscous, 7–9 mm. tall, in rather dense clusters; stalk black, polished, one-fourth to one-third the total height; columella dark, marked by obscure spirals, not attaining the apex; capillitium dark, of stout branches, often flattened into membranous expansions in the axils, the surface net irregular, with many large meshes and free ends; spores nearly black in mass, pale sooty-brown by transmitted light, firmly united in clusters of 4–12 or more and irregular in shape from pressure, the exposed surface distinctly warted, the rest smooth, occasionally free, and then globose and uniformly warted, 8–10 μ in diameter.

TYPE LOCALITY: Mt. Rainier, Washington.
HABITAT: Dead wood.
DISTRIBUTION: Pennsylvania, District of Columbia, Ohio, Montana, Washington.
ILLUSTRATIONS: Macbr. & Mart. Myxom. *pl. 11, f. 257–259.*

7. **Stemonitis confluens** Cooke & Ellis, Grevillea **5**: 51. 1876.

Stemonitis splendens δ confluens Lister, Mycet. 112. 1894.

Sporangia closely fasciculate on a persistent hypothallus, short-stalked or sessile, separated at the tips and usually at the bases, elsewhere completely united, deep fuscous to almost black; columella dark, often failing to reach the apex; capillitium dense, often bearing membranous expansions, the terminal branchlets forming an open surface net, the branchlets of adjacent sporangia often united and bearing at the point of union persistent disk-like membranes derived from the sporangial walls; spores black in mass, purplish-brown by transmitted light, distinctly spinulose, 11–12 μ in diameter; plasmodium white.

TYPE LOCALITY: New Jersey.
HABITAT: Dead wood.
DISTRIBUTION: New York, New Jersey, Pennsylvania, North Carolina, Washington; Europe.
ILLUSTRATIONS: Macbr. N. Am. Slime-Moulds ed. 2. *pl. 11, f. 4, 4a, 5;* Macbr. & Mart. Myxom. *pl. 11, f. 255, 256.*

8. Stemonitis splendens Rost. Monog. 195. 1874.

Stemonitis Morgani Peck, Bot. Gaz. 5: 33. 1880.
Stemonitis Bauerlinii f. *fenestrata* Rex, Proc. Acad. Phila. 1890: 37. 1890.
Stemonitis maxima sensu Massee, Monog. 74. 1892. Not *S. maxima* Schw. 1832.
Stemonitis acuminata Massee, Monog. 78. 1892.
Stemonitis Bäuerlinii Massee, Monog. 79. 1892.
Stemonitis fenestrata Macbr. N. Am. Slime-Moulds 119. 1899.

Sporangia long-cylindric, flexuous, purplish-brown, closely fasciculate or less commonly gregarious, 7–25 mm. tall, forming large and conspicuous fruitings; stalk black, polished, 1–4 mm. tall, arising from a membranous, silvery or purple hypothallus; columella reaching nearly to the apex, often coiled and tortuous toward the tip; capillitium purple-brown, open, arising from few branches, the surface net regular, the meshes large, mostly 20–50 μ in diameter; spores purplish in mass, lilaceous-brown by transmitted light, faintly and closely warted, 7–9 μ in diameter; plasmodium white or pale yellow.

TYPE LOCALITY: Europe.
HABITAT: Dead wood, usually large fallen logs.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Macbr. & Mart. Myxom. *pl. 11, f. 260–263;* Hattori, Myxom. Nasu *pl. 20, f. 4.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2088;* Thaxter, Rel. Farl. *420.*

9. Stemonitis Webberi Rex, Proc. Acad. Phila. 1891: 390. 1891.

Stemonitis splendens β *Webberi* Lister, Mycet. 112. 1894.

Sporangia cylindric, obtuse, purplish-brown, erect or flexuous, usually clustered in small tufts, sometimes forming extensive fruitings or merely gregarious, 5–15 mm. tall; stalk black, shining, usually expanded at the base into a broad disk with conspicuous rhizoidal processes merging into the purplish or silvery hypothallus; capillitium open, arising from few branches, sometimes bearing membranous expansions, brown, with coppery or bronze iridescence, the tips united into a surface net with large irregular meshes, 30–125 μ in diameter; spores fuscous in mass, yellowish-brown or lilaceous-brown by transmitted light, minutely to distinctly warted, 8–9 μ in diameter.

TYPE LOCALITY: Manhattan, Kansas.
HABITAT: Dead wood.
DISTRIBUTION: Temperate North America, chiefly west of the Mississippi, and Cuba; Europe; Asia; Africa.
ILLUSTRATIONS: Macbr. N. Am. Slime-Moulds ed. 2. *pl. 11, f. 6–8;* Macbr. & Mart. Myxom. *pl. 11, f. 264, 265.*
EXSICCATI: Brândză, Myxom. Roum. III. 2: *17*(NY); *94*(IU).

10. Stemonitis axifera (Bull.) Macbr. N. Am. Slime-Moulds 120. 1899.

Trichia axifera Bull. Hist. Champ. Fr. 118. 1791.
Stemonitis ferruginea Ehrenb. Sylvae Myc. Berol. 25. 1818.
Stemonitis microspora Lister; Morgan, Jour. Cinc. Soc. Nat. Hist. 16: 138. 1894.

Sporangia cylindric, acuminate, bright rusty-brown, becoming pale brown, 7–20 mm. tall, fasciculate in small or medium-sized clusters, occasionally in large fruitings, arising from a membranous hypothallus; stalk black, shining, 3–7 mm. tall; columella branching freely and evenly, dissipated below the apex; surface net delicate, small-meshed, persistent; spores bright reddish-brown in mass, pale by transmitted light, nearly smooth or minutely punctate, 5–7 (-7.5) μ in diameter; plasmodium white or pale yellow.

TYPE LOCALITY: France.
HABITAT: Dead wood.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Bull. Herb. Fr. *pl. 477, f. 1;* Lister, Mycet. ed. 3. *pl. 119, e–g;* Hattori, Myxom. Nasu *pl. 20, f. 5.*
EXSICCATI: Rav. Fungi Car. *75, 788;* Ellis, N. Am. Fungi *1118;* Jaap, Myxom, Exs. *112, 197;* Sydow, Myc. Mar. *1085;* Thaxter, Rel. Farl. *419* (as *S. Smithii*).

11. **Stemonitis Smithii** Macbr. Bull. Nat. Hist. Univ. Iowa **2**: 381. 1893.

Stemonitis ferruginea var. *Smithii* G. Lister in Lister, Mycet. ed. 2. 150. 1911.
Stemonitis axifera var. *Smithii* Hagelst. Mycet. N. Am. 154. 1945.

Sporangia in small, close-packed clusters, subcylindric, tapering to base and tip, erect, light cinnamon-drab to vinaceous-fawn, 2.5–5 mm. tall; stalk jet black, shining, about two-fifths the total height; columella dark, becoming brown at the tip, gradually tapering and becoming dissolved into the capillitium some distance below the apex; capillitium abundant, light brown, the threads of the interior sparingly united, the surface net delicate, the meshes small, regular, polygonal; hypothallus thin, distinct, common to a cluster; spores bright reddish-brown in mass, pale brown or almost colorless by transmitted light, nearly smooth, 4–5 μ in diameter; plasmodium greenish-yellow to reddish-purple.

TYPE LOCALITY: Nicaragua.
HABITAT: Dead wood.
DISTRIBUTION: Temperate and tropical North America to Panama; Europe; Asia; New Zealand.
ILLUSTRATIONS: Macbr. & Mart. Myxom. *pl. 12, f. 268, 269.*

12. **Stemonitis flavogenita** Jahn, Verh. Bot. Ver. Brand. **45**: 165. 1904.

Sporangia cylindric, obtuse, closely fasciculate, wood-brown at first, becoming natal-brown with the disappearance of the spores, 4–8 mm. tall, occasionally taller; stalk short, black; columella ending abruptly just below the apex, often with plate-like expansions; capillitium a loose network with many membranous expansions, the surface net delicate, the meshes uneven, mostly small, with many free spine-like ends; hypothallus membranous, varying from pallid, through dull red to nearly black; spores rich brown in mass, lilaceous-brown by transmitted light, verruculose, 7–9 μ in diameter; plasmodium yellow, pallid, or white.

TYPE LOCALITY: Germany.
HABITAT: Dead wood and plant debris.
DISTRIBUTION: Known from scattered collections, New England to Washington and south to Panama; Europe; Asia.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 119, a–d;* Hattori, Myxom. Nasu *pl. 20, f. 3.*

13. **Stemonitis carolinensis** Macbr. N. Am. Slime-Moulds 122. 1899.

Stemonitis tenerrima sensu Morgan, Jour. Cinc. Soc. Nat. Hist. 16: 137. 1894. Not *S. tenerrima* M. A. Curt. 1848.

Sporangia tufted in scattered clusters, small, slender, cylindric, somewhat acuminate, at first ferruginous, then ashen or purplish, stipitate, 7–10 mm. tall; stalk usually short, black and shining; hypothallus well developed, black or very dark brown; columella black, gradually diminishing, at length dissipated some distance below the clavate or acuminate apex of the sporangium; capillitium dense, composed of many scarcely expanded, pallid, freely anastomosing branches, the surface net with very small meshes, often less than the spores, 3–15 μ in diameter; spores vinaceous in mass, pale violaceous-brown by transmitted light, very minutely roughened, 6.5–8 μ in diameter; plasmodium white.

TYPE LOCALITY: Alabama.
HABITAT: Dead wood.
DISTRIBUTION: New York to Ohio, Virginia, and Alabama, and in Puerto Rico and Panama; Africa.

14. **Stemonitis pallida** Wingate; Macbr. N. Am. Slime-Moulds 123. 1899.

Sporangia gregarious in large groups, occasionally somewhat clustered within the colony, stipitate, erect, cylindric, rather stout, obtuse, 2–6 mm. tall, dusky drab, becoming pallid as the spores disappear; stalk short or of medium length, one-third the total height or a little more,

black, polished, rising from a thin, brown or iridescent hypothallus; columella percurrent, ceasing abruptly at the apex; capillitium dense, forming at the surface a close-meshed net, poorly developed above; spores dark brown in mass, dusky by transmitted light, nearly smooth, 6.5–8 μ in diameter; plasmodium white or greenish-yellow.

TYPE LOCALITY: Delaware County, Pa.
HABITAT: Dead wood.
DISTRIBUTION: Eastern United States to Iowa; Europe; the Malay Peninsula; Japan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 120, h–l;* Hattori, Myxom. Nasu *pl. 20, f. 2.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *3498* (type).

15. **Stemonitis herbatica** Peck, Ann. Rep. N. Y. State Mus. 26: 75. 1874.

Sporangia clustered, the clusters gregarious, cylindric, obtuse, stalked or occasionally nearly sessile, natal-brown or army-brown, fading to avellaneous, 3–7 mm. tall; stalk fuscous to black, only slightly expanded below, short; hypothallus membranous, rather inconspicuous; columella attenuate upward, sometimes not reaching the apex; capillitium brown, the inner network moderately dense, often with expanded nodes, the surface net paler, the meshes small, polygonal; spores dark brown in mass, pale by transmitted light, minutely warted, 7–9 μ in diameter; plasmodium white to pale yellow.

TYPE LOCALITY: Albany, N. Y.
HABITAT: Living herbaceous plants; less commonly on dead wood and forest debris.
DISTRIBUTION: Throughout North America; Europe; Congo; the Fiji Islands.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 120, a–g;* Macbr. & Mart. Myxom. *pl. 12, f. 276, 277.*
EXSICCATI: Brândză Myxom. Roum. *102, 119*(NY).

7. **COMATRICHA** Preuss, Linnaea 24: 140. 1851.

Rostafinskia Racib. Rozp. Akad. Umiej. 12: 77. 1884. Not *Rostafinskia* Speg. 1880.
Raciborskia A. Berl. in Sacc. Syll. Fung. 7: 400. 1888.

Sporangia cylindric to globose, scattered, gregarious or densely crowded. Columella typically present, usually reaching nearly to the apex of the sporangium, rarely lacking, giving rise to numerous branches which subdivide and often anastomose to form a capillitial net, the ultimate branchlets free. Peridium free, usually evanescent, sometimes persistent. Spores black, purple, or ferruginous in mass, violaceous-brown to pallid by transmitted light.

Types species, *Comatricha obtusata* Preuss.

Peridium silvery or bronze, iridescent, persistent.
  Sessile or short-stipitate; spores roughly warted. — 1. *C. caespitosa.*
  Sessile; spores reticulate. — 2. *C. cylindrica.*
Peridium usually fugacious, rarely persistent in well-matured sporangia except as a cup-like base.
  Sporangia sessile, in dense tufts; base of peridium persisting as a cup. — 3. *C. Rispaudii.*
  Sporangia stipitate.
    Sporangia long-cylindric, densely clustered; capillitium sparse, the outer branches free or nearly so.
      Ferruginous, spore markings faint. — 4. *C. flaccida.*
      Dark brown or blackish; spore markings distinct.
        Sporangia slender, drooping, 10–50 mm. in length; capillitium dark, very open, with almost no anastomoses; spores reticulate. — 5. *C. longa.*
        Sporangia 3–6 mm. in length; capillitium with few anastomoses, pallid at the tips; spores spinulose. — 6. *C. irregularis.*
    Sporangia cylindric to globose, gregarious or scattered; capillitium forming a net except in certain minute globose species.
      Spores black or dark purple in mass; violet brown by transmitted light.
        Capillitium lax, open.
          Ovate to short-cylindric; columella reaching almost to the summit. — 7. *C. laxa.*
          Globose, minute; columella not exceeding the middle of the sporangium.
            Stalk translucent, yellowish at the base; capillitium forking repeatedly, the tips not expanded. — 8. *C. cornea.*
            Stalk black; capillitium rigid, without anastomoses, sparsely branched, with expanded tips. — 9. *C. fimbriata.*

Capillitium dense, intricate.
Robust, black, truncate; spores dark, spiny, mostly 11–13 μ in diameter. 10. *C. Suksdorfii.*
Spores rarely exceeding 11 μ in diameter.
Sporangia cylindric to elongate-ovate.
Spores warted to nearly smooth.
Stem long, usually half the total height or more.
Spores black in mass, 9–11 μ in diameter. 11. *C. pacifica.*
Spores purplish-brown in mass, 7–8 μ in diameter. 12. *C. aequalis.*
Stem short, one-fourth of the total height or less. 13. *C. subcaespitosa.*
Spores reticulate. 14. *C. reticulata.*
Sporangia globose to ovoid, rarely short-cylindric.
Columella extending above the middle of the sporangium, often nearly to the apex. 15. *C. nigra.*
Columella very short, dividing just above the base of the sporangium into primary branches of the capillitium, or lacking, and the stem dividing at the apex. 16. *C. elegans.*
Spores lilaceous or ferruginous in mass; pallid by transmitted light.
Base of the peridium persisting as a cup with capillitium attached. 17. *C. rubens.*
Peridium entirely fugacious or, if persisting, not as a basal cup.
Sporangia cylindric, 2–5 mm. tall; spores minutely punctate with widely scattered clusters of large warts. 18. *C. typhoides.*
Sporangia globose to ovate, rarely short-cylindric, less than 2 mm. tall; spore markings uniform.
Columella reaching the middle of the sporangium and there dividing into the main branches of the capillitium; spores coarsely warted. 19. *C. lurida.*
Columella reaching almost to the apex; spores minutely warted or punctate.
Capillitium brown; stalk usually shorter than the sporangium. 20. *C. pulchella.*
Capillitium pallid or flesh-colored; stalk usually longer than the sporangium. 21. *C. tenerrima.*

1. **Comatricha caespitosa** Sturgis, Bot. Gaz. **18**: 186. 1893.

Diachaea caespitosa A. & G. Lister, Jour. Bot. 45: 186. 1907.

Sporangia caespitose or crowded, sessile or with very short stalks, clavate-cylindric, dark, 1–1.5 mm. tall, 0.5 mm. in diameter; peridium silvery, iridescent with blue or bronze reflections, tending to persist, especially below; columella tubular, attaining two-thirds to three-fourths the height of the sporangium; hypothallus delicate, yellowish, inconspicuous; capillitium blackish, arising from the entire length of the columella, and forming a moderately dense network, with many free tips; spores blackish-violet in mass, pale brownish-violet by transmitted light, irregularly verrucose, 10–13 μ in diameter.

TYPE LOCALITY: Woods Hole, Mass.
HABITAT: On mosses and lichens.
DISTRIBUTION: Maine, New Hampshire, Massachusetts, Ontario, North Carolina.
ILLUSTRATIONS: Bot. Gaz. 18: *pl. 20, f. 1–4;* Lister, Mycet. ed. 3. *pl. 103, f–j;* Macbr. & Mart. Myxom. *pl. 12, f. 278, 279.*

2. **Comatricha cylindrica** (Bilgram) Macbr. N. Am. Slime-Moulds ed. 2. 173. 1922.

Diachaea cylindrica Bilgram, Proc. Acad. Phila. 57: 524. 1905.

Sporangia gregarious or caespitose in small clusters, sessile, cylindric, silvery-gray or bronze, iridescent, 1–1.7 mm. tall, 0.5–0.65 mm. in diameter; peridium membranous, hyaline, silvery-iridescent; hypothallus whitish, rugose; columella tubular, extending nearly to the apex, pale and semitranslucent near the base, elsewhere brown; capillitium a fairly dense network of brown threads with pale, slender tips; spores dark in mass, pale violaceous by transmitted light, verrucose-reticulate, 10–12 μ in diameter.

TYPE LOCALITY: Philadelphia, Pa.
HABITAT: Dead twigs and leaves.
DISTRIBUTION: New Hampshire, Pennsylvania, Florida; Japan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 103, a–e;* Macbr. & Mart. Myxom. *pl. 12, f. 280, 281;* Hattori, Myxom. Nasu *pl. 9, f. 6.*

3. **Comatricha Rispaudii** Hagelst. Mycologia 21: 297. 1929.

Sporangia densely clustered, sessile, cylindric or clavate, violaceous-brown, 0.8–1.5 mm. tall, 0.4–0.6 mm. in diameter; peridium evanescent except at the base, where it remains as a cup; columella dark brown, solid, stout below, becoming slender, sinuous, and irregular above, sometimes attaining the apex; capillitium brown, netted, the meshes rather coarse; spores brown in mass, pale violet-brown by transmitted light, reticulate, with narrow ridges, 8–9 μ in diameter.

TYPE LOCALITY: Albertson, N. Y.
HABITAT: Dead leaves and herbaceous stems.
DISTRIBUTION: New Hampshire, New York, Pennsylvania, Virginia, Florida.
ILLUSTRATIONS: Mycologia 21: *pl. 26, f. 1–3;* Hagelst. Mycet. N. Am. *pl. 11, f. 5, 6; pl. 12, f. 1.*

4. **Comatricha flaccida** (Lister) Morgan, Jour. Cinc. Soc. Nat. Hist. 16: 135. 1894.

Stemonitis splendens γ *flaccida* Lister, Mycet. 112. 1894.

Sporangia crowded in dense tufts up to 5 cm. in extent, stipitate, cylindric, ferruginous, semi-erect, their total height 5–10 mm.; stalk black, one-fourth to one-third the total height; columella percurrent, weak, crooked above, sometimes irregularly enlarged at the apex; capillitium sparse, brown, irregular, with few anastomoses and many free ends; spores ferruginous or ferruginous-brown in mass, bright reddish-brown under the lens, minutely warted, 7.5–8 μ in diameter.

TYPE LOCALITY: Lyme Regis, England.
HABITAT: Dead wood.
DISTRIBUTION: Ohio, Kentucky, Manitoba, Wisconsin, Montana, Washington, California; Europe.
ILLUSTRATION: Macbr. & Mart. Myxom. *pl. 12, f. 284, 285.*

5. **Comatricha longa** Peck, Ann. Rep. N. Y. State Mus. 43: 70. 1890.

Stemonitis longa Massee, Monog. 83. 1892.
Comatricha equinoctialis Torrend, Broteria 7: 78. 1908.

Sporangia crowded in dense masses, stipitate, black, cylindric, 10–50 mm. long, the clusters depressed or pendent; stalks black or dark red, shining, relatively short; hypothallus well developed, dark, shining; columella dark, slender, weak, attaining nearly to the apex; capillitium sparse, open, with a few anastomoses near the columella, elsewhere merely forking dichotomously, the branches free; spores blue-black in mass, dark brown by transmitted light, verrucose-reticulate, 8–10 μ in diameter; plasmodium yellow.

TYPE LOCALITY: New York.
HABITAT: Dead wood.
DISTRIBUTION: New Hampshire to Ontario and Wisconsin and in Washington (state), south to Panama and the West Indies; South America; Central Europe; South Africa; southern and eastern Asia.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 122, a–e;* Macbr. & Mart. Myxom. *pl. 13, f. 303, 304;* Hattori, Myxom. Nasu *pl. 7, f. 1.*
EXSICCATI: Brândză, Myxom. Roum. *100*(NY); *47*(IU).

6. **Comatricha irregularis** Rex, Proc. Acad. Phila. 1891: 393. 1891.

Comatricha crypta Macbr. Bull. Nat. Hist. Univ. Iowa 2: 139. 1892. Probably not *Stemonitis crypta* Schw. 1832.
Comatricha longa β *irregularis* Lister, Mycet. 120. 1894.

Sporangia crowded in tufts, stipitate, cylindric, dark brown or nearly black, semi-erect or drooping, their total height 2–8 mm.; stalk black, relatively long, one-third to one-half the total height; hypothallus well developed, continuous, shining, dark red or silvery; columella slender, flexuous, reaching the apex; capillitium loose, open, forming a large-meshed net toward the center, with numerous hyaline free ends, appearing hoary when the spores are dispersed; spores black in mass, often agglutinated, dark brown by transmitted light, strongly echinulate, 7.5–9.5 μ in diameter; plasmodium white.

TYPE LOCALITY: Philadelphia, Pa.
HABITAT: Dead wood, often corticate, and usually of deciduous trees.
DISTRIBUTION: Maine to Manitoba and Washington (state), south to Pennsylvania and Texas, and in Puerto Rico; Malaya; Japan; Australia.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 122, f–h;* Macbr. & Mart. Myxom. *pl. 12, f. 286, 287;* Hattori, Myxom. Nasu *pl. 7, f. 4.*
EXSICCATI: Thaxter, Rel. Farl. *387.*

7. **Comatricha laxa** Rost. Monog. 201. 1874.

Lamproderma Ellisiana Cooke, Ann. Lyc. N. Y. 11: 397. 1877.
Comatricha macrosperma Racib. Rozpr. Akad. Umiej. 12: 76. 1884.
Comatricha Ellisiana Ell. & Ev. N. Am. Fungi *2696.* 1891.
Comatricha Sommerfeltii A. Blytt, Forh. Vid.-Selsk. Christiania 1892[2]: 8. 1892.
Stemonitis laxa Massee, Monog. 79. 1892.
Comatricha Ellisii Morgan, Jour. Cinc. Soc. Nat. Hist. 16: 133. 1894.

Sporangia scattered or gregarious, stipitate, subglobose, ovate or short-cylindric, erect, dusky purplish-brown, their total height 1–3.5 mm.; stalk short, usually less than half the total height, tapering from an expanded base; columella erect, rigid, usually reaching nearly to the summit, rarely shorter and forking in globose forms; capillitium open, arising from all parts of the columella, the primary branches more or less horizontal, with few anastomoses and many short free tips; spores dark purplish-brown in mass, grayish-brown or lilaceous by transmitted light, minutely warted, 7–11 μ in diameter; plasmodium watery-white.

TYPE LOCALITY: Germany.
HABITAT: Dead wood and twigs and on bark in cultures.
DISTRIBUTION: Throughout North America; Europe; Asia.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 124, a–g;* Macbr. & Mart. Myxom. *pl. 12, f. 288–290;* Hattori, Myxom. Nasu *pl. 7, f. 3.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2696, 3495;* Jaap, Myxom. Exs. *114.*

8. **Comatricha cornea** Lister & Cran; G. Lister, Jour. Bot. 55: 121. 1917.

Sporangia scattered or solitary, stipitate, globose, dark brown, 0.1–0.3 mm. in diameter, their total height 0.3–1 mm.; stalk straight, slender, subulate, translucent, dark brown above, brownish-yellow below, arising from a discoid hypothallus; columella brown, cylindric, attaining one-third to one-half the height of the sporangium, with a small collar where it meets the stalk, dividing above into the two or three primary branches of the capillitium; capillitium of dichotomously forking branches with few or no anastomoses; spores gray, the wall thinner on one side, minutely warted, 8.5–9.5 μ in diameter; plasmodium colorless.

TYPE LOCALITY: Aberdeen, Scotland.
HABITAT: On bark and mosses.
DISTRIBUTION: Iowa, Kansas; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 210, a–e.*

9. **Comatricha fimbriata** Lister & Cran; G. Lister, Jour. Bot. 55: 122. 1917.

Sporangia scattered, globose, stalked, fuscous, 0.1–0.35 mm. in diameter, their total height under 1.5 mm.; stalk black, subulate, slender, straight or curved, 0.4–1 mm. high; capillitium a scanty tuft of simple or forking purplish-brown threads, slender at the base but with expanded tips; spores grayish-purple, closely and minutely spinulose, paler and smoother on one side, 10–12 μ in diameter; plasmodium colorless.

TYPE LOCALITY: Great Britain.
HABITAT: Bark of trees, especially when covered with *Protococcus*, dead coniferous wood, and woody stems. In the United States known only from developments in moist chambers.
DISTRIBUTION: Massachusetts, New York, Iowa, Kansas; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 210, e–i.*

10. Comatricha Suksdorfii Ellis & Ev. Bull. Washburn Lab. Nat. Hist. 1: 5. 1884.

Stemonitis Suksdorfii Massee, Monog. 76. 1892.
Comatricha nigra var. *Suksdorfii* Sturgis, Colo. Coll. Publ. Sci. 12: 33. 1907.

Sporangia scattered to densely gregarious, stipitate, erect, bluntly cylindric, black, their total height 2–8 mm.; peridium usually quickly evanescent, sometimes persistent, silvery; stalk jet-black, shining, even, usually about one-half the total height, sometimes shorter; hypothallus dark brown, broken or continuous; columella black, giving rise to a dense, dark capillitium, the threads anastomosing freely, with numerous, often pallid, free ends; spores black in mass, dark violaceous-brown by transmitted light, paler on one side, distinctly spiny, 10–13 μ in diameter.

TYPE LOCALITY: Washington.
HABITAT: Coniferous wood and debris.
DISTRIBUTION: Ontario, Colorado, Nevada, New Mexico, British Columbia, Washington, Oregon, California; Switzerland.
ILLUSTRATIONS: Macbr. & Mart. Myxom. *pl. 12, f. 291, 292.*

11. Comatricha pacifica (Macbr.) Peck & Gilbert, Am. Jour. Bot. 19: 139. 1932.

Comatricha aequalis "var. *C. pacifica*" Macbr. N. Am. Slime-Moulds ed. 2. 181. 1922.

Sporangia gregarious, stipitate, erect, deep violaceous, cylindric or slightly ovate, their total height 6–8 mm.; stalk half the total height or more, black, polished, even; hypothallus dark reddish-brown, shining, conspicuous, usually not a continuous layer, often forming a net connecting the various sporangia; columella dark, tapering, attaining almost the summit of the sporangium; capillitium dense, dark, flexuous, the threads branching and anastomosing freely, the free ends numerous, short, not pale; spores black in mass, dark violaceous-brown by transmitted light, distinctly warted, 9–11 μ in diameter.

TYPE LOCALITY: Oregon.
HABITAT: Coniferous wood.
DISTRIBUTION: Washington, Oregon, California.
ILLUSTRATIONS: Macbr. N. Am. Slime-Moulds ed. 2. *pl. 18, f. 13, 13a, 13b* (as *C. aequalis*).

12. Comatricha aequalis Peck, Ann. Rep. N. Y. State Mus. 31: 42. 1879.

Stemonitis aequalis Massee, Monog. 80. 1892.
Comatricha nigra var. *aequalis* Sturgis, Colo. Coll. Publ. Sci. 12: 34. 1907.

Sporangia gregarious, stipitate, usually nodding, dark brown, cylindric, their total height 2–6 mm.; stalk black, polished, even, about half the total height; hypothallus well developed, brown, continuous; columella black, attaining almost the summit of the sporangium; capillitium dense, intricate, anastomosing, dark, with numerous short, pale, free ends; spores dark purplish-brown in mass, dark violaceous by transmitted light, warted, 7.5–8 μ in diameter; plasmodium milk-white.

TYPE LOCALITY: Catskill Mts., New York.
HABITAT: Dead wood.
DISTRIBUTION: New Hampshire to Washington (state), south to North Carolina and New Mexico; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 123, l–n.*

13. Comatricha subcaespitosa Peck, Ann. Rep. N. Y. State Mus. 43: 71. 1890.

Stemonitis subcaespitosa Massee, Monog. 80. 1892.
Comatricha Persoonii γ *subcaespitosa* Torrend, Broteria 7: 77. 1908.
Comatricha nigra var. *subcaespitosa* G. Lister in Lister, Mycet. ed. 3. 142. 1925.

Sporangia scattered, caespitose or clustered, stipitate, cylindric, obtuse, their total height 1.5–2.5 mm.; stalk black, rather short, one-fifth to one-fourth the total height; hypothallus in-

conspicuous; columella straight, reaching nearly to the apex; capillitium regular, the main branches horizontal, the secondary branches flexuous, violaceous-brown, the network moderately dense; spores dark purplish-brown in mass, dusky under the lens, minutely punctate, 7–11 μ in diameter.

TYPE LOCALITY: Sandlake, N. Y.
HABITAT: Dead wood.
DISTRIBUTION: Nova Scotia to Ontario and Kansas, south to North Carolina, and in California; Europe.
ILLUSTRATIONS: Macbr. & Mart. Myxom. *pl. 12, f. 295, 296.*

14. Comatricha reticulata H. C. Gilbert; Peck & Gilbert, Am. Jour. Bot. 19: 140. 1932.

Sporangia scattered or gregarious in small, loose tufts, stipitate, erect, short-cylindric or ovate, dark lilac-brown, their total height 1.5–3 mm.; stalk black, shining, about half the total height, arising from a thin, silvery hypothallus; columella reaching to about three-fourths the height of the sporangium; capillitium rather dense, anastomosing and forming a net near the surface, the free tips short, abundant; spores brown in mass, pale lilac-brown by transmitted light, strongly although irregularly reticulate, 7–9 μ in diameter.

TYPE LOCALITY: Turner, Oregon.
HABITAT: Rotten coniferous wood.
DISTRIBUTION: Ontario, Oregon.
ILLUSTRATION: Am. Jour. Bot. 19: *pl. 12, f. 5.*

15. Comatricha nigra (Pers.) Schroet. Krypt.-Fl. Schles. 3[1]: 118. 1885.

Stemonitis nigra Pers.; J. F. Gmel. Syst. Nat. 2: 1467. 1791.
Stemonitis atrofusca Pers. Neues Mag. Bot. 1: 91. 1794.
Stemonitis ovata Pers. Syn. Fung. 189. 1801.
Trichia mucoriformis Schum. Enum. Pl. Saell. 2: 211. 1803.
Stemonitis oblonga Fries, Syst. Myc. 3: 159. 1829.
Stemonitis obtusata Fries, Syst. Myc. 3: 160. 1829.
Comatricha obtusata Preuss, Linnaea 24: 141. 1851.
Comatricha Friesiana Rost. Monog. 199. 1874.
Comatricha Persoonii C. *gracilis* Čelak. f. Arch. Nat. Land. Böhmen 7[b]: 51. 1893.

Sporangia scattered or gregarious, stipitate, globose, ovate or short-cylindric, erect, dark brown, becoming ferruginous when blown, their total height 2–8 mm.; stalk black, hair-like, relatively long, usually 2–6 times the length of the sporangium; hypothallus scanty, red, sometimes lacking; columella reaching to the middle or the upper part of the sporangium, there merging into the capillitium; capillitium intricate, the threads slender, flexuous, branching and anastomosing freely and forming a dense net; spores black in mass, dark violaceous by transmitted light, faintly warted to nearly smooth, 7–11 μ in diameter; plasmodium colorless, then white.

TYPE LOCALITY: Germany.
HABITAT: Dead wood.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 123, a–g;* Macbr. & Mart. Myxom. *pl. 12, f. 297, 298;* Hattori, Myxom. Nasu *pl. 7, f. 5.*
EXSICCATI: Rab. Fungi. Eur. *568;* Jaap, Myxom. Exs. *32, 113;* Brândză, Myxom. Roum. *46*(IU); Thaxter, Rel. Farl. *388.*

16. Comatricha elegans (Racib.) Lister, Guide Brit. Mycet. ed. 3. 31. 1909.

Rostafinskia elegans Racib. Rozp. Akad. Umiej. 12: 78. 1884.
Raciborskia elegans A. Berl. in Sacc. Syll. Fung. 7: 401. 1888.

Sporangia gregarious or scattered, stipitate, globose or ovate, purplish-brown, 0.3–0.5 mm. in diameter, their total height 1–2 mm.; peridium silvery, evanescent, rarely persistent; stalk long, slender, subulate, 0.8–1.6 mm. in length; columella short, divided below the center of the

sporangium into several stout branches which give rise to the capillitium; capillitium rather loose, the threads flexuous, slender, anastomosing; spores dark purplish-brown or pale reddish-lilac in mass, pale violaceous-brown by transmitted light, minutely spinulose, 8–10 μ in diameter; plasmodium watery-white.

TYPE LOCALITY: Poland.
HABITAT: Dead wood.
DISTRIBUTION: New Brunswick to Washington (state), south to Georgia and California; Europe; southern Asia and Japan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 124, h–n;* Hattori, Myxom. Nasu *pl. 7, f. 2;* Hagelst. Mycet. N. Am. *pl. 11, f. 1, 2.*

17. **Comatricha rubens** Lister, Mycet. 123. 1894.

Sporangia gregarious, stipitate, globose, obovate or ellipsoid, erect, pinkish-brown, their total height 1–2 mm.; peridium membranous, pinkish-brown, persistent at the base as a cup with the capillitium attached; stalk black, shining, setaceous, rising from a circular, brown hypothallus; columella reaching one-half to two-thirds the height of the sporangium; capillitium arising from all parts of the columella, dense, flexuous and anastomosing, pinkish-brown, attached to the persistent lower portion of the peridium; spores pale pinkish-brown, minutely spinulose, 7–8 μ in diameter; plasmodium watery-white.

TYPE LOCALITY: Lyme Regis, England.
HABITAT: Dead leaves and bark.
DISTRIBUTION: Maine to Washington, Oregon, and Virginia, in widely scattered localities; Great Britain; Switzerland.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 127, d–f.*

18. **Comatricha typhoides** (Bull.) Rost.; Lister, Mycet. 120. 1894.

Trichia typhoides Bull. Hist. Champ. Fr. 119. 1791.
Stemonitis typhoides DC. Fl. Fr. 2: 257. 1805.
Stemonitis pumila sensu Corda, Ic. Fung. 5: 59. 1842. Not *S. pumila* Fries, 1829.
Comatricha typhina Rost. Monog. 197. 1874.
Comatricha affinis Rost. Monog. 202. 1874.
Comatricha Stemonitis Wettst. Verh. Zool.-Bot. Ges. Wien 35: Abh. 534. 1886.
Stemonitis affinis Massee, Monog. 76. 1892.
Stemonitis aira Massee, Monog. 78. 1892.
Stemonitis Carlylei Massee, Monog. 84. 1892.
Stemonitis platensis Speg. Anal. Mus. Nac. Buenos Aires 6: 202. 1898.

Sporangia gregarious or scattered, stipitate, cylindric or narrowly ovate, obtuse, erect or arcuate, lilac-brown, 0.3–0.6 mm. in diameter, their total height 2–5 mm.; peridium silvery, tardily fugacious, sometimes persisting in patches; stalk dark red to nearly black, often covered with a silvery film, about half the total height, sometimes shorter, continuing into the sporangium as the tapering columella; capillitium a dense network of pale brown threads, with numerous anastomoses, the free ultimate branchlets short, delicate; hypothallus distinct, reddish-brown, often continuous; spores rich lilac-brown in mass, pale by transmitted light, faintly punctate and with a few scattered clusters of dark warts, 6–8 μ in diameter; plasmodium white.

TYPE LOCALITY: France.
HABITAT: Rotten wood; sometimes on leaves.
DISTRIBUTION: Throughout North America; cosmopolitan and common.
ILLUSTRATIONS: Bull. Herb. Fr. *pl. 477, f. 2;* Lister, Mycet. ed. 3. *pl. 125, a–c, k–m;* Macbr. & Mart. Myxom. *pl. 12, f. 293, 294;* Hattori, Myxom. Nasu *pl. 15, f. 1;* Hagelst. Mycet. N. Am. *pl. 15, f. 8.*
EXSICCATI: Jaap, Myxom. Exs. *13, 49;* Brândză, Myxom. Roum. *60*(NY); *45*(IU); Wann & Muensch. N. Am. Myxom. *62.*

19. **Comatricha lurida** Lister, Mycet. 119. 1894.

Sporangia gregarious, stipitate, globose or short-ovoid, erect, purplish-brown, 0.2–0.5 mm. in diameter, their total height 1–1.5 mm.; peridium fugacious; stalk black, setaceous, one-half to three-fourths the total height, arising from a scanty hypothallus; columella cylindric, reaching to about half the height of the sporangium and there divided into several stout branches

which give rise to the capillitium; capillitium rather dark brown, not dense, with few anastomoses and many long, colorless free ends, arising mainly from the tip of the main branches of the columella; spores lilac-purple in mass, pale lilaceous-gray under the lens, distinctly and coarsely warted, 6–10 μ in diameter; plasmodium white.

TYPE LOCALITY: Lyme Regis, England.
HABITAT: Dead leaves.
DISTRIBUTION: New York, Iowa; Europe; Asia.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 127, a–c;* Hagelst. Mycet. N. Am. *pl. 3.*

20. **Comatricha pulchella** (C. Bab.) Rost. Monog. Append. 27. 1876.

Stemonitis pulchella C. Bab. Proc. Linn. Soc. 1: 32. 1839.
Comatricha Persoonii Rost. Monog. 201. 1874.

Sporangia gregarious, sometimes crowded, stipitate, ovate to cylindric, acuminate, pale brown or ferruginous, their total height 0.7–1.5 mm.; stalk black, shorter than the sporangium; hypothallus thin, membranous, either circular and individual or forming a more or less continuous film under the colony; columella straight, tapering, reaching almost to the apex; capillitium dense, flexuous, dark brown, with many anastomoses and few free ends; spores brown in mass, pale lilac-brown by transmitted light, minutely but uniformly punctate, 7–8 μ in diameter; plasmodium watery-white or colorless.

TYPE LOCALITY: England.
HABITAT: Dead wood and dead and living leaves.
DISTRIBUTION: Throughout North America; Bolivia; Europe; Nigeria; southern Asia and Japan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 126, a–e, i-l;* Macbr. & Mart. Myxom. *pl. 13, f. 301, 302;* Hattori, Myxom. Nasu *pl. 7, f. 6.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2094* (as *C. gracilis* Wingate), *3599.*

21. **Comatricha tenerrima** (M. A. Curt.) G. Lister, Guide Brit. Mycet. ed. 4. 39. 1919.

Stemonitis tenerrima M. A. Curt. Am. Jour. Sci. II. 6: 352. 1848.
Comatricha pulchella var. *tenerrima* G. Lister in Lister, Mycet. ed. 2. 156. 1911.

Sporangia scattered, stipitate, ovoid or cylindric, pale red, brownish-pink or lilac-pink, their total height 1.5–2 mm.; stalk slender, black, usually longer than the sporangium; columella slender, often reaching the summit; capillitium flexuous, netted, pale red; spores pale flesh-colored, minutely warted, 7–8 μ in diameter; plasmodium watery-white.

TYPE LOCALITY: South Carolina.
HABITAT: Dead wood, herbaceous stalks and leaves.
DISTRIBUTION: Quebec, Pennsylvania, South Carolina, Antigua; Brazil; Europe; Japan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 126, f–h.*
EXSICCATI: Jaap, Myxom. Exs. *156.*

DOUBTFUL SPECIES

COMATRICHA EXTENDENS Hagelst. Mycologia 27:374 (1935), with an elastic capillitium and no columella, is known only from the type collection, New York, made from flooring near steam pipes in a moist environment with temperature 90–100°F. It may well be a phase of *C. nigra* induced by such conditions.

COMATRICHA MICROSPORA G. Lister (Guide Brit. Mycet. ed. 4.39. 1919. *Stemonitis hyperopla* var. *microspora* G. Lister in Lister, Mycet. ed. 3.134. 1925), with spores 3.5–4 μ in diameter, is recorded by G. Lister from Ohio. No specimens have been seen. Further collections are necessary to determine the status of this form.

TBMS 48: 648, 1965

8. **CLASTODERMA** Blytt, Bot. Zeit. 38: 343. 1880.

Orthotricha Wingate, Jour. Myc. 2: 125. 1886.

Sporangiate, globose, stipitate. Peridium breaking up at maturity into rounded or angular fragments which remain attached to the tips of the capillitium. Columella short, sometimes

nearly obsolete. Capillitium arising from the apex of the columella, of branching and anastomosing threads bearing at the free tips the peridial platelets. Spores brown.

Type species, *Clastoderma Debaryanum* Blytt.

1. Clastoderma Debaryanum* A. Blytt, Bot. Zeit. 38: 343. 1880.

Orthotricha microcephala Wingate, Jour. Myc. 2: 125. 1886.

Sporangia scattered or gregarious, 0.1–0.2 mm. in diameter, 1-1.3 mm. tall; peridium rosaceous-brown, dehiscent into scales which remain attached to the tips of the capillitium; columella short or nearly obsolete, giving rise at the tip to the branching and occasionally anastomosing, pale-brown capillitium, the latter often rather sparse; stem slender, stuffed with dark, granular material below, translucent brown above, the two portions usually abruptly divided by a swollen ring; spores bright rosaceous-brown in mass, pallid by transmitted light, smooth, 8–10 μ in diameter; plasmodium watery-white or greenish.

TYPE LOCALITY: Norway.
HABITAT: Dead wood, bark of living and dead trees, weathered sporophores of fungi, and miscellaneous debris.
DISTRIBUTION: Maine to Iowa and Panama; South America; Europe; southern Asia; Australia; abundant in the tropics.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 135;* Macbr. & Mart. Myxom. *pl. 21, f. 554;* Hattori, Myxom. Nasu *pl. 8, f. 5.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2498;* Thaxter, Rel. Farl. *801.*

9. LAMPRODERMA Rost. Versuch 7. 1873.

Fructification sporangiate, stalked or sessile, globose or ellipsoid. Peridium tough, membranous, persistent, shining with metallic iridescence. Columella cylindric or clavate, one-half to two-thirds the height of the sporangial cavity, rarely shorter or lacking. Capillitium arising mainly from the apex of the columella, the branches becoming thinner and often paler as they approach the periphery. Spores dark in mass.

Type species, *Physarum columbinum* Pers.

Spores reticulate over at least a portion of the surface; sporangia sessile or short-stalked.
- Reticulation complete, of raised bands. — 1. *L. Cribrarioides.*
- Reticulation incomplete, of warts arranged in sinuous lines on part of the spore surface. — 2. *L. robustum.*

Spores warted or spiny to nearly smooth; sporangia sessile to long-stalked.
- Peridium silvery-blue, dotted with black, depressed spots. — 3. *L. Gulielmae.*
- Peridium iridescent, not dotted with black spots.
  - Sporangia sessile, ovate or with a very short stalk, taller than wide. — 4. *L. Carestiae.*
  - Sporangia stalked, globose or depressed-globose.
    - Stalks short, stout.
      - Capillitium delicate, pale, flaccid; spores pale, punctate, 8–11 μ in diameter. — 5. *L. Arcyrioides.*
      - Capillitium coarse, dark, rigid; spores dark, usually larger.
        - Capillitium purplish-brown throughout; spores 10–12 μ in diameter, with large, sparsely scattered spines. — 6. *L. muscorum.*
        - Capillitium purplish, with pale tips; spores 12–15 μ in diameter, densely echinulate. — 7. *L. Sauteri.*
    - Stalks long, slender.
      - Columella dividing at the apex into several main branches which give rise to the circinate capillitium. — 8. *L. Arcyrionema.*
      - Columella not divided at the apex, but giving rise directly to the capillitium.
        - Capillitium brown throughout, not dense, freely branching and anastomosing; spores 11–14 μ in diameter. — 9. *L. columbinum.*
        - Capillitium colorless as it leaves the columella, then abruptly dark, with pale tips; spores 7–9 μ in diameter. — 10. *L. scintillans.*

1. Lamproderma Cribrarioides (Fries) R. E. Fries, Sv. Bot. Tidskr. 4: 259. 1911.

Stemonitis Cribrarioides Fries, Syst. Myc. 3: 163. 1829.
Lamproderma Lycopodii Raunk. Bot. Tidssk. 17: 90. 1888.

* as "Debaryianum."

Sporangia globose, 0.8–1 mm. in diameter, scattered or clustered, sessile or with very short stalks, rarely plasmodiocarpous, purple-brown, iridescent, the total height 1–2 mm.; peridium membranous, hyaline above, purplish-brown below; stalk, when present, black, often flattened or membranous, 0.1–0.6 mm. high; columella cylindric, penetrating the sporangium to one-half or two-thirds its height, absent in plasmodiocarpous forms; capillitium a network of pale purplish-brown, flexuous threads which are stout at the base, slender and colorless at the tips; spores black in mass, dark purplish-brown by transmitted light, regularly and distinctly reticulate by narrow bands 0.5–1.5 μ high forming a net of 8–24 meshes to the hemisphere, 11–16 μ in diameter.

TYPE LOCALITY: Germany.
HABITAT: Coniferous wood and litter of various sorts.
DISTRIBUTION: Colorado; Europe. Calif woodrow 19:44
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 133, a–e;* Macbr. & Mart. Myxom. *pl. 13, f. 309, 310.*

2. Lamproderma robustum* Ellis & Ev. Bull. Washburn Lab. Nat. Hist. 1: 5. 1884.

Lamproderma atrosporum Meylan, Bull. Soc. Vaud. Sci. Nat. 46: 51. 1910.
Lamproderma Sauteri var. *robustum* Graff, Mycologia 20: 106. 1928.

Sporangia sessile or stalked, globose to elliptic or obovate, 1–1.3 mm. in diameter, the total height 1–2 mm.; peridium dark purple-black with silvery sheen, fragile, fugacious, breaking up into small fragments which tend to adhere to the capillitium, rarely membranous and persistent at the base; stalk, when present, short, stout, not exceeding the sporangium in height; columella cylindric or clavate, slender, reaching the center of the sporangial cavity; capillitium olive-brown to black, without traces of violet, the tips frequently attached to the peridium by conspicuous enlargements; spores black in mass, dark by transmitted light, strongly warted, the warts arranged in sinuous, reticulate lines over a portion of the surface, 12–15 μ in diameter; plasmodium black.

TYPE LOCALITY: Mt. Paddo, Washington.
HABITAT: Dead wood and plant litter.
DISTRIBUTION: Quebec, Utah, Washington, Oregon, California; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 133, f–i;* Macbr. & Mart. Myxom. *pl. 13, f. 312, 313.*
EXSICCATI: Jaap, Myxom. Exs. *178.*

3. Lamproderma Gulielmae Meylan, Bull. Soc. Vaud. Sci. Nat. 52: 449. 1919.

Sporangia stipitate, spherical or obovoid, 0.3–0.5 mm. in diameter, the total height 1–2 mm., silvery-blue with black depressed spots, forming a netted peridium; stalk slender, black, subulate, 1–1.2 mm. tall, entering the sporangium as a columella which reaches half-way to the summit and there gives rise to the hyaline or pallid, branching capillitium; spores dark purple, strongly echinulate, 12–15 μ in diameter; plasmodium translucent yellow.

TYPE LOCALITY: Jura Mts. Switzerland.
HABITAT: Dead bark, and herbaceous stalks.
DISTRIBUTION: Colorado; Europe. Calif woodrow 19:44
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 215, a–d;* Macbr. & Mart. Myxom. *pl. 13, f. 314, 315.*
EXSICCATI: Brândză, Myxom. Roum. *58*(NY), *8*(IU).

4. Lamproderma Carestiae (Ces. & De-Not.) Meylan, Bull. Soc. Vaud. Sci. Nat. 57: 368. 1932.

Stemonitis Carestiae Ces. & De-Not. Erb. Crit. Ital. *888.* 1879.
Lamproderma violaceum γ *Carestiae* Lister, Mycet. 130. 1894.
Lamproderma Sauteri var. *Carestiae* Meylan, Bull. Soc. Vaud. Sci. Nat. 51: 264. 1917.

Sporangia sessile or with a very short stipe, globose or ovate and smaller above, 0.9–1.3 mm. in diameter, 1–1.5 mm. tall, violet-blue with shining, metallic reflections; columella cylindric, about half the height of the sporangium; capillitium dense, dark purple-brown or black, colorless at the tips; spores violaceous-brown, spinulose, 10–12 μ in diameter.

* as "robusta."

TYPE LOCALITY: Italy.
HABITAT: Turf and herbaceous stalks and twigs.
DISTRIBUTION: Colorado, Utah, Oregon, California; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 132, h–l;* Macbr. & Mart. Myxom. *pl. 13, f. 316, 317.*
EXSICCATI: Brândză, Myxom. Roum. *12*(IU).

5. **Lamproderma Arcyrioides*** (Sommerf.) Rost. Monog. 206. 1874.

Stemonitis arcyrioides Sommerf. Mag. Naturvid. **7**: 298. 1827.
Stemonitis violacea Fries, Syst. Myc. **3**: 162. 1829. Not *S. violacea* Roth, 1788, nor *S. violacea* Schum. 1803.
Lamproderma violacea Rost.; Fuckel, Jahrb. Nass. Ver. Nat. **27–28**: 69. 1873.
Lamproderma nigrescens Sacc. Michelia **2**: 262. 1881. Not *L. nigrescens* Rost. 1874.
Lamproderma Saccardianum Massee, Monog. 101. 1892.
Tilmadoche Berkeleyi Massee, Monog. 332. 1892.

Sporangia globose or depressed-globose, 0.3–1 mm. in diameter, often umbilicate below, metallic blue or iridescent-purple, short-stipitate or sometimes sessile, gregarious or scattered, the total height 0.6–1.5 mm.; stalk, when present, usually rather stout, even, dark, short, rarely exceeding three-fifths of the total height; hypothallus a thin, continuous, reddish-brown membrane, or, when the sporangia are scattered, broken up into basal disks; columella black, cylindric or tapering slightly toward the apex, reaching the center of the sporangial cavity, the tip obtuse; capillitium lax, flaccid, flexuous, the threads branching and anastomosing to form a net loose at the center, denser toward the periphery, the threads pale brown as they leave the columella, becoming darker, then gradually paler toward the colorless tips; spores violaceous to purplish-gray by transmitted light, minutely warted, 8–11 μ in diameter; plasmodium watery-white, rarely yellow.

TYPE LOCALITY: Norway.
HABITAT: Dead wood, twigs, and leaves.
DISTRIBUTION: Maine to Washington, south to Virginia and Colorado and in Puerto Rico; Europe; Tasmania.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 132, a–e;* Macbr. & Mart. Myxom. *pl. 13, f. 318, 319;* Nat. Geogr. Mag. 49[4]: *pl. 10.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2698, 3199;* Jaap, Myxom. Exs. *116, 135;* Brândză, Myxom. Roum. *48*(IU).

6. **Lamproderma muscorum** (Lév.) Hagelst. Mycologia **27**: 88. 1935.

Enerthenema muscorum Lév.; Triana & Planch. Ann. Sci. Nat. IV. **20**: 289. 1863.

Sporangia scattered, globose, stalked, erect, blue or iridescent bronze, 0.3–0.5 mm. in diameter, their total height 0.6–1 mm.; peridium thin, membranous, more persistent at the base; stalk thick, black, shining, about equal to the sporangium in height, rising from a circular, purple-brown hypothallus; columella thick, tapering slightly to the obtuse end, attaining the center or the sporangium; capillitium dense, the threads rigid, radiating from the tip of the columella, forking dichotomously, purple-brown throughout; spores black in mass, violet-brown by transmitted light, with large, sharp, scattered spines, 10–12 μ in diameter.

TYPE LOCALITY: Colombia.
HABITAT: Dead leaves.
DISTRIBUTION: New York, Pennsylvania; Colombia.
ILLUSTRATIONS: Mycologia **27**: 87; Hagelst. Mycet. N. Am. *pl. 4.*

7. **Lamproderma Sauteri** Rost. Monog. 205. 1874.

Lamproderma violaceum β Sauteri Lister, Mycet. 129. 1894.

Sporangia stipitate, globose or slightly depressed, usually flattened or umbilicate below, 1–2 mm. in diameter, the total height 1–4 mm.; peridium membranous, persistent, dark blue with a metallic luster, not brilliant; stalk usually short, rarely exceeding the height of the sporangium, black, subulate, from a firm, well developed hypothallus; columella reaching about

* as "arcyriodes," obviously an error.

the center of the sporangium, truncate or slightly enlarged at the tip; capillitium coarse, purplish with pale tips, appearing hoary after the spores are shed; spores black in mass, dark purplish-brown by transmitted light, echinulate, 12–15 μ in diameter.

TYPE LOCALITY: Salzburg, Austria.
HABITAT: Wood, leaves, and debris, mainly of coniferous trees.
DISTRIBUTION: Ontario, Michigan, Montana, Colorado, Washington, Oregon, California; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 132, f, g, m;* Macbr. & Mart. Myxom. *pl. 13, f. 320, 321.*
EXSICCATI: Brândză, Myxom. Roum. *11*(IU).

8. Lamproderma Arcyrionema Rost. Monog. 208. 1874.

Lamproderma suboeneum Massee, Monog. 95. 1892.
Comatricha Shimekiana Macbr. Bull. Nat. Hist. Univ. Iowa 2: 380. 1893.
Lamproderma subaeneum Lister, Mycet. 127, as syn. 1894.

Sporangia globose, 0.5–0.75 mm. in diameter, stipitate, erect, silvery-gray or iridescent bronze, the total height 1–2.5 mm.; stalk slender, rigid, black, two-thirds to three-fourths the total height; peridium membranous, silvery, the base persisting as a collar after the upper portion has broken away; columella cylindric, slender, attaining one-third to one-half the height of the sporangium and there dividing into two or more thick branches which by further division give rise to the dense, curled branches of the capillitium, these anastomosing and leaving few free ends; spores black in mass, violaceous-gray by transmitted light, minutely punctate, 7–9 μ in diameter; plasmodium watery-white.

TYPE LOCALITY: Poland.
HABITAT: Dead leaves and wood.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 129;* Macbr. & Mart. Myxom. *pl. 13, f. 322, 323;* Nat. Geogr. Mag. 49[1]: *pl. 6;* Hattori, Myxom. Nasu *pl. 13, f. 4.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *1400, 2898;* Brândză, Myxom. Roum. III. 2: *21; 57*(NY); *7*(IU); Hintikka, Myxogast. Fenn. *8* (as *L. columbinum*); Thaxter, Rel. Farl. *402.*

9. Lamproderma columbinum (Pers.) Rost.; Fuckel, Jahrb. Nass. Ver. Nat. 27–28: 69. 1873.

Physarum columbinum Pers. Ann. Bot. Usteri 15: 5. 1795.
Trichia physaroides Schum. Enum. Pl. Saell. 2: 210. 1803.
Stemonitis physaroides Alb. & Schw. Consp. Fung. 103. 1805.
Trichia columbina Poir. in Lam. Encyc. 8: 52. 1808.
Fulgia encaustica Chev. Fl. Paris ed. 2. 1: 347. 1836.
Lamproderma physaroides Rost. Monog. 202. 1874.
Lamproderma Schimperi Rost. Monog. 203. 1874.
Lamproderma iridescens Rost. Monog. Append. 25. 1876.
Lamproderma Crucheti Meylan, Bull. Soc. Vaud. Sci. Nat. 52: 96. 1918.
Lamproderma brevipes Meylan, Bull. Soc. Vaud. Sci. Nat. 56: 322. 1927.
Lamproderma subglobosum Meylan, Bull. Soc. Vaud. Sci. Nat. 56: 322. 1927.

Sporangia globose or ellipsoid, scattered or gregarious, 0.5–1 mm. in diameter, rich violet or purple with a metallic iridescence, the total height 2–3 mm.; peridium membranous, persistent; stalk long, usually about three-fourths the total height, black, straight, subulate; columella cylindric, with a conic apex, or clavate, one-third to one-half the height of the sporangium; capillitium brownish-purple, originating from all parts of the columella, rigid, sparingly forked at the center, then anastomosing freely to form a large-meshed, open net; spores black in mass, smoky-brown by transmitted light, punctate, 11–14 μ in diameter; plasmodium white, rarely yellow.

TYPE LOCALITY: Europe.
HABITAT: Coniferous wood, mossy stumps and logs.
DISTRIBUTION: Common in the United States east of the Mississippi and west of the Great Plains and in British Columbia; Europe; Tasmania.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 131, a, e, f, g, l, m;* Macbr. & Mart. Myxom. *pl. 13, f. 326, 327.*
EXSICCATI: Rab. Fungi Eur. *2213;* Jaap, Myxom. Exs. *14;* Brândză, Myxom. Roum. I. 1: *16;* III, 2: *22; 59*(NY); *10, 21*(IU); Thaxter, Rel. Farl. *403.*

10. **Lamproderma scintillans** (Berk. & Br.) Morgan, Jour. Cinc. Soc. Nat. Hist. 16: 131. 1894.

Stemonitis scintillans Berk. & Br. Jour. Linn. Soc. 15: 84. 1876.
Lamproderma arcyrioides var. *iridea* Cooke, Myxom. Gr. Brit. 50. 1877.
Lamproderma irideum Massee, Monog. 95. 1892.

Sporangia stalked, erect, globose, 0.3–0.5 mm. in diameter, metallic blue or bronze, iridescent, 1.5–2 mm. tall; stalk long, slender, even, black, nodding or erect, rising from a small circular hypothallus; columella cylindric, truncate, not exceeding the center; capillitium dense, of rigid, straight, sparingly branched and anastomosing threads, pallid or colorless as they leave the columella, elsewhere brown; spores violaceous-brown, regularly and distinctly warted, 7–9 μ in diameter; plasmodium watery-white.

TYPE LOCALITY: Ceylon.
HABITAT: Dead leaves, moss and vegetable litter; rarely on wood or dung.
DISTRIBUTION: Southern Canada, south to Panama; South America; Asia.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 130;* Macbr. & Mart. Myxom. *pl. 13, f. 324, 325.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *3600;* Jaap, Myxom. Exs. *73. 115.*

10. **MACBRIDEOLA** H. C. Gilbert, Univ. Iowa Stud. Nat. Hist. 16: 155. 1934.

Sporangia minute, stipitate. Columella present; capillitium lacking, or represented by a slight branching at the tip of the columella. Peridium membranous, translucent. Spores dull brown.

Type species, *Macbrideola scintillans* Gilbert.

Peridium persistent; tip of the columella attached to the apex of the peridium. 1. *M. scintillans.*
Peridium fugacious; columella not attaining the apex of the sporangium. 2. *M. decapillata.*

1. **Macbrideola scintillans** H. C. Gilbert, Univ. Iowa Stud. Nat. Hist. 16: 156. 1934.

Sporangia scattered, stipitate, globose, dark brown or metallic bronze, 75–125 μ in diameter; stalk tapering, translucent, appearing hollow, yellow at the base, brown above, 50–100 μ in height, continuing into the sporangium as a columella; peridium thin, shining, translucent, tough; columella tapering, sometimes forking at the apex, where it is strongly attached to the peridium; capillitium lacking except for the apical branches of the columella; spores globose, dull brown, marked with large, irregularly distributed warts, 8–9 μ in diameter.

TYPE LOCALITY: Iowa City, Iowa.
HABITAT: Bark from living deciduous trees, in moist chambers.
DISTRIBUTION: Iowa, Minnesota.
ILLUSTRATIONS: Univ. Iowa Stud. Nat. Hist. 16: 157.

2. **Macbrideola decapillata** H. C. Gilbert, Univ. Iowa Stud. Nat. Hist. 16: 158. 1934.

Sporangia widely scattered, stipitate, globose, dark brown, 50–100 μ in diameter; stalk slender, translucent, appearing hollow, yellow at the base, brown above, continuing into the sporangium as a columella; peridium very thin, hyaline, early fugacious, leaving a ring about the stipe; columella reaching one-half to three-quarters the height of the sporangium, rounded at the tip, rarely with a few short protuberances; capillitium none; spores globose, agglutinated, dark brown in mass, violaceous-brown by transmitted light, thick-walled, marked with irregularly distributed warts, 7–9 μ in diameter.

TYPE LOCALITY: Waverly, Iowa.
HABITAT: Bark from living deciduous trees in moist chambers.
DISTRIBUTION: Iowa, Minnesota, Kansas.
ILLUSTRATIONS: Univ. Iowa Stud. Nat. Hist. 16: 158.

Order IV. PHYSARALES

Spores black or deep violaceous in mass, violaceous or violaceous-brown by transmitted light. Capillitium threadlike or tubular, usually forming a network, often charged with lime. Peridium usually limy.

Capillitium calcareous, usually intricate; entire fructification often limy, the lime only rarely and exceptionally in crystalline form. Fam. 1. PHYSARACEAE.

Capillitium usually non-calcareous; peridium and often the stipe, limy, the lime frequently crystalline. Fam. 2. DIDYMIACEAE.

Family 1. PHYSARACEAE

Capillitium netted, calcareous, very rarely nearly limeless, composed either of calcareous tubes of nearly uniform diameter, or more commonly of calcareous nodes connected by slender, hyaline tubules. Peridium usually limy. Spores black, deep violaceous or dark gray in mass, dark purple-brown or violaceous-brown by transmitted light.

Fructification an aethalium. — 1. FULIGO.
Fructification plasmodiocarpous or sporangiate.
- Capillitium a network of calcareous tubes of nearly uniform diameter. — 2. BADHAMIA.
- Capillitium a network of hyaline, slender, limeless tubules connecting calcareous nodules.
  - Peridium delicate to firm, but not brittle, polished, nor shell-like; capillitium uniform.
    - Sporangium deeply introverted, thimble-shaped; inner wall bearing prominent yellow spines exposed by the lobate dehiscence. — 5. PHYSARELLA.
    - Sporangium not deeply introverted; peridium not bearing spines on the inner wall.
      - Plasmodiocarpous, the plasmodiocarp tending to be divided into chambers by calcareous bands; capillitium bearing hooked branches. — 6. CIENKOWSKIA.
      - Sporangiate or plasmodiocarpous but, if the latter, the plasmodiocarps not divided by calcareous bands; capillitium without hooked branches.
        - Lower portion of the peridium firm, persisting as a deep cup; dehiscence circumscissile, often by a preformed lid. — 4. CRATERIUM.
        - Dehiscence irregular or lobate; lower portion of the peridium forming, at most, a shallow, irregular cup. — 3. PHYSARUM.
  - Peridium crustose, shell-like, smooth, shiny, brittle. — 7. LEOCARPUS.

1. FULIGO Hall. Hist. Stirp. Helv. 3: 110. 1768.

Aethalium Link, Ges. Nat. Freunde Berlin Mag. 3: 24. 1809.

Fructification aethalioid, occasionally subplasmodiocarpous, consisting of interwoven and poorly defined tubes, each with a calcareous wall; outer portion sterile, forming a fragile cortex, sometimes nearly lacking. Basal layer a membranous hypothallus, the intermediate portion containing spores, capillitium, and limy walls derived from the plasmodial tubes. Capillitium of hyaline, tubular threads connecting the lime-knots, often rather scanty. Spores dark in mass.

Type species, *Mucor septicus* L.

Spores spherical, 6–9 μ in diameter; aethalia usually large. — 1. *F. septica.*
Spores over 10 μ in diameter; aethalia often smaller.
- Aethalia usually slender, often somewhat plasmodiocarpous, or thin and effused.
  - Spores often elliptic; crust white. — 2. *F. cinerea.*
  - Spores spherical; crust greenish-gray or yellowish-green. — 3. *F. muscorum.*
- Aethalia compact, pulvinate.
  - Cortex thin, fragile, not strongly calcareous, often wanting; spores 11–13 μ in diameter, nearly smooth. — 4. *F. intermedia.*
  - Cortex thick, spongy, calcareous; spores 15–20 μ in diameter, dark, rough. — 5. *F. megaspora.*

1. Fuligo septica (L.) Weber; Wiggers, Prim. Fl. Holsat. 112. 1780.

Mucor septicus L. Sp. Pl. ed. 2. 1656. 1763.
Mucor Mucilago Scop. Fl. Carn. ed. 2. 2: 492. 1772.
Reticularia carnosa Bull. Hist. Champ. Fr. 85. 1791.
Reticularia hortensis Bull. Hist. Champ. Fr. 86. 1791.
Reticularia lutea Bull. Hist. Champ. Fr. 87. 1791.
Reticularia septica With. Brit. Pl. ed. 2. 3: 470. 1792.
Reticularia ovata With. Brit. Pl. ed. 2. 3: 471. 1792.
Fuligo rufa Pers. Neues Mag. Bot. 1: 88. 1794.

Fuligo flava Pers. Neues Mag. Bot. 1: 88. 1794.
Fuligo candida Pers. Obs. Myc. 1: 92. 1796.
Fuligo vaporaria Pers. Obs. Myc. 1: 92. 1796.
Fuligo pallida Pers. Obs. Myc. 2: 36. 1799.
Fuligo violacea Pers. Syn. Fung. 160. 1801.
Fuligo laevis Pers. Syn. Fung. 160. 1801.
Fuligo carnea Schum. Enum. Pl. Saell. 2: 194. 1803.
Reticularia cerea Sow. Engl. Fungi 3: *pl. 399, f. 4.* 1803.
Aethalium flavum Link; Nees, Syst. Pilze Schw. 99. 1816.
Fuligo cerebrina Brondeau, Mém. Soc. Linn. Paris 3: 74. 1824.
Reticularia vaporaria Chev. Fl. Paris 1: 342. 1826.
Fuligo varians Sommerf. Suppl. Fl. Lapp. 239. 1826.
Aethalium violaceum Spreng. Syst. 4[1]: 533. 1827.
Aethalium candidum Schlecht.; Spreng. Syst. 4[1]: 533. 1827.
Reticularia carnea Fries, Syst. Myc. 3: 91. 1829.
Aethalium septicum Fries, Syst. Myc. 3: 93. 1829.
Fuligo hortensis Duby, Bot. Gall. 863. 1830.
Fuligo carnosa Duby, Bot. Gall. 863. 1830.
Aethalium ferrincola Schw. Trans. Am. Phil. Soc. II. 4: 261. 1832.
Reticularia rufa Schw. Trans. Am. Phil. Soc. II. 4: 262. 1832.
Aethalium rufum Wallr. Fl. Crypt. Germ. 2: 341. 1833.
Aethalium vaporarium Fries, Summa Veg. Scand. 449. 1849.
Licea Lindheimeri Berk. Grevillea 2: 68. 1873.
Fuligo tatrica Racib. Hedwigia 24: 169. 1885.
Tubulina Lindheimeri Massee, Monog. 42. 1892.
Fuligo ovata Macbr. N. Am. Slime-Moulds 23. 1899.

Aethalia pulvinate, rarely subplasmodiocarpous, usually large, 2–20 cm. in their longer dimension, 1-3 cm. thick, white, ochraceous, tawny, greenish, brown, or violet; cortex calcareous, fragile, usually rather thick and separable; capillitium of white, yellow, or reddish lime-knots connected by hyaline threads, sometimes scanty; spores spherical, dull black in mass, purplish-brown by transmitted light, minutely spinulose, 6–9 μ in diameter; plasmodium usually yellow, sometimes white or creamy.

TYPE LOCALITY: France.
HABITAT: Rotten wood and litter, living plants, soil.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Bull. Herb. Fr. *pl. 380, f. 1; pl. 424, f. 1, 2;* Bolt. Hist. Fung. *pl. 134;* Grev. Scot. Crypt. Fl. *pl. 272;* Lister, Mycet. ed. 3. *pl. 74;* Nat. Geogr. Mag. 49[4]: *pl. 2;* Hattori, Myxom. Nasu *pl. 13, f. 3.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *3200;* Ellis & Ev. Fungi Columb. *1500;* Thaxter, Rel. Farl. *397;* Brândză, Myxom. Roum. II. 1: *21, 22, 23*(NY); Wann & Muensch. N. Am. Myxom. *56.*

2. **Fuligo cinerea** (Schw.) Morgan, Jour. Cinc. Soc. Nat. Hist. 19: 33. 1896.

Enteridium cinereum Schw. Trans. Am. Phil. Soc. II. 4: 261. 1832.
Lachnobolus cinereus Schw. Trans. Am. Phil. Soc. II. 4: 262. 1832.
Badhamia coadnata Rost. Monog. 146. 1874.
Physarum elipsosporum Rost. Monog. Append. 10. 1876.
Aethaliopsis stercoriformis Zopf, Pilzth. 150. 1885.
Fuligo stercoriformis Racib. Hedwigia 26: 111. 1887.
Fuligo ellipsospora Lister, Mycet. 67. 1894.

Fructification white, rather thin, broadly effused or subplasmodiocarpous, 0.5–6 cm. in extent or forming a network 15 cm. or more across; cortex firm, crustose, rather thick; capillitium of large, irregular, white nodules connected by hyaline threads; spores black in mass, bright violet-brown by transmitted light, some subspherical or spherical, the majority elliptic, 14–16 × 11–12 μ; plasmodium on emergence watery, becoming milk-white, then cinereous.

TYPE LOCALITY: Pennsylvania.
HABITAT: On piles of rotting straw and manure or on detritus in woods.
DISTRIBUTION: Probably throughout North America; cosmopolitan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 75;* Macbr. & Mart. Myxom. *pl. 1, f. 11.*
EXSICCATI: Jaap, Myxom. Exs. *147, 168;* Thaxter, Rel. Farl. *413.*

3. **Fuligo muscorum** Alb. & Schw. Consp. Fung. 86. 1805.

Lignydium griseo-flavum Link, Ges. Nat. Freunde Berlin Mag. 3: 24. 1809.
Lignidium Muscicola Fries, Symb. Gast. 10. 1817.
Reticularia muscorum Fries, Syst. Myc. 3: 91. 1829.
Aethalium muscorum Schw. Trans. Am. Phil. Soc. II. 4: 261. 1832.

Physarum gyrosum Rost. Monog. 111. 1874.
Licea ochracea Peck, Ann. Rep. N. Y. State Mus. 28: 55. 1876.
Fuligo simulans P. Karst. Bidr. Finl. Nat. Folk 31: 108. 1879.
Fuligo ochracea Peck, Ann. Rep. N. Y. State Mus. 31: 56. 1879.
Physarum muscorum A. Berl. in Sacc. Syll. Fung. 7: 346. 1888.

Athalia pulvinate, irregular, small, usually 1 cm. or less in width, seated on a pallid or dull orange hypothallus; cortex very thin, gray or greenish, bearing scattered deposits of lime; internal walls poorly developed, forming a pseudocapillitium; capillitium of pallid, ochraceous, or dull orange, fusiform or branching lime-knots, connected by rather short, hyaline threads; spores violet-brown, coarsely, irregularly and rather sparsely warted, 11–13 μ in diameter; plasmodium yellow.

TYPE LOCALITY: Germany.
HABITAT: Litter and plant debris and on mosses, especially in moist habitats.
DISTRIBUTION: New England to Ontario and Pennsylvania; Europe; Ceylon.
ILLUSTRATIONS: Alb. & Schw. Consp. Fung. *pl. 7, f. 1;* Lister, Mycet. ed. 3. *pl. 77.*
EXSICCATI: Jaap, Myxom. Exs. 7.

4. **Fuligo intermedia** Macbr. N. Am. Slime-Moulds ed. 2. 30. 1922.

Fuligo cinerea var. *ecorticata* G. Lister in Lister, Mycet. ed. 2. 88. 1911.

Aethalia usually 2–3 cm. in their greatest diameter, 5–10 mm. thick, covered with a thin, fragile, yellowish-gray or brownish cortex which often disappears early; spore-mass gray or violaceous to nearly black, firm, with numerous limy plates forming an intricate pseudocapillitium; true capillitium scanty, of white lime-knots connected by hyaline threads; spores globose, pale purple, faintly warted, 11–13 μ in diameter.

TYPE LOCALITY: Colorado.
HABITAT: Dead wood and vegetable debris.
DISTRIBUTION: New York to Washington, south to Florida and New Mexico; Europe.
ILLUSTRATIONS: Jour. N. Y. Bot. Gard. 38: 113 (as *F. septica*); Hagelst. Mycet. N. Am. *pl. 15, f. 3.*

5. **Fuligo megaspora** Sturgis, Colo. Coll. Publ. Sci. 12: 443. 1913.

Aethalia pulvinate, 1.5–7 cm. in diameter, covered with a thick, spongy, calcareous cortex, white or yellowish below; spore-mass gray by the abundant network of limy, tubular walls; capillitium scanty, of delicate, colorless, anastomosing threads bearing toward the center large, white, branching nodules; spores spherical, dark purplish-brown, rough-tuberculate to subreticulate, 15–20 μ in diameter.

TYPE LOCALITY: Colorado.
HABITAT: Wood and soil.
DISTRIBUTION: Florida, Colorado, New Mexico; France; Belgian Congo.
ILLUSTRATIONS: Colo. Coll. Publ. Sci. 12: *pl. 2, f. 1–3;* Lister, Mycet. ed. 3. *pl. 202, d–f.*

2. **BADHAMIA** Berk. Trans. Linn. Soc. 21: 153. 1853.

Scyphium Rost. Monog. 148. 1874.

Sporangiate or somewhat plasmodiocarpous. Peridium usually thin, breaking irregularly. Capillitium a network of calcareous tubules, the nodes only slightly enlarged, rarely with a few hyaline threads. Stipe, when present, membranous. Columella present or absent. Spores black in mass, adherent in clusters or free.

Type species, *Sphaerocarpus capsulifer* Bull.

Spores strongly warted or spiny at one end, smooth or nearly so elsewhere, typically adherent in persistent globose clusters.
  Spores elliptic or ovoid; clusters often hollow. — 1. *B. versicolor.*
  Spores pyriform or globose; clusters solid.
    Sporangia yellow, orange, or greenish. — 2. *B. nitens.*
    Sporangia gray or white.
      Sporangia borne on firm, dark, usually short stalks. — 3. *B. papaveracea.*

Sporangia sessile or on pale, weak, membranous stalks.
Walls thin, translucent, sometimes almost limeless; exposed area of the spores uniformly warted. 4. *B. capsulifera.*
Walls calcareous, opaque, pure white or tinged with rose; exposed area of the spores with warts arranged in lines; sporangia large, densely clustered or heaped. 5. *B. populina.*
Surface of the spores uniform or nearly so; spores free or loosely clustered.
Spores elliptic; sporangia ochraceous or dingy white, pulvinate or plasmodiocarpous. 7. *B. ovispora.*
Spores globose or subglobose.
Sporangia yellow or orange. 8. *B. decipiens.*
Sporangia never yellow or orange.
Sporangia white or gray to pale lilaceous or pinkish.
Sporangia large, 0.5–1 mm. in diameter, obovate or obpyriform, clustered on pale, branching, often long stalks or rarely sessile; peridium thin, usually translucent. 6. *B. utricularis.*
Sporangia usually smaller in average size, globose to flattened.
Spores dark, warted, with overlying coarse reticulation. 9. *B. gracilis.*
Spores not reticulate.
Peridium gray, iridescent, scantily charged with lime. 10. *B. foliicola.*
Peridium white, usually densely charged with lime, sometimes iridescent, but not gray.
Spores dark, encircled by a conspicuous pale band. 11. *B. Dearnessii.*
Spores not encircled by a pale band.
Sporangia subglobose or angled by pressure, sessile on a narrow base or short-stalked.
Spores dark, spiny, 12–15 μ in diameter; sporangia without red at the base. 12. *B. macrocarpa.*
Spores clear violet-brown, minutely spinulose, 11–13 μ in diameter; sporangia often reddish at the base. 13. *B. panicea.*
Sporangia flattened or discoid; sessile on a broad base or stalked.
Sporangia sessile or on short, black stalks; peridium rugulose. 14. *B. affinis.*
Sporangia sessile, rarely on a narrowed base, white, pale lilac, or pinkish; peridium smooth, shell-like. 15. *B. lilacina.*
Sporangia drab to reddish or purplish-brown, columellate, usually stalked. 16. *B. Curtisii.*

1. Badhamia versicolor Lister, Jour. Bot. 39: 81. 1901.

Sporangia sessile, 0.2–0.5 mm. in diameter, scattered or clustered, gray, flesh-colored, yellowish-gray, or dingy white, rugose; capillitium white or apricot-colored; spores ovoid, arranged in spherical or elliptic, frequently hollow, clusters of 10–40, dull purple and minutely warted at the broader end, elsewhere paler and nearly smooth, 10–14 × 9–11 μ; plasmodium colorless.

TYPE LOCALITY: Rhynie, Scotland.
HABITAT: On the bark of living and dead trees, often on mosses and lichens.
DISTRIBUTION: Ontario, Iowa, Colorado, California; Europe; India; Hawaii.
ILLUSTRATIONS: Jour. Bot. 39: *pl. 419, f. 2;* Lister, Mycet. ed. 3. *pl. 6.*

2. Badhamia nitens Berk. Trans. Linn. Soc. 21: 153. 1853.

Badhamia pallida Berk. Trans. Linn. Soc. 21: 153. 1853.
Badhamia inaurata Currey, Trans. Linn. Soc. 24: 156. 1863.
Badhamia Alexandrowiczii Rost. Monog. 146. 1874.
Didymium reticulatum Berk. & Br. Jour. Linn. Soc. 15: 83. 1876. Not *D. reticulatum* Rost. 1873.
Lepidoderma reticulatum Massee, Monog. 252. 1892.

Sporangia gregarious or closely crowded, sessile or with weak, procumbent, strand-like stalks, globose or depressed-globose, 0.5–1 mm. in diameter, or plasmodiocarpous, yellow, greenish-yellow, or dull green, or, in forms with scanty lime in the peridium, iridescent; capillitium yellow to dull orange, delicate, somewhat thickened at the nodes; spores in compact clusters of 4–20, mostly 6–12, violaceous-brown, coarsely warted on the exposed area, more finely warted elsewhere, pyriform, 12–14 × 10–12 μ; plasmodium yellow.

TYPE LOCALITY: Essex, England.
HABITAT: Dead wood and bark and on the bark of living trees, associated with mosses and lichens.

DISTRIBUTION: Colorado, Washington, Oregon, California, and the West Indies; Europe; Asia; South Africa.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 5.*

3. Badhamia papaveracea Berk. & Rav.; Berk. Grevillea 2: 66. 1873.

Badhamia hyalina β papaveracea Lister, Mycet. 30. 1894.

Sporangia closely gregarious, globose or ovate, stalked or sometimes sessile, 0.5–1 mm. in diameter, iridescent gray, white when empty; peridium thin, translucent, smooth or slightly rugulose, weakly calcareous, the lime often forming a surface reticulation; stalk, when present, usually rather short, occasionally exceeding the sporangium in height, cylindric, black or dark brown; hypothallus thin, colorless, common to a cluster, often scarcely apparent; capillitium a white, persistent network of slender tubes, the meshes large; spores adherent in compact clusters of 6–20, pyriform, strongly warted on the exposed surface, elsewhere smooth, 10–13 μ in diameter.

TYPE LOCALITY: Aiken, South Carolina.
HABITAT: Dead bark.
DISTRIBUTION: Maine to Kansas and South Carolina; Roumania; Japan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 3, d, e;* Nat. Geogr. Mag. 49[4]: *pl. 3.*
EXSICCATI: Ellis, N. Am. Fungi *1214* (as *B. hyalina*); Brândză, Myxom. Roum. *65*(IU).

4. Badhamia capsulifera* (Bull.) Berk. Trans. Linn. Soc. 21: 153. 1853.

Sphaerocarpus capsulifer Bull. Hist. Champ. Fr. 139. 1791.
Physarum hyalinum Pers. Syn. Fung. 170. 1801.
Trichia capsulifer DC. Fl. Fr. 2: 254. 1805.
Physarum capsuliferum Chev. Fl. Paris 1: 339. 1826.
Physarum botryoides var. *hyalinum* Fries, Stirp. Fems. 83. 1826.
Badhamia hyalina Berk. Trans. Linn. Soc. 21: 153. 1853.
Badhamia varia Massee, Monog. 319, in part. 1892.

Sporangia clustered or gregarious, in small colonies, globose or oboveid, 0.5–1.5 mm. in diameter, sessile or plasmodiocarpous or occasionally with weak strand-like stalks, grayish or greenish-white, pure white when empty; peridium thin, translucent; stalk, when present, yellow or straw-colored, repent; capillitium white, open, not greatly expanded at the nodes; spores black in mass, purplish-brown by transmitted light, adhering in firm clusters, mostly of 6–20, broadly ovate, warted especially on the exposed surface, 11–14 μ in diameter; plasmodium chrome-yellow.

TYPE LOCALITY: France.
HABITAT: Bark of dead limbs, sometimes while still attached to the tree.
DISTRIBUTION: Maine to California, south to Tennessee and Virginia; Europe; Japan; Australia.
ILLUSTRATIONS: Bull. Herb. Fr. *pl. 470, f. 2;* Lister, Mycet. ed. 3. *pl. 3, a–c.*
EXSICCATI: Jaap, Myxom. Exs. *62, 161;* Brândză, Myxom. Roum. III. 1: *2; 122*(NY); *66*(IU).

5. Badhamia populina A. & G. Lister, Jour. Bot. 42: 129. 1904.

Sporangia subglobose or ovoid, white or rarely pale rose, 1.2–1.5 mm. in diameter, usually sessile and heaped, sometimes forming a pseudoaethalium, less commonly gregarious and borne on short, yellowish, membranous stalks; peridium smooth, calcareous; capillitium coarse, white, somewhat thickened at the nodes and usually with a few hyaline threads; spores clustered firmly or frequently rather loosely, irregularly spherical, strongly warted on the exposed end, some of the warts arranged in lines so as to form a coarse and irregular reticulation, elsewhere minutely warted, 10–13 μ in diameter; plasmodium white or cream-colored.

TYPE LOCALITY: England.
HABITAT: Dead wood.
DISTRIBUTION: Iowa, Colorado, Montana, Washington, Oregon, California; Europe.
ILLUSTRATIONS: Jour. Bot. 42: *pl. 459, f. 1;* Lister, Mycet. ed. 3. *pl. 2.*
EXSICCATI: Cavara, Fungi Longob. *1;* Brândză, Myxom. Roum. *115*(NY).

* as "capsulifer."

6. Badhamia utricularis (Bull.) Berk. Trans. Linn. Soc. 21: 153. 1853.

Sphaerocarpus utricularis Bull. Hist. Champ. Fr. 128. 1791.
Trichia coerula Trent. in Roth, Catalecta Bot. 1: 229. 1797.
Physarum ovoideum Schum. Enum. Pl. Saell. 2: 198. 1803.
Physarum hyalinum ββ chalybaeum Alb. & Schw. Consp. Fung. 92. 1805.
Trichia utricularis DC. Fl. Fr. 2: 251. 1805.
Trichia rubiformis Purton, Midl. Fl. 3: 291. 1821. Not *T. rubiformis* Pers. 1794.
Physarum utriculare Chev. Fl. Paris 1: 337. 1826.
Physarum botryoides Sommerf. Suppl. Fl. Lapp. 242. 1826.
Diderma papaverinum Wallr. Fl. Crypt. Germ. 2: 375. 1833.
Dictydium magnum Peck, Ann. Rep. N. Y. State Mus. 24: 84. 1872.
Badhamia magna Peck, Ann. Rep. N. Y. State Mus. 31: 57. 1879.
Badhamia varia Massee, Monog. 319, in part. 1892.

Sporangia clustered, usually in large colonies, globose, ovoid or obpyriform, 0.5–1 mm. in diameter, mounted on thin, strand-like stalks, occasionally sessile, blue-gray, iridescent violet, or cinereous; peridium iridescent, hyaline or white when empty, smooth, rugulose or netted; stalk when present pallid, yellowish, or tawny, weak, branched, often prostrate; hypothallus dull red, inconspicuous; capillitium delicate, uniform, open, white; spores dull blackish-brown in mass, loosely aggregated into clusters which readily fall apart, spherical, uniformly and distinctly warted, bright violet-brown, 10–14 μ in diameter; plasmodium yellow.

TYPE LOCALITY: France.
HABITAT: The bark of fallen trees and the basidiocarps of leathery fungi.
DISTRIBUTION: Maine to Southern Canada and Washington (state), south to New Jersey, New Mexico, and California; South America; Europe; South Africa; Australia.
ILLUSTRATIONS: Bull. Herb. Fr. *pl. 417, f. 1;* Lister, Mycet. ed. 3. *pl. 4, 9.*
EXSICCATI: Jaap, Myxom. Exs. *41, 81;* Thaxter, Rel. Farl. *381, 383.*

7. Badhamia ovispora Racib. Rozp. Akad. Umiej. 12: 72. 1884.

Sporangia usually small, 0.2–0.5 mm. in diameter, sometimes larger, up to 1.2 mm., crowded or gregarious, sessile on a broad base, depressed-globose or plasmodiocarpous, white to pale ochraceous; peridium thick, densely limy, nearly smooth to rugose; capillitium white, dense, irregular, somewhat physaroid, sometimes forming a pseudocolumella; spores free, pale purple-brown under a lens, smooth, ellipsoid, with a low longitudinal ridge, 10–16 × 8–10 μ.

TYPE LOCALITY: Poland.
HABITAT: Wood, straw, and dung.
DISTRIBUTION: Massachusetts, New York, Pennsylvania, Ontario, Manitoba, Colorado; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 12.*
EXSICCATI: Jaap, Myxom. Exs. *163.*

8. Badhamia decipiens (M. A. Curt.) Berk. Grevillea 2: 66. 1873.

Physarum decipiens M. A. Curt. Am. Jour. Sci. II. 6: 352. 1848.
Physarum chrysotrichum Berk. & Curt.; Berk. Grevillea 2: 66. 1873.
Badhamia chrysotricha Rost. Monog. Append. 4. 1876.

Sporangia gregarious, sessile or rarely with a short, weak stalk, depressed-globose, pulvinate, or plasmodiocarpous, 0.3–0.7 mm. in diameter, dull to bright yellow or orange; sporangial wall membranous, yellow, roughened by numerous included calcareous scales; capillitium yellow or dull orange, strongly calcareous, sometimes somewhat physaroid; spores free, dull black in mass, rather pale violet-brown by transmitted light, minutely spinulose, 10–13 μ in diameter.

TYPE LOCALITY: South Carolina.
HABITAT: Bark and moss.
DISTRIBUTION: Nova Scotia to South Carolina, Ontario, and Ohio, and in California, not common; South America; Europe; Asia; Hawaii.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 7;* Macbr. & Mart. Myxom. *pl. 2, f. 27, 28.*
EXSICCATI: Brândză, Myxom. Roum. *121*(NY), *63*(IU).

9. **Badhamia gracilis** (Macbr.) Macbr. in Macbr. & Mart. Myxom. 35. 1934.

Badhamia macrocarpa var. *gracilis* Macbr. N. Am. Slime-Moulds ed. 2. 37. 1922.

Sporangia gregarious or clustered, globose or ovate, 0.5–0.7 mm. in diameter, stipitate or sessile, rarely plasmodiocarpous, white or gray; peridium thin, translucent, pure white, sparsely flecked with white, calcareous nodules; stalk, when present, thin, delicate, straw-yellow, sulcate, more or less twisted, usually not exceeding the height of the sporangium; capillitium delicate, the tubes of uniform diameter throughout; hypothallus scanty, pale yellowish; spores free, globose or somewhat angular, dark violaceous-brown, closely and irregularly warted, usually with clusters of darker warts, and with a very coarse network of 1–6 meshes to the hemisphere covering the surface of many of the spores, 12–16 μ in diameter.

TYPE LOCALITY: Colorado.
HABITAT: Dead stems of *Yucca* and cacti, rarely on bark.
DISTRIBUTION: New York to Washington (state); Panama; Puerto Rico; Galapagos.
ILLUSTRATIONS: Macbr. & Mart. Myxom. *pl. 3, f. 37, 38.*

10. **Badhamia foliicola** Lister, Jour. Bot. **35**: 209. 1897.

Sporangia gregarious or crowded, sessile or stipitate, subglobose or ellipsoid, 0.5–0.6 mm. in diameter, or forming short plasmodiocarps, iridescent, gray; peridium thin, rugulose, sparingly calcareous, white or hyaline when empty; stalk, when present, short, yellowish, weak; capillitium a uniform network of slender, delicate tubes; spores free, violet-brown by transmitted light, minutely spinulose, 11–12 μ in diameter; plasmodium orange.

TYPE LOCALITY: Essex, England.
HABITAT: Plant debris.
DISTRIBUTION: Massachusetts to Washington (state), south to New Jersey and California, rarely collected; Europe; Australia.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 11.*
EXSICCATI: Jaap, Myxom. Exs. *142, 162;* Brândză, Myxom. Roum. *85*(IU).

11. **Badhamia Dearnessii** Hagelst. Mycologia **34**: 117. 1942.

Sporangia scattered or in small clusters, globose to subglobose, 0.5–1 mm. in diameter, sessile on a narrow base, grayish-white; peridium membranous, with deposits of white lime granules often arranged in vein-like fashion, or nearly limeless and iridescent; capillitium a delicate network of slender tubes sparsely charged with lime, sometimes nearly limeless and appearing pale yellow; spores free, globose, minutely and closely spinulose, purplish-brown by transmitted light, encircled by a narrow pale band, 13–16 μ in diameter.

TYPE LOCALITY: Quebec.
HABITAT: Dead twigs and branches of spruce.
DISTRIBUTION: Maine, Quebec.
ILLUSTRATIONS: Mycologia **34**: 117; Hagelst. Mycet. N. Am. *pl. 7, f. 1.*

12. **Badhamia macrocarpa** (Ces.) Rost. Monog. 143. 1874.

Physarum macrocarpon Ces. in Klotzsch, Herb. Viv. Myc. *1968.* 1855.

Sporangia scattered or crowded, globose, subglobose, or subannulate, 0.5–1 mm. in diameter, sessile or stipitate; peridium rugose, white above, often yellowish or brownish below; stalk, when present, yellowish or brown, furrowed and erect or submembranous and recumbent; hypothallus scanty; capillitium limy, with large nodes, often strongly physaroid; spores spherical, free, black in mass, violet-brown by transmitted light, finely but densely and somewhat irregularly spinulose, 11–15 μ in diameter; plasmodium white or yellow.

TYPE LOCALITY: Germany.
HABITAT: Dead wood and bark, and plant debris.
DISTRIBUTION: Maine to Ontario, south to North Carolina and Kansas, and in the West Indies; South America; Europe; Asia.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 8, a–c;* Hattori, Myxom. Nasu *pl. 5, f. 4.*
EXSICCATI: Klotzsch, Herb. Viv. Myc. *1968;* Jaap, Myxom. Exs. *82;* Brândză, Myxom. Roum. *92*(NY).

13. Badhamia panicea (Fries) Rost.; Fuckel, Jahrb. Nass. Ver. Nat. 27–28: 71. 1873.

Physarum paniceum Fries, Syst. Myc. 3: 141. 1829.
Reticularia Schmitzii Debey, Verh. Nat. Ver. Preuss. Rheinl. 4: 2. 1847.
Physarum nudum Macbr.; Peck & Gilbert, Am. Jour. Bot. 19: 134. 1932.

Sporangia gregarious or crowded, subglobose, pulvinate, 0.4–1.2 mm. in diameter, or somewhat plasmodiocarpous, sessile, rarely stalked, white or cinereous; peridium thin, membranous, usually with dense lime deposits, sometimes nearly limeless and iridescent; stalk, when present, short, red; hypothallus thin, inconspicuous, dark red; capillitium dense, white, sometimes aggregated at the base and the center to form a pseudocolumella; spores free, black in mass, bright violaceous-brown by transmitted light, sometimes darker on one side and paler on the other, minutely punctate, 11–14 μ in diameter; plasmodium white.

TYPE LOCALITY: Lund, Sweden.
HABITAT: Bark and dead wood.
DISTRIBUTION: Southern Canada and the United States; South America; Europe.
ILLUSTRATIONS: Lister, Mycet, ed. 3. *pl. 10;* Hattori, Myxom. Nasu *pl. 5, f. 5.*
EXSICCATI: Jaap, Myxom. Exs. *63, 121;* Brândză, Myxom. Roum. II. 1: *2;* III. 1: *1; 91*(NY); *64*(IU).

14. Badhamia affinis Rost. Monog. 143. 1874.

Badhamia orbiculata Rex, Proc. Acad. Phila. 1893: 372. 1893.

Sporangia gregarious, often crowded or caespitose, subspherical to discoid, often depressed in the center and umbilicate below, sessile or short-stipitate, or plasmodiocarpous, 0.5–1 mm. broad, pale gray or whitish, usually with a darker base; peridium membranous, with flake-like, scanty or abundant incrustations of lime, sometimes rugulose; stalk when present short, dark, plicate, 0.1–0.7 mm. tall; capillitium scanty, often denser at the center, white, the nodes somewhat expanded; spores black in mass, deep violet-brown by transmitted light, closely and densely spinulose, (12–) 14–16 (–18) μ in diameter; plasmodium creamy-white.

TYPE LOCALITY: Chile.
HABITAT: Bark, often mossy, of living and dead trees.
DISTRIBUTION: New York to Colorado, south to Panama; cosmopolitan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 8, d–f;* Hattori, Myxom. Nasu *pl. 5, f. 3.*

15. Badhamia lilacina (Fries) Rost. Monog. 145. 1874.

Physarum lilacinum Fries, Syst. Myc. 3: 141. 1829.
Craterium lilacinum Massee, Monog. 271. 1892.
Physarum concinnum Massee, Monog. 308. 1892.

Sporangia gregarious or clustered, globose or obovate, 0.4–0.6 mm. in diameter, sessile or rarely with a short, stalk-like base; peridium double, the outer layer calcareous, crustose, smooth, pale lilac-brown to white, less commonly pinkish or drab, the inner layer thin, membranous, colorless, closely appressed; capillitium dense, white, strongly nodulose, often aggregated in the center as a pseudocolumella; hypothallus thin, transparent, continuous; spores free, black in mass, dark violaceous-brown by transmitted light, covered with rough warts and ridges, subreticulate, 12–15 μ in diameter; plasmodium white, changing to bright yellow.

TYPE LOCALITY: Femsjö, Sweden.
HABITAT: Leaves, moss, and wood in swampy places.
DISTRIBUTION: New England to Ontario and Iowa, New Mexico; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 13.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2494;* Thaxter, Rel. Farl. *380.*

16. Badhamia Curtisii (Berk.) Rost. Monog. Append. 5. 1876.

Physarum rubiginosum Chev. Fl. Paris 1: 338. 1826. Not *P. rubiginosum* Fries, 1817.
Didymium Curtisii Berk. Grevillea 2: 65. 1873.
Craterium obovatum Peck, Ann. Rep. N. Y. State Mus. 26: 75. 1874.
Scyphium rubiginosum Rost. Monog. 148. 1874.
Scyphium Curtisii Rost. Monog. 149. 1874.
Badhamia dictyospora Rost. Monog. Append. 4. 1876.

Badhamia rubiginosa Rost. Monog. Append. 5. 1876.
Craterium rubiginosum Massee, Monog. 270. 1892.
Craterium dictyospermum Massee, Monog. 270. 1892.
Craterium Curtisii Massee, Monog. 272. 1892.
Badhamia subaquila Macbr. N. Am. Slime-Moulds 64. 1899.

Sporangia gregarious or scattered, often forming extensive fruitings, obovoid, 0.5–0.7 mm. in diameter, grayish or purplish-brown, stipitate, rarely sessile; peridium thin, brittle, paler and somewhat calcareous above, more persistent and darker below, merging into the stalk; stalk erect, usually about the height of the sporangium, prolonged as a columella into the sporangium for about two-thirds of its total height; capillitium dense, white or pale brown, radiating from the columella; hypothallus dark, thin, continuous or netted beneath the colony; spores dark brown in mass, dark violet or purple-brown by transmitted light, strongly warted, often verrucose-reticulate or with a coarse overlying reticulation, variable in size in different collections but mostly 13–17 μ in diameter; plasmodium yellow.

TYPE LOCALITY: France.
HABITAT: Rotten wood and plant debris; common.
DISTRIBUTION: Temperate North America; Europe; Japan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 14;* Hattori, Myxom. Nasu *pl. 5, f. 6.*
EXSICCATI: Ellis, N. Am. Fungi *1215;* Jaap, Myxom. Exs. *2, 64, 83, 143;* Thaxter, Rel. Farl. *382;* Wann & Muensch. N. Am. Myxom. *51.*

3. PHYSARUM Pers. Neues Mag. Bot. 1: 88. 1794.

Angioridium Grev. Scot. Crypt. Fl. *pl. 310.* 1827.
Trichamphora Jungh. Crypt. Java 12. 1838.
Claustria Fries, Summa Veg. Scand. 451. 1849.
Tilmadoche Fries, Summa Veg. Scand. 454. 1849.
Crateriachea Rost. Versuch 11. 1873.
Cytidium Morgan, Jour. Cinc. Soc. Nat. Hist. 19: 8. 1896.

Sporangiate to plasmodiocarpous, rarely almost aethalioid. Peridium single or double, calcareous. Stalk, when present, usually tubular, translucent or stuffed with lime or dark amorphous material. Capillitium a network of hyaline tubules connecting calcareous nodes, attached to the base and to the peridium. Lime in the peridium, capillitium, and stipe in the form of amorphous granules, not crystalline.* Spores black or dark brown in mass, violet-brown or violaceous by transmitted light.

Type species, *Physarum aureum* Pers.

Capillitium reticulate, not notably radiating from the base of the peridium or columella; nodes rounded or angular, rarely fusiform, the connecting threads not dichotomously branched.
  Plasmodiocarpous or sporangiate and sessile, sometimes on a constricted base, or attached by a weak, stalk-like extension of the hypothallus, never truly stalked.
    Peridium single, or, if double, the inner portion very delicate and firmly united to the limy outer wall. KEY 1.
    Peridium plainly double, the two layers firmly united or separable. KEY 2.
  Primarily sporangiate and stipitate (sessile and plasmodiocarpous fruitings occur in many species but are usually accompanied by stipitate sporangia).
    Columella present. KEY 3.
    Columella lacking.
      Lime-knots massed in the center to form a pseudocolumella or calcareous nucleus. KEY 4.
      Pseudocolumella or calcareous central mass usually lacking.
        Sporangia globose to oval or depressed-globose. KEY 5.
        Sporangia strongly compressed, annulate, saucer-shaped, or lobed. KEY 6.
Capillitium radiating from the base of the sporangium; nodes elongate-fusiform, usually small, sometimes spike-like when attached to the peridium; connecting threads dichotomously branched. KEY 7.

KEY 1

Predominantly sporangiate, but often forming short plasmodiocarps, these rarely branching or netted.
  Spores in large part oval, with a pale line of dehiscence. 1. *P. ovisporum.*
  Spores globose; area of dehiscence, if present, not a pale line.
    Capillitium elastic. 2. *P. Famintzini.*

* In occasional irregular developments of various species, the lime may be deposited on the peridium in the form of crystalline plates, resembling those of *Lepidoderma.*

Capillitium not elastic.
Fructification white or pale ashy-gray.
Sporangiate to plasmodiocarpous; wall fragile, membranous, more or less encrusted with flakes of lime. 3. *P. cinereum.*
Sporangiate on a constricted base; wall thin, hyaline, with limy ridges forming a reticulation on the surface. 4. *P. Gilkeyanum.*
Fructification distinctly colored.
Sporangia small, occurring in dense, heaped clusters.
Sporangia green or yellow to pallid. 5. *P. virescens.*
Sporangia dull, dark violaceous-brown. 6. *P. confertum.*
Sporangia scattered or gregarious, but not heaped.
Sporangia crowded, cylindric or irregular, often with blunt lobes, tawny or clay-colored. 7. *P. digitatum.*
Sporangia globose or pulvinate; red, reddish-brown, or yellow.
Sporangia bright yellow. 8. *P. luteolum.*
Sporangia red or brown, or occasionally green.
Nodes rounded, yellow, with red centers. 9. *P. lateritium.*
Nodes angular.
Sporangia small, 0.3–0.5 mm. in diameter, the peridium delicate, speckled; nodes small. 10. *P. Braunianum.*
Sporangia larger, 0.5–1.2 mm. in diameter, the peridium rough; nodes large.
Sporangia scarlet to red-brown or olive-brown; peridium thin, rugulose. 11. *P. rubiginosum.*
Sporangia reddish or orange to green, mottled; peridium thick with lime-granules, rough, sometimes short-stalked. 12. *P. auriscalpium.*
Predominantly plasmodiocarpous; plasmodiocarps often branching or netted, usually accompanied by short plasmodiocarps or sporangiate fruitings.
Plasmodiocarps bright yellow or orange; spores mostly less than 10 μ in diameter. 13. *P. superbum.*
Plasmodiocarps dull yellow or ochraceous; spores mostly over 10 μ in diameter. 14. *P. Serpula.*
See also Nos. 51, 52, 61, and 63.

KEY 2

Primarily plasmodiocarpous; plasmodiocarps long, often branched or reticulate, usually accompanied by shorter plasmodiocarps or sporangiate fruitings.
Plasmodiocarps strongly compressed laterally; dehiscence by a longitudinal fissure.
Spores reticulate; known only from the tropics. 15. *P. echinosporum.*
Spores minutely spiny, 8–10 μ in diameter. 16. *P. bivalve.*
Plasmodiocarps terete or nearly so; dehiscence not by a longitudinal fissure.
Plasmodiocarps white or pallid, usually rather short and unbranched; spores 10–13 μ in diameter. 17. *P. bitectum.*
Outer peridium distinctly colored.
Outer peridium smooth, yellow-brown; dehiscence by triangular lobes, exposing the white inner peridium. 18. *P. bogoriense.*
Outer peridium bronze, wrinkled; inner wall iridescent, membranous; dehiscence not lobate. 19. *P. aeneum.*
Primarily sporangiate, the fructifications sometimes merging into short, rarely long, unbranched plasmodiocarps.
Sporangia white, often on a constricted base; outer wall crustose, smooth, *Diderma*-like, usually remote from the inner wall. 20. *P. Diderma.*
Fructifications creamy or ochraceous to yellow, greenish, or brown; walls closely applied.
Sporangia flattened, elongate, subplasmodiocarpous, densely crowded. 21. *P. contextum.*
Sporangia not notably flattened; gregarious or clustered but not crowded.
Nodes white. 22. *P. Mortoni.*
Nodes yellow or red, sometimes fading.
Fructifications sessile to plasmodiocarpous; yellow or greenish; spores violet-brown, closely and minutely warted. 23. *P. alpinum.*
Fructifications sessile or on weak, strand-like stalks; spores dark, rough.
Dull yellow to pallid; nodes dull orange to pale yellow. 24. *P. albescens.*
Pinkish-brown; nodes scarlet. 25. *P. rubronodum.*
See also No. 41.

KEY 3

Columella large, conspicuous.
  Sporangia ellipsoid, greenish; columella slender, almost reaching the apex; spores 6–7 μ in diameter. 26. *P. penetrale.*
  Sporangia neither green nor ellipsoid; columella usually shorter; spores over 10 μ in diameter.
    Columella subglobose or clavate, yellow. 27. *P. Listeri.*
    Columella clavate to cylindric, never yellow.
      Sporangia grayish-white; columella white, one-third the height of the sporangial cavity; stalk stout, calcareous. 28. *P. perfectum.*
      Sporangia grayish-white or pale brown; columella white, brown, or black, cylindric and reaching the apex or shorter and clavate; stalk not calcareous. 29. *P. crateriforme.*
Columella small, usually a conical projection of a calcareous stalk.
  Sporangia yellow or orange.
    Nodes white; peridium honey-yellow; stalk white, yellow, or tawny. 30. *P. melleum.*
    Nodes yellow or red.
      Sporangia bright yellow; columella and stalk yellow. 31. *P. citrinum.*
      Sporangia orange to bronze-tawny; stalk orange-red. 32. *P. pulcherripes.*
  Sporangia neither yellow nor orange.
    Stalk and capillitium white; sporangia white to bluish-gray. 33. *P. globuliferum.*
    Stalk and capillitium colored.
      Lilac or blue throughout. 34. *P. Bilgramii.*
      Without lilac or blue tints.
        Sporangia, stalks, and nodes brown. 35. *P. murinum.*
        Sporangia and stalks deep maroon; nodes purple. 36. *P. pulcherrimum.*

KEY 4

Sporangia globose to oval, sometimes plasmodiocarpous.
  Fructifications elongate-ovate, varying to plasmodiocarpous; central lime mass usually cylindric, often forming a pseudocolumella. 37. *P. mutabile.*
  Fructifications globose; central lime mass usually spherical.
    Capillitium delicate, with few nodes; stalk calcareous. 38. *P. stellatum.*
    Capillitium dense; stalk not calcareous. 39. *P. nucleatum.*
Sporangia obconic, lobate or distorted. 40. *P. nicaraguense.*
  See also No. 41.

KEY 5

Sporangia white or ashy-gray; nodes white.
  Stalk pale, translucent, weak, often lacking; sporangia ovoid, crowded; outer peridium white, strongly calcareous; inner peridium plumbeous; often with a pseudocolumella. 41. *P. Didermoides.*
  Stalk opaque, solid, erect.
    Stalk calcareous, fragile, snow-white; peridium *Didymium*-like. 42. *P. leucopus.*
    Stalk non-calcareous, dark or externally frosted with lime.
      Sporangia small, 0.4–0.6 mm. in diameter, white, with a persistent, brownish base; stalk long, slender, brown. 43. *P. pusillum.*
      Sporangia usually larger; stalk short, stout, or lacking.
        Depressed-globose, strongly calcareous, often clustered on an opaque, dark or frosted stalk, varying to sessile or plasmodiocarpous. 44. *P. notabile.*
        Globose to subdepressed or ovate, with darker base; peridium not strongly calcareous, often iridescent; stalk short, dark or frosted. 45. *P. leucophaeum.*
Sporangia not white, rarely pale gray and then the nodes yellow.
  Sporangia blue, red, purple, or bronze.
    Sporangia rose-purple or purplish-red throughout.
      Stalk long, slender, translucent; spores pale under the lens. 46. *P. roseum.*
      Stalk short, thick, opaque; spores dark under the lens. 47. *P. Newtoni.*
    Peridium iridescent blue or bronze, often mottled with red or orange; stalk orange. 48. *P. psittacinum.*
  Sporangia some shade of yellow or brown.
    Peridium yellow-brown, smooth, crustose, varnished, short-stipitate to sessile. 49. *P. brunneolum.*
    Peridium not crustose nor varnished.
      Peridium dull yellow or ochraceous to yellow-brown or dusky.
        Peridium ochraceous above; stalk and lower portion of the peridium flesh-colored. 50. *P. carneum.*
        Stalk and base of the peridium not flesh-colored.
          Stalk short, stout, sometimes lacking.
            Stalk orange or brown, translucent; peridium double. 51. *P. flavidum.*
            Stalk white or dull brown, calcareous, opaque. 52. *P. sulphureum.*
          Stalk long, slender, reddish-brown; peridium yellowish to sooty, iridescent. 53. *P. flavicomum.*

Peridium bright yellow or orange, rarely gray with yellow nodes.
Stalk usually rather short, relatively thick; capillitium dense.
Nodes large, angular; base of the peridium tending to persist as a cup. 54. *P. oblatum.*
Nodes small, rounded; base of the peridium not cupulate. 55. *P. auripigmentum.*
Stalk long, slender; base of the peridium not persistent; nodes small, sparse.
Stalk calcareous; dehiscence petaloid; color varying from bright yellow to ochraceous or gray. 56. *P. tenerum.*
Stalk limeless; dehiscence by fragmentation. 57. *P. galbeum.*
See also Nos. 12, 24, and 25.

KEY 6

Sporangia greatly depressed, discoid or patellate.
Sporangia umbilicate above or annulate; stalk short, dark; spores dark, 12–16 μ in diameter. 58. *P. megalosporum.*
Sporangia saucer-shaped; stalk slender; spores clear violet, usually smaller.
Stalk reddish-brown, translucent. 59. *P. Pezizoideum.*
Stalk white or pallid above, dark below from amorphous inclusions. 60. *P. javanicum.*
Sporangia flattened laterally.
Sporangia ovoid or reniform, varying to sessile and plasmodiocarpous, often in the same fruiting; stalks stout, opaque, dark or frosted with lime. 61. *P. compressum.*
Sporangia obovoid or wedge-shaped, usually stipitate; stalks weak, pallid, translucent. 62. *P. straminipes.*
See also No. 63.

KEY 7

Plasmodiocarpous, massed, often almost aethalioid, sometimes accompanied by sporangiate fruitings. 63. *P. gyrosum.*
Sporangiate, stalked.
Sporangial heads compound, gyrose. 64. *P. polycephalum.*
Sporangia not compound.
Capillitium orange, strongly calcareous, the nodes long, rigid, rod-like; sporangia yellow or iridescent, nodding, lenticular. 65. *P. rigidum.*
Capillitium dense, delicate, with small nodes.
Sporangia erect on short stalks, iridescent blue, with yellow scales 66. *P. Bethelii.*
Sporangia usually nodding on long stalks.
Gray or white; nodes white. 67. *P. nutans.*
Yellow, greenish-yellow, or orange, often fading; nodes yellow or orange. 68. *P. viride.*
See also No. 27.

1. Physarum ovisporum G. Lister, Jour Bot. 59: 90. 1921.

Sporangia scattered, white, sessile, pulvinate, 0.5–0.8 mm. in diameter, or forming straight, curved, or irregular plasmodiocarps; peridium minutely roughened with deposits of lime granules, often with smoother areas where the lime deposits are scanty; capillitium composed of numerous rounded or angular nodes, varying in size, connected by short hyaline threads; spores deep purple-brown by transmitted light, warted or spiny, often with a pale line of dehiscence, varying from oval, 12–13 × 10–12 μ, to globose, 9–11 μ in diameter; plasmodium white.

TYPE LOCALITY: England.
HABITAT: Dead leaves, surface litter, and wood.
DISTRIBUTION: New York, Iowa, Kansas; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 202, a–c.*

2. Physarum Famintzini Rost. Monog. 107. 1874.

Physarum Gulielmae Penzig, Myxom. Buitenz. 34. 1898.

Sporangia sessile, clustered or heaped, rugulose, brownish-orange or chestnut, globose or reniform, about 0.4 mm. in diameter; peridium membranous, bearing clustered deposits of yellowish-brown lime granules; capillitium abundant, elastic and expanding, the nodes white, angular, branching, sometimes forming a pseudocolumella; spores purplish-brown, spinulose, 9–12 μ in diameter; plasmodium yellow or orange.

TYPE LOCALITY: Poland.
HABITAT: Dead wood and plant debris.
DISTRIBUTION: Maryland; Europe; Java.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 63.*

3. **Physarum cinereum** (Batsch) Pers. Neues Mag. Bot. 1: 89. 1794.

Lycoperdon cinereum Batsch, Elench. Fung. 155. 1783.
Physarum griseum Link, Ges. Nat. Freunde Berlin Mag. 3: 27. 1809.
Didymium cinereum Fries, Syst. Myc. 3: 126. 1829.
Physarum plumbeum Fries, Syst. Myc. 3: 142. 1829.
Didymium scrobiculatum Berk. Lond. Jour. Bot. 4: 66. 1845.
Didymium oxalinum Peck, Ann. Rep. N. Y. State Mus. 28: 54. 1876.
Physarum scrobiculatum Massee, Monog. 300. 1892.

Sporangia sessile, closely gregarious, crowded or heaped, subglobose or elongate, merging into short plasmodiocarps, 0.3–0.5 mm. broad, calcareous, white or cinereous, or nearly limeless and iridescent to drab; peridium single, thin, more or less densely coated or flecked with lime; capillitium abundant, the nodes often angular and with the calcareous deposits extending into the internodes; spores purplish-brown in mass, clear violaceous by transmitted light, minutely warted, 9–13 μ in diameter; plasmodium watery-white or colorless, sometimes becoming bright yellow before fruiting.

TYPE LOCALITY: Germany.
HABITAT: Dead leaves and soil, often forming extensive fruitings on living plants.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 47;* Hattori, Myxom. Nasu *pl. 6, f. 4.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2085, 2691, 3496;* Jaap, Myxom. Exs. *166;* D. Sacc. Myc. Ital. *930, 1114;* Brândză, Myxom. Roum. II. 1: *19*(NY).

4. **Physarum Gilkeyanum** H. C. Gilbert; Peck & Gilbert, Am. Jour. Bot. **19**: 133. 1932.

Sporangia sessile, gregarious, globose or broadly obovate on a narrowed base, 0.4–0.8 mm. in diameter, 0.7–0.9 mm. tall, grayish-white; peridium hyaline, usually covered with a thin, reticulately wrinkled coat of lime, irregularly dehiscent; capillitium dense, rigid, fine-meshed, persistent, the nodes few, white, small and rounded at the top, long, branching, badhamioid at the base; spores dark violaceous-brown in mass, violet-brown by transmitted light, coarsely warted, 9–11 μ in diameter.

TYPE LOCALITY: Lebanon, Oregon.
HABITAT: Leaf mold.
DISTRIBUTION: Known only from the type locality.
ILLUSTRATION: Am. Jour. Bot. 19: *pl. 10, f. 1.*

5. **Physarum virescens** Ditmar in Sturm, Deuts. Fl. Pilze 1: 123. 1817.

Physarum thejoteum Fries, Symb. Gast. 21. 1818.
Physarum caespitosum Schw. Trans. Am. Phil. Soc. II. 4: 258. 1832.
Didymium nectriaeforme Berk. & Curt.; Berk. Grevillea 2: 65. 1873.
Physarum Ditmari Rost. Monog. Append. 8. 1876.
Didymium sinapinum Cooke, Myxom. Gr. Brit. 33. 1877.

Sporangia sessile or with a weak, strand-like stalk, spherical, ovoid, or elongate, 0.2–0.4 mm. in diameter, crowded or superimposed in small clusters, yellow, greenish-yellow, or pallid gray-green; peridium thin, fragile, rugose; capillitium delicate, the nodes small, irregular, yellowish; columella none; spores dingy brownish-black in mass, bright violet by transmitted light, minutely roughened, 8–11 μ in diameter; plasmodium lemon-yellow.

TYPE LOCALITY: Germany.
HABITAT: Moss and dead leaves.
DISTRIBUTION: Temperate North America; Europe; Java; Japan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 61, a–c;* Macbr. & Mart. Myxom. *pl. 3, f. 49, 50;* Hattori, Myxom. Nasu *pl. 19, f. 1.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2692;* Hintikka, Myxogast. Fenn. *16;* Brândză, Myxom. Roum. II. 1: *7*(NY); *16, 37*(IU); Jaap, Myxom. Exs. *6.*

6. **Physarum confertum** Macbr. N. Am. Slime-Moulds ed. 2. 64. 1922.

Physarum atrum sensu Morgan, Jour. Cinc. Soc. Nat. Hist. 19: 27. 1896. Not *P. atrum* Schw. 1832.

Sporangiate, subglobose, or somewhat elongate, sessile, small, 0.2–0.4 mm. in diameter, closely gregarious, often confluent or heaped, rarely plasmodiocarpous, dull violaceous-brown; peridium thin, more or less transparent, nearly limeless or sprinkled or reticulated with lime; capillitium scanty, the nodes small, elongate, rounded, white; columella none; spores violet-brown, minutely warted, 11–13 μ in diameter; plasmodium white or yellowish.

TYPE LOCALITY: North Carolina.
HABITAT: Pine needles, moss, twigs, and dead wood; often in *Sphagnum* bogs.
DISTRIBUTION: Nova Scotia to Ontario, south to North Carolina and Mississippi; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 64.*
EXSICCATI: Hintikka, Myxogast. Fenn. *14;* Brândză, Myxom. Roum. II. 1: *12*(NY; as *P. atrum*); *38*(IU).

7. **Physarum digitatum** Lister & Farq.; Farq. & Lister, Jour. Bot. 54: 128. 1916.

Physarum thejoteum sensu Morgan, Jour. Cinc. Soc. Nat. Hist. 19: 22. 1896. Not *P. thejotum* Fries. 1818.
Physarum instratum Macbr. N. Am. Slime-Moulds ed. 2. 62. 1922.

Sporangia sessile, subglobose, obovoid or erect-cylindric, 0.2–0.4 mm. in diameter, 0.3–1 mm. high, closely crowded in clusters on a shining hypothallus, not superimposed, but often merged below so that the erect portions become lobes of the basal mass, sometimes subaethalioid, dull orange, brownish, or tawny; peridium thin, covered with minute calcareous scales; columella none; capillitium lax, sometimes scanty, the nodes small, yellowish or brownish, sometimes confluent; spores dull, dark lilaceous in mass, pale violet by transmitted light, bearing scattered clusters of minute warts, 6–7 μ in diameter; plasmodium grayish-yellow.

TYPE LOCALITY: Southern Nigeria.
HABITAT: Dead wood.
DISTRIBUTION: Pennsylvania to Washington (state), south to Maryland and Nebraska; Africa.
ILLUSTRATIONS: Jour. Bot. 54: *pl. 541, f. 1;* Lister, Mycet. ed. 3. *pl. 203;* Macbr. & Mart. Myxom. *pl. 4, f. 53, 54.*

8. **Physarum luteolum** Peck, Ann. Rep. N. Y. State Mus. 30: 50. 1878.

Physarum virescens γ *nitens* Lister, Mycet. 59. 1894.

Sporangia gregarious or clustered, but not heaped, subglobose, sessile, 0.4–0.8 mm. in diameter, rugulose or smooth, bright chrome-yellow; peridium membranous, with included yellow lime granules; capillitium a network of hyaline threads bearing numerous small, yellow, rounded or angular nodes; spores brown in mass, pale lilac by transmitted light, minutely spinulose, 8.5–11 μ in diameter.

TYPE LOCALITY: New York.
HABITAT: Dead leaves.
DISTRIBUTION: Maine to Ontario, south to Pennsylvania and Iowa.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 62, a–c.*

9. **Physarum lateritium** (Berk. & Rav.) Morgan, Jour. Cinc. Soc. Nat. Hist. 19: 23. 1896.

Didymium lateritium Berk. & Rav.; Berk. Grevillea 2: 65. 1873.
Didymium croceo-flavum Berk. & Br. Jour. Linn. Soc. 14: 84. 1873.
Physarum Ditmari β *croceo-flavum* Rost. Monog. Append. 9. 1876.
Physarum Ditmari γ *lateritium* Rost. Monog. Append. 9. 1876.
Physarum inaequalis Peck, Ann. Rep. N. Y. State Mus. 31: 40. 1879.

Sporangiate, sessile, globose or subglobose, 0.3–0.7 mm. in diameter, or occasionally forming short plasmodiocarps, gregarious or clustered, yellowish-red, orange, or scarlet, sometimes fading; peridium thin, somewhat rugulose, dotted with minute scarlet scales; capillitium deli-

cate, usually dense, the nodes rounded, yellow, often with red centers, connected by a network of hyaline or yellow threads, many of the nodes limeless, consisting merely of membranous expansions; spores violet-brown in mass, clear bright violet by transmitted light, minutely warted, 7–9 μ in diameter; plasmodium orange-yellow.

TYPE LOCALITY: South Carolina.
HABITAT: Dead wood and leaves.
DISTRIBUTION: Nova Scotia to Iowa and Panama; South America; Europe; Asia; Hawaii.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 60;* Hattori, Myxom. Nasu *pl. 19, f. 5;* Nat. Geogr. Mag. 49[4]: *pl. 8.*

10. **Physarum Braunianum** De Bary; Rost. Monog. 105. 1874.

Sporangia sessile, subglobose to erect-ovate, 0.3–0.5 mm. in diameter, scattered or clustered but not heaped, brown or reddish-brown, speckled with pale spots, or with scanty lime and then darker when filled with spores; peridium membranous, colorless except for included clusters of yellow or red lime-granules and occasional red streaks; capillitium a network of small, angular or branching, white, yellowish, or red nodes connected by hyaline threads; spores violet-brown, spinulose, 8–10 μ in diameter.

TYPE LOCALITY: Germany.
HABITAT: Dead leaves.
DISTRIBUTION: Eastern United States from Maine to Florida; Europe.
ILLUSTRATION: Lister, Mycet. ed. 3. *pl. 61, d* (as *P. lateritium*).

11. **Physarum rubiginosum** Fries, Symb. Gast. 21. 1817.

Leangium rubiginosum Fries, Stirp. Femsj. 83. 1825. (Nomen nudum.)
Physarum fulvum Fries, Syst. Myc. 3: 143. 1829.

Sporangiate, sessile, globose or cylindric, sometimes narrowed to a stalk-like base, 0.5–0.8 mm. in diameter, rarely plasmodiocarpous, gregarious or clustered, olive-brown, reddish-brown, or scarlet, sometimes white-incrusted; peridium thin, usually rugulose, the lime deposits continuous or in the form of calcareous scales; capillitium dense, the nodes large, angular, branched, dull orange to rusty-brown, sometimes red inside and paler outside; spores grayish-black in mass, grayish-violet by transmitted light, minutely spinulose, 9–12 μ in diameter; plasmodium orange-red or scarlet.

TYPE LOCALITY: Sweden.
HABITAT: Dead wood and moss.
DISTRIBUTION: Maine to Washington (state), south to Florida and Colorado; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 59;* Macbr. & Mart. Myxom. *pl. 4, f. 51, 52.*

12. **Physarum auriscalpium** Cooke, Ann. Lyc. N. Y. 11: 384. 1877.

Badhamia iowensis Macbr. N. Am. Slime-Moulds ed. 2. 36. 1922.

Sporangiate, sessile, gregarious or clustered, subglobose or distorted by pressure, rarely with short stalks, 0.4–0.8 mm. in diameter, or forming short, straight, curved, or annulate plasmodiocarps, pallid to orange, green, or tawny; peridium membranous, yellowish or dark, covered with large, multicolored clusters of lime granules; capillitium dense, of large, branching, yellow or pallid nodes connected by short, hyaline threads; spores nearly black in mass, violet-brown by transmitted light, minutely warted, 9–12 μ in diameter; plasmodium orange or greenish.

TYPE LOCALITY: South Carolina.
HABITAT: Dead wood, woody debris, and moss. Frequent on bark from living trees in culture.
DISTRIBUTION: Maine to Ontario, south to South Carolina and Colorado; widely reported elsewhere but the species as here delimited (following Lister) has apparently been confused with others.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 33.*

13. **Physarum superbum** Hagelst. Mycologia **32**: 385. 1940.

Physarum aureum Brândză, Bull. Soc. Myc. Fr. 44: 261. 1929. Not *P. aureum* Pers. 1794.

Sporangiate, sessile, solitary or in small clusters, 0.4–0.6 mm. in diameter, or forming elongate plasmodiocarps up to 12 mm. in length, bright yellow; peridium rugulose, pelliculose,

transparent yellow to orange-red, bearing small clusters of minute yellow or orange calcareous granules; capillitium well developed, persistent, the nodes firm, angular, unequal, pallid to bright yellow, 10–25 μ in diameter, the connecting threads hyaline or yellowish, branched; spores pale violaceous-brown, minutely echinulate, 8–10 μ in diameter.

TYPE LOCALITY: Philadelphia, Pennsylvania.
HABITAT: Dead leaves, mosses, and decaying wood.
DISTRIBUTION: New York to Ontario, south to Florida and Kansas; Europe; Japan.
ILLUSTRATIONS: Bull. Soc. Myc. Fr. 44: *pl. 16;* Lister, Mycet. ed. 3. *pl. 22, a* (as *Physarum sessile*).

14. **Physarum Serpula** Morgan, Jour. Cinc. Soc. Nat. Hist. 19: 29. 1896.

Plasmodiocarpous, forming lines, rings, or a simple network, 0.3–0.4 mm. wide, often interspersed with globose sporangiate fruitings, dull yellow or ochraceous, rarely bright yellow, fading; peridium thin, fragile, simple, membranous, persistent, borne on a diffuse hypothallus; capillitium dense, calcareous, the nodes numerous, large, angular, branching, pale yellow or whitish, connected by short, hyaline threads, often almost badhamioid; spores globose, dull black in mass, violaceous by transmitted light, minutely warted, with a paler and smoother area on one side, 10–13 μ in diameter; plasmodium at maturity greenish-yellow.

TYPE LOCALITY: Eastern United States (Pennsylvania or North Carolina).
HABITAT: Dead leaves, bark, wood, lichens, and old fungi.
DISTRIBUTION: New York to Ontario, south to Florida and Nebraska, and in Panama; Hawaii; Japan.
ILLUSTRATIONS: Jour. Cinc. Soc. Nat. Hist. 19: *pl. 3, f. 65;* Lister, Mycet. ed. 3. *pl. 57;* Macbr. & Mart. Myxom. *pl. 3, f. 47, 48;* Hattori, Myxom. Nasu *pl. 18, f. 4.*
EXSICCATI: Ellis, N. Am. Fungi *1396* (as *P. gyrosum*).

15. **Physarum echinosporum** Lister, Jour. Bot. 37: 147. 1899.

Plasmodiocarpous, usually curved, strongly compressed laterally, chalky white, dehiscent at the upper margin; peridium double, the outer layer smooth, calcareous, the inner membranous, pale purple, iridescent; capillitium dense, the nodes large, white, angular, the internodes short, hyaline; spores purple, marked with conspicuous ridges and spines, 8 μ in diameter (according to Lister), 11–14 μ in diameter (according to Boedijn).

TYPE LOCALITY: Antigua.
HABITAT: Dead leaves and branches.
DISTRIBUTION: Antigua; Dutch East Indies.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 53;* Bull. Jard. Bot. Buitenz. III. 16: 362.

16. **Physarum bivalve** Pers. Ann. Bot. Usteri 15: 5. 1795.

Reticularia sinuosa Bull. Hist. Champ. Fr. 94. 1791.
Angioridium sinuosum Grev. Scot. Crypt. Fl. *pl. 310.* 1827.
Diderma valvatum Fries, Syst. Myc. 3: 109. 1829.
Physarum sinuosum Weinm.; Fries, Syst. Myc. 3: 145. 1829. Not *P. sinuosum* Link, 1809.
Carcerina valvata Fries, Summa Veg. Scand. 451. 1849.
Diderma contortum sensu Fuckel, Jahrb. Nass. Ver. Nat. 23–24: 341. 1869. Not *D. contortum* Hoffm. 1795.

Plasmodiocarpous, crowded, laterally compressed, white, gray, or yellowish, the plasmodiocarps usually interspersed with shortened, sporangiate fructifications, these sometimes with a constricted base; peridium double, the outer layer usually thickly calcareous, especially above, and then white, sometimes nearly limeless below and then drab or yellowish, the inner wall delicate, colorless; dehiscence by a more or less regular longitudinal fissure; capillitium abundant, the nodes large, white; spores black in mass, dull violet by transmitted light, minutely and uniformly spinulose, 8–10 μ in diameter; plasmodium gray, pallid, or yellowish.

TYPE LOCALITY: France.
HABITAT: Dead leaves and accompanying debris.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Bull. Herb. Fr. *pl. 446, f. 3;* Grev. Scot. Crypt. Fl. *pl. 310;* Lister, Mycet. ed. 3. *pl. 49;* Macbr. & Mart. Myxom. *pl. 4, f. 57–59;* Hattori, Myxom. Nasu *pl. 18, f. 6.*
EXSICCATI: Ellis, N. Am. Fungi *1394;* Sydow, Myc. Germ. *33;* Jaap, Myxom. Exs. *4, 86, 145;* Brândză, Myxom. Roum. *27*(IU); Hintikka, Myxogast. Fenn. *15;* Thaxter, Rel. Farl. *410;* Wann & Muensch. N. Am. Myxom. *60.*

17. **Physarum bitectum** G. Lister in Lister, Mycet. ed. 2. 78. 1911.

Physarum Diderma sensu Lister, Jour. Bot. 29: 260. 1891. Not *P. Diderma* Rost. 1874.

Sporangiate, sessile, subglobose, 0.6–0.8 mm. in diameter, or forming short, usually unbranched plasmodiocarps up to 6 mm. long, smooth, white or pallid, terete or somewhat compressed; peridium double, the outer wall calcareous, free, deciduous above, recurved and persistent below, the inner smooth, pale purple, persistent; dehiscence irregular, by the breaking away of the upper part of the peridium; capillitium of large, white nodes connected by short, hyaline tubes; spores black in mass, dark violaceous-brown by transmitted light, spinulose, with a conspicuous smoother area, 10–13 μ in diameter.

TYPE LOCALITY: Great Britain.
HABITAT: Dead leaves and twigs.
DISTRIBUTION: Ohio to Washington (state), south to Kansas and California, and in Puerto Rico; South America; Europe; South Africa; Australia.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 51.*
EXSICCATI: Jaap, Myxom. Exs. *146.*

18. **Physarum bogoriense** Racib. Hedwigia 37: 52. 18 F 1898.

Physarum pallidum Lister, Jour. Bot. 36: 117. Ap 1898.

Sporangiate, globose, sessile or forming elongate but not reticulate plasmodiocarps, semicircular in transverse section, 0.3–0.6 mm. wide; peridium double, the outer layer thick, smooth, yellow or brown on the outside, white within, dehiscing in stellate fashion into persistent, more or less triangular, reflexed lobes, remote from the thin, colorless or somewhat iridescent inner layer; capillitium abundant, of large, white, rounded and branching lime-knots connected by slender, hyaline threads; spores dark brown in mass, bright violet by transmitted light, minutely warted, 7.5–10 μ in diameter.

TYPE LOCALITY: Buitenzorg, Java.
HABITAT: Dead leaves and plant litter.
DISTRIBUTION: New York to California and southward; South America; Europe; South Africa; Asia; Australia; abundant in the tropics of both hemispheres.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 50;* Hattori, Myxom. Nasu *pl. 6, f. 3.*
EXSICCATI: Ellis & Ev. Fungi Columb. *1396* (as *Physarum conglomeratum*).

19. **Physarum aeneum** (Lister) R. E. Fries, Ark. Bot. 1: 62. 1903.

Physarum murinum var. β *aeneum* Lister, Jour. Bot. 36: 117. 1898.

Plasmodiocarpous, 0.3–0.4 mm. in width, the plasmodiocarps usually accompanied by sessile, subglobose, sporangiate fruitings, pinkish-brown or citrine-drab to bronze, glossy; peridium double, the outer layer cartilaginous, brittle, wrinkled, usually separating at dehiscence from the shining, iridescent, membranous inner wall; capillitium dense, the nodes small, brown, sometimes aggregated to form a pseudocolumella; spores dark brown in mass, pale brownish-violet by transmitted light, nearly smooth, 7–9 μ in diameter; plasmodium black.

TYPE LOCALITY: Dominica.
HABITAT: Dead leaves and wood.
DISTRIBUTION: New York to Iowa and Kansas, south to Virginia and Louisiana, and in the West Indies; South America; Asia; Hawaii.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 58.*

20. **Physarum Diderma** Rost. Monog. 110. 1874.

Physarum testaceum Sturgis, Colo. Coll. Publ. Sci. 12: 18. 1907.

Sporangia clustered, sessile or narrowly adnate, globose, pulvinate or polygonal by pressure, about 1 mm. in diameter, snow-white; peridium double, the outer layer dense, fragile, thick, calcareous, the inner delicate, translucent, membranous, sometimes remote; capillitium abundant, the nodes white, angular, sometimes uniting to form a pseudocolumella; spores black in mass, purplish-brown by transmitted light, rough, 10–12 μ in diameter.

TYPE LOCALITY: Poland.
HABITAT: Dead wood, bark and moss.
DISTRIBUTION: Maine to Montana and Oregon, south to New York, Iowa and Colorado; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 54;* Machr. & Mart. Myxom. *pl. 4, f. 60, 61.*

21. **Physarum contextum** (Pers.) Pers. Syn. Fung. 168. 1801.

Diderma contextum Pers. Obs. Myc. 1: 89. 1796.
Didymium contextum Fries, Symb. Gast. 20. 1818.
Leocarpus contextus Fries, Summa Veg. Scand. 450. 1849.
Diderma ochroleucum Berk. & Curt.; Berk. Grevillea 2: 52. 1873.
Chondrioderma contextum Rost.; Fuckel, Jahrb. Nass. Ver. Nat. 27–28: 74. 1873.
Diderma flavidum Peck, Ann. Rep. N. Y. State Mus. 28: 54. 1876.
Physarum flavidum A. Berl. in Sacc. Syll. Fung. 7: 350. 1888.
Physarum conglomeratum Massee, Monog. 304. 1892. Not *P. conglomeratum* Rost. 1874.

Sporangiate or subplasmodiocarpous, sessile, densely crowded, sometimes almost aethalioid, oval, reniform, or elongate, 0.3–0.6 mm. wide; peridium double, the outer layer thick, calcareous, yellow, ochraceous, or pallid, rarely pinkish-buff, the inner layer membranous, pallid or yellowish; capillitium dense, the nodes white; columella none; spores nearly black in mass, deep violet-brown by transmitted light, distinctly and irregularly spinulose, 11–13 μ in diameter; plasmodium yellow.

TYPE LOCALITY: Germany.
HABITAT: Dead leaves and twigs and herbaceous debris.
DISTRIBUTION: Throughout North America; Europe; India; Japan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 55;* Macbr. & Mart. Myxom. *pl. 6, f. 101, 102;* Hattori. Myxom. Nasu *pl. 6, f. 2.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2086;* Jaap, Myxom. Exs. *5;* Brândză, Myxom. Roum. I. 1: *6;* II. 1: *14;* III. 1: *6*(NY); *26*(IU).

22. **Physarum Mortoni** Macbr. N. Am. Slime-Moulds ed. 2. 58. 1922.

Physarum contextum var. *Mortoni* G. Lister in Lister, Mycet. ed. 3. 60. 1925.

Sporangiate, or rarely plasmodiocarpous, clustered, sessile, often on a contracted base, 0.7–0.8 mm. in diameter, bright ochraceous to pallid; peridium double, the outer layer rough, calcareous, breaking up into coarse, irregular fragments, the inner layer membranous, dark, but bearing calcareous flakes and granules and colored by them, both layers persisting as a cup below; capillitium lax, the nodes large, white, angular, sometimes aggregated at the center; columella none; spores black in mass, dark purplish-brown by transmitted light, coarsely warted, 11–13 μ in diameter.

TYPE LOCALITY: Oregon.
HABITAT: Dead leaves and bark.
DISTRIBUTION: Washington, Oregon, California.
ILLUSTRATIONS: Macbr. & Mart. Myxom. *pl. 5, f. 72, 73.*

23. **Physarum alpinum** (A. & G. Lister) G. Lister, Jour. Bot. 48: 73. 1910.

Physarum virescens var. *alpinum* A. & G. Lister, Jour. Bot. 46: 216. 1908.

Sporangiate, subglobose, sessile, 0.8–1.4 mm. in diameter, or plasmodiocarpous, dull yellow or greenish, smooth or scaly; peridium double, the outer wall densely calcareous, separating irregularly from the membranous inner wall; capillitium dense, calcareous, the nodes large, more or less branched, yellow; spores purple-brown, closely and minutely warted, 11–13 μ in diameter.

TYPE LOCALITY: California.
HABITAT: Grass, leaves, and twigs.
DISTRIBUTION: Washington (state), California; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 62, d–f;* Macbr. & Mart. Myxom. *pl. 4, f. 62, 63.*
EXSICCATI: Jaap, Myxom. Exs. *124.*

24. **Physarum albescens** Macbr. N. Am. Slime-Moulds ed. 2. 86. 1922.

Leocarpus fulvus Macbr. N. Am. Slime-Moulds 82. 1899.
Physarum fulvum Lister, Mycet. ed. 2. 60. 1911. Not *P. fulvum* Fries, 1829.

Sporangia gregarious or scattered, obovoid or globose, 0.6–0.8 mm. in diameter, occasionally subplasmodiocarpous, pale yellow or fulvous, often fading to dingy white, or dark from lack of lime, sessile or attached by a weak, strand-like stipe, irregularly dehiscent above; peridium double, the outer layer calcareous, the inner delicate, membranous, persistent below as a shallow cup; stalk, when present, variable in length, weak, striate, fulvous or yellow, arising as an extension of the venulose or more or less continuous hypothallus; capillitium dense, yellow, fading to pallid or white, often nearly limeless above, the nodes larger, flattened, and usually more deeply colored below; spores black in mass, dark violaceous-brown by transmitted light, rough, 12–15 μ in diameter; plasmodium yellow.

TYPE LOCALITY: Denver, Colorado.
HABITAT: Fallen leaves and woody debris.
DISTRIBUTION: Wisconsin to Oregon, south to Florida and California; Switzerland.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 66;* Macbr. & Mart. Myxom. *pl. 6, f. 107, 108.*

25. **Physarum rubronodum** G. W. Martin, Jour. Wash. Acad. 38: 238. 1948.

Sporangia globose to obovate or pulvinate, sessile or borne on weak, strand-like stalks produced as extensions of the hypothallus, pinkish-brown, or dark when lime is scanty in the peridium, 1–1.5 mm. in diameter, densely clustered on a common hypothallus; peridium double, the outer layer cartilaginous, calcareous, shining, crustose, smooth except for a coarse overlying reticulation or, when lime is scanty, dark and lacking the reticulation, the inner layer membranous, closely applied, colorless, iridescent; hypothallus prominent, silvery to yellow, venose, the veins often projecting as stalk-like extensions on which sporangia are borne; capillitium profuse, close-meshed, bearing large, fusiform or irregularly angular, scarlet or pinkish nodes, most of the junctions limeless; spores nearly black in mass, dark violaceous-brown by transmitted light, slightly paler on one side, densely and somewhat irregularly verrucose, globose, 11–13 μ in diameter, or oval and correspondingly longer and narrower; plasmodium scarlet or orange-red.

TYPE LOCALITY: Mt. Shasta, California.
HABITAT: Dead wood and old cloth.
DISTRIBUTION: Known only from the type locality.
ILLUSTRATION: Jour. Wash. Acad. 38: 239, *f. 1.*

26. **Physarum penetrale** Rex, Proc. Acad. Phila. 1891: 389. 1891.

Cytidium penetrale Morgan, Jour. Cinc. Soc. Nat. Hist. 19: 11. 1896.

Sporangia stipitate, scattered, globose to ellipsoidal or pyriform, 0.4–0.6 mm. in total height, 0.3–0.4 mm. in diameter, erect or nodding; peridium greenish-gray to yellowish-green, sparsely studded with rounded, pale yellow to yellowish-gray calcareous scales, rupturing to the base in two to four segments; capillitium dense, persistent, the nodes rounded, pale yellow, fading to white; columella reaching to about four-fifths the height of the sporangium, acuminate, or enlarged at the tip, orange-brown to dull yellow or pallid; stalk variable in height, slender, subulate, rugulose, translucent, not calcareous, dull red or orange-brown, often flattened laterally at the base; spores brown in mass, brownish-lilac by transmitted light, very minutely spinulose, 6–7 μ in diameter; plasmodium orange-yellow.

TYPE LOCALITY: Philadelphia, Pennsylvania.
HABITAT: Dead wood and moss.
DISTRIBUTION: Maine to Ontario, south to North Carolina and Iowa, and in Washington and Oregon; Europe; Asia; Africa.
ILLUSTRATIONS: Jour. Cinc. Soc. Nat. Hist. 19: *pl. 1, f. 54;* Lister, Mycet. ed. 3. *pl. 36;* Macbr. & Mart. Myxom. *pl. 4, f. 65–67;* Hattori, Myxom. Nasu *pl. 17, f. 1.*
EXSICCATI: Brândză, Myxom. Roum. II. 1: *17;* III. 1: *11*(NY); *17, 18*(IU).

27. **Physarum Listeri** Macbr. in Macbr. & Mart. Myxom. 62. 1934.

Physarum luteo-album A. & G. Lister, Jour. Bot. 42: 130. 1904. Not *P. luteo-album* Schum. 1803.

Sporangia gregarious, stipitate, subglobose or short-allantoid, bright yellow to dull orange or olivaceous, or dark and iridescent in limeless phases, mostly 0.8–1 mm. broad; peridium

double, the outer portion smooth or reticulately rugulose, the lime deposits dense to scanty or nearly lacking, the inner portion dark, shining olivaceous, dehiscent except for a persistent collar at the base; stalk stout, calcareous, smooth, with a membranous outer wall, 0.5–1 mm. high, cylindric or expanding upward, white below, changing to yellowish or orange above, rising from a netted, strand-like hypothallus; columella large, subglobose or depressed-clavate; capillitium of rigid, slender or coarse, radiating, yellow threads, branching and anastomosing, the nodes few, yellow, linear or fusiform, or occasionally large and rounded; spores black in mass, purple-brown by transmitted light, coarsely and somewhat irregularly spiny, 10–13 μ in diameter; plasmodium orange.

TYPE LOCALITY: Ventimiglia, Italy.
HABITAT: Dead leaves and wood.
DISTRIBUTION: Quebec to Ontario, south to North Carolina and Colorado; Europe; Asia.
ILLUSTRATIONS: Jour. Bot. 42: *pl. 459, f. 2;* Lister, Mycet. ed. 3. *pl. 24;* Macbr. & Mart. Myxom. 5, *f. 74, 75.*
EXSICCATI: Jaap, Myxom. Exs. *84.*

28. **Physarum perfectum** M. E. Peck; Peck & Gilbert, Am. Jour. Bot. **19**: 134. 1932.

Sporangia loosely gregarious, grayish-white, globose, stipitate, 0.6–0.8 mm. in diameter; hypothallus very thin, colorless, widely effused; stalk yellowish-white, stout, calcareous, nearly smooth, slightly narrowed upward, equaling or a little surpassing in height the diameter of the sporangium; columella well developed, white, conic, nearly one-third the height of the sporangium; peridium a thin membrane, evenly granular with included lime, and thickly sprinkled with round, mainly superficial, white scales of lime; capillitium moderately dense with numerous rounded and elongated, pale yellow, calcareous nodes; spores minutely roughened, violaceous-brown, 10–11 μ in diameter.

TYPE LOCALITY: Salem, Oregon.
HABITAT: Decaying bark of *Populus.*
DISTRIBUTION: Known only from the type locality.
ILLUSTRATIONS: Am. Jour. Bot. 19: *pl. 11, f. 3.*

29. **Physarum crateriforme** Petch. Ann. Bot. Gard. Peradeniya **4**: 304. 1909.

Sporangia stipitate or occasionally sessile, globose, clavate or crateriform, 0.4–0.6 mm. in diameter, 1–2 mm. in total height, grayish-white or pale brown; stalk, when present, opaque, conic, black, or black below and white above; columella variable, sometimes cylindric and attaining the apex of the sporangium, sometimes shorter and then clavate or conic, concolorous with the stipe or paler, rarely lacking; capillitium strongly calcareous, the nodes either massed about the columella or rod-like and ascending; spores dull lilac, closely spinulose, 10–13 μ in diameter; plasmodium dull ochraceous.

TYPE LOCALITY: Ceylon.
HABITAT: Dead wood and herbaceous stalks and the bark of living trees.
DISTRIBUTION: Iowa, Kansas, Antigua; Europe; West Africa; southern and eastern Asia.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 76.*

30. **Physarum melleum** (Berk. & Br.) Massee, Monog. 278. 1892.

Didymium melleum Berk. & Br. Jour. Linn. Soc. **14**: 83. 1873.
Didymium chrysopeplum Berk. & Curt.; Berk. Grevillea **2**: 53. 1873.
Physarum Schumacheri β melleum Rost. Monog. Append. **7**. 1876.
Physarum Kalchbrenneri Massee, Monog. 297. 1892.
Cytidium melleum Morgan, Jour. Cinc. Soc. Nat. Hist. **19**: 11. 1896.

Sporangia stipitate, gregarious, globose or somewhat flattened below, 0.4–0.5 mm. in diameter, usually yellow to dull orange, but varying from yellowish-gray to bright orange-red or brown; peridium rugose, encrusted with lime, persistent below; stalk cylindric or tapering upward, stout, opaque, white, yellow, or tawny, furrowed, calcareous, short, about equal to the sporangium; columella small, conic, white or yellowish; capillitium abundant, the nodes large,

angular, white or yellow; hypothallus white or colorless; spores pale violet-brown by transmitted light, minutely warted, 7.5–10 μ in diameter; plasmodium yellow.

TYPE LOCALITY: Peradeniya, Ceylon.
HABITAT: Dead wood and leaves.
DISTRIBUTION: Quebec to Oregon, south to Panama; cosmopolitan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 23;* Macbr. & Mart. Myxom. *pl. 4, f. 68–71;* Hattori, Myxom. Nasu *pl. 16, f. 5.*
EXSICCATI: Ellis, N. Am. Fungi *1395;* Ellis & Ev. N. Am. Fungi *2491* (both as *P. Schumacheri*).

31. **Physarum citrinum** Schum. Enum. Pl. Saell. 2: 201. 1803.

Physarum compactum Ehrenb. Sylvae Myc. Berol. 26. 1818.
Physarum Schumacheri Spreng. Syst. 4[1]: 528. 1827.
Diderma citrinum Fries, Syst. Myc. 3: 100. 1829.
Physarum aureum var. *E. chrysopus* Lév. Ann. Sci. Nat. III. 5: 166. 1846.
Cytidium citrinum Morgan, Jour. Cinc. Soc. Nat. Hist. 19: 9. 1896.

Sporangia gregarious or scattered, subglobose, somewhat flattened below, 0.4–0.7 mm. in diameter, bright to pale yellow, stipitate or rarely sessile, peridium thin, almost completely covered with small, calcareous scales; stalk stout, erect, furrowed, tapering upward, calcareous, yellow, opaque, very short to more than half the total height, arising from a small hypothallus; columella small, conic, yellow; capillitium dense, delicate, the nodes numerous, small, rounded, yellow, the connecting threads hyaline, rigid; spores black in mass, violaceous under the lens, minutely punctate, 8–10 μ in diameter; plasmodium yellow.

TYPE LOCALITY: Germany.
HABITAT: Dead wood and moss.
DISTRIBUTION: New England to Washington (state), south to Tennessee and Colorado; cosmopolitan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 20;* Hattori, Myxom. Nasu *pl. 6, f. 5.*
EXSICCATI: Brândză, Myxom. Roum. II 1: *3*(NY).

32. **Physarum pulcherripes** Peck, Bull. Buffalo Soc. Nat. Sci. 1: 64. Jl 1873.

Didymium erythrinum Berk. Grevillea 2: 52. O 1873.
Didymium Ravenelii Berk. & Curt.; Berk. Grevillea 2: 53. O 1873.
Physarum Petersii Berk. & Curt.; Berk. Grevillea 2: 66. O 1873.
Physarum Schumacheri δ rufipes Rost. Monog. 99. 1874.
Physarum psiitacinum γ Ravenalii [sic] Rost. Monog. Append. 8. 1876.
Physarum pulchripes A. Berl. in Sacc. Syll. Fung. 7: 349. 1888.
Physarum Ravenelii Massee, Monog. 281. 1892.
Cytidium rufipes Morgan, Jour. Cinc. Soc. Nat. Hist. 19: 9. 1896.
Physarum rufipes Macbr. N. Am. Slime-Moulds 50. 1899.

Sporangia globose, stipitate, 0.5–0.7 mm. in diameter, orange-yellow to tawny, calcareous above, dark iridescent beneath, the walls thin, deciduous; stalk slender, erect, calcareous, deep red, orange or pale at the apex, sometimes shading to black below, supported on a well-developed hypothallus; columella small, conic, rarely subglobose; capillitium dense, the meshes small, the nodes reddish or yellow, small, rounded; spores dark violaceous-gray in mass, violet by transmitted light, faintly warted, with clusters of darker warts, 8–10 μ in diameter; plasmodium yellow.

TYPE LOCALITY: New York.
HABITAT: Dead wood.
DISTRIBUTION: New York to Ontario, south to Florida and Missouri, and in Washington (state) and Panama; Ireland.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 17;* Macbr. & Mart. Myxom. *pl. 5, f. 81, 82.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *3300;* Thaxter, Rel. Farl. *416.*

33. **Physarum globuliferum** (Bull.) Pers. Syn. Fung. 175. 1801.

Sphaerocarpus globulifer Bull. Hist. Champ. Fr. 134. 1791.
Stemonitis globulifera J. F. Gmel. Syst. Nat. 2: 1469. 1791.
Trichia globulifera DC. Fl. Fr. 2: 253. 1805.
Diderma globuliferum Fries, Syst. Myc. 3: 100. 1829.
Physarum Petersii a Farlowii Rost. Monog. Append. 6. 1876.
Didymium subroseum Peck, Ann. Rep. N. Y. State Mus. 28: 54. 1876.

Physarum albicans Peck, Ann. Rep. N. Y. State Mus. 30: 50. 1878.
Physarum columbinum Machr. Bull. Nat. Hist. Univ. Iowa 2: 384. 1893. Not *P. columbinum* Pers. 1795, nor *P. columbinum* Somm. 1826.
Cytidium globuliferum Morgan, Jour. Cinc. Soc. Nat. Hist. 19: 10. 1896.
Physarum relatum Morgan, Jour. Cinc. Soc. Nat. Hist. 19: 26. 1896.

Sporangia stipitate, gregarious, often in extensive colonies, sometimes united in clusters, globose or slightly depressed, 0.4–0.7 mm. in diameter, 0.6–1.5 mm. tall, white or pale ochraceous; peridium membranous, bearing crustose patches of lime granules; stipe subulate, slender, wrinkled, brittle, calcareous, white, yellowish, or reddish, usually exceeding the sporangium; columella short, conic or blunt; hypothallus scanty, inconspicuous; capillitium dense, delicate, persistent, the nodes small, rounded, white, many of the junctions limeless; spores dark grayish-brown in mass, violet by transmitted light, minutely warted, the warts in indistinct clusters, 7–9 μ in diameter; plasmodium yellow.

TYPE LOCALITY: France.
HABITAT: Dead wood.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Bull. Herb. Fr. *pl. 484, f. 3;* Lister, Mycet. ed. 3. *pl. 16;* Macbr. & Mart. Myxom. *pl. 5, f. 76–78;* Hattori, Myxom. Nasu *pl. 17, f. 3;* Nat. Geogr. Mag. 49[4]: *pl. 4.*
EXSICCATI: Ellis, N. Am. Fungi *1120;* Jaap, Myxom. Exs. *42;* Thaxter, Rel. Farl. *414;* Brândză, Myxom. Roum. II. 1: *18; 93, 94*(NY).

34. Physarum Bilgramii Hagelst. Mycologia 33: 306. 1941.

Physarum lilacinum Sturg. & Bilgr.; Sturgis, Mycologia 9: 324. 1917. Not *P. lilacinum* Fries, 1829.

Sporangia gregarious, stalked, globose, erect, 0.4–0.6 mm. in diameter, 1–1.5 mm. tall, pale lilac, Indian red, or pale blue; peridium membranous, bearing clusters of concolorous lime granules; stalk erect, furrowed, calcareous, tapering upwards, concolorous with the sporangium or paler, 0.5–1 mm. tall, about 0.1 mm. in diameter; capillitium delicate, rigid, persistent, the nodes small, rounded, filled with large, spherical, lilac, blue, or reddish granules; spores pale brownish-lilac by transmitted light, nearly smooth, 7–8 μ in diameter; plasmodium dark red.

TYPE LOCALITY: Philadelphia, Pennsylvania.
HABITAT: Dead wood.
DISTRIBUTION: Known only from eastern Pennsylvania.

35. Physarum murinum Lister, Mycet. 41. 1894.

Physarum Braunianum sensu Lister, Jour. Bot. 29: 259. 1891. Not *P. Braunianum* De Bary 1875.
Cytidium Ravenelii Morgan, Jour. Cinc. Soc. Nat. Hist. 19: 10. 1896.
Physarum Ravenelii sensu Macbr. N. Am. Slime-Moulds 48. 1899. Not *P. Ravenelii* Massee, 1892.
Physarum heterosporum Widder, Verh. Zool.-Bot. Ges. Wien 73: 159. 1923.

Sporangia stipitate, gregarious, globose, about 0.5 mm. in diameter, occasionally sessile or plasmodiocarpous, ashy-brown or drab; peridium membranous, encrusted with a rugose layer of lime; stalk cylindric, pale brown, furrowed, calcareous, brittle, usually equaling or exceeding the sporangium; hypothallus inconspicuous; columella short, hemispheric or bluntly conic; capillitium dense, hyaline, brownish or orange-brown, the nodes rounded or angular, usually small, brownish or orange; spores brown in mass, bright lilac by transmitted light, minutely warted, the warts somewhat clustered, 8–10 μ in diameter.

TYPE LOCALITY: Eastern United States.
HABITAT: Dead wood and leaves.
DISTRIBUTION: Eastern United States to Missouri and Kansas, and in Washington; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 18.*

36. Physarum pulcherrimum Berk. & Rav.; Berk. Grevillea 2: 65. 1873.

Stemonitis porphyra Berk. & Curt.; Berk. Grevillea 2: 69. 1873.
Physarum atrorubrum Peck, Ann. Rep. N. Y. State Mus. 31: 40. 1879.
Cytidium pulcherrimum Morgan, Jour. Cinc. Soc. Nat. Hist. 19: 8. 1896.

Sporangia stalked, gregarious, globose, 0.4–0.5 mm. in diameter, even or somewhat wrinkled, deep maroon, reddish-violet, or purple; stalk cylindric, even, impregnated with

lime, concolorous or darker; columella small, sometimes lacking; capillitium delicate, dense, the numerous, small, rounded, purple-red nodes connected by pinkish-white threads; spores dark brown in mass, pale pinkish-lilac by transmitted light, globose, nearly smooth, 7.5–8.5 μ in diameter; plasmodium deep purple or dark red.

TYPE LOCALITY: South Carolina.
HABITAT: Dead wood.
DISTRIBUTION: Eastern United States and Canada to Colorado and Mississippi, and in Washington and New Mexico; Europe; Asia.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 19;* Hattori, Myxom. Nasu *pl. 17, f. 2.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2897;* Ellis & Ev. Fungi Columb. *1395;* Brândză, Myxom. Roum. III. 1: *8*(NY); *1, 2*(IU); Thaxter, Rel. Farl. *415.*

37. **Physarum mutabile** (Rost.) G. Lister in Lister, Mycet. ed. 2. 53. 1911.

Crateriachea mutabilis Rost. Monog. 126. 1874.
Didymium neapolitanum Ces.; Rab.-Wint. Fungi Eur. *2675.* 1881.
Physarum Crateriachea Lister, Guide Brit. Mycet. 20. 1895.

Sporangia subglobose to erect-ovoid or cylindric, 0.3–0.6 mm. in diameter, usually stalked, but sometimes sessile or forming long plasmodiocarps, white, becoming yellowish-gray with weathering; peridium thin, wrinkled, bearing uniform sometimes squamulose lime deposits; stalks, when present, yellow, rarely brownish, enclosing lime, especially at the base, sometimes limeless, rising from a white or ochraceous hypothallus; capillitium intricate, persistent, the nodes white, varying in size, in the stalked forms tending to be massed at the center as a pseudocolumella; spores purplish-brown by transmitted light, spinulose, 7–10 μ in diameter; plasmodium watery-gray.

TYPE LOCALITY: Germany.
HABITAT: Leaves and herbaceous stems.
DISTRIBUTION: Ontario, California; Europe; Asia; Africa.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 44.*
EXSICCATI: Rab.-Wint. Fungi Eur. *2675, 2969* (as *Didymium squamulosum*); Brândză, Myxom. Roum. I. 1: *4;* II. 1: *10;* III. 1: *9*(NY).

38. **Physarum stellatum** (Massee) G. W. Martin, Mycologia **39**: 461. 1947.

Tilmadoche columbina Rost. Monog. Append. 13. 1876.
Tilmadoche compacta Wingate, Proc. Acad. Phila. 1889: 48. 1889.
Lepidoderma stellatum Massee; Cooke, Grevillea 17: 60. 1889.
Didymium Barteri Massee, Monog. 231. 1892.
Physarum compactum Lister, Mycet. 44. 1894. Not *P. compactum* Ehrenb. 1818.
Physarum columbinum Sturgis, Mycologia 8: 201. 1916. Not *P. columbinum* Pers. 1795.
Physarum Wingatense Macbr. N. Am. Slime-Moulds ed. 2. 72. 1922.

Sporangia globose, 0.4–0.6 mm. in diameter, stipitate, gregarious, sometimes closely so, erect or nodding, gray, brownish-gray, or bronze; peridium thin, metallic, splitting at maturity in floriform fashion into 6–12 segments; stalk calcareous, white or yellowish, often shading to fuscous or black below, rather long, tapering upward; hypothallus inconspicuous; columella lacking; capillitium delicate, white or colorless, usually radiating from a central nucleus, the extra-nuclear nodes few, small, fusiform; spores brown in mass, pale violet-brown by transmitted light, delicately warted, 8–10 μ in diameter; plasmodium light gray.

TYPE LOCALITY: Venezuela.
HABITAT: Dead wood and bark.
DISTRIBUTION: Temperate and tropical North America; South America; Africa; Asia.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 26;* Hattori, Myxom. Nasu *pl. 6, f. 6.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2087, 3499;* Thaxter, Rel. Farl. *814.*

39. **Physarum nucleatum** Rex, Proc. Acad. Phila. 1891: 389. 1891.

Sporangia stipitate, spherical, white, about 0.5 mm. in diameter, erect or nodding; peridium membranous, studded with rounded, white calcareous nodules, the lime sometimes scanty and the peridium then metallic, the lower portion thicker and remaining as a collar on the stem after

the upper portion has disappeared; stalk subulate, yellowish-white, rugose, not calcareous, about 1 mm. long; columella none; capillitium dense, white, the nodes small, white, rounded, aggregated in the center to form a conspicuous ball of lime, free from the stalk; spores black in mass, violet-brown by transmitted light, minutely spinulose, 6–7 μ in diameter.

TYPE LOCALITY: Philadelphia, Pennsylvania.
HABITAT: Dead wood.
DISTRIBUTION: New York to Oregon, south to Nicaragua; Europe; South Africa; Japan; and generally in the tropics.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 35;* Macbr. & Mart. Myxom. *pl. 5, f. 85–87;* Hattori, Myxom. Nasu *pl. 16, f. 6.*

40. **Physarum nicaraguense** Macbr. Bull. Nat. Hist. Univ. Iowa **2**: 382. 1893.

Physarum reniforme G. Lister in Lister, Mycet. ed. 2. 72. 1911. Probably not *Tilmadoche reniformis* Massee, 1892.

Sporangia gregarious, stalked, multilobate or compound-contorted, obconic below, grayish-white, ribbed with calcareous thickenings, the individual sporangia 0.3–0.6 mm. in diameter, the clusters up to 2 mm. across, their total height 0.8–1.5 mm.; stalk short, up to half the total height, fluted, dark; hypothallus black, reticulate; capillitium dense, white, the nodes large, angular, massed at the center, forming a pseudocolumella, the connecting threads short, hyaline; spores black in mass, violaceous-brown by transmitted light, closely and finely warted, 11–12 μ in diameter.

TYPE LOCALITY: Ometipe, Nicaragua.
HABITAT: Dead wood.
DISTRIBUTION: Nicaragua; Puerto Rico; Trinidad; Ceylon; Japan; Caroline Islands.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 41* (as *P. reniforme*).

41. **Physarum Didermoides** (Pers.) Rost. Monog. 97. 1874.

Spumaria Didermoides Pers. Syn. Fung. XXIX. 1801.
Diderma oblongum Schum. Enum. Pl. Saell. **2**: 197. 1803.
Physarum atrum Schw. Trans. Am. Phil. Soc. II. **4**: 257. 1832.
Spumaria licheniformis Schw. Trans. Am. Phil. Soc. II. **4**: 261. 1832.
Claustria Didermoides Fries, Summa Veg. Scand. 451. 1849.
Didymium congestum Berk. & Br. Ann. Mag. Nat. Hist. II. **5**: 365. 1850.
Physarum lividum Rost. Monog. 95. 1874.
Physarum cinereum ovoideum Sacc. Michelia **2**: 334. 1881.
Physarum reticulatum A. Berl. in Sacc. Syll. Fung. **7**: 350. 1888. Not *P. reticulatum* Alb. & Schw. 1805.

Sporangia crowded, cylindric or ovoid, 0.4–0.6 mm. broad, stipitate or sessile, blue-gray, often capped with white; stalk when present white, often flattened or expanded, connate with others through the irregularly reticulate or expanded hypothallus; columella none, a pseudocolumella often present; capillitium abundant, the nodes angular or rounded, connected by hyaline tubules; spores black in mass, dark violet by transmitted light, densely spiny, 12–15 μ in diameter; plasmodium white or watery-gray.

TYPE LOCALITY: Sweden.
HABITAT: Dead wood, bark and debris.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 45, 46;* Macbr. & Mart. Myxom. *pl. 5, f. 88–90.*
EXSICCATI: Jaap, Myxom. Exs. *144, 187* (as *Diderma globosum*); Thaxter, Rel. Farl. *412.*

42. **Physarum leucopus** Link, Ges. Nat. Freunde Berlin Mag. **3**: 27. 1809.

Physarum bullatum Link, Ges. Nat. Freunde Berlin Mag. **3**: 27. 1809.
Didymium leucopus Fries, Syst. Myc. **3**: 121. 1829.

Sporangia gregarious, stipitate, globose, white, about 0.5 mm. in diameter; peridium calcareous, the lime in small, frosty particles, suggesting *Didymium*; stalk white, calcareous, sulcate, brittle, tapering upward, about equal to the sporangium, sometimes very short; columella none; capillitium rather lax, the nodes large, angular, white, connected by long, hyaline threads;

spores black in mass, pale violet-brown by trnasmitted light, distinctly warted, 8–10 μ in diameter; plasmodium white, often tinted with blue, green, or yellow.

TYPE LOCALITY: Germany.
HABITAT: Dead leaves and wood.
DISTRIBUTION: Maine to Ontario and Oregon, south to Panama; cosmopolitan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 15.*
EXSICCATI: Jaap, Myxom. Exs. *181.*

43. **Physarum pusillum** (Berk. & Curt.) G. Lister in Lister, Mycet. ed. 2. 64. 1911.

Didymium pusillum Berk. & Curt.; Berk. Grevillea **2**: 53. 1873.
Badhamia nodulosa Massee, Jour. Myc. **5**: 186. 1889.
Physarum calidris Lister, Jour. Bot. **29**: 258. 1891.
Craterium nodulosum Morgan, Jour. Cinc. Soc. Nat. Hist. **19**: 15. 1896.
Physarum gravidum Morgan, Jour. Cinc. Soc. Nat. Hist. **19**: 24. 1896.
Physarum nodulosum Macbr. N. Am. Slime-Moulds 51. 1899.

Sporangia stipitate, gregarious, globose, small, 0.4–0.6 mm. in diameter, grayish-white with a brown base; peridium thin, rugose, more or less incrusted with lime, breaking up irregularly; stalk slender, exceeding the sporangium, cylindric or somewhat attenuate above, rugose, bright brown, merging into the shallow, cup-like base of the sporangium; columella none; capillitium variable, the nodes white, angular and scattered or badhamioid; spores black in mass, pale lilaceous-brown by transmitted light, minutely warted, 10–12 μ in diameter; plasmodium watery-white.

TYPE LOCALITY: Aiken, South Carolina.
HABITAT: Dead leaves and herbaceous litter, often on compost.
DISTRIBUTION: Throughout temperate and tropical North America; cosmopolitan.
ILLUSTRATIONS: Jour. Myc. 5: *pl. 14, f. 6;* Lister, Mycet. ed. 3. *pl. 43;* Hattori, Myxom. Nasu *pl. 16, f. 3.*
EXSICCATI: Ellis, N. Am. Fungi *614* (as *Physarum leucophaeum*); Brândză, Myxom. Roum. II. 1: *16*(NY).

44. **Physarum notabile** Macbr. N. Am. Slime-Moulds ed. 2. 80. 1922.

Didymium connatum Peck, Ann. Rep. N. Y. State Mus. **26**: 74. 1874.
Physarum connexum sensu Morgan, Jour. Cinc. Soc. Nat. Hist. **19**: 20. 1896. Probably not *P. connexum* Link, 1809.
Physarum connatum G. Lister in Lister, Mycet. ed. 2. 71. 1911. Not *P. connatum* Schum. 1803, nor *P. connatum* Ditmar, 1817.

Sporangiate to plasmodiocarpous; sporangia gregarious, globose to reniform, stalked or sessile on a constricted base, 0.3–1 mm. in diameter, the sporangiate forms merging into short plasmodiocarps, the fructifications often clustered into closely compacted groups of 3–10 within the larger groups; peridium membranous, densely incrusted with ashy-white calcareous deposits; stalk, when present, irregular, usually tapering upward, deeply plicate-furrowed, opaque, dark or covered with white calcareous granules; capillitium abundant, the nodes variable in size and shape, connected by rather long hyaline threads, the junctions not always nodulose; spores black in mass, dark sooty-brown by transmitted light, minutely papillose, 10–11.5 μ in diameter; plasmodium white or gray.

TYPE LOCALITY: Portville, New York.
HABITAT: Dead wood and bark.
DISTRIBUTION: Northern United States and Canada; Brazil; Europe.
ILLUSTRATIONS: Jour. Cinc. Soc. Nat. Hist. **19**: *pl. 2, f. 59;* Lister, Mycet. ed. 3. *pl. 40, c–e.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2694* (as *P. leucophaeum*); Jaap, Myxom. Exs. *85;* Brândză, Myxom. Roum. II. 1: *11;* III. 1: *4*(NY); *25*(IU); Thaxter, Rel. Farl. *811, 813.*

45. **Physarum leucophaeum** Fries, Symb. Gast. 24. 1818.

Didymium terrestre Fries; Weinm. Fl. Ross. 574. 1836.
Physarum granulatum Balf. f.; Cooke, Grevillea **10**: 115. 1882.
Physarum imitans Racib. Rozp. Akad. Umiej. **12**: 73. 1884.
Physarum Readeri Massee, Monog. 282. 1892.
Tilmadoche nephroidea Čelak. f. Arch. Nat. Land. Böhmen **7**[5]: 69. 1893.
Physarum nutans γ *leucophaeum* Lister, Mycetozoa 51. 1894.

plasmodiocarpous, dingy yellow to olivaceous-brown; peridium varying from thick, crustaceous, and rugulose to thin and translucent, rupturing irregularly; stalk short, cylindric or expanded at the base, calcareous, longitudinally rugose, dingy white to ochraceous or grayish-brown; capillitium delicate, small-meshed, the nodes large, angular, white or yellowish, often aggregated at the center; spores dark violet-brown, verruculose, 9–11 μ in diameter.

TYPE LOCALITY: Germany.
HABITAT: Dead leaves and wood.
DISTRIBUTION: Widely distributed in southern Canada and the United States, and in Puerto Rico; South America; Europe; Japan.
ILLUSTRATIONS: Alb. & Schw. Consp. Fung. *pl. 6, f. 1;* Lister, Mycet. ed. 3. *pl. 21, 65;* Hattori, Myxom. Nasu *pl. 18, f. 1;* Hagelst. Mycet. N. Am. *pl. 7, f. 2.*
EXSICCATI: Jaap, Myxom. Exs. *24.*

53. Physarum flavicomum Berk. Lond. Jour. Bot. 4: 66. 1845.

Physarum cupripes Berk. & Rav.; Berk. Grevillea 2: 65. 1873.
Physarum Berkeleyi Rost. Monog. 105. 1875.
Didymium flavicomum Massee, Monog. 242. 1892.

Sporangia gregarious, stalked, nodding, spherical or lenticular, small, 0.3–0.6 mm. in diameter, 1–2 mm. tall, dusky yellow or sooty; peridium thin, limeless, iridescent, deciduous in patches except at the base; stalk long, slender, reddish-brown, limeless, fluted, twisted, not hollow, tapering upward from a small, radiant hypothallus; columella none; capillitium dense, persistent, the threads colorless, the nodes yellow, elongate, sometimes branching, many of the junctions limeless; spores sooty-brown in mass, bright violaceous by transmitted light, minutely punctate, 8–10 μ in diameter; plasmodium yellow or yellowish-green.

TYPE LOCALITY: Australia.
HABITAT: Dead wood.
DISTRIBUTION: Maine to Ontario, south to South Carolina and New Mexico; Asia; Africa; Australasia.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 32, a, b;* Macbr. & Mart. Myxom. *pl. 6, f. 111–113.*
EXSICCATI: Rav. Fungi Car. *76;* Ellis & Ev. N. Am. Fungi *3299.*

54. Physarum oblatum Macbr. Bull. Nat. Hist. Univ. Iowa 2: 384. 1893.

Craterium Maydis Morgan, Jour. Cinc. Soc. Nat. Hist. 19: 15. 1896.
Physarum Maydis Torrend, Broteria 7: 133. 1908.

Sporangia stalked, rarely sessile, globose or depressed-globose, 0.4–0.6 mm. in diameter, bright yellow or pale yellow; peridium membranous, roughened with clusters of yellow lime granules, the base tending to persist as an irregular cup; stalk reddish-brown or smoky, translucent, slender, furrowed, mostly 1–3 times the diameter of the sporangium in height; columella none; capillitium composed of angular and branching yellow nodes, connected by hyaline or yellowish threads, sometimes badhamioid; spores blackish-brown in mass, violaceous-brown by transmitted light, minutely spinulose, 9–13 μ in diameter; plasmodium bright yellowish-green.

TYPE LOCALITY: Iowa.
HABITAT: Dead leaves and herbaceous stems and wood.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Bull. Nat. Hist. Univ. Iowa 2: *pl. 11, f. 3, 3a, 3b;* Jour. Cinc. Soc. Nat. Hist. 19: *pl. 2, f. 57;* Lister, Mycet. ed. 3. *pl. 32, c–e;* Hattori, Myxom. Nasu *pl. 16, f. 2.*
EXSICCATI: Thaxter, Rel. Farl. *808* (as *P. auriscalpium*).

55. Physarum auripigmentum G. W. Martin, Jour. Wash. Acad. 38: 239. 1948.

Sporangia stalked, gregarious; sporangia globose, 0.4–0.6 mm. in diameter, their total height 0.6–1 mm., clear to opaque yellow; peridium membranous, closely covered by subcircular limy scales; dehiscence somewhat petaloid; columella none; stalk short, about half the diameter

of the sporangium, cylindric, expanded at the base, orange-red, limeless, translucent; hypothallus scarcely evident; capillitium dense, delicate, persistent, the nodes small, rounded, bright yellow, many of the junctions limeless and with numerous free, pointed ends; spores dark brown in mass, clear violet-brown by transmitted light, nearly smooth, (8.5–) 9.5–11 (–12.5) μ in diameter; plasmodium unknown.

TYPE LOCALITY: Mt. Shasta, California.
HABITAT: Dead coniferous wood.
DISTRIBUTION: Mt. Shasta, California, and Mt. Rainier, Washington.
ILLUSTRATION: Jour. Wash. Acad. 38: 239, *f. 2.*

56. **Physarum tenerum** Rex, Proc. Acad. Phila. 1890: 192. 1890.

Physarum maculatum Macbr. Bull. Nat. Hist. Univ. Iowa 2: 383. 1893.

Sporangia gregarious, stipitate, spherical, erect or nodding, small, 0.3-0.4 mm. in diameter; peridium single, membranous but thickly studded with circular, flattened, yellow, greenish yellow or ochraceous gray flakes of lime, dehiscing by petal-like lobes; stalk 0.7–2.5 mm. long, subulate, slender, calcareous, opaque, pale yellow above, shading to darker below; columella none; capillitium delicate, the nodes yellow, small, rounded, connected by hyaline threads, many of the junctions often limeless; spores black in mass, violaceous by transmitted light, minutely warted, 8–11 μ in diameter; plasmodium yellow or yellowish-green.

TYPE LOCALITY: Philadelphia, Pennsylvania.
HABITAT: Dead wood.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 25.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2489.*

57. **Physarum galbeum** Wingate; Macbr. N. Am. Slime-Moulds 53. 1899.

Sporangia gregarious, stalked, erect or nodding, globose, mostly 0.4–0.5 mm. in diameter, golden-yellow; peridium thin, coated with yellow calcareous flakes, sometimes nearly limeless, deciduous in patches; stalk subulate, about twice the diameter of the sporangium, bright orange below, fading to yellow above, translucent, longitudinally furrowed; capillitium a close-meshed, persistent net of yellow threads, the nodes few, small, angular, yellow; spores pale brown in mass, pale violet by transmitted light, 7.5–10 μ in diameter; plasmodium yellow-green.

TYPE LOCALITY: Philadelphia, Pa.
HABITAT: Dead wood and woody stems.
DISTRIBUTION: Nova Scotia to Oregon, south to Virginia and Iowa; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 199, d–f.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2491.*

58. **Physarum megalosporum** Macbr. N. Am. Slime-Moulds ed. 2. 63. 1922.

Physarum melanospermum Sturgis, Mycologia 9: 323. 1917. Not *P. melanospermum* Pers. 1794.

Sporangia gregarious, short-stipitate or sessile, depressed-annulate or umbilicate above, rugulose, white above or rarely touched with rose, darker below, 0.4–0.7 mm. in diameter; stalk, when present, thick, black, rough; hypothallus black, inconspicuous; columella none; capillitium strongly calcareous, the nodes white, irregular, sometimes massed toward the center, the connecting threads short, hyaline; spores black in mass, dark purplish-brown by transmitted light, with a paler area of dehiscence, densely spiny, 12.5–16 μ in diameter.

TYPE LOCALITY: Colorado.
HABITAT: Dead leaves and wood.
DISTRIBUTION: Iowa, Kansas, Colorado.
ILLUSTRATIONS: Mycologia 9: *pl. 14, f. 1–3;* Macbr. N. Am. Slime-Moulds ed. 2. *pl. 16, f. 7, 7a;* Lister, Mycet. ed. 3. *pl. 201;* Hagelst. Mycet. N. Am. *pl. 2, f. 1–3.*

plasmodiocarpous, dingy yellow to olivaceous-brown; peridium varying from thick, crustaceous, and rugulose to thin and translucent, rupturing irregularly; stalk short, cylindric or expanded at the base, calcareous, longitudinally rugose, dingy white to ochraceous or grayish-brown; capillitium delicate, small-meshed, the nodes large, angular, white or yellowish, often aggregated at the center; spores dark violet-brown, verruculose, 9–11 μ in diameter.

TYPE LOCALITY: Germany.
HABITAT: Dead leaves and wood.
DISTRIBUTION: Widely distributed in southern Canada and the United States, and in Puerto Rico; South America; Europe; Japan.
ILLUSTRATIONS: Alb. & Schw. Consp. Fung. *pl. 6, f. 1;* Lister, Mycet. ed. 3. *pl. 21, 65;* Hattori, Myxom. Nasu *pl. 18, f. 1;* Hagelst. Mycet. N. Am. *pl. 7, f. 2.*
EXSICCATI: Jaap, Myxom. Exs. *24.*

53. Physarum flavicomum Berk. Lond. Jour. Bot. 4: 66. 1845.

Physarum cupripes Berk. & Rav.; Berk. Grevillea 2: 65. 1873.
Physarum Berkeleyi Rost. Monog. 105. 1875.
Didymium flavicomum Massee, Monog. 242. 1892.

Sporangia gregarious, stalked, nodding, spherical or lenticular, small, 0.3–0.6 mm. in diameter, 1–2 mm. tall, dusky yellow or sooty; peridium thin, limeless, iridescent, deciduous in patches except at the base; stalk long, slender, reddish-brown, limeless, fluted, twisted, not hollow, tapering upward from a small, radiant hypothallus; columella none; capillitium dense, persistent, the threads colorless, the nodes yellow, elongate, sometimes branching, many of the junctions limeless; spores sooty-brown in mass, bright violaceous by transmitted light, minutely punctate, 8–10 μ in diameter; plasmodium yellow or yellowish-green.

TYPE LOCALITY: Australia.
HABITAT: Dead wood.
DISTRIBUTION: Maine to Ontario, south to South Carolina and New Mexico; Asia; Africa; Australasia.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 32, a, b;* Macbr. & Mart. Myxom. *pl. 6, f. 111–113.*
EXSICCATI: Rav. Fungi Car. *76;* Ellis & Ev. N. Am. Fungi *3299.*

54. Physarum oblatum Macbr. Bull. Nat. Hist. Univ. Iowa 2: 384. 1893.

Craterium Maydis Morgan, Jour. Cinc. Soc. Nat. Hist. 19: 15. 1896.
Physarum Maydis Torrend, Broteria 7: 133. 1908.

Sporangia stalked, rarely sessile, globose or depressed-globose, 0.4–0.6 mm. in diameter, bright yellow or pale yellow; peridium membranous, roughened with clusters of yellow lime granules, the base tending to persist as an irregular cup; stalk reddish-brown or smoky, translucent, slender, furrowed, mostly 1–3 times the diameter of the sporangium in height; columella none; capillitium composed of angular and branching yellow nodes, connected by hyaline or yellowish threads, sometimes badhamioid; spores blackish-brown in mass, violaceous-brown by transmitted light, minutely spinulose, 9–13 μ in diameter; plasmodium bright yellowish-green.

TYPE LOCALITY: Iowa.
HABITAT: Dead leaves and herbaceous stems and wood.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Bull. Nat. Hist. Univ. Iowa 2: *pl. 11, f. 3, 3a, 3b;* Jour. Cinc. Soc. Nat. Hist. 19: *pl. 2, f. 57;* Lister, Mycet. ed. 3. *pl. 32, c–e;* Hattori, Myxom. Nasu *pl. 16, f. 2.*
EXSICCATI: Thaxter, Rel. Farl. *808* (as *P. auriscalpium*).

55. Physarum auripigmentum G. W. Martin, Jour. Wash. Acad. 38: 239. 1948.

Sporangia stalked, gregarious; sporangia globose, 0.4–0.6 mm. in diameter, their total height 0.6–1 mm., clear to opaque yellow; peridium membranous, closely covered by subcircular limy scales; dehiscence somewhat petaloid; columella none; stalk short, about half the diameter

of the sporangium, cylindric, expanded at the base, orange-red, limeless, translucent; hypothallus scarcely evident; capillitium dense, delicate, persistent, the nodes small, rounded, bright yellow, many of the junctions limeless and with numerous free, pointed ends; spores dark brown in mass, clear violet-brown by transmitted light, nearly smooth, (8.5–) 9.5–11 (–12.5) μ in diameter; plasmodium unknown.

TYPE LOCALITY: Mt. Shasta, California.
HABITAT: Dead coniferous wood.
DISTRIBUTION: Mt. Shasta, California, and Mt. Rainier, Washington.
ILLUSTRATION: Jour. Wash. Acad. 38: 239, *f. 2.*

56. **Physarum tenerum** Rex, Proc. Acad. Phila. **1890**: 192. 1890.

Physarum maculatum Macbr. Bull. Nat. Hist. Univ. Iowa 2: 383. 1893.

Sporangia gregarious, stipitate, spherical, erect or nodding, small, 0.3-0.4 mm. in diameter; peridium single, membranous but thickly studded with circular, flattened, yellow, greenish y ellow or ochraceous gray flakes of lime, dehiscing by petal-like lobes; stalk 0.7–2.5 mm. long, subulate, slender, calcareous, opaque, pale yellow above, shading to darker below; columella none; capillitium delicate, the nodes yellow, small, rounded, connected by hyaline threads, many of the junctions often limeless; spores black in mass, violaceous by transmitted light, minutely warted, 8–11 μ in diameter; plasmodium yellow or yellowish-green.

TYPE LOCALITY: Philadelphia, Pennsylvania.
HABITAT: Dead wood.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 25.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2489.*

57. **Physarum galbeum** Wingate; Macbr. N. Am. Slime-Moulds 53. 1899.

Sporangia gregarious, stalked, erect or nodding, globose, mostly 0.4–0.5 mm. in diameter, golden-yellow; peridium thin, coated with yellow calcareous flakes, sometimes nearly limeless, deciduous in patches; stalk subulate, about twice the diameter of the sporangium, bright orange below, fading to yellow above, translucent, longitudinally furrowed; capillitium a close-meshed, persistent net of yellow threads, the nodes few, small, angular, yellow; spores pale brown in mass, pale violet by transmitted light, 7.5–10 μ in diameter; plasmodium yellow-green.

TYPE LOCALITY: Philadelphia, Pa.
HABITAT: Dead wood and woody stems.
DISTRIBUTION: Nova Scotia to Oregon, south to Virginia and Iowa; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 199, d–f.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2491.*

58. **Physarum megalosporum** Macbr. N. Am. Slime-Moulds ed. 2. 63. 1922.

Physarum melanospermum Sturgis, Mycologia 9: 323. 1917. Not *P. melanospermum* Pers. 1794.

Sporangia gregarious, short-stipitate or sessile, depressed-annulate or umbilicate above, rugulose, white above or rarely touched with rose, darker below, 0.4–0.7 mm. in diameter; stalk, when present, thick, black, rough; hypothallus black, inconspicuous; columella none; capillitium strongly calcareous, the nodes white, irregular, sometimes massed toward the center, the connecting threads short, hyaline; spores black in mass, dark purplish-brown by transmitted light, with a paler area of dehiscence, densely spiny, 12.5–16 μ in diameter.

TYPE LOCALITY: Colorado.
HABITAT: Dead leaves and wood.
DISTRIBUTION: Iowa, Kansas, Colorado.
ILLUSTRATIONS: Mycologia 9: *pl. 14, f. 1–3;* Macbr. N. Am. Slime-Moulds ed. 2. *pl. 16, f. 7, 7a;* Lister, Mycet. ed. 3. *pl. 201;* Hagelst. Mycet. N. Am. *pl. 2, f. 1–3.*

59. **Physarum Pezizoideum** (Jungh.) Pav. & Lag. Bull. Soc. Myc. Fr. **19**: 87. 1903.

Trichamphora pezizoidea Jungh. Crypt. Java 12. 1838.
Didymium zeylanicum Berk. Jour. Bot. & Kew Misc. 6: 230. 1854.
Physarum macrocarpum Fuckel, Jahrb. Nass. Ver. Nat. **23–24**: 343. 1870.
Trichamphora Fuckeliana Rost.; Fuckel, Jahrb. Nass. Ver. Nat. **27–28**: 71. 1873.
Chondrioderma pezizoides Rost. Monog. 424. 1875.
Badhamia Fuckeliana Rost. Monog. Append. 2. 1876.
Chondrioderma zeylandicum Rost. Monog. Append. 15. 1876.
Chondrioderma Muelleri Rost. Monog. Append. 15. 1876.
Chondrioderma Berkeleyanum Rost. Monog. Append. 16. 1876.
Didymium australis Massee; Cooke, Grevillea **17**: 7. 1888.
Didymium pezizoideum Massee, Monog. 239. 1892.
Didymium paresilicum Sacc. & Syd. in Sacc. Syll. Fung. **14**: 836. 1899.
Badhamia pezizoidea Buchet, Bull. Soc. Myc. Fr. **55**: 116. 1939.

Sporangia gregarious, stipitate, discoidal or saucer-shaped, grayish-white, 0.8–1.3 mm. broad, the disk 0.2–0.4 mm. thick, the total height 1–2.5 mm., erect or nodding; peridium thin, membranous, breaking irregularly, persistent; stalk slender, subulate, striate, reddish-brown, translucent; capillitium variable, sometimes almost badhamioid, sometimes nearly limeless; spores pale violet-brown, spinulose or nearly smooth, about 9–10 μ in diameter; plasmodium grayish-white.

TYPE LOCALITY: Java.
HABITAT: Dead wood, leaves, and litter, and sporophores of *Auricularia*.
DISTRIBUTION: Florida, Cuba, Puerto Rico; South America and the Old World, where it is abundant in the tropics.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 72*.
EXSICCATI: Brândză, Myxom. Roum. II. 1: *30*(NY); Thaxter, Rel. Farl. *813*.

60. **Physarum javanicum** Racib. Hedwigia **37**: 53. 1898.

Physarella javanica Torrend, Broteria **7**: 114. 1908.

Sporangia stalked, gregarious, obconic or turbinate, umbilicate above, erect or nodding, 0.6–1 mm. in diameter, 3–4 mm. tall; peridium thin, white, thickly encrusted with small, irregular calcareous granules, the upper part dehiscent at maturity; stalk slender, furrowed, attenuate above, grayish-white, darker below, arising from a small hypothallus; capillitium dense, rigid, composed of colorless, thin, often spindle-shaped tubes connecting the numerous elongated or triangular, white nodes; spores violet, globose, nearly smooth, 10–12 μ in diameter.

TYPE LOCALITY: Buitenzorg, Java.
HABITAT: Dead wood, twigs, and grass.
DISTRIBUTION: Florida; Colombia; South and East Africa; Java.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 197*.

61. **Physarum compressum** Alb. & Schw. Consp. Fung. 97. 1805.

Physarum nefroideum Rost. Monog. 93. 1874.
Physarum candidum Rost. Monog. 96. 1874.
Physarum affine Rost. Monog. Append. 5. 1876.
Didymium glaucum Phill. Grevillea 5: 114. 1877.
Physarum Phillipsi Balf. f.; Cooke, Grevillea **10**: 116. 1882.
Physarum glaucum Massee, Monog. 284. 1892.

Sporangia scattered or gregarious, stipitate or less commonly sessile, compressed-globose, compressed-reniform, or plasmodiocarpous, calcareous, white or cinereous; peridium thin, squamulose, opening by an apical cleft or irregularly; stalk when present short, stout, sulcate, dark brown or frosted with lime; capillitium rather loose, the nodes white, variable in size and shape; spores purplish-brown, warted, the warts sometimes irregularly distributed, 10–12.5μ in diameter; plasmodium grayish-white.

TYPE LOCALITY: Germany.
HABITAT: Dead leaves and other plant debris.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 39;* Macbr. & Mart. Myxom. *pl. 5, f. 93–95;* Hattori, Myxom. Nasu *pl. 6, f. 1.*
EXSICCATI: Jaap, Myxom. Exs. *165, 183;* Thaxter, Rel. Farl. *809*.

62. **Physarum straminipes** Lister, Jour. Bot. 36: 163. 1898.

Sporangia grayish-white, obovoid or wedge-shaped, 0.7 mm. in diameter, clustered or scattered, stipitate or sessile; stalk when present usually long, slender, translucent, weak, merging into the hypothallus; capillitium rigid, persistent, the nodes white, rounded, sometimes massed in the center to form a pseudocolumella; spores purple-brown, warted, the papillae in definite patches, 10–11 μ in diameter; plasmodium white.

TYPE LOCALITY: Dunstable, England.
HABITAT: Dead leaves and straw.
DISTRIBUTION: Oregon; Chile; Europe; New Zealand.
ILLUSTRATIONS: Jour. Bot. 36: *pl. 386, f. 2;* Lister, Mycet. ed. 3. *pl. 42.*

63. **Physarum gyrosum** Rost. Monog. 111. 1874.

Physarum cerebrinum Massee, Monog. 306. 1892.
Fuligo gyrosa Jahn, Ber. Deuts. Bot. Ges. **20**: 272. 1902.

Plasmodiocarps white or gray to brownish or reddish-drab, forming a close net or rosette-like tufts sometimes so closely massed as to approach an aethalium, varying to sporangium-like fruitings attached to the substratum by a weak, red, stalk-like strand of the hypothallus, the plasmodiocarps higher than broad, 0.3–0.4 mm. wide and up to 1 mm. or more high, the clumps usually 2–3 mm. in diameter, frequently larger; peridium membranous, with scattered, white or reddish lime deposits; capillitium a dense network of delicate, hyaline threads, with numerous large, spike-like, white nodes and smaller fusiform nodes; spores dark brown in mass, pale violaceous-brown by transmitted light, minutely spinulose, 7–10 μ in diameter; plasmodium yellowish-white.

TYPE LOCALITY: Germany.
HABITAT: Soil, surface debris, and often encrusting leaves of living plants.
DISTRIBUTION: Maine to Ontario and Kansas, south to Florida and Louisiana; cosmopolitan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 52;* Macbr. & Mart. Myxom. *pl. 6, f. 123, 124;* Hattori, Myxom. Nasu *pl. 16, f. 1;* Hagelst. Mycet. N. Am. *pl. 8, f. 3.*
EXSICCATI: Ellis, N. Am. Fungi *1596.*

64. **Physarum polycephalum** Schw. Schr. Natur. Ges. Leipzig **1**: 63. 1822.

Didymium polycephalum Fries, Syst. Myc. **3**: 122. 1829.
Didymium polymorphum Mont. Ann. Sci. Nat. II. **8**: 361. 1837.
Didymium gyrocephalum Mont. Ann. Sci. Nat. II. **8**: 362. 1837.
Didymium obrusseum Berk. & Curt.; Berk. Jour. Linn. Soc. **10**: 348. 1868.
Didymium tenerrimum Berk. & Curt.; Berk. Jour. Linn. Soc. **10**: 348. 1868.
Didymium luteo-griseum Berk. & Curt.; Berk. Grevillea **2**: 65. 1873.
Physarum polymorphum Rost. Monog. 107. 1874.
Tilmadoche gyrocephala Rost. Monog. 131. 1874.
Physarum obrusseum Rost. Monog. Append. 11. 1876.
Physarum multiplex Peck, Bull. Torrey Club **11**: 50. 1884.
Tilmadoche polycephala Macbr. N. Am. Slime-Moulds 57. 1899.

Sporangia stalked, gregarious, yellow or yellowish-gray; sporangia irregular, gyrose-confluent, helvelloid, umbilicate below; peridium thin, ashy, fragile, covered with evanescent, yellow squamules; capillitium dense, delicate, often expanding and becoming open, the nodes yellow, fusoid or irregular; stalks arising from an expanded, membranous hypothallus, yellow, translucent, usually long, slender, flexuous, often confluent; spores violet, minutely spinulose, 9–11 μ in diameter; plasmodium yellow or greenish.

TYPE LOCALITY: Wilkes County, North Carolina.
HABITAT: Dead wood and fleshy fungi, often fruiting on adjacent surfaces.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 34;* Macbr. & Mart. Myxom. *pl. 6, f. 122.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2699;* Ellis & Ev. Fungi Columb. *404;* Brândză, Myxom. Roum. I. 1: *5;* II. 1: *9;* III. 1: *3; 103*(NY); *4*(IU).

65. Physarum rigidum (G. Lister) G. Lister in Lister, Mycet. ed. 3. 36. 1925.

Physarum viride var. *rigidum* G. Lister in Lister, Mycet. ed. 2. 56. 1911.

Sporangia stalked, gregarious, lenticular, often umbilicate above, yellow, dull orange, or iridescent from lack of lime; stalk slender, orange or yellow above, dark below from included amorphous matter, 0.3–1.5 mm. long; capillitium of sparingly branched threads with long orange-yellow nodes, or consisting almost entirely of slender, rod-like tubes enclosing yellow lime granules; spores rich violet-brown, minutely spinulose, 9–10 μ in diameter; plasmodium yellow.

TYPE LOCALITY: Japan.
HABITAT: Dead wood and gelatinous and fleshy fungi.
DISTRIBUTION: The West Indies; Central Africa; southern and eastern Asia.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 199, a–c.*

66. Physarum Bethelii Macbr.; G. Lister in Lister, Mycet. ed. 2. 57. 1911.

Physarum viride var. *Bethelii* Sturgis, Colo. Coll. Publ. Sci. 12: 439. 1913.

Sporangia gregarious, stipitate, depressed-globose, slightly umbilicate below, 0.6–0.8 mm. in diameter; peridium iridescent blue, nearly limeless or covered with pale yellow, calcareous scales, the lower portion remaining as a cup; stalk 0.5–1 mm. in length, black or dark brown, furrowed, nearly equal; capillitium dense, radiating from the black, slightly intrusive summit of the stalk; nodes not numerous, pale yellow, fusiform, occasionally branched; spores bright violet-brown, distinctly warted, 9–10 μ in diameter.

TYPE LOCALITY: Tolland, Colorado.
HABITAT: Dead wood.
DISTRIBUTION: Colorado, Washington (state); Roumania.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 200;* Hattori, Myxom. Nasu *pl. 17, f. 4.*

67. Physarum nutans Pers. Ann. Bot. Usteri 15: 6. 1795.

Sphaerocarpus albus Bull. Hist. Champ. Fr. 137. 1791. Not *Physarum album* Fries, 1829.
Stemonitis alba J. F. Gmel. Syst. Nat. 2: 1469. 1791. Not *S. alba* Schrank, 1789.
Trichia nutans Trent. in Roth, Catalecta Bot. 1: 227. 1797. Not *T. nutans* Bull. 1791.
Physarum bulbiforme Schum. Enum. Pl. Saell. 2: 200. 1803.
Physarum albo-punctatum Schum. Enum. Pl. Saell. 2: 200. 1803.
Physarum marginatum Schum. Enum. Pl. Saell. 2: 202. 1803.
Physarum Pini Schum. Enum. P. Saell. 2: 203. 1803.
Physarum furfuraceum Schum. Enum. Pl. Saell. 2: 204. 1803.
Trichia cernua Schum. Enum. Pl. Saell 2: 211. 1803.
Didymium marginatum Fries, Syst. Myc. 3: 115. 1829.
Didymium furfuraceum Fries, Syst. Myc. 3: 116. 1829.
Physarum cernuum Fries, Syst. Myc. 3: 130. 1829.
Physarum gracilentum Fries, Syst. Myc. 3: 133. 1829.
Tilmadoche cernua Fries, Summa Veg. Scand. 454. 1849.
Tilmadoche nutans Rost. Monog. 127. 1874.
Tilmadoche Pini Rost. Monog. 128. 1874.
Tilmadoche gracilenta Rost. Monog. 129. 1874.
Tilmadoche alba Macbr. N. Am. Slime-Moulds 58. 1899.

Sporangia stalked, gregarious, depressed-spherical to lenticular, umbilicate, 0.4–0.7 mm. in diameter, sometimes smaller, white or gray, nodding or less commonly erect; peridium thin, usually lobate or petaloid in dehiscence, the basal portion persistent; capillitium delicate, persistent, the threads forming a dense network bearing rather few elongate or rounded, white, calcareous nodes; stalk long, black or fuscous below, tapering upward to the tenuous, white apex; spores black in mass, pale lilaceous-brown by transmitted light, minutely roughened, 8–10 μ in diameter; plasmodium bright yellow to greenish-yellow, changing to watery-white before fruiting.

TYPE LOCALITY: Europe.
HABITAT: Dead wood and old fungi.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Bull. Herb. Fr. *pl. 407, f. 3; 470, f. 1;* Lister, Mycet. ed. 3. *pl. 37;* Macbr. & Mart. Myxom. *pl. 6, f. 125, 126;* Hattori, Myxom. Nasu *pl. 16, f. 4.*
EXSICCATI: Jaap, Myxom. Exs. *3, 102;* Ellis & Ev. N. Am. Fungi *2693* (as *P. leucophaeum*); Brândză, Myxom. Roum. I. 1: 7(NY).

68. **Physarum viride** (Bull.) Pers. Ann. Bot. Usteri 15: 6. 1795.

Sphaerocarpus aurantius Bull. Hist. Champ. Fr. 133. 1791.
Sphaerocarpus viridis Bull. Hist. Champ. Fr. 135. 1791.
Sphaerocarpus luteus Bull. Hist. Champ. Fr. 136. 1791.
Stemonitis aurantia J. F. Gmel. Syst. Nat. 2: 1469. 1791.
Stemonitis viridis J. F. Gmel. Syst. Nat. 2: 1469. 1791.
Stemonitis bicolor J. F. Gmel. Syst. Nat. 2: 1469. 1791.
Physarum aureum Pers. Neues Mag. Bot. 1: 88. 1794.
Physarum luteum Pers. Syn. Fung. 172. 1801.
Physarum aurantium Pers. Syn. Fung. 173. 1801.
Trichia lutea DC. Fl. Fr. 2: 255. 1805. Not *T. lutea* Trent. 1797.
Trichia viridis DC. Fl. Fr. 2: 255. 1805.
Trichia aurantia DC. Fl. Fr. 2: 255. 1805.
Physarum nutans β viride Fries, Syst. Myc. 3: 129. 1829.
Physarum nutans γ aureum Fries, Syst. Myc. 3: 129. 1829.
Physarum nutans δ coccineum Fries, Syst. Myc. 3: 129. 1829.
Tilmadoche mutabilis Rost. Monog. 129. 1874.
Tilmadoche viridis Sacc. Michelia 2: 263. 1881.

Sporangia stalked, gregarious, nodding, globose to lenticular, umbilicate below, yellow, greenish-yellow, greenish-gray, rusty orange, or golden; peridium delicate, incrusted with calcareous flakes, splitting in reticulate or floriform fashion; capillitium dense, the nodes fusiform, orange or yellow, often fading, connected by hyaline threads; stalk subulate, varying from pale yellow or reddish and darker below to nearly black, usually relatively long; spores fuscous or violaceous-black in mass, bright violet by transmitted light, nearly smooth, 7–9 μ in diameter; plasmodium yellow or greenish-yellow.

TYPE LOCALITY: France.

HABITAT: Dead wood, bark, old sporophores of fungi, and less commonly leaves and herbaceous debris.

DISTRIBUTION: Throughout North America; cosmopolitan.

ILLUSTRATIONS: Bull. Herb. Fr. *pl. 407, f. 1, 2; pl. 484, f. 2;* Lister, Mycet. ed. 3. *pl. 31;* Nat. Geogr. Mag. 49[1]: *pl. 16;* Macbr. & Mart. Myxom. *pl. 6, f. 127, 128;* Hattori, Myxom. Nasu *pl. 19, f. 3.*

EXSICCATI: Ellis, N. Am. Fungi *1213;* Jaap, Myxom. Exs. *23, 65, 164;* Brândză, Myxom. Roum. II. 1: *4, 5;* III. 1: *5*(NY); *13, 14*(IU); Thaxter, Rel. Farl. *417.*

DOUBTFUL AND EXCLUDED SPECIES.

PHYSARUM CONGLOMERATUM Rost. Monog. 108. 1874. This differs from *P. contextum* Pers. mainly in the smaller, paler and smoother spores. All North American collections so labelled which have been examined appear to be phases of *P. contextum.*

PHYSARUM DISCOIDALE Macbr. N. Am. Slime-Moulds ed. 2. 74. 1922. Regarded by G. Lister (in Lister, Mycet. ed. 3. 49. 1925) as a probable, and by Hagelstein (Mycet. N. Am. 58. 1944) as a definitive synonym of *P. javanicum* Racib. Apparently based on a single collection from California. What is left of the type does not seem to justify the disposition noted, but further collections are needed to establish its position.

PHYSARUM LEPIDOIDEUM H. C. Gilbert; Peck & Gilbert, Am. Jour. Bot. 19: 133. 1932. Regarded by Hagelstein as a sessile phase of *P. compressum* Alb.& Schw. in which the lime has been dissolved and rehardened in crystalline plates.

PHYSARUM ORNATUM Peck, Ann. Rep. N. Y. State Mus. 31: 40. 1879. Cited by G. Lister (in Lister, Mycet. ed. 3. 40. 1925) as a doubtful synonym of *P. auriscalpium* Cooke. Hagelstein, Mycet. N. Am. 48 (1944), believes it is probably an earlier name for *P. oblatum* Macbr., but the type specimen in the New York State Museum is too fragmentary to establish its position.

PHYSARUM RENIFORME G. Lister in Lister, Mycet. ed. 2. 72. 1911. Reported from Nicaragua on the basis of specimens here referred to *P. nicaraguense* Macbr. *P. reniforme* Lister is based on *Tilmadoche reniformis* Massee (Monog. 336. 1892). Massee's description suggests *P. compressum* Alb. & Schw., but apparently his type was a mixture of two species. See Petch, Ann. Bot. Gard. Peradeniya 4: 334 (1910), and Macbride, N. Am. Slime-Moulds ed. 2. 83 (1922), for fuller comment. It is possible, however, that some collections now assigned to *P. compressum* should be segregated as *P. reniforme* in Massee's sense. Massee's description does not apply to *P. nicaraguense.* Hagelstein (Mycet. N. Am. 63. 1944) reports

P. reniforme from Pennsylvania, Costa Rica, and Puerto Rico. The Puerto Rican specimens appear to represent *P. nicaraguense.*

PHYSARUM SESSILE Brândză, Ann. Sci. Univ. Jassy 11: 116. 1921. Reported from several localities in North America, but these reports appear to be based on confusion with other species. The species is believed to be valid, but has not yet been recognized from North America.

PHYSARUM SIMPLEX M. E. Peck; Peck & Gilbert, Am. Jour. Bot. 19: 136 (1932) is regarded by Hagelstein, Mycet. N. Am. 40 (1944), as probably to be included in *P. lenerum* Rex. This must be regarded as doubtful.

PHYSARUM TROPICALE Macbr. N. Am. Slime-Moulds 45. 1899. Regarded by G. Lister (Mycet. ed. 2. 72. 1911) as a nearly limeless phase of what is here called *P. notabile* Macbr. Examination of the scanty remnants of the type and only collection from Mexico now in the collection of the University of Iowa suggests that the species is distinct, but additional collections are desirable to establish the fact.

PHYSARUM VERNUM Fries, Syst. Myc. 3: 146. 1829. Reported many times from North America. The modern European conception of this species is that of a limy, plasmodiocarpous form with larger and darker spores than *P. cinereum* Pers. The original description is not in entire accord with this conception. However, *P. vernum* in the modern sense appears to be unknown in North America, the collections so referred representing for the most part limy and large-spored phases of *P. cinereum.*

4. CRATERIUM Trent. in Roth, Catalecta Bot. 1: 224. 1797.

Cupularia Link, Handh. 3: 421. 1833.
Iocraterium Jahn, Hedwigia 43: 302. 1904.

Sporangia cyathiform, stalked or rarely sessile. Peridium cartilaginous, more or less incrusted with lime, the lower portion persisting as a deep cup. Dehiscence circumscissile or irregular at the apex or by a preformed lid. Capillitium of hyaline, thread-like tubes connecting calcareous nodes, the latter often aggregated in the center to form a pseudocolumella. Spores dark in mass.

Type species, *Craterium pedunculalum* Trent.

Dehiscence circumscissile or by the fragmentation of the upper part of the sporangium; wall mealy or rough.
  Sporangia white above, ochraceous to reddish-brown below. 1. *C. leucocephalum.*
  Sporangia rarely white and without brown tints.
    Sporangia violet or purple throughout. 2. *C. paraguayense.*
    Sporangia bright yellow or green, rarely pale yellow or whitish. 3. *C. aureum.*
Dehiscence by a preformed lid; wall smooth, glossy.
  Nodes large, white. 4. *C. minutum.*
  Nodes small, pale brown. 5. *C. concinnum.*

1. Craterium leucocephalum (Pers.) Ditmar in Sturm, Deuts. Fl. Pilze 1: 21. 1813.

Stemonitis leucocephala Pers.; J. F. Gmel. Syst. Nat. 2: 1467. 1791.
Arcyria leucocephala Hoffm. Deuts. Fl. 2, *pl. 6, f. 1.* 1795.
Cyathus cinereus Purton, Midl. Fl. 3: 309. 1821.
Cupularia leucocephala Link, Handb. 3: 421. 1833.
Craterium xanthopus Wallr. Fl. Crypt. Germ. 2: 358. 1833.
Craterium deoperculatum Fries; Weinm. Fl. Ross. 597. 1836.
Cupularia xanthopus Rab. Deuts. Krypt.-Fl. 1: 271. 1844.
Craterium pruinosum Corda, Ic. Fung. 6: 13. 1854.
Craterium minimum Berk. & Curt.; Berk, Grevillea 2: 67. 1873.
Physarum scyphoides Cooke & Balf.; Massee, Jour. Myc. 5: 186. 1889.
Craterium cylindricum Massee, Monog. 268. 1892.
Craterium Fuckelii Massee, Monog. 272. 1892.
Craterium convivale Morgan, Jour. Cinc. Soc. Nat. Hist. 19: 14. 1896.

Sporangia stalked, gregarious, globose or obovate to cylindric, 0.3–0.7 mm. in diameter, 1–1.5 mm. tall, rarely sessile or subplasmodiocarpous; peridium white and fragile above, ochraceous, yellow-brown or reddish-brown and cartilaginous below; dehiscence in globose sporangia irregular, in cylindric forms circumscissile, with a complete transition, in all cases leaving the

lower portion of the peridium as a deep, goblet-shaped cup; capillitium of large, irregular, white or ochraceous lime-knots connected by slender, hyaline threads, often massed at the center to form a prominent pseudocolumella; stalk about half the total height or shorter, sometimes lacking, cylindric or expanded upward, reddish-brown, translucent, arising from a small, disk-like hypothallus; spores black in mass, violaceous-brown by transmitted light, minutely spinulose, 8–9 μ in diameter; plasmodium yellow.

TYPE LOCALITY: Europe.
HABITAT: Dead leaves and twigs, occasionally wood.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 81;* Macbr. & Mart. Myxom. *pl. 7, f. 133–137;* Hattori, Myxom. Nasu *pl. 8, f. 1.*
EXSICCATI: Ellis, N. Am. Fungi *1400;* Ellis & Ev. N. Am. Fungi *2695;* Jaap, Myxom. Exs. *26, 43, 44, 87, 186;* Brândză, Myxom. Roum. I. 1: *8;* II. 1: *24, 25*(NY); *39, 40*(IU).

2. Craterium paraguayense (Speg.) G. Lister in Lister, Mycet. ed. 2. 95. 1911.

Didymium paraguayense Speg. Anal. Soc. Ci. Argent. 22: 186. 1886.
Craterium rubescens Rex, Proc. Acad. Phila. 1893: 370. 1893.
Iocraterium rubescens Jahn, Hedwigia 43: 302. 1904.
Iocraterium paraguayense Torrend, Broteria 8: 114. 1908.

Sporangia gregarious, cylindric or elongate-cyathiform, stipitate, 0.3–0.6 mm. in diameter, 0.6–0.8 mm. tall, dark reddish-violet or rose-purple to deep purplish-brown, the apex slightly roughened by pale calcareous granules, the peridium longitudinally wrinkled below; dehiscence irregularly circumscissile; stalk dark, longitudinally wrinkled, about one-half the total height; capillitium dense, violet, strongly calcareous; spores violet-brown, minutely roughened, 8–9 μ in diameter.

TYPE LOCALITY: Paraguay.
HABITAT: Dead leaves.
DISTRIBUTION: Florida, Iowa, Louisiana, Panama; South America.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 80.*
EXSICCATI: Langl. Fl. Ludovic. *2327* (as *Physarum lilacinum* Ellis & Ev.; nomen nudum).

3. Craterium aureum (Schum.) Rost. Monog. 124. 1874.

Trichia aurea Schum. Enum. Pl. Saell. 2: 208. 1803.
Craterium mutabile Fries, Syst. Myc. 3: 154. 1829. Not *C. mutabile* Fries, 1818.
Cupularia mutabilis Rab. Deuts. Krypt.-Fl. 1: 271. 1844.

Sporangia gregarious, globose or obovoid, golden-yellow, rarely yellow-brown or greenish-yellow, stipitate, erect, 0.4–0.6 mm. in diameter; peridium thin, especially above, where at maturity it breaks up somewhat reticulately, leaving the persistent lower portion with an uneven margin; stalk short, yellow, brownish-red or greenish, arising from a small hypothallus; capillitium dense, yellow, fading, the nodes rather small and irregular, often massed in the center as a pseudocolumella; spores violaceous-brown, minutely warted, 8–10 μ in diameter; plasmodium clear lemon-yellow.

TYPE LOCALITY: Denmark.
HABITAT: Dead leaves.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 67;* Hattori, Myxom. Nasu *pl. 8, f. 3.*
EXSICCATI: Jaap, Myxom. Exs. *169;* Brândză, Myxom. Roum. II. 1: *27*(NY); *42*(IU).

4. Craterium minutum (Leers) Fries, Syst. Myc. 3: 151. 1829.

Peziza minuta Leers, Fl. Herborn. 277. 1775.
Cyathus minutus Hoffm. Veg. Crypt. 2: 6. 1790.
Trichia minuta Relhan, Fl. Cantabr. Suppl. 3: 37. 1793.
Craterium pedunculatum Trent. in Roth, Catalecta Bot. 1: 224. 1797.
Physarum turbinatum Schum. Enum. Pl. Saell. 2: 205. 1803.
Physarum pedunculatum Schum. Enum. Pl. Saell. 2: 206. 1803.
Craterium vulgare Ditmar in Sturm, Deuts. Fl. Pilze 1: 17. 1813.
Craterium pyriforme Ditmar in Sturm, Deuts. Fl. Pilze 1: 19. 1813.
Craterium nutans Fries, Syst. Myc. 3: 151. 1829.
Craterium turbinatum Fries, Syst. Myc. 3: 152. 1829.
Craterium Oerstedtii Rost. Monog. 120. 1874.
Craterium Friesii Rost. Monog. 122. 1874.
Craterium confusum Massee, Monog. 263. 1892.

Sporangia gregarious, stalked or sessile, 0.2–0.8 mm. in diameter, 0.3–1.5 mm. tall, goblet-shaped, ochraceous-brown or olivaceous to deep chocolate, umber, or bright brownish-red, usually darker below; peridium thick, double, the outer layer cartilaginous or rarely limy, the inner layer limy and white, varying to membranous and translucent; dehiscence by a distinct operculum which is sharply separated from the peridium, usually depressed at the margin, sometimes throughout, sometimes convex and protruding, paler than the peridium, varying from white to ochraceous, brown, or red; stalk usually slightly paler than the base of the cup, orange-red, translucent, furrowed, half the total height or less, sometimes lacking; hypothallus distinct, discoid; capillitium physaroid, the nodes large, white or ochraceous, tending to become aggregated at the center; spores black in mass, violaceous-brown by transmitted light, minutely warted, 8–10 μ in diameter; plasmodium white, bright yellow, or orange.

TYPE LOCALITY: Germany.
HABITAT: Dead leaves and twigs, sometimes wood or bark.
DISTRIBUTION: Throughout the United States and Canada; in temperate regions generally.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 78;* Macbr. & Mart. Myxom. *pl. 7, f. 138–140;* Hattori, Myxom. Nasu *pl. 8, f. 2.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2500;* Jaap, Myxom. Exs. 25; Brândză, Myxom. Roum. II. 1: *26; 96*(NY); *41*(IU).

5. Craterium concinnum Rex, Proc. Acad. Phila. 1893: 370. 1893.

Sporangia stalked, gregarious, 0.2–0.5 mm. in diameter, 0.5–0.8 mm. tall, broadly funnel-shaped or goblet-shaped; peridium simple, cartilaginous, pinkish-brown, bearing scattered, brown lime granules, darker below; operculum convex, thin, pale brown, membranous, falling off as a whole at dehiscence; stalk about equal to the spore-case in height or a little shorter, reddish-brown, limeless; capillitium rather dense, of small, rounded or angular, brownish nodes connected by short, hyaline threads, the nodes larger toward the center and sometimes tending to form a pseudocolumella; spores black in mass, dusky purplish-brown by transmitted light, spinulose, 9–10 μ in diameter; plasmodium milky, then cream-colored.

TYPE LOCALITY: Philadelphia, Pa.
HABITAT: Dead wood and leaves and vegetable litter, especially of *Castanea dentata* Borkh.
DISTRIBUTION: Massachusetts to Virginia and Iowa; Japan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 79;* Hattori, Myxom. Nasu *pl. 8, f. 4.*
EXSICCATI: Ellis, N. Am. Fungi *1400* (type).

5. PHYSARELLA Peck, Bull. Torrey Club 9: 61. 1882.

Sporangia annulate, cylindric, borne at the summit of a hollow stalk, hence appearing thimble- or bell-shaped, sometimes sessile or plasmodiocarpous. Peridium limy, bearing on the inner surface of the exterior walls stout spines which penetrate to the interior walls. Capillitium of slender tubules bearing fusiform lime-knots. Spores dark in mass.

Type species, *Physarella mirabilis* Peck.

1. Physarella oblonga (Berk. & Curt.) Morgan, Jour. Cinc. Soc. Nat. Hist. 19: 7. 1896.

Trichamphora oblonga Berk. & Curt.; Berk. Grevillea 2: 66. N 1873.
Physarum rufibasis Berk. & Br. Jour. Linn. Soc. 14: 85. 3 D 1873.
Chondrioderma inflatum Rost. Monog. 425. 1875.
Tilmadoche oblonga Rost. Monog. Append. 13. 1876.
Tilmadoche hians Rost. Monog. Append. 14. 1876.
Physarella mirabilis Peck, Bull. Torrey Club 9: 61. 1882.
Tilmadoche minuta A. Berl. in Sacc. Syll. Fung. 7: 361. 1888.
Physarum hians Massee, Monog. 296. 1892.

Sporangia gregarious, annulate and cylindric, cup-shaped or infundibuliform, up to 1 mm. in diameter and 3 mm. tall, usually stipitate, erect or nodding, varying to sessile and plasmodiocarpous; peridium greenish with shadings of brown or red, flecked with yellowish scales, at length rupturing from above, usually in lobate fashion, the lobes becoming reflexed, exposing the spiny processes, and leaving the cylindrical inner wall protruding as a pseudocolumella;

stalk, when present, terete, hollow, usually long, red, translucent, arising from a scanty hypothallus; capillitium of slender, violaceous threads, sparingly branching and anastomosing and bearing a few fusiform, yellow lime-knots; spores globose, violet-brown, nearly smooth, 7–8 μ in diameter; plasmodium yellow.

TYPE LOCALITY: Pennsylvania.
HABITAT: Dead wood and leaves.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Rost. Monog. Append. *f. 243;* Lister, Mycet. ed. 3. *pl. 71;* Univ. Iowa Stud. Nat. Hist. 14[8]: *pl. 3, f. 21;* Macbr. & Mart. Myxom. *pl. 10, f. 223–225.*
EXSICCATI: Ellis, N. Am. Fungi *1212, 1399.*

6. CIENKOWSKIA Rost. Versuch 9. 1873.

Fructification plasmodiocarpous, irregularly dehiscent. Peridial wall cartilaginous, with or without lime deposits. Capillitium rigid, organized into transverse, calcareous bands tending to divide the plasmodiocarp into incomplete segments, and slender, anastomosing threads forming a loose or dense net, bearing a few calcareous nodes and numerous short, sharp-pointed, uncinate branchlets. Spores dark in mass.

Type species, *Physarum reticulatum* Alb. & Schw.

1. Cienkowskia reticulata (Alb. & Schw.) Rost. Monog. 91. 1874.

Physarum reticulatum Alb. & Schw. Consp. Fung. 90. 1805.
Diderma reticulatum Fries, Syst. Myc. 3: 112. 1829.

Plasmodiocarp a close-meshed network, often almost aethalioid in appearance, dull orange flecked with scarlet, to entirely scarlet or deep red, transversely rugulose, closely applied to the substratum, the interior tending to be divided by more or less clearly defined transverse, calcareous bands; capillitium a delicate, rigid network of yellow tubules bearing a few calcareous nodes and numerous sharp-pointed, uncinate branchlets; spores jet black in mass, pale violaceous by transmitted light, minutely roughened, 9–10 μ in diameter; plasmodium scarlet to deep brownish-red.

TYPE LOCALITY: Germany.
HABITAT: Dead wood.
DISTRIBUTION: New England to Manitoba and California, south to Panama; cosmopolitan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 70.*

7. LEOCARPUS Link, Ges. Nat. Freunde Berlin Mag. 3: 25. 1809.

Sporangiate. Peridium double, the outer wall smooth, polished, limy within, the inner wall delicate, hyaline. Capillitium duplex, comprising a system of strongly calcareous tubules bearing lime-knots intermingled with a network of hyaline, limeless threads. Columella none, but a pseudocolumella often present. Spores black in mass.

Type species, *Diderma vernicosum* Pers.

1. Leocarpus fragilis (Dicks.) Rost. Monog. 132. 1874.

Lycoperdon fragile Dicks. Pl. Crypt. Brit. 1: 25. 1785.
Lycoperdon parasiticum With. Brit. Pl. ed. 2. 3: 464. 1792.
Diderma vernicosum Pers. Ann. Bot. Usteri 15: 34. 1795.
Trichia lutea Trent. in Roth, Catalecta Bot. 1: 230. 1797.
Spumaria ramosa Schum. Enum. Pl. Saell. 2: 195. 1803.
Physarum nitidum Schum. Enum. Pl. Saell. 2: 205. 1803.
Physarum vernicosum Schum. Enum. Pl. Saell. 2: 206. 1803.
Reticularia fragilis Poir. in Lam. Encyc. 6: 183. 1804.
Leocarpus spermoides Link, Ges. Nat. Freunde Berlin Mag. 3: 25. 1809.
Leocarpus atrovirens Fries, Symb. Gast. 13. 1817.
Leocarpus parasiticus S. F. Gray, Nat. Arr. Brit. Pl. 1: 574. 1821.
Leocarpus vernicosus S. F. Gray, Nat. Arr. Brit. Pl. 1: 574. 1821.
Leangium vernicosum Fries, Stirp. Fems. 83. 1826. (Nomen nudum.)
Leangium atrovirens Fries, Stirp. Fems. 83. 1826. (Nomen nudum.)
Diderma atrovirens Fries, Syst. Myc. 3: 103. 1829.
Diderma ramosum Fries, Syst. Myc. 3: 105. 1829. Not *Diderma ? ramosum* Pers. 1801.
Tripotrichia elegans Corda, Ic. Fung. 1: 22. 1837.
Leocarpus ramosus Fries, Summa Veg. Scand. 450. 1849.
Liceopsis jurensis Meylan, Bull. Soc. Vaud. Sci. Nat. 53: 459. 1921.

Sporangia gregarious or clustered, stipitate or sessile, short-cylindric, obovate or nearly globose, 0.6–1.6 mm. in diameter, 2–4 mm. tall, pale yellowish or ochraceous to yellowish-brown, chestnut, or deep reddish-brown; peridium smooth, shining, double, the outer layer cartilaginous on the surface, limy within, the inner layer membranous, hyaline; stalk when present usually short, weak, whitish or yellow, forming an extension of the membranous hypothallus; capillitium duplex, one system composed of rigid, limy tubes with flattened expansions at the axils, the other a network of slender, colorless, limeless threads; spores spherical, dark, with a paler area on one side, coarsely warted, 12–14 μ in diameter; plasmodium orange-yellow.

TYPE LOCALITY: Germany.
HABITAT: Dead leaves, twigs, rotten wood, and sometimes living herbaceous plants.
DISTRIBUTION: Temperate North America southward; cosmopolitan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 82;* Nat. Geogr. Mag. 49[4]: *pl. 1;* Hattori, Myxom. Nasu *pl. 11, f. 3.*
EXSICCATI: Rav. Fungi Car. *78;* Ellis, N. Am. Fungi *1123;* Sydow, Myc. Germ. *1400;* Jaap, Myxom. Exs. *8, 66, 88, 103;* Brândză, Myxom. Roum. I. 1: *10;* II. 1: *28*(NY); *19*(IU); Hintikka, Myxogast. Fenn. *9a, b;* Thaxter, Rel. Farl. *404;* Wann & Muensch. N. Am. Myxom. *57.*

Family 2. **DIDYMIACEAE**

Capillitium typically limeless (except in one species of *Lepidoderma*), thread-like, purple-brown to pallid. Peridium calcareous, the lime either in the form of amorphous granules and then aggregated into a shell-like outer layer or imbedded in the substance of a cartilaginous wall, or in crystalline form and sprinkled over the surface as scattered crystals or aggregated into crustose walls or plate-like scales. Spores dark in mass, dark purple-brown or violaceous-brown by transmitted light.

Lime amorphous, granular; fructification sporangiate or plasmodiocarpous; wall double, the outer layer calcareous or cartilaginous, the iner membranous, rarely with a crystalline middle layer. 1. DIDERMA.
Lime crystalline, the crystals powdering the surface of the peridium, united into a crust, or aggregated into scales.
  Fructification an aethalium or pseudoaethalium. 2. MUCILAGO.
  Fructification sporangiate or plasmodiocarpous.
    Crystals stellate, forming a powdery coating or united into a shell-like crust. 3. DIDYMIUM.
    Crystals in scale-like aggregations.
      Scales prominent, scattered over the sporangial wall; peridium rarely iridescent. 4. LEPIDODERMA.
      Scales inconspicuous, restricted to the base and imbedded in amorphous material, sometimes lacking; peridium iridescent. 5. LEPTODERMA.

1. **DIDERMA** Pers. Neues Mag. Bot. 1: 89. 1794.

Leangium Link, Ges. Nat. Freunde Berlin Mag. 3: 26. 1809.
Chondrioderma Rost. Versuch 13. 1873.

Fructification sporangiate, stalked or sessile, or plasmodiocarpous; peridium usually double, the outer wall calcareous, the lime in granules or rarely in disk-like plates, not in stellate crystals, the inner wall delicate, membranous, closely applied to the outer wall or distant, lacking in some species. Columella usually conspicuous, sometimes reduced to a thickened or intrusive, dome-like base. Spores black in mass, deep violet to pale violaceous-brown by transmitted light.

Type species, *Sphaerocarpus floriformis* Bull.

Outer wall of the peridium calcareous, fragile; inner wall membranous, often remote, sometimes appressed or lacking.
  Fructification plasmodiocarpous or sessile, rarely with a short, thick, stalk-like base.
    Wall single; sporangia crowded or heaped, brick-red to ochraceous-brown or yellow. 1. *D. simplex.*
    Wall clearly double; colors not as above.
      Sporangia globose, densely massed on or immersed in a conspicuous, white or creamy, broadly effused hypothallus.
        Peridial walls united; spores 8–11 μ in diameter. 2. *D. Spumarioides.*
        Peridial walls separate, usually remote; spores 10–14 μ in diameter. 3. *D. globosum.*
      Sporangia not densely massed on an effused hypothallus or, if apparently so, not globose.
        Fructification depressed, sporangiate or plasmodiocarpous.
          Outer peridium smooth, polished, porcelain-like, lilaceous to pinkish, fading to white. 4. *D. testaceum.*
          Outer peridium not porcelain-like, white to ochraceous, occasionally dark, limeless.
            Sporangia scattered, in reticulate colonies, or closely massed to form a crustose pseudoaethalium; spores 7–9 μ in diameter. 5. *D. effusum.*
            Sporangia scattered or gregarious; spores mostly 12–13 μ in diameter. 6. *D. Chondrioderma.*

Fructification not notably depressed; white.
Fructification subglobose; columella large, globose or hemispheric. 7. *D. niveum.*
Fructification pulvinate to plasmodiocarpous, often annulate; columella reduced to a thick, orange base. 8. *D. deplanatum.*
Sporangiate, stipitate, varying to sessile or plasmodiocarpous, but stalked sporangia usually present.
Sporangia flattened, disk-shaped, white; stem stout, white, furrowed, sometimes lacking. 9. *D. hemisphaericum.*
Sporangia globose or ovate.
Sporangia white or pinkish, always stalked; spores pale, 8–10 μ in diameter. 10. *D. montanum.*
Sporangia white or flesh-colored, stalked or sessile; spores dark, 14–17 μ in diameter. 11. *D. Lyallii.*
Outer wall of the peridium cartilaginous; inner wall membranous (lacking in No. 16), the two usually firmly united.
Sporangia sessile or sometimes with a short, thick, stem-like base.
Peridium of three layers, the middle layer of closely compacted, coarse, crystalline lime; dehiscence stellate. 12. *D. Trevelyani.*
Peridium without a crystalline middle layer.
Dehiscence by breaking up of the upper part of the peridium.
Peridium dark ochraceous or olivaceous, wrinkled; capillitium purplish; spores pale, 9–11 μ in diameter. 13. *D. ochraceum.*
Peridium white to pale ochraceous, rough; capillitium pale or colorless; spores dark, 12–13 μ in diameter. 14. *D. Sauteri.*
Dehiscence stellate. 15. *D. asteroides.*
Sporangia usually distinctly stalked, rarely sessile.
Peridium corrugate-plicate or areolate.
Wall single, areolate; stalk black, slender; columella pale. 16. *D. rugosum.*
Wall double, corrugate-plicate; stalk thick, brown; columella grayish-purple to deep red. 17. *D. cor-rubrum.*
Peridium smooth or nearly so.
Sporangium flattened, red-brown with pale lines; dehiscence by breaking up into plates. 18. *D. roanense.*
Sporangium globose or pyriform; dehiscence stellate.
Sporangium pale drab to olive-brown, not mottled; lower part of the peridium cup-like, persistent. 19. *D. floriforme.*
Sporangium pale gray to reddish-brown, often mottled; lower part of the peridium not cup-like. 20. *D. radiatum.*

1. **Diderma simplex** (Schroet.) G. Lister in Lister, Mycet. ed. 2. 107. 1911.

Chondrioderma simplex Schroet. Krypt.-Fl. Schles. 3[1]: 123. 1885.

Sporangia gregarious, sessile, crowded or heaped, 0.4–1 mm. in diameter, subglobose, pulvinate, depressed or plasmodiocarpous, brown or brick-red to deep ochraceous or greenish-yellow; peridium calcareous, single, rugulose or smooth; columella usually little more than a thickened base, sometimes dome-like and with a space between the bottom and the hypothallus; hypothallus concolorous, sometimes extensive; capillitium scanty, the threads slender, pallid to concolorous; spores drab in mass, pale violaceous-brown by transmitted light, minutely warted, sometimes with clusters of larger warts, 8–11 μ in diameter; plasmodium orange-brown.

TYPE LOCALITY: Silesia.
HABITAT: Mosses and leaves in moist habitats, rarely on wood.
DISTRIBUTION: Maine to Ontario and Wisconsin, south to Florida; South America; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 88;* Hattori, Myxom. Nasu *pl. 10, f. 3.*

2. **Diderma Spumarioides** (Fries) Fries, Syst. Myc. 3: 104. 1829.

Didymium Spumarioides Fries, Symb. Gast. 20. 1818.
Physarum stromateum Link, Handb. 3: 409. 1833.
Carcerina Spumarioides Fries, Summa Veg. Scand. 451. 1849.
Chondrioderma spumarioides Rost.; Fuckel, Jahrb. Nass. Ver. Nat. 27–28: 74. 1873.
Chondrioderma stromateum Rost. Monog. Append. 18. 1876.
Chondrioderma virgineum Massee, Monog. 207. 1892.
Diderma stromateum Morgan, Jour. Cinc. Soc. Nat. Hist. 16: 152. 1894.
Diderma cinereum Morgan, Jour. Cinc. Soc. Nat. Hist. 16: 154. 1894.

Sporangia sessile, white, globose, 0.4–0.8 mm. in diameter, gregarious or more commonly crowded and distorted by pressure, smooth or rugose, sometimes, especially in tropical collections, areolate; peridium double, the outer layer densely calcareous, fragile, closely applied to

the membranous inner layer; columella convex or hemispheric, rarely cylindric or digitate, or forming free, fusiform, calcareous accretions mingled with the capillitium, white or pale flesh-colored; capillitium usually abundant, the threads purple-brown, branching and anastomosing, the tips paler; hypothallus white, usually abundant, the sporangia more or less imbedded in it; spores black in mass, dark violet-brown by transmitted light, distinctly but rather sparsely warted, 8–11 μ in diameter; plasmodium white.

TYPE LOCALITY: Europe.
HABITAT: Dead leaves.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 84;* Hattori, Myxom. Nasu *pl. 11, f. 5.*
EXSICCATI: Ellis & Ev. Fungi Columb. *1399;* Jaap, Myxom. Exs. *104, 125, 148;* Brândză, Myxom. Roum. II. 2: *31*(NY); Thaxter, Rel. Farl. *386;* Wann & Muensch. N. Am. Myxom. *54.*

3. **Diderma globosum** Pers. Neues Mag. Bot. 1: 89. 1794.

Didymium candidum Schrad. Nov. Gen. Pl. 25.. 1797.
Reticularia globosa Poir. in Lam. Encyc. 6: 182. 1804.
Didymium globosum Chev. Fl. Paris. 1: 334. 1826.
Cionium globosum Spreng. Syst. 4[1]: 529. 1827.
Chondrioderma globosum Rost. Monog. 180. 1874.
Diderma crustaceum Peck, Ann. Rep. N. Y. State Mus. 26: 74. 1874.
Chondrioderma affine Rost. Monog. Append. 18. 1876.
Chondrioderma similans Rost. Monog. Append. 20. 1876.
Chondrioderma crustaceum A. Berl. in Sacc. Syll. Fung. 7: 373. 1888.

Sporangia sessile, globose, 0.5–1 mm. in diameter, gregarious, or densely crowded and angular from pressure, rarely plasmodiocarpous, white or creamy; peridium double, the outer wall calcareous, smooth, polished, fragile, usually remote from the membranous, smooth or corrugated, sometimes iridescent inner wall; columella white or pale flesh-colored, hemispheric or globose, often small, sometimes large and pedicellate; capillitium abundant, brown or purplish, the threads branching and sparsely anastomosing, often bearing irregular expansions toward the base; hypothallus white or cream-colored, usually profuse and spreading beyond the sporangia; spores black in mass, dark purplish-brown by transmitted light, spinulose, 10–14 μ in diameter; plasmodium white.

TYPE LOCALITY: Europe.
HABITAT: Dead leaves and twigs and often encrusting living plants.
DISTRIBUTION: Temperate North America; Europe; Africa.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 85.*
EXSICCATI: Jaap, Myxom. Exs. *126.*

4. Diderma testaceum (Schrad.) Pers. Syn. Fung. 167. 1801.

Didymium testaceum Schrad. Nov. Gen. Plant. 25. 1797.
Cionium testaceum Spreng. Syst. 4[1]: 529. 1827.
Diderma cubense Berk. & Curt.; Berk. Jour. Linn. Soc. 10: 347. 1868.
Diderma sublateritium Berk. & Br. Jour. Linn. Soc. 14: 82. 1873.
Chondrioderma testaceum Rost. Monog. 179. 1874.
Diderma Mariae-Wilsoni Clinton in Peck, Ann. Rep. N. Y. State Mus. 26: 74. 1874.
Chondrioderma sublateritium Rost. Monog. Append. 19. 1876.
Chondrioderma cubense Rost. Monog. Append. 19. 1876.

Sporangia gregarious, sessile, hemispheric or depressed-globose, 0.7–1 mm. in diameter, pale flesh-colored or pinkish, rarely pale brownish-red; peridium double, the outer layer thick, crustaceous, polished, the inner separate but close, thin, membranous, often wrinkled, ashen or pinkish-gray; columella prominent, convex, slightly roughened, pinkish-brown or alutaceous; capillitium abundant, the threads delicate, smooth, little-branched, pale or colorless; spores black in mass, violaceous-brown by transmitted light, nearly smooth, 8–9 μ in diameter; plasmodium yellowish-buff.

TYPE LOCALITY: Germany.
HABITAT: Dead leaves and plant debris in moist habitats.
DISTRIBUTION: Throughout North America; Europe; Ceylon; Japan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 87, a–c;* Nat. Geogr. Mag. 49[4]: *pl. 12;* Hattori, Myxom. Nasu *pl. 11, f. 6.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2093;* Jaap, Myxom. Exs. *27, 68, 106;* Brândză, Myxom. Roum. I. 1: *11; 35*(NY); *50*(IU); Thaxter, Rel. Farl. *393.*

5. **Diderma effusum** (Schw.) Morgan, Jour. Cinc. Soc. Nat. Hist. 16: 155. 1894.

Physarum effusum Schw. Trans. Am. Phil. Soc. II. 4: 257. 1832.
Didymium reticulatum Rost.; Fuckel, Jahrb. Nass. Ver. Nat. 27–28: 73. 1873.
Chondrioderma reticulatum Rost. Monog. 170. 1874.
Diderma reticulatum Morgan, Jour. Cinc. Soc. Nat. Hist. 16: 155. 1894.
Physarum crustiforme Speg. Anal. Mus. Nac. Buenos Aires 6: 200. 1898.

Fructification varying from sporangiate, pulvinate, and sessile or rarely with a short, thick, stem-like base, 0.5–1.5 mm. broad, often forming a reticulate pattern, through tessellate colonies to broadly effused, continuous, crustose plasmodiocarps to 6 cm. long; peridium double, the outer wall calcareous, crustose, smooth or occasionally bearing scattered crystalline disks, the inner wall membranous, closely applied; columella pulvinate, appressed, pinkish-brown, sometimes scarcely more than a thickened base; capillitium delicate, the threads colorless or pale purple, sparingly branched and anastomosing; spores dark purple in mass, violaceous-brown by transmitted light, minutely warted with faint clusters of larger warts, 7–9 μ in diameter; plasmodium white.

TYPE LOCALITY: Salem, North Carolina.
HABITAT: Dead leaves, stems of herbaceous plants, and sometimes wood or dung.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 83, f;* Macbr. & Mart. Myxom. *pl. 8, f. 178–181;* Hattori, Myxom. Nasu *pl. 10, f. 4.*
EXSICCATI: Ellis, N. Am. Fungi *1217* (as *Chondrioderma Michelii*); Brândză, Myxom. Roum. *34* (NY); *49*(IU); Thaxter, Rel. Farl. *392a, b.*

6. **Diderma Chondrioderma** (De Bary & Rost.) G. Lister in Lister, Mycet. ed. 3. 258. 1925.

Didymium Chondrioderma De Bary & Rost.; Aleksandrovich, Stroj. Miksom. 89. 1872.
Chondrioderma Alexandrowiczii Rost. Monog. 169. 1874.
Didymium Alexandrowiczii Massee, Monog. 232. 1892.
Diderma arboreum Lister & Petch; G. Lister, Jour. Bot. 51: 2. 1913.

Sporangia scattered, discoid, sessile or rarely stalked, 0.5–0.7 mm. in diameter, or forming expanded and lobed, flattened plasmodiocarps 1–3 mm. in diameter, white or purplish-gray from lack of lime; peridium membranous with deposits of round or angular lime granules united to form a thin crust or sparsely distributed, often with scattered deposits of amorphous material; columella flesh-colored, sometimes nearly obsolete; stalk, when present, very short, dark-brown; capillitium coarse, purplish or colorless, often with membranous expansions at the joints; spores pale purplish-gray by transmitted light, minutely and closely spinulose (10–) 12–13 (–15) μ in diameter; plasmodium white, then violet.

TYPE LOCALITY: Poland.
HABITAT: Mosses and lichens on the bark of trees.
DISTRIBUTION: Iowa, California; Europe; Asia.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 206;* Hattori, Myxom. Nasu *pl. 10, f. 6.*

7. **Diderma niveum** (Rost.) Macbr. N. Am. Slime-Moulds 100. 1899.

Chondrioderma niveum Rost. Monog. 170. 1874.
Chondrioderma physaroides Rost. Monog. 170. 1874.
Diderma albescens Phill. Grevillea 5: 114. 1877.
Chondrioderma albescens Phill.; Massee, Monog. 209. 1892.

Sporangia gregarious or crowded, depressed-spherical and sessile on a constricted base, 0.7–1.8 mm. in diameter, varying to pulvinate and elongate, white or pale pinkish-huff; peridium double, the outer layer crustaceous, chalky, smooth, fragile, the inner layer delicate, persistent, membranous and often iridescent, yellowish or orange below; hypothallus scanty or none; columella large, globose or hemispheric, ochraceous to deep orange; capillitium abundant, the threads of two sorts, some purplish or dusky, coarse, uneven, with pale extremities, others delicate and colorless, often beaded with wart-like thickenings, all rather sparsely branched and anastomosing; spores black in mass, violet-brown by transmitted light, minutely roughened, 9–13 μ in diameter; plasmodium white.

TYPE LOCALITY: France.
HABITAT: Dead twigs and plant debris, especially in mountainous regions.
DISTRIBUTION: Michigan, Colorado, Washington, Oregon, California; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 89, a–c.*
EXSICCATI: Jaap, Myxom. Exs. *128.*

8. **Diderma deplanatum** Fries, Syst. Myc. 3: 110. 1829.

Leocarpus deplanatus Fries, Summa Veg. Scand. 450. 1849.
Chondrioderma deplanatum Rost. Monog. Append. 17. 1876.
Diderma niveum subsp. *deplanatum* G. Lister in Lister, Mycet. ed. 2. 106. 1911.

Sporangia scattered or in small groups, pulvinate, sessile, 1–1.5 mm. in diameter, or forming curved or ring-shaped plasmodiocarps, white or cream-colored; peridium double, the outer layer smooth, crustose, brittle, thick, the inner layer membranous, iridescent, deep orange below; columella lacking or represented by a broadly convex or thickened orange-brown base; capillitium composed of dark purple, simple or branched threads, often bearing nodular enlargements; spores purplish-brown by transmitted light, minutely spinulose, 9–10 μ in diameter; plasmodium white.

TYPE LOCALITY: Europe.
HABITAT: Dead leaves, twigs, and mosses.
DISTRIBUTION: Washington; Europe.
ILLUSTRATION: Lister, Mycet. ed. 3. *pl. 89, d.*
EXSICCATI: Jaap, Myxom. Exs. *9, 45, 89, 189.*

9. **Diderma hemisphaericum** (Bull.) Hornem. Fl. Dan. 33: 13. 1829.

Reticularia hemisphaerica Bull. Hist. Champ. Fr. 93. 1791.
Physarum depressum Schum. Enum. Pl. Saell. 2: 202. 1803.
Reticularia contorta Poir. in Lam. Encyc. 6: 182. 1804.
Didymium hemisphaericum Fries, Syst. Myc. 3: 115. 1829.
Didymium Michelii Libert, Pl. Crypt. *180.* 1832.
Physarum Michelii Corda, Ic. Fung. 5: 57. 1842.
Chondrioderma Michelii Rost.; Fuckel, Jahrb. Nass. Ver. Nat. 27–28: 74. 1873.
Diderma Michelii Morgan, Jour. Cinc. Soc. Nat. Hist. 16: 153. 1894.
Chondrioderma hemisphaericum Torrend, Broteria 7: 103. 1908.

Sporangia gregarious, discoid, 0.6–1.2 mm. in diameter, depressed above and often umbilicate below, stipitate or sometimes sessile; peridium double, the outer layer white, fragile, crustaceous, soon breaking at the margins, closely applied to the delicate, cinereous inner layer, which ruptures irregularly; stalk up to 1 mm. tall, rather stout, calcareous, white or pallid to alutaceous or brownish, longitudinally furrowed, the furrows continued as veins on the lower surface of the sporangium, rarely lacking; capillitium delicate, the threads colorless or pale violet-brown, sparsely branched, often scanty; spores pale violaceous-brown by transmitted light, nearly smooth, 8–9.5 μ in diameter; plasmodium opaque-white.

TYPE LOCALITY: France.
HABITAT: On leaves and other plant litter, occasionally on wood.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Bull. Herb. Fr. *pl. 446, f. 1;* Sow. Engl. Fungi, *pl. 12;* Rost. Monog. *pl. 8, f. 131, 146, 149, 150;* Lister, Mycet. ed. 3. *pl. 83, a–e;* Macbr. & Mart. Myxom. *pl. 9, f. 196, 197;* Hattori, Myxom. Nasu *pl. 10, f. 5.*
EXSICCATI: Ellis, N. Am. Fungi *615;* Jaap, Myxom. Exs. *67, 170;* Cavara, Fungi Longob. *51.*

10. **Diderma montanum** (Meylan) Meylan, Bull. Soc. Vaud. Sci. Nat. 53: 454. 1921.

Chondrioderma montanum Meylan, Bull. Soc. Bot. Genève 2: 262. 1910.

Sporangia scattered or grouped, subglobose or ovate, stalked, flattened or umbilicate beneath, pearl or pinkish-gray or nearly white, smooth or slightly wrinkled, 0.6–0.8 mm. in diameter; peridium double, the walls often separating, the outer wall calcareous, the inner wall membranous, reddish-brown toward the base or throughout; stalk pale or bright yellow-brown, enclosing white lime-granules, 0.1–0.8 mm. high; columella small, brownish-red, sometimes stalked; capillitium of slender purplish or hyaline threads, branching and anastomosing

toward the tips; spores pale purplish-brown, faintly spinulose, 8–10 μ in diameter; plasmodium probably white or pale yellow.

TYPE LOCALITY: Switzerland.
HABITAT: On mosses, leaves, and plant litter.
DISTRIBUTION: New York to Ontario, south to Virginia and Iowa; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 207.*
EXSICCATI: Brândză, Myxom. Roum. *54*(IU).

11. Diderma Lyallii (Massee) Macbr. N. Am. Slime-Moulds 99. 1899.

Chondrioderma Lyallii Massee, Monog. 201. 1892.
Diderma niveum subsp. *Lyallii* G. Lister in Lister, Mycet. ed. 2. 105. 1911.

Sporangia subglobose or obovate, crowded, 1–1.5 mm. in diameter, white, cream-colored, or pale flesh-colored, often mottled, sessile or substipitate; peridium double, the outer layer firm, stout, encrusted with granular or sometimes scaly masses of lime, the inner layer close but separate, membranous or subcartilaginous, opaque, buff or pale flesh-colored; hypothallus well developed, venulose, white; stalk when present short, stout, furrowed, merging with the hypothallus; columella prominent, clavate, about half the height of the sporangium, creamy-white to flesh-colored or pale brown; capillitium rigid, the threads purplish-brown or pallid, branching and anastomosing freely, often widened at the nodes; spores black in mass, dark purplish-brown by transmitted light, coarsely warted, 14–17 μ in diameter; plasmodium white.

TYPE LOCALITY: Fort Colville, Washington.
HABITAT: Plant litter in mountainous regions.
DISTRIBUTION: Colorado, Idaho, Utah, Nevada, Washington, California; South America; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 90;* Macbr. & Mart. Myxom. *pl. 9, f. 190, 191.*
EXSICCATI: Jaap. Myxom. Exs. *129;* Brândză, Myxom. Roum. *97*(IU).

12. Diderma Trevelyani (Grev.) Fries, Syst. Myc. 3: 105. 1829.

Leangium ? Trevelyani Grev. Scot. Crypt. Fl. *pl. 132.* 1824.
Chondrioderma Trevelyana Rost. Monog. 182. 1874.
Chondrioderma Oerstedtii Rost. Monog. 184. 1874.
Diderma geasterodes Phill. Grevillea 5: 113. 1877.
Diderma laciniatum Phill. Grevillea 5: 113. 1877.
Didymium subcastaneum Romell, Fungi Scand. *100.* 1885.
Chondrioderma geasteroides Massee, Monog. 201. 1892.

Sporangia scattered or clustered, globose or nearly so, yellow-brown to reddish-brown, occasionally dark, 0.8–1.5 mm. in diameter, sessile or short-stalked, rarely somewhat plasmodiocarpous; peridium firm, of three layers firmly attached to each other, a thin, cartilaginous, brown outer layer and a thin, membranous, iridescent, colorless inner layer connected by a middle layer composed of closely aggregated, coarse, crystalline lime particles, at maturity dehiscing as a whole into petal-like lobes; stalk when present short, furrowed, brown; columella variable, sometimes well developed, globose and occasionally free in the center, sometimes very small or lacking; capillitium abundant, the threads rather rigid, purplish-brown, anastomosing, often beaded; spores black in mass, dark violaceous-brown by transmitted light, spinulose, 11–14 μ in diameter; plasmodium yellow-brown.

TYPE LOCALITY: Scotland.
HABITAT: Mosses, dead wood, and plant litter.
DISTRIBUTION: Virginia, Ohio, Colorado, Washington, Oregon, California; South America; Europe.
ILLUSTRATIONS: Grev. Scot. Crypt. Fl. *pl. 132;* Grevillea 5: *pl. 87, f. 1, 2.*
EXSICCATI: Romell, Fungi Scand. *100;* Jaap, Myxom. Exs. *149.*

13. Diderma ochraceum Hoffm. Deuts. Fl. *pl. 9, f. 2 b.* 1795.

Reticularia ochracea Poir. in Lam. Encyc. 6: 182. 1804.
Chondrioderma ochraceum Schroet. Krypt.-Fl. Schles. 3[1]: 124. 1885.

Sporangiate, sessile, the sporangia often on a constricted base, scattered or clustered, subglobose, 0.4–1 mm. in diameter, the fructification varying to short, curved or annulate plasmodiocarps, deep ochraceous, rarely pale red; peridium double, the outer wall cartilaginous,

nearly smooth or wrinkled, bearing concolorous lime deposits, free from or adherent to the membranous, yellowish inner peridium; columella not strongly developed; capillitium abundant, the threads simple or branching, purple-brown, often hyaline at the base; spores black in mass, purplish-gray by transmitted light, minutely spinulose, 9–11 μ in diameter; plasmodium lemon-yellow.

TYPE LOCALITY: Germany.
HABITAT: Mosses and liverworts in wet places.
DISTRIBUTION: Quebec, Massachusetts, Pennsylvania, Tennessee; Europe; Japan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 95.*
EXSICCATI: Brândză, Myxom. Roum. *53*(IU).

14. Diderma Sauteri (Rost.) Macbr. N. Am. Slime-Moulds 103. 1899.

Chondrioderma Sauteri Rost. Monog. 181. 1874.
Chondrioderma aculeatum Rex, Proc. Acad. Phila. 1891: 390. 1891.

Sporangia scattered, gregarious, sessile, subglobose or lenticular, 0.6–1 mm. in diameter, ochraceous, pinkish-gray or pale reddish-brown; peridium double, the outer layer cartilaginous, thin, smooth or occasionally wrinkled, rupturing irregularly, remote from the thin, semitransparent, grayish or sometimes iridescent inner layer; hypothallus not apparent; columella small and scarcely evident, often reduced to a thickened, brownish-red, rugose base; capillitium scanty, the threads pale violaceous or colorless except at the reddish-brown bases which often adhere to the columella and cause it to appear spiny; spores dark violet-brown by transmitted light, spinulose, 12–13 μ in diameter; plasmodium white.

TYPE LOCALITY: Austria.
HABITAT: Mosses and mossy logs.
DISTRIBUTION: Maine to Quebec, south to Pennsylvania; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 96.*

15. Diderma asteroides (A. & G. Lister) G. Lister in Lister, Mycet. ed. 2. 113. 1911.

Chondrioderma asteroides A. & G. Lister, Jour. Bot. 40: 209. 1902.

Sporangia hemispheric, globose, or ovoid, the apex often more or less acuminate, sessile, 0.3–0.8 mm. in diameter, or rarely short-stalked or plasmodiocarpous, brown or chocolate, marked by radiant lines converging at the top; wall triple, the brown, cartilaginous outer layer firmly attached to the middle layer of closely aggregated lime granules, the membranous inner layer usually attached also, sometimes free; columella globose or depressed-globose or sometimes poorly developed, rugose, pallid to deep ochraceous; capillitium of slender, single or anastomosing, colorless or purplish threads; spores black in mass, dark violaceous-brown by transmitted light, verrucose, 10–12 μ in diameter; plasmodium yellow or orange.

TYPE LOCALITY: Italy.
HABITAT: Dead wood and leaves and mosses.
DISTRIBUTION: Ontario, Colorado, Washington, Oregon, California; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 97.*
EXSICCATI: Jaap, Myxom. Exs. *171;* Brândză, Myxom. Roum. III. 1: *13*(NY); *100*(Ia).

16. Diderma rugosum (Rex) Macbr. N. Am. Slime-Moulds 105. 1899.

Chondrioderma rugosum Rex, Proc. Acad. Phila. 1893: 369. 1893.

Sporangia scattered, stalked, subglobose, 0.4–0.5 mm. in diameter, white or cinereous with a brownish base; peridium single, thin, scantily charged with lime, reticulately wrinkled, the ridges marking the lines of dehiscence into irregular, polyhedral fragments; stalk well developed, subulate, furrowed, black, 0.4–0.8 mm. high; columella clavate, rugose, white or pale ochraceous, often attaining half the height of the sporangium; capillitium pale purplish or colorless, the threads forking and anastomosing to form a loose net attached to the base of the sporangium and the columella below and to the peridium at their tips; spores violaceous-brown by transmitted light, minutely warted, 8–10 μ in diameter; plasmodium gray.

TYPE LOCALITY: Cranberry, North Carolina.
HABITAT: Dead leaves and mosses.
DISTRIBUTION: New York to Florida and the West Indies, west to Iowa; Europe; Asia.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 86;* Macbr. & Mart. Myxom. *pl. 9, f. 210, 211;* Hattori, Myxom. Nasu *pl. 10 f. 3.*
EXSICCATI: Brândză, Myxom. Roum. *95*(NY).

17. **Diderma cor-rubrum** Macbr. N. Am. Slime-Moulds ed. 2. 140. 1922.

Sporangia clustered or gregarious, globose or depressed, 0.5–0.7 mm. in diameter, short-stalked or sessile, white or pale pinkish-gray; peridium double, the outer layer cartilaginous, polished, rugose, reddish-purple within, the inner layer delicate, shining, membranous, translucent, closely applied to the outer layer but somewhat separable; columella clavate, spherical above, grayish-purple to deep purplish-red, sometimes connected by stout, calcareous bars with the peridium; stalk when present short, stout, furrowed, white or pinkish, merging with the white hypothallus; capillitium of slender purplish or hyaline threads, or purplish with hyaline tips, sparsely branched; spores black in mass, smoky-brown by transmitted light, verrucose, 11–12 μ in diameter.

TYPE LOCALITY: Iowa.
HABITAT: Dead wood and leaves.
DISTRIBUTION: Iowa, Kansas, Colorado; Africa.
ILLUSTRATION: Macbr. N. Am. Slime-Moulds ed. 2. *pl. 18, f. 2.*

18. **Diderma roanense** (Rex) Macbr. N. Am. Slime-Moulds 104. 1899.

Chondrioderma roanense Rex, Proc. Acad. Phila. **1893**: 368. 1893.

Sporangia scattered, stalked, discoid, thin, sometimes slightly convex above, 0.8–1.2 mm. in diameter, mottled red-brown or umber with paler lines of dehiscence; peridium double, the outer layer smooth, cartilaginous, white within, more or less adherent to the membranous, white, punctate inner layer; dehiscence irregular or somewhat stellate; stalk short, black, furrowed, variable in thickness; columella large, flat, discoid, ochraceous to brownish; capillitium sparse, the threads white or colorless, sinuous, scantily forked and anastomosing; spores dark violaceous-brown by transmitted light, minutely but distinctly warted, 12–14 μ in diameter.

TYPE LOCALITY: Roan Mountain, Tennessee.
HABITAT: Dead wood.
DISTRIBUTION: Maine to Ontario, North Carolina, and Colorado; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 94, c, d.*

19. **Diderma floriforme** (Bull.) Pers. Neues Mag. Bot. 1: 89. 1794.

Sphaerocarpus floriformis Bull. Hist. Champ. Fr. 142. 1791.
Stemonitis floriformis J. F. Gmel. Syst. Nat. **2**: 1469. 1791.
Lycoperdon floriforme With. Brit. Pl. ed. 3. **4**: 376. 1796.
Didymium floriforme Schrad. Nov. Gen. Pl. 21. 1797.
Diderma spurium Schum. Enum. Pl. Saell. **2**: 197. 1803.
Reticularia floriforme Poir. in Lam. Encyc. **6**: 182. 1804.
Leangium lepidotum Ditmar. in Sturm, Deuts. Fl. Pilze **1**: 43. 1814.
Leangium floriforme Chev. Fl. Paris **1**: 333. 1826.
Cionium floriforme Spreng. Syst. **4**[1]: 529. 1827.
Cionium lepidotum Spreng. Syst. **4**[1]: 529. 1827.
Diderma lepidotum Fries, Syst. Myc. **3**: 100. 1829.
Chondrioderma floriforme Rost. Monog. 184. 1874.

Sporangia stipitate, crowded in dense and often large colonies, globose or pyriform, 0.7–1 mm. in diameter, 1.2–2 mm. tall, pale brown to umber or deep reddish-brown; peridium double, the outer layer cartilaginous, usually adherent to the membranous inner layer, the dehiscence irregular above, the lower portion dividing into petal-like lobes which often become deeply reflexed and rolled; columella prominent, clavate, globose above, the surface rugose, densely calcareous, ochraceous to brown; stalk weak, furrowed, orange-brown or concolorous, usually

merging into the prominent hypothallus; capillitium abundant; the threads delicate, slender, dark brown, often bearing head-like thickenings; spores intense black in mass, dark violaceous-brown and paler on one side by transmitted light, sparsely and irregularly marked with large, blunt warts, 10–11 μ in diameter; plasmodium yellow or grayish-white.

TYPE LOCALITY: France.
HABITAT: Decaying wood.
DISTRIBUTION: Eastern North America to South Dakota and Nebraska; Europe.
ILLUSTRATIONS: Bull. Herb. Fr. *pl. 371;* Lister, Mycet. ed. 3. *pl. 92;* Macbr. & Mart. Myxom. *pl. 9, f. 208, 209.*
EXSICCATI: Ellis, N. Am. Fungi *1121;* Brândză, Myxom. Roum. I. I: *12; 36, 104*(NY); *52*(IU); Thaxter, Rel. Farl. *803.*

20. **Diderma radiatum** (L.) Morgan, Jour. Cinc. Soc. Nat. Hist. **16**: 151. 1894.

Lycoperdon radiatum L. Sp. Pl. ed. 2. 1654. 1763.
Didymium stellare Schrad. Nov. Gen. Pl. 21. 1797.
Diderma stellare Pers. Syn. Fung. 164. 1801.
Diderma umbilicatum Pers. Syn. Fung. 165. 1801.
Diderma crassipes Schum. Enum. Pl. Saell. **2**: 196. 1803.
Reticularia umbilicata Poir. in Lam. Encyc. **6**: 183. 1804.
Didymium Geaster Link, Ges. Nat. Freunde Berlin Mag. **7**: 42. 1815.
Cionium stellare Spreng. Syst. 4^1: 529. 1827.
Cionium umbilicatum Spreng. Syst. 4^1: 529. 1827.
Diderma Carmichaelianum Berk. in Smith, Engl. Fl. 5^2: 311. 1836.
Didymium complanatum sensu Fuckel, Jahrb. Nass. Ver. Nat. **23–24**: 341. 1870. Not *D. complanatum* Schrad. 1797, nor *D. complanatum* Rost. 1874.
Diderma concinnum Berk & Curt.; Berk. Grevillea **2**: 52. 1873.
Chondrioderma radiatum Rost. Monog. 182. 1874.
Chondrioderma Carmichaelianum Cooke, Myxom. Gr. Brit. 42. 1877.
Perichaena phaeosperma P. Karst. Rev. Myc. 9: 11. 1887.

Sporangia scattered, gregarious or crowded, globose or depressed-globose, sometimes umbilicate below and occasionally above, 0.6–1.4 mm. in diameter, stalked or sessile on a contracted base, pale gray to brownish-drab, often mottled or areolate; peridium obscurely double, the outer layer smooth, rugose, or corrugated, whitish or pale reddish-brown within, usually darker at the base, closely applied to the membranous inner wall; dehiscence irregular above, stellate below, the lobes spreading radiately; columella large, calcareous, hemispheric to subglobose, pale cream-colored to orange or reddish-brown; stalk usually short, thick, furrowed, more or less calcareous, pallid to reddish-brown; capillitium abundant, the threads violet-brown, pallid at the tips, sparsely branched except at the tips; spores often forming a compact dense black mass remote from the peridium but not enclosed by a membrane, purplish-brown by transmitted light, distinctly, often irregularly warted, 9–12 μ in diameter; plasmodium white or yellowish.

TYPE LOCALITY: Sweden.
HABITAT: Dead wood.
DISTRIBUTION: Throughout the United States and Canada; cosmopolitan.
ILLUSTRATIONS: Schrad. Nov. Gen. Pl. *pl. 5, f. 3, 4;* Rost. Monog. *pl. 9, f. 152, 153, 155, 156;* Lister, Mycet. ed. 3. *pl. 93, 94, a, b.;* Macbr. & Mart. Myxom. *pl. 9, f. 204, 205;* Hattori, Myxom. Nasu *pl. 10, f. 1.*
EXSICCATI: Jaap, Myxom. Exs. *90, 130, 150, 191;* Jaap. Myxom. Exs. Nachl. 2: *6;* Brândză, Myxom. Roum. II. **2**: *32*(NY); *51, 98, 99*(IU).

DOUBTFUL SPECIES

DIDERMA ALPINUM Meylan (Bull. Soc. Vaud. Sci. Nat. **51**: 261. 1917. *Diderma globosum* var. *alpinum* Meylan, Ann. Cons. Jard. Genève 15–16: 310. 1913) has been reported from California. No authentic collections from North America have been seen.

DIDERMA ANTARCTICUM (Speg.) Sturgis (Mycologia **8**: 37. 1916. *Licea antarctica* Speg. Bol. Acad. Ci. Córdoba **11**: 58. 1887) has been reported from North America on the basis of two collections from Southern California by Plunkett, determined by G. Lister. The specimens do not conform to the published descriptions of *D. antarctica.* It is possible that they represent an undescribed species, but more and better material is needed before this can be decided. Hagelstein regards the species as based by Sturgis on Thaxter's Patagonian collection as a synonym of *D. asteroides.*

2. MUCILAGO Micheli; Batt. Fung. Hist. 76. 1755.

Spumaria Pers.; Gmel. Syst. Nat. 2: 1466. 1791.

Fructification aethalioid, pulvinate, usually large, consisting of numerous anastomosing tubes or irregular sporangiate bodies filled with spores and capillitium, covered by a dense, calcareous, crystalline cortex, with a delicate, membranous, inner cortex. Capillitium slender, limeless. Pseudocapillitium membranous, limy, composed of the walls of the constituent plasmodial strands. Spores black in mass.

Type species: *Mucilago crustacea alba* Micheli.

1. Mucilago spongiosa (Leysser) Morgan, Bot. Gaz. 24: 56. 1897.

Mucor spongiosus Leysser, Fl. Hal. ed. 2. 305. 1783.
Reticularia alba Bull. Hist. Champ. Fr. 92. 1791.
Spumaria Mucilago Pers.; J. F. Gmel. Syst. Nat. 2: 1466. 1791.
Spumaria alba DC. Fl. Fr. 2: 261. 1805.
Didymium Spumarioides Fries, Syst. Myc. 3: 121. 1829. Not *D. spumarioides* Fries, 1818.
Diderma spumariaeforme Wallr. Fl. Crypt. Germ. 2: 374. 1833.
Spumaria alba var. *solida* Sturgis, Colo. Coll. Publ. Sci. 12: 29. 1907.
Spumaria solida Jahn, Ber. Deuts. Bot. Ges. 41: 391. 1924.

Aethalium white, creamy, or ochraceous, 1–7 cm. long, 1–5 cm. broad, 1–2 cm. thick; cortex dense, spongy or pulverulent, composed of large or small calcareous crystals, sometimes disappearing early; capillitium scanty, of dark-colored or pallid limeless threads, often bearing dark nodes or enlargements; pseudocapillitium composed of the walls of the constituent tubes or sporangia, thin, hyaline, often iridescent; hypothallus strongly developed, horny, membranous or spongy, hyaline or white, often including dense masses of crystalline lime; spores black in mass, dark purple-brown or occasionally bright purple-brown by transmitted light, densely or rarely sparsely warted (9–) 11–13 (–15) μ in diameter; plasmodium creamy-white or pale yellowish.

TYPE LOCALITY: Italy.
HABITAT: Dead wood and leaves or encrusting the stems of living plants.
DISTRIBUTION: Throughout temperate North America; cosmopolitan.
ILLUSTRATIONS: Micheli, Nov. Pl. Gen. *pl. 96, f. 2;* Batt. Fung. Hist. *pl. 40, f. G–I;* Bull. Herb. Fr. *pl. 326;* Lister, Mycet. ed. 3. *pl. 117;* Univ. Iowa Stud. Nat. Hist. 14[8]: *pl. 4, f. 27 a, b;* Macbr. & Mart. Myxom. *pl. 7, f. 149, 150;* Hagelst. Mycet. N. Am. *pl. 10, f. 3.*
EXSICCATI: Jaap, Myxom. Exs. *30;* Hintikka, Myxogast. Fenn. *12;* Brândză, Myxom. Roum. I. 1: *15; 41, 105*(NY); *77*(IU); Wann & Muensch. N. Am. Myxom. *61.*

3. DIDYMIUM Schrad. Nov. Gen. Pl. 20. 1797.

Sporangiate or plasmodiocarpous; peridium thin, membranous, covered with a more or less dense coating of calcareous crystals either scattered loosely over the surface or combined into a crust; columella usually present, sometimes reduced to a thickened, calcareous base; capillitium of branching and anastomosing, limeless threads, often bearing dark, nodular thickenings; spores black in mass, violaceous-brown by transmitted light.

Type species, *Didymium farinaceum* Schrad.

Crystals scattered or forming a powdery coating on the surface of the sporangium.
  Plasmodiocarpous or sessile, rarely with short, usually weak, stalks.
    Fructification ochraceous to brown.
      Yellowish to tawny; spores dark, tuberculate or subreticulate, 12–14 μ in diameter. 1. *D. fulvum.*
      Ochraceous to brownish; spores pale, smooth, 7–8 μ in diameter. 2. *D. ochroideum.*
    Fructification white or gray.
      Vesiculose bodies borne in the interior of the fructification.
        Plasmodiocarp branched and anastomosing, laterally flattened, with a central, limy wall; vesicles free from the capillitium. 3. *D. parietale.*
        Plasmodiocarp thin, depressed, effused, sometimes netted, without a central, limy wall; vesicles attached to the capillitium. 4. *D. Serpula.*
      Vesicular bodies not present in the interior.
        Plasmodiocarpous, extremely thin; capillitium lacking, replaced by vertical columns containing crystalline lime. 5. *D. Sturgisii.*

Capillitium present; vertical calcareous columns lacking.
Plasmodiocarpous, small, often annulate; spores pale, mostly under 10 μ in diameter. 6. *D. anellus.*
Spores dark, over 10 μ in diameter.
Plasmodiocarpous, large, pulvinate or effused; capillitium elastic. 7. *D. dubium.*
Sporangiate, globose, sessile or with a weak stalk hidden by the crust of lime enveloping the cluster; capillitium not elastic. 8. *D. crustaceum.*
Typically with distinct stalks, often accompanied by sessile or plasmodiocarpous fructifications.
Spores reticulate; stalk pale, limy. 9. *D. intermedium.*
Spores warted, spiny, or nearly smooth.
Sporangium strongly depressed, discoid; stalk dark. 10. *D. Clavus.*
Sporangium subglobose to lenticular.
Stalk white, calcareous, often accompanied by sessile or plasmodiocarpous fructifications. 11. *D. squamulosum.*
Stalk not calcareous.
Stalk black or dark brown; columella dark.
Sporangia somewhat flattened, deeply umbilicate; stalk short, stout, opaque.
Spores dark, rough, 10–14 μ in diameter; capillitium purple. 12. *D. melanospermum.*
Spores violet-brown, minutely warted, 8–11 μ in diameter; capillitium pale. 13. *D. minus.*
Sporangia globose, with a small umbilicus; stalk translucent, relatively long and slender; spores pale, 7–10 μ in diameter. 14. *D. nigripes.*
Stalk yellow or pale brown; columella pale.
Subglobose; stalk yellow or yellowish-brown, translucent; columella smooth; lime crystals always white. 15. *D. Iridis.*
Flattened; stalk orange; columella spiny; lime crystals often yellowish. 16. *D. megalosporum.*
Crystals united to form a shell-like crust.
Sporangiate, sessile or with a short, thick stalk; columella very large, the peridium attached to its margin. 17. *D. vaccinum.*
Sessile to plasmodiocarpous; columella inconspicuous or lacking.
Sporangiate and hemispherical to thin and effused; capillitium dense, the threads connected by transverse bars; spores pale. 18. *D. Listeri.*
Pulvinate to plasmodiocarpous; capillitial threads not connected by transverse bars; spores dark.
Spores nearly smooth, 11–14 μ in diameter. 19. *D. difforme.*
Spores prominently marked.
Spores obscurely banded and subreticulate, usually over 15 μ in diameter. 20. *D. quitense.*
Spores strongly and coarsely warted, sometimes subreticulate, 9–10 μ in diameter. 21. *D. trachysporum.*

1. **Didymium fulvum** Sturgis, Mycologia 9: 327. 1917.

Sporangia sessile, elongate and pulvinate, rarely subglobose, or forming small plasmodiocarps, gregarious, sometimes confluent, concave beneath, pale brownish-ochraceous, 0.5–0.8 mm. broad, on a concolorous, membranous, lime-encrusted hypothallus which may be contracted to form a thick, stalk-like base; peridium membranous, rugose, yellow, thickly sprinkled with large, pale yellow crystals; columella consisting of the convex, thickened base; capillitium abundant, of delicate, pale purple or almost colorless, branching and anastomosing threads, frequently with dark thickenings and occasionally with fusiform, crystalline enlargements; spores dark purplish-brown by transmitted light, coarsely tuberculate, the tubercles usually arranged in curved lines forming an imperfect reticulation, paler and smoother and often papillate on one side, 12–14 μ in diameter.

TYPE LOCALITY: Colorado.
HABITAT: Dead leaves and twigs.
DISTRIBUTION: Known only from the type collection.
ILLUSTRATIONS: Mycologia 9: *pl. 14, f. 4–6;* Lister, Mycet. ed. 3. *pl. 221;* Hagelst. Mycet. N. Am. *pl. 2, f. 4–6.*

2. **Didymium ochroideum** G. Lister, Jour. Bot. 69: 297. 1931.

Sporangia sessile and pulvinate or forming slender plasmodiocarps, 0.5 mm. broad, often depressed in the center, pale brown or ochraceous; peridium pale, dull orange, thickly clothed

with stellate crystals, sometimes divided into small areoles, each with a dark, raised center to which the crystals adhere; hypothallus scanty, yellowish-red; columella orange, composed of the thickened and convex, somewhat limy base; capillitium a loose network of slender, pale purplish threads; spores pale purplish-gray by transmitted light, minutely warted, 7–8 μ in diameter; plasmodium white.

TYPE LOCALITY: Japan.
HABITAT: Dead leaves and herbaceous stems, mosses, and dung of herbivorous animals.
DISTRIBUTION: New York, Ontario, Iowa; India; Japan.
ILLUSTRATION: Jour. Bot. 69: *pl. 598, f. 1, a–d.*

3. **Didymium parietale** Martin & Brooks, Trans. Am. Micr. Soc. **57**: 320. 1938.

Plasmodiocarps white or cinereous, laterally compressed, branching and anastomosing to form an intricate net, with occasional simple plasmodiocarps or sporangia interspersed, 0.2–0.4 mm. wide, borne on a broadly expanded but colorless and inconspicuous hypothallus; peridium membranous, fragile, translucent, iridescent, sparsely to densely powdered with white lime crystals, these sometimes aggregated into small, discoid platelets; columella conspicuous, wall-like, elongated, extending longitudinally nearly the full length of the plasmodiocarp, attached to the base by broad extensions, free above; capillitium dense, with few anastomoses, the threads slender, brownish and 2 μ in diameter below, hyaline and more slender at the tips; spores black in mass, interspersed with numerous vesicular bodies colored like the spores but larger and irregular in shape; spores deep violaceous-brown by transmitted light, sparsely and irregularly spiny or subreticulate, 11–13 μ in diameter.

TYPE LOCALITY: Geary County, Kansas.
HABITAT: Dead leaves.
DISTRIBUTIONS: Iowa, Kansas.
ILLUSTRATIONS: Trans. Am. Micr. Soc. 57: 320.

4. **Didymium Serpula** Fries, Syst. Myc. **3**: 126. 1829.

Lycoperdon complanatum Batsch, Elench. Fung. Contin. 1: 251. 1786.
Didymium complanatum Rost. Monog. 151. 1874. Not *D. complanatum* Schrad. 1797, nor *D. complanatum* Fuckel, 1870.

Plasmodiocarps depressed, scattered or solitary, effused, perforated or nearly continuous or tubular, dark gray, whitish, or iridescent, 0.1–0.15 mm. thick, usually 2–8 mm. in extent but sometimes much larger, to 4 cm.; peridium dark gray or iridescent, sparsely or sometimes rather densely covered with white, stellate lime crystals; hypothallus inconspicuous; columella lacking; capillitium moderately dense, the threads slender, violaceous, connected with numerous subglobose vesicles 30–50 μ in diameter, filled with yellow, granular material; spores dull black in mass, pale violaceous-brown by transmitted light, minutely warted, 8–11 μ; plasmodium yellow.

TYPE LOCALITY: Europe.
HABITAT: Dead leaves and herbaceous stems.
DISTRIBUTION: Maine to Florida, west to Tennessee and Iowa; rare; Europe. Calif Kowalski 1962
ILLUSTRATIONS: De Bary, Mycet. *pl. 2, f. 15;* Rost. Monog. *pl. 9, f. 166, 180;* Lister, Mycet. ed. 3. *pl. 107;* Macbr. & Mart. Myxom. *pl. 7, f. 151–153.*
EXSICCATI: Jaap, Myxom. Exs. *175, 193;* Brândză, Myxom. Roum. I. 1: *13* (NY); *89* (IU).

5. **Didymium Sturgisii** Hagelst. Mycologia **29**: 397. 1937.

Didymium anomalum Sturgis, Colo. Coll. Publ. Sci. **12**: 444. 1913. Not *D. anomalum* Massee, 1892.

Plasmodiocarps white or gray, scattered or gregarious, very thin, rounded or irregular in outline, 1–10 mm. in length, 0.1–0.2 mm. thick; peridium membranous, white or yellowish, sprinkled, usually scantily, with white, angular or stellate lime crystals; columella none, but the thickened base giving rise to numerous, erect pillars 7–22 μ thick, enclosing white lime crystals and penetrating the plasmodiocarp to the upper surface to which they are attached; capillitium lacking; spores black in mass, bright violet-brown by transmitted light, minutely and irregularly warted, 10–12 μ in diameter.

TYPE LOCALITY: Colorado.
HABITAT: Dead wood and bark.
DISTRIBUTION: New York to Pennsylvania, west to Montana and Colorado; rare; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 213;* Hagelst. Mycet. N. Am. *pl. 10, f. 1.*

6. **Didymium anellus** Morgan, Jour. Cinc. Soc. Nat. Hist. **16**: 148. 1894.

Didymium effusum var. *tenue* Lister, Jour. Bot. **35**: 214. 1897.

Plasmodiocarps often forming small rings, or elongate, simple or branching and netted, 0.3–0.5 mm. wide, varying to flattened, pulvinate sporangiate fruitings, these rarely short-stalked, or to broad, crustose, pitted plasmodiocarps; peridium membranous, colorless or purplish-brown, iridescent, covered with a rather sparse layer of lime crystals; dehiscence mainly circumscissile; columella none or represented by a brown deposit at the base of the sporangium; capillitium abundant, of branching and anastomosing, slender, purple threads forming a somewhat elastic net; hypothallus thin, delicate, often scarcely apparent; spores dark brown in mass, violaceous-brown by transmitted light, minutely warted, usually with clusters of larger warts, 7.5–11 μ in diameter.

TYPE LOCALITY: Ohio.
HABITAT: Dead leaves, herbaceous stems and twigs, rarely on wood.
DISTRIBUTION: New York through southern Canada to Washington, south to Pennsylvania, New Mexico, and California; Europe; Asia.
ILLUSTRATIONS: Jour. Cinc. Soc. Nat. Hist. **16**: *pl. 12, f. 41;* Lister, Mycet. ed. 3. *pl. 110, a–c;* Macbr. & Mart. Myxom. *pl. 8, f. 156–158.*
EXSICCATI: Jaap, Myxom. Exs. *132, 154.*

7. **Didymium dubium** Rost. Monog. 152. 1874.

Didymium Wilczekii Meylan, Bull. Soc. Vaud. Sci. Nat. **44**: 290. 1908.
Didymium nivicolum Meylan, Bull. Soc. Vaud. Sci. Nat. **57**: 40. 1929.

Plasmodiocarps white or grayish-white, flat, thin, 1–30 mm. long, 1–6 mm. wide, 0.3–0.5 mm. thick, usually accompanied by small, pulvinate, sporangiate fructifications; peridium membranous, colorless, purplish or tawny, more or less covered with a crust of minute, stellate, rod-like or nodular lime crystals, sometimes nearly limeless and then dark, or the lime occasionally in the form of scales; columella usually represented by the thickened base; capillitium abundant, rigid, the threads brownish-purple, radiating, branching and anastomosing by nearly transverse bars and forming an elastic net, readily separating from the peridium; spores dark purplish-brown in mass, purple-brown by transmitted light, distinctly warted, 10–15 μ in diameter; plasmodium gray.

TYPE LOCALITY: Europe.
HABITAT: Dead herbaceous stalks, twigs, and leaves.
DISTRIBUTION: Missouri, Kansas, Colorado, Alaska, Oregon, California; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 194.*
EXSICCATI: Jaap, Myxom. Exs. *93, 110, 196.*

8. **Didymium crustaceum** Fries, Syst. Myc. **3**: 124. 1829.

Didymium confluens Rost. Monog. 164. 1874.

Sporangia short-stalked or sessile, closely aggregated, globose or deformed by pressure, 0.7–2 mm. in diameter, pure white; peridium double, the outer wall limy, fragile, distant, sometimes forming a continuous crust over all or part of the cluster, the inner wall membranous, transparent, scantily clothed with large stellate crystals; stalk when present pale buff, weak, 0.2–0.4 mm. high, often concealed by the outer crust; columella small, white or pale buff, sometimes nearly obsolete; hypothallus membranous, often more or less limy, not prominent; capillitium rather rigid, sparsely branched, except at the tips, and with few anastomoses, pallid or purplish; spores black in mass, dark violet-brown by transmitted light, strongly warted, 10–14 (–16) μ in diameter; plasmodium white.

TYPE LOCALITY: Europe.
HABITAT: Dead wood, twigs and leaves.
DISTRIBUTION: Pennsylvania and southern Canada to Washington, south to North Carolina and Colorado; South America; Europe; Japan; Hawaii.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 111;* Hagelst. Mycet. N. Am. *pl. 10, f. 2.*
EXSICCATI: Brândză, Myxom. Roum. III. 1: *14*(NY); *88*(IU).

9. **Didymium intermedium** Schroet.; P. Henn.
Hedwigia 35: 209. 1896.

Didymium excelsum Lister; Jahn, Ber. Deuts. Bot. Ges. 20: 275. 1902.

Sporangia stalked, gregarious, solitary, or united in simple or compound, corymbose clusters, appearing globose or somewhat irregular, 0.4–0.7 mm. in diameter, in reality discoid and deeply reflexed, white or grayish; peridium thin, fragile, translucent, densely covered with a white, powdery layer of stellate crystals; stalk yellowish-white, smooth, subulate, 1–1.3 mm. long, with an opaque, crystalline core and hyaline cortex; hypothallus extensive, branching, white and calcareous at the bases of the stalks, elsewhere colorless or nearly so; columella small, dome-shaped, inconspicuous, its place largely taken by the inverted sporangial base; capillitium profuse, colorless, delicate, branching and anastomosing freely; spores black in mass, dark violaceous-brown by transmitted light, densely covered with long, dark spines arranged to form a partial and irregular reticulation, 10–12 μ in diameter.

TYPE LOCALITY: Brazil.
HABITAT: Dead leaves, herbaceous stems, and moss-covered logs.
DISTRIBUTION: Missouri, Nicaragua, Canal Zone; Brazil; Japan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 110, d–f;* Univ. Iowa Stud. Nat. Hist. 17: 349.

10. **Didymium Clavus** (Alb. & Schw.) Rab. Deuts.
Krypt.-Fl. 1: 280. 1844.

Physarum Clavus Alb. & Schw. Consp. Fung. 96. 1805.
Didymium melanopus β clavus Fries, Syst. Myc. 3: 114. 1829.
Didymium commutabile Berk. & Br. Jour. Linn. Soc. 14: 83. 1873.
Didymium neglectum Massee, Monog. 231. 1892. Not *D. neglectum* Berk. & Br. 1873.
Didymium Masseeanum Sacc. & Syd. in Sacc. Syll. Fung. 14: 836. 1899.

Sporangia stalked, discoid, 0.5–1 mm. in diameter, up to 1 mm. tall, grayish-white or dark when limeless; peridium dark, more or less covered with lime crystals above, thickened, brown, and limeless on the under side; stalk tapering upward, longitudinally striate, dark brown or black, sometimes so short as to be contained within the base, the sporangia then appearing sessile; columella represented by the thickened, dome-like base; capillitium delicate, the threads pale purple-brown or nearly colorless, sparsely branched; spores black in mass, violaceous-brown by transmitted light, nearly smooth, 6–8 μ in diameter; plasmodium gray or colorless.

TYPE LOCALITY: Germany.
HABITAT: Dead wood, twigs, and leaves.
DISTRIBUTION: Quebec to Washington, south to Florida and California; cosmopolitan.
ILLUSTRATIONS: Alb. & Schw. Consp. Fung. *pl. 2, f. 2;* Lister, Mycet. ed. 3. *pl. 108.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2091;* Jaap, Myxom. Exs. *70, 109, 131, 194;* Hintikka, Myxogast. Fenn. *4;* Brândză, Myxom. Roum. *102*(IU).

11. **Didymium squamulosum** (Alb. & Schw.) Fries, Symb.
Gast. 19. 1818.

Diderma squamulosum Alb. & Schw. Consp. Fung. 88. 1805.
Licea stipitata DC. Fl. Fr. 6: 101. 1815.
Didymium effusum Link, Ges. Nat. Freunde Berlin Mag. 7: 42. 1815.
Tubulina pedicellata Poir. in Lam. Encyc. Suppl. 5: 373. 1817.
Cionium squamulosum Spreng. Syst. 4[1]: 528. 1827.
Didymium costatum Fries, Syst. Myc. 3: 118. 1829.
Didymium herbarum Fries, Syst. Myc. 3: 120. 1829.
Physarum liceoides Duby, Bot. Gall. 861. 1830.
Didymium praecox De Bary; Rab. Fungi. Eur. *367.* 1861.
Didymium radiatum Berk. & Curt.; Berk. Jour. Linn. Soc. 10: 348. 1868.
Didymium neglectum Berk. & Br. Jour. Linn. Soc. 14: 83. 1873.
Didymium Fuckelianum Rost.; Fuckel, Jahrb. Nass. Ver. Nat. 27–28: 73. 1873.

Didymium macrospermum Rost. Monog. 161. 1874.
Didymium discoideum Rost. Monog. 162. 1874.
Chondrioderma Cookii Rost. Monog. Append. 17. 1876.
Physarum Tussilaginis Berk. & Br. Ann. Mag. Nat. Hist. IV. **17**: 139. 1876.
Didymium angulatum Peck, Ann. Rep. N. Y. State Mus. **31**: 41. 1879.
Didymium Cookei Raunk. Bot. Tidssk. **17**: 86. 1888.
Didymium affine Raunk. Bot. Tidssk. **17**: 88. 1888.
Didymium Bonianum Pat. Jour. de Bot. **5**: 316. 1891.
Didymium Tussilaginis Massee, Monog. 244. 1892.
Didymium annulatum Macbr. N. Am. Slime-Moulds, ed. 2. 125. 1922.

Usually sporangiate and stalked, but varying to sessile and plasmodiocarpous often in the same fruiting, white, gray, or rarely pinkish; sporangia appearing globose or depressed, in reality discoid and deeply umbilicate below, 0.3–1 mm. in diameter, up to 1.2 mm. in total height; peridium membranous, transparent, somewhat iridescent, usually covered with a thick, white crust of stellate lime crystals which often form a reticulate surface, the lime sometimes scanty; stalk stout, calcareous, fluted, white or ochraceous to orange or pinkish, arising from a discoid, concolorous hypothallus; columella discoid or hemispheric, consisting of the thickened, umbilicate sporangial base; capillitium variable, the threads slender or coarse, nearly simple or branching profusely, colorless or pallid, less commonly dark, often bearing conspicuous thickenings; spores black in mass, dark violaceous-brown by transmitted light, minutely warted or spinulose, the warts sometimes clustered, 8–11 μ in diameter; plasmodium colorless, white, or yellow.

TYPE LOCALITY: Germany.
HABITAT: Dead plant remains of all sorts and on dung of herbaceous animals.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Alb. & Schw. Consp. Fung. *pl. 4, f. 5;* Rost. Monog. *pl. 8, f. 134, 139–141, 148;* Macbr. & Mart. Myxom. *pl. 8, f. 159–163;* Lister, Mycet. ed. 3. *pl. 109.*
EXSICCATI: Ellis, N. Am. Fungi *1216;* Ellis & Ev. N. Am. Fungi *2090;* Jaap, Myxom. Exs. *72, 177, 195;* Brândză, Myxom. Roum. I. **1**: *14; 39*(NY); *101*(IU).

12. **Didymium melanospermum** (Pers.) Macbr. N. Am. Slime-Moulds 88. 1899.

Physarum melanospermum Pers. Neues Mag. Bot. **1**: 88. 1794.
Didymium farinaceum Schrad. Nov. Gen. Pl. 22. 1797.
Trichia compressa Trent. in Roth, Catalecta Bot. **1**: 229. 1797.
Trichia sphaerocephala Sow. Engl. Fungi, *pl. 240.* 1799.
Physarum farinaceum Pers. Syn. Fung. 174. 1801.
Trichia farinosa Poir. in Lam. Encyc. **8**: 53. 1808.
Physarum sinuosum Link, Ges. Nat. Freunde Berlin Mag. **3**: 27. 1809. Not *P. sinuosum* Weinm.; Fries, 1829.
Physarum capitatum Link, Ges. Nat. Freunde Berlin Mag. **3**: 27. 1809.
Strongylium minus Fries, Symb. Gast. 9. 1817.
Didymium Physaroides Fries, Symb. Gast. 21. 1818.
Cionium farinaceum S. F. Gray, Nat. Arr. Brit. Pl. **1**: 571. 1821.
Cionium lobatum Spreng. Syst. **4**[1]: 529. 1827.
Didymium lobatum Schw. Trans. Am. Phil. Soc. II. **4**: 257. 1832.
Didymium Fairmani Sacc.; Fairman, Jour. Myc. **5**: 78. 1889.

Sporangia gregarious, stalked or sessile, or somewhat plasmodiocarpous, subglobose or depressed, deeply umbilicate below, 0.5–1 mm. in diameter, up to 1 mm. tall, white or gray; peridium firm, dull brown, frosted with lime crystals, breaking irregularly; stalk when present short, stout, fluted, opaque, dull black, often completely immersed in the umbilicate base of the sporangium, when longer sometimes paler above; columella prominent, hemispheric, dark or pallid, calcareous; columella of stout, sparingly branched, pale or purplish, sinuous threads often bearing dark, nodular thickenings; spores black in mass, dull purplish-brown by transmitted light, strongly spinulose, 10–14 μ in diameter; plasmodium colorless or dull gray.

TYPE LOCALITY: Europe.
HABITAT: Dead wood, twigs and leaves.
DISTRIBUTION: Throughout temperate North America; cosmopolitan.
ILLUSTRATIONS: Schrad. Nov. Gen. Pl. *pl. 5, f. 6;* Sow. Engl. Fungi, *pl. 240;* Lister, Mycet. ed. 3. *pl. 112, a–c.*
EXSICCATI: Sydow, Myc. Germ. *1800;* Ellis & Ev. N. Am. Fungi *2085* (as *Physarum cinereum*), *2689;* Jaap, Myxom. Exs. *12, 71, 91.*

13. **Didymium minus** (Lister) Morgan, Jour. Cinc. Soc. Nat. Hist. 16: 145. 1894.

Didymium farinaceum β minus Lister, Mycet. 97. 1894.
Didymium melanospermum var. *minus* G. Lister in Lister, Mycet. ed. 3. 115. 1925.

Sporangia stalked, gregarious, depressed-globose, umbilicate below, whitish or gray, 0.4–0.6 mm. in diameter, rarely exceeding 0.8 mm. in total height, occasionally subplasmodiocarpous; peridium delicate, dull, frosted with lime crystals; stalk erect, rather slender, black, faintly striate, opaque and granular, about equal to the diameter of the sporangium, sometimes shorter, rarely lacking; columella dark brown to sordid whitish, globose or depressed-globose, rough, attaining about the center of the sporangium; capillitium delicate, almost colorless, sparsely branched, radiating; spores black in mass, violet by transmitted light, minutely warted, 8–11 μ in diameter; plasmodium dark purplish-gray.

TYPE LOCALITY: England.
HABITAT: Dead bark and litter.
DISTRIBUTION: Probably throughout North America; cosmopolitan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 112, d–f.*
EXSICCATI: Brândză, Myxom. Roum. *90*(IU).

14. **Didymium nigripes** (Link) Fries, Syst. Myc. 3: 119. 1829.

Physarum nigripes Link, Ges. Nat. Freunde Berlin Mag. 3: 27. 1809.
Physarum microcarpon Fries, Symb. Gast. 23, as syn. 1818.
Didymium microcephalum Chev. Fung. & Byss. Ill. *f. 2.* 1837.
Didymium porphyropus Dur. & Mont.; Durieu, Fl. Algér. Bot. 1: 409. 1848.
Didymium microcarpon Rost. Monog. 157. 1874.
Didimium tenue Pat. & Gaill. Bull. Soc. Myc. Fr. 4: 96. 1888.

Sporangia gregarious, stalked, globose or hemispheric, somewhat umbilicate beneath, 0.3–0.5 mm. in diameter, the total height up to 1.5 mm.; peridium smoky, covered with white calcareous crystals; columella dark brown, subglobose, calcareous within; stalk slender, erect, dark brown, shining, translucent; hypothallus scutate, black; capillitium delicate, the threads pale or colorless, bearing occasional thickenings, sparingly branched; spores dark in mass, pale violaceous by transmitted light, minutely warted, 7–10 μ in diameter; plasmodium gray or colorless.

TYPE LOCALITY: Germany.
HABITAT: Dead leaves, herbaceous stems, and twigs, less commonly on wood.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 102, a–c.*
EXSICCATI: Ellis, N. Am. Fungi *1393;* Jaap, Myxom. Exs. *46, 176;* Brândză, Myxom. Roum. *37* (NY).

15. **Didymium Iridis** (Ditmar) Fries, Syst. Myc. 3: 120. 1829.

Cionium Iridis Ditmar in Sturm, Deuts. Fl. Pilze 1: 13. 1813.
Cionium xanthopus Ditmar in Sturm, Deuts. Fl. Pilze 1: 87. 1816.
Didymium xanthopus Fries, Syst. Myc. 3: 120. 1829.
Physarum xanthopus Schw. Trans. Am. Phil. Soc. II. 4: 257. 1832.
Didymium pertusum Berk. in Smith, Engl. Fl. 5²: 313. 1836.
Didymium proximum Berk. & Curt.; Berk. Grevillea 2: 52. 1873.
Didymium elegantissimum Massee, Monog. 243. 1892.
Didymium nigripes γ xanthopus Lister, Mycet. 98. 1894.

Sporangia gregarious, stalked, globose or somewhat depressed, with a small umbilicus, white, 0.4–0.6 mm. in diameter, their total height to 1.5 mm.; peridium thin, nearly or quite colorless, more or less densely covered with white lime crystals; stalk cylindric or somewhat attenuate upwards, erect, slender, striate, yellow or yellowish-brown, translucent; columella white or whitish, turbinate, depressed-globose or subglobose; capillitium delicate, of colorless or pale purplish-brown, branching threads, always white at the tips; spores brown in mass, pale violet-brown by transmitted light, faintly warted or nearly smooth, 7–9 μ in diameter; plasmodium yellowish-white, pale flesh-color or green.

TYPE LOCALITY: Germany.
HABITAT: Dead leaves, mosses, twigs, and dead wood.
DISTRIBUTION: Throughout North America; cosmopolitan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 102, e–g.*
EXSICCATI: Ellis, N. Am. Fungi *412;* Jaap, Myxom. Exs. *47;* Brândză, Myxom. Roum. *38*(NY).

16. **Didymium megalosporum** Berk. & Curt.; Berk. Grevillea 2: 53. 1873.

Didymium eximium Peck, Ann. Rep. N. Y. State Mus. 31: 41. 1879.
Didymium fulvellum Massee, Monog. 237. 1892.
Didymium nigripes β eximium Lister, Mycet. 98. 1894.

Sporangia gregarious, stalked, depressed-globose, discoid, or umbilicate and subannulate, often distorted, grayish-yellow or gray, 0.4–0.6 mm. in diameter, to 1.5 mm. tall; peridium membranous, often yellowish or ochraceous-brown, rather sparsely clothed with white or yellowish lime crystals; stalk slender, cylindric, striate, pale yellow-brown to orange, translucent except at the base which is usually darker; columella prominent, subglobose to discoid, rough or spiny above, dull yellow or orange-brown; capillitium scanty, pallid or smoky, netted; spores black in mass, violaceous-brown by transmitted light, minutely warted to nearly smooth, 8–10 μ in diameter.

TYPE LOCALITY: South Carolina.
HABITAT: Dead leaves and plant litter.
DISTRIBUTION: Maine to Ontario, south to South Carolina, Colorado, and Mexico; Europe; Asia.
ILLUSTRATION: Lister, Mycet. ed. 3. *pl. 102, d.*
EXSICCATI: Ellis & Ev. N. Am. Fungi *2089, 2493;* Jaap, Myxom. Exs. *92.*

17. **Didymium vaccinum** (Dur. & Mont.) Buchet; Buch., Cherm. & Evrard, Bull. Soc. Myc. Fr. 36: 110. 1920.

Diderma vaccinum Dur. & Mont.; Durieu, Expl. Sci. Algér. Bot. 1: 407. 1848.
Chondrioderma vaccinum Rost. Monog. 180. 1874.
Didymium Trochus Lister, Jour. Bot. 36: 164. 1898.

Sporangia scattered, short-stalked or sessile, rarely plasmodiocarpous, hemispheric or turbinate, 0.6–1 mm. in diameter, white to pale ochraceous; peridium double, the outer layer shell-like, smooth, composed of closely compacted lime-crystals, the inner layer membranous, yellowish-brown, the two layers adherent and attached to the margin of the very large, hemispheric, ochraceous columella; stalk, when present, short, stout, calcareous, furrowed; capillitium sparse, the threads sparsely branched, colorless or pale purplish-brown, sometimes bearing vesicular enlargements which may contain lime-crystals; spores black in mass, purplish-brown by transmitted light, strongly warted, 9–12 μ in diameter; plasmodium bright yellow.

TYPE LOCALITY: Algeria.
HABITAT: Decaying leaves and straw and desert succulents.
DISTRIBUTION: California; Europe; Algeria; Japan.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 106.*
EXSICCATI: Jaap, Myxom. Exs. *192.*

18. **Didymium Listeri** Massee, Monog. 244. 1892.

Sporangia sessile, pulvinate to plasmodiocarpous, attaining a length of 12 mm. or more, 0.3–0.5 mm. thick, white; peridium double, the outer layer shell-like, composed of closely compacted lime-crystals, the surface coated with a powdery layer of loose crystals, the inner layer delicate, membranous, dark, adherent; columella none; capillitium profuse, the threads dark purplish-brown or pallid, connected by transverse bars and joined by the pale tips to the inner peridial wall; spores grayish-violet, nearly smooth, 9–11 μ in diameter; plasmodium watery-white.

TYPE LOCALITY: England.
HABITAT: Dead leaves and stems.
DISTRIBUTION: Iowa, Kansas, Bermuda; Europe.
ILLUSTRATIONS: Massee, Monog. *pl. 4, f. 97–101;* Lister, Mycet. ed. 3. *pl. 105* (as *Didymium dubium*).
EXSICCATI: Jaap, Myxom. Exs. *153.*

19. **Didymium difforme** (Pers.) S. F. Gray, Nat. Arr. Brit. Pl. 1: 571. 1821.

Diderma difforme Pers. Tent. Disp. Fung. 9. 1797.
Licea caesia Schum. Enum. Pl. Saell. 2: 219. 1803.
*Amphisporium versicolor** Link, Ges. Nat. Freunde Berlin Mag. 7: 41. 1813.
Didymium cyanescens Fries, Symb. Gast. 19. 1818.
Licea alba Nees in Kunze & Schmidt, Myk. Hefte 2: 66. 1823.
Lycogala minuta Grev. Scot. Crypt. Fl. *pl. 40.* 1823.
Reticularia pusilla Fries, Syst. Orbis. Veg. 147. 1825.
Diderma cyanescens Fries, Syst. Myc. 3: 109. 1829.
Physarum album Fries, Syst. Myc. 3: 147. 1829.
Diderma Libertianum Fresen. Beitr. Mykol. 28. 1850.
Didymium Libertianum De Bary, Mycet. 124. 1864.
Chondrioderma difforme Rost.; Fuckel, Jahrb. Nass. Ver. Nat. 27–28: 74. 1873.
Chondrioderma liceoides Rost. Monog. Append. 17. 1876.
Diderma Persoonii Macbr. N. Am. Slime-Moulds 96. 1899.
Didymium tubulatum Jahn, Ber. Deuts. Bot. Ges. 36: 663. 1919.

Sporangia sessile, gregarious, flat-pulvinate, 0.3–1 mm. broad, varying to short, netted or effused plasmodiocarps up to 25 mm. in length, smooth, white; peridium double, the outer wall crustose, *Diderma*-like, composed of densely aggregated lime crystals, the inner wall delicate, purplish or colorless, iridescent; capillitium usually scanty, sometimes profuse, of purple or nearly colorless, dichotomously branching threads, often rather coarse below, slender above; columella lacking or represented by the purplish, thickened calcareous base; spores black in mass, dark purple-brown or purplish-gray by transmitted light, faintly warted or smooth, 11–14 μ in diameter; plasmodium colorless or yellow.

TYPE LOCALITY: Europe.
HABITAT: Dead leaves, herbaceous stalks, and dung of herbivorous animals.
DISTRIBUTION: Quebec to Manitoba and Washington (state), south to Pennsylvania and California; South America; Europe; Japan.
ILLUSTRATIONS: Grev. Scot. Crypt. Fl. *pl. 40;* Lister, Mycet. ed. 3. *pl. 104.*
EXSICCATI: Sydow, Myc. Germ. *1799;* Jaap, Myxom. Exs. *11, 29, 69, 108, 174;* Brândză, Myxom. Roum. *40*(NY).

20. **Didymium quitense** (Pat.) Torrend, Broteria 7: 90. 1908.

Chondrioderma quitense Pat.; Pat. & Lagerh. Bull. Soc. Myc. Fr. 11: 212. 1895.

Fructification in the form of pulvinate, depressed sporangia 0.4–1 mm. in diameter, varying to short plasmodiocarps up to 5 mm. long, gregarious or scattered, white; peridium double, the outer layer smooth or slightly roughened, composed of small, closely compacted lime-crystals, remote from the thin, membranous, iridescent inner wall; capillitium rather sparse, the threads brownish-purple, of nearly uniform size, branching and anastomosing; spores black in mass, dark purplish-brown by transmitted light, strongly roughened, the warts more or less united to form an imperfect or rather pronounced reticulate pattern, (13–) 15–17 μ in diameter.

TYPE LOCALITY: Ecuador.
HABITAT: Herbaceous stems and leaves and dead wood.
DISTRIBUTION: Montana, Colorado, California; Ecuador.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 218, f–h.*

21. **Didymium trachysporum** G. Lister, Essex Nat. 20: 113. 1923.

Fructification sporangiate, hemispheric, scattered, 0.2–0.6 mm. in diameter, or forming slender, curved, simple, branched or annulate plasmodiocarps, white or cream-colored; peridium double, the outer layer a smooth or wrinkled crust of closely compacted lime-crystals, the inner layer membranous, colorless, somewhat iridescent; columella rudimentary or lacking, replaced by the pale yellow sporangial base, which is thickened at the margin and bears scanty or rarely abundant deposits of lime crystals; capillitium rather scanty, variable, consisting usually of a network of colorless or purplish, stout or slender threads, sometimes bearing vesicular expansions which enclose lime-crystals; spores black in mass, dark purplish-brown by transmitted light, strongly and coarsely warted, the warts sometimes arranged in lines to form an imperfect reticulation, 9–10 μ in diameter; plasmodium colorless.

* By error "St. versicolor."

TYPE LOCALITY: England.
HABITAT: Dead leaves, herbaceous stalks, and decayed wood.
DISTRIBUTION: Oregon; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 218, a–e.*

DOUBTFUL AND EXCLUDED SPECIES

DIDYMIUM RUGULOSUM Berk. Lond. Jour. Bot. 4: 308. 1845. Described from Ohio. The description is too vague to be recognizable.

4. LEPIDODERMA De Bary; Rost. Versuch 13. 1873.

Sporangiate, stalked or sessile, or plasmodiocarpous. Peridium cartilaginous, bearing large, crystalline, calcareous scales. Capillitium rigid, branching, limeless except in a single species.

Type species, *Didymium tigrinum* Schrad.

Stipitate, the stalk bright orange-brown, rarely sessile, on an orange-brown hypothallus. 1. *L. tigrinum.*
Typically sessile or plasmodiocarpous; stalk, when present, dark.
  Subglobose, pulvinate or forming short plasmodiocarps; spores minutely warted, 10–13 μ in diameter. 2. *L. Chailletii.*
  Usually distinctly plasmodiocarpous; spores strongly warted, larger.
    Capillitium dark, not vesicular; spores mostly 11–15 μ in diameter. 3. *L. Carestianum.*
    Capillitium usually pallid, bearing vesicles which enclose calcareous accretions; spores mostly 15–20 μ in diameter. 4. *L. granuliferum.*

1. Lepidoderma tigrinum (Schrad.) Rost.; Fuckel, Jahrb. Nass. Ver. Nat. 27–28: 73. 1873.

Didymium tigrinum Schrad. Nov. Gen. Pl. 22. 1797.
Physarum squamulosum Pers. Syn. Fung. 174. 1801.
Physarum tigrinum Pers. Syn. Fung. 174. 1801.
Trichia squamulosa Poir. in Lam. Encyc. 8: 53. 1808.
Trichia tigrina Poir. in Lam. Encyc. 8: 53. 1808.
Leangium squamulosum Fries, Stirp. Fems. 83. 1826. (Nomen nudum.)
Didymium rufipes Fries, Syst. Myc. 3: 116. 1829.
Diderma citrinum Berk. in Smith, Engl. Fl. 5^2: 310. 1836.
Lepidoderma fulvum Massee, Monog. 253. 1892.

Sporangia stipitate, rarely sessile, subglobose or somewhat flattened, umbilicate below gregarious or scattered, 0.8–1.5 mm. in diameter, olive or purplish-gray, the surface incompletely covered with rounded or angular crystalline plates of lime; peridium cartilaginous, opaque, dark gray or dull orange-brown; stalk 1–2 mm. tall, stout, furrowed, bright orange-brown, spongy, with orange lime-granules secreted inside; hypothallus dull yellow or orange-brown; columella large, hemispheric, orange, similar to the stalk and containing similar lime-granules; capillitium profuse, the dark, sparingly branched, straight or flexuous threads radiating from the columella; spores black in mass, dull purplish-brown by transmitted light, minutely spinulose, 10–13 μ in diameter; plasmodium orange-yellow.

TYPE LOCALITY: Germany.
HABITAT: Rotten coniferous wood among mosses and lichens.
DISTRIBUTION: Maine to British Columbia, south to North Carolina and California, chiefly in regions of coniferous forest; Europe; Japan.
ILLUSTRATIONS: Schrad. Nov. Gen. Pl. *pl. 6, f. 2, 3;* Rost. Monog. *pl. 9, f. 159, 160;* Lister, Mycet. ed. 3. *pl. 114;* Univ. Iowa Stud. Nat. Hist. 14^8: *pl. 4, f. 28;* Macbr. & Mart. Myxom. *pl. 10, f. 212, 213;* Hagelst. Mycet. N. Am. *pl. 10, f. 4.*
EXSICCATI: Jaap, Myxom. Exs. *48, 155;* Brândză, Myxom. Roum. III. 1: *15*(NY); *84*(IU).

2. Lepidoderma Chailletii Rost. Monog. 189. 1874.

Lepidoderma Carestianum var. *Chailletii* G. Lister in Lister, Mycet. ed. 2. 140. 1911.

Sporangia subglobose to pulvinate, 0.5–1 mm. in diameter, sessile or with a weak strand-like stalk arising from the hypothallus, often fusing or forming short plasmodiocarps, dull gray

or drab, the cartilaginous peridium sprinkled with small, crystalline, limy scales, these often rather sparse; columella variable, pale or dark brown or rarely orange, clavate or hemispheric, or absent; stalk, when present, short, weak, brown; capillitium abundant, rigid, purple-brown, sparingly branched and anastomosing; spores nearly black in mass, smoky but not dark purple-brown by transmitted light, spinulose, 10–13 μ in diameter; plasmodium dirty white.

TYPE LOCALITY: Bohemia.
HABITAT: Dead leaves, twigs, and bark.
DISTRIBUTION: Oregon, California; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 116.*
EXSICCATI: Jaap, Myxom. Exs. *133* (as *L. Carestianum*).

3. **Lepidoderma Carestianum** (Rab.) Rost. Monog. 188. 1874.

Reticularia Carestiana Rab. Fungi Eur. *436.* 1862.
Amaurochaete minor Sacc. & Ell. Michelia 2: 566. 1882.

Plasmodiocarps pulvinate or flattened, irregular, to 15 mm. long and 1 mm. thick, varying to subsporangiate, the fructifications ellipsoid or elongate, more or less confluent; rarely sporangiate and with a short, thick stipe formed by modification of the hypothallus; peridium cartilaginous, brown or brownish-gray, more or less clothed with white or yellowish crystalline scales; columella pulvinate, flattened, dark, spongy within, enclosing calcareous masses, sometimes scarcely more than a thickened base; capillitium coarse, rigid, the threads purple-brown, branching and anastomosing and usually bearing beadlike thickenings; spores black in mass, dark purple-brown by transmitted light, closely warted or spiny, 11–15 (–18) μ in diameter; plasmodium black.

TYPE LOCALITY: Italy.
HABITAT: Plant litter of various sorts.
DISTRIBUTION: New Hampshire, Utah, Washington, Oregon, California; Europe.
ILLUSTRATION: Lister, Mycet. ed. 3. *pl. 115, a.*
EXSICCATI: Rab. Fungi Eur. *436* (TYPE); Jaap, Myxom. Exs. *111;* Thaxter, Rel. Farl. *405.*

4. **Lepidoderma granuliferum** (Phill.) R. E. Fries, Ark. Bot. 6^7: 3. 1906.

Didymium granuliferum Phill. Grevillea 5: 114. 1877.
Badhamia granulifera Phill.; Massee, Monog. 321. 1892.
Lepidoderma Carestianum var. *granuliferum* G. Lister in Lister, Mycet. ed. 2. 140. 1911.

Plasmodiocarps simple or branched, rarely exceeding 10 mm. in length, varying to pulvinate or subsporangiate, sessile, often anastomosing, white to pinkish-gray or drab; peridium cartilaginous, dark gray or dull yellow, sometimes iridescent, sprinkled with limy scales or the scales sometimes united to form an outer wall remote from the peridium; columella pulvinate, dark, not conspicuous; capillitium rough, the threads branching and anastomosing to form a close net, many of the nodes enlarged and filled with crystalline lime; spores black in mass, dark purple-brown by transmitted light, densely spinulose, 15–20 μ in diameter.

TYPE LOCALITY: Blue Cañon, California.
HABITAT: Herbaceous stems and bark.
DISTRIBUTION: Utah, Washington, California.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 115, b–d* (as *L. Carestianum*).

5. **LEPTODERMA** G. Lister, Jour. Bot. **51**: 1. 1913.

Sporangiate. Peridium membranous above, thickened at the base with dark granular material in which small calcareous scales are often imbedded. Capillitium netted. Spores dark.

Type species, *Leptoderma iridescens* G. Lister.

1. **Leptoderma iridescens** G. Lister, Jour. Bot. **51**: 1. 1913.

Sporangia scattered or loosely clustered, subglobose, sessile or rarely short-stalked, grayish-purple, glossy, iridescent, 0.5-0.8 mm. in diameter; peridium nearly hyaline above, purplish below, where it is thickened with granular material and often includes crystalline flakes of lime 2–15 μ in diameter; stalk when present stout, dark, spreading below into the dark hypothallus; columella dark and convex, or lacking; capillitium a persistent network of flexuous, dark purple threads radiating from the base of the sporangium, the tips and bases of the threads colorless or pale, the bases often expanded or tubular and enclosing granular matter; spores black in mass, purplish-gray by transmitted light, spinulose, 10–12 μ in diameter; plasmodium gray or drab.

TYPE LOCALITY: England.
HABITAT: Dead leaves, stems and wood.
DISTRIBUTION: Colorado; Europe.
ILLUSTRATIONS: Lister, Mycet. ed. 3. *pl. 131, h, i; pl. 218, i–m.*

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Engler, Heinrich Gustav Adolf, 1844–1930; Prantl, Karl Anton Eugen, 1849–1893 (E. & P.).

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In 4 parts containing 23 divisions, with 4 sets of additions to parts 2–4, and index to the whole.

Fairman, Charles Edward, 1856–1934 (Fairman).

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Farquharson, Charles Ogilvie, 1888–1918; Lister, Gulielma, 1860– (Farq. & Lister).

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Fresenius, Johann Baptist Georg Wolfgang, 1808–1866 (Fresen.).

Beitr. Mykol. 1–108. *pl. 1–13.* 1850–1863.—Beiträge zur Mykologie.
1–38. *pl. 1–4.* Au 1850. 81–108+Vorwort, t.-p. *pl. 10–13.* [Au] 1863.
39–80. *pl. 5–9.* O 1852.

Fries Elias Magnus, 1794–1878 (Fries).

Fl. Scan. I–XXIV, 1–394. 1835.—Corpus florarum provincialium Sueciae. I. Floram scanicam scripsit. . . .

Stirp. Fems. 1–100. 1825, 1826.—Stirpium agri femsionensis index, observationibus illustrata.

Summa Veg. Scand. 1–258. 1845. 259–572. 1849—Summa vegetabilium Scandinaviae.

Symb. Gast. 1–25. 1817–1818—Symbolae gasteromycorum ad illustrandam floram suecicam.

1–8. My 1817. 17–25. 3 Je 1818. "Fascic. III."

9–16. 4 Je 1817. "Fascic. II."

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1: I–LVII, errata, 1–520. 1821.

2: 1–274. 1822.

2: 275–620. 1823.

3: I–VIII, 1–259. 1829. [p. 161 misnumbered "611."]

3: 261–524. 1832. [last 2 pp. are misnumbered "253" and "245."]

Syst. Orbis Veg. 1–374. 1825.—Systema orbis vegetabilis. Primas lineas novae constructionis. Pars I. Plantae homonemeae.

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Ark. Bot. 1: 57–70. 29 My 1903.—Myxomyceten von Argentinien und Bolivia.

Ark. Bot. 6⁷: 1–9. 6 S 1906.—Myxomycetfloran i de jämtländska fjälltrakterna.

Sv. Bot. Tidskr. 4: 253–262. 25 F 1911.—Några ord om Myxomycetenfloran i torne Lappmark.

Fuckel, Karl Wilhelm Gottlieb Leopold, 1821–1876 (Fuckel).

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Jahrb. Nass. Ver. Nat. 27–28: 1–99. *1 pl.* 1873 [? 1874].—Symbolae mycologicae. Beiträge zur Kenntniss der rheinischen Pilze. Zweiter Nachtrag.

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Meth. Fung. 1–162+index. *pl. 1–6.* 1753.—Methodus fungorum exhibens genera, species et varietates cum charactere, differentia specifica, synonomis, solo, loco et observationibus.

Gmelin, Johann Friedrich, 1748–1804 (J. F. Gmel.).

Syst. Nat. 1788–1793.—Caroli a Linné Systema naturae per regna tria naturae, secundum classes, ordines, genera, species; cum characteribus, differentiis, synonymis, locis. Editio decima tertia, aucta, reformata.

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2: 1–1661. 1791.

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Mycologia 20: 101–113. 1 Mr 1928.—Contributions to our knowledge of western Montana Fungi—I. Myxomycetes.

Gray, Samuel Frederick, 1766–1836 (S. F. Gray).

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1: i–xxviii, 1–824. *pl. 1–21.* 2: i–viii, 1–757.

Greville, Robert Kaye, 1794–1866 (Grev.).

Fl. Edin. i–lxxxi, 1–478. *pl. 1–4.* 1824.—Flora edinensis: or a description of plants growing near Edinburgh arranged according to the Linnaean system. With a concise introduction to the natural orders of the Class Cryptogamia, and illustrative plates.

Scot. Crypt. Fl. *pl. 1–360.* 1822–1828.—Scottish cryptogamic flora, or coloured figures and descriptions of cryptogamic plants, belonging chiefly to the order Fungi; and intended to serve as a continuation of English Botany.

Issued in 72 monthly parts of 5 plates each, the text not paged.

pl. 1–30.	1822.	*pl. 211–270.*	1826.
pl. 31–90.	1823.	*pl. 271–330.*	1827.
pl. 91–150.	1824.	*pl. 331–360.*	1828.
pl. 151–210.	1825.		

Hagelstein, Robert, 1870–1945 (Hagelst.).

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Mycologia **32**: 376–387. 1 Je 1940.—Notes on the Mycetozoa—IV.

Mycologia **33**: 294–309. 1 Je 1941.—Notes on the Mycetozoa—V.

Mycologia **34**: 116–118. *f. 1.* 1 F 1942.—A new species of Mycetozoa.

Mycologia **34**: 248–262. 1 Je 1942.—Notes on the Mycetozoa—VI.

Mycologia **34**: 593, 594. 1 D 1942.—A new genus of the Mycetozoa.

Mycologia **35**: 130, 131. 1 F 1943.—Mycetozoa: a new combination.

Haller, Albert von, 1708–1777 (Hall.).

Hist. Stirp. Helv. 1768.—Historia stirpium indigenarum Helvetiae inchoata.

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2: 1–323. *pl. 21–44.*	

Hattori,

Myxom. Nasu [key+] 1–280. *320 f., pl. 1–23* [in color]. 1935.—Myxomycetes of Nasu District.

Text in Japanese.

Hazslinszky von Hazslin, Friedrich August, 1818–1896 (Hazsl.).

Oesterr. Bot. Zeits. **27**: 83–85. Mr 1877.—Ein neuer Myxogasteren-Typus.

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Samml. Phys. Naturg. **2**: 273–280. *unnumb. pl.* 1780.—Von einem sehr kleinen bey Chemnitz gefundenden Bovist.

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Samml. **1**: 1–208. *pl. 1–5.* 1793. **2**: 1–176. *pl. 1.* 1797.—Sammlung seiner zerstreuten Abhandlungen und Beobachtungen über botanisch-ökonomische Gegenstande.

Hennings, Paul Christoph, 1841–1908 (P. Henn.).

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Fl. Tasm. 1855–1859.—The botany of the Antarctic voyage of H. M. discovery ships Erebus and Terror in the years 1839–1843. . Part III. Flora Tasmaniae.
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Editio altera, emendata et aucta.

Jaap, Otto, 1864–1922 (Jaap).
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21–40.	1908.	*101–120.*	1912.
41–60.	1909.	*121–140.*	1913.
61–80.	1909.	*141–160.*	1914.
		161–200.	1917.

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Jacquin, Nikolaus Josef von, 1727–1817 (Jacq.).
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Title also in English: On the morphology and systematical value of the mycetozoon *Kleistobolus pusillus* Lippert.

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501–700.	1844.	*1201–1300.*	1849.	*1701–1800.*	1853.
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Lamarck, Jean Baptiste Antoine Pierre Monnet de, 1744–1829 (Lam.).

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Léveillé, Joseph Henri, 1796–1870 (Lév.).

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101–200. 1832. *301–400.* 1837.

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2: I–533. 1831.

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Linnaeus, Carl, 1707–1778 (L.).

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Lippert, Christian, –1899 (Lippert).

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Lister, Arthur, 1830–1908 (Lister).

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Jour. Bot. **35**: 209–218. Je 1897.—Notes on some rare species of Mycetozoa.

Jour. Bot. **36**: 113–122. *pl. 385.* Ap 1898.—Mycetozoa of Antigua and Dominica.

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Jour. Bot. 51: 1–4. *pl. 524, 525.* Ja 1913.—New Mycetozoa.

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Jour. Bot. 57: 105–111. My 1919.—Mycetozoa recorded as British since 1909.

Jour. Bot. 59: 89–93. *pl. 558.* Ap 1921.—New or rare species of Mycetozoa.

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Meylan, Charles, 1868–1941 (Meylan).

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551–650.	O	1907.	*2251–2450.*	F	1929.
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Dates are conjectural. Latest works reviewed in Heft 1 are of 1817, in Heft 2 of 1818, in Heft 2 of 1819. It is plain from Link's "Vorrede" that the three parts appeared separately. Cf. also part 2. p. 59, note. Part 2 was being prepared for the press in 1818—see obituary notice of Bergius on p. 167, also Chamisso's return on p. 191. Only date on volume is 1820, date of completion.

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* Compiled by Gussie Mildred Miller.

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10^1: 1–76. 10^2: 77–144. 10^3: 145–226. 10^4: 227–276. 10^5: 277–348. (Agaricales:) Agaricaceae (pars).

11^1: 1–102. *pl. 1–36.* Oedogoniales: Oedogoniaceae.

14^1: 1–66. Sphaerocarpales: Sphaerocarpaceae, Riellaceae. Marchantiales: Ricciaceae, Corsiniaceae, Targioniaceae, Sauteriaceae, Rebouliaceae, Marchantiaceae.

15^1: 1–75. Sphagnales: Sphagnaceae. Andreaeales: Andreaeaceae. Bryales: Archidiaceae, Bruchiaceae, Ditrichaceae, Bryoxyphiaceae, Seligeriaceae. 15^2: 77–166. Dicranaceae, Leucobryaceae. 15^3: 167–202. *pl. 1–10.* Fissidentaceae.

$15A^1$: 1–62. *pl. 1–5.* (Bryales:) Orthotrichaceae.

16^1: 1–88. Ophioglossales: Ophioglossaceae. Marattiales: Marattiaceae. Filicales: Osmundaceae, Ceratopteridaceae, Schizaeaceae, Gleicheniaceae, Cyatheaceae (pars).

17^1: 1–98. Pandanales: Typhaceae, Sparganiaceae. Naiadales: Zannichelliaceae, Zosteraceae, Cymodoceaceae, Naiadaceae, Lilaeaceae. Alismales: Scheuchzeriaceae, Alismaceae, Butomaceae. Hydrocharitales: Elodeaceae, Hydrocharitaceae. Poales: Poaceae (pars). 17^2: 99–196. 17^3: 197–288. 17^4: 289–354. 17^5: 355–418. 17^6: 419–482. 17^7: 483–542. 17^8: 543–638. Poaceae (pars).

18^1: 1–60. 18^2: 61–112. 18^3: 113–168. 18^4: 169–240. 18^5: 241–312. 18^6: 313–392. 18^7: 393–478. 18^8: 479–504. (Poales:) Cyperaceae (pars).

19[1]: 1–60. Xyridales: Mayacaceae, Xyridaceae, Eriocaulaceae, Pontederiaceae. 19[2]: 61–228. Bromeliaceae.

21[1]: 1–93. Chenopodiales: Chenopodiaceae. 21[2]: 95–169. Amaranthaceae. 21[3]: 171–254. Allioniaceae. 21[4]: 255–339. Batidaceae, Petiveriaceae, Tetragoniaceae, Portulacaceae, Basellaceae.

22[1]: 1–80. Rosales: Podostemonaceae, Crassulaceae, Penthoraceae, Parnassiaceae. 22[2]: 81–191. Saxifragaceae, Hydrangeaceae, Cunoniaceae, Iteaceae, Pterostemonaceae, Hamamelidaceae, Altingiaceae, Phyllonomaceae. 22[3]: 193–292. Grossulariaceae, Platanaceae, Crossosomataceae, Connaraceae, Calycanthaceae, Rosaceae (pars). 22[4]: 293–388. 22[5]: 389–480. 22[6]: 481–560. Rosaceae (pars).

23[1]: 1–76. 23[2]: 77–136. 23[3]: 137–194. (Rosales:) Mimosaceae. 23[4]: 195–268. Krameriaceae, Caesalpiniaceae (pars). 23[5]: 269–349. Caesalpiniaceae (pars).

24[1]: 1–64. 24[2]: 65–136. 24[3]: 137–200. 24[4]: 201–250. 24[5]: 251–314. 24[6]: 315–378. 24[7]: 379–462. (Rosales:) Fabaceae (pars).

25[1]: 1–87. Geraniales: Geraniaceae, Oxalidaceae, Erythroxylaceae, Linaceae. 25[2]: 89–171. Tropaeolaceae, Balsaminaceae, Limnanthaceae, Koeberliniaceae, Zygophyllaceae, Malpighiaceae. 25[3]: 173–261. Rutaceae, Surianaceae, Simaroubaceae, Burseraceae. 25[4]: 263–326. Meliaceae, Trigoniaceae. Polygalales: Vochyaceae, Polygalaceae (pars). 25[5]: 327–383. Polygalaceae (pars), Dichapetalaceae.

29[1]: 1–102. Ericales: Clethraceae, Monotropaceae, Lennoaceae, Pyrolaceae, Ericaceae. 29[2]: 103–192. Asclepiadales: Apocynaceae.

32[1]: 1–86. 32[2]: 87–158. 32[3]: 159–228. 32[4]: 229–300. Rubiales: Rubiaceae (pars).

32A[1]: 1–134. Campanulales: Campanulaceae, Lobelioideae.

33[1]: 1–110. Carduales: Ambrosiaceae, Carduaceae (pars).

34[1]: 1–80. 34[2]: 81–180. 34[3]: 181–288. 34[4]: 289–360. (Carduales:) Carduaceae (pars).

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