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¹⁰
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THE

GENERA OF FUNGI

FREDERIC EDWARD CLEMENTS, Ph. D.

*Professor of Botany and Head of the Department of Botany
in the University of Minnesota*

MINNEAPOLIS
THE H. W. WILSON COMPANY
1909

Revised Dyff.

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FREDERIC E. CLEMENTS

PREFACE.

The present book is an outgrowth of a translation of the keys in the original eight volumes of Saccardo's "Sylloge Fungorum." This translation was mimeographed and bound for the use of classes in mycology. It immediately proved so convenient and usable that the preparation of a complete guide to the fungi was begun the same year. Many things have occurred during the past two years to delay the completion of the guide until this time. In its present form, the book is based upon Saccardo's great work, though in certain groups other authors have been followed, and in some cases, the discomycetes and lichens, the treatment amounts almost to a revision. The arrangement of the orders and families is different in a large measure, and in the distribution of the lichens is original. No attempt has been made to revise the genera, except where the treatment had lagged behind current practice, as is particularly true of the lichens. In some cases, genera have been included in others, but this is done only for the sake of the beginner, when the descriptions reveal no differences, and is by no means intended as a revision.

Questions of nomenclature have necessarily been left largely to one side, but no hesitation has been felt in making certain corrections. These have dealt mostly with mistaken or neglected transliteration, and with faulty composition. A considerable number of sesquipedalian words have been shortened, and the greater number of hybrid names have been corrected. These corrections have been made in such a way as to retain as much of the original name as possible. Corrections are indicated by the sign † with the original form in parenthesis below. New genera are designated by an asterisk, and are listed with their types on a later page.

The genera described in volumes 9-18 of the "Sylloge" have been included in the proper family keys. Genera placed under "incertae sedis" are excluded as a rule, since it is impossible to locate them definitely. A few genera occur more than once when they show the characters of two families, or when superficial and developmental features indicate different positions. An endeavor has been made to make the keys as consistent as possible, and as simple as is profitable. The mycologist must have a fair equipment of technical terms, as well as a Latin vocabulary, and the sooner these are acquired the better. In many cases, definiteness will seem to be lost by the use of such terms as "typically," "usually," etc., but the beginner must quickly learn that the line between families is rarely clear-cut, but often on the contrary most devious. The tyro must constantly be warned that some species belong as naturally in one family as in another, and must consequently be sought in more than one place. The color of a spore, the position of a perithegium, or the texture of a cup does not always

conform with a definite term, and the beginner must be governed accordingly.

While the writer is particularly indebted to Saccardo's "Sylloge Fungorum," he is also indebted to Thaxter's "Monograph of the Laboulbeniaceae," and his "Preliminary Diagnoses of New Species of Laboulbeniaceae," II-VI, for the material for the key to this group. The treatment of the Pezizales is largely that of Rehm's "Discomyceten," modified by the inclusion of the lichens. From Engler and Prant's "Pflanzenfamilien," material has been drawn in the monographs of the bacteria by Migula, of phycomycetes and other groups by Schröter and Lindau, and especially of the lichens by Zahlbruckner. The writer is also under heavy obligation to Dr. Edith Clements, for the preparation of the Glossary, and for much other work of preparation and of publication. His thanks are also due to Professor Raymond J. Pool for assistance in the original mimeograph copies.

FREDERIC EDWARD CLEMENTS.

The University of Minnesota,
June 1, 1909.

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Key to Orders and Families

- | | | |
|--|----------------------|----|
| I. Filaments one-celled, rarely septate, typically aquatic or endobiotic; propagation by fission or by conidia, the latter usually in sporangia; sex-cells typically present, uniting to form resting-spores | Phycomycetes | 1 |
| II. Filaments septate, typically saprophytic or epibiotic; conidia borne on conidiophores; sex-cells usually absent | | |
| 1. Spores in a hymenium composed of asci or club-shaped basidia | Ascomycetes | 2 |
| a. Spores in asci | Basidiomycetes | 5 |
| b. Spores on more or less club-shaped basidia | | |
| 2. Conidia on conidiophores of various form, not in asci or on true basidia | Fungi Imperfecti | 6 |
| Phycomycetes | | |
| I. True mycelium lacking or rudimentary | | |
| 1. Threads simple, globose to filamentous, often motile; propagating by fission or by conidia also | | |
| a. Cells single or in colonies, never forming plasmodium-like masses | Bacteriales | 7 |
| (1) Cells filamentous, not spirally twisted | | |
| (a) Filaments motile, sheathless | Beggiatoaceae | 7 |
| (b) Filaments non-motile, sheathed | Chlamydobacteriaceae | 7 |
| (2) Cells cylindrical to globose, spirally twisted when filamentous | | |
| (a) Cells more or less spirally twisted | Spirillaceae | 7 |
| (b) Cells not spirally twisted or curved | | |
| x. Cells oblong to cylindrical | Bacteriaceae | 8 |
| y. Cells globose or cuboid | Coccaceae | 8 |
| b. Cells secreting a gelatinous matrix and forming pseudoplasmodia, passing into cysts or spore-masses which are often stalked | Myxobactrales | 8 |
| 2. Threads absent or slightly developed; propagation by sporangia which produce zoogonids; sex-cells rare | Chytridiaceae | 9 |
| II. Mycelium present, typically well-developed and branched; propagation by zoogonids or by non-motile conidia borne in sporangia or on conidiophores; sex-cells usually present | | |
| 1. Aerial fungi propagating by conidia | | |
| a. Conidia typically in globose to cylindrical sporangia; mostly saprophytes; zygosporous | Mucoraceae | 12 |

b. Conidia single or in chains on conidiophores	Entomophthoraceae	14
(1) Typically parasitic on insects; zygosporous		
(2) Typically parasitic on leaves and stems; oosporous	Peronosporaceae	17
2. Typically aquatic fungi propagating by zoogonids		
a. Mycelium mostly well-developed	Saprolegniaceae	15
(1) Antheridial tube touching or penetrating oogone	Monoblepharidaceae	18
(2) Antherids producing antherozoids		
b. Mycelium more or less scanty, developing wholly or chiefly into sporangia and sex-organs	Ancylistaceae	16
Ascomycetes		
I. Asci completely or partly enclosed in a pericarp		
1. Asci in a perithecium		
a. Perithecia one to many on a receptacle; sex-organs present; typically on insects	Laboulbeniales	18
b. Perithecia not on a receptacle; sex organs very rare; rarely on insects	Sphaeriales	21
(1) Mycelium or subicle typically present; ostiole and paraphyses usually absent		
(a) Subicle white; perithecia usually with appendages; asci one to few, more or less ovoid	Erysibaceae	21
(b) Subicle dark or black; appendages mostly lacking; asci usually numerous, more or less cylindrical		
x. Perithecia more or less globose	Perisporiaceae	22
y. Perithecia clavate to cylindrical, often branched	Capnodiaceae	25
(2) Subicle usually absent; ostiole and paraphyses typically present		
(a) Perithecia fleshy or waxy, bright colored	Hypocreaceae	42
(b) Perithecia hard, membranous to carbonous, typically brown to black		
x. Perithecia distinct, not reduced to cavities or locules		
(x) Perithecia normally globose, single, clustered or in a stroma	Sphaeriaceae	25
m. Mycelium not forming a thallus with algae	Verrucariaceae	38
n. Mycelium forming a thallus		
(y) Perithecia flattened, dimidiate and radiate	Microthyriaceae	51
(z) Perithecia with a broad and compressed or a funnelform ostiole		
m. Ostiole broad and compressed, cleft; perithecia mostly carbonous	Lophiostomataceae	53
n. Ostiole elongate, then expanded and		

funnel form; perithecia mostly carbonous	Coryneliaceae	54
y. Perithecia reduced to locules in a stroma		
(x) Thallus absent		
m. Stromata mostly carbonous or membranous, not attached by a stipe-like point	Dothideaceae	48
n. Stromata subcarnose, attached by a stipe-like point	Coccoideaceae	50
(y) Thallus present	Mycoporaceae	50
2. Asci in a hysterothecium, i. e., a perithecium with a cleft-like ostiole, typically oblong to linear, rarely vertical	Hysteriales	54
a. Hysterothecium imperfect, dimidiate-scutate, but the ostiole a cleft		
b. Hysterothecium more or less elongate and rimose, or rounded and stellately cleft	Hemihysteriaceae	54
(1) Hysterothecium elongate, rimose, rarely vertical		
(a) Thallus absent	Hysteriaceae	55
(b) Thallus present	Graphidaceae	58
(2) Hysterothecium round to linear, ostiole more or less stellate or lobed; thallus present or absent	Arthoniae	58
3. Asci in an apothecium	Pezizales	61
a. Apothecia closed at first, then open, disk-shaped to cup-shaped, rarely elongate		
(1) Thallus lacking		
(a) Apothecia sunken, then erumpent, usually opening by lobes, rarely by a cleft		
x. Apothecia opening by stellate or irregular lobes or by a cleft		
(x) Apothecia dark, brown or black	Phaciaceae	61
m. Apothecia mostly carbonous or leathery; hypothecium thin		
n. Apothecia mostly membranous or horny; hypothecium thick	Tryblidiaceae	65
(y) Apothecia white or bright colored, typically waxy	Stictiaceae	62
y. Apothecia usually opening circularly, mostly leathery or horny, brown or black	Dermateaceae	65
(b) Apothecia typically superficial and opening circularly, usually waxy or fleshy but often carbonous, gelatinous or leathery		
x. Asci disappearing early; spores and paraphyses forming a mazaedium	Caliciaceae	70
y. Asci persistent; mazaedium lacking		

(x) Apothecia not branched-stipitate at the tips of branches	
m. Apothecia gelatinous	Bulgariaceae 66
n. Apothecia not gelatinous	
(m) Apothecia usually dark or black, carbonous to leathery, rarely waxy	Patellariaceae 68
(n) Apothecia usually bright colored, waxy to fleshy	
r. Apothecia typically waxy, on plant parts	
(r) Exciple brownish, parenchymatic all over or at the base; mostly sessile	Mollisiaceae 84
(s) Exciple concolorous, prosenchymatic; mostly stalked	Helotiaceae 86
s. Apothecia typically fleshy, usually terrestrial, often fimicole	
(r) Apothecia usually terrestrial, medium to large; asci mostly cylindrical, not exerted	Pezizaceae 88
(s) Apothecia usually fimicole; asci broad, exerted from disk at maturity	
(y) Apothecia branched-stipitate at the tips of branches	Ascobolaceae 92
(2) Thallus present	Cordieritaceae 92
(a) Asci disappearing early; disk with a mazaedium	
(b) Asci persistent; mazaedium absent	Caliciaceae 70
x. Thallus cottony, cobwebby or spongy; algae yellow-green	Chryso-trichaceae 72
y. Thallus more or less distinctly gelatinous; algae blue-green	Collemataceae 72
z. Thallus firm, layered, neither gelatinous nor cottony	
(x) Thallus of two sorts: one horizontal, the other erect, i. e., a podetium	
(y) Thallus of one sort only, horizontal or erect	Cladoniaceae 78
m. Spores typically 2-celled, with a thickened cross-wall, usually traversed by a narrow canal	
n. Spores without thickened cross-wall and intersecting canal	Physciaceae 83
(m) Apothecia sunken, or grown together with the thallus on the whole underside	
(n) Apothecia typically superficial when mature, not attached broadly	Peltophoraceae 75

r. Apothecia with proper exciple	Lecideaceae 76
s. Apothecia typically with thalline exciple	Parmeliaceae 78
b. Apothecia open from the first, stalked, saddle-shaped, pileate to club-shaped, terrestrial as a rule	Helvellaceae 90
4. Asci in a closed globose body or ascoma, containing cavities or veins	Tuberales 94
a. Ascomata epigean	
(1) Ascomata fleshy with locules at the margin, forming swellings on branches of living trees	Cyttariaceae 94
(2) Ascomata minute, waxy to subcarbonous, crowded with locules containing a single ascus each	Phymatosphaeriaceae 95
(3) Ascomata fragile, asci evanescent, then powdery within; epizoic	Onygenaceae 96
b. Ascomata hypogean	
(1) Ascomata woody, crustose or carbonous, powdery within	Elaphomycetaceae 96
(2) Ascomata fleshy or waxy, not powdery but veined or lacunose within	Tuberaceae 96
II. Asci exposed, apothecium lacking	
1. Spores free in the ascus	Gymnasciales 93
a. Asci parallel and crowded, usually deforming living plant parts	Exasaceae 93
b. Asci solitary or grouped irregularly, saprophytic or when parasitic scarcely deforming the host	Gymnascaceae 93
c. Asci abnormal, rare; mycelium poorly developed, propagating by budding	Saccharomycetaceae 94
2. Spore wall united with ascus wall, or asci disappearing at maturity	Uredinales 98
a. Spores and ascus united; acidia and uredinia often present	Uredinaceae 98
b. Asci disappearing early, leaving a firm or powdery spore-mass	Ustilaginaceae 101
Basidiomycetes	
I. Hymenium variously modified, exposed at maturity	Agaricales 102
1. Basidia septate crosswise or lengthwise, or furcate; usually gelatinous	Tremellaceae 103
2. Basidia not septate; pileus fleshy, waxy, leathery or woody	
a. Hymenium more or less uniform	
(1) Pileus funnel-form, dimidiate or resupinate	Thelephoraceae 106
(2) Pileus club-shaped, coralloid or filiform	Clavariaceae 105
b. Hymenium modified into teeth, pores or gills	
(1) Hymenium of teeth or granules	Hydnaceae 107
(2) Hymenium of pores or tubes	Polyporaceae 108

long to find

- (3) Hymenium of gills or gill-like veins
- II. Definite hymenium lacking; spore-mass gelatinous or powdery, typically enclosed in a peridium, or elevated at maturity
1. Gleba more or less gelatinous, enclosed at first in a volva, then raised on the receptacle
 2. Gleba firm or powdery, not gelatinous, enclosed in a peridium
 - a. Peridium epigean
 - (1) Gleba typically powdery or cellular, enclosed in a more or less globose peridium which opens irregularly or by a definite mouth
 - (2) Gleba in seed-like sporangioles which are borne in a more or less cup-shaped peridium
 - b. Peridium hypogean, closed
- Fungi Imperfecti**
- I. Conidia present
 1. Conidia in globose, cup-shaped or hysterooid pycnidia
 - a. Pycnidia fleshy or waxy, bright colored
 - b. Pycnidia typically membranous to carbonous, dark, brown or black
 - (1) Pycnidia more or less globose, rarely cylindrical
 - (2) Pycnidia dimidiate, shield-shaped
 - (3) Pycnidia disciform, cup-shaped or hysterooid
 2. Conidia not in pycnidia
 - a. Hyphae short or obsolete, borne on a matrix or stratum
 - b. Hyphae not on a matrix, typically well-developed, but sometimes short or even lacking
 - (1) Hyphae in more or less loose cottony masses
 - (a) Hyphae and conidia clear or bright colored
 - (b) Hyphae and conidia both typically dark or one or the other always dark
 - (2) Hyphae compactly united to form a globose to cylindrical body which is often stalked
 - (a) Hyphal body cylindrical to capitate, stalked, i. e., a synnema
 - (b) Hyphal body more or less globose, sessile, i. e., a sporodochium
 - II. Conidia lacking

Agaricaceae	110
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Lycoperdaceae	116
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Key to the Genera

Class 1. SCHIZOMYCETES

Typically one-celled fungi, dividing by fission in 1, 2 or 3 planes, sometimes forming true filaments, but then motile or sheathed, and without true branches; resting cells often developed; sexual reproduction lacking.

Order 1. BACTERIALES

Globose, rod-like or filamentous, single or in colonies, sometimes grouped into a loose mass (zoogloea), but never forming pseudoplasmodia or sporangium-like masses.

Family 1. BEGGIATOACEAE

MIGULA 40

Filaments simple, free, motile, continuous or septate, sheathless, usually filled with shining or yellowish sulphur granules.

Beggiatoa 8: 935

Family 2. CHLAMYDOBACTERIACEAE

MIGULA 35

Filaments simple or false-branched, typically attached, non-motile, septate, with a more or less conspicuous sheath; propagation by ciliate, creeping or non-motile conidia.

I. Cells without sulphur granules

1. Filaments simple

a. Fission always in one plane

Nocardia 8: 927

b. Fission in 3 planes during conidia formation

(1) Filaments marine, sheath very thin

Phragmidiothrix 8: 935

(2) Filaments fresh-water, sheath distinct

Crenothrix 8: 925

Cladothrix 8: 927

2. Filaments false-branched

Thiothrix 8: 934

II. Cells with sulphur granules

Family 3. SPIRILLACEAE

MIGULA 30

One-celled, more or less spirally twisted, rod-like or short-filamentous, usually motile by means of one to many flagella.

I. Cells stiff or rigid

- I. Flagella lacking
 2. Flagella present
 a. Flagellum 1, rarely 2-3, polar
 b. Flagella clustered, polar
- II. Cells flexible
- Spirosoma* M. 31
Microspira M. 31
Spirillum 8: 1006
Spirochaete 8: 1006

Family 4. BACTERIACEAE

MIGULA 20

One-celled, cells oblong to cylindrical, straight or at least never spirally curved, flagella often present.

- I. Flagella lacking
 II. Flagella present
 1. Flagella peripheral
 2. Flagella polar
- Bacterium* 8: 1020 ✓
Bacillus 8: 943
Pseudomonas M. 29

Family 5. COCCACEAE

MIGULA 15

One-celled, cells globose, usually flattened when grouped in rows or masses, flagella usually absent.

- I. Flagella lacking
 1. Fission in one plane, cells in rows
 2. Fission in two planes, cells in plates
 3. Fission in three planes, cells in bundles
- II. Flagella present
 1. Fission in two planes
 2. Fission in three planes
- Streptococcus* 8: 1054 ✓
Micrococcus 8: 1076
Sarcina 8: 1044 ✓
Planococcus M. 19
Planosarcina M. 20

Order 2. MYXOBACTRALES

Cells rod-like, motile, fission in one plane; cells secreting a gelatinous base and forming pseudoplasmodia, then passing into cysts, or spore-masses which are often stalked (cystophore).

Family 6. MYXOBACTERIACEAE

11: 460, T. 389

Characters of the order.

- I. Cells always rod-like, distinct cysts present
 1. Cysts free, usually on a cystophore
 2. Cysts one or more in a gelatinous matrix
- II. Cells finally forming rows of globose spores, no definite cysts
- Chondromyces* 14: 842
Myxobacter 14: 844 m. ✓
 (*Polyangium* 7: 47)
Myxococcus 14: 843 m. ✓

Class 2. CHLOROPHYCEAE

Typically one-celled or filamentous plants, for the most part chlorophyllous but

each order containing at least one fungous family; propagation by fission and zoogonids; sexual reproduction present in most.

Order 3. PROTOCOCCALES

Typically one-celled algae, usually dividing by fission and producing zoogonids; sexual reproduction often lacking; one fungous family.

Family 7. CHYTRIDIACEAE

7: 286, SCHROETER 65

Mycelium lacking or in the form of delicate protoplasmic threads, rarely of hyphae, one-celled; sporangiophore lacking or but slightly developed; sporangia producing zoogonids, thin-walled and ripening quickly, or thick-walled and resting for a time (resting sporangia); sexual reproduction present in a few forms, the sex organs scarcely distinguishable.

Key to the Subfamilies

- I. Resting sporangium asexual, rarely formed by the union of two zoogonids
 1. Mycelium completely lacking
 a. Sporangia separate, one formed from each fruit-mass
 Olpidiae
 b. Sporangia in sori, formed by division of fruit-mass
 Synchronytriae
2. Mycelium present
 a. Mycelium of delicate transient strands
 (1) Mycelium limited to one terminal sporangium
 Rhizidiae ✓
 (2) Mycelium extended, sporangia intercalary and terminal
 Cladochytriae ✓
 b. Mycelium consisting of permanent hyphae
 Hypochytriae ✓
- II. Sexual resting spores formed by union of two sporangia and passing of contents of one into the other
 Oochytriae
- III. Sexual spores formed by conjugation
 Zygochytriae

Subfamily Olpidiae

SCHROETER 67

Mycelium lacking; fruit-mass endobiotic, globose, elliptic, rarely subclavate, undivided, finally forming a simple zoosporangium or resting sporangium, in which zoospores are formed after a period of rest.

- I. Fruit-body amoeboid before maturity
Reessia 7: 304, S. 67 *R. amorbonensis* Fench
- II. Fruit-body without movement
 1. Sporangia free in the host-cell
 a. Membrane delicate, dissolving to free zoospores
Sphaerita 7: 314, S. 67 *S. endogena* Bang
- b. Membrane firm, with a definite opening
 (1) Sporangia globose or elliptic
 (a) Sporangia with 1, rarely 2, openings

1. Mycelium producing a single fruit-body *Polyphagus* 7: 302, S. 85
 2. Mycelium producing several fruit-bodies *Orophlyctis* 7: 303, S. 86

Subfamily Zygochytriae
 SCHROETER 87

Mycelium one-celled, upright, branched, producing zoospores and zygospores; zoosporangia single on ends of the branches, opening by a lid, zoospores one-ciliate; zygospores produced by the fusion of the end-cells of conjugating tubes, growing into a filament upon germination; intermediate between Chytridiaceae and Mucoraceae.

A single genus

Zygochytrium 7: 294, S. 87

Order 4. SPIROGYRALES

Typically one-celled or simple filamentous algae, without zoospores; sexual reproduction by the conjugation of similar gametes; two fungous families.

Family 8. MUCORACEAE

SCHROETER 119, 7: 182, 9: 335, 11: 239, 14: 432, 16: 383, 17: 494

Saprophytes, rarely parasites, with a well-developed branching mycelium in which cross-walls are absent; propagation by spores (conidia) arising within sporangia, the latter apparently reduced to chains of conidia in one family; reproduction by the union of the end-cells or gametes of conjugating tubes.

Key to the Subfamilies

- I. Sporangia always present, conidia sometimes present
- Columella present; zygospore naked or with a few appendages
 - Wall of the sporangium homogeneous, not cuticularized, diffluent
Mucorae
 - Wall cuticularized and persistent above, thin and diffluent below
Pilobolae
 - Columella absent; zygospore enveloped in a dense covering
Mortierellae
- T. dent*
Eudogonaceae
- II. Sporangia rarely present, conidia always present
- Conidia solitary; zygospore arising directly from the gametes
 - Sporangia present
Choanophorae
 - Sporangia lacking
Chaetocladiaceae
 - Conidia in chains; zygospore arising from outgrowths of gametes
Syncephalidae

Subfamily Mucorae
 7: 184, S. 123

Mycelium similar throughout or consisting of aerial and nutritive parts; sporangia alike or of two sorts, primary and accessory, the former with columella, the latter mostly without one; zygospore naked or with separate appendages arising from the suspensors.

- I. Sporangia similar
- Suspensors without appendages at maturity

(1) Aerial mycelium lacking

- Sporangia single, terminal
- Sporangia clustered, lateral
 - Sporangia globose
 - Sporangia long pear-shaped

(2) Aerial mycelium present

- (a) Aerial mycelium stoloniferous

(b) Aerial mycelium with many short thorn-like branches

b. Suspensors with thorny appendages at maturity

(1) Appendages spreading

(2) Appendages loosely enclosing the zygospore

2. Sporangiphore repeatedly dichotomous

II. Sporangia of two sorts, primary and secondary

1. Primary sporangia with, secondary without columella

2. Both kinds of sporangia with columella

Subfamily Pilobolae

7: 184, S. 123

Mycelium similar throughout; sporangia alike, with columella, sporangial wall cuticularized and persistent above; zygospores naked.

I. Sporangiphore equal, sporangium not thrown off

Pilaira 7: 188, S. 129

II. Sporangiphore swollen above, sporangium thrown off

Pilobolus 7: 184, S. 129

Subfamily Mortierellae

7: 184, S. 130

Sporangia similar, terminal, without columella; conidia single, spherical on short lateral branches of the aerial mycelium; zygospore enclosed in a dense mass of hyphae arising from the suspensors.

I. Sporangiphores erect, branches attenuate toward tip

Mortierella 7: 220, S. 130

II. Sporangiphores creeping, branches equal

Herpocliadiella 7: 225, S. 130

Subfamily Choanophorae

9: 339, S. 131

Mycelium parasitic on plant parts; sporangia and conidia both present; conidio-

phores simple or branched, bearing one-celled conidia; sporangioophores simple, sporangia with a small columella.
A single genus

✓ *Choanophora* 9: 339, S. 131

Subfamily Chaetocladidae

7: 220, S. 131

Mycelium parasitic on species of *Mucor*; propagation by conidia, sporangia lacking, conidia arising on short side branches; zygospore arising directly from the fused gametes.

A single genus

Subfamily Syncephalidae

7: 225, S. 132

Conidia in chains on short basidia borne on the end of the sporophores; zygospores arising as an outgrowth from the tips of the suspensors, after conjugation.

I. Sporophores not swollen at tip

✓ *Piptocephalis* 7: 225, S. 132

II. Sporophores swollen into a head at tip

1. Sporophore simple

✓ *Syncephalis* 7: 227, S. 132

2. Sporophore branched

✓ *Syncephalastrum* 7: 232, S. 134

Family 9. ENTOMOPHTHORACEAE

SCHROETER 134, 7: 280, 9: 340, 14: 437, 16: 388, 17: 510

Mycelium usually well-developed, tubular or filamentous, mostly parasitic or endozoic, rarely saprophytic, at first one-celled, then septate; propagation by one-celled conidia terminal on one-celled clavate conidiophores; zygospores globose.

I. Mycelium endozoic (in insects)

1. Conidia always present

a. Conidiophore simple, zygospores unknown, azygospores present

(1) Cystidia and holdfasts lacking; azygospores lateral

✓ *Empusa* 7: 281, S. 138

(2) Cystidia and holdfasts present; azygospores terminal

✓ *Lamia* S. 139

b. Conidiophore repeatedly branched, zygospores and azygospores present

✓ *Entomophthora* 7: 282, S. 139

✓ *Tarichium* 7: 284, S. 140

2. Azygospores alone present

II. Mycelium endophytic or saprophytic

1. Mycelium little developed, intracellular

✓ *Completeria* 7: 286, S. 140

2. Mycelium well-developed, not intracellular

a. Parasitic on fungi

✓ *Conidiobolus* 7: 285, S. 141

b. Saprophytic

✓ *Basidiobolus* 7: 285, S. 141

Order 5. VAUCHERIALES

Unicellular, multinucleate, saccate or filamentous algae and fungi; propagation by zoospores or conidia; sexual reproduction in the three fungous families by unlike gametes, produced in antherids and oogones.

Family 10. SAPROLEGNIAEAE

SCHROETER 93, 7: 264, 9: 345, 11: 244, 14: 450, 16: 395, 17: 519

Mycelium strongly developed, broadly filamentous, more or less branched; propagation by zoosporangia, producing ciliate, rarely non-motile, zoospores; sexual reproduction by antherids and oogones, their contents fusing by means of a connecting tube.

Key to the Subfamilies

- I. Vegetative mycelium broad, tubular, aquatic; zoosporangia cylindrical, of the same width as the mycelium
1. Filaments uniform, not constricted **Saprolegniae**
 2. Filaments constricted regularly **Leptomitae**
- II. Vegetative mycelium thin, mostly saprophytic on plant tissues; zoosporangia several times broader than the filaments **Pythiae**

Subfamily Saprolegniae

SCHROETER 96

Nutritive mycelium sunken in the substratum, finely branched, water mycelium tubular, repeatedly branched, cylindrical; zoosporangia narrowly cylindrical; oogones mostly terminal, globose, 1- to many-spored, antheridia clavate, the tube penetrating the oogone.

I. Zoospores escaping before germination

1. Zoosporangia cylindrical-clavate, zoospores several-rowed

a. Zoospores escaping together through a terminal pore

(1) Zoospores scattering upon escape

(a) Zoosporangia ovate ✓ *Pythiopsis* S. 97

(b) Zoosporangia cylindrical ✓ *Saprolegnia* 7: 268, S. 97

(2) Zoospores remaining massed about the pore

✓ *Achlya* 7: 274, S. 99

b. Zoospores not escaping through a common opening

(1) Each zoospore escaping singly through its own lateral pore

✓ *Dictyuchus* 7: 273, S. 99

(2) Zoospores freed by the falling apart of the whole sporangium

✓ *Thraustotheca* S. 100

2. Zoosporangia linear, zoospores 1-rowed

a. Zoospores scattering upon escape

✓ *Leptolegnia* S. 100

b. Zoospores remaining in a ball at the pore

✓ *Anaphomyces* 7: 276, S. 100

II. Zoospores germinating in the sporangium

✓ *Aplanes* S. 101

Subfamily Leptomitae

SCHROETER 101

Filaments thin, branched, divided by regular constrictions; zoosporangia cylindrical, pear-shaped or elliptic; oogones 1-spored.

I. Branches similar to the main stem

- I. Zoospores escaping singly from the pore
 Leptomitrus 7: 265, S. 101
 Apodachlya S. 102
- II. Branches different from the main stem
 1. Branches whorled
 Naegeliella S. 163
 2. Branches repeatedly umbellate-ramose
 Araeospora 14: 454
 3. Branches springing from the swollen tip
 Rhipidium 7: 268, S. 103
- Subfamily Pythiae
 SCHROETER 104

Vegetative mycelium very narrow, uniform, much-branched; sporangiophores not distinct from mycelium; zoosporangium filamentous, cylindrical, ellipsoid or globose, contents escaping in a globose vesicle in which the zoospores arise, zoospores 2-ciliate; oogones globose, terminal, rarely intercalary, 1-spored.

- I. Zoosporangia filamentous
 Nematosporangium S. 104
 II. Zoosporangia globose or lemon-shaped
 Pythium 7: 270, S. 104

Family 11. ANCYLISTACEAE

SCHROETER 89, 7: 278, 9: 348, 14: 450, 16: 395, 17: 516

Mycelium mostly poorly developed and scarcely distinct from the fruit-body, the latter tubular, when mature divided into vegetative cells, sporangia or oogones and antherids; entire contents of antherid passing into oogone, oospore lying free; sporangia always producing zoospores.

Key to the Subfamilies

- I. Filament or fruit-body producing wholly sporangia or sex cells, mycelium entirely lacking
 Lagenidiae
 II. Filament producing vegetative cells also, the latter germinating to form threads
 Anclistae

Subfamily Lagenidiae

Fruit-body filamentous, tubular, simple or branched, dividing into cells which develop into sporangia or sex cells; antherids on the same or on different fruit bodies; sporangia and oospores always giving rise to zoospores.

- I. In fresh-water algae, rarely in animals

1. Filament simple
 a. Zoospores escaping singly from the sporangium
 Achlyogeton 7: 277, S. 89
 b. Sporangial plasm poured out into a vesicle in which the zoospores are formed
 Myzocytium 7: 279, S. 90
 Lagenidium 7: 278, S. 90
 2. Filament with short side-branches
 II. In the root-hairs of plants
 Rhizomyxa 7: 278, S. 91

Subfamily Anclistae

Fruit-body tubular, mycelium-like, unbranched or with few short side-branches, when mature dividing into a number of chain-like cells, which develop into vegetative

cells, sporangia or sex cells; sporangia producing zoospores; vegetative cells producing a long tube, which penetrates new host-cells; oospores globose or elliptic.

- I. Sporangia lacking vegetative and sex cells alone formed
 Anclistae 7: 280, S. 92
 Reticularia 9: 348, S. 92
- II. Sporangia also present

Family 12. PERONOSPORACEAE

SCHROETER 110, 7: 233, 9: 340, 11: 242, 14: 457, 16: 396, 17: 519

Mycelium abundant, filamentous, much branched, one-celled, endophytic; propagation by conidia borne on the ends of conidiophores, conidia producing zoospores or a germinating tube; sexual reproduction by means of endophytic antherids and oogones, borne on the ends of lateral branches; oospores single, globose, producing zoospores or a germinating tube.

Key to the Subfamilies

- I. Conidia in chains, conidiophores club-shaped
 Albuginiae
 II. Conidia single, conidiophores branched
 Peronosporae

Subfamily Albuginiae

Mycelium intercellular, haustoria globose; conidiophores densely grouped into a conidial layer beneath the epidermis; conidia globose, ellipsoid or subcylindrical, in chains on the ends of the conidiophores, usually producing zoospores, rarely a germinating tube; oospores globose, producing zoospores.
 A single genus
 Albugo 7: 233, S. 110

Subfamily Peronosporae

Mycelium intercellular, rarely intracellular, haustoria of various form; conidiophores thread-like, above the epidermis, branched, without cross-walls; conidia single on the tips of the branchlets, producing zoospores or a germinating tube; oospores globose, with a well-developed outer wall, germinating by means of a tube.

- I. Conidiophores slender, with long and slender branches
 1. Conidiophore growing after the formation of the first conidia, producing new joints
 Phytophthora 7: 237, S. 113
 2. Conidiophore not growing and making new extensions
 a. Conidia papillate at the tip
 (1) Conidia on stalks arising from irregular disks
 Bremia 7: 243, S. 116
 (2) Conidia on stalks arising directly from the unchanged ends of the conidiophores
 Plasmopara 7: 239
 b. Conidia not papillate at the tip
 Peronospora 7: 244, S. 117
 II. Conidiophores stout, swollen at the tip, or with short thick branches
 1. Conidiophore simple up to the enlarged tip, which bears the conidia on slender stalks
 Basidiophora S. 114
 2. Conidiophore with short thick branches bearing the conidia on flask-like stalks
 Sclerospora 7: 238, S. 114

Order 6. CONFERVALES

Typically multicellular filamentous algae, propagating by zoospores, and reproducing by the union of isogametes, or by heterogametes borne in antherids and oogones; one fungous family.

Family 13. MONOBLEPHARIDACEAE *Copied*

SCHROETER 106, 7: 277, 14: 452, 16: 394

Mycelium filamentous, one-celled or septate, producing zoospores and sex cells; zoospores 1-ciliate arising in terminal sporangia; antherids cylindrical producing ciliate antherozoids; oogones globose, terminal, opening by a pore, 1-spored.

I. Zoospores 1-ciliate

1. Mycelial threads equal throughout ✓ *Monoblepharis* 7: 277, S. 107 *m. affinis* *Comu*
2. Mycelial threads constricted, necklace-like *Bischof* *Gonapodya* 14: 452, S. 107 *m. prolifera* *Comu*
St. 290

II. Zoospores two or more ciliate

1. Zoospores 2-ciliate *Diblepharis* 16: 395 *m. insignis* *St. 109*
2. Zoospores many-ciliate *Myrioblepharis* 14: 455 *m. formosa* *St. 110*

Class 4. ASCOMYCETES

Fungi usually destitute of a conspicuous mycelium, reproducing by means of a spore-fruit containing asci (perithecium or apothecium), the spore-fruit occasionally reduced to a group of naked asci.

Order 7. LABOULBENIALES

THAXTER 197, LINDAU 491

Family 14. LABOULBENIACEAE *Copied*

8: 909, 9: 1130, 11: 446, 14: 725, 16: 674, 17: 915

Receptacle consisting of two to many cells in a row, or parenchyma-like, regularly producing from the cells one or more appendages bearing antherids as a rule; antherozoids normally endogenous, borne within flask-like, simple or compound antherids, rarely produced like conidia, i. e., naked or exogenous; perithecia one to many, stalked or sessile, terminal or lateral on the receptacle, resulting from fertilization by means of a trichogyne; asci seriate, mostly 4-spored, spores usually 2-celled.

I. Antherozoids endogenous, i. e., in closed antherids

1. Antheridial cells forming a compound antherid
 - a. Diocious
 - (1) Perithecia and appendages in pairs to the right and left *Dimorphomyces* T. 264, L. 497 *B. verticillatus* *St.*
 - (2) Perithecia and appendages in a row *Dimeromyces* T. 267, L. 497 *B. africanus* *St.*
 - b. Monoecious
 - (1) Antherids arising on an appendage
 - (a) Antherids lateral
 - x. On a subbasal cell of the appendage *Cantharomyces* T. 271, L. 497 *B. bledii* *St.*

- y. On short opposite branchlets of the appendage *Stichomyces* T. 4: 37 *B. emosa* *St.*
- (b) Antherids terminal
- x. Antherid with a short spine at the tip *Haplomyces* T. 269, L. 497 *H. haeriformis* *St.*
- y. Antherid without a spine but with a neck-like canal cell
 - (x) Ascogonic cells at least 36 *Polyascomyces* T. 2: 414 *P. trichoglypha* *St.*
 - (y) Ascogonic cells few
 - m. Stalk of antherid a single cell
 - (m) Antheridial cells obliquely in vertical rows
 - r. Subbasal cell of receptacle with a sterile appendage *Eumonoecomyces* T. 4: 21 *E. papaveris* *St.*
 - s. Subbasal cell of receptacle without sterile appendage *Eucantharomyces* T. 273, L. 497 *E. atrium* *St.*
 - (n) Antherid parenchyma-like, many-celled
 - r. Antheridial cells with three marginal cells *Euhaplomyces* T. 4: 25 *E. anagrophori* *St.*
 - s. Antheridial cells without marginal cells *Camptomyces* T. 274, L. 498 *C. melanocephalus* *St.*
 - (o) Antherid of several superposed cells bearing single simple antherids directly
 - r. Simple antherids two *Acallomyces* T. 5: 23 *A. homolotae* *St.*
 - s. Simple antherids several *Acompsomyces* T. 4: 37 *A. corticaria* *St.*
 - n. Stalk of two cells placed side by side *Monoecomyces* T. 2: 412, 4: 23 *M. bonati* *St.*

(2) Antherids arising on the receptacle

- (a) Perithecia free
 - x. Receptacle of a single row of several to many superposed cells *Enarthromyces* T. 276, L. 498 *E. indicus* *St.*
- y. Receptacle of one or two superposed cells followed by two or three oblique or transverse rows
 - (x) Receptacle with one basal cell
 - m. Basal cell followed by two tiers of cells *Limnaecomyces* T. 2: 428 *L. propertorii* *St.*
 - n. Basal cell followed by three symmetrical series *Dichomyces* T. 282, L. 499 *D. fureifera* *St.*
 - (y) Receptacle with two superposed basal cells *Peyritsiella* T. 278, L. 499 *P. curvata* *St.*
- (b) Perithecia grown together with distal portion of receptacle
 - x. Base of receptacle of two superposed cells *Chitonomyces* T. 285, L. 499 *C. melanocephalus* *St.*
 - y. Base of three superposed cells *Hydracomyces* T. 293, L. 500 *H. helveticus* *St.*
2. Antheridial cells distinct, discharging independently
 - a. Diocious
 - (1) Perithecia borne by the basal or subbasal cell of receptacle
 - (a) Perithecia on the single basal cell, spores continuous *Amorphomyces* T. 295, L. 501 *A. fuscus* *St.*

- (b) Perithecium lateral on the subbasal cell, spores obliquely 1-septate
Diocomyces T. 4: 330. *antheris* *Thas*
- (2) Two-celled normal receptacle producing secondary receptacles on which the perithecia are borne
Herpomyces T. 5: 11 *Habaetophidus* *Thas*
on T. 2: 286
- b. Monocious
- (1) Antherids in definite series on the appendages
- (a) Arising directly from cells of the appendages
- x. Appendage one
- (x) Antherids in 4 vertical series *Arthrothymus* *Kol. 187*
Helminthophana T. 297, L. 501
- (y) Antherids in a single vertical series
Stigmatomyces T. 298, L. 502 *Stigmatomyces* *Thas*
- y. Appendages numerous, antherids in 3 vertical series
Idiomyces T. 302, L. 502 *Idiomyces* *Thas*
- (b) Borne on branches of the appendages
- x. Appendage one
- (x) Appendage with sterile terminal branchlets, antherids in short series near its base
Rhadomyces T. 305, L. 501 *Rhadomyces* *Thas*
- (y) Appendage with fertile terminal branchlets bearing antherids laterally
Eucorethromyces T. 2: 433 *Eucorethromyces* *Thas*
- y. Appendages forming a tuft, antherids on lateral branchlets
Corethromyces T. 303, L. 502 *Corethromyces* *Thas*
- (2) Antherids not in definite series on the appendages
- (a) Receptacle 2-celled
- x. Basal cell with rhizoids
- (x) A single receptacle from each rhizoid base
Rhizomyces T. 307, L. 502 *Rhizomyces* *Thas*
- (y) Several receptacles from a common rhizoid base
Moschomyces T. 368, L. 504 *Moschomyces* *Thas*
- y. Basal cell not from a rhizoid
- (x) Appendage single
- m. Receptacle of 2 superposed cells
- (m) Basal cell spheric, penetrating by a long filament
Ceraomyces T. 3: 410 *Ceraomyces* *Thas*
- (n) Basal cell elongate
Sphaleromyces T. 365, L. 504 *Sphaleromyces* *Thas*
- n. Receptacle of a series of superposed cells
Ectinomyces T. 5: 26 *Ectinomyces* *Thas*
- (y) Appendages several to many
- m. Appendages and perithecium in a whorl
- n. Appendages in a row
Compsomyces T. 366, L. 504 *Compsomyces* *Thas*
- (b) Receptacle more than 2-celled
- x. Receptacle of seriate, regularly superposed cells
- (x) Plant bilaterally symmetrical
Clematomyces T. 2: 439 *Clematomyces* *Thas*
- (y) Plant asymmetrical
Diplomyces T. 357, L. 503 *Diplomyces* *Thas*
- m. Receptacle of two contiguous and united rows
Rhachomyces T. 358, L. 504 *Rhachomyces* *Thas*

- (n) Basal and subbasal cell present
Distichomyces T. 6: 308 *Distichomyces* *Thas*
- n. Receptacle of a single row
Chaetomyces T. 364, L. 504 *Chaetomyces* *Thas*
- y. Receptacle more or less parenchyma-like, at most only part of the cells superposed in series
- (x) Appendages all on one side **Laboulbenia** T. 308, L. 502 *Laboulbenia* *Thas*
- (y) Appendages on two sides **Rickia** 16: 689 *Rickia* *Thas*
- (z) Appendages completely surrounding the perithecium
Teratomyces T. 354, L. 502 *Teratomyces* *Thas*
- II. Antherozoids exogenous, i. e., produced terminally or laterally on the appendages as naked cells
1. Receptacle large, very many-celled, parenchyma-like
- a. Perithecium with six wall cells in each row
- (1) Base of trichogyne persistent as a one-celled appendage
Caenomyces T. 4: 44 *Caenomyces* *Thas*
- (2) Base of trichogyne not persistent as an appendage
Zodiomyces T. 371, L. 504 *Zodiomyces* *Thas*
- b. Perithecium with 9-10 wall cells in each row
Euzodiomyces T. 2: 449 *Euzodiomyces* *Thas*
2. Receptacle of a series of superposed cells
- a. Appendage single
Ceratomyces T. 372, L. 505 *Ceratomyces* *Thas*
- b. Appendages several
Coreomyces T. 5: 56 *Coreomyces* *Thas*
- The genus *Misgomyces* T. 2: 419 has not been included in the key owing to the fact that its antherids are unknown; it is very closely related, apparently, to *Laboulbenia*.

Order 8. SPHAERIALES

Mycelium sometimes superficial and abundant, often forming a thallus with algae, but usually scanty and imbedded in the matrix, the threads branched and septate; propagation by means of conidia borne on branches of the mycelium, or by means of pycnidia; reproduction resulting in a globose, flask-shaped or flattened perithecium, with a round mouth or ostiole except in the simpler forms, in which appendages are also often found; asci usually 8-spored and with paraphyses; spores hyaline, yellowish or brown, one to many-celled.

Family 15. ERSIBACEAE

1: 1, 9: 364, 11: 253, 14: 404, 17: 526

Mycelium white, cobwebby, superficial, penetrating the epiderm by means of haustoria; propagation by chains of conidia cut off from upright simple branches; perithecium without mouth, membranous, regularly with simple or modified appendages, often imbedded in the mycelium; ascus one to several, globose to ovoid, 2-8-spored, without paraphyses; spores usually 1-celled, hyaline.

Hyalosporae

Spores 1-celled, hyaline

I. Perithecium with one ascus

1. Appendages simple **Sphaerotheca** 1: 3 *Sphaerotheca* *Thas*
2. Appendages dichotomously branched **Podosphaera** 1: 2 *Podosphaera* *Thas*

II. Perithecium with several asci

1. Appendages present

a. Appendages simple, thread-like

h. Appendages branched or otherwise modified

(1) Appendages dichotomously branched

✓ *Erysibe* 1: 15 *E. ochracea* (Ces.)
 ✓ *Microsphaera* 1: 10 *M. alba*
 ✓ *Asci Treicholadia* (W. G. C.)
 ✓ *Asci J. detragalis* (K.)

(2) Appendages modified but not branched

(a) Appendages stiff and bristle-like

x. Appendages numerous, not swollen at base

✓ *Pleochaete* 1: 9 *P. saccinifera* (Ces.)
 ✓ *Phyllactinia* 1: 5 *P. asperula*

y. Appendages few, swollen at base

(b) Appendages coiled at tip

2. Appendages absent; perithecium surrounded by the mycelium

✓ *Uncinula* 1: 6 *U. aspinosa* (Ces.)
 ✓ *Erysibella* 1: 23 *E. lagopodica*

Dictyosporae

Spores usually hyaline, muriform

✓ *Saccardia* 1: 24 *S. guericana* (Ces.)

A single genus

Family 16. PERISPORIACEAE

1: 24, 97, 371, 11: 253, 14: 462, 16: 398, 17: 524

Mycelium superficial, dark, filamentous, sometimes lacking, rarely forming a firm stroma; conidia or pycnidia rarely present; perithecium without a mouth, or opening irregularly, usually globose, membranous or coriaceous, rarely carbonous, appendages usually lacking; asci mostly numerous, clustered, more or less cylindrical, mostly 8-spored, paraphyses regularly lacking; spores various.

Hyalosporae

Spores 1-celled, hyaline or yellowish

1. Perithecia bright-colored, yellow or reddish, rarely white

1. Asci 8-spored

a. Perithecia with setae, or hairs

(1) With long rigid setae

(2) With many hairs, immersed in a dense subicle

✓ *Chaetotheca* 11: 254 *C. fragilis* (Ces.)

✓ *Cryptothecium* 14: 465 *C. subrotundum* (Ces.)

b. Perithecia glabrous

(1) Spores with an unequal samariform appendage

✓ *Samarospora* 11: 254 *S. fragilis* (Ces.)

(2) Spores not appendaged

(a) Spores verrucose

(b) Spores smooth

x. Conidiophores branched

y. Conidiophores simple, swollen at tip

✓ *Anixiopsis* 14: 464 *A. asperula* (Ces.)

✓ *Allescheria* 14: 464 *A. asperula* (Ces.)

✓ *Eurotium* 1: 25 *E. asperula* (Ces.)

(✓ *Kickxella* 9: 372 *K. asperula* (Ces.)

✓ *Pisomyxa* 1: 29 *P. asperula* (Ces.)

2. Asci many-spored

11. Perithecia dark or black, spores hyaline

1. Asci 2-8-spored

a. Ascus single

✓ *Cystotheca* 16: 407 *C. unguis* (Ces.)

b. Asci several or many

(1) Perithecia numerous in setose stroma-like cups

✓ *Lasiobotrys* 1: 29 *L. asperula* (Ces.)

(2) Perithecia not in cups

(a) Perithecia globose

(b) Perithecia applanate

✓ *Meliolopsis* 1: 68 *M. asperula* (Ces.)

✓ *Asterula* 1: 47 *A. asperula* (Ces.)

✓ *Apostorium* 1: 30 *A. asperula* (Ces.)

✓ *Monascus* 9: 373 *M. asperula* (Ces.)

2. Asci many-spored

a. Asci many

b. Ascus single

III. Perithecia brown, then black, spores yellow

✓ *Anixia* 1: 34 *A. asperula* (Ces.)

Phaeosporae

Spores 1-celled, dark

I. Asci capitate on tips of branched hyphae

✓ *Cephalotheca* 1: 36 *C. asperula* (Ces.)

II. Asci sessile or on simple stalks

1. Perithecia with appendages

a. Spores globose, conglobate

(1) Appendages closely spiral, convolute

✓ *Pleurascus* 16: 1123 *P. asperula* (Ces.)

✓ *Arachnomycetes* 17: 532 *A. asperula* (Ces.)

(2) Appendages flexuose-tortuose

b. Spores ellipsoid

(1) Appendages several times branched

✓ *Ascotricha* 1: 37 *A. asperula* (Ces.)

✓ *Magnusia* 1: 38 *M. asperula* (Ces.)

(2) Appendages circinate at apex

2. Perithecia without appendages

a. Perithecia hairy or setose

✓ *Chaetomidium* 1: 39 *C. asperula* (Ces.)

b. Perithecia glabrous

(1) Perithecia innate upon a radiate subicle

✓ *Asteronia* 1: 47 *A. asperula* (Ces.)

(2) Perithecia not on a radiate subicle

(a) Spores at first conglobate

✓ *Laeseomyces* 16: 405 *L. asperula* (Ces.)

(b) Spores free from the first

✓ *Orbicula* 1: 38 *O. asperula* (Ces.)

✓ *Thielavia* 1: 39 *T. asperula* (Ces.)

x. Growing on lichen thalli

y. Growing on roots

Hyalodidymae

Spores 2-celled, (1-septate), hyaline

I. Asci 8-spored

1. Cells of spore separating easily

✓ *Neorehnia* 17: 536 *N. asperula* (Ces.)

2. Cells of spore not separating

a. Perithecia on a radiate subicle

✓ *Asterella* 1: 42 *A. asperula* (Ces.)

✓ *Dimerosporium* 1: 51 *D. asperula* (Ces.)

✓ *Pampolysporium* 16: 411 *P. asperula* (Ces.)

b. Perithecia on a uniform subicle

II. Asci many-spored

Phaeodidymae

Spores 1-septate, dark when mature, rarely yellowish

I. Perithecia on a subicle

1. Subicle radiate; perithecia lenticular

✓ *Asterina* 1: 39 *A. asperula* (Ces.)

2. Subicle uniform, dematium-like; perithecia globose

- a. Perithecia without basal setae
 (1) Asci several or many
 (2) Ascus one, rarely two
 b. Perithecia with basal setae
- II. Perithecia not seated on a subicle
 I. Perithecia gelatinous when wet, honey-yellow
 Engleria 17: 529 *Engleria*
 2. Perithecia membranous or coriaceous, usually dark
 a. Spores apiculate-appendaged, very large
 Zopfia 1: 54 *Zopfia*
 b. Spores not appendaged, small or medium
 (1) Spores smooth
 (a) Spores elongate-oblong, very large
 Richonia 9: 379 *Richonia*
 Argynna 14: 470 *Argynna*
 Parodiella 1: 717, 9: 409 *Parodiella*
 (c) Spores elliptic, medium
 (2) Spores spiny or roughened
 (a) Perithecium irregularly dehiscent; asci not long-stalked
 Marchaliella 11: 257 *Marchaliella*
 Testudina 9: 378 *Testudina*
 (b) Perithecia regularly areolate-dehiscent; asci long-stalked

Hyalophragmiae

Spores with 2 or more cross walls, hyaline

- I. Perithecia on a radiate subicle
 Asteridium 1: 49 *Asteridium*
 II. Perithecia on a uniform subicle
 1. Subicle effuse, dematiu-like; perithecium closed
 Zukalia 9: 431 *Zukalia*
 2. Subicle fibrous, subcrustose; perithecium perforate
 Perisporiopsis 17: 544 *Perisporiopsis*

Phaeophragmiae

Spores 2-several-septate, dark

- I. Perithecia on a radiate subicle
 Melioli 1: 60 *Melioli*
 (Limacinia 14: 474) *Limacinia*
 II. Subicle uniform or absent
 1. Spores separating at the joints
 a. Paraphyses lacking
 b. Paraphyses present
 2. Spores not separating
 Perisporium 1: 55 *Perisporium*
 Schenckia 11: 268 *Schenckia*
 Perisporina 17: 545 *Perisporina*

Hyalodictyae

Spores muriform, hyaline

- I. Perithecia on a subicle, closed
 Zukaliopsis 17: 554 *Zukaliopsis*

Phaeodictyae

Spores muriform, dark

- I. Perithecia globose
 1. Spores with an appendage at each end
 2. Spores without appendages
 Ceratocarpia 14: 474 *Ceratocarpia*

- a. Subicle radiate
 b. Subicle lacking
 II. Perithecia applanate
 Pleomeliola 1: 70, 17: 554 *Pleomeliola*
 Cleistotheca 11: 279 *Cleistotheca*
 Cookella 1: 71 *Cookella*

Scolecosporae

Spores filiform, septate or continuous, hyaline or subhyaline

- I. Perithecium opening by a small pore
 Saccardomyces 17: 530 *Saccardomyces*
 II. Perithecium without a pore
 1. Subicle radiate, paraphyses present
 Ophiomeliola 16: 416 *Ophiomeliola*
 2. Subicle uniform, paraphyses absent
 Hyaloderma 9: 437 *Hyaloderma*

Family 17. CAPNODIACEAE

1: 73, 9: 438, 11: 279, 14: 476, 17: 555

Perithecia vertically elongate, clavate or cylindrical, obtuse or acute, simple or branched, usually laciniate-dehiscent at the apex, on a thick black mycelium, which is rarely absent.

- I. Subicle crustose
 1. Spores 1-celled, globose
 Capnodiella 1: 74 *Capnodiella*
 2. Spores 3-4-septate, dark
 Capnodaria 1: 74 *Capnodaria*
 3. Spores muriform, dark
 Capnodium 1: 73, 80 *Capnodium*
 II. Subicle very thick, spongy
 Scorias 1: 83 *Scorias*
 III. Subicle sparse or lacking
 1. Spores 1-celled, hyaline
 Capnodiopsis 17: 555 *Capnodiopsis*
 2. Spores 2-celled, hyaline; perithecium gelatinous
 Seuratia 17: 558 *Seuratia*

Family 18. SPHAERIACEAE

1: 88, 2: 1, 9: 4, 11: 271, 14: 478, 16: 417, 17: 550

Mycelium scanty and immersed, or often producing a stroma, rarely a subicle; perithecia typically globoid, often drawn out into a beak, membranous, coriaceous, or carbonous, brown or black, dehiscing by a round pore or ostiole, single, cespitose or composite in a stroma; in the latter case each perithecium is distinct, not merely a locale in the stroma; asci usually numerous, elongate, usually paraphysate; spores various.

Allantosporae

Spores 1-celled, obtuse, curved-oblong, hyaline or olivaceous

- I. Perithecia sparse or cespitose
 1. Ostiole central, very short
 a. Asci 8-spored
 (1) Perithecia covered
 (a) Perithecia minute, glabrous
 Massalongiella 1: 89 *Massalongiella*
 (b) Perithecia largish, strigose-pilose
 Enchnoa 1: 89 *Enchnoa*
 (2) Perithecia subsuperficial
 (a) Perithecia globose, never collapsing
 Bizzozera A: 24, 9: 445 *Bizzozera*

- (b) Perithecia collapsing, becoming cup-shaped
 x. Perithecia gregarious
 y. Perithecia cespitose
- b. Asci many-spored
2. Ostiole central, papillate
3. Ostiole lateral, conic
- II. Perithecia composite, typically in a stroma
1. True stroma lacking; perithecia heaped together between bark and wood
- a. Asci 8-spored; ostiole short or long
- b. Asci many-spored; ostiole very short
2. True stroma present; perithecia immersed in bark or wood
- a. Stroma formed by the changed matrix
- (1) Stroma valvous, i. e., perithecia in a circle
- (a) Asci 4-8-spored
- x. Perithecia usually 4, never more than 6, in each stroma
- y. Perithecia many, 8-30, in most stromata at least
- (x) Perithecia circinate or monostichous, ostiole entire, asci subsessile.
- (y) Perithecia monostichous or polystichous, ostiole not entire; asci stipitate
- (b) Asci many-spored
- (2) Stroma eutypous, i. e., broadly and indefinitely effuse
- (a) Asci 8-spored
- x. Stroma conspicuous, cortical or woody
- y. Stroma more or less obsolete
- (x) Stroma woody; ostiole largish; spores subfuscous
- (y) Stroma cortical; ostiole small; spores subhyaline
- (b) Asci many-spored
- x. Stroma manifest, cortical or woody
- y. Stroma obsolete, cortical
- b. Stroma different from the substance of the matrix
- (1) Asci 8-spored; stroma effuse or disciform
- (2) Asci many-spored; stroma verruciform

Hyalosporae

1: 497, A 58, 9: 577, 11: 289, 14: 515, 16: 452, 17: 573

Spores 1-celled, hyaline or nearly hyaline, ovoid, oblong or fusoid, rarely irregular or stellate, not allantoid.

- I. Perithecia single or separate
1. Perithecia beaked or with a stellate ostiole
- a. Perithecia subcarbonous

Coelosphaeria 1: 91

Nitschkea 11: 272

Fracchiacea 1: 93

Neocarangelia 16: 419

Pleurostoma 1: 95

Calosphaeria 1: 95 (16: 419, 421)

Coronophora 1: 103

Quaternaria 1: 106

Valsa 1: 108

Eutypella 1: 145, 17: 569

Valsella 1: 158

Endoxylla 1: 181

Cryptosphaeria 1: 182

Cryptovalsa 1: 187

Cryptosphaerella 1: 186

Diatrype 1: 191, 9: 480

Diatrypella 1: 200

- (1) Spores normal, i. e., not modified

(a) Perithecia superficial, glabrous or dark hairy

(b) Perithecia innate-erumpent, yellow-hairy

(2) Spores with a ring-like appendage

b. Perithecia submembranous, usually phyllopus

(1) Ostiole black, not stellate

(2) Ostiole white, stellate with black wartlike appendages

2. Perithecia not beaked

a. Perithecia covered

(1) Asci 1-2- or 4-8-spored

(a) Paraphyses present

(b) Paraphyses lacking

x. Spores long-caudate

(x) Spores caudate at one end only

(y) Spores caudate at both ends

y. Spores not caudate

(x) Asci 1-2-spored

m. Perithecia perforate

(y) Asci 4-8-spored

m. Perithecia lenticular, perforate

n. Perithecia globose, papillate

- (2) Asci many-spored

(a) Perithecia glabrous

(b) Perithecia strigose-pilose

b. Perithecia superficial

(1) Perithecia smooth, i. e., glabrous

(b) Spores stellate

(b) Spores not stellate

x. Perithecia on a dark crustose subile

y. Perithecia not on a subile

(x) Perithecia surrounded by dark hyphae at base

(y) Perithecia without dark hyphae at base

(2) Perithecia hairy

(a) Asci 8-spored

(b) Asci 16-spored

Ceratostomella 1: 408

Camptosphaeria 1: 413

Rostrella 17: 609

Gnomoniella 1: 413

Rinia 17: 591

Physalospora 1: 433

(incl. Stigmatula 1: 543)

Urcospora 1: 448

Urosoporella 14: 523

Diptoropsis 11: 292

(Geminispora)

Spolverinia 17: 577

Laestadia 1: 420

Phomatosporea 1: 432

Ditopenella 1: 450

Polytrichia 1: 451

Inzengaea 9: 610

Pilgeriella 16: 464

Guignardiella 16: 465

Wallrothiella 1: 455

(incl. Zignoia 2: 219)

Trichosphaeria 1: 452

Trichosphaerella 9: 604

- II. Perithecia upon or within a stroma or subicle
 - 1. Perithecia beaked
 - Glomerella 16: 452, 17: 573 *V. gurgulata*
 - 2. Perithecia not beaked
 - a. Perithecia immersed in a subicle
 - Scortechinia A 68, 9: 604 *S. acanthostoma* *subicte*
 - b. Perithecia in or upon a stroma
 - (1) Stroma radiate, phylogenous
 - Trabutia 1: 449 *T. guericana* *subicte*
 - (2) Stroma not radiate, usually caulicole
 - (a) Necks of perithecia wanting, stroma disk-like
 - Botryosphaeria 1: 456 *V. B. subicte*
 - (incl. Gibellia A 406, 9: 608 and Coutinia 17: 589) *ly. H. 311*
 - (b) Necks of perithecia present, stroma valsiform
 - Cryptosporella 1: 466 *C. pycnantha*
 - (incl. Diaporthopsis 9: 610)

Phaeosporae

1: 214, 9: 481, 11: 278, 14: 489, 16: 427, 17: 593

Spores 1-celled, colored, usually yellowish or brown, ovoid, oblong or fusoid

- I. Perithecia separate, at least without a stroma
 - 1. Covered, often erumpent
 - a. Asci 1-spored
 - Haplosporium A 40, 9: 495 *H. halbrunnii*
 - b. Asci 4-8-spored
 - (1) Perithecia covered by the blackened adhering epiderm
 - Anthostomella 1: 278 *V. phasodite*
 - (2) Perithecia erumpent with a stellate volva
 - Astrocytis 1: 293 *A. mirabilis* *subicte*
 - c. Asci many-spored
 - (1) Spores smooth
 - Müllerella A 40, 9: 495 *M. pulcherrima* *subicte*
 - (2) Spores verrucose
 - Mesneria 16: 440 *M. rotundata* *subicte*
 - 2. Superficial or subsuperficial
 - a. Perithecia long-beaked
 - (1) Spores lunulate; fimicole
 - Micrascus A 37, 9: 483 *M. longicauda* *subicte*
 - (2) Spores globose to elliptic; not fimicole
 - Ceratostoma 1: 215 *V. caespitosa* *subicte*
 - b. Perithecia not beaked
 - (1) Perithecia submembranous
 - (a) Spores with a mucous sheath or tail; usually fimicole
 - x. Asci 4-8-spored
 - (x) Spores with a hyaline tail or cauda
 - Sordaria 1: 230 *S. sordaria* *subicte*
 - (y) Spores with a mucous sheath
 - m. Perithecia sparse
 - Hypocopra 1: 240 *H. fuscicollis* *subicte*
 - n. Perithecia densely aggregate, almost-stroma-like
 - Coprolepa 1: 248 *C. maculata* *subicte*
 - y. Asci many-spored, spores usually caudate
 - Philocopra 1: 249 *P. filicopra* *subicte*
 - (b) Spores without mucous sheath or tail
 - x. Perithecia with simple setae, asci persistent
 - Helminthosphaeria 1: 230 *H. clavariarum* *subicte*

- y. Perithecia with branched, hooked or spiral setae; asci diffluent
 - (x) Spores subglobose to elliptic
 - Chaetomium 1: 220 *V. C. globosum* *Ky. 2*
 - Bommerella A 38, 9: 486 *B. tripartita* *subicte*
 - (y) Spores triangular
 - Rosellinia 1: 252 *R. rosellii* *subicte*
- (2) Perithecia typically carbonous
 - (incl. Pleosporopsis 14: 501 and Tympanopsis 11: 283 *T. tympaniformis* *subicte*)
 - (3) Perithecia coriaceous, firm, ascending-elongate
 - Bombardia 1: 277 *B. foveolata* *subicte*
- II. Perithecia in a stroma
 - 1. Stroma immersed, somewhat woody; perithecia membranous
 - Anthostoma 1: 293 *A. decipiens* *subicte*
 - 2. Stroma superficial, carbonous or leathery; perithecia carbonous
 - a. Stroma terete, fruticose or filiform
 - (1) Stroma fimicole
 - † Pedisordaria 14: 494 *(Podosordaria) P. formosa* *subicte*
 - (2) Stroma not fimicole
 - (a) Stroma with a single perithecium at apex
 - Capnodidiella 17: 621 *C. marma* *subicte*
 - (b) Stroma containing many perithecia
 - x. Perithecia immersed laterally
 - (x) Stroma fruticose, clavate or filiform
 - Xylaria 1: 309 *X. xylaria* *subicte*
 - (incl. Kretschmaria 9: 565)
 - (y) Stroma disk-like or cupulate above
 - Xylariodiscus 16: 449 *X. denticulatus* *subicte*
 - y. Perithecia immersed vertically
 - (x) Perithecia immersed annulately about the truncate apex
 - Camillea 1: 346 *C. apiculata* *subicte*
 - (y) Perithecia crowded beneath an operculate disk
 - Henningsinia 16: 450 *H. durissima* *subicte*
 - b. Stroma effuse, globose or cupulate, adnate or subsitipitate
 - (1) Conidia superficial on the young stroma
 - (a) Stroma usually fimicole
 - Poronia 1: 348 *P. punctata* *subicte*
 - (b) Stroma not fimicole
 - x. Stroma concentrically zonate
 - Daldinia 1: 393 *D. daldinia* *subicte*
 - y. Stroma not concentrically zonate
 - (x) Stroma repand-pulvinate, somewhat hollow
 - Ustilina 1: 351 *U. ustulina* *subicte*
 - (y) Stroma solid
 - m. Stroma subglobose, hemispheric or obpiriform
 - (m) Stroma not modified with squarrose papery membranes
 - Penzia 9: 567 *P. penzia* *subicte*
 - (n) Stroma modified by squarrose papery membranes
 - Squamotubera 17: 620 *S. squamatubera* *subicte*
 - n. Stroma effuse
 - (m) Perithecia immersed, necks rather long
 - Bolnia 1: 352 *B. tubulina* *subicte*

(n) Perithecia innately prominent, necks lacking
Hypoxyllum 1: 352 *Heoscaum*

(2) Conidia arising beneath the upper layer of the disk-like or cupulate stroma

(a) Perithecia flask-shaped Nummularia 1: 395 *N. tuberculata* etc.
(b) Perithecia long-cylindrical Solenoplea 17: 619 *S. microspora*

Hyalodidymae

1: 475, 9: 611, 11: 295, 14: 525, 16: 468, 17: 635

Spores 1-septate (2-celled), hyaline or subhyaline, ovoid, oblong or fusoid

I. Perithecia separate

1. Perithecia covered or nearly so

a. Perithecia beaked, submembranous

(1) Asci 8-spored Gnomonia 1: 561 *G. staccata*
(2) Asci many-spored Rehmiella 9: 676 *R. alpina*

b. Perithecia not beaked

(1) Asci 8-spored

(a) Perithecia in a phylogenous pseudostroma

Hypoxyllum 2: 190 *H. bifrons* (L.)

(b) Perithecia not in a phylogenous pseudostroma

x. Paraphyses lacking

Sphaerella 1: 476 (incl. Lizoniella 17: 661) *S. myriophylla*

y. Paraphyses present

(x) Spores surrounded with mucus

Massarinula 14: 536 *M. guerdoni*

(y) Spores not surrounded with mucus

m. Spores septate near the base

Apiospora 1: 539 (incl. Stigmataea 1: 541) *A. montana*

n. Spores septate near the middle

(m) Perithecia smooth Didymella 1: 545 (incl. Stigmataea 1: 545) *D. appurata*

(n) Perithecia long-hairy Arcangelia 9: 696 *A. tuberculata*

(2) Asci 16-24-spored

(a) Asci 16-spored Mycosphaerella 9: 659 *M. lunicata*
(b) Asci 24-spored Hariotia 9: 672 *H. tuberculata*

2. Perithecia superficial or nearly so

a. Perithecia beaked

(1) Spores expelled in a mucous mass Spumatoria 16: 1134 *S. longicollis*
(2) Spores not expelled in a mucous mass Lentomitia 1: 584 *L. brevicolle*

b. Perithecia not beaked

(1) Perithecia smooth

(a) Asci 8-spored Pharcidia 9: 676, 17: 635 (incl. Epicymatia 1: 570) *P. constricta*

x. Paraphyses lacking

(x) Perithecia borne in lichen thalli

Bertia 1: 581 *B. myriophylla* (T.) *Taraxacum*

(y) Perithecia not in lichen thalli

y. Paraphyses present

(x) Spores with a mucous layer produced into a spatulate ring

Peridiospora 14: 539 *P. javanica* etc.

(y) Spores without a mucous layer

m. Spores ellipsoid to fusoid Melanopsamma 1: 575 *M. parvifrons* (L.)
n. Spores botuliform Thaxteria 9: 687 *T. didymata* (L.)
Pseudolizonia 9: 682 *P. tuberculata* (L.)

(b) Asci 16-spored

(2) Perithecia with hairs or bristles

(a) Paraphyses lacking

x. Perithecia lichenicolic

Echinothecium 16: 484 *E. minutum* (L.)
y. Perithecia typically on leaves, rarely on stems

(b) Paraphyses present

Venturia 1: 586 *V. chloropora* (L.)
Eriosphaeria 1: 597 *E. ramosissima* (L.)
Othiella 1: 739, 17: 662 *O. senilis* (L.)

II. Perithecia in, or rarely upon, a stroma

1. Stroma scanty

a. Perithecia smooth

Gibbera 1: 599 *G. ramosa* (L.)
Cacosphaeria 9: 699 *C. subrotunda* (L.)

b. Perithecia setose

2. Stroma well-developed

a. Stroma white or colored

(1) Stroma white and soft

Melchiora 14: 538 *M. melchiorae* (L.)
Endothia 1: 601 *E. endothioides* (L.)

(2) Stroma bright yellow

b. Stroma black, rarely yellowish

(1) Perithecia botryose, eruptent, superficial Myrmaecium 1: 600 *M. melchiorae* (L.)
(2) Perithecia immersed Aplacodina 16: 485 *A. clausenii* (L.)

(a) Spores septate near the base

(b) Spores septate near the middle

x. Stroma vasa-like

(x) Conidial stage Melanconium

Melanconium 1: 602 *M. attholus* (L.)
(y) Pycnidial stage Rabenhorstia

Hercospora 1: 605 *H. hercospora* (L.)
(2) Pycnidial stage Phoma

Diaportha 1: 666 *D. diaporthoides* (L.)
y. Stroma eutype-like or diatrype-like

Euportha 1: 631, 11: 662 *E. euportha* (L.)

Phaeodidymae

1: 704, 9: 723, 11: 312, 14: 551, 16: 498, 17: 675

Spores 1-septate, dark, fuliginous to brown, ovoid, oblong or fusoid

I. Perithecia separate

1. Perithecia covered

a. Paraphyses lacking

Phaeosphaerella 9: 723 (incl. Lizonia 1: 574) *P. constricta* (L.)

b. Paraphyses present

(1) Asci 8-spored

(a) Spores surrounded by a hyaline sheath

Massariella 1: 716 *M. massariella* (L.)

- (b) Spores without a sheath
(2) Asci many-spored
2. Perithecia superficial or immersed at the base
- a. Subile present
- (1) Perithecia beaked
- (a) Paraphyses lacking
- (b) Paraphyses present
- (2) Perithecia not beaked
- (a) Perithecia glabrous
- (b) Perithecia setose
- b. Subile lacking
- (1) Perithecia beaked
- (a) Asci paraphysate
- (b) Asci not paraphysate
- (2) Perithecia not beaked
- (a) Perithecia glabrous
- x. Perithecia carbonous
- y. Perithecia membranous or submembranous
- (x) Asci 8-spored
- m. Perithecia globose, fimbriate
- n. Perithecia cupulate, not fimbriate
- (y) Asci many-spored
- (b) Perithecia setose
- II. Perithecia sessile or forming a crust, not strumate
1. Perithecia forming an effuse crust
2. Perithecia in groups
- a. Perithecia foliicole
- b. Perithecia lichenicole
- c. Perithecia ramicole
- III. Perithecia in a stroma
1. Spore with a mucous covering
2. Spore without a mucous covering
- a. Stroma erect, subterete
- (1) Paraphyses lacking
- (a) Stroma bearing conidia of Melanconium
- (b) Stroma without conidia
- (2) Paraphyses present
- (a) Stroma phyllogenous; perithecia superficial
- ✓ *Didymosphaeria* 1: 701 *D. apiculata* Berk
Ticothecium 17: 676, 9: 723 *T. pygmaea* Berk
Rhynchomeliola A. 127, 9: 751 *R. beakii* Berk
Gibellina A: 413, 9: 740, 11: 317 *G. virgata* Berk
Neopectia A: 26, 9: 749 *N. conulata* Berk
 † *Dimerosporis* 17: 686 *D. rugulosa* Berk
 (= *Dimerosporiopsis*)
 = *Coleospora* Berk
 ✓ *Rhynchostoma* 1: 730 *R. minutum* Berk
 † *Dysrhynchis* 17: 689
 (= *Henningsomyces*)
 ✓ *Amphisphaeria* 1: 718 *A. coniformis* Berk
Delitschia 1: 732 *D. curvivalvis* Berk
Gaillardella 14: 559 *G. pygmaea* Berk
Delitschiella 17: 688 *D. polyphora* Berk
Protoventuria A: 113, 9: 741 *P. (P.) (P.)* Berk
Parodiella 1: 717 *P. (P.) (P.)* Berk
Pseudothia 16: 507 *P. (P.)* Berk
Sorothelia A: 122, 9: 728 *S. (P.)* Berk
Othia 1: 735 *O. (P.)* Berk
Massariovalsia 9: 755 *M. (P.)* Berk
Xylobotryum 11: 319, 14: 20 *X. (P.)* Berk
 (= *Trachyxlaria* 16: 510, *Xyloceras*
 17: 690) Berk
Melanconiella 1: 740 *M. (P.)* Berk
Camaropsis 1: 753 *C. (P.)* Berk
 (= *Boltonia* Berk) *sp. not specified*
Licopolia 16: 508 *L. (P.)* Berk

- (b) Stroma not phyllogenous
- x. Perithecia valloid
- y. Perithecia eutypoid
- ✓ *Valsaria* 1: 741 *V. (P.)* Berk
 ✓ *Endoxyliina* 11: 318 *E. (P.)* Berk
- Hyalophragmiae*
 2: 152, 9: 824, 11: 332, 14: 581, 16: 528, 17: 692
 Spores 2-several-septate, hyaline, oblong to cylindrical
- I. Perithecia separate
1. Perithecia covered or eruptent
- a. Perithecia beaked
- (1) Perithecia xylogenous, carbonous
- ✓ *Ceratosphaeria* 2: 227 *C. (P.)* Berk
Cryptoderis 2: 229 *C. (P.)* Berk
Gnomoniopsis 17: 716 *G. (P.)* Berk
- (2) Perithecia phyllogenous, submembranous
- (a) Spores separating into halves
- (b) Spores not separating into halves
- b. Perithecia not beaked
- (1) Spores with a mucous covering
- (2) Spores without a mucous covering
- (a) Perithecia submembranous, pseudostroma lacking
- x. Paraphyses lacking
- y. Paraphyses present
- (x) Spores muticate
- (y) Spores with a seta or cusp at either end
- (b) Perithecia membranous, in a leafy pseudostroma
- ✓ *Massarina* 2: 153 *M. (P.)* Berk
Sphaerulina 2: 186 *S. (P.)* Berk
 ✓ *Metasphaeria* 2: 156 *M. (P.)* Berk
 (incl. *Charrinia* 14: 585) Berk
 ✓ *Ceriosporella* 2: 184, 14: 19 *C. (P.)* Berk
Hypospila 2: 189 *H. (P.)* Berk
Saccardoella 2: 190 *S. (P.)* Berk
- (c) Perithecia subcarbonous, pseudostroma lacking, spores 20-30-septate
2. Perithecia superficial or subsuperficial
- a. Perithecia glabrous
- (1) Perithecia stalked, covered with a bright powder
- ✓ *Bombardiarium* 11: 338 *B. (P.)* Berk
Melomastia 2: 213 *M. (P.)* Berk
Zignoella 2: 214 *Z. (P.)* Berk
 (incl. *Bertiella* 17: 708) Berk
 y. Perithecia softish, greenish or reddish
- ✓ *Winterina* 14: 589 *W. (P.)* Berk
- b. Perithecia hairy or bysside
- (1) Perithecia of one color
- (a) Spores chain-like, separating into globose joints
- ✓ *Hormosperma* 14: 591 *H. (P.)* Berk
- (b) Spores not separating into joints
- x. Perithecia carbonous, large
- (x) Spores cylindrical, elongate
- ✓ *Lasiosphaeria* 2: 191 *L. (P.)* Berk

- (y) Spores fusoid, somewhat short
 y. Perithecia submembranous, small
 z. Perithecia fleshy-coriaceous, hairs
- (2) Perithecia of two colors, usually reddish at vertex
- II. Perithecia caespitose, erumpent, superficial
- III. Perithecia in a stroma or on a subicle
1. Perithecia on a subicle; asci many-spored, paraphyses lacking
2. Perithecia in a stroma
- a. Stroma lichenicole, white, lanose
- b. Stroma not lichenicole, black
- (1) Stroma immersed
- (2) Stroma superficial
- (a) Stroma lentiform, adnate to the pycnidium
- (b) Stroma pulvinate or hemispheric

Phaeosphaeriae

2: 1, 9: 759, 11: 319, 14: 561, 16: 510, 17: 718
 Spores 2-several-septate, olive, melleous or fuliginous, oblong to cylindrical

I. Perithecia separate

1. Perithecia covered or erumpent
- a. Spores with a mucous covering
- b. Spores without a mucous covering
- (1) Perithecia depressed beneath a black cortical clypeus
- (2) Perithecia without a stromatic clypeus
- (a) Spores muticate
- x. Paraphyses lacking
- y. Paraphyses present
- (x) Cells of spore concolorous
- m. Perithecia glabrous
- (m) Perithecia rostrate
- (n) Perithecia not beaked
- r. Spores cylindrical, connected in pairs in the ascus
- s. Spores separate
- n. Perithecia setose or hairy
- (y) Cells of spore discolorous
- (b) Spores caudate or cuspidate
- x. Spores caudate at base
- y. Spores cuspidate at both ends

- Enchnosphaeria 2: 205 *E. pinctum* Felt
- Acanthostigma 2: 207 *A. perianthium* Felt
 fascicled on a central disk
- Actiniopsis 16: 543 *A. thurberii* Felt
- Herpotrichia 2: 211 *H. rubri* Felt
- Baumliella 17: 708 *B. aculeata* Felt
- Sydowia 11: 341 *S. sparganii* Felt
- Dichosporium 16: 542 *D. glomeratum* Felt
- Calospora 2: 231 *C. patriciana* Felt
- Melanops 2: 231 *M. nivalis* Felt
- Holstiella 14: 593 *H. albomaculata* Felt

- Massaria 2: 2 *M. angustata* Felt
- Clypeosphaeria 2: 90 *C. notensis* Felt
- Phaeospora 16: 519 *P. unicolor* Felt
- Rhynchosphaeria 16: 524 *R. densa* Felt
- Leptosphaeropsis 9: 770, 11: 321
- Leptosphaeria 2: 131 *L. solitaria* Felt
- (incl. Cladosphaeria 11: 321, Chitonospora 9: 797)
- Pocosphaeria 11: 325 *P. variopunctata* Felt
- Heptameria 2: 88
- (incl. Passeriniella 11: 326)
- Rebentischia 2: 12 *R. foveoliformis* Felt
- Ceriospora 14: 19, 2: 184 *C. dubia* Felt

2. Perithecia superficial or subsuperficial
- a. Perithecia glabrous
- (1) Phytophilous
- (a) Spores finally separating into joints
- x. Joints 1-celled
- y. Joints 2-celled
- (b) Spores not separating into joints
- x. Perithecia smooth or nearly so
- (x) Spores biconic with a mucous covering
- (y) Spores medium, no mucous covering
- m. Ostiole narrow
- n. Ostiole widely open
- y. Perithecia verrucose
- (2) Fimicole
- b. Perithecia pilose or lyssiside
- (1) Perithecia concolorous
- (a) Spores cylindrical, elongate
- (b) Spores fusoid, somewhat short
- (2) Perithecia discolorous at the vertex

II. Perithecia caespitose, erumpent

III. Perithecia in a stroma

1. Stroma lichenicole
2. Stroma not lichenicole
- a. Asci 1-spored
- b. Asci 4-8-spored
- (1) Stroma valsa-like, innate
- (a) Asci 4-spored
- (b) Asci 6-8-spored
- x. Acervuli covered with a reddish or yellowish bran
- y. Acervuli not covered with a bran
- (2) Stroma eutype-like, i. e., woody, effuse
- (a) Paraphyses lacking
- (b) Paraphyses present
- (3) Stroma pulvinate, emerging

Hyalodictyae

2: 238, 11: 349, 9: 872, 14: 611, 16: 554, 17: 743

Spores transversally and longitudinally septate, usually muriform, hyaline, oblong to fusoid.

I. Perithecia separate

1. Perithecia covered or erumpent
- a. Asci 8-spored
- (1) Paraphyses lacking

- Oheriella 17: 736 *O. hermalina* Felt
- Oheria 2: 96 *O. modesta* Felt
- Caryospora 2: 122 *C. patriciana* Felt
- Melanomma 2: 98 *M. pulvisporica* Felt
- Trematosphaeria 2: 115 *T. pertusata* Felt
- Stuartella 2: 123 *S. foveola* Felt
- Sporormia 2: 123 *S. minima* Felt
- *Lasiosphaeria 2: 194 *L. trichota* Felt
- Chaetosphaeria 2: 92 *C. phaeothomae* Felt
- *Herpothrix 2: 211 *H. phaeana* Felt
- Gibberidea 2: 132 *G. rubra* Felt

†Trematosphaeria 17: 735 *T. formosana* Felt
 (Trematosphaeropsis)

Titania 9: 823 *T. brevis* Felt

Aglaospora 2: 133 *A. profusa* Felt

Thyridaria 2: 140 *T. unicolor* Felt

Pseudovalsa 2: 135 *P. laniformis* Felt

Cryptosphaeria 16: 521 *C. foveola* Felt

Kalmusia 2: 142 *K. rubra* Felt

Melogramma 2: 144 *M. vulgaris* Felt

- (a) Spores separate
 (b) Spores in a common mucus
 (2) Paraphyses present
 (a) Perithecia covered by a stromatic clypeus
 (b) Perithecia without a clypeus
 b. Asci 16-spored; perithecia setose
 2. Perithecia superficial
 a. Perithecia glabrous
 (1) Perithecia softish, greenish or reddish
 (2) Perithecia hard, black
 (a) Perithecia beaked
 (b) Perithecia not beaked
 b. Perithecia setose or hairy
 (1) Perithecia globose, setose and byssoid
 (2) Perithecia turbinate, disk with fascicled hairs
- II. Perithecia in a stroma
 1. Perithecia projecting, setose
 2. Perithecia immersed
 a. Stroma effuse, eutypeous
 b. Stroma circular, valvulous

Phaeodictyae

2: 238, 9: 872, 11: 341, 14: 594, 16: 544, 17: 746.
 Spores muriform, yellow to brown, oblong to fusoid.

I. Perithecia separate

1. Perithecia covered or erumpent
 a. Spores with a mucous layer
 b. Spores without a mucous layer
 (1) Perithecia without a phyllogenous pseudostroma
 (a) Asci 1-2-spored
 (b) Asci 8-spored
 x. Paraphyses lacking
 y. Paraphyses present
 (x) Perithecia covered by a black stromatic clypeus
 (y) Perithecia not covered by a black stromatic clypeus
 m. Perithecia glabrous
 (m) Spores muticate
 r. Perithecia coriaceous
 s. Perithecia membranous
 (r) Spores rounded or terete
 h. Wall of perithecium single
 Pleosphaerulina 11: 350
 Diplothea 16: 555
 = *Mycogonium* etc. (H. 711)
 Peltosphaeria 9: 898
 Catharinaea 11: 350
 Capronia 2: 288
 Winteria 14: 589
 Rhamphoria 2: 307
 Tichosporella 11: 351
 Boerlagella 14: 612
 Ophiodictyum 16: 555
 Berlesiella 9: 914
 Thyriddella 11: 351
 Clethridium 11: 350, 2: 332
 Pleomassaria 2: 239
 Julella 2: 289
 Leptosphaerulina 17: 746
 Phaeopeltosphaeria 11: 344
 Karstenula 2: 240
 Pleospora 2: 241

- i. Wall of perithecium double
 Scleroplea 16: 548
 (s) Spores compressed, flattened
 h. Perithecia smooth
 i. Perithecia hairy
 (n) Spores appendaged at both ends
 Delacouria 2: 288
 Pyrenophora 2: 277
 (2) Perithecia in a phyllogenous pseudostroma
 Isothea 2: 290
 2. Perithecia superficial
 a. Phytogenous
 (1) Perithecia soft, light colored
 (2) Perithecia carbonous, black
 (a) Perithecia corrugate-tuberculate
 (b) Perithecia not corrugate
 x. Perithecia glabrous
 y. Perithecia hairy
 b. Fimicole; each spore of 3 10-celled chains
 Winteria 14: 589
 Crotonocarpia 2: 306
 Tichospora 2: 290
 Pleosphaeria 2: 304
 Pleophragmia 2: 307
 Cucurbitaria 2: 307
 Montagnula 14: 603
 Thyridium 2: 323
 Fenestella 2: 325

Scolecosporae

2: 337, 9: 923, 11: 351, 14: 613, 16: 557, 17: 767
 Spores linear or filiform, continuous or septate, hyaline or yellowish.

I. Perithecia separate

1. Perithecia covered or erumpent
 a. Perithecia covered by a phyllogenous clypeus
 Linospora 2: 354
 b. Perithecia not covered by a clypeus
 (1) Perithecia beaked
 (2) Perithecia not beaked
 (a) Perithecia glabrous
 x. Spores muticate
 (x) Spores in a hyaline sheath
 (y) Spores not in a hyaline sheath
 m. Perithecia globose to conoid
 Ophiobolus 2: 337
 n. Perithecia cylindrical, truncate
 y. Spores awned at each end
 Ophiognomonina 17: 776
 Ophiomassaria 11: 353
 Ophiobolus 2: 337
 Cylindrina A: 421, 9: 937

- (x) Perithecia very large, disk-like *Therysia 2: 358*
- (y) Perithecia small, globose, on grasses and palms *Dilophia 2: 357*
- (b) Perithecia hairy *Ophiochaete 11: 353*
- 2. Perithecia superficial or immersed at base *Ophiochaete 11: 353*
- a. Perithecia beaked *Bovilla 2: 360*
- b. Perithecia not beaked
 - (1) Perithecia fimicole
 - (2) Perithecia not fimicole
 - (a) Perithecia glabrous
 - x. Perithecia globose
 - (x) Perithecia immersed at base
- (y) Perithecia wholly superficial
 - y. Perithecia elongate cylindrical; ostiole sulcate *Aceria 11: 353*
 - (b) Perithecia hairy *Leptosporella 14: 619*
- II. Perithecia in a stroma
 - 1. Stroma superficial
 - a. Perithecia in an effuse definite stroma *Bactrosphaeria 14: 617*
 - b. Perithecia densely heaped in a thin vanishing stroma *Acerbiella 17: 768*
 - 2. Stroma immersed or eruptent
 - a. Stroma eruptent, yellow within *Mauria 14: 620*
 - b. Stroma immersed, viscidous *Pseudomeliola 9: 938*
 - (1) Necks of perithecia short, scarcely converging *Sillia 7: 361*
 - (2) Necks long, converging into a disk *Vialaea 14: 619*

Family 19. VERRUCARIACEAE
ZAHLEBRUCKNER 51

Mycelium parasitic on bluegreen or yellow green algae, and forming a more or less distinct crustose, foliose or fruticose thallus, the latter usually superficial but sometimes below the surface; perithecia distinct, single or cespitose or united in a stroma, usually globose and ostiolate, membranous, coriaceous or carbonous; asci 1-many-spored; spores various.

- I. Perithecia separate, at least not in a stroma (Cfr. Lichinae, page 74.)
 - 1. Algae bluegreen, Nostoc, Scytonema, Sirospion, or Calothrix
 - Subfamily Pyrenidiaceae 76
 - a. Asci 4-8-spored
 - (1) Asci 4-spored; spores 3-septate *Pyrenidium 77*
 - (2) Asci 6-8-spored
 - (a) Spores spheric, 1-celled: algae Calothrix *Calothricopsis 165*
 - (b) Spores fusiform, 1-septate

- x. Algae Sirospion or Scytonema
 - Eolichen 76
 - Pyrenocollema 169
 - Hassea 76
 - y. Algae Nostoc
 - (c) Spores filiform, continuous - *Placothelium 77*
 - b. Asci many-spored; spores 1-celled
 - 2. Algae yellow green, Pleurococcus, Palmella, Chroolepus, etc.
 - a. Thallus crustose or gelatinous
 - (1) Thallus gelatinous, hyphae loose *Epigloea 53*
 - (2) Thallus crustose, not gelatinous, hyphae compact
 - (a) Algae Cystococcus, in sheathed colonies
 - Subfamily Morioliace 52
 - Moriola 52
 - x. Thallus without pseudoparenchyma
 - y. Thallus with pseudoparenchyma
 - (x) Asci 8-spored
 - m. Spores dark, 1-septate **Dimerisma 52*
 - n. Spores dark, 4-8-septate **Phaeomeris 52*
 - o. Spores hyaline, 2-4-septate *Spheconisca 52*
 - (y) Asci many-spored; spores hyaline, 1-celled **Pleophalis 52*
 - (b) Algae Pleurococcus or Palmella
 - Subfamily Verrucariace 53
 - x. Paraphyses lacking, or soon disappearing
 - (x) Asci 1-8-spored
 - m. Algae present within the perithecium; spores muriform
 - (m) Spores hyaline **Phalotauris 57*
 - (n) Spores dark *Staurothele 56*
 - n. Algae lacking in perithecium
 - (m) Spores 1-celled
 - r. Spores globose to elliptic
 - (r) Perithecia more or less superficial
 - h. Spores hyaline *Verrucaria 54*
 - i. Spores dark **Phaeosporis 55*
 - (s) Perithecia immersed
 - *Lithoecis 55
 - s. Spores vermiform, clavate at each end
 - Saccopyrenia 54
 - (n) Spores 2-4-celled, hyaline
 - r. Spores 2-celled *Thelidium 56*
 - s. Spores 4-celled **Phragmothele 56*
 - (o) Spores muriform *Polyblastia 56*
 - (y) Asci many-spored *Trimmatothele 56*
- y. Paraphyses persistent
 - (x) Algae present in the perithecium *Thelenidia 57*
 - (y) Hymenial algae lacking
 - m. Perithecia with normal ostiole

- (m) Spores 1-celled
 r. Spores hyaline **Thrombium 57**
 s. Spores dark ***Phaeothrombis 57**
- (n) Spores septate
 r. Spores elliptic, 3-few-septate
Geisleria 57
- s. Spores muriform
 (r) Spores hyaline **Microglæna 57**
 (s) Spores dark ***Phaeoglæna 57**
 t. Spores needle-shaped, many-celled
Gongylia 57
- n. Ostiole margined by a broad disk
 (m) Spores transeptate **Aspidopyrenium 58**
 (n) Spores muriform **Aspidothelium 58**
- (c) Algae *Chroolepus*
 x. Perithecia upright, with vertical ostiole
Subfamily Pyrenulæ 62
- (x) Paraphyses free, simple
 m. Perithecia smooth
 (m) Spores 1-celled, colorless
Coccotrema 66
- (n) Spores septate
 r. Asci 4-8-spored
 (r) Asci persistent
 h. Spores transeptate
 (h) Spores hyaline
 +. Spores 1-septate
 (+) Spore cells separating
***Dichoporis 66**
 (-) Spore cells not separating
***Diporina 66**
 - Spores 2-many-septate
Porina 66 ✓
- (i) Spores dark
 +. Spores 1-septate
***Dippyrenis 68**
 - Spores several-septate
Pyrenula 57 ✓
 (incl. *Blastodesmia 67*)
- i. Spores muriform
 (h) Spores hyaline **Clathroporina 67**
 (i) Spores brown **Anthracothecium 68**
- (s) Asci evanescent; spores acicular, clear
Belonia 67
- s. Asci many-spored; spores septate, clear
 (r) Spores 1-celled ***Holothesis 67**
 (s) Spores septate
 h. Spores 1-septate ***Dithelopsis 67**

- i. Spores 2-many-septate
Thelopsis 67
- n. Perithecia with stiff fasciated hairs
Stereochlamys 68
- (y) Paraphyses lacking, or branched and united
 m. Ostiole round or dot-like
 (m) Spores hyaline
 r. Spores 1-septate ***Pyrenyllum 64**
 s. Spores 2-many-septate
 (r) Spores oval to oblong
Arthropryrenia 64
 (incl. *Pseudopyrenula 65*)
- (s) Spores acicular to filiform
Leptorhaphis 65
Polyblastiopsis 65
- t. Spores muriform
 (n) Spores brown
 r. Spores 1-septate **Microthelia 62**
 s. Spores 2-several-septate ***Polythesis 64**
 n. Ostiole radiate, torn or lobed
Asteroporum 62
- y. Perithecia oblique or horizontal with oblique or lateral ostiole
Subfamily Paratheliae 71
- (x) Spores transeptate
 m. Spores hyaline
 (m) Spores 1-septate ***Ditremsia 71**
 (n) Spores several-septate, oblong
Pleurotrema 71
 (incl. *Plagiotrema 72*)
- (o) Spores filiform, many-celled
***Trichotrema 71**
Parathelium 72
- n. Spores brown
 (y) Spores muriform
 m. Spores hyaline **Campylotheium 72**
 n. Spores brown **Pleurotheium 72**
- (d) Algae *Phyllactidium* or *Cephaleurus*
Subfamily Strigulae 74
- x. Perithecia smooth
 (x) Paraphyses simple, free
 m. Spores transeptate
 (m) Spores 1-septate ***Phylloporis 75**
 (n) Spores several-septate
 r. Thallus uniform **Phylloporina 75**
 s. Thallus orbicular, lobed at edge
Strigula 76
Phyllobathelium 75
- n. Spores muriform
 (y) Paraphyses branched and united
 m. Spores 1-celled, dark **Haplopyrenula 74**
 n. Spores 2-4-celled, brown **Microthelopsis 75**

- y. Perithecia with fascicled nearly horizontal hairs at apex
Trichothelium 75
Subfamily Dermatocarpaceae 58
- b. Thallus foliose or scaly
- (1) Algae Palmella
- (a) Hymenial algae lacking
- x. Paraphyses lacking, or fused into a mass without cortex
- (x) Paraphyses lacking; thallus Normandina 59
- (y) Paraphyses fused; thallus corticate
- m. Spores 1-celled, colorless Dermatocarpum 60 ✓
- n. Spores septate
- (m) Spores colorless Placiidiopsis 60
- (n) Spores brown Heterocarpum 60
- y. Paraphyses persistent
- (x) Spores 1-celled, brown Anapyrenium 59
- (y) Spores muriform, colorless Psoroglaena 59
- (b) Hymenial algae present Endocarpum 61 ✓
- (2) Algae Chroolepus; spores colorless, 1-celled
- Lepolichens 69
- Mastodia 241
- (3) Algae Prasiola
- c. Thallus fruticose, branched, with Pleurococcus; spores muriform, brown Pyrenothamnia 61
- II. Perithecia in a stroma (Cfr. Pertusariae, page 79.)
1. Perithecia upright, with individual pores
- Subfamily Trypetheliae 69
- a. Spores colorless
- (1) Spores transeptate
- (a) Spores oval to fusiform Trypethelium 70
- (b) Spores filiform Tomasiella 69
- (2) Spores muriform Laurera 71
- b. Spores brown
- (1) Spores transeptate Melanotheca 70
- (2) Spores muriform Bottaria 71
2. Perithecia oblique or horizontal, with a common canal or pore
- Subfamily Astrotheliae 72
- a. Spores transeptate
- (1) Spores colorless Astrothelium 73 ✓
(incl. Lithothelium 73)
- (2) Spores brown Pyrenastrum 73
- b. Spores muriform
- (1) Spores colorless Heufleria 74
- (2) Spores brown Parmenteria 74
- III. Perithecia sunken in stroma-like warts; horizontal thallus lacking; asci many-spored; spores 1-celled, clear
- Thelocarpum 150

Family 20. HYPOCREACEAE

2: 447, 9: 941, 11: 354, 14: 621, 16: 559, 17: 777.

Mycelium scanty and immersed or producing a subicle or a stroma; perithecia

globose, sometimes beaked, fleshy, waxy or waxy-membranous, bright colored, usually reddish, more rarely blue, yellow or whitish, never carbonous, opening by a round pore or ostiole, single, cespitose or composite in a stroma; asci and spores as in Sphaeriaceae.

Allantosporae

17: 778

Spores 1-celled, obtuse, curved-oblong, hyaline or olivaceous

One genus

Allantonectria 17: 778

Hyalosporae

2: 447, 9: 941, 11: 354, 14: 621, 16: 559, 17: 778

Spores 1-celled, hyaline

I. Perithecia separate

1. Perithecia covered

a. Asci 8-spored

b. Asci many-spored

2. Perithecia superficial or nearly so

a. Perithecia beaked; spores ciliate

b. Perithecia not beaked

(1) Spores smooth

(2) Spores ciliate or spiny

(a) Spores 1-ciliate at each end

(b) Spores spiny, hemispheric

Hyponectria 2: 455

Thelocarpum 9: 946

Eleutheromyces 2: 455

Nectriella 2: 448

Heteronectria 14: 624

Cleistosoma A: 195, 9: 943

II. Perithecia cespitose

1. Asci 8-spored

2. Asci many-spored

III. Perithecia in a subicle or stroma

1. Perithecia in a subicle, i. e., a colwebby or cottony stroma

a. Paraphyses lacking, fungicole

b. Paraphyses numerous, not fungicole

2. Perithecia in a definite stroma

a. Stroma effuse, globose, verruciform or linear

(1) Asci 8-spored

(a) Perithecia circinate, valsiform Balzania 16: 561

(b) Perithecia not circinate, mostly irregular

x. Spores globose

y. Spores ovate to oblong

(x) Stroma globose or verruciform

m. Stroma globose, smooth, dark

n. Stroma verruciform, hairy, red

(y) Stroma lirelliform, clear

(z) Stroma effuse, phyllogenous

(2) Asci many-spored; phyllogenous

b. Stroma elongate, erect

Peckiaella 9: 944

Byssonectria 2: 456

Battarina 2: 533

Pseudotrype 16: 561

Selinia 2: 457

Monographus 2: 457

Polystigma 2: 458

Moelleriella 14: 626

Incl. Cypripodinae L.H. 7th 1866
Sp. C. amphididyma (L.H.) 1866

- (1) Asci 8-spored
- (a) Stroma capitate, spores smooth

Sphaerostibella 17: 778 *S. lutea* H. M.

- (b) Stroma clavaria-like; spores asperate

Penicillioopsis 9: 945 *P. clavariae* form. in

- (2) Asci 16-spored; stroma clavate; on insects

Podostroma 11: 355 *P. leucosphaera* Hart

Phaeosporae

2: 459, 9: 949, 11: 355, 14: 626, 16: 562, 17: 781

Spores 1-celled, dark

I. Perithecia separate

- 1. Perithecia more or less covered

Baculospora 9: 952 *B. pallens* Zerk

- 2. Perithecia superficial

- a. Perithecia not beaked

- (1) Perithecia smooth

- (a) Spores globose, verruculose

Neocosmospora 16: 562 *N. verruculata* Zerk

- (b) Spores oval to elliptic, smooth

*Sphaerodes 2: 460 *S. ellipticus* Zerk

- (2) Perithecia hairy

Erythrocarpum 9: 950 *E. microcarpum* Zerk

- b. Perithecia beaked

- (1) Asci 8-spored

Melanospora 2: 461 *M. brucei* Zerk

- (2) Asci many-spored

Scopinella 9: 953 *S. pleuron* Zerk

II. Perithecia in a subicle or a stroma

- 1. Perithecia immersed in a subicle

- a. Perithecia beaked

*Rynchomelasma 2: 461 *R. aridum* Zerk

- b. Perithecia not beaked

Sphaeroderma 2: 459 *S. tuberculoides* Zerk

- 2. Perithecia in a stroma

- a. Spores spheric

Thuemennella 14: 628 *T. javanica* Zerk

- b. Spores ovoid

- (1) Stroma clavate, pendulous

Xylocrea 16: 451 *X. periformis* Zerk

- (2) Stroma more or less globose

- (a) Perithecia in one layer

Entonaema 16: 450 *E. liguricum* Zerk

- (b) Perithecia in several layers

Stromme 16: 452 *S. (Engleromyces) globosa* Zerk

Hyalodidymae

2: 465, 9: 953, 11: 355, 14: 628, 16: 565, 17: 782

Spores 2-celled, hyaline

I. Perithecia separate or cespitose

- 1. Perithecia immersed; in leaves

Charonectria 2: 466 *C. consolida* Zerk

- 2. Perithecia superficial

- a. Perithecia red, yellow or white

- (1) Asci of one kind, 8-spored

Rhynchonectria 17: 798 *R. longicauda* Zerk

- (a) Perithecia beaked

- (b) Perithecia not beaked

Bresadolella 17: 797 *B. aurea* Zerk

- x. Spore cells separating

- y. Spore cells not separating

- (x) Perithecia smooth

- m. Perithecia often on a tubercularoid base

Nectria 2: 479

- n. Perithecia on or with a stillloid base

Sphaerostilbe 2: 511

- (y) Perithecia hairy

*Dasyphthora 2: 505

- (2) Asci of two kinds, 8-spored and many-spored

Aponectria 2: 516

- (3) Asci many-spored

Metanectria 2: 517

- b. Perithecia blue or violet

Lisea 2: 517

- (1) Asci 8-spored

- (2) Asci many-spored

Cyanocephalum 11: 360

II. Perithecia in a subicle or stroma

- 1. Perithecia in a subicle

- a. Perithecia globose-conic, fungicoid

Hypomyces 2: 466

- b. Perithecia scutate-dimidiate, phyllogenes

Puiggariella 2: 478

- 2. Perithecia in a stroma

- a. Perithecia adnate to a fruticose stroma

Corallomyces 2: 519

- b. Perithecia immersed in a clavate, globose, pulvinate or effuse stroma

Treleasia 14: 640

- (1) Perithecia long-beaked

Lambro 16: 589

- (2) Perithecia not long-beaked

- (a) Spore divided near base

- (b) Spore divided near middle

- x. Spore cells separating

- (x) Stroma vertically elongate

Podocrea 17: 799

- (y) Stroma globose to effuse

- m. Conidiophore (Stilbum) arising from stroma

Stilbocrea 16: 588

- n. Conidiophore lacking or not Stilbum

Hypocrea 2: 520

(incl. Cryphonectria 17: 783, My-

cocitrus 16: 589)

- y. Spore cells not separating

Hypocreopsis 9: 980

(incl. Clintoniella 16: 588)

Phaeodidymae

2: 537, 9: 981, 14: 646, 16: 591, 17: 808

Spores 2-celled, dark

I. Perithecia separate or cespitose

- 1. Perithecia immersed

- a. Perithecia white, ostiole cylindrical; on black fungi

Passerinula 2: 537

- b. Perithecia darkish, ostiole broad, bright; in bark

Spegazzinula 2: 537

- 2. Perithecia superficial

- a. Spore cells separating

Neoskofitzia 9: 981

- b. Spore cells not separating

- 46
- (1) Perithecia on or with a stilbum-like base
Calostilbe 16: 591 *C. longicaulis* (Müll. Arg.)
 often with *Helminthosporium*
- (2) Perithecia without stilbum-like base
Letendracra 2: 538 *L. sinuolobes* Sacc.
 (incl. *Phaeoectria* 11: 359)
Phaeoecopsis 16: 591 *P. hypoxylonoides* (Müll. Arg.)
 = *Volgana* + *Hypoxylon* see P. 11: 359
 Prob. wrong, V.M. opinion
 based on *Ascochyta*
- II. Perithecia in a stroma
 = *Hyalophragmia*
 2: 539, 9: 982, 11: 363, 14: 647, 16: 592, 17: 808
 Spores 2-several-septate, hyaline
- I. Perithecia separate or cespitose
1. Perithecia immersed, spores falcate
Cesatiella 2: 557 *C. australis* Sacc. & Syd.
 = *Ascochyta* = *Montoya*
2. Perithecia superficial
- a. Perithecia red, yellow or white
 (1) Perithecia on or with a stilbum base
Stilbnectria 9: 986 *S. lateritia* Kest.
 = *Stilbnectria* = *Ascochyta*
- (2) Perithecia without a stilbum base
 (a) Perithecia atomous
Malmeomyces 16: 592 *M. parvulus* Sacc.
 = *Stilbnectria* = *Ascochyta*
- (b) Perithecia ostiole
 x. Spores ciliate at each end
Paranectria 2: 552 *P. affinis* (Sacc.) Sacc.
 (incl. *Debaryella* 17: 809) *P. ruficarpa* Sacc.
Calonectria 2: 540 *C. daldeniana* Sacc.
- y. Spores muticate
- b. Perithecia blue, violet or greenish
 (1) Spores muticate
 (2) Spores appendiculate each way
- II. Perithecia in a subicle or in a stroma
1. Perithecia in a subicle
Berkelella 9: 989 *B. calidonica* (Müll. Arg.)
 = *Ascochyta* = *Montoya*
2. Perithecia in a pulvinate or discoid stroma
Broomella 2: 557 *B. vitellina* (Müll. Arg.)
 = *Ascochyta* = *Montoya*
Cuttermanella *P. canescens* Sacc.
 = *Stilbnectria* = *Ascochyta*
- Phaeophragmia*
 2: 539, 9: 982, 11: 363, 16: 590
 Spores 2-several-septate, dark
- I. Perithecia in a large tuberiform stroma *Pelonectria* 16: 599 *P. primora* Müll.

Hyalodictyae

2: 558, 9: 990, 11: 364, 14: 659, 16: 599, 17: 814

Spores muriform, hyaline 6-7

- I. Perithecia separate or cespitose, superficial
1. Perithecia red or yellow to whitish
 a. Perithecia with a stilbum base
Megalonectria 2: 560 *M. pascuensis* Sacc.
 = *Ascochyta* = *Montoya*
- b. Perithecia without a stilbum base
 h. Perithecia blue or violet
Pleonectria 2: 559 *P. leucostoma* Sacc.
Pleogibberella 9: 992 *P. cubensis* (Müll. Arg.)
Thyronectria 2: 561 *T. patavina* Sacc.
- II. Perithecia in a valsoid stroma

Phaeodictyae

2: 558, 9: 990, 11: 364, 16: 600, 17: 815

Spores muriform, dark

- I. Perithecia separate or cespitose
1. Perithecia beaked, asci 8-spored
Bivonella 9: 989 *B. hypoxylonoides* Sacc.
2. Perithecia not beaked, asci many-spored
Feracia 17: 815 *F. hibernica* Peck.
- II. Perithecia in a stroma
1. Asci paraphysate
- a. Stroma conoid, snow-white
Leucocrea 16: 601 *L. murale* (Sacc.) Sacc.
Shiraia 16: 600 *S. canaliculata* (Müll. Arg.)
- b. Stroma tuberiform, rimose
2. Asci not paraphysate
- a. Stroma pulvinate, disk greenish
Mattiroliella 9: 993 *M. murale* (Sacc.) Sacc.
Uleomyces 11: 364 *U. parvulus* Sacc.
 = *Uleomyces* = *Ascochyta*
- b. Stroma suberustose
Scolecosporeae
 2: 562, 9: 993, 11: 365, 14: 651, 17: 815, 16: 601
- Hyaloscoleciae*
 Spores needle-shaped or filiform, hyaline or nearly so, constant or sept.
- I. Perithecia separate or cespitose
1. Perithecia enclosed in a sack
Oomyces 2: 564 *O. curvicaulis* (Müll. Arg.)
 = *Ascochyta* = *Montoya*
2. Perithecia not in a sack
- a. Perithecia immersed or erumpent
- (1) Perithecia many-perforate above
Cosciniaria 9: 1003 *C. longicaulis* Sacc.
- (2) Perithecia with a single ostiole
Micronectria 9: 996 *M. gurgulenta* (Müll. Arg.)
- b. Perithecia superficial
- (1) Perithecia globose-conic, papillate, reddish
Ophionectria 2: 563 *O. hibernica* Peck.
- (2) Perithecia vertically oblong, not papillate, white
Tubeufia 14: 652 *T. jamaicensis* Peck.
- II. Perithecia in a subicle or in a stroma
1. Perithecia in a subicle or lysoid stroma
Torrubiella 9: 994 *T. marneola* Sacc.
 = *Ascochyta* = *Montoya*
 = *Helminthascus* 16: 616
2. Perithecia in a stroma
- a. Stroma vertical, stipitate
- (1) Stroma from a sclerotium or a blackened matrix
Claviceps 2: 564 *C. purpurea* Sacc.
 (incl. *Balansia* 9: 997, *Balansjella* 17: 822) *B. hirsuta* (Müll. Arg.)
 = *Ascochyta* = *Montoya*
- (2) Stroma without sclerotium; on insects or fungi
Cordyceps 2: 566 *C. militaria* Sacc.
Dussiella 9: 1004 *D. trichosporia* Peck.
- b. Stroma effuse or pulvinate
- (1) Stroma on a white subicle
Epicloe 2: 578 *E. typhicalis* (Sacc.)
 = *Ascochyta* = *Montoya*
- (2) Stroma without a subicle
- (a) Stroma effuse, encircling culms
 x. Spore cells separating
 (x) Perithecia in a definite peripheral zone
Mycomalus 16: 604 *M. baccharum* Müll.

(y) Perithecia not arranged in a zone

m. Stroma hard and black **Fleischera** 17:819 *F. javanica* R. Br.

n. Stroma fleshy and soft

(m) Stroma fertile over entire surface

Hypocrella 2:579 *H. discoidalis* (R. Br.) Sacc.

(n) Stroma fertile above, sterile below

Ascoplyporus 16:605 *A. volucreformis* Sacc.y. (Spore cells not separating) **Echinodothis** 17:819 *E. tuberculiformis* (R. Br.) Sacc.**Phaeoscoliciae**

Spores filiform, dark

I. Stroma black, perithecia immersed; spores dilabent, brown

Konradia 16:605 *K. bambusaria* R. Br.**Family 21. DOTHIDEACEAE**

Mycelium typically producing a stroma, in which the perithecia are more or less completely sunken and reduced to locules; otherwise as in Sphaeriaceae.

Hyalosporae

2:588, A:222, 9:1004, 11:368, 14:663; 16:616, 17:827

Spores 1-celled, hyaline or nearly hyaline, ovoid, oblong or fusoid, rarely globose

I. Asci 8-spored

1. Stroma globose, pulvinate or cup-shaped

a. Stroma cupulate-discoid, attached at center

Schweinitziella 9:1005 *S. hyrcanica* Sacc.

b. Stroma pulvinate or subcypate

(1) Stroma pulvinate

(a) Stroma subcoriaceous

(b) Stroma corneous

(2) Stroma subcypate, often oval to oblong

Mazzantia 2:591(incl. **Diachora** 11:374)

2. Stroma oblong, linear or effuse

a. Stroma superficial, on flowers

b. Stroma erumpent or superficial

(1) Stroma waxy or fleshy

a. Stroma more or less waxy within, linear, black

Scirrhella 9:1030**Monographus** 2:457

b. Stroma fleshy, white

(2) Stroma more or less carbonous, round to effuse

(a) Asci usually shorter than 30 μ (b) Asci usually longer than 50 μ **Euryachora** 2:625f.**Phyllachora** 2:594

II. Asci 3-spored; stroma subglobose, subcoriaceous

Zimmermanniella 17:827**Phaeosporae**

2:626, 9:1031, 11:374, 14:675, 16:625, 17:841

Spores 1-celled, colored, usually yellowish or brown, ovoid, oblong or fusoid

I. Stroma subhemispheric to effuse; asci 8-spored

Auerswaldia 2:626**Hyalodidymae**

2:627, 9:1034, 11:375, 14:676, 16:625, 17:844

Spores 1-septate (2-celled), hyaline or subhyaline, ovoid, oblong or fusoid

I. Stroma pulvinate or disciform

1. Stroma pulvinate, erumpent, usually ramifol

a. Asci 4-8-spored **Plowrightia** 2:635***Pleodothis** 11:376b. Asci many-spored **Microcyclus** 17:844

II. Stroma oblong to linear or effuse

1. Stroma linear

2. Stroma oblong to effuse, sometimes orbicular

a. Cells of spore very unequal **Munkiella** 9:1034

b. Cells of spore equal

(1) Locules immersed in stroma **Dothidea** 2:627

(2) Locules completely exerted from stroma

Rosenscheldia 9:1036**Phaeodidymae**

2:630, 9:1043, 11:377, 14:680, 16:628, 17:852

Spores 1-septate, dark, fuliginous to brown, ovoid, oblong or fusoid

I. Stroma superficial, disciform

II. Stroma erumpent, pulvinate to effuse

1. Stroma usually effuse

2. Stroma pulvinate

a. Stroma subcarbonous

b. Stroma subcoriaceous

Russoella 9:1044**Dothidea** 2:639(incl. **Hypoxylopsis** 17:855)**Hyalophragmiae**

2:646, 9:1045, 11:377, 14:682, 16:629, 17:856

Spores 2-several-septate, hyaline, oblong to cylindrical

I. Perithecia or locules exerted from the stroma; spores sometimes colored

Montagnella 2:646

II. Perithecia immersed

1. Stroma fleshy or waxy

2. Stroma carbonous

a. Perithecia disposed in radiate lines

b. Perithecia not radiate

Telimena 16:631**Darwiniella** 9:1048**Phaeophragmiae**

2:646, 9:1045, 11:377, 14:682, 16:629, 17:857

Spores 2-several-septate, colored, yellowish to brown, oblong to cylindrical

I. Stroma elongate or linear

Rhopoglyphus 2:647

II. Stroma subhemispheric

Homostegia 2:649

Hyalodictyae

8: 847

Spores muriform, hyaline, ovate to oblong

I. Stroma with a round black receptacle stuffed with locules

Pyrenotheca 8: 847 *Pyrenotheca*

II. Stroma disciform or hemispheric

*Discostroma 11: 379 *Discostroma*

Phaeodictyae

2: 651, 9: 1051, 11: 378, 14: 684, 16: 632, 17: 858

Spores muriform, dark, ovate to oblong

I. Stroma disciform or hemispheric

Curreya 2: 651 *Curreya*

Scolecosporae

2: 652, 9: 1051, 14: 685, 16: 632, 17: 859

Spores filiform, hyaline, continuous, guttate or septate

I. Asci 8-spored

1. Spores narrowly filiform, 1-2 μ wide2. Spores broadly filiform, 5-8 μ wide

II. Asci many-spored

Ophiodothis 2: 652 *Ophiodothis*Oxydothis 14: 674 *Oxydothis*Myriogenospora 14: 685 *Myriogenospora*

Family 22. MYCOPORACEAE

ZAHLEBRUCKNER 77

Mycelium parasitic on Palmella or Chroolepus, forming a uniform thallus without a cortex; perithecia reduced to locules in a stroma as in Dothideaceae, to which family the genera might well be referred.

I. Spores transeptate; algae Chroolepus

1. Spores 1-septate

a. Spores colorless

b. Spores brown

2. Spores several-septate

a. Spores colorless

b. Spores brown

3. Spores needle-shaped

II. Spores muriform; algae Palmella

*Chlorodothis 78 *Chlorodothis**Sciodothis 78 *Sciodothis**Nothostroma 78 *Nothostroma**Mycoporis 78 *Mycoporis*Mycoporellum 78 *Mycoporellum*Mycoporum 78 *Mycoporum*

Family 23. COCCOIDEACEAE

17: 860 (16: 624)

Stromata with immersed locules, affixed to the matrix by a central stipitiform point, subcarneous when fresh, subcorneous when dry; locules without distinct proper walls.

Hyalosporae

16: 624

Spores 1-celled, hyaline, ellipsoid

I. Stroma superficial, disciform-pulvinate, subcarneous

Coccoidea 16: 624 *Coccoidea*

II. Stroma superficial, cupulate-discoid

Schweinitziella 9: 1005 *Schweinitziella*

Phaeosporae

17: 860

Spores 1-celled, dark, ovoid

I. Stroma subcarneous, discoid

Coccodiscus 17: 860 *Coccodiscus*

Hyalodidymae

17: 860

Spores 1-septate, hyaline, fusoid

I. Stroma subcarneous or corneous, disciform-pulvinate

Yoshinagaia 17: 860 *Yoshinagaia*

Family 24. MICROTHYRIACEAE

2: 658, 9: 1053, 11: 379, 14: 686, 16: 633, 17: 861

Perithecia separate, or rarely in a stroma, dimidiated, appanate, context usually beautifully radiate, subsuperficial, black, membranous or carbonous, perforate or astomous; asci 4-8-spored, usually short.

Subfamily Microthyriae

Perithecia typically not seated on a subicle

Hyalosporae.

2: 659, 9: 1053, 11: 379, 14: 686, 16: 633, 17: 861

Spores 1-celled, hyaline, ovoid to oblong or fusiform

I. Spores oblong, curved

Piptostoma 9: 1054 *Piptostoma*

II. Spores elliptic to fusiform, straight

1. Spores elliptic, short

Myiocoprum 2: 659 *Myiocoprum*

2. Spores fusiform, long, sometimes 1-septate

Pemphidium 2: 670 *Pemphidium*

Phaeosporae

2: 662, 9: 1054, 16: 634, 17: 861

Spores 1-celled, dark, globose to oblong

I. Spores globose; perithecia on a hyaline subicle

Blasdalea 16: 634 *Blasdalea*

II. Spores oblong; subicle lacking

Vizella 2: 662 *Vizella*

Hyalodidymae

2: 662, 9: 1055, 11: 379, 14: 687, 16: 635, 17: 862

Spores 1-septate, hyaline, oblong to fusoid

I. Asci with paraphyses

1. Perithecia with several ostioles

Polystomella 9: 1063 *Polystomella*

2. Perithecia astomous

Clypeolum 2: 667 *Clypeolum*

II. Asci without paraphyses

1. Perithecia smooth

a. Perithecia more or less mytiliform and confluent

Brefeldiella 9: 1063 *Brefeldiella*

MICROTHYRIACEAE

- b. Perithecia not mytiliform or confluent
Microthyrium 2: 662
- 2. Perithecia setulose
Chaetothyrium 9: 1067
- Phaeodidymae
2: 668, 9: 1064, 11: 381, 14: 689, 17: 865
Spores 1-septate, dark, oblong to fusoid
- I. Perithecia superficial, carbonous, perforate
Seynesia 2: 668

Hyalophragmiae
2: 668, 9: 1068, 11: 381, 14: 690, 16: 642, 17: 868
Spores 2-several-septate, hyaline, fusoid to cylindrical

- I. Perithecia separate
- 1. Perithecia on a fibrous mycelium
Trichopeltis 9: 1068
- 2. Perithecia without a mycelium
a. Perithecia smooth
Micropeltis 2: 669
- b. Perithecia margined with rigid appendages
Actinopsis 17: 871

- II. Perithecia in a dimidiate many-perforate stroma
Gillettiella 14: 691
- Phaeophragmiae
2: 668, 9: 1068, 11: 381, 14: 690, 16: 642, 17: 872
Spores 2-several-septate, dark, fusoid, to cylindrical
- I. Perithecia membranous, subfibrous; spores conglobate
Phaeoscutella 17: 872

- II. Perithecia carbonous or coriaceous
Scutellum 2: 668

Hyalodictyae
A: 253, 9: 1071, 14: 692, 16: 645
Spores muriform, hyaline, oblong to elliptic

- I. Perithecia membranous, ostiolate
Saccardinula 9: 1071
- Phaeodictyae
17: 873

- I. Perithecia superficial, phyllogenous, subradiate
Phaeopeltis 17: 873

(Phaeosaccardinula)
Scolecosporae
9: 1072, 16: 646, 17: 873

- Spores acicular, hyaline or colored, continuous or septate
- I. Spores separating into cells
Scolepeltis 9: 1072
- II. Spores not separating
Ophiopeltis 17: 873

Subfamily Asterinae
14: 692, 16: 646, 17: 875

Perithecia typically seated upon an effuse radiate black subicle

Hyalosporae

14: 692, 16: 646

- I. Spores hyaline, one-celled
Asterula 1: 47, 14: 692

Phaeosporae

14: 693

- I. Spores dark, one celled
Asteronia 1: 47, 14: 693

Hyalodidymae

14: 693, 16: 646, 17: 882

- I. Spores hyaline, 1-septate
Asterella 1: 42, 14: 698

Phaeodidymae

14: 693, 16: 646, 17: 875

- I. Spores dark, 1-septate
Asterina 1: 39, 14: 693

(incl. Trichothyrium 9: 1062)

Hyalophragmiae

14: 699, 16: 650, 17: 884

- I. Spores hyaline, several-septate
Asteridium 1: 49, 14: 699

Phaeophragmiae

14: 699, 17: 885

- I. Spores dark, several-septate
Asteridiella 14: 701

Family 25. LOPHIOSTOMATAEAE

2: 672, 9: 1074, 11: 382, 14: 702, 16: 650, 17: 886

Perithecia simple, separate, at first covered, then subsuperficial or insculptate, carbonous, rarely submembranous, black, with a very narrowly rimose, broad and compressed ostiole; asci paraphysate, usually 8-spored; matrix often blackened giving the appearance of a stroma.

Hyalosporae

(Not represented)

Phaeosporae

2: 673, 17: 886

- I. Spores 1-celled, dark
Lophiella 2: 673

Hyalodidymae

2: 675, 9: 1075, 11: 383, 14: 702, 17: 886

Spores 1-septate, hyaline, oblong to fusoid

- I. Perithecia smooth
Lophiosphaera 2: 675

- II. Perithecia hairy, with wool at base
Lophotricha 9: 1082

Phaeodidymae

2: 673, 9: 1074, 11: 382, 14: 702, 16: 650, 17: 887

- I. Spores 1-septate, dark
Schizostoma 2: 673

Hyalophragmiae

2: 678, 9: 1076, 14: 703, 16: 651, 17: 887

- I. Spores hyaline, several-septate Lophiotrema 2: 678 *✓ L. reticulata (W.) Goid*

Phaeophragmiae

2: 689, 9: 1083, 11: 383, 14: 704, 16: 651, 17: 887

- I. Spores caudate Brigantiella 17: 889 *✓ Br. caudata (W.) Goid*
- II. Spores not caudate Lophiostoma 2: 689 *✓ L. caudiciforme (W.) Goid*

Hyalodictyae

9: 1093

- I. Spores hyaline or nearly so, muriform Lophidiopsis 9: 1093 *✓ L. muriformis (W.) Goid*

Phaeodictyae

2: 710, 9: 1091, 11: 384, 14: 706, 16: 653, 17: 889

- I. Spores dark, muriform Platystomum 17: 889 *✓ P. compressum (W.) Goid*
- (Lophidium 2: 710)

Scoleosporae

2: 717, 9: 1094

- I. Spores filiform, hyaline or dilutely colored Lophonema 2: 717 *✓ L. muriformis (W.) Goid*

Family 26. CORYNELIACEAE

9: 1073, 11: 385, 16: 650

Perithecia separate or in a stroma, coriaceous, black, lageniform, with an elongated ostiole, perforate at the apex and then broadly expanded and infundibuliform.

Phaeosporae

9: 1073, 16: 650

- I. Spores dark, 1-celled, spherical Corynelia 9: 1073 *✓ C. subreticulata (W.) Goid*

Phaeophragmiae

11: 385

- I. Spores dark, 3-several-septate Coryneliella 11: 385 *✓ C. caudiciformis (W.) Goid*

Phaeodictyae

9: 1073

- I. Spores black, stellate, cells radiating Tripospora 9: 1073 *✓ T. tripospora (W.) Goid*

Order 9. HYSTERIALES

9: 1094, 11: 385, 14: 707, 16: 653, 17: 892

Perithecia oblong to linear, rarely round, carbonous or membranous, rarely coriaceous, ostiole a cleft or slit; mycelium often forming a thallus with algae.

Family 27. HEMIHYSTERIACEAE

9: 1094, 11: 385, 14: 707, 16: 653, 17: 892

Perithecia simple or aggregated into a stroma, dimidiate-scutate, subicle lacking,

or more or less developed, ostiole hysterium-like; asci 8-spored, spores usually 2-celled, dark.

Phaeosporae

14: 707

- I. Spores dark, 1-celled; subicle lacking Cyclostomella 14: 707 *✓ C. disciformis (W.) Goid*

Phaeodidymae

9: 1094, 11: 385, 14: 708, 16: 653, 17: 892

Spores dark, 1-septate, elliptic to fusoid

- I. Perithecia on a subicle; stroma lacking Morenoella 9: 1094 *✓ M. morenoana (W.) Goid*

II. Perithecia in a stroma

- 1. Asci with paraphyses *✓ Parmularia 14: 708*

- 2. Asci without paraphyses *(Schneeppia 9: 1097)*

Hysterostomella 9: 1098

Hyalophragmiae

17: 892

- I. Spores hyaline, 3-several-septate

Parmulariella 17: 892 *✓ P. muriformis (W.) Goid*

Family 28. HYSTERIACEAE

2: 721, 9: 1100, 11: 385, 14: 710, 16: 657, 17: 893

Perithecia simple or very rarely in a stroma, erumpent-superficial, horizontally, rarely vertically oblong or linear, membranous, coriaceous or carbonous, rarely carnosule at first, usually black, opening along the whole surface by a somewhat narrow cleft; asci usually paraphysate, 4-8-spored, rarely many-spored.

Hyalosporae

2: 723, 9: 1100, 11: 385, 14: 710, 16: 657, 17: 893

Spores 1-celled, hyaline, globose to fusoid

- I. Asci 4-spored; spores covered with mucus

Hypodermella 11: 385 *✓ H. hirsuta (W.) Goid*

II. Asci 8-spored

- 1. Perithecia single or at least not coalescing

Schizothyrium 2: 723 *✓ S. schizothyrum (W.) Goid*

(Henriquesia 2: 726) *✓ H. henriquesii (W.) Goid*

- 2. Perithecia coalescing in stellate groups of 4-6 *Delphinella 16: 658*

Phaeosporae

2: 727, 9: 1100, 14: 710

Spores 1-celled, dark, globose to ovoid

I. Asci 8-spored

- 1. Perithecia separate; asci paraphysate

Farlowiella 2: 727, 9: 1100 *✓ F. farlowii (W.) Goid*

- 2. Perithecia stromatic at base; asci aparaphysate

Erikassonia 14: 710 *✓ E. erikassonia (W.) Goid*

II. Asci 10-12-spored

Lembosiella 9: 1101 *✓ L. lembosii (W.) Goid*

HYSTERIACEAE

Hyalodidymae

2: 727, 9: 1101, 11: 386, 14: 711, 16: 659, 17: 895
Spores 1-septate, hyaline, ovoid to fusoid

- I. Perithecia membranous
1. Perithecia separate, minute
2. Perithecia in a dimidiate stroma

Aulographum 2: 727 *Va. vagans*
Cyclochizum 17: 896 *C. bacilliforme*

- II. Perithecia carbonous
1. Perithecia separate

Glonium 2: 731 *V. B. stellatum*

- a. Perithecia simple or scarcely branched
(1) Asci 8-spored

*Pleoglonis 9: 1103 *C. trochiliforme*

- (2) Asci many-spored

- b. Perithecia radiately branched, or stellate

Actidium 2: 738 *A. leptotrichum*

Synglonium 14: 711 *S. purpurinum*

2. Perithecia connected in orbicular sori

- III. Perithecia at first somewhat fleshy, reddish or yellow

Angelina 2: 739 *A. fuscescens*

Phaeodidymae

2: 740, 9: 1103, 11: 387, 14: 711, 16: 659, 17: 897
Spores 1-septate, dark, ovoid to oblong

- I. Perithecia on a fibrillose-radiate subicle

Lembosia 2: 741 *L. bacilliformis*

- II. Perithecia without a subicle

1. Perithecia coriaceous

Tryblidium 2: 740 *T. bacilliforme*

2. Perithecia carbonous

- a. Perithecia linear; cleft very narrow, straight

Bulliardia 17: 902 *B. bacilliformis*

- b. Perithecia scutellate; cleft subcircular

Dielsiella 17: 902 *D. bacilliformis*

Hyalophragmiae

2: 765, 9: 1112, 11: 388, 14: 715, 16: 664, 17: 903

Spores several-septate, hyaline, oblong to cylindrical

- I. Perithecia saprogenous

1. Perithecia carbonous, cleft narrow

Gloniella 2: 765 *G. typica*

2. Perithecia subcoriaceous, cleft wide

Pseudographis 2: 769 *P. bacilliformis*

- II. Perithecia biogenous, gregarious in spots

1. Perithecia corticole

Dichaena 2: 771 *D. bacilliformis*

2. Perithecia foliicole

- a. Perithecia merely gregarious

Phragmographium 17: 906 *P. bacilliformis*

- b. Perithecia radiately disposed

Aldona 16: 667 *A. bacilliformis*

Phaeophragmiae

2: 743, 9: 1108, 11: 387, 14: 715, 16: 664, 17: 907

Spores several-septate, dark, oblong to cylindrical

- I. Edges of cleft somewhat obtuse, then more or less distant

1. Asci 4-8-spored

- a. Perithecia transversely densely and coarsely sulcate

Rhytidhysterium 2: 759 *R. bacilliformis*

= Tryblidium gonostoides

HYSTERIACEAE

- b. Perithecia smooth

- (1) Perithecia covered by the epidermis

Hypodermopsis 17: 908 *H. bacilliformis*

- (2) Perithecia erumpent or superficial

- (a) Perithecia carbonous

Hysterium 2: 743 *H. bacilliformis*

- (b) Perithecia coriaceous

Tryblidiella 2: 757 *T. bacilliformis*

2. Asci many-spored, perithecia subcoriaceous

Baggea 2: 760 *B. bacilliformis*

- II. Edges of cleft very thin, closely connivent

1. Asci 4-spored; perithecia subcarbonous, striate

Ostreium 2: 765 *O. bacilliformis*

2. Asci 8-spored; perithecia somewhat membranous, fragile

Mytilidium 2: 760 *M. bacilliformis*

Hyalodictyae

2: 772, 9: 1116, 11: 389, 14: 717, 16: 668, 17: 909

Spores muriform, hyaline, ovoid to oblong

- I. Perithecia separate

1. Perithecia carbonous, erumpent; spores without mucus

Gloniopsis 2: 772 *G. bacilliformis*

2. Perithecia membranous, innate; spores with mucus sheath

Hysteropsis 9: 1118 *H. bacilliformis*

- II. Perithecia in a lenticular, radiate stroma

Mendogia 16: 669 *M. bacilliformis*

Phaeodictyae

2: 776, 9: 1119, 11: 389, 14: 717, 16: 668, 17: 912

Spores muriform, dark, ovoid to oblong

- I. Perithecia carbonous or corneo-carbonous, firm

Hysterographium 2: 776 *H. bacilliformis*

- II. Perithecia membranous, thin

Graphyllum 16: 1145, 17: 913 *G. bacilliformis*

Scoleosporae

2: 784, 9: 1123, 11: 389, 14: 719, 16: 669, 17: 913

Spores bacillar to filiform, hyaline or dark

- I. Spores 2-5 times shorter than the asci; perithecia membranous

Hypoderma 2: 784 *H. bacilliformis*

- II. Spores filiform, nearly as long as the asci

1. Perithecia horizontally elongate, rarely ampulliform

- a. Perithecia elongate

- (1) Perithecia membranous, appanate

Lophodermium 2: 791 *L. bacilliformis*

- (2) Perithecia subcarbonous, conchiform

Lophium 2: 799 *L. bacilliformis*

- (3) Perithecia subcoriaceous, depressed

- (a) Perithecia subcorneous

Sporomega 2: 801 *S. bacilliformis*

- (b) Perithecia subcarinose

Colpoma 2: 803 *C. bacilliformis*

- b. Perithecia subspheroid or ampulliform

- (1) Perithecia depressed spheroid, cleft longitudinal

Ostropa 2: 804 *O. bacilliformis*

- (2) Perithecia horizontally ampulliform, ostiole roundish
 Robergea 2: 806 *A. murina* *lim*
 Perithecia vertically elongate, cylindrical; cleft obsolete
 a. Spores breaking apart into cells Microstelum 16: 672 & *Hydium* 93
 b. Spores not breaking apart AcrospERMUM 2: 807
 (SchizacrospERMUM 16: 672) *Hydium* *murina*

Family 29. GRAPHIDACEAE
 ZAHLBRUCKNER 87

Mycelium parasitic on yellow green algae, forming a crustose, foliose or fruticose thallus, the latter often immersed, or thallus lacking, and parasitic on lichens or on bark; perithecia single or cespitose or united in a stroma, typically oblong to elongate with a cleft-like opening, more rarely disk-shaped and with an irregular often stellate opening, more or less carbonous.

I. Perithecia separate

1. Thallus lacking, parasitic on lichens or on bark

Subfamily Arthoniae 89, R. 414

a. Parasitic on lichens

1. Spores 1-celled
 2. Spores 2-celled
 3. Spores 4-6-celled

Phacopsis R. 419
 Conida R. 420
 Celidium R. 425

b. On bark

1. Spores 2-celled
 2. Spores 2-several-septate
 3. Spores muriform

Lecideopsis R. 432
 Arthonia R. 435
 Arthothelium R. 438

2. Thallus present, crustose, or uniform

a. Perithecia without an exciple, i. e., not margined

Subfamily Arthoniae 89

(1) Algae Palmella or Protococcus; spores colorless

- (a) Spores 1-septate
 (b) Spores several-septate
 (c) Spores muriform

Allarthonia 91
 *Plearthonis 91
 Allarthothelium 241

(2) Algae Chroolepus

- (a) Spores transeptate
 x. Spores colorless
 (x) Spores 1-septate
 (y) Spores 2-several-septate

*Diarthonis 91
 Arthonia 89
 Gymnographa 94
 Arthothelium 91

y. Spores brown

- (b) Spores muriform

(3) Algae Phylactidium

- (a) Spores 1-septate
 (b) Spores 2-several-septate

*Merarthonis 91
 Arthoniopsis 91

b. Perithecia margined with a distinct proper exciple

Subfamily Graphidae 92

(1) Thallus without cortex

- (a) Algae Palmella
 x. Perithecia with a single hymenium
 (x) Spores colorless
 m. Spores 1-celled

(m) Hypothecium clear or brownish

Xylographa 93 ✓

(n) Hypothecium black, carbonous

Lithographa 93

Aulaxina 94

n. Spores transeptate

(y) Spores dark

m. Spores transeptate

n. Spores finally muriform

y. Perithecia with 2-4 parallel hymenia

(x) Spores 1-celled

(y) Spores transeptate

(b) Algae Chroolepus

x. Asci many-spored; spores filiform

Spirographa 96

y. Asci 1-8-spored

(x) Spores clear

m. Spores transeptate

(m) Paraphyses simple and not united

r. Ends of paraphyses little thickened, smooth

(r) Spores 1-septate *Digraphis 98

(s) Spores 2-several-septate

Graphis 96

s. Ends clavate and warted or spiny

*Psorographis 102

(n) Paraphyses branched and united

Opegrapha 94 ✓

n. Spores muriform

(m) Paraphyses simple and not united

r. Ends of paraphyses not thickened, smooth

Graphina 99

s. Ends of paraphyses clavate, warted or spiny

†Acanthothecis 101

(not Acanthothecium Speg.)

(n) Paraphyses branched and united

Helminthocarum 102

(incl. Dictyographa 96)

(y) Spores dark

m. Spores 1-septate

Melaspilea 96 ✓

n. Spores 2-several-septate

Phaeographis 99

o. Spores muriform

Phaeographina 100

(c) Algae Phylactidium: spores transeptate

x. Spores clear; paraphyses branched and united

Opegraphella 102

y. Spores dark; paraphyses simple and free

Micrographa 102

(2) Thallus with a cortex: algae Chroolepus

Subfamily Dirinae 105

(a) Spores elliptic to fusoid, 4-8-celled, clear

Dirina 106

- (b) Spores similar but brown
 3. Thallus present, fruticose, erect
 a. Hyphae of cortex parallel with thallus surface
 (1) Perithecia elongate, furrowed; spores clear, 8-9-celled
Dirinastrum 106
Subfamily Roccellae 106
Ingaderia 107
 (2) Perithecia round
 (a) Hypothecium black; spores clear
 x. Exciple with algae
 y. Exciple without algae
Dendrographa 107
Roccellaria 107
 (b) Hypothecium clear; spores brown, spiny
Darbshirella 108
 b. Hyphae perpendicular to surface
 (1) Perithecia elongate, furrowed
 (a) Perithecia immersed; hypothecium clear
Roccellographa 108
 (b) Perithecia superficial; hypothecium black
Reinkella 108
 (2) Perithecia round
 (a) Spores clear; perithecia entire
 x. Hypothecium black
 (x) Thallus mostly crustose, slightly fruticose
Roccellina 108
Roccella 109 ✓
 y. Hypothecium clear
 (x) Algae present below the hypothecium
Pentagenella 110
 (y) No algae below the hypothecium
Combea 109
 (b) Spores brown or brownish; perithecia deeply lobed
 x. Medulla clear throughout
Schizopelte 110 ✓
 y. Inner medullary layer black
Simonyella 110
 II. Perithecia in a stroma, mostly immersed
 1. Algae Chroolepus
 a. Paraphyses simple and free
 (1) Spores transeptate
 (a) Spores clear
Glyphis 103
 (b) Spores brown
Sarcographa 103
 (2) Spores muriform
 (a) Spores clear
Enterodictyum 104
 (b) Spores brown
Sarcographina 103
 b. Paraphyses branched and reticulately united
 (1) Spores transeptate
 (a) Spores colorless
Chiodectum 104 ✓
 (b) Spores brown or dark
 x. Perithecia margined
 y. Perithecia margined
Sclerophytum 105
Synarthonia 91
 (2) Spores muriform
 (a) Spores clear
Minkia 241

- (b) Spores brown
 2. Algae Phyllactidium
 a. Spores 2-celled; paraphyses simple and free
Enterostigma 105
Pycnographa 105
 b. Spores many-celled; paraphyses branched and united
Mazosia 105

Order 10. PEZIZALES

Mycelium various, but typically inconspicuous or invisible; propagaton by conidia, but usually not in evidence; reproductive body or apothecium at first closed and more or less globose, rarely elongate, then opening more or less completely into a cup, saucer or disk, waxy or fleshy, more rarely carbonous, leathery or gelatinous; asci typically 8-spored and paraphysate; spores various.

Family 30. PHACIDIACEAE *copied*

RHM 60

Apothecia sunken, more or less erumpent, disk-like or elongate, single or grouped, leathery or carbonous, black, firm, opening by lobes or by a rift; hypothecium poorly developed as a rule.

Hyalosporae

8: 705, 11: 431, 10: 48, 14: 813, 16: 783, 18: 155

Spores hyaline, 1-celled, globose to oblong

I. Apothecia concrete above with the epiderm

1. Apothecia and epiderm splitting radiately

Phacidium 8: 709

2. Apothecia and epiderm splitting circumscissilely

Stegia 8: 733

3. Apothecia and epiderm splitting irregularly

Cryptomyces 8: 707

II. Apothecia and epiderm little or not at all concrete

Pseudophacidium R. 94

Phaeosporae

14: 814

Spores dark, 1-celled, oblong

I. Apothecia superficial, membranous, lacinate

Phaeophacidium 14: 814

Hyalodidymae

Spores hyaline, 1-septate, elliptic to oblong

I. Apothecia scutellate or oblong, lacinate

Schizothyrium R. 75**(incl. Rhagadolobium 14: 816)**

Phaeodidymae

Spores dark, 1-septate, elliptic to oblong

I. Apothecia in black foliicolle spots

Cocconia 8: 738

II. Apothecia stellately erumpent through epiderm

Metadothella 18: 162 *Metadothella* *Metadothella*

III. Apothecia and epiderm concrete, laciniate

Keithia 10: 49 *Keithia* *Keithia*

Phragmosporae

8: 740

Spores typically hyaline, 2-several-septate, ovoid to oblong

I. Apothecia and epiderm concrete, laciniate

Sphaeropezia 8: 740, R. 72 *Sphaeropezia*

II. Apothecia and epiderm not concrete, splitting irregularly

Pseudographis R. 90 *Pseudographis*

Dictyosporae

8: 764, 16: 799

Spores muriform, typically hyaline, ovoid to oblong

I. Apothecia round to oblong, splitting irregularly; paraphyses

Dothiora 8: 764, R. 108 *Dothiora*

Scolecosporae

8: 744, 10: 51, 11: 432, 14: 817, 16: 789, 18: 163

Spores lacillar to filiform, typically hyaline, continuous or septate

I. Apothecia and epiderm concrete

1. Apothecia in black follicle stroma-like spots

Rhytisma 8: 752, R. 82 *Rhytisma*

(incl. *Duplicaria* 8: 764) *Duplicaria*

2. Apothecia not in stroma-like spots

a. Apothecia and epiderm laciniate

b. Apothecia and epiderm operculately circumscissile

Moutoniella 18: 163 *Moutoniella*

II. Apothecia and epiderm not concrete

1. Apothecia round, laciniate

2. Apothecia oblong to elongate, hysterioid

Coccophacidium R. 97 *Coccophacidium*

Clitris 18: 165, R. 101 *Clitris*

Family 31. STICTIDACEAE

REHM 112

Apothecia sunken, finally more or less erumpent, round or elongate, single or grouped, typically waxy, rarely membranous or leathery, white or bright-colored, at least never black, splitting the epiderm laciniately or irregularly, hypothecium little developed.

Subfamily Eustictidae

REHM 113

Apothecia waxy, not deeply sunken, finally opening widely, and exposing the hymenium.

Hyalosporae

8: 648, 10: 44, 11: 428, 14: 806, 16: 776, 18: 146

Spores hyaline, 1-celled, globose to oblong

I. Spores globose

1. Asci 8-spored

Lindaella 16: 777 *Lindaella*

Flaminia 16: 777 *Flaminia*

II. Spores elliptic to oblong

1. Paraphyses long-pointed, much longer than the ascigeri

Stegia 8: 733, R. 155 *Stegia*

2. Paraphyses blunt, swollen or branched

a. Paraphyses thread-shaped or forked

(1) Apothecia round

(a) Apothecia blackish; ascus pore blue with iodine

Trochila 8: 728, R. 127 *Trochila*

(b) Apothecia bright-colored

x. Ascus pore blue with iodine

(x) Paraphyses forked, enlarged and colored above

Ocellaria 8: 654, R. 133 *Ocellaria*

(y) Paraphyses little if at all enlarged or colored

**Habrostrictis* R. 137 *Habrostrictis*

y. Ascus pore not blue with iodine

Naevia 8: 658, R. 145 *Naevia*

(2) Apothecia oblong or elongate

(a) Hymenium blue with iodine

Xylographa 8: 654, R. 153 *Xylographa*

(b) Hymenium not blue with iodine

Briardia 16: 776, R. 151 *Briardia*

b. Paraphyses irregularly branched

(1) Asci 8-spored

Propolis 8: 648, R. 141 *Propolis*

(2) Asci many-spored

Propolina 8: 654 *Propolina*

Phaeosporae

Spores 1-celled, dark, oblong

Stictophacidium R. 1215 *Stictophacidium*

Didymosporae

8: 666, 10: 45, 11: 428, 14: 808, 16: 778, 18: 147

Spores 1-septate, typically hyaline or bright-colored, oblong

I. Paraphyses lacking

Coccopezia 10: 45 *Coccopezia*

II. Paraphyses present

1. Spores blue or green

Ploettnera 16: 778 *Ploettnera*

2. Spores hyaline

a. Spores with 1-2 cilia at each end; hysterioid

Iridionia 16: 788 *Iridionia*

b. Spores muticate

(1) Paraphyses filiform or forked

(a) Apothecia round

x. Asci not blue with iodine

**Naeviella* R. 164 *Naeviella*

y. Asci blue with iodine

(x) Ascus pore alone blue with iodine

Diplonaevia 8: 666, R. 161 *Diplonaevia*

(y) Whole hymenium blue with iodine

**Diplocryptis* R. 158 *Diplocryptis*

- (b) Apothecia rounded, with flexuose clefts
Lauterbachella 16: 788 *Tym. flandersi*
Rhagabobolium ✓ *form. disc.*
schizocarpum ✓ 14: 429, 20: 632
- (2) Paraphyses irregularly branched
 (a) Apothecia round; not blue with iodine
Propolidium 8: 667 *P. blauschwarzii* ✓
 (b) Apothecia elongate; ascus pore blue with iodine
***Xyloglyphis** R. 170 *X. thoma* (Fr.) Cleve

Phragmosporae

8: 669, 10: 46, 11: 429, 14: 808, 16: 778, 18: 148

- Spores 2-several-septate, hyaline, rarely darkish, oblong to elongate
- I. Spores somewhat fuscous
Eupropolis 8: 676 *E. gutturalis* ✓
 (incl. **Janseella** 16: 780) *8th disc. of Hofm. 186*
Distansia ✓
- II. Spores hyaline
 1. Paraphyses filiform or forked
 a. Asci not blue with iodine
***Merostictis** R. 164 *M. surmensis*
 b. Asci blue with iodine
 (1) Ascus pore alone blue with iodine
Phragmonaevia 8: 674, R. 160 *P. blattaria* ✓
 (2) Whole hymenium blue with iodine
Cryptodiscus 8: 669, R. 158 *C. (C. (C.))*
 2. Paraphyses branched; apothecia elongate
Xylogramma 8: 677, R. 169 *X. (X. (X.))*

Dictyosporae

8: 704, 11: 431, 14: 812, 16: 782, 18: 151

Spores muriform, typically hyaline, ovoid to oblong

- I. Asci 1-spored
Pleostictis 8: 703 *P. (P. (P.))*
- II. Asci 8-spored
 1. Apothecia oblong, hysterioid
Melittiosporium 8: 704, R. 172 *M. (M. (M.))*
 2. Apothecia round
 a. Apothecia urceolate
Platysticta 8: 703 *P. (P. (P.))*
 b. Apothecia disk-like
Delpontia 18: 151 *D. (D. (D.))*

Scolecosporae

8: 681, 10: 46, 11: 429, 14: 810, 16: 781, 18: 152

Spores bacillar or filiform, typically hyaline

- I. Asci 8-spored
 1. Apothecia pilose
Lasiostictis 8: 696 *L. (L. (L.))*
 2. Apothecia not pilose
 a. Spore cells separating
Schizoxylum 8: 697, R. 181 *S. (S. (S.))*
 b. Spore cells not separating
 (1) Paraphyses filiform or nearly so; asci cylindrical
Stictis 8: 681, R. 175 *S. (S. (S.))*
 (incl. **Karstenia** 8: 702, **Cerion** 18: 154) *Stictis* ✓
 (2) Paraphyses much branched; asci clavate
Naemacyclus 8: 701, R. 173 *N. (N. (N.))*
Carestiella 14: 810 *C. (C. (C.))*

II. Asci many-spored

Subfamily Ostropae

REHM 185

Apothecia membranous or leathery, deeply sunken, the scarcely opened tip alone erumpent.

- I. Spores 1-celled, elliptic; asci clavate
Laquearia R. 187 *L. (L. (L.))*
- II. Spores many-celled, filiform; asci cylindrical
 1. Apothecia cask-shaped, partly erumpent
Ostropa R. 188 *O. (O. (O.))*
 2. Apothecia with only the thick ostiole erumpent
Robergea R. 189 *R. (R. (R.))*

Family 32. TRYBLIDIACEAE

REHM 191

Apothecia sunken, then erumpent, often lobed, brown or black, membranous or horny; hypothecium well-developed, thick.

- I. Apothecia scattered
 1. Spores 1-septate
 a. Spores with a mucose covering
***Tryblidis** R. 194 *T. (T. (T.))*
 b. Spores without a mucose covering
Heterosphaeria R. 198 *H. (H. (H.))*
2. Spores 2-several-septate
 a. Spores with a mucose covering
Tryblidiopsis R. 193 *T. (T. (T.))*
 b. Spores without a mucose covering
Odontotrema R. 204 *O. (O. (O.))*
 3. Spores muriform
Tryblidium R. 196 *T. (T. (T.))*
 4. Spores filiform
***Odontura** R. 207 *O. (O. (O.))*
- II. Apothecia cespitose or stromate; spores bacillar or filiform
Scleroderria R. 208 *S. (S. (S.))*

Family 33. DERMATEACEAE

REHM 241

Apothecia sunken, then erumpent, cup-shaped to oblong, single or grouped, waxy, leathery or horny, mostly brownish or black; hypothecium more or less developed.

Hyalosporae

8: 547, 10: 36, 11: 422, 14: 794, 16: 762, 18: 121

Spores hyaline, 1-celled, globose to oblong

- I. Apothecia large, usually stalked or radicate at base
 1. Apothecia ear-shaped, more or less vertical, leathery
Midotis 8: 547 *M. (M. (M.))*
 a. Spores ovoid to oblong
Midotopsis 18: 121 *M. (M. (M.))*
 b. Spores globose
 2. Apothecia urceolate or turbinate
 a. Apothecia stalked; exciple and hypothecium prosenchymatic
Urnula 8: 548 *U. (U. (U.))*
 b. Apothecia stalked; exciple and hypothecium parenchymatic
Choriactis 18: 121 *C. (C. (C.))*
 c. Apothecia sessile, hairy; exciple parenchymatic, hypothecium prosenchymatic
Scytopezis 18: 122 *S. (S. (S.))*
- II. Apothecia small, sessile or nearly so

- I. Asci 8-spored
 a. Apothecia more or less corky Dermatea 8: 550, R. 246 *Microspora*
 b. Apothecia coriaceous to subcorneous Cenangium 8: 556, R. 219 *Cenangiaceae*
 (incl. Ameghiniella 8: 584, Ephe-
 lina 8: 585) *Ephelella* *Ephelella*
2. Asci many-spored, or 8-spored and many-spored
 Tympanis 8: 578, R. 264 *Tympanis*

Phaeosporae
 16: 764, 18: 127

Spores dark, 1-celled, oblong

- I. Apothecia coriaceous, erumpent Phaeangium 16: 764 *Phaeangium*

Hyalodidymae

8: 587, 10: 37, 11: 424, 14: 798, 18: 127

Spores hyaline, 1-septate, elliptic to oblong

- I. Apothecia patellate, coriaceous to corneous
 Cenangella 8: 587 *Cenangella*
 Angelinia 18: 129 *Angelinia*
- II. Apothecia elongate, cleft, subcorneous *Angelinia*

Phaeodidymae

18: 128

Spores dark, 1-septate, elliptic to oblong

- I. Apothecia patellate, coriaceous Phaeangella 18: 128 *Phaeangella*

Hyalophragmiae

8: 594, 16: 765, 18: 129

Spores hyaline, 2-several-septate, elliptic to fusoid

- I. Apothecia waxy-membranous, pilose, urceolate
 Crumenula 8: 600, R. 235 *Crumenula*

Phaeophragmiae

2: 757, R. 233

Spores dark, 2-several-septate, elliptic to fusoid

- I. Apothecia hysterioid, cleft, coriaceous Tryblidiella R. 233 *Tryblidiella*

Scoleosporae

8: 601, 10: 37, 11: 425, 18: 130

Spores filiform, hyaline or subhyaline

- I. Apothecia urceolate to cup-shaped, subcoriaceous
 Godronia 8: 601, R. 237 *Godronia*
- II. Apothecia clavate, stipe corneous, disk submemose
 Crinula 8: 606 *Crinula*

Family 34. BULGARIACEAE

REHM 444

Apothecia mostly superficial, cup-shaped to disk-shaped, usually smooth, gelatinous-fleshy or gelatinous-waxy, horn-like when dry; hypothecium gelatinous, more or less developed.

Hyalosporae

4: 609, 10: 38, 11: 425, 14: 801, 16: 766, 18: 131

Spores hyaline, 1-celled, globose to oblong

- I. Spores globose Pulparia 8: 612 *Pulparia*
- II. Spores elliptic to bacillar
 1. Apothecia in a lens-shaped gelatinous stroma
 Physmatomyces 16: 770 *Physmatomyces*

2. Apothecia not in a stroma

a. Exciple lacking

- (1) Asci 8-spored

(a) Apothecia microscopic, margined by changed paraphyses

Gloeopeziza 10: 41 *Gloeopeziza*

not modified

Agryrium 8: 634, R. 450 *Agryrium*

*Agryrina 8: 636 *Agryrina*

- (2) Asci 16-spored

b. Exciple present

- (1) Lichenicole

- (2) Not lichenicole

(a) Apothecia stipitate

Ombrophila 8: 613, R. 475 *Ombrophila*

(incl. Stammaria 8: 620, R. 465) *Stammaria*

(b) Apothecia sessile

- x. Asci 8-spored

(x) Apothecia smooth outside

m. Apothecia with an even disk

Orbilia 8: 621, R. 453 *Orbilia*

(incl. Bulgariopsis 18: 135) *Bulgariopsis*

n. Apothecia with a much folded disk

Haematomyces 8: 633 *Haematomyces*

(y) Apothecia veined or roughened outside

m. Apothecia 1-2 cm. wide

n. Apothecia 2-9 cm. wide

y. Asci many-spored

Gloeocalyx 18: 133 *Gloeocalyx*

Sarcosoma 10: 42, R. 497 *Sarcosoma*

*Myridium 8: 631 *Myridium*

Phaeosporae

8: 636, 10: 41, 14: 804, 16: 770, 18: 140

Spores dark, 1-celled, elliptic to fusoid

- I. Apothecia turbinate, substipitate, closed at first, large
 Bulgaria 8: 636, R. 494 *Bulgaria*

- II. Apothecia disciform, sessile, open at first, smaller
 (Bulgariella 8: 638 *Bulgariella*) *Bulgariella*

Hyalodidymae

8: 639, 10: 42, 11: 427, 14: 805, 16: 771, 18: 142

Spores hyaline or subhyaline, 1-septate, elliptic to fusoid

- I. Parasitic, urn-shaped; paraphyses forming an epithecium
 Paryphedria 10: 43, R. 484 *Paryphedria*

- II. Saprophytic, disciform; epithecium lacking
 Calloria 8: 639, R. 462 *Calloria*

Phaeodidymae

10: 42, 16: 771, 18: 142

Spores brown, 1-septate, elliptic to fusoid

I. Apothecia subturbinate, sessile

Sorokinia 10: 42 *S. muriformis* (Des) Moudry

Phragmosporae

8: 641, 10: 43, 11: 427, 16: 773, 18: 143

Spores typically hyaline, 2-several-septate, fusoid

I. Apothecia turbinate to disciform

Coryne 8: 641, R. 485 *C. discoides* (Jy)

Hyalodictyae

18: 145

Spores hyaline, muriform, ovoid

I. Apothecia cupulate to plane

Dictyonia 18: 144 *D. baranetii* Moudry

Phaeodictyae

8: 646, 10: 44, 18: 144

Spores dark, muriform, ovoid to oblong

I. Hymenium sinuate-gyrose, not margined

Haematomyxa 8: 646 *H. muriformis* (R) Jy

II. Hymenium smooth, acute-margined

Sarcomyces 10: 44 *S. muriformis* Moudry
not of from salt?

Scoleosporae

8: 646, 14: 805, 16: 775, 18: 145

Spores filiform, typically hyaline

I. Apothecia without an exciple

Agryiopsis 14: 805 *A. batellii* (Fr) Des Moudry

II. Exciple present

1. Apothecia dark or black; spores medium

Holwya 8: 646 *H. ophitiformis* (L) Jy Moudry

2. Apothecia gray or bright-colored; spores very long

Ophiogloea 18: 145 *O. ophitiformis* Des Moudry

Family 35. PATELLARIACEAE

REHM 277

Apothecia mostly superficial, cupulate to disk-shaped, more rarely boat-shaped or oblong, usually dark or black, carbonous, leathery, corneous or waxy; hypothecium typically well-developed.

Hyalosporae

8: 769, 10: 52, 11: 433, 14: 818, 16: 791, 18: 165

Spores hyaline, 1-celled, globose to oblong

I. Asci many-spored

1. Spores globose

2. Spores allantoid

II. Asci 8-spored

1. Apothecia oblong to elongate, cleft

2. Apothecia round

a. Parasitic on lichen thalli

(1) Exciple present

as from R.H.
Biatorella 8: 469, R. 303 *B. punctiformis* (Fr) Jy
Biatorellina 18: 172 *B. punctiformis* (Fr) Jy
*= synonymus as R. 14, 644*Placographa R. 313 *P. punctiformis* (Fr) Jy
*d. punctiformis (Fr) Jy*Rhymbocarpus 14: 819 *R. punctiformis* (Fr) Jy
Moudry

(2) Exciple lacking

Nesolechia 10: 53, R. 315 *N. myoporum* (Fr) Moudry

b. Saprophytic

(1) Paraphyses branched, forming an epithecium

(a) Asci club-shaped

x. Subicle absent

Patrella 8: 769, R. 310 *P. subclavata* (Fr) Jy

y. Subicle present, radiate

Actinoscypha 8: 774 *A. radiata* (Fr) Jy

(b) Asci cylindrical

Starbaeckia 10: 53 *S. radiata* (Fr) Jy

(2) Paraphyses simple; epithecium none

Psilothecium 18: 168 *P. muriformis* Des Moudry

Phaeosporae

10: 55

Spores dark, 1-celled, globose to elliptic

I. Apothecia patellate, margined, black

Lagerheimia 10: 55 *L. muriformis* (Fr) Jy

Hyalodidymae

8: 779, 10: 56, 11: 434, 14: 820, 16: 792, 18: 173

Spores hyaline, 1-septate, elliptic to fusoid

I. Parasitic on lichen thalli

Scutula R. 321 *S. punctiformis* (Fr) Jy

II. Not lichenicole

1. Apothecia smooth, saprophytic

Patella 8: 783, R. 283 *P. punctiformis* (Fr) Jy

2. Apothecia setose, parasitic on leaves

Johansonia 8: 785 *J. punctiformis* (Fr) Jy

Phaeodidymae

8: 779, 10: 56, 11: 434, 14: 820, 16: 792, 18: 173

Spores dark, 1-septate, elliptic to fusoid

I. Asci 8-spored

1. Apothecia on a foliicole radiate subicle

Woodiella 16: 794 *W. punctiformis* (Fr) Jy

2. Apothecia not on a subicle

a. Apothecia round

(1) Apothecia superficial

(a) Saprophytic

Karschia 8: 779, R. 345 *K. punctiformis* (Fr) Jy

(b) Parasitic on lichens

*Epilichen 18: 177, R. 350 *E. punctiformis* (Fr) Jy

(2) Apothecia sunken, then erumpent

(a) Parasitic on lichens

Abrothallus 8: 739, R. 358 *A. punctiformis* (Fr) Jy

(b) Saprophytic

Caldesia R. 289 *C. punctiformis* (Fr) Jy

b. Apothecia elliptic to linear

(1) Apothecia irregularly elliptic or oblong

Melaspilia 10: 58, R. 362 *M. punctiformis* (Fr) JyHysteropatella R. 367 *H. punctiformis* (Fr) Jy

(2) Apothecia boat-shaped to linear

Ravenelula 8: 782 *R. punctiformis* (Fr) Jy*Pleosporis 18: 179 *P. punctiformis* (Fr) Jy

II. Asci 16-spored

III. Asci many-spored

Hyalophragmiae

8: 786, 10: 59, 11: 434, 14: 821, 16: 795, 18: 179

Spores hyaline, 2-several-septate, elliptic to fusoid

I. Parasitic on lichens

Mycobilimbia 10: 60, R. 327 *M. punctiformis* (Fr) Jy

II. Saprophytic

1. Apothecia twisted when dry
2. Apothecia not contorted

Durella 8: 790, R. 286

Patellaria R. 329

(incl. Lecanidion 8: 795) *D. confusata* (Fr.) Sacc
P. striata (Fr.) Sacc

Phaeocephragmia

8: 786, 10: 59, 11: 434, 14: 821, 16: 795, 18: 179

Spores dark, 2-several-septate, elliptic to fusoid

I. Asci 8-spored

1. Margin of cup involute, densely costate-rugose

Rhytidopeziza 10: 65

R. balanoides (Fr.) Sacc
R. rhytidopora (Fr.) SaccPseudotryblium 10: 65, R. 370 *P. rhytidopora* (Fr.) Sacc

2. Margin not costate-rugose

- a. Apothecia erumpent
- b. Apothecia superficial
 - (1) Parasitic typically on lichens
 - (a) Apothecia round
 - (b) Apothecia elliptic to elongate
 - (2) Saprophytic

Lecio-grapha 10: 61, R. 372

*Lecoglyphis R. 380

*Mycocleis, R. 372, 10: 61 *L. leucostoma* (Fr.) Sacc
L. aurifera (Fr.) Sacc

II. Asci many-spored

Dictyosporae

8: 802, 11: 435, 14: 823, 18: 185

Spores hyaline or subhyaline, muriform, ovoid to oblong

- I. Apothecia lacinate, depressed-spheroid

Blitrydium 8: 802

- II. Apothecia not lacinate, patellae

Tryblidaria 18: 186

Scolecosporae

8: 807, 10: 65, 11: 435, 14: 823, 16: 798

Spores hyaline or subhyaline, bacillar to filiform

- I. Spores separating at the joints

Bactrosora 10: 67, R. 344 *B. longicauda* (Fr.) Sacc

- II. Spores not separating

1. Apothecia sessile

- a. Parasitic
- b. Saprophytic

Mycobacdia 10: 66, R. 337 *M. lachrymans* (Fr.) SaccPragmopora R. 339 *P. amplibola* (Fr.) Sacc(incl. Scutularia 8: 807) *S. scutularia* (Fr.) Sacc

2. Apothecia stalked, turbinate

- a. Parasitic
- b. Saprophytic

*Parathalle R. 343 *P. fruticosa* (Fr.) SaccLahmia 10: 65, R. 341 *L. lanuginosa* (Fr.) Sacc

Family 36. CALICIACEAE

REHM 388, ZAHLBRUCKNER 80

Mycelium inconspicuous and saprophytic, or parasitic on algae, forming a powdery, crustose, foliose or fruticose thallus; apothecia sessile or stalked, cup- to top-shaped, opening more or less completely, asci disappearing very early and the disk then covered with a persistent mass of spores and paraphyses, i. e., mazaeidium; exciple prosenchymatic, horny, proper or thalline.

- I. Mycelium saprophytic, at least not forming a thallus

1. Spores 1-celled, globose or globoid

- a. Spores clear or merely yellowish

- (1) Algae present but not forming a thallus

Farricola 83

- (2) Algae lacking

- (a) Asci long and slender stalked, ovoid above

Caliciopsis R. 388 *C. linearis* (Fr.) Sacc= Roessleria 8: 826, R. 396 *R. linearis* (Fr.) Sacc

- (b) Asci cylindrical

- b. Spores dark

- (1) Apothecia black, nearly sessile

Sphinctrina 83, R. 389

- (2) Apothecia bright-colored, with a slender stalk

*Eucyphelis R. 392
(Cyphelium Rehm)

2. Spores typically 2-several-celled

- a. Spores 2-celled

- (1) Apothecia sessile

Acolium R. 398 ✓

- (2) Apothecia with a slender stalk

Mycocalicium R. 401

- b. Spores 3-several-celled

Stenocybe 82 R. 413

- II. Mycelium forming a thallus with algae

1. Thallus crustose

- a. Spores 1-celled, globose or globoid

- (1) Asci 8-spored

- (a) Spores dark; disk more or less flat

- x. Apothecia stalked

Chaenotheca 81

- y. Apothecia sessile

*Holocyphis 84

- (b) Spores clear or yellowish; disk globose

Coniocybe 82

Tylophorella 85

- (2) Asci many-spored

- b. Spores 2-several-celled, transeptate or muriform

- (1) Spores transeptate

- (a) Spores 2-celled, dark or brown

- x. Apothecia stalked

- (x) Apothecia long-stalked

Calicium 81 ✓

- (y) Apothecia with short thick stalk

Pyrgidium 83

- y. Apothecia sessile

- (x) Algae Pleurococcus

Cyphelium 83

- (y) Algae Chroolepus

- m. Proper exciple alone present

*Dipyrgis 84

- n. Thalline exciple also present

*Ditylis 84

- (b) Spores 3-many-celled

- x. Proper exciple alone present

Pyrgillus 84

- y. Thalline exciple also present

Tylophorum 84

- (2) Spores muriform

Pseudocolium 84

2. Thallus foliose

- a. Thallus of horizontal scales with marginal apothecia

Calycidium 85 ✓

- b. Horizontal scales sterile; apothecia on cylindrical podetia
Tholurna 85
3. Thallus fruticose
a. Thallus hollow; apothecia on the under side
Pleurocybe 85
- b. Thallus with solid medulla; apothecia terminal
(1) Apothecia without thalline covering, goblet-like
Acrocypus 86
(2) Apothecia enclosed in a globose thalline exciple, which finally opens irregularly at the top
Sphaerophorus 86

Family 37. CHRYSOTRICHACEAE

ZÄHLBRÜCKNER 117, 127

Apothecia disk-form, margined, asci persistent; mazaedium lacking, thallus uniform, cobwebby, cottony or spongy, loose, without layers, algae Palmella, Pleurococcus, Chroolepus or Cladophora.

- I. Thallus with Palmella or Pleurococcus
1. Spores 1-celled
Crocynia 242
2. Spores 2-4-celled
Chrysothrix 117 ✓
- II. Thallus with Chroolepus; spores clear
1. Spores 1-celled
*Holococcus 128
2. Spores 2-celled
Coenogonium 127
- III. Thallus with Cladophora; apothecia lacking
Racodium 128

Family 38. COLLEMATACEAE

ZÄHLBRÜCKNER 154, 158, 167, 168

Apothecia disk-form or pitcher-form, with persistent asci; thallus more or less gelatinous when moist, mostly without layers, always with blue-green algae, scaly, foliose or fruticose, rarely crustose.

- I. Algae Gloeocapsa, Chroococcus or Xanthocapsa; spores typically 1-celled, colorless
Subfamily Pyrenopsidaceae 158
1. Algae Gloeocapsa
a. Thallus crustose, scaly or dwarf fruticose
(1) Spores 1-celled
(a) Asci 8-spored
Pyrenopsis 159
(b) Asci 32-spored
*Pleopyrenis 160
(2) Spores 2-celled
Cryptothele 159
b. Thallus foliose, of a single leaf; spores clear, 1-celled
Phyllicidium 160
c. Thallus fruticose, with rhizoids; spores clear, 1-celled
Synalissa 160
2. Algae Chroococcus
a. Thallus crustose; apothecia more or less open
Pyrenopsidium 160
b. Thallus foliose, of one leaf, umbilicate; apothecia closed
Phyllicum 161

3. Algae Xanthocapsa
a. Thallus crustose
(1) Spores 1-celled
(a) Hymenium covered with a mass of algae and hyphae
Gonohymenia 161
(b) Hymenium without epithelial mass
x. Thallus pseudoparenchymatic at margin
Forssellia 161
y. Thallus nowhere pseudoparenchymatic
Psorotichia 161
(2) Spores 2-celled; apothecia closed
Collemopsidium 161
b. Thallus of one leaf, umbilicate, often lobed
(1) Thallus pseudoparenchymatic
Anema 162
(2) Thallus not pseudoparenchymatic
(a) Spores 1-celled
x. Hyphae loose, net-like at margin
Thyrea 162
y. Hyphae perpendicular to the margin
Jenmania 162
Paulia 163
(b) Spores 2-celled
- c. Thallus fruticose, branched, upright
(1) Thallus without layers
(a) Asci 8-spored
Peccania 163
(b) Asci 12-many-spored
*Pleoconis 164
(2) Thallus layered, with a cortex
Phloeopeccania 164
Subfamily Collematae 168
- II. Thallus with Nostoc; spores clear
1. Apothecia with proper exciple only, biatorin
a. Spores 1-celled
(1) Spores globose to fusoid, straight
(a) Thallus crustose, scarcely gelatinous
Leprocollema 170
(b) Thallus scaly or dwarf fruticose, gelatinous
Leciophysma 170
Koerberia 173
(2) Spores needle-shaped, twisted
b. Spores transeptate, 2-many-celled
(1) Spores 2-celled; thallus without cortex
Homothecium 171
(2) Spores 4-8-celled; thallus with cortex
Arctomia 173
2. Apothecia with thalline exciple, lecanorin
a. Spores 1-celled
(1) Thallus scaly or dwarf fruticose; spores thin-walled
(a) Thallus without cortex
Physma 170
(b) Thallus with pseudoparenchymatic cortex
Lemmopsis 171
(2) Thallus large-leaved; spores thick-walled or mucose
Dichodium 171
b. Spores transeptate to muriform
(1) Thallus without cortex

- (a) Spores 2-celled
 (b) Spores transeptate, many-celled
 (c) Spores muriform
- (2) Thallus with a pseudoparenchymatic cortex on one or both sides or pseudoparenchymatic throughout
- (a) Spores transeptate, 3-many-celled
 (b) Spores muriform
- III. Thallus with *Scytonema* or *Stigonema*; spores colorless
 Subfamily *Ephebae* 154
1. Thallus crustose to scaly
 a. Thallus uniform, not corticate
 (1) Spores 1-celled
 (2) Spores 4-celled
 b. Thallus corticate above
2. Thallus dwarf fruticose, much branched, dark
 a. Apothecia sunken in swellings of the thallus
 (1) Spores 1-celled; paraphyses present
 (2) Spores 2-3-celled
 b. Apothecia superficial
 (1) Thallus without pseudoparenchymatic cortex or central medulla
 (a) Paraphyses capitate, septate
 (b) Paraphyses filiform, not septate
 (2) Thallus with large-celled pseudoparenchymatic cortex and central medulla
 (a) Cortex of one row of cells;
 (b) Cortex of several rows
 x. Spores 1-celled
 y. Spores 2-celled
- IV. Algae Rivularia; spores clear
 1. Apothecia disk-form; thallus scaly to granular
 a. Apothecia with proper exciple; algae horizontal
 b. Apothecia with thalline exciple; algae erect
2. Apothecia almost perithecioid; thallus dwarf fruticose
 a. Algae in the middle of the thallus and parallel with the long axis of the branches
 b. Algae absent from the middle but marginal beneath the cortex
 (1) Algae parallel with the long axis of the branches
 (2) Algae perpendicular to the long axis
 (a) Paraphyses present
 (b) Paraphyses absent
- Dicollema* 172 ✓
Collema 171
Blennothallia 172
Leptogiopsis 175 ✓
Leptogium 174 ✓
Pterygiopsis 157
Petractis 124
Porocyphus 157
Ephebeia 155 ✓
Ephebe 155 ✓
Spilonema 154
Thermutis 154
Leptodendriscum 155
Leptogidium 156
Polychidium 156
 Subfamily *Lichinae* 164
Pterygium 165
Steinera 166
Lichinodium 166
Lichina 167 ✓
Lichinella 166
Homopsella 167

Family 39. PELTOPHORACEAE

ZÄHLBRÜCKNER 122, 176, 190

Thallus firm, not at all gelatinous, crustose or foliose, more or less lobed and somewhat erect at the margin but never truly fruticose, typically attached to the substratum by rhizoids or by a navel, with a pseudoparenchymatic cortex on one or both sides or pseudoparenchymatic throughout; apothecia typically sunken in the thallus or grown together with it on the whole under side, more or less margined by the thallus, but a proper exciple lacking.

- I. Thallus uniform to crustose; algae *Protococcus*, rarely *Pleurococcus*
 Subfamily *Ectolechiae* 122
1. Spores transeptate, usually 2-3-celled
 a. Paraphyses not branched
 (1) Paraphyses free; no algae below the hypothecium
 (2) Paraphyses united; algae below the hypothecium
 b. Paraphyses branched and united
 (1) Spores 2-celled
 (2) Spores many-celled
2. Spores muriform
 a. Asci 1-spored; hypothecium without algae
 (1) Paraphyses unbranched, free
 (2) Paraphyses branched, united
 (a) Epithecium without algae
 (b) Epithecium with algae
 b. Asci 8-spored; hypothecium with algae below
- II. Thallus foliose or foliose scaly, rarely subfruticose; algae typically bluegreen, rarely bright-green
1. Apothecia not marginal; thallus pseudoparenchymatic throughout
 Subfamily *Heppiæ* 176 ✓
 One genus, parasitic on *Scytonema*
2. Apothecia typically marginal or even with the thallus; thallus layered
 Subfamily *Peltophoræ* 190
- a. Thallus foliose, usually large-leaved
 (1) Apothecia on the upper side of the thallus
 (a) Apothecia marginal on lobes of thallus; lower surface of thallus without cortex
 x. Algae *Nostoc*
 y. Algae *Palmella* (*Dactylococcus*)
 (b) Apothecia superficial; lower surface with cortex below the apothecia
 x. Algae *Nostoc*
 y. Algae *Palmella*
 (2) Apothecia on the under side of elongate thallus lobes; thallus completely corticate on both sides
 x. Algae *Nostoc*
- Asterothyrium* 123
Lecaniella 124
Actinoplaca 124
Tapellaria 243
Lopadiopsis 123
Sporopodium 123
Gonothecis 123
Arthotheliopsis 124
Heppia 177
 Subfamily *Peltophoræ* 190
 †*Peltophora* 194 ✓
 (*Peltigera*)
 †*Chloropeltis* 194
Solorina 192
Solorinina 192
Nephromium 194

- y. Algae Palmella
 b. Thallus minute, small triangular scales radiating from the apothecium
 (1) Asci 8-spored; spores brownish, 4-6-celled
Asteridium 191
 (2) Asci many-spored; spores clear, 2-celled
Solorinella 192

Family 40. LECIDEACEAE

ZÄHLBRÜCKNER 114, 129, 138, 144

Thallus firm, not gelatinous, crustose, scaly or foliose, exceptionally dwarf fruticose, with rhizoids or a navel in the larger forms, with or without cortex; apothecia superficial or somewhat sunken at first, with a characteristic proper exciple, very rarely lacking, but without a thallic exciple. The absence of the latter distinguishes this family from the Parmeliaceae.

I. Thallus uniform or crustose

1. Algae Chroolepus or Phylactidium **Subfamily Lecanactidae 114**
 a. Proper exciple lacking, or rudimentary and lateral absent
 (1) Spores transeptate; exciple mostly
Schismatomma 115
 (2) Spores muriform; exciple thin, complete
Melampyridium 116
 b. Proper exciple well-developed, carbonous
 (1) Spores 2-celled **Arthoniactis 115**
 (2) Spores 4-many-celled **Lecanactis 115**
 (3) Spores needle-shaped ***Scoleactis 115**
 2. Algae Pleurococcus or Palmella **Subfamily Lecideae 129**
 a. Thallus uniform-crustose, loose, without cortex; spores clear, fusoid, 4-celled
Pilocarpum 116
 b. Thallus typically crustose, firm
 (1) Asci 1-8-spored, rarely 16-32-spored
 (a) Spores 1-celled
 x. Spores clear
 (x) Asci 1-2-spored; spores large, thick-walled
Mycoblastus 133
 (y) Asci 8-spored
 m. Exciple black, carbonous **Lecidea 130**
 n. Exciple clear or colored, not carbonous
Biatora 132
 (z) Asci 16-32-spored ***Pleolecis 132**
 y. Spores brown **Orphniospora 133**
 (b) Spores 2-celled
 x. Spores clear
 (x) Paraphyses simple
 m. Spores thick-walled, large **Megalospora 134**
 n. Spores thin-walled, small
 (m) Thallus with cortex ***Diphloeis 136**
 (n) Thallus without cortex

Nephroma 193

Asteridium 191

Solorinella 192

Family 40. LECIDEACEAE

ZÄHLBRÜCKNER 114, 129, 138, 144

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 (1) Spores transeptate; exciple mostly
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 (2) Spores muriform; exciple thin, complete
Melampyridium 116
 b. Proper exciple well-developed, carbonous
 (1) Spores 2-celled **Arthoniactis 115**
 (2) Spores 4-many-celled **Lecanactis 115**
 (3) Spores needle-shaped ***Scoleactis 115**
 2. Algae Pleurococcus or Palmella **Subfamily Lecideae 129**
 a. Thallus uniform-crustose, loose, without cortex; spores clear, fusoid, 4-celled
Pilocarpum 116
 b. Thallus typically crustose, firm
 (1) Asci 1-8-spored, rarely 16-32-spored
 (a) Spores 1-celled
 x. Spores clear
 (x) Asci 1-2-spored; spores large, thick-walled
Mycoblastus 133
 (y) Asci 8-spored
 m. Exciple black, carbonous **Lecidea 130**
 n. Exciple clear or colored, not carbonous
Biatora 132
 (z) Asci 16-32-spored ***Pleolecis 132**
 y. Spores brown **Orphniospora 133**
 (b) Spores 2-celled
 x. Spores clear
 (x) Paraphyses simple
 m. Spores thick-walled, large **Megalospora 134**
 n. Spores thin-walled, small
 (m) Thallus with cortex ***Diphloeis 136**
 (n) Thallus without cortex

Nephroma 193

Asteridium 191

Solorinella 192

Family 40. LECIDEACEAE

ZÄHLBRÜCKNER 114, 129, 138, 144

Thallus firm, not gelatinous, crustose, scaly or foliose, exceptionally dwarf fruticose, with rhizoids or a navel in the larger forms, with or without cortex; apothecia superficial or somewhat sunken at first, with a characteristic proper exciple, very rarely lacking, but without a thallic exciple. The absence of the latter distinguishes this family from the Parmeliaceae.

I. Thallus uniform or crustose

1. Algae Chroolepus or Phylactidium **Subfamily Lecanactidae 114**
 a. Proper exciple lacking, or rudimentary and lateral absent
 (1) Spores transeptate; exciple mostly
Schismatomma 115
 (2) Spores muriform; exciple thin, complete
Melampyridium 116
 b. Proper exciple well-developed, carbonous
 (1) Spores 2-celled **Arthoniactis 115**
 (2) Spores 4-many-celled **Lecanactis 115**
 (3) Spores needle-shaped ***Scoleactis 115**
 2. Algae Pleurococcus or Palmella **Subfamily Lecideae 129**
 a. Thallus uniform-crustose, loose, without cortex; spores clear, fusoid, 4-celled
Pilocarpum 116
 b. Thallus typically crustose, firm
 (1) Asci 1-8-spored, rarely 16-32-spored
 (a) Spores 1-celled
 x. Spores clear
 (x) Asci 1-2-spored; spores large, thick-walled
Mycoblastus 133
 (y) Asci 8-spored
 m. Exciple black, carbonous **Lecidea 130**
 n. Exciple clear or colored, not carbonous
Biatora 132
 (z) Asci 16-32-spored ***Pleolecis 132**
 y. Spores brown **Orphniospora 133**
 (b) Spores 2-celled
 x. Spores clear
 (x) Paraphyses simple
 m. Spores thick-walled, large **Megalospora 134**
 n. Spores thin-walled, small
 (m) Thallus with cortex ***Diphloeis 136**
 (n) Thallus without cortex

- r. Exciple and hypothecium dark or black
Catillaria 133
 s. Exciple and hypothecium clear or bright
Biatorina 134
 (y) Paraphyses branched, in a slimy hymenium
***Diphanis 138**
 y. Spores brown; paraphyses branched
***Diphais 138**
 (c) Spores 4-many-celled
 x. Spores elliptic to long-fusoid
 (x) Thallus not corticate, crustose-uniform
 m. Spores thin-walled **Bacidia 135**
 n. Spores thick-walled **Bombyliospora 136**
 (y) Thallus corticate, warty to scaly
Toninia 136
 y. Spores needle-shaped or filiform
†Scoleosporis 136
(Scoliosporum)
 (d) Spores muriform
 x. Spores clear
 (x) Spores with mucus covering; paraphyses branched
***Phalodictyum 138**
 (y) Spores without mucus cover; paraphyses simple
Lopadium 137
Rhizocarpum 137
 y. Spores brown, mucose
 (2) Asci many-spored
 (a) Exciple bright-colored, soft **Biatorella 151**
 (b) Exciple dark or black, hard **Sporostatia 152**
 II. Thallus scaly or foliose; algae Pleurococcus or Palmella **Subfamily Phyllopsorae 138**
 1. Thallus scaly, with rhizoids; disk even
 a. Spores 1-celled
 (1) Hypothecium pseudoparenchymatic
Phyllopsora 138
 (2) Hypothecium not pseudoparenchymatic
 (a) Exciple clear or bright **Psoromaria 183**
 (b) Exciple dark or black **Psora 132**
 b. Spores transeptate **Psorella 139**
 2. Thallus mostly with one large leaf; disk often furrowed
Subfamily Gyrophorae 147
 a. Spores 1-celled; disk furrowed in most of the species
Gyrophora 147
 b. Spores transeptate
 (1) Spores 2-many-celled, colorless ***Merophora 148**
 (2) Spores 2-celled, brown **Dermaticum 149**
 c. Spores muriform, dark **Umbilicaria 149**
 III. Thallus dwarf fruticose, of low erect slightly branched podetia, horizontal thallus lacking; spores clear, 2-celled **Sphaerophoropsis 133**

Family 41. CLADONIAEAE

ZAHLEBRUCKNER 139

Thallus of two kinds, one horizontal on the substratum, crustose, scaly to foliose, the other consisting of erect clubshaped, cupshaped or filiform, simple or branched podetia; algae typically Pleurococcus; apothecia terminal or lateral, mostly convex to globose, with proper exciple only, except in Chlorocaulum; spores colorless.

I. Apothecia with proper exciple

1. Podetia short, simple, rarely forked; apothecia terminal

a. Podetia equal, not broadened above

(1) Podetia covering the surface

(a) Hypothecium clear

x. Spores 1-celled

Baeomyces 140 ✓

y. Spores transeptate

(x) Spores elliptic to rod-shaped

m. Spores 2-celled

***Dibaeis 140**

n. Spores 4-celled

(m) Algae blue-green

***Cyanobaeis 141**

(n) Algae yellow-green

Heteromyces 141

(y) Spores filiform, many-celled

Gomphyllus 141

(b) Hypothecium dark; spores 1-celled

Pilophorum 142

(2) Podetia marginal on a foliose thallus

Gymnoderma 142

b. Podetia broadened above into lobes or tongues bearing the hymenium on one side

(1) No algae below the hymenium; medulla uniform

Glossodium 142

(2) Algae below the hymenium; medulla with thicker strands

Thysanothecium 142

2. Podetia funnelliform, cupshaped or more or less branched, large ✓

a. Spores 1-celled; podetia hollow

Cladonia 143

b. Spores 4-many-celled

Stereocaulum 146

c. Spores muriform

Argopsis 146

II. Apothecia with thalline exciple

***Chlorocaulum 146**

Family 42. PARMELIACEAE

ZAHLEBRUCKNER 118, 124, 150, 195, 199, 207, 216

Thallus of one kind, podetia lacking, firm, not gelatinous, crustose, scaly, foliose or fruticose, often with rhizoids, typically layered, algae typically yellow green, but bluegreen in two subfamilies; apothecia characterized by a thalline exciple, which is rarely lacking, superficial, rarely immersed

I. Thallus typically crustose, sometimes scaly or lobed at the margin

1. Algae Pleurococcus or Palmella, rarely Protococcus

a. Asci 1-32-spored, mostly 8-spored

(1) Disk conspicuous, not perithecioid **Subfamily Leanorae 199**

(a) Spores 1-celled

x. Asci 1-8-spored

(x) Paraphyses simple, free

m. Spores straight, elliptic to oblong

(m) Thallus bright yellow; pycnoconidia elliptic

Candelariella 207

(n) Thallus rarely bright yellow; conidia filiform

r. Cortex not pseudoparenchymatic

Lecanora 201 ✓

s. Cortex pseudoparenchymatic

Psoroma 183 ✓

n. Spores crescent to falcate

Harpidium 199

(y) Paraphyses branched and united

Ochrolechia 203

y. Asci 12-many-spored

***Myriolecis 202**

(b) Spores 2-celled

x. Paraphyses simple, free

(x) Sterigmata exobasidial

Lecania 204 ✓

(y) Sterigmata endobasidial

Icmadophila 204(incl. **Placolecia 205**)

y. Paraphyses branched, united

Calenia 205

(c) Spores 4-many-celled

x. Apothecia superficial

(x) Asci 1-8-spored

m. Thallus with cortex

Haematomma 205

n. Thallus without cortex

(m) Paraphyses forked; spores moniliform, 30-40-celled

Conotrema 121

(n) Paraphyses simple; spores not moniliform, 8-30-celled

***Adermatis 204**

(y) Asci 16-32-spored

***Dyslecanis 204**

y. Apothecia immersed; thallus without cortex

(x) Paraphyses simple, free

Phlyctella 206

(y) Paraphyses branched and united

Phlyctidia 206

(d) Spores muriform

x. Spores clear, at least not dark

(x) Apothecia superficial, broad

Myxodictyum 206

(y) Apothecia immersed, small

Phlyctis 206

y. Spores dark

Diploschistes 122

(2) Disk small, more or less closed and perithecioid; apothecia mostly sunk-

(a) Spores 1-celled

Subfamily Pertusariae 195

(a) Spores 1-celled

x. Paraphyses simple, free

Perforaria 195

y. Paraphyses branched and united

Pertusaria 195 ✓

- (b) Spores 2-celled; paraphyses branched and united
Varicellaria 198
- h. Asci many-spored; spores 1-celled, more rarely 2-celled
Subfamily Acarosporae 150
- (1) Apothecia superficial
(a) Thallus bright yellow ***Pleochroma 207**
(b) Thallus not bright yellow **Maronea 152**
- (2) Apothecia typically immersed, with mostly narrow disk
Acarospora 152
2. Algae Chroolepus or Phylactidium; apothecia with thalline exciple, at least when young
Subfamily Gyalectae 124
(incl. **Thelotremae 118**)
- a. Thalline exciple present and persistent
- (1) Spores 1-celled **Jonaspis 125**
(2) Spores 2-celled ***Ocellis 118**
(3) Spores 4-many-celled
- (a) Spores clear
- x. Apothecia sprouting repeatedly from the margin, forming erect forked chains of apothecia
Polystroma 121
- y. Apothecia not in chains
- (x) Algae Chroolepus
- m. Exciple and hypothecium clear
Ocellularia 118
- n. Exciple and hypothecium dark, hard
Sagiotechia 126
Phyllophthalmaria 120
Phaeotrema 119
- (y) Algae Phylactidium
- (b) Spores brown
- (4) Spores muriform
- (a) Spores clear **Thelotrema 119**
x. Paraphyses simple, free
y. Paraphyses branched and united
- ***Phanotylum 121**
- (b) Spores dark or brown
x. Paraphyses simple, free **Leptotrema 120**
y. Paraphyses branched and united
(x) Apothecia sunken in groups in a stroma
Tremotylum 120
- (y) Apothecia not in a stroma
Gyrostomum 120
- b. Thalline exciple present at first, then more or less completely disappearing
- (1) Asci 1-8-spored
- (a) Spores 2-celled **Microphiale 125**
(b) Spores 4-many-celled **Bryophagus 126**
(c) Spores muriform **Gyalecta 125**
- (2) Asci 12-many-spored
- (a) Spores 2-celled **Ramonia 125**
(b) Spores 6-many-celled **Pachyphiale 126**
- II. Thallus typically foliose or fruticose, sometimes small-leaved or scaly; thalline exciple sometimes lacking

- I. Algae Pleurococcus, Protococcus, Palmella or Cystococcus
- a. Asci many-spored; apothecia cespitose on a one-leaved thallus
Glypholecia 153
- b. Asci 1-32-spored
- (1) Thallus foliose, horizontal or upright, rarely fruticose, typically dorsiventral
- (a) Thallus with cyphellae or pseudocyphellae or furnished with well-developed clubshaped cephalodia
- x. Lower side of thallus with cyphellae or pseudocyphellae
- (x) Apothecia with thalline exciple
- m. Spores 2-celled
- (m) Spores clear ***Diphanosticta 189**
(n) Spores brown ***Diphaeosticta 189**
- n. Spores 4-many-celled
- (m) Spores clear ***Phanosticta 189**
(n) Spores brown **Sticta 188**
- (y) Apothecia with proper exciple only
***Dysticta 189**
- y. Lower side of thallus without cyphellae or pseudocyphellae; thallus typically with cephalodia
- (x) Algae Protococcus **Lobaria 185**
(y) Algae Cystococcus, i. e., in mucose colonies
***Cystolobis 188**
- (b) Thallus typically without cyphellae, pseudocyphellae, and cephalodia
Subfamily Parmeliae 207
Candelaria 209
- x. Asci 16-32-spored
- y. Asci 2-8-spored
- (x) Cortex on both sides of thallus
- m. Apothecia superficial
- (m) Lower cortex more or less cellular, usually with rhizoids
Parmelia 211
(incl. **Parmeliopsis 209**)
- (n) Lower cortex without rhizoids, spongy, of net-like hyphae
Anzia 213
- n. Apothecia marginal or terminal; thallus often fruticose
- (m) Disks upright from the beginning
Cetraria 214
- (n) Disks on the under side of thallus lobes, later upright by the twisting of the lobes
Nephromopsis 216
- (y) Cortex on the upper side alone
- m. Apothecia superficial; lower surface without cyphellae
Physcidia 209
- n. Apothecial terminal; cyphellae on lower side
Heterodea 208
- (2) Thallus fruticose, erect or hanging, often long and hair-like; radial, rarely dorsiventral in structure **Subfamily Usneae 216**
- (a) Spores 1-celled or unknown

- x. Medulla traversed by varying solid strands
Letharia 218
- y. Medulla uniform without strands
(x) Cortex formed of hyphae running lengthwise
m. Spores clear; asci 8-spored
Bryopogon 219 ✓
n. Spores brownish; asci 4-spored
Alectoria 219 ✓
(y) Cortex of hyphae more or less perpendicular to the long axis, pseudoparenchymatic
m. Medulla of hyphae running lengthwise
(m) Medulla loose, not horny; apothecia unknown
Thamnolia 225
(n) Medulla firm, horny
r. Thallus low, podetium-like; apothecia unknown
Siphula 225
s. Thallus fruticose, elongate; apothecia known
(r) Thallus dorsiventral, without fibrous branches; medulla and cortex not separable
Everniopsis 218
(s) Thallus radial, usually with fibrous branches; medulla and cortex readily separable
Usnea 223 ✓
n. Medulla of hyphae running in all directions
(m) Thallus more or less hollow
r. Thallus swollen, tubular
Dactylina 218
s. Thallus not swollen and tubular
(r) Thallus fruticose, erect
Dufourea 218
Endocena 226
(n) Thallus flattened, not hollow, dorsiventral ✓
Evernia 217
(b) Spores 2-celled
Ramalina 220 ✓
(c) Spores muriform, brown, large; asci 1-spored
Oropogon 220
2. Algae bluegreen, Scytonema or Nostoc
a. Thallus large-leaved, with cyphellae, pseudocyphellae or cephalodia
(1) Lower side of thallus with cyphellae or pseudocyphellae
(a) Apothecia with thalline exciple
x. Spores clear, bacillar to acicular, 2-8-celled
***Podostictina 189**
y. Spores brown
(x) Spores 2-celled
Stictina 189 ✓
(y) Spores 4-celled
***Merostictina 189**
(b) Apothecia with proper exciple only
***Dystictina 190**

- (2) Cyphellae or pseudocyphellae absent; cephalodia usually present
(a) Apothecia with thalline exciple
***Phycodiscis 188**
(b) Apothecia with proper exciple only
Lobarina 188
- b. Thallus scaly to small-leafy, sometimes crustose, exceptionally large-leafy, without cyphellae, etc.
(1) Lower surface of thallus scarcely or not at all veined; spores 1-2-celled
(a) Upper cortex well-developed, distinct
x. Upper cortex with hyphae perpendicular to it
(x) Upper cortex hairy or pilose
Erioderma 183
(y) Upper cortex not hairy
m. Apothecia with thalline exciple
(m) Spores 1-celled; algae Nostoc
Pannaria 181 ✓
(n) Spores 2-celled; algae Scytonema
Massalongia 183
n. Apothecia with proper exciple only
(m) Spores 1-celled
Parmeliella 181
(n) Spores 2-many-celled
Placynthium 181
y. Upper cortex of horizontal hyphae
Coccocarpia 184
(b) Upper cortex indistinct; algae occupying nearly the whole width of the thallus
Lepidocellema 180
(2) Lower surface of thallus with distinct forked veins; spores 4-celled
Hydrothiria 184

Family 43. PHYSICIACEAE

ZAHLEBRUCKNER 226-234

Thallus crustose, foliose or fruticose, as in Parmeliaceae; apothecia mostly lecanorin, sometimes with proper exciple alone; spores normally 2-celled, with more or less thickened cross-wall, often traversed by a line-like canal, or exceptionally 1-many-celled or muriform

I. Spores 2-celled

1. Spores clear

- a. Thallus without cortex, uniform or crustose
(1) Apothecia with thalline exciple
Caloplaca 227
(2) Apothecia with proper exciple only
Blastenia 226

b. Thallus with cortex, foliose or fruticose

- (1) Thallus foliose, horizontal or ascending, dorsiventral, with rhizoids, cortex pseudoparenchymatic on both sides
Xanthoria 229
(2) Thallus fruticose, erect, radial, cortex of conglutinate longitudinal hyphae
Theloschistes 230 ✓

2. Spores dark or brown

- a. Thallus without cortex, uniform or crustose

- (1) Apothecia with thalline exciple ✓
 (a) Asci 8-spored ✓ **Rinodina 232**
 (b) Asci 12-24-spored ***Pleorinia 233**
- (2) Apothecia with proper exciple only ✓
Buellia 231
- b. Thallus with cortex, foliose or fruticose
 (1) Upper cortex of perpendicular hyphae, pseudoparenchymatic
 (a) Apothecia with thalline exciple
 x. Hypothecium clear ✓ **Physcia 234**
 y. Hypothecium black **Dirinaria 235**
 (b) Apothecia with proper exciple only
Pyxine 234
- (2) Upper cortex of hyphae parallel with the long axis, not pseudoparenchymatic; apothecia with proper exciple
Anaptychia 236
- II. Spores 3-4-celled
 1. Spores clear
 a. Thallus without cortex, uniform or crustose
 (1) Apothecia with thalline exciple ***Meroplacis 228**
 (2) Apothecia with proper exciple only
Xanthocarpia 227
Niorma 230
- b. Thallus with cortex, fruticose
 2. Spores brown
 a. Thallus without cortex, uniform or crustose
 (1) Apothecia with thalline exciple ***Merorinis 233**
 (2) Apothecia with proper exciple alone
Diplotomma 232
- b. Thallus with cortex, foliose; exciple proper
 ***Phragmopyxine 234**
- III. Spores muriform, brown
 1. Thallus without cortex, uniform or crustose
 ***Dictyorinis 233**
Hyperphyscia 236
2. Thallus with cortex, foliose

Copied
Family 44. MOLLISIACEAE
 REHM 503

Apothecia superficial or erumpent, cupulate to disk-shaped, mostly smooth, rarely with hairs, typically soft-waxy; distinguished from all other families by the typically brownish exciple, which is entirely parenchymatic, or at least about the base.

Subfamily Eumollisiae

Apothecia superficial from the beginning

Hyalosporae

Spores hyaline, 1-celled, globose to elliptic

- I. Apothecia not on a subicle
 1. Spores globose
 2. Spores elliptic to fusoid
- ✓ **Mollisiella 18: 64**
 ✓ **Mollisia, R. 511, 8: 321**

- II. Apothecia on a subicle ✓
Tapesia R. 573, 8: 371 ✓ *Tapesia (P) J. J. J.*

Hyalodidymae

Spores hyaline, 1-septate, elliptic to oblong

- I. Apothecia not on a subicle ✓
Niptera R. 549-84-480 ✓ *(Niptera) J. J. J.*

- II. Apothecia on a subicle

1. Spores with a mucose covering

Stictoclypeolum 18: 110 ✓ *Stictoclypeolum (P) J. J. J.*

2. Spores not mucose

- a. Spores constricted, large, 50 x 25 μ

Psorotheciopsis 16: 745 ✓ *Psorotheciopsis (P) J. J. J.*

- b. Spores not constricted, small, 12 x 5 μ

Linhartia 16: 744 ✓ *Linhartia (P) J. J. J.*

Hyalophragmiae

Spores hyaline, 2-several-septate, elliptic to fusoid

- I. Apothecia not on a subicle or thallus ✓
Belonidium R. 561, 8: 496 ✓ *Belonidium (P) J. J. J.*

- II. Apothecia on a subicle or thallus

1. Spores ciliate at each end

Ciliella 16: 748 ✓ *Ciliella (P) J. J. J.*

2. Spores not ciliate

- a. Apothecia on a subicle of hyphal threads

Trichobelonium R. 590, 16: 747 ✓ *Trichobelonium (P) J. J. J.*

- b. Apothecia on a parenchymatic thallus

Pazschkea 14: 788 ✓ *Pazschkea (P) J. J. J.*

(incl. **Psorotheciella 16: 746**) ✓ *Psorotheciella (P) J. J. J.*

Hyalodictyae

Spores hyaline, muriform, ovoid to oblong

- I. Subicle present; asci 1-4-spored; spores mucose

✓ **Melittosporia 16: 751** ✓ *Melittosporia (P) J. J. J.*

(**Melittosporiopsis**) ✓ *Melittosporiopsis (P) J. J. J.*

Scolecosporae

Spores hyaline, filiform, usually septate

- I. Apothecia gregarious; subicle lacking ✓
Belonopsis R. 571, 16: 752 ✓ *Belonopsis (P) J. J. J.*

Subfamily Pyrenopezizae

Apothecia at first covered, then erumpent and more or less superficial

Hyalosporae

Spores hyaline, 1-celled, globose to oblong

- I. Apothecia bright-colored, on living leaves ✓
Pseudopeziza R. 596, 8: 723 ✓ *Pseudopeziza (P) J. J. J.*

- II. Apothecia dark-brown without, not on living leaves ✓

Pirotaea R. 636, 8: 386 ✓ *Pirotaea (P) J. J. J.*

1. Apothecia with bristles

2. Apothecia without bristles, but sometimes with projecting rows of cells

✓ **Pyrenopeziza R. 608, 8: 354** ✓ *Pyrenopeziza (P) J. J. J.*

- a. Subicle lacking

- b. Subicle present

***Spilopezis R. 620** ✓ *Spilopezis (P) J. J. J.*

Phaeosporae

Spores dark or brownish, 1-celled, elliptic to oblong

- I. Apothecia leathery, bright-colored outside

Velutaria R. 645, 8: 488 *Velutaria*

Hyalodidymae

Spores hyaline, 1-septate, elliptic to fusoid

- I. Apothecia scarcely erumpent, bright colored

Fabraea R. 599, 8: 735

- II. Apothecia nearly superficial, dark-brown without

**Dibelonius* R. 638

Hyalophragmiae

Spores hyaline, 2-several-septate, oblong to fusoid

- I. Apothecia at last superficial, more or less roughened

Beloniella R. 638

Family 45 HELOTIACEAE

REHM 647

Apothecia mostly superficial, rarely erumpent or arising from a sclerotium, typically stalked, sometimes sessile, cupulate to disk-shaped, waxy; distinguished by an exciple which is completely prosenchymatic.

Subfamily Helotiae

Apothecia not hairy

Hyalosporae

Spores hyaline, 1-celled, globose to oblong

- I. Apothecia on a subicle

Eriopeziza R. 693

- II. Apothecia not on a subicle

1. Apothecia arising from a sclerotium, long-stalked

Sclerotinia R. 803, 8: 195

2. Apothecia not arising from a sclerotium

- a. Apothecia green, arising from a green substratum

Chlorosplenium R. 752, 8: 315

- b. Apothecia not on a green substratum

- (1) Apothecia margined by a row of triangular teeth

- (a) Apothecia stalked

Cyathicula R. 740, 8: 304

- (b) Apothecia sessile

**Pezojoma*

- (2) Apothecia without teeth

- (a) Asci many-spored

Comesia 8: 468

- (b) Asci typically 8-spored

- x. Apothecia sessile

Peizizella R. 653, 8: 275

- y. Apothecia stalked

- (x) Ascus pore blue with iodine

Helotium R. 772, 8: 210

(incl. *Ciboria* R. 754, 8: 201)

- (y) Ascus pore not blue with iodine

Phialea R. 708, 8: 251

(incl. *Helotium* in part)

Hyalodidymae

Spores hyaline, 1-septate, elliptic to fusoid

- I. Apothecia typically sessile

**Eubelonis* R. 685

- II. Apothecia stalked

1. Stalk ridged or folded

Lanzia 8: 479

2. Stalk not ridged or folded

Hymenoscypha R. 781

Hyalophragmiae

Spores hyaline, 2-several-septate, elliptic to fusoid

- I. Apothecia not toothed at margin

1. Apothecia sessile

Belonium R. 685, 8: 492

2. Apothecia stalked

- a. Subicle lacking

- (1) Spores muticate

- (a) Paraphyses colorless, epithecium lacking

Belonioscypha R. 743

- (b) Paraphyses colored, forming an epithecium

Rutstroemia R. 763

- (2) Spores 1-ciliate at each end

**Belospora* R. 744, 8: 488

- b. Subicle present

Massea 18: 99

- II. Apothecia with a row of triangular teeth at margin

1. Apothecia sessile

**Merodontis* 18: 102

2. Apothecia stalked

Davincia 18: 101

Scolecosporae

Spores typically hyaline, filiform

- I. Apothecia sessile or merely narrowed below

1. Apothecia smooth

Gorgoniceps R. 690, 8: 504

2. Apothecia hairy

Arachnopeziza R. 698

- II. Apothecia stalked

Pocillum R. 747, 8: 605

Subfamily Dasyscyphae

REHM 824

Apothecia hairy

Hyalosporae

Spores hyaline, 1-celled, globose to fusoid

- I. Spores globose

Lachnellula R. 862, 8: 390

- II. Spores elliptic to fusoid

1. Paraphyses lance-shaped, pointed

- a. Apothecia sessile

**Dyslachnium* R. 868, 888

- b. Apothecia stalked

Lachnum R. 870

2. Paraphyses filiform, blunt

- a. Apothecia divided above into 3-6 lobes, black

Arenaea 18: 75

- b. Apothecia entire, rarely black

- (1) Apothecia hairy with distinct bristles
 (a) Hairs shining, clear, non-septate, nearly solid
 *Phalothrix R. 831
 (b) Hairs dull, usually septate, hollow
 x. Apothecia sessile
 y. Apothecia stalked
 (2) Apothecia villose with projecting hyphae
 Hyphoscypa 18: 87

Hyalodidymae

Spores hyaline, 1-septate, elliptic to fusoid

I. Spores at first 1-celled, but finally 2-celled

- Lachnella R. 853, 8: 391
 (incl. Perrotia 18: 90)

Hyalophragmiae

Spores hyaline, 2-several-septate, oblong to fusoid

I. Paraphyses lance-shaped, pointed

- Erinella R. 910, 8: 507

II. Paraphyses bearing conidia at the tips

- Diplocarpa 18: 110

Family 46. PEZIZACEAE

RHM 913

Apothecia typically terrestrial, erumpent or superficial, sessile or stalked, urn-shaped to disciform, smooth or hairy, fleshy or fleshy-waxy, rarely leathery; usually medium to large forms.

Subfamily Pezizae

Apothecia smooth, i. e., without hairs

Hyalosporae

Spores hyaline, 1-celled, globose to fusoid

I. Asci not blue with iodine

1. Apothecia cleft on one side, ear-like

- Otidea R. 1023, 8: 94
 (incl. Phyllospora, P. longicauda Br.
 " Scodellaria)

2. Apothecia not ear-like

a. Spores globose

(1) Apothecia fleshy or fleshy-waxy

- (a) Substipitate, parasitic
 Pitya R. 925, 8: 209
 (b) Sessile, terrestrial
 Detonia R. 927, 1269, 8: 105
 (Barlaea 8: 111, Otidella 8: 99)
 †Peltophoromyces 16: 720
 (Peltigeromyces)

(2) Apothecia cartilaginous

b. Spores elliptic to fusoid

(1) Apothecia sessile

(a) Spores with reticulately thickened wall

- Aleuria R. 968

(b) Spores smooth or roughened

- x. Apothecia not on a subicle
 Humaria R. 934, 8: 118

- y. Apothecia on a subicle
 ✓ Pyronema R. 962, 8: 107
 (incl. Phycascus 16: 709)
 (2) Apothecia stalked
 (a) Stalk narrow, cylindrical, mealy-rough, almost hairy
 Macropodia R. 984, 8: 158
 (b) Stalk mostly short and wide, not mealy-rough
 x. Stalk large and thick, deeply furrowed
 Phleboscypus R. 981, 18: 13
 (Acetabula)
 y. Stalk even or slightly furrowed
 (x) Apothecia persistently cup-shaped
 Geopyxis R. 971, 8: 63
 (y) Apothecia finally open and flat
 Discina R. 976, 8: 99

II. Asci blue with iodine

1. Apothecia cleft on one side, ear-like

- *Iotidea R. 1028

2. Apothecia not ear-like

a. Spores globose

- Plicariella R. 993

b. Spores elliptic to fusoid

(1) Apothecia sessile

(a) Apothecia with a milky juice

- Galactinia 8: 106

(b) Apothecia without milky juice

x. Apothecia not on a subicle

(x) Apothecia leathery, black

- Urnula R. 999, 8: 548

(y) Apothecia fleshy, not black

m. Apothecia on the surface

of the ground

- Plicaria R. 1000

(Pustularia in part)

n. Apothecia large, sunken, lobed

- Peziza R. 1019, 8: 73 and 511

(Pustularia in part)

y. Apothecia on a subicle

(2) Apothecia with a long, slender stalk

- Melachroia R. 997
 Tarzetta R. 1021

Phaeosporae

Spores dark, 1-celled, globose to oblong

I. Spores globose

- ✓ Phaeopeziza 8: 471, R. 995

II. Spores elliptic

1. Apothecia sessile

- Aleurina 18: 88

2. Apothecia stalked

- *Podoleuria 18: 88

Subfamily Scutelliniae

Apothecia setose or hairy

Hyalosporae

Spores hyaline, 1-celled, globose to fusoid

I. Spores globose

- 1. Spores smooth
 - a. Cup dark or black, more or less strigose at base
 - b. Cup bright-colored, hairy or setose
- 2. Spores warted or reticulate; cups white-hairy

Pseudoplectania R. 1039, 8: 105 *P. pinguis* (Wulfen) *Wulfen*

Sphaerospora R. 1037, 8: 188 *S. trichoides* (Wulfen) *Wulfen*

Pyronemella R. 1038, 8: 194 *Pyronemella* *Wulfen*

II. Spores elliptic to fusoid

- 1. Spores rostrate at base
- 2. Spores muticate
 - a. Apothecia sunken in the ground, opening by lobes
 - b. Apothecia superficial
 - (i) Apothecia sessile
 - (a) Apothecia dark-hairy or ciliate
 - x. Apothecia uniformly dark-hairy
 - (y) Apothecia also with long cilia at the margin
 - (x) Paraphyses clavulate, blunt
 - (y) Paraphyses equal, brown, pointed

Pattersonia 18: 98 *Pattersonia* *Wulfen*

Sepultaria R. 1075, 8: 166 *Sepultaria* *Wulfen*

Pelodiscus 16: 1147, 18: 35 *Pelodiscus* *Wulfen*

Scutellinia R. 1042, 8: 173 *Scutellinia* *Wulfen*

Desmazierella R. 1041, 8: 386 *Desmazierella* *Wulfen*

- (b) Apothecia bright-hairy or ciliate
 - x. Apothecia uniformly bright-hairy
 - y. Apothecia with marginal cilia also

Leucopezis R. 1068a *Leucopezis* *Wulfen*

Neotlopezis 8: 190, R. 1068a *Neotlopezis* *Wulfen*

- (2) Apothecia stalked
 - (a) Apothecia dark or black
 - x. Stalk long, slender, mealy
 - y. Stalk short, thick with brown hairs and rhizoids
 - (b) Apothecia and hairs bright-colored

Macropodia R. 984, 8: 158 *Macropodia* *Wulfen*

Plectania 8: 163, R. 1070 *Plectania* *Wulfen*

Sarcoscypha R. 1070, 8: 153 *Sarcoscypha* *Wulfen*

Trichoscypha 8: 160, *Pilocratera* 18: 31 *Trichoscypha* *Wulfen*

Phaeosporae

Spores hyaline, 1-celled, globose to fusoid

- I. Apothecia with a cylindrical verrucose stalk
- II. Apothecia sessile

Phaeomacropus 16: 740 *Phaeomacropus* *Wulfen*

Trichaleuris 18: 89 *Trichaleuris* *Wulfen*

Family 47. HELVELLACEAE

Rehm 1134

Apothecia typically terrestrial, and stalked, sometimes sessile, club-shaped, conical or saddle-shaped, rarely flat, mostly smooth, fleshy, cartilaginous or rarely gelatinous; usually large forms.

Subfamily Rhizinae

Apothecia sessile, flat, arched or irregularly globose

- I. Spores globose
- II. Spores elliptic or fusoid
 - 1. Spores elliptic, rounded at ends
 - 2. Spores fusoid, pointed at the thickened ends

Sphaerosoma R. 1140, 8: 56 *Sphaerosoma* *Wulfen*

Psilopezia R. 1137, 8: 152 *Psilopezia* *Wulfen*

Rhizina R. 1138, 8: 57 *Rhizina* *Wulfen*

Subfamily Helvellae

Apothecia stalked, cap- or saddle-shaped, or columnar

- I. Hymenium ridged in both directions
 - 1. Ridged cap stalked
 - 2. Ridged cap sessile
- II. Hymenium smooth, convolute or ridged longitudinally
 - 1. Hymenium saddle-like, more or less lobed
 - 2. Hymenium globoid, convolute
 - 3. Hymenium cap- or bell-shaped, smooth or ridged

Morchella R. 1200, 8: 8 *Morchella* *Wulfen*

Underwoodia 10: 1 *Underwoodia* *Wulfen*

Helvella R. 1179, 8: 17 *Helvella* *Wulfen*

Gyromitra R. 1189, 8: 15 *Gyromitra* *Wulfen*

Verpa R. 1195, 8: 29 *Verpa* *Wulfen*

Subfamily Geoglossae

Apothecia stalked, clavate or capitate

- I. Hymenium distinct from stem, disciform or capitate
 - 1. Spores 1-celled
 - 2. Spores 2-4-celled
 - a. Apothecia gelatinous
 - b. Apothecia waxy or fleshy-waxy
 - 3. Spores filiform or acicular
 - a. Apothecia fleshy, cap-shaped with involute margin
 - b. Apothecia waxy, button-shaped, solid
- II. Hymenium club-shaped, not distinct from stem or but slightly so
 - 1. Spores hyaline
 - (1) Spores globose
 - (2) Spores elliptic
 - 2. Spores 2-4-celled, fusoid
 - (1) Hymenium covering the whole club
 - (2) Hymenium on one side only
 - 3. Spores more or less filiform

Haplocybe R. 1168 *Haplocybe* *Wulfen*

Leotia R. 1164, 8: 609 *Leotia* *Wulfen*

Cudoniella R. 1166, 8: 41 *Cudoniella* *Wulfen*

Leotiella 16: 700 *Leotiella* *Wulfen*

Vibrissea R. 1170, 8: 51 *Vibrissea* *Wulfen*

Neolecta 8: 40 *Neolecta* *Wulfen*

Mitrulella R. 1146, 8: 32 *Mitrulella* *Wulfen*

Microglossum R. 1151, 8: 39 *Microglossum* *Wulfen*

Hemiglossum 10: 2 *Hemiglossum* *Wulfen*

Spathularia R. 1158, 8: 48 *Spathularia* *Wulfen*

Geoglossum R. 1153, 8: 42 *Geoglossum* *Wulfen*

b. Spores elliptic

†Ascodes, 16: 807
(Oscarbrefeldia)

II. Biogenous

1. Asci 4-8-spored

a. Asci 4-spored, solitary; on fungi

b. Asci 8-spored

(1) Spores 1-celled

(a) Hyphae of palmiform haustoria on fungi

Podocapsa 8: 820

(b) Hyphae filamentous; on animals

(2) Spores muriform; on leaves

2. Asci many-spored

a. Mycelium present

b. Mycelium none

(1) Haustoria present; on fungi

(2) Haustoria absent; mostly on flowering plants

Eremothecium 8: 821

Protomyces 7: 319

Family 52. SACCHAROMYCETACEAE

8: 916, 11: 457, 14: 828, 16: 818, 18: 198

True hyphae lacking, unicellular, propagating by buds; asci spurious?, globose to elliptic, mostly 1-4-spored; growing typically in sugary or starchy liquids or materials.

1. Cells increasing by fission

II. Cells increasing by budding

1. Spores pileiform or limoniform, costate

2. Spores globose to irregular

- a. Vegetative cells conjugating
b. Vegetative cells normal

Schizosaccharomyces 18: 207

Willia 18: 198

Zygosaccharomyces 18: 198

Saccharomyces 18: 198

Order 12. TUBERALES

Ascoma or apothecium typically more or less globose, and indehiscent, with one to many hollows, locules or veins, fleshy, waxy, leathery or even subcarbonous, saprophytic or parasitic, usually subterranean; asci present, 1-many-spored.

Family 53. CYTTARIACEAE

8: 4, 16: 695, 18: 1

Ascomata globose or obovate, firm fleshy, subcoriaceous when dry, stuffed or hollow, loculiferous at the periphery, producing tubercular swellings on the branches of living trees; locules globose, large, dehiscing by lobes, filled with asci and paraphyses; asci cylindrical 8-spored; spores hyaline.

1. Ascoma globose or obovate; all locules bearing asci

Cyttaria 8: 4

C. darwinii Berk.

of base, very fig. for ill. aspicin
Hoo.

II. Ascoma turbinate, fenestrate below; asci on a definite disk

Rickiella 18: 1

Family 54. PHYMATOSPHAERIAACEAE

(incl. MYRIANGIACEAE)

8: 843, 11: 440, 16: 799, 18: 191

Ascomata verruciform, small, waxy, membranous or subcarbonous, superficial, densely loculiferous within; locules with a single ascus, indehiscent; asci globose or short clavate, 8-spored.

Hyalosporae

Spores hyaline, 1-celled, ovoid to elliptic

I. Ascomata globose-depressed, membranous

Phillipsiella 8: 844

Phaeosporae

Spores dark, 1-celled, elliptic to fusoid

I. Spores angulose, verrucose; fimicole

Guillermondia 18: 191

Hyalodidymae

Spores hyaline, 1-septate, elliptic to fusoid

I. Ascomata dark, globose-depressed

Microphyma 8: 844

II. Ascomata bright-colored, applanate

Leptophyma 8: 844

Hyalophragmiae

Spores hyaline, 2-several-septate, oblong to fusoid

I. Ascomata elongate, rugose

Eurytheca 8: 846

II. Ascomata punctiform to obconic

1. Ascomata punctiform or applanate

a. Ascomata punctiform; asci clavate

Harknessiella 8: 845

b. Ascomata applanate-disciform; asci ovoid to globose

Myriangium 16: 800

(incl. Myriangella 18: 192)

2. Ascomata hemispheric or obconic; asci globose

Mollerella 8: 845

Phaeophragmiae

Spores dark, 2-several-septate, oblong to fusoid

I. Ascomata blood-red, membranous-waxy

Kusanoa 16: 800

Hyalodictyae

Spores hyaline, muriform

I. Ascomata bright-colored

1. Ascomata on a radiate subicle

Phymatosphaeria 8: 847

2. Ascomata not on a subicle

Ascomycetella 8: 846

II. Ascomata dark or black

Trichophyma 18: 194

Phaeodictyae

Spores dark, muriform

- I. Ascomata appanate-tuberculiform, black **Cookella** 8:846 *C. muriformis* Berk. (right be. l. l. from the *Synonyma Cookella* 8:848)
- Family 55. **ONYGENACEAE**
8:861, 10:80, 11:440, 16:807

Ascomata subglobose, sessile or stipitate, membranous, fragile, epizoic; gleba waxy, then pulverulent; asci 8-spored, globose, evanescent; spores continuous, sub-hyaline.

A single genus

Ascomata subglobose 13:12

Family 56. **ELAPHOMYCETACEAE** - Part in *Ascomata*
(incl. **CENOCOCCACEAE**)
8:863, 10:80, 11:441

Ascomata hypogaeal, woody, crustose or carbonous, more or less globose, indehiscent, finally producing a powdery spore mass or gleba; asci 1-8-spored, sometimes spurious.

I. Gleba interwoven with silky threads; asci normal

✓ **Elaphomyces** 8:863 *E. granulatus* Fr. (10:80)

II. Gleba without capillitium; asci spurious, cell-shaped

Cenococcum 8:871 *C. cygophilum* Fr.
add *Mesophelia* 11:117

Family 57. **TUBERACEAE**
(incl. **ENDOGONACEAE**, **EOTERFEZIACEAE**)

8:872, 10:80, 11:442, 14:826, 16:808, 18:205

Ascomata hypogaeal, rarely epigaeal or parasitic, fleshy or waxy hardened, more or less globose, indehiscent; gleba never becoming a powdery mass, typically veined or lacunose, rarely continuous; asci 1-8-spored, rarely spurious.

Hyalosporae

Spores hyaline, 1-celled, globose to elliptic

I. Gleba without veins, but with one or more cavities

1. Asci linear or elongate

a. Spores verrucose or roughened

(1) Spores globose

Pseudogena 16:808 *P. rotundobovata* Berk.

(2) Spores ovoid to elliptic

✓ **Gena** 8:873 *G. verrucosa* Vitt.

b. Spores smooth

(1) Gleba with a single large cavity

Hydnocystis 8:876 *H. pelagica* Tul.

(2) Gleba convolute lacunose

(a) Densely lanate; canals not produced to surface

Geopora 8:877 *G. scopae* Harkn.

(b) Not lanate; canals produced to surface

✓ **Pseudohydnotria** 16:808 *P. hirsuta* Berk.

2. Asci globose to oblong

a. Spores roughened or alveolate, globose

(1) Asci 2-4-spored; spores with recurved spines

Terfeziopsis 16:816 *T. lignaria* Harkn.

(2) Asci 8-spored

x. Hollows or canals not reaching the surface

(x) Gleba with irregular stellate hollows

Myrmecocystis 16:809 *M. caribiformis* Berk.*in Senes* 22: 214**Lilliputia** 16:816 *L. gallardi* Berk. & Pat.

y. Hollows or canals reaching the surface

Hydnobolites 8:879 *H. caribiformis* Tul.

b. Spores smooth

(1) Gleba of numerous locules; epigaeal, parasitic on fungi

Eoterfezia 18:205 *E. parvipes* Berk.

(2) Hypogaeal

(a) Ascoma brown villous

Phaeangium 11:442 *P. leptocarpum* Berk.

(b) Ascoma not villous

Balsamia 8:877 *B. vulgaris* Vitt.

II. Gleba with veins, solid or also lacunose

1. Veins of two colors; spores globose, smooth

Stephensia 8:880 *S. bombina* Berk.

2. Veins all of one color

a. Spores globose, roughened

(1) Gleba with distinct veins; asci mostly 2-3-spored

Delastria 8:904 *D. vesca* Tul.

(2) Gleba marbled with brown spots; asci 3-4-spored

Piersonia 16:812 *P. alveolata* Harkn.

b. Spores ellipsoid, smooth

(1) Spores apiculate at each end, limoniform

Leucangium 8:899 *L. optalmospora* Berk.

(2) Spores not apiculate

(a) Asci 8-spored, broadly stipitate

Tirmania 11:444 *T. ovalispora* Berk.

(b) Asci 6-8-spored, not stipitate

Picoa 8:899 *P. juniperi* Vitt.

Phaeosporae

Spores dark, 1-celled

I. Gleba without veins; typically with hollows or canals

1. Spores globose, roughened

a. Asci linear or cylindrical

(1) Gleba with one or more hollows

Gyrocraera 16:815 *G. platensis* Berk.(incl. **Cryptica** 10:82)**Ruhlandiella** 17:241 *R. rubiginosa* Berk.**Hydnotrya** 8:879 *H. tuberosa* Berk.**Genabea** 8:878 *G. fragilis* Berk.

(2) Gleba homogeneous, lax

b. Asci broad, oblong

2. Spores ovoid, smooth

II. Gleba with veins

1. Veins of two colors

a. Some veins white

Pachyphloeus 8:881 *P. melanocarpus* Berk.

b. No veins white

Tuber 8:882 *T. aestivum* Vitt.

2. Veins of one color

a. Asci elongate; gleba not divided into masses

Choeromyces 8: 900 *C. meandriformis* Vitt

b. Asci ovate to globose; gleba divided into masses

Terfezia 8: 902 *T. leonia* Tul.

Order 13. UREDINALES

Apothecia reduced to a mass of persistent or evanescent asci, waxy, leathery, gelatinous or powdery; parasites.

Family 58. UREDINACEAE

7: 528, 9: 291, 11: 174, 14: 269, 16: 257, 17: 244

Parasitic; apothecia reduced to a mass of asci with fixed spore cells, i. e. teleutospores with 1 or more cells; conidia normally present, produced in cluster cups (aecidia, aecia), sori (uredinia), or spermatogonia (pycnia); the asci and conidia may occur on the same host or upon different hosts, or one or the other alone may occur; teleutospores producing a promycelium and sporidiales upon germination.

Amerosporae

Teleutospores 1-celled, colored, rarely hyaline, or absent

I. Teleutospores present

1. Teleutospores hyaline

- a. Teleutospores catenate
b. Teleutospores single

2. Teleutospores colored

a. Spore mass or sorus horizontal

(1) Teleutospores catenate

- (a) Spores in a pseudoperidium
(b) Spores not in a pseudoperidium

(2) Teleutospores not catenate

- (a) Uredospores not in a pseudoperidium
x. Spores half smooth, half roughened

y. Spore cells alike smooth or rough

- (x) Teleutospores on a stalk
(y) Teleutospores not stalked

m. Teleutospores connate in a lentiform layer

Monosporidium 9: 297 *M. euphorbiae* Tard. cell

Zaghouania 17: 268 *Z. phillyreae* P. H. mont.

Dietzia 14: 297 *D. verruciformis* P. H.

Clastospora 17: 263 *C. Konarovi* Diet

Hemileia 7: 585 *H. vestatrix* B. M. var. *hemisphaerica* P. H.

Uromyces 7: 531 *U. appendiculatus* T. G. var. *ovatus*

†Uromycodes 14: 290

(Schroeteriaster) *S. alpina* (Schott) T. G.

Chaonia 14: 290 *C. alutacea* Tul.

†Melampsora 7: 586 *M. euphorbiae* Tard. cell

(incl. Phacopsora 14: 289) *M. euphorbiae* (Tard.) T. G.

Melampsorella 7: 596

(incl. Hyalopsora 17: 268) *M. euphorbiae* (Tard.) T. G.

- b. Spore mass or sorus with a cylindrical columella, more or less vertical, globose to cylindrical

(1) Teleutospores mucose; uredospores lacking

Masseilla 14: 292 *M. capensis*

(2) Teleutospores not mucose; uredospores present

(a) Uredospores in a pseudoperidium

†Cronartium 7: 597 *C. pseudoperidium* M. = *Phacodermium* (T. G.)

(b) Uredospores not in a pseudoperidium

Skierka 16: 271

II. Teleutospores absent; pycnia, aecia or uredinia only

1. Spores in a pseudoperidium or cup

a. Spores in pycnia

Aecidiolum 7: 773

b. Spores in aecia

(1) Aecia cup-shaped, usually dentate or crenate at margin

Aecidium 7: 774

(2) Aecia cylindrical, margin fimbriate

Roestelia 7: 833 *R. cancellata* Reb. *R. pinicola* (T. G.) T. G.

(3) Aecia irregular, more or less globose

(a) Spores catenate; on conifers

Peridermium 7: 835

(b) Spores free; not on conifers

Pericladium 7: 838

2. Spores not in a pseudoperidium; uredinia

a. Spores single

Uredo 7: 838

b. Spores catenate

Caeoma 7: 863

Didymosporae

Teleutospores 2-celled, colored or hyaline

I. Teleutospores absent; aecia alone present

Aecidiella 14: 389

II. Teleutospores present

1. Sori horizontal

a. Teleutospores catenate, in a pseudoperidium

†Didymosira 11: 205 (Pucciniosira) *D. truncatella* (T. G.) T. G. *D. elongata* (T. G.) T. G.

b. Teleutospores single

(1) Teleutospores not in a pseudoperidium

(a) Teleutospores subpenicillate at each end

Dasyospora 9: 313 *D. foveolata* B. M.

(b) Teleutospores not penicillate

x. Pedicel of spore with a hyaline gelatinous sheath

†Coleoma 9: 313

(Coleopuccinia)

y. Pedicel without gelatinous sheath

(x) Teleutospores longitudinally 1-septate

Diorchidium 7: 736

(y) Teleutospores transversely 1-septate

m. Teleutospores with a hyaline integument

†Uropyxis 7: 735 *U. euphorbiae* (Tard.) T. G.

n. Teleutospores without hyaline integument

UREDINACEAE

- (m) Spore cells with germination pores
 Puccinia 7: 600 *P. graminis Pers.*
 (inc. Trichopsora, Chrysopsora *Sy.*
 11: 206, Gymnosporia 14: 360) *Good here*
- (n) Spore cells without germination pores
 Leptinia 14: 358 *Good here*
- (2) Teleutospores in a pseudoperidium
 Schizospora 14: 361
2. Sori vertical
- a. Teleutospores confluent into a gelatinous stratum
 Gymnosporangium 7: 737 *G. abietinum*
Good here
- b. Teleutospores closely joined in a columella
 Gambleola 16: 314
 Didymopsora 16: 315
- Phragmosporae**
 Teleutospores 2-several-septate
- I. Teleutospores not in a pseudoperidium
1. Teleutospores transversely septate
- a. Teleutospores catenate
 †Phragmostele 16: 321
 (Pucciniostele)
- b. Teleutospores not catenate
 (1) Uredospores not catenate
 (a) Teleutospores cylindrical; cells separating with difficulty
 Phragmidium 7: 742 *Phragmidium*
 (incl. Phragmopyxis 14: 361, Ro-
 strupia, Barclayella 9: 316) *Good here*
- (b) Teleutospores moniliform; cells separating easily
 Xenodochus 7: 750
- (2) Uredospores catenate, at least at first = Phragmidium
 (a) Wall of teleutospore thick; promycelium simple with a single sporidio-
 le at apex
 Colosporium 7: 751
 (incl. Stichospora 16: 318) *Good here*
- (b) Wall of teleutospore thin; promycelium 3-septate, with a sporidole at
 each cell
 Chrysomyxa 7: 759 *Chrysomyxa*
2. Teleutospores longitudinally or obliquely septate
- a. Teleutospores developed within the host cells
 (1) Uredospores in a pseudoperidium; homoecious
 Thecopsora 7: 764
- (2) Uredospores lacking; heteroecious
 Calyptospora 7: 766 *Calyptospora*
 Pucciniastrum 7: 762 *Good here*
- b. Teleutospores developed outside the host cells
 Endophyllum 7: 767
 Milesia 7: 768
 (incl. Uredinopsis 17: 269)

USTILAGINACEAE

Dictyosporae

Teleutospores septate in two directions, or muriform

- I. Teleutospores more or less radiately 3-septate
 Triphragmium 7: 768 *Triphragmium*
 (incl. Hapalophragmium 16: 1121)
- II. Teleutospores radiately 4-many-septate or muriform
 Ravenelia 7: 770 *Ravenelia*
 (incl. Sphaerophragmium 11: 209,
 Alveolaria 11: 212, Hemileio-
 psis 16: 269, Anthomyces 16: 325,
 Pleoraravenelia and Neoraven-
 lia, 17: 407) *Good here*

Family 59. USTILAGINACEAE

7: 449, 9: 282, 11: 230, 14: 410, 16: 367, 17: 472

Mycelium growing widely through parts of living plants, chiefly flowers and fruits, finally disappearing, leaving the mass of spores; spores producing upon germination a promycelium upon which sporidiales are borne.

Amerosporae

Spores 1-celled

- I. Sori without a fungal involucre
1. Sporidiales typically pleurogenous on the promycelium
- a. Spores arising from a compact subgelatinous stroma
 Cintractia 7: 480 *Cintractia*
 b. Spores not arising from a compact subgelatinous stroma
 Ustilago 7: 451 *Ustilago*
 (incl. Anthraceoida 14: 420) *Good here*
2. Sporidiales many, acrogenous, crowning the promycelium
- a. Sori powdery at maturity
 (1) Sporidiales many, in a capitulum
 Neovossia 16: 375 *Neovossia*
 (2) Sporidiales not in a capitulum
 Tilletia 7: 481 *Tilletia*
- b. Sori not powdery at maturity
 (1) Spores catenate, then separating
 Sirentiyloma 14: 425 *Sirentiyloma*
 (2) Spores not catenate
 (a) Spores rostrate
 Rhamphospora 9: 287 *Rhamphospora*
 (b) Spores not rostrate
 x. In stems and leaves
 (x) Sori pustulate, pale or rust-brown
 Entyloma 7: 487 *Entyloma*
 (y) Sori explanate, widely expanded, black
 Melanotaenium 7: 496 *Melanotaenium*
- y. In roots
 (x) Spores conglobate in spheroid cysts
 Oedomyces 11: 234 *Oedomyces*
 Entorrhiza 7: 497 *Entorrhiza*
 (= Schizogaea *Sy.*, 1: 19 u. 20,
 = Synchaetium *Sy.* *Good here*)

z. In ovaries

†Ustilaginula 7: 498
(Ustilagopsis)

- II. Sori with a fungal involucre
1. Spores in a powdery mass
2. Spores in a hard black crust

Didymosporae

Spores united by twos or 2-celled

- I. Spore-bearing hyphae tubular, enclosed in a stroma
Mycosyrinx 17: 484 *h. cicuti (DC) Peck*

- II. Spore-bearing hyphae not in a stroma

1. Spores joined laterally by a narrow isthmus; sporidiales pleurogenous
Schizonella 7: 500 *5. mediana (Gramma) (DC) Peck*
2. Spores joined horizontally and broadly; sporidiales acrogenous
Schroeteria 7: 500 *2. subcylindrica (DC) Peck*

Dictyosporae

Spores closely joined in masses, the latter appearing to be many-celled spores

- I. Spores or cells of each mass alike

1. Sporidiales pleurogenous or acrogenous; usually not foliicole
a. Promycelium simple
Tolyposporium 7: 501 *7. fructicolle (DC) Peck*
b. Promycelium branched
Tolyposporella 14: 427 *7. thuyae (DC) Peck*
2. Sporidiales acrogenous, typically foliicole
a. Sporidiales numerous
(1) Spore masses covered by a layer of sterile cells
Doassansia 7: 502 *6. olivacea (DC) Peck*
(incl. Cornuella, Burrillia 11: 236)
Tubercinia 7: 507 *7. tridentata (DC) Peck*
b. Sporidiales solitary; sori reddish, usually fructicole
Thecophora 7: 507 *7. thuyae (DC) Peck*

3. Sporidiales unknown; sori mostly very black
Sorosporium 7: 511 *8. spongiae (DC) Peck*
(incl. Poecilosporium 16: 380)

- II. Spores or cells of two kinds in each mass, central few large, peripheral many, small

1. Sori of many sacks containing spore masses
Polysaccopsis 16: 381 *2. heteromera (DC) Peck*
2. Sori without sacks
Urocystis 7: 515 *11. muscicola (DC) Peck*

Class 5. BASIDIOMYCETES

Spores produced on basidia, not inclosed in asci.

Order 14. AGARICALES (HYMENOMYCETES)

Basidia exposed on an even or modified hymenium, the latter usually in the form of gills, pores or teeth.

Family 60. TREMELLACEAE

6: 760, 9: 257, 11: 142, 14: 244, 16: 215, 17: 203

Pileus typically gelatinous and homogeneous, horny when dry, reviving when wet, sometimes waxy or leathery but then with divided basidia; hymenium typically amphigenous or superior, smooth or somewhat convolute; basidia globose to terete, transversely or longitudinally divided, or in one subfamily merely terete-clavate transversely or longitudinally divided; spores globose to reniform and oblong, continuous and furcate, 1-4-sterigmate; on germination; conidia often present with the spores. Some gelatinous forms included in the following families on account of the character of the hymenium seem to belong properly in this family.

Subfamily Auriculariae

Basidia transversely septate, elongate or fusoid

- I. Pileus, or at least the hymenium, gelatinous
1. Entire pileus gelatinous
a. Pileus verruciform or effuse
(1) Basidia mixed with paraphyses
Mytilopsis 14: 246 *11. longipes (DC) Peck*
(2) Basidia without paraphyses
(a) Spores not producing sporidiales on germination
Platyglöea 6: 721 *1. muscicola (DC) Peck*
Helicogloea 11: 145
(b) Spores producing sporidiales
b. Pileus disciform, cupulate or columnar
(1) Pileus erect, filiform, columnar
Edronartium 17: 211 *1. typhloides (DC) Peck*
(2) Pileus not columnar, disciform or cupulate
Auriculariella 6: 427 *1. muscicola (DC) Peck*
(a) Basidia without sterigmata
(b) Basidia with sterigmata
x. Basidia 2-sterigmate; pileus applanate
Phlebophora 16: 215
y. Basidia 3-4-sterigmate; pileus pezizoid
†Collopezis 16: 216
(Tjibodasia) *7. pygmaea (DC) Peck*
2. Pileus coriaceous or membranous, hymenium gelatinous
a. Pileus coriaceous; hymenium reticulate-costate
Auricularia 6: 762 *1. muscicola (DC) Peck*
b. Pileus membranous; hymenium smooth or plicate
Hirneola 6: 754 *1. muscicola (DC) Peck*
- II. Pileus waxy, crust-like or byssoid
1. Pileus waxy or crust-like
a. Pileus very minute, disciform, on a pedicel
Pilarella 14: 246 *1. muscicola (DC) Peck*
Jola 14: 245 *1. muscicola (DC) Peck*
b. Pileus membranous, incrusting
2. Pileus byssoid
a. Basidia without a sac near the base
Stypinella 14: 244 *1. muscicola (DC) Peck*
b. Basidia with a sack near the base
Saccoblastia 14: 244 *1. muscicola (DC) Peck*

Subfamily Tremellae

Basidia longitudinally 4-divided, or cruciate, globose or ovoid

1. Spores alone present, i. e., homosporous

I. Pileus waxy or byssoid

a. Pileus waxy, scarcely gelatinous

- (1) Pileus effuse
(2) Pileus cupulate or concave
b. Pileus byssoid

2. Pileus gelatinous

a. Pileus covered with sterile setae, effuse

Protomerulius 11: 142 *P. boissianus* Berk
Hirneolina 17: 208 *H. incarnata* (Berk) Berk
Stypella 14: 246 *S. papillata* Mill.

Heterochaete 14: 247 *H. vanderica* Pat.

b. Pileus without sterile setae

- (1) Pileus erect, clavate, columnar or spatulate
(a) Pileus clavate, simple or branched

Clavariopsis 16: 219 *C. pengarsii* Holtt
(incl. Hyalaria 14: 252) *H. pilacra* Holtt

- (b) Pileus spatulate, large, simple

Gyrocephalus 6: 795 *G. rufipes* (Pers) Pers

- (2) Pileus effuse, globose, cupulate or pulvinate

(a) Spores 1-celled

x. Pileus cupulate, radicate *Femsonia* 6: 779 *F. luteo-alba* Fr.

y. Pileus pulvinate or effuse

(y) Basidia in chains; hymenium not cerebriform 11: 148 *Sirobasidium* 14: 248 *S. albidum* (Fr) Pat.

(y) Basidia not in chains; hymenium cerebriform

Tremella 6: 780 *T. sibirica* Fr.
(inc. Naematelia 6: 792) *N. ampullacea* Fr.

- (b) Spores 2-4-celled, at least upon germination, reniform

x. Spores 2-4-celled, sporidiales allantoid; pileus truncate-cupulate or effuse *Exidia* 6: 772 *Ex. glabrescens* (Fr) Fr

y. Spores 2-celled, sporidiales straight; pileus pulvinate, gyrose *Ulocolla* 6: 777 *U. saccarum* (Fr) Fr

II. Spores and conidia present, i. e., heterosporous

1. Pileus ascending and dendroid

†Collo dendrium 17: 208

(Tremellodendron) *T. candidum* (Schw) Berk

2. Pileus effuse to pulvinate

a. Spores on the disk, conidia on the exciple

Craterocolla 6: 778 *C. carasii* (Schw) Berk

b. Conidia and spores usually succeeding each other on the same area

- (1) Pileus cerebriform, pulvinate or effuse

Tremella 6: 780 *T. foveolata* Fr.

- (2) Pileus not cerebriform, crust-like

(a) Spores reniform, conidia ovoid *Sebacina* 6: 540 *S. laciniata* (Berk) Berk

(b) Spores ovoid, conidia hamate *Exidiopsis* 14: 248 *E. effusa* Ols

Subfamily Dacryomycetaceae

Basidia terete-clavate, furcate above

I. Pileus effuse, pulvinate or globose, typically sessile

1. Spores septate, at least upon germination

a. Pileus gyrose; spores not horseshoe-shaped *Dacryomyces* 6: 796 *D. stipitatus* Berk

b. Pileus tuberculiform; spores horseshoe-shaped

Delortia 6: 795 *D. pulvinata* Berk

Delortia 6: 795 *D. pulvinata* Berk

Delortia 6: 795 *D. pulvinata* Berk

Delortia 6: 795 *D. pulvinata* Berk

Delortia 6: 795 *D. pulvinata* Berk

Delortia 6: 795 *D. pulvinata* Berk

Delortia 6: 795 *D. pulvinata* Berk

Delortia 6: 795 *D. pulvinata* Berk

Delortia 6: 795 *D. pulvinata* Berk

Delortia 6: 795 *D. pulvinata* Berk

Delortia 6: 795 *D. pulvinata* Berk

2. Spores not septate

a. Spores hyaline; pileus more or less effuse, waxy
Arrhytidia 6: 804 *A. flava* Berk
(incl. Ceracea 6: 805) *C. ramosa* Berk
Seismosarca 9: 260 *S. hydrophora* Berk

b. Spores colored; pileus subglobose

II. Pileus cupulate, clavate or foliose, typically stalked

1. Pileus irregularly cup-shaped, usually stipitate

a. Pileus gelatinous or cartilaginous, cupulate

Guepinia 6: 805 *G. spatuloides* (Schw) Fr.

cupulate-disciform

Ditiola 6: 813 *D. radicata* (Fr) Fr.

†Tremellastrum 17: 193
(Tremellopsis) Pat. *T. antillarum* Pat.

2. Pileus erect, foliose-lobed

3. Pileus capitate to lanceolate, stipitate

a. Pileus capitate, head inflated, corrugate; stipe hollow

Collyria 6: 811 *C. tuberculoides* (Schw) Fr.

(1) Homosporous *Dacryopsis* 11: 149 *D. rotundata* (Fr) Fr.

(2) Heterosporous *Dacryomitra* 6: 811 *D. tricauda* Berk

b. Pileus clavate, club plicate *Myxomycidium* 16: 220 *M. pendulum* Berk

c. Pileus lanceolate, hanging

Family 61. CLAVARIACEAE

6: 690, 9: 247, 11: 134, 14: 235, 16: 203, 18: 193

Hymenium not discrete from the hymenophore, amphigenous; pileus more or less clavate or coralloid, subcarinose or leathery, simple or branched.

I. Pileus with many crowded, leaf-like branches

Sparassis 6: 690 *S. crispata* (Fr) Fr.

II. Branches not leaf-like

1. Pileus fleshy

a. Branches fibrous-splitting *Acurtis* 6: 691 *A. gigantea* (Fr) Fr.

b. Branches not splitting *Clavaria* 6: 692 *C. lobosticta* Pers.

(incl. Phaeoclavulina 14: 238) *Phaeoclavulina* 14: 238 *P. maschkeana* Berk

2. Pileus leathery, rarely subgelatinous

a. Pileus somewhat gelatinous

- (1) Pileus capitate; cap hollow, inflated

Baumanniella 14: 244 *B. toggenensis* Ols

Calocera 6: 732 *C. ramosa* (Fr) Fr.

(2) Pileus clavate or coralloid *Lachnocladium* 6: 738 *L. fuscicollatum* (Fr) Fr.

b. Pileus leathery

- (1) Pileus tomentose

- (2) Pileus not tomentose

(a) Pileus terete or compressed, dry, cartilaginous

Pterula 6: 740 *P. multifida* Fr.

(incl. Phaeopterula 17: 201) *Phaeopterula* 17: 201 *P. 287*

(b) Pileus simple, filiform or capitate

Hirsutella 11: 140 *H. hirsuta* (Fr) Fr.

Physalacria 6: 759 *P. inflecta* Berk

x. Pileus capitate, inflated

y. Pileus more or less filiform

Protophloeocladium

Protophloeocladium

Protophloeocladium

Protophloeocladium

Protophloeocladium

Protophloeocladium

Protophloeocladium

Protophloeocladium

Protophloeocladium

Protophloeocladium

Protophloeocladium

Protophloeocladium

- (x) Pileus clavulate with filiform stipe ⁹⁸⁰
 Typhula 6: 743 *Solenaria* Fr.
 (y) Pileus linear or subclavate; stipe short or none
 Pistillaria 6: 752 *B. melanos* Fr.

Family 62. THELEPHORACEAE

6: 513, 9: 218, 11: 115, 14: 212, 16: 181, 18: 160

Hymenium inferior or amphigenous, leathery, waxy or membranous, smooth, i. e. without spines, pores, etc., sometimes somewhat ridged, or cracked; spores various.

I. Not parasitic on algae

1. Pileus more or less gelatinous

a. Pileus effuse

- (1) Spores hyaline
 (2) Spores olivaceous

b. Pileus convex to discoid

2. Pileus not gelatinous

a. Hymenium somewhat ridged or roughened

- (1) Hymenium subcarnose, infundibuliform, costate
 Craterellus 6: 514 *C. coniofoveatus* (Fr.) P.

(2) Hymenium leathery

- (a) Hymenium woody, with radiating ridges, warty-roughened
 Cladoderris 6: 547 *C. dendritica* B.

- (b) Hymenium similar, but with fan-like ridges
 Beccariella 6: 550

b. Hymenium smooth, or absent

(1) Hymenium present, smooth

(a) Hymenium without cystidia

- x. Pileus urn-shaped, stipitate
 Hypolyssus 6: 521 *H. montagnii* Berk.

y. Pileus typically crateriform to dimidiate

- (x) Pileus with distinct intermediate stratum
 Stereum 6: 551 *S. hirsutum* (L.) P.

(y) Pileus homogeneous or nearly so

- m. Pileus vertical, beautifully convolute, mitriform
 Skepperia 6: 603 *S. convoluta* Berk.

n. Pileus not convolute

- (m) Basidia not transeptate
 Thelephora 6: 521 *T. ternstroemia* Berk.

- (n) Basidia transeptate
 (incl. Friesula 6: 685)
 Septobasidium 11: 1184 *S. pedicellatum* Pat.

z. Pileus resupinate, effuse, rarely cupulate

- (x) Pileus not cupulate

m. Hymenium waxy

- (m) Spores large, citriform
 Michenera 6: 652 *M. antiochensis* Fr.

- (n) Spores medium, not citriform
 Corticium 6: 603 *C. roseorum* Pers.

- (incl. Kneiffia 6: 510)

n. Hymenium fleshy, spores minute, colored

- (m) Spores smooth
 Coniophora 6: 647 *C. cerebrealton* Johnston

- (n) Spores angular or aculate
 Prillieuxia 14: 225 *see Kille*

(y) Pileus cupulate or cylindrical

m. Pileus cupulate

- n. Pileus terete to cylindrical
 Cyphella 6: 667 *C. digitata* (Fr.) Berk.
 Solenia 6: 424 *S. conoides* B.

(b) Hymenium with cystidia

x. Cystidia simple

(x) Cystidia hyaline

Peniophora 6: 640 *P. squarrosa* (Fr.) Berk.(incl. Coniophorella 17: 183) *see Kille*Hymenochaete 6: 588 *H. tabacina* (Fr.) Berk.

(incl. Lloydia 16: 1116)

Bonina 11: 123 *B. fava* (Fr.) Pat.

(y) Cystidia colored

y. Cystidia septate

- (2) Hymenium absent, or more or less cobwebby
 Endobasidium 17: 190 *E. ducastellum* Sp.

(a) Biogenous

x. Hymenium endophytic

y. Hymenium erumpent

(x) Basidia circinate

(y) Basidia not circinate

- m. Spores globose; on galls
 n. Spores cylindrical; on roots

Helicobasidium 6: 666 *H. purpureum* Pat.Urobasidium 11: 131 *U. rostratum* Berk.Chrysobasidium 11: 131 *C. (Aureobasidium) a. vitiginea* (Fr.) Wor.Exobasidium 6: 664 *E. vaccinii* (Fr.) Wor.

o. Spores oblong; on leaves

Heterobasidium 9: 237

(b) Saprogenous

x. Spores septate, fuscous

y. Spores 1-celled, hyaline

- (x) Brown stellate hyphae present
 Asterostroma 9: 236 *A. corticolum* Berk.

(y) Brown stellate hyphae absent

m. Basidia 4-spored

n. Basidia 2-spored

(Cfr. Tulasnellaceae 14: 234)

Hypochnus 6: 653 *H. ferrugineus* (Fr.) Berk.Matruchotia 11: 118 *M. varians* Berk.

II. Parasitic on algae

1. Algae Chroococcus

2. Algae Scytonema

(Zahlbruckner 237)

Family 63. HYDNACEAE

6: 429, 9: 208, 11: 106, 14: 201, 16: 174, 18: 147

Pileus cap-shaped to resupinate, fleshy, gelatinous, woolly or leathery; hymenium consisting of spines, teeth, or granules, rarely somewhat pore-like; spores various.

I. Pileus more or less gelatinous

1. Gelatinous, stalked or dimidiate; with teeth

Tremellodon 6: 479 *T. gelatinosum* (Fr.) Berk.

2. Waxy-gelatinous, resupinate, with granules

Grandiniella 14: 208 *G. livescens* (Fr.) Berk.

II. Pileus fleshy, woolly or leathery

1. Hymenium of more or less subulate teeth or spines

- a. Pileus present
 - (1) Perennial; woody
 - (2) Not perennial
 - (a) Pileus clavaria-like
 - (b) Pileus not clavaria-like
 - x. Teeth free; mostly carmose
 - (x) Pileus typically stalked
 - (y) Pileus horizontal
 - y. Teeth connected at base; coriaceous
 - (x) Cystidia lacking
 - (y) Cystidia present
 - m. Cystidia subulate
 - n. Cystidia stielate
- b. Pileus lacking
 - (1) Teeth on a membranous subicle
 - (2) Teeth without a subicle

2. Hymenium of granules, warts or folds

a. Hymenium of granules or warts

- (1) Hymenium with penicillate-multifid warts
 - Odontia 6: 506 *O. fimbriata* P.
- (2) Hymenium with simple granules or warts
 - (a) Hymenium porose-reticulate, granular
 - Grammothele 6: 505 *G. lineata* P. & C.
 - (b) Hymenium with difform, obtuse cylindrical warts
 - Radulum 6: 493 *R. orbiculata* Fr.
 - (incl. Phaeoradulum 16: 179)
 - (c) Hymenium with globose hollowed granules
 - Grandinia 6: 500 *G. granulosa* Fr.

b. Hymenium with folds or laminae

- (1) Hymenium with fold-like crests
 - (a) Crests with edge entire
 - Phlebia 6: 497 *P. repante* Fr.
 - (b) Crests with edge incised
 - Lopharia 6: 500 *L. hirsutella* K. & M.
- (2) Hymenium with anastomosing radiate laminae
 - Thwaitesiella 11: 112 *T. mirabilis* (Fr.) Murr.

Family 64. POLYPORACEAE

6: 1, 9: 150, 11: 79, 14: 164, 16: 138, 17: 95

Pileus cap-shaped, shelf-like, or resupinate, very rarely volvate or annulate, fleshy, leathery or woody, rarely gelatinous; hymenium consisting of pores, very rarely somewhat lamellar; spores typically 1-celled, hyaline or colored.

1. Pileus fleshy, putrescent, or gelatinous

- a. Stipe volvate or annulate
 - (1) Stipe volvate

Boletinus 14: 164
Volvoboletus

V. volvatus P. H.
V. abscissus P. H.

Hydnophysa 16: 177
Hydnophyses (Hydnofomes) *H. longicola* P. H.
Hericium 6: 478 *H. schimmleri* (Vog.) P. H.
Hydnum 6: 430 *H. umbrosum* L.
Echinodontium 16: 176
Sistotrema 6: 480 *S. confusum* P. H.
Irpex 6: 482 *I. lacteus* Fr.
Asterodon 11: 111 *A. ferruginosum* Fr.
Hydnochaete 14: 211 *H. badii* Berk.
Caldonella 6: 477 *C. italica* Berk.
Mucronella 6: 512 *M. fascicularis* (Fr.) Murr.

Boletopsis 14: 164 *B. muscipula* (Schaff.) P. H.

- (2) Stipe annulate
- b. Stipe not volvate or annulate
 - (1) Stipe central, tubes usually not discrete from each other
 - (a) Spores cylindrical, minute
 - Bactroboletus 16: 142 *B. chryseus* (Fr.) Murr.
 - (Filoboletus) P. H. *F. myanensis* (Fr.) Murr.
 - (b) Spores globose to fusoid
 - x. Pileus and stipe beautifully squarrose-scaly
 - Strobilomyces 6: 49 *S. stramineus* (Fr.) Berk.
 - y. Pileus and stipe not squarrose-scaly
 - (x) Layer of tubes separating readily from the hymenophore
 - Boletus 6: 2 *B. subumbellatus* L.
 - (incl. Suillus, Tylopilus 16: 142) *S. eximius* (Fr.) Murr.
 - (y) Layer of tubes not separating readily from the hymenophore
 - m. Tubes not discrete from each other
 - (m) Tubes radiate; hymenophore mucronate
 - Boletinus 6: 51 *B. ovipes* (Fr.) Murr.
 - hymenophore smooth
 - Gyrodon 6: 51 *G. stramineus* (Fr.) Murr.
 - (n) Tubes sinuose or gyrose; hymenophore smooth
 - Fistulinella 17: 101 *F. strobilata* (Fr.) Murr.
 - n. Tubes discrete from each other
 - Fistulina 6: 54 *F. hepatica* (Schaff.) Fr.

2. Pileus gelatinous

- a. Stalked; spores brown
 - (1) Pileus single
 - Rodwaya 16: 172 *R. capricornis* (Fr.) Murr.
 - (2) Pileus many, superimposed on the stipe
 - Mycodendrum 9: 206 *M. hirsutum* (Fr.) Murr.
 - Laschia 6: 404 *L. arvensis* (Fr.) Murr.
- b. Mostly sessile; spores hyaline
- II. Pileus leathery, corky or woody, rarely tough-fleshy
 - 1. Tubes gelatinous
 - Gloeoporus 6: 403 *G. conchoides* (Fr.) Murr.
 - 2. Tubes not gelatinous
 - a. Hymenium covered by a volva-like membrane
 - Cryptoporus 17: 125 *C. velvatus* (Fr.) Murr.
 - b. Hymenium not volvate
 - (1) Tubes in several layers; perennial, woody
 - Fomes 6: 150 *F. officinalis* (Fr.) Murr.
 - (2) Tubes not stratified in layers
 - (a) Tubes typically pore-like
 - x. Tube layer distinct but not separable from the hymenophore; tough-fleshy to leathery
 - (x) Pileus thick, tough-fleshy, stalked or sessile
 - Polyporus 6: 55 *P. brennabiae* (Fr.) Murr.
 - (incl. Laccocephalum 11: 87) Fr.
 - (y) Pileus thin, coriaceous or membranous
 - m. Pileus stipitate to dimidiate
 - (m) Tubes not spiny inside
 - Polystictia 6: 208 *P. muscicola* (Fr.) Murr.
 - (n) Tubes spiny inside
 - Mucronoporus 9: 188 *M. trivittatus* (Fr.) Murr.
 - n. Pileus resupinate
 - Poria 6: 292 *P. praeputina* (Fr.) Murr.

- y. Tube layer not distinct from hymenophore; tubes often unequally sunken
- (x) Pileus suberose; typically sessile to resupinate
- m. Tubes subrotund **Trametes 6: 334**
(incl. *Sclerodepsis* 9: 194)
- n. Tubes not round, or of two forms
- (m) Tubes of two forms, one normal, the other loculiform, enclosed **Myriadoporus 6: 384**
- (n) Tubes alike, superficial
- r. Tubes hexagonal **Hexagonia 6: 356**
- s. Tubes sinuose-labyrinthine, elongate **Daedalea 6: 370**
- (y) Pileus leathery, membranous or waxy; sessile
- m. Tubes immersed in discrete warts; resupinate **Porothelium 6: 421**
- n. Tubes not immersed in warts
- (m) Tubes with a papilla in the center **Theloporus 6: 421**
- (n) Tubes reticulate-gyrose, not papillate **Merulius 6: 411**
(incl. *Poropytche* 9: 206)
- (b) Tubes lamella-like (see *Daedalea* also)
- x. Tubes of many little laminae **Bresadolia 6: 388**
- y. Tubes lamellose, in radiating series **Favolus 6: 390**
- z. Tubes really concentric lamellae **Cyclomyces 6: 389**

Family 65. AGARICACEAE

Pileus typically cap-shaped and stalked, rarely sessile and the hymenium above, fleshy to corky; pileus sometimes enclosed in a cap veil which persists at the base of the stipe as a volva; hymenium consisting of radiating lamellae or gills, often protected by a gill veil which remains on the stipe as a ring; gills covered with basidia, bearing typically 4 sterigmata and spores; spores typically 1-celled, hyaline or colored.

Leucosporae

5: 8, 9: 1, 11: 1, 14: 63, 16: 1, 18: 1

Spores colorless, or very dilutely colored even in spore prints, globose to fusoid, smooth or rough

I. Edge of the gills entire, not cancellulate or split

1. Fleshy, putrescent, not reviving when wet

a. Edge of the gills acute, not fold-like

- (1) Trama of the pileus not vesiculose; spores typically smooth
- (a) Gills more or less fleshy, readily separable into two layers
- x. Stipe central or nearly so
- (x) Hymenophore discrete from the fleshy stipe
- m. Stipe volvate

- (m) Stipe annulate **Amanita 5: 8**
- (n) Stipe not annulate **Amanitopsis 5: 20**
- n. Stipe not volvate **Lepiota 5: 27**
- (m) Stipe annulate **Schulzeria 5: 72**
- (n) Stipe not annulate
- (y) Hymenophore homogeneous and confluent with the fleshy or fibrous-elastic stipe
- m. Stipe annulate, without a volva **Armillaria 5: 73**
- n. Stipe not annulate or volvate
- (m) Gills adnate or sinuate, not decurrent **Tricholoma 5: 87**
- (n) Gills typically decurrent **Clitocybe 5: 141**
- (z) Hymenophore confluent with the cartilaginous stipe but heterogeneous from it
- m. Gills not decurrent
- (m) Cap very thin, diaphanous **Hiatala 5: 305**
- (n) Cap not diaphanous
- r. Margin of the young cap turned in **Collybia 5: 200**
- s. Margin of the young cap straight **Mycena 5: 251**
(incl. *Eomyccenella* 17: 21)
- n. Gills decurrent; cap umbilicate **Omphalia 5: 308**
- y. Stipe excentric or none **Pleurotus 5: 359**
- (b) Gills waxy rather than fleshy, splitting with difficulty **Hygrophorus 5: 387**
- (2) Trama of cap more or less vesiculose; spores globose, spiny
- (a) Gills with milky, white or bright-colored sap **Lactarius 5: 423**
(incl. *Lactariopsis* 17: 30)
- (b) Gills with clear sap, if any **Russula 5: 453**
- b. Edge of gills obtuse or fold-like
- (1) Gills decurrent, dichotomous, somewhat waxy **Cantharellus 5: 482**
- (2) Gills not decurrent
- (a) Gills somewhat broad, obtuse **Nyctalis 5: 499**
- (b) Gills thin or obsolete
- x. Gills thin
- (x) Gills vein-like, fleshy **Arrhenia 5: 498**
(incl. *Campanella* 14: 100, *Rimbachia* 11: 32)
- (y) Gills of two sorts, gelatinous **Stylobates 5: 502**

- y. Gills obsolete
2. Fleshy-leathery, leathery, corky or woody, persistent, reviving when wet
- a. Fleshy-leathery or gelatinous-leathery
- (1) Gills distinct
- (a) Stipe discrete from the hymenophore
- x. Cap fleshy and tough or thin and leathery

Bank built this up in Pteromyces
Cymatella 16: 49 *C. minor* Ck.

Marasmius 5: 503 *M. rotula* (Pers.) Fr.
 (incl. **Marasmiopsis** 14: 101)

Heliomyces 5: 569 *H. Heloglyphus* Ck.

- y. Cap gelatinous-leathery
- (b) Stipe and hymenophore continuous
- x. Edge of gills acute
- (x) Edge serrate

Lentinus 5: 571 *L. dignus* (Pers.) Fr.
 (incl. **Lentodium** 14: 121, **Lentodopsis** 17: 47)

Panus 5: 614 *P. panus* (Pers.) Fr.

- (y) Edge entire
- y. Edge of gills obtuse, gills dichotomous

Xerotus 5: 630 *X. roridus* (Pers.) Fr.

Trogia 5: 635 *T. cretaea* (Pers.) Fr.

- b. Corky
- (1) Gills distinct
- (a) Gills tomentose
- (b) Gills smooth
- (2) Gills line-like, parallel, flexuous

Tilotus 5: 652 *T. tilotus* (Pers.) Fr.

Lenzites 5: 637 *L. betulina* (Pers.) Fr.

Hymenogramme 5: 652 *H. jarvisii* Ck.

II. Edge of gill split or appendiculate

1. Fleshy
- a. Stipe central; edge of gills split
- b. Stipe lateral; edge with appendages
2. Membranous or coriaceous
- a. Membranous; stipe central; gills split into flexuous fragments
- b. Coriaceous; stipe none or lateral; edge split and revolute

Oudemansiella 5: 653 *O. batonensis* Ck.

Pterophyllum 5: 654 *P. pterophyllum* (Pers.) Fr.

Rhacophyllum 5: 654 *R. rhacophyllum* (Pers.) Fr.

Schizophyllum 5: 654 *S. commune* (Pers.) Fr.

Rhodosporeae

5: 656, 9: 82, 11: 43, 14: 124, 16: 69, 18: 52

Spores rosy, salmon-colored or rosy-rust-colored in spore prints, paler under the microscope

I. Stipe central

1. Hymenophore discrete from the stipe
- a. Stipe volvate at base
- (1) Stipe annulate also
- (2) Stipe not annulate
- b. Stipe not volvate
- (1) Stipe annulate
- (2) Stipe not annulate
- (a) Fleshy; gills free

Metrarja 9: 82 *M. metrarja* (Pers.) Fr.

Volvaria 5: 656 *V. apicaria* Fr.

Annularia 5: 663 *A. ferganensis* Schff.

Pluteus 5: 665 *P. cervinus* (Schff.) Fr.

- (b) Tough; gills adnexed
2. Hymenophore homogeneous and confluent with the stipe
- a. Gills decurrent
- (1) Stipe fleshy-fibrous
- (2) Stipe cartilaginous
- b. Gills adnexed, sinuate or free
- (1) Stipe fleshy-fibrous; gills sinuate
- (2) Stipe cartilaginous; gills not sinuate
- (a) Cap convex; margin at first inflexed

Schinzia 11: 44 *S. punctulosa* (Pers.) Fr.

Clitopilus 5: 698 *C. prunellus* (Pers.) Fr.

Ecclia 5: 729 *E. farinaria* Fr.

Entoloma 5: 679 *E. sinuatum* Fr.

Leptonia 5: 706 *L. macrochaeta* (Pers.) Fr.

Nolanea 5: 716 *N. paspali* (Pers.) Fr.

- (b) Cap campanulate; margin straight from the first
3. Hymenophore continuous with the cartilaginous stipe, but different from it; volvate
- II. Stipe excentric or none; lignicole

Ochrosporeae

5: 735, 9: 90, 11: 48, 14: 131, 16: 83, 18: 62

Spores ochraceous or more or less rust-colored

I. Gills not separating readily or naturally from hymenophore

1. Gill veil not cobwebby
- a. Stipe central
- (1) Stipe volvate or annulate
- (a) Stipe volvate
- (b) Stipe annulate

Locellina 5: 761

Pholiota 5: 736 *P. praecox* (Pers.) Fr.

(incl. **Pholiotella** 9: 90)

- (2) Stipe not volvate or annulate
- (a) Gills not deliquescing
- x. Stipe fleshy

Flammula 5: 809 *F. flavida* (Pers.) Fr.

- (y) Gills mostly sinuate
- m. Cap fibrillose, silky or scaly
- n. Cap smooth, more or less viscid

Inocybe 5: 762 *I. hypoleuca* Fr.

Hebeloma 5: 791 *H. festuciforme* Fr.

Tubaria 5: 872 *T. puberula* (Pers.) Fr.

- y. Stipe cartilaginous
- (x) Gills decurrent
- (y) Gills not decurrent
- m. Margin of cap inflexed at first

Naucoria 5: 828 *N. penicillata* (Pers.) Fr.

- n. Margin of cap straight
- (m) Stipe discrete from hymenophore; gills free

Pluteolus 5: 859 *P. reticulatus* (Pers.) Fr.

- (n) Stipe homogeneous with hymenophore

Galera 5: 860 *G. tenuis* (Pers.) Fr.

Bolbitius 5: 1073 *B. bolbitius* (Pers.) Fr.

Crepidotus 5: 876 *C. mollis* (Pers.) Fr.

- (b) Gills deliquescing
- b. Stipe excentric or none; lignicole

- 2. Gill veil cobwebby, hanging curtain-like from the margin, often disappearing completely with age
Cortinarius 5: 889 *V. violaceus* Fr.
- II. Gills separating readily from the hymenophore, margin of cap persistently involute
Paxillus 5: 983 *V. involutus* (Pers.) Fr.

Melanosporae

5: 991, 9: 136, 11: 69, 14: 140, 16: 112, 18: 82
Spores purple, dark-purple to black

I. Spores purple or dark-purple

1. Hymenophore discrete from stipe

a. Stipe volvate at base

- (1) Stipe annulate
- (2) Stipe not annulate

b. Stipe not volvate

- (1) Stipe annulate
- (2) Stipe not annulate; gills free

2. Hymenophore continuous with stipe

a. Stipe annulate

- b. Stipe not annulate; margin sometimes cortinate
- (1) Margin of cap cortinate; rarely subannulate

(2) Margin not cortinate

- (a) Gills decurrent
- (b) Gills not decurrent
- x. Margin of cap inflexed at first
- y. Margin of cap straight

II. Spores dark or black, not purple

1. Gills deliquescing

2. Gills not deliquescing

a. Gills united above to the hymenophore

- (1) Cap fleshy, fleshy-waxy or membranous
- (a) Gills waxy; spores globose, spiny

Phaeogrocybe 17: 81

(b) Gills not waxy

- x. Margin of cap with a viscid cobwebby cortina

Phaeolium 16: 110

y. Margin of cap not viscid-cortinate

(x) Spores globose to elliptic

m. Stipe annulate; variegated gills exceeding the margin

Anellaria 5: 1125

n. Stipe not annulate

- (m) Cap fleshy, not striate; variegated gills exceeding the margin

Panaeolus 5: 1118

- (n) Cap membranous, striate; uniform gills not exceeding the margin

Psathyrella 5: 1126

- (y) Spores elongate, fusoid; gills decurrent

Gomphidius 5: 1137

- (2) Cap leathery-horny; spores minute, globose

Anthracophyllum 5: 1139

- b. Gills free above, not united to the hymenophore; stipe dilated into a lamellar disk above

Montagnites 5: 1140

Order 15. LYCOPERDALES (GASTEROMYCETES)

Typically terrestrial, sometimes lignicole or hypogaeous, fleshy, leathery or membranous; spores borne on basidia, in a receptacle or a peridium, continuous, hyaline or colored.

Family 66. PHALLACEAE

7: 2, 9: 262, 11: 153, 14: 254, 16: 224, 17: 212

Receptacle arising from a volva, bearing outside or inside the sporiferous pulp or gleba, stalk-like, pileiform, or sessile and more or less clathrate

I. Gleba covering the outside of receptacle; receptacle stalk-like, pileate or appendaged

1. Receptacle pileate; gleba on outer surface of pileus

a. Stalk with an appendage below the pileus

- (1) Appendage net-like; volva smooth
- (2) Appendage collar-like; volva aculeate

Dictyophora 7: 3

Echinophallus 16: 226

b. Stalk without an appendage

- (1) Upper part of volva remaining with pileus, and enclosing the gleba

Cryptophallus 14: 254

- (2) Upper part of volva not enclosing gleba at maturity

Ithyphallus 7: 8

(incl. **Albofiella** 16: 227)

2. Receptacle without hanging pileus; gleba borne directly on the apex of the stalk-like receptacle

a. Receptacle without appendages

- (1) Receptacle floccose
- (2) Receptacle not floccose

Floccimutinus 14: 255

Mutinus 7: 12

(incl. **Aporophallus** 17: 213)

Itajahya 11: 153, **Jansia** 16: 226

- b. Receptacle or gleba with coralloid processes

Kalchbrennera 7: 14

II. Gleba on the inside of the hollow receptacle, which is clathrate or lobed

1. Receptacle hollow and clathrate, or formed of a few vertical branches joined at the apex

a. Receptacle stalked

- (1) Gleba dimorphous, apex with sterile radiate laminae, lower part with convolute subclathrate lobes
- (2) Gleba not dimorphous

Dictyobole 17: 213

- (a) Receptacle hollow-clathrate, stalked

- x. Openings polygonal
 y. Openings vertically elongate
 (b) Receptacle of thin anastomosing branches, stipitiform at base
- Clathrella 16: 228 *S. fasciculata* (L.) Kütz.
- b. Receptacle sessile
 (1) Hollow-clathrate, or of a few united vertical branches
 Clathrus 7: 18 *C. cancellatus* L.
 Protuberans 11: 155 *P. protuberans* Willd.
 (2) Radiately loculate within
 Receptacle divided above into free lacinae or lobes
 a. Receptacle expanded above into a horizontal border which is lacinate at the margin
 Aseroe 7: 25 *A. serotina* (L.) Berk.
- b. Receptacle divided directly into lobes
 (1) Lobes distinct from stalk in structure and color
 (a) Lobes without winged appendages
 Lysurus 7: 22 *L. rotundifolius* (L.) Berk.
 (b) Lobes with membranous winged appendages
 Blumenavia 11: 154 *B. thersites* (L.) Berk.
- (2) Lobes like the stalk in structure and color
 (a) Receptacle spheric, lobes contiguous
 Phallogaster 11: 155 *P. piperatus* Berk.
 (b) Receptacle elongate or cupulate
 x. Lobes sporiferous
 y. Lobes not sporiferous
 Anthurus 7: 23 *A. musciformis* (L.) Berk.
 Calathiscus 7: 24 *C. calathiscus* (L.) Berk.

Family 67. LYCOPERDACEAE

7: 48, 9: 266, 11: 157, 14: 257, 16: 230, 17: 217

Epigeous, rarely hypogaeous or lignicole, peridium usually globose to pyriform, sessile or stipitate, membrano-coriaceous, furnished with a mouth or opening irregularly, enclosing a more or less powdery, often floccose, gleba; spores globose to ellipsoid, hyaline or colored, smooth or rough.

- I. Peridium more or less completely traversed by a continuation of the stipe, i. e. a columella; gleba lamellate or with membranous septa or more or less uniform

Subfamily Podaxae

1. Gleba lamellate; capillitium none; peridium turbinate
 Gyrophragmium 7: 51 *G. delictum* Mont.
2. Gleba not lamellate, more or less divided by anastomosing septa, or uniform
 a. Gleba with septa
 (1) Capillitium none; stipe central, not volvate, short
 (a) Peridium with broad false radiate lamellae beneath
 Elasmomyces 14: 258 *E. matricolans* Berk.
 (b) Peridium without lamellae beneath
 Secotium 7: 51 *S. myrtillophorum* Berk.
 (2) Capillitium present, filamentous; stipe volvate
 Polyplocium 7: 55 *P. polyplocium* Berk.
- b. Gleba without septa or locules; capillitium copious
 (1) Peridium subsessile; columella free, not touching the apex of the peridium
 (a) Epigeous

- x. Colpymella cup-shaped; exoperidium arcuate
 Cycloclerma 7: 56 *C. indicum* Kütz.
- v. Columella obturbinate; exoperidium splitting into lobes
 Geasteropsis 17: 229 *G. conopsea* Berk.
 Mesophellia 7: 56 *M. americana* Berk.
- (2) Peridium stipitate; columella touching the apex of the peridium
 (a) Peridium splitting longitudinally, or laterally lacerate
 x. Peridium opening lengthwise by valves
 Chaenoderma 9: 268 *C. chaenoderma* (L.) Berk.
 y. Peridium laterally lacerate
 Cauloglossum 7: 57 *C. cauloglossum* (L.) Berk.
- (b) Peridium opening horizontally or circularly
 x. Peridium opening around the stipe
 Podaxon 7: 58 *P. carolinense* (L.) Berk.
 † Sphaerocybis 7: 60
 (Sphaericeps) *S. thymus* (L.) Berk.
- II. Peridium typically without a columella, with exo- and endoperidium; gleba
 floccose, rarely septate
- I. Peridium stalked
 a. Inner peridium alone persistent
 (1) Peridium fixed to stipe, with distinct mouth
 Tylostoma 7: 60 *T. tylostoma* (L.) Berk.
 (2) Peridium easily separable from stipe; mouth none
 Queletia 7: 65 *Q. queletii* Berk.
- b. Both peridial layers persistent
 (1) Exoperidium forming a volva about the stipe
 (a) Endoperidium convex; spores on upper surface
 Battarea 7: 65 *B. pallidifolia* Berk.
 (b) Endoperidium hemispheric; spores within
 † Podoloma 17: 223
 (Battareopsis) *B. battaria* Berk.
- (2) Exoperidium not volvate; inner peridium with a mouth
 (a) Endoperidium with plicate-sulcate mouth; capillitium copious
 Husseyia 7: 67 *H. husseyi* Berk.
 (b) Endoperidium suspended free in cavity of exoperidium, mouth with bright-colored scales
 † Mitromyces 7: 68 *M. mitromyces* Berk.
2. Exoperidium sessile, typically stellate-laciniate, containing 1 or more endoperidia
 a. Endoperidium one
 (1) Spores borne on the inside
 (a) Exoperidium closed
 Diploderma 7: 92 *D. suberosum* Berk.
 (b) Exoperidium opening stellately or circularly
 x. Exoperidium stellate
 (x) Endoperidium dehiscent, usually by a mouth; capillitium present
 Geaster 7: 70 *G. geaster* (L.) Berk.
 (y) Endoperidium indehiscent; capillitium none
 Stella 9: 272 *S. americana* Berk.

- y. Exoperidium cup-shaped, mouth minute, ciliate
Diplocystis 7: 92
 (2) Spores borne on the outside of endoperidium; stellate
Trichaster 7: 93
 b. Endoperidia several
 (1) Mycelium crust-like; capillitium not hollow
Broomeia 7: 93
 (2) Mycelium not crust-like; capillitium hollow
Coelomyces 7: 94
 III. Peridium without a columella; exoperidium lacking or consisting of a papery or spiny cortex; gleba floccose
 Subfamily Lycoperdaceae
 1. Peridium with a distinct, stalk-like sterile base; exoperidium spiny or warty
Lycoperdon 7: 106
 2. Peridium without sterile base; gleba fertile throughout
 a. Peridium sessile or nearly so
 (1) Capillitium a dense elastic mass discrete from the peridium
 (a) Peridium persistent
Lanopila 7: 95
 (b) Peridium falling away
Eriospaera 7: 96
 (2) Capillitium not dense elastic and discrete
 (a) Peridium persistent
 x. Mouth at apex, or lacking
Eovista 7: 96
 y. Mouth at base when in the ground
Catastoma 11: 165
Lycoperdopsis 16: 243
 (b) Peridium entirely falling away
 b. Peridium stipitate; exoperidium dehiscing above along undulating folds
Calvatia 7: 105
 IV. Peridium without columella; gleba with sporangioles, or powdery
 Subfamily Sclerodermatae
 1. Gleba without sporangioles, finally powdery
 a. Peridium none; gleba naked, subcylindric
Gymnoglossum 11: 158
 b. Peridium present, enclosing the gleba
 (1) Peridium sessile or nearly so
 (a) Peridium not dehiscent
 x. Gleba reticulate-veined, hard
Corditubera 14: 266
 y. Gleba not reticulate-veined, somewhat floccose
 (x) Spores globose
Hippoperdon 7: 133
 (y) Spores fusiform
Castoreum 7: 142
 (b) Peridium dehiscent stellately or irregularly
Scleroderma 7: 134
 (incl. *Caloderma* 16: 243)
 (2) Peridium stalked
 (a) Peridium not dehiscent, clavate
Corynogaster 14: 266
 (Clavogaster)
 (b) Peridium dehiscent

- x. Peridium clavate, splitting above and entirely disappearing
Favillea 7: 146
 y. Peridium globose, not entirely disappearing
 (x) Stipe hollow; peridium dehiscing irregularly, or rimose
Phellorina 7: 145
 (y) Stipe not hollow
 m. Peridium many-lobed; stipe fibrous-woody
Xylopodium 7: 143
 n. Peridium reticulately dehiscent; stipe solid
Areolaria 7: 144
 2. Gleba containing numerous sporangioles
 a. Sporangioles fleshy or gelatinous
 (1) Peridium stipitate; stipe with persistent cupulate volva
Dictyocephalus 17: 238
 (2) Peridium not volvate, sessile or with stipe-like base
 (a) Parasitic in glumes; peridium not dehiscent
Testicularia 7: 150
 (b) Terrestrial or parasitic on roots
 x. Peridium with sterile stipe-like base, mucose-cellular within
Polysacrum 7: 146
 y. Peridium sessile, fleshy-cellular within
Polygaster 7: 146
 b. Sporangioles membranous, not fleshy or gelatinous
 (1) Peridium corky; sporangioles round
Arachnium 7: 150
 (2) Peridium membranous; sporangioles cylindrical, gyrose
Scoleiocarpus 7: 151
 (3) Peridium hard; sporangioles large, flexuous
Paurocotylis 7: 152
 Family 68. HYMENOGASTRACEAE
 7: 154, 9: 280, 11: 168, 14: 267, 16: 245, 17: 239
 Typically subterranean, very rarely epigeous, mycelium often persistent; peridium not opening at maturity, wall occasionally lacking, more or less globose; gleba fleshy or gelatinous, putrescent, more or less cellular or loculate, capillitium none.
 I. Peridium wall present, distinct
 1. Peridium easily separating from the gleba
 a. Peridium volvate
 (1) Peridium silky, reticulate-sulcate; volva gelatinous
Clathrogaster 16: 250
 (2) Peridium waxy-gelatinous, not sulcate
Torrendia 17: 241
 b. Peridium not volvate
 (1) Peridium vertical, elongate-cylindric; basidia 2-spored
Protoglossum 11: 158
 (2) Peridium more or less globose

- (a) Endosporium and exosporium separated by a hyaline mucus
Leucogaster 9: 281 *Leucogaster fuscarius* *H. Sacc.*
- (b) Endosporium and exosporium contiguous
x. Spores elliptic to lanceolate, smooth
✓ **Hysterangium** 7: 155 *H. strigosum* *Witt.*
- y. Spores globose, rough or spiny
(x) Peridium lanate; basidia usually 7-spored
Sclerogaster 11: 169 *S. lanatus* *H. Sacc.*
- (y) Peridium not lanate; basidia 3-4-spored
m. Gleba with a sterile base, radicate
✓ **Octaviania** 7: 158 *O. asterisporia* *Witt.*
- n. Gleba without a sterile base, not radicate
Martelia 16: 252 *M. mitisporus* *Witt.*
2. Peridium separating from the gleba with difficulty or not at all
a. Peridium covered with thread-like masses of mycelium
(1) Spores hyaline
✓ **Rhizopogon** 7: 161 *R. bulbosus* *Witt.*
- (2) Spores colored
✓ **Melanogaster** 7: 164 *M. lanatus* *Witt.*
- b. Peridium without thread-like masses of mycelium
(1) Spores spiny
(a) Gleba percurrent by a columella
Arcangiella 16: 255 *A. bovisiana* *Witt.*
- (b) Gleba without a columella
Hydnangium 7: 175 *H. canaliculatum* *Witt.*
- (2) Spores not spiny, smooth, verrucose, rugose, etc.
(a) Gleba with branching columella and sterile base
Dendrogaster 17: 249 *D. concolor* *Witt.*
- (b) Gleba without columella or sterile base
✓ **Hymenogaster** 7: 168 *H. chamonixia* *Witt.*
(incl. **Chamonixia**, **Leucophleps** 16: 251) *Leucophleps* *Witt.*
- II. Peridium wall lacking
1. Hypogaeous
a. Spores elliptic, striate-sulcate
Gautieria 7: 177 *G. strigata* *Witt.*
- b. Spores globose, spiny or warty
Gymnomycetes 16: 249 *G. strigata* *Witt.*
2. Epigaeous; spores globose, warty
Macowanites 7: 179 *M. strigata* *Witt.*

Family 69. NIDULARIACEAE

7: 28, 9: 265, 11: 156, 14: 256, 16: 220, 17: 214

Epigaeous, fimicole or lignicole, funnel-shaped to cup-shaped, leathery, containing one to many lentiform or globose sporangioles, the latter attached by a cord to the wall of the peridium; spores elliptic, smooth.

I. Peridium single

1. Peridium with several to many sporangioles
a. Peridium torn at the apex in opening
Nidularia 7: 28 *N. fraxinea* *Witt.*
- b. Peridium opening by a deciduous membranous lamina
(1) Sporangioles attached to wall by a cord
(a) Spores mixed with filaments; peridium of three united layers
✓ **Cyathus** 7: 32 *C. striatus* *Witt.*

- (b) Spores not mixed with filaments; peridium of a single cottony layer
Crucibulum 7: 43 *C. nigra* *Witt.*
- (2) Sporangioles densely crowded in a glutinous substance
Nidula 17: 215 *N. canaliculata* *Witt.*
2. Peridium with a single gelatinous sporangiole
Dacryobolus 7: 45 *D. strigatus* *Witt.*
- II. Peridium double, outer stellate, inner with a single viscous sporangiole
✓ **Sphaerobolus** 7: 46 *S. strigatus* *Witt.*

FUNGI IMPERFECTI

Secondary or propagative stages of other fungi, largely Ascomycetes, characterized by the presence of conidia borne in perithecia-like or disk-like structures, on a stroma, or on a mycelial mass. Many of these forms have been connected by means of experiment with the corresponding perfect stage, but the vast majority of them are found alone in nature.

Order 16. PHOMATALES (Sphaeropsidae Sacc. 3: 1)

Conidia borne on simple or branched threads, so-called basidia, in pycnidia; pycnidia globose, conic, elongate, dimidiate, disk-shaped or cup-shaped, membranous, carbonous, coriaceous or somewhat fleshy, usually black, sometimes bright-colored.

Family 70. PHOMATACEAE (Sphaeroidaceae 3: 1)

Pycnidia globose, conic or lens-like, membranous, carbonous or subcoriaceous, black, immersed or superficial, separate or in a stroma; conidia from 1 to many-celled, hyaline or dark.

Hyalosporae

3: 1, 10: 100, 11: 472, 14: 844, 16: 825, 18: 220

Conidia 1-celled, hyaline, globose, ovoid or oblong, often curved

I. Pycnidia separate

1. Pycnidia smooth
a. Pycnidia borne in discolored areas, i. e., maculicole
✓ **Phyllosticta** 3: 3 *Ph. ovalispora* *P.*
- b. Pycnidia not maculicole
(1) Conidia single, not in chains
(a) Conidia muciculate, not ciliate or trigonous
x. Subicle none
(x) Pycnidia muciculate or papillate, not rostrate or cylindrical
m. Pycnidia erumpent or immersed
(m) Basidia 1-spored, mostly short
r. Pycnidia papillate
(r) Growing on lichens
Lichenosticta 16: 851 *L. strigata* *Witt.*
- (s) Not lichenicole
h. Basidia hamate
✓ **Phomopsis** 18: 264 *Ph. strigata* *Witt.*

PHOMATACEAE

- i. Basidia not hamate
 (h) Conidia less than 15 μ *Phoma* 3: 65
 (i) Conidia 15 μ or more long
Macrophoma 10: 189
 s. Pycnidia astomous or irregularly delinquent
 (r) Pycnidia subcarnose, sclerotoid
 h. Conidia obtuse at both ends
Plenodomus 3: 184
 i. Conidia acute at both ends
 (s) Pycnidia carbonous, circumscissile
Piptostomum 3: 183
 (n) Basidia several-spored, branched
Dendrophoma 3: 178
 n. Pycnidia superficial
 (m) Pycnidia dense in asteroma-like spots
Asteromella 3: 182
 (n) Pycnidia not in such spots
 r. Pycnidia globose or nearly so
 (r) Basidia short, straight
Aposphaeria 3: 169
 (s) Basidia beautifully circinate
Pyrenotrichum 3: 184
 (t) Basidia none
Mycogala 3: 185
 s. Pycnidia turbinate, carnos
Crocicreas 3: 183
 (y) Pycnidia rostrate or cylindrical
 m. Pycnidia globose, rostrate
Sphaeronaema 3: 185
 n. Pycnidia cylindrical
Glutinium 11: 500
 y. Subicle present
 (x) Subicle white, cobwebby
Cicinobolus 3: 216
 (incl. *Byssocystis* 11: 502)
 (y) Subicle dark
 m. Subicle usually radiate
 n. Subicle not radiate
 (b) Conidia ciliate, forked or angled
 x. Conidia ciliate at apex
 (x) Apex 1-ciliate
 (y) Apex several-ciliate
 y. Conidia forked or angled
 (x) Conidia Y-like; subicle present
Ypsilonia 3: 215
 (y) Conidia trigonous
Trigonosporium 16: 892
 (2) Conidia in chains

HYALOSPORAE

- (a) Chains of spores simple or nearly so
Sirococcus 3: 217
 (b) Chains of spores connected, often net-like
Peckia 3: 217
 2. Pycnidia with hairs or bristles
 a. Bristles stellate; conidia ovoid
Staurochaeta 3: 218
 b. Bristles simple
 (1) Basidia usually simple, conidia fusoid
Vermicularia 3: 221
 (2) Basidia usually branched, conidia oblong
Pyrenochaeta 3: 219
 II. Pycnidia in a stroma
 1. Stroma globose, conic or vasa-like
 a. Conidia in chains
 **Sirodothis* Clem.
 b. Conidia single
 (1) Stroma globose, conic or pulvinate
 (a) Stroma more or less globose or pulvinate
Dothiopsis 10: 228
 x. Stroma unilocular
 y. Stroma several- or many-locular
 (x) Pycnidia distinct
 m. Pycnidia aggregate in a basal stroma
Dothiella 3: 235
 n. Pycnidia more deeply immersed
 (m) Necks not joined in one ostiole
Lamyella 11: 510
 (n) Necks joined in a single ostiole
Torsellia 11: 510
 (y) Pycnidia merely locules in the stroma
 m. Locules several, not numerous
Rabenhorstia 3: 243
 n. Locules very numerous
Fuckelia 3: 244
 (b) Stroma conic-truncate, conidia bacillar
Ceuthospora 3: 277
 (2) Stroma vasa-like
 (a) Conidia fusoid or bacillar
Fusicoccum 3: 247
 (b) Conidia allantoid
Cytopora 3: 252
 (c) Conidia globose or ovoid
Cytoporella 3: 251
 2. Stroma applanate, effuse or linear
 a. Stroma linear, conidia connate in fours
Gamosporella 10: 238
 b. Stroma applanate or effuse
 (1) Growing on leaves and stems
Placosphaeria 3: 244
 (2) Growing on fungi
Anthracoaderma 10: 238

Of Uncertain Position.

Manginia 18: 266. a *Phoma* with micro- and macropycnidia

- (y) Conidia 15# or more long ✓ *Diplodia* 3: 399 *D. mustela* Fr
 (b) Pycnidia superficial, lignicole ✓ *Diplodiella* 3: 375 *D. mustelina* Karst
- II. Pycnidia cespitose or in a stroma
 1. Pycnidia cespitose
 2. Pycnidia in a stroma
 a. Pycnidia and subicle enclosed in a hemispheric stroma:
 Lasiodiplodia 14: 939 *L. tuberculata* E & E
 b. Pycnidia without subicle, in a globose stroma
 Diplodiopsis 18: 335 *D. tarapotensis* P. H
 Phaeophragmia
 3: 418, 10: 330, 11: 533, 14: 962, 16: 947, 18: 358
 Conidia hyaline, 2-several-septate, oblong to fusoid
- I. Pycnidia more or less globose
 1. Subicle none
 a. Conidia appendaged at apex
 (1) Seta 1
 (2) Setae 3
 b. Conidia muticate
 2. Subicle present, dark, phyllogenous
 II. Pycnidia elongate to cylindrical
 Phaeophragmia
 3: 418, 10: 317, 11: 528, 14: 953, 16: 943, 18: 362
 Conidia hyaline, 2-several-septate, oblong to fusoid
- I. Pycnidia separate
 1. Conidia free from each other
 a. Conidia muticate
 (1) Pycnidia papillate or substomous
 (a) Pycnidia with flattened base ✓ *Macrobatis* 11: 532 *M. platypus* Sacc
 (b) Pycnidia globose, without flattened base
 x. Pycnidia on a stellate subicle, superficial
 Couturea 3: 442 *C. castagnae* Sacc
 y. Pycnidia without a subicle, erumpent
 (x) Pycnidia hairy ✓ *Wojnowicia* 14: 960
 (y) Pycnidia smooth ✓ *Hendersonia* 3: 418 *H. carmentorum*
 (2) Pycnidia opening widely, with an operculum
 (a) Pycnidia superficial, dark, hairy ✓ *Angiopoma* 3: 442 *A. campanulata*
 (b) Pycnidia immersed, pale, smooth
 Lichenopsis 3: 442
 b. Conidia appendaged
 (1) Conidia 1-ciliate at each end ✓ *Cryptostictis* 3: 443 *C. hysteronoides* Felt
 (2) Conidia 1-ciliate at base by the basidium
 † *Uroconis* 18: 368
 (*Urohendersonia*)
 (3) Conidia with a round or cup-like appendage at each end
 Santiella 16: 947

2. Conidia united in groups
 a. Conidia united into a fascicle
 b. Conidia stellately united
 II. Pycnidia locules in a stroma
- Hyalodictyae**
 16: 955
 Conidia hyaline, muriform, ovoid or oblong
- I. Pycnidia erumpent, papillate
 † *Hyalothyris* 16: 955
 (*Hyalothyridium*)
- Phaeodictyae**
 3: 459, 10: 338, 11: 536, 14: 964, 16: 951, 18: 369
 Conidia dark, muriform, oblong to ovoid, rarely radiate or cruciate
- I. Pycnidia separate
 1. Conidia not reticulately roughened
 a. Pycnidia corticole, erumpent ✓ *Camarosporium* 3: 459 *C. guatemalense* Sacc
 Cytosporium 3: 470
 b. Pycnidia xylogenous, subsuperficial
 2. Conidia reticulately roughened
 II. Pycnidia locules in a stroma
 ✓ *Dichomera* 3: 471
- Scolecosporae**
 3: 474, 10: 349, 11: 538, 14: 967, 16: 956, 18: 376
 Conidia hyaline or dilutely colored, elongate-fusoid, bacillar or filiform, continuous or septate.
- I. Pycnidia separate
 1. Pycnidia membranous or carbonous
 a. Pycnidia superficial
 (1) Pycnidia hairy
 (a) Conidia single on the basidia ✓ *Trichocollonema* 18: 404
 (b) Conidia ternate on the basidia ✓ *Gamospora* 10: 402
 (2) Pycnidia smooth
 (a) Pycnidia beaked
 (b) Pycnidia not beaked
 x. Conidia usually expelled in a ball
 y. Conidia not expelled in a ball
 Pycnidia immersed or erumpent
 (1) Pycnidia hairy, maculicole ✓ *Trichoseptoria* 11: 548
 (2) Pycnidia smooth
 (a) Pycnidia beaked
 (b) Pycnidia not beaked
 x. Pycnidia maculicole, phyllogenous
 y. Pycnidia not maculicole
 (x) Pycnidia complete at top, usually papillate
 ✓ *Septoria* 3: 474 *S. verticillata* Robt
 ✓ *Rhabdospora* 3: 578 *R. herbarum* (Fr.) Sacc

- (y) Pycnidia more or less incomplete at top
 m. Pycnidia gaping, showing a gelatinous spore mass
 Gelatinosporium 3: 596 *G. tubiforme* Br.
- n. Pycnidia not exposing a gelatinous mass
 (m) Pycnidia foliicole
 (n) Pycnidia rami-caulicole
 Phlyctaena 3: 593 *P. vagabunda* Karst.
 Micropera 3: 604 *M. druseae* Karst.
 Micula 3: 604 *M. druseae* Karst.
2. Pycnidia suberoso, incomplete, often pale
 a. Pycnidia cespitose
 b. Pycnidia merely gregarious
- II. Pycnidia in a stroma
 1. Conidia 4-6 fasciculate on a basidium
 2. Conidia separate
 a. Conidia setose-penicillate
 b. Conidia muticate
 (1) Stroma superficial, setose
 Eriospora 3: 600 *E. leucostoma* Br.
 Dilophospora 3: 600 *D. granivora* Karst.
 †Merodothidis 18: 405
 (Septodothideopsis)
 Cytosporina 3: 601 *C. ludibunda* Sacc.
 Septosporiella 10: 403 *S. phragmitis* Karst.

Family 71. ZYTHIACEAE
 (Nectrioidaceae Sacc. 3: 613)

Pycnidia, and stromata when present, fleshy or waxy, light-colored, white, yellow, red or orange, globose, more rarely cup-shaped or hysterioid; conidia various, mostly hyaline.

Subfamily Zythiae

Pycnidia more or less globose

Hyalosporae

3: 613, 10: 404, 11: 552, 14: 988, 16: 983, 18: 407

I. Pycnidia separate

1. Pycnidia smooth

a. Pycnidia beakless

(1) Conidia in chains

(2) Conidia not catenulate

(a) Pycnidia on creeping hyphae

(b) Pycnidia without mycelium

x. Conidia spiny or ciliate

(x) Conidia spiny

(y) Conidia with several cilia at apex

y. Conidia smooth

(x) Pycnidia single-walled

m. Pycnidia more or less papillate

Sirozythia 18: 410 *S. rosea* Karst.

Eurotiopsis 10: 406 *E. trinitaria* Karst.

Roumegueriella 3: 616 *R. muricospora* Sacc.

Ciliospora 18: 410 *C. gelatinosa* Zimm.

Zythia 3: 614 *Z. resinosa* Karst.

- n. Pycnidia with crateriform ostiole
 Libertella 3: 616 *L. malmedyensis* Sacc.
- o. Pycnidia cup-shaped
 Lemäliis 3: 672 *L. alba* Karst.
- (y) Pycnidia with outer circumscissile wall
 Dichlaena 3: 629 *D. lentice* Karst.
 Sphaeronemella 3: 617 *S. tuberosa* Karst.
- b. Pycnidia beaked
 Bymatocera 3: 617 *B. tuberosa* Karst.
2. Pycnidia hairy or spiny
 a. Pycnidia densely beset with conoid 1-celled setae
 Muricularia 3: 218 *M. straminea* Karst.
 Collocystia 3: 616 *C. petredinis* Karst.
- b. Pycnidia with slender bristles or hairs
 (1) Hairs fasciculate
 (2) Hairs separate
 (a) Hairs everywhere but at the apex
 Chaetozythia 10: 406 *C. apiculata* Karst.
 Pseudozythia 18: 409 *P. pusilla* Karst.
 (b) Hairs only around the wide ostiole
- II. Pycnidia cespitose or in a stroma
 1. Pycnidia cespitose, beaked; conidia in chains
 Trelesiella 14: 989 *T. sacchari* Sacc.
2. Pycnidia in a stroma
 a. Stroma more or less pulvinate; conidia fusoid
 Aschersonia 3: 619 *A. tuberosa* Karst.
 b. Stroma fruticose branched; conidia bacillar
 Hypocreodendrum 14: 992 *H. sanguinolentum* Sacc.
- Phaeosporae
 10: 409, 18: 416
 Conidia dark, 1-celled, globose to oblong
- I. Pycnidia separate, beaked; basidia obsolete
 Ampullaria 18: 416 *A. aurea* Karst.
 Martinella 10: 409 *M. martinellii* Karst.
- II. Pycnidia in a stroma
 Hyalodidymae
 3: 621, 10: 409, 11: 553, 16: 986, 18: 416
 Conidia hyaline or nearly so, 1-septate, ovoid to oblong
- I. Basidia simple or nearly so
 Pseudodiplodia 3: 621 *P. lignicola* Karst.
 II. Basidia dendroid branched
 Diplozythia 18: 417 *D. coleae* Karst.
- Hyalophragmiae
 3: 621, 10: 410, 18: 417
 Conidia hyaline, several-septate, elliptic to fusoid
- I. Conidia oblong-fusoid
 Stagonopsis 3: 621 *S. pallida* Karst.
 II. Conidia 4-radiate, with septate radii
 Chiastospora 3: 621 *C. parvula* Karst.
- Scoleosporae
 3: 622, 10: 410, 18: 418
 Conidia hyaline, bacillar or filiform, continuous or septate
- I. Pycnidia separate

- I. Pycnidia beakless, almost discoid
 1. Pycnidia beaked; conidia 1-ciliate
 II. Pycnidia in a stroma; conidia hamate

Subfamily Patellinae

Pycnidia cupulate or hysteroioid

Hyalosporae

3: 622, 10: 411, 11: 553, 18: 419

Conidia hyaline, 1-celled, globose to oblong

I. Pycnidia separate

1. Pycnidia cup-shaped

a. Pycnidia smooth

- (1) Pycnidia carnosae; basidia simple, cylindric
 Patellina 3: 622 *P. talichrona* Spiz.
 (2) Pycnidia submembranous; basidia branched
 Ollula 10: 411 *O. pagyzerica* Lév.

b. Pycnidia hairy

(1) Conidia in chains

(2) Conidia not in chains

2. Pycnidia flattened, oblong, cleft

II. Pycnidia in a stroma

1. Stroma suberose, white

2. Stroma corneous, black

- Munkia 10: 408 *M. mastipis* Spiz.
 Pycnostroma 18: 415
 (Aschersoniopsis) *A. globosa* Spiz.
 Hysteromyxa 3: 622 *H. effugiens* Lév.
 Hyalophragmiae
 11: 553

Conidia hyaline, several-septate, oblong

I. Pycnidia immersed, waxy

Pseudostictis 11: 553 *P. agglomerata* Fatt.

Scoleosporae

10: 411

Conidia hyaline, filiform, continuous

I. Pycnidia waxy, cup-shaped, on a white subicle

Trichosperma 10: 411 *T. pulchellum* Spiz.

Family 72. LEPTOSTROMATACEAE

Pycnidia membranous or carbonous, black, more or less distinctly dimidiate, scutiform, astomous, ostiolate or cleft, erumpent or superficial.

Hyalosporae

3: 625, 10: 412, 11: 553, 14: 992, 16: 986, 18: 419

Conidia hyaline, 1-celled, globose to oblong

I. Pycnidia separate

1. Pycnidia astomous or variously perforate, but not cleft
 a. Basidia lacking

(1) Pycnidia on a subicle

- (a) Subicle of fumiginous hyphae
 (b) Subicle of broad fibers

Eriothyrium 10: 418 *E. debile* Spiz.
 Trichopeltium 10: 418
 (Trichopeltium) Spiz., *T. pulchellum* Spiz.

(2) Pycnidia without subicle

- (a) Conidia muticate
 x. Pycnidia stellately divided or cleft

Actinothecium 3: 638 *A. caricicum* Lév.

y. Pycnidia depressed-clypeate, not stellate

Leptothyrium 3: 626 *L. lunaria* Lév.(Sacidium) 3: 649 *S. rufum* Lév.Tracyella 18: 424 *T. spartanensis* Lév.Piggotia 3: 636 *P. rufum* Lév.

(b) Conidia setulose at each end

b. Basidia present, cylindric

2. Pycnidia more or less clearly cleft lengthwise

a. Pycnidia elongate or lanceolate

b. Pycnidia subcircular

Leptostroma 3: 639 *L. subiculum* Lév.Labrella 3: 647 *L. rufum* Lév.

II. Pycnidia in a stroma

1. Stroma phylogenous
 2. Stroma growing on animal hairs

Melasmia 3: 637 *M. acuminata* Lév.Trichophila 10: 423 *T. myricetophaga* Lév.

Phaeosporae

3: 633, 10: 423, 14: 996, 18: 429

Conidia dark, 1-celled, globose to oblong

I. Pycnidia separate

1. Pycnidia on a dark subicle, radiately deliquescent

Asterostomella 10: 423 *A. rufum* Lév.

2. Pycnidia not on a subicle

a. Conidia conglobate, verrucose

b. Conidia not conglobate, smooth

Discomycopsella 18: 429 *D. rufum* Lév.Pirostoma 3: 653 *P. rufum* Lév.

II. Pycnidia in a stroma

1. Stroma membranous

a. Pycnidia distinct, exerted

b. Pycnidia merely locules, immersed

2. Stroma carbonous; locules many, immersed

Peltostroma 18: 430 *P. rufum* Lév.Lasmenia 10: 425 *L. rufum* Lév.Poropeltis 18: 430 *P. rufum* Lév.

Hyalodidymae

10: 426, 11: 557, 18: 431

Conidia hyaline, 1-septate, oblong to fusoid

I. Pycnidia separate

1. Pycnidia astomous or variously perforate, not cleft

a. Conidia muticate

b. Conidia cuspidate at apex, falcate

2. Pycnidia cleft lengthwise, elongate

Leptothyrella 10: 426 *L. rufum* Lév.Kabatia 18: 433 *K. rufum* Lév.Fioriella 18: 432 *F. rufum* Lév.Pseudomelasmia 18: 434 *P. rufum* Lév.

II. Pycnidia in a stroma, rimose

= *Rhynchospora* see V. 11, 129

Phaeodidymae

10: 426, 18: 431

Conidia dark, 1-septate, oblong to fusoid

- I. Pycnidia separate
 a. Pycnidia ostiolate
 b. Pycnidia longitudinally cleft
 II. Pycnidia in a stroma, ostiolate

Diplopetalis 10: 426 *D. sparta* Thos. *sparta* Thos. *sparta* Thos.Holcomyces 18: 431 *H. exiguus* C. G. L.Seynesiopsis 18: 431 *S. sionopora* C. G. L.

Hyalophragmiae

3: 653, 10: 426, 11: 557, 14: 996, 16: 992, 18: 434

Conidia hyaline, 2-several-septate, oblong to fusoid

- I. Pycnidia astomous or ostiolate, not cleft

1. Conidia muticate; pycnidia with creeping hyphae
 Asterothyrium 18: 434 *A. microsporum* C. G. L.

2. Conidia ciliate

- a. Conidia fusoid, 1-ciliate at each end
 Discosia 3: 653 *D. artonae* C. G. L.

- b. Conidia cruciate, each arm 1-ciliate
 Entomosporium 3: 657 *E. maculatum* C. G. L.

- II. Pycnidia rimose dehiscens

Cystothyrium 10: 427 *C. megakaryum* C. G. L.

Phaeophragmiae

14: 997, 18: 435

Conidia dark, 1-several-septate, oblong to fusoid

- I. Pycnidia separate, rimose-gaping; conidia 1-ciliate each way

- Labridium 14: 997 *L. hians* Vest.

- II. Pycnidia in a stroma; conidia muticate, finally black

Phragmopeltis 18: 435 *P. papaveris* C. G. L.

Scolecosporae

3: 658, 10: 428, 11: 557, 14: 997, 16: 992, 18: 436

Conidia normally hyaline, bacillar or filiform, continuous or septate

- I. Pycnidia astomous or opening variously

1. Pycnidia with a round ostiole; conidia catenate

- Crandallia 14: 998 *C. juncea* C. G. L.

2. Pycnidia astomous or irregularly dehiscens

- a. Pycnidia with radiate-fimbriate margin
 Actinothyrium 3: 658 *A. graminea* C. G. L.

- b. Pycnidia not radiate-fimbriate

- (1) Pycnidia of two kinds, small simple and large loculate
 Brunchoratia 10: 431 *B. distans* C. G. L.

- (2) Pycnidia of one kind

- (a) Conidia muticate

- x. Pycnidia corrugate, not hairy; conidia not separating
 Melophia 3: 658 *M. ophiopora* C. G. L.

- y. Pycnidia hairy; conidia separating into joints
 Chaetopeltis 14: 998 *C. laevissima* C. G. L.

- (b) Conidia ciliate-penicillate at apex

- Giulia 18: 435 *G. tenuis* (C. G. L.) Sacc.

- II. Pycnidia elongate, longitudinally cleft

1. Basidia simple, bacillar
 2. Basidia umbellately branched

Leptostromella 3: 659 *L. faginatoides* C. G. L.*Petasodes 14: 998 *P. petasodes* C. G. L.

Family 73. EXCIPULACEAE

Pycnidia membranous or carbonous, black, cup-shaped, patellate or hysterioid, at first more or less spheric, but at length widely open, erumpent or superficial, glabrous or hairy.

Hyalosporae

3: 665, 10: 432, 11: 558, 14: 999, 16: 993, 18: 436

Conidia hyaline, 1-celled, globose to oblong

- I. Pycnidia pilose or setose

1. Conidia muticate; pycnidia cupulate
 Amerosporium 3: 680 *A. apiculata* C. G. L.

2. Conidia ciliate; pycnidia cupulate

- a. Conidia several-ciliate at apex
 Polynema 3: 687 *P. ornata* C. G. L.

- b. Conidia 1-ciliate at each end
 Dinemasporium 3: 683 *D. granulosum* C. G. L.

- II. Pycnidia smooth or nearly so

1. Pycnidia more or less cup-shaped, or disciform

- a. Pycnidia composed of conglutinate dark hyphae
 Godroniella 3: 665 *G. godronii* C. G. L.

- b. Pycnidia with cellular context

- (1) Pycnidia cup-like when mature, sometimes obconoid

- (a) Basidia simple
 Excipula 3: 665 *E. excipula* C. G. L.

- x. Pycnidia cup-shaped
 Catinula 3: 673 *C. catinula* C. G. L.

- y. Pycnidia terete-conic
 Heteropeltella 3: 670 *H. heteropeltella* C. G. L.

- (b) Basidia branched
 Heteropeltella 3: 670 *H. heteropeltella* C. G. L.

- (2) Pycnidia subglobose-collabent, disciform or verruciform

- (a) Pycnidia subglobose, irregularly dehiscens and collabent
 Dothichiza 3: 671 *D. dothichiza* C. G. L.

- (b) Pycnidia disciform, often imperfect and covered by epiderm
 Discula 3: 674 *D. discula* C. G. L.

- (c) Pycnidia verruciform; conidia mucose-involute
 Agryriolopsis 18: 438 *A. agryriolopsis* C. G. L.

2. Pycnidia hysterioid or valvately gaping

- a. Pycnidia widely hysterioid
 Psilospora 3: 679 *P. faginatoides* C. G. L.

- b. Pycnidia valvately gaping
 Sporoneura 3: 677 *S. sporoneura* C. G. L.

- (1) Basidia typically branched
 Pleococcium 3: 679 *P. pleococcium* C. G. L.

- (2) Basidia simple or none

Phaeosporae

10: 439, 18: 441

Conidia dark, 1-celled, globose to oblong

- I. Pycnidia patellate, smooth

- Coniothyris 10: 439 *C. coniothyris* C. G. L.

- II. Pycnidia cupulate, setulose at margin
 Coniothyriella 3: 679 *C. coniothyriella* C. G. L.

Phaeosporae

3: 749, 10: 471, 11: 571, 14: 1018, 16: 1008, 18: 469
 Conidia dark, 1-celled, globose to oblong or fusoid

I. Conidia solitary on the basidia

1. Conidia globose or oblong
2. Conidia fusoid, often arcuate
 - a. Basidia not swollen at base
 - b. Basidia swollen at base

II. Conidia in chains

1. Conidial chains separate
2. Conidial chains in a mucose head

Hyalodidymae

3: 766, 10: 475, 11: 572, 14: 1020, 16: 1009, 18: 472

Conidia hyaline or nearly so, 1-septate, ovoid to fusoid

I. Conidia muticate

1. Saprogenous, on stems and fruits
2. Biogenous, typically on leaves

II. Conidia 3-4-ciliate at each end

Phaeodidymae

3: 763, 10: 475, 11: 572, 14: 1029, 16: 1009

Conidia dark, 1-septate, ovoid to fusoid

I. Conidia solitary

1. Conidia muticate
2. Conidia 1-3-ciliate at apex

II. Conidia catenate, connected by hyaline isthmi

3: 801, 10: 480, 11: 575, 14: 1022, 16: 1012, 18: 474

Conidia hyaline, 2-several-septate, oblong to fusoid or clavate

I. Conidia separate

1. Conidia muticate
 - a. Conidia oblong or fusoid, masses usually pale
 - b. Conidia long-clavate; masses dark
2. Conidia 1-several-ciliate, usually at the apex

II. Conidia united at base into a radiate or stellate group

3: 801, 10: 480, 11: 575, 14: 1022, 16: 1012, 18: 474

Phaeophragmiae

3: 771, 10: 480, 11: 575, 14: 1022, 16: 1012, 18: 475

Conidia dark, at least in part, 2-several-septate, oblong to cylindrical

I. Conidia muticate

1. Conidia separate, not in chains

- a. Conidia oblong or elongate
 - (1) Conidia curved-attenuate, i. e., hyaline-rostrate

(a) Conidia dark, except the hyaline beak

(b) Conidia with 2 inner cells opaque, others clear

(2) Conidia oblong, not rostrate

(a) Conidia cirrhose protruded and atro-inquinant

(b) Conidia not protruded and atro-inquinant

b. Conidia stellate-lobed, lobes several-septate

2. Conidia in chains

- a. Conidia connected by filiform isthmi
- b. Conidia chains without isthmi

II. Conidia ciliate

1. Conidia ciliate at apex alone

- a. Conidia 1-ciliate
- b. Conidia several-ciliate

2. Conidia 1-ciliate at each end

3: 803, 10: 508, 11: 565, 14: 1035, 16: 1022, 18: 488
 Conidia dark, muriform, ovoid or oblong

I. Conidia muticate

1. Conidia not catenate
2. Conidia catenate by cylindrical isthmi

II. Conidia pluriciliate at apex; end cells subhyaline

Scoleosporae

3: 737, 10: 498, 11: 582, 14: 1031, 16: 1018, 18: 488

Conidia cylindrical, filiform or suballantoid, hyaline, mostly continuous

I. Conidia allantoid

II. Conidia bacillar to filiform

1. Conidia fasciculate at the apex of the basidia

2. Conidia solitary

- a. Masses white or pale, follicole; conidia filiform
- b. Masses gray or dark, usually ramicole; conidia falcate

Cryptosporium 3: 749

MONILIACEAE

c. Masses bright-colored, saprophytic; conidia bifurcate ^{filiform}
Libertella 3:744 *S. betulina* Ham.

Staurosporae

18:493

Conidia star-shaped, hyaline

I. Masses phyllogenous, bright-colored; conidia 4-radiate

Asteroconium 18:493 *A. haecelerii* Syd.
A. 234 1:34

Order 18. MONILIALES (Hyphomyceteae Sacc. 4:1)

Hyphae more or less developed, cobwebby or more or less compacted, but rarely arising from a definite stratum or stroma, never enclosed in a pycnidium, typically superficial.

Family 75. MONILIACEAE (Mucedineae 4:2)

Hyphae hyaline or bright-colored, more or less fragile, lax, not cohering in fascicles; conidia concolorous, i. e., hyaline or bright-colored.

Hyalosporae

4:2, 10:510, 11:586, 14:1037, 16:1023, 18:495

Conidia hyaline, or bright-colored, 1-celled, globose, ovoid to short-cylindrical

Micronemeae

Hyphae very short or obsolete, or little different from the conidia

I. Conidia not in chains

1. Conidia solitary, at least not capitate

a. Saprogenous

(1) Hyphae none

(a) Conidia separate

(b) Conidia joined in twos or threes, not catenate

✓ Chromosporium 4:6 *C. viride* Cha.

Selenotila 11:587 *S. rivulalis* Lag. ^{man}

(2) Hyphae very short, branched, septate

✓ Coccospora 4:9 *C. aurantiae* Berk. ^{man}
Massospora 4:10 *M. muscivora* Berk. ^{man}
(incl. Sorosporella 10:512)

b. Entomogenous

c. Phytogenous

(1) In fungi

(a) Conidia ovoid, smooth

(b) Conidia globose, verrucose

(2) In leaves

(a) Hyphae paliform, stipitate, very short

✓ Microstroma 4:9 *M. myrtilloides* Berk. ^{man}

(b) Hyphae vermiform-tortuose; biophilous

Ophiocladium 11:587 *O. hordei* Berk. ^{man}

2. Conidia capitate; hyphae lacking; biophilous

✓ Glomerularia 4:10 *G. corni* Berk. ^{man}

II. Conidia in chains

1. Saprophilous

a. Conidial chains arising in the hyphae

(1) Conidial branches simple, arcuate

Malbranchea 4:11 *M. fulgida* Syd. ^{man}

(2) Conidial branches dichotomous, not arcuate

Glycophila 4:11 *G. variabilis* Mont. ^{man}

b. Chains arising at the apex of the hyphae

(1) Conidia globose, elliptic or fusiform

(a) Hyphae short, simple or nearly so

Oospora 4:11 *O. ovata* Berk. ^{man}

x. Conidia globose or suboblong

Fusidium 4:25 *F. croceum* Sacc. ^{man}

y. Conidia fusoid, acute each way

Monilia 4:31 *M. fructigena* Berk. ^{man}

(b) Hyphae longer, distinctly branched

(incl. Halobysus 11:588) ^{man}

(2) Conidia bacillar or cuboid

(a) Hyphae nearly obsolete; conidia bacillar

Cylindrium 4:36 *C. longatum* Berk. ^{man}

(b) Hyphae distinctly present

Polyscytulum 4:38 *P. fuscum* Berk. ^{man}

x. Conidia bacillar

Geotrichum 4:39 *G. candidum* Berk. ^{man}

y. Conidia cuboid

Oidiopsis 18:507 *O. bacillata* Berk. ^{man}

2. Biophilous

a. Growing within leaf tissue

b. Growing on leaves or other parts

Oidium 4:40 *O. erythroideum* Berk. ^{man}

(1) Conidia ellipsoid, without isthmi

Paepalopsis 4:47 *P. bismarckiana* Berk. ^{man}

(2) Conidia globose, connected by isthmi

Macronemeae

Hyphae elongate and distinct from the conidia

Cephalosporiae

I. Conidia in heads

1. Conidia not catenulate

a. Conidia globose or oblong

(1) Conidia sessile on the head or nearly so

(a) Fertile hyphae inflated at apex

x. Apical vesicle globose-inflated

(x) Conidia sessile, not mucus-covered

m. Vesicle verrucose or muriculate

(m) Fertile hyphae simple

(n) Fertile hyphae sigmoid, much branched

Oedocephalum 4:47 *O. cylindricum* Berk. ^{man}

Sigmoidomyces 10:523 *S. diploides* Berk. ^{man}

n. Vesicle hexagonally areolate

✓ Rhopalomyces 4:50 *R. elegans* Berk. ^{man}

(y) Conidia on stalks, mucus-covered

Glocephalus 16:1031 *G. hypnoides* Berk. ^{man}

y. Vesicle clavate or lobed

Coronella 4:51 *C. nivea* Cronan. ^{man}

(x) Vesicle disk-shaped, stellate-lobed

- (y) Vesicle clavate or subpalmate
 (b) Fertile hyphae not inflated at apex
 x. Conidial head covered with mucus
 (x) Fertile hyphae simple
 (y) Fertile hyphae with verticillate branches at tip
- y. Head without mucus
 (x) Fertile hyphae with one head
 m. Conidia not separating
 n. Conidia separating
 (m) Head elongate
 (n) Head globose or slightly clavate
 r. Sterile hyphae scanty
 s. Sterile hyphae long, decumbent
- (y) Fertile hyphae with 2-several heads
 m. Conidia upright on verticillate basidia
 n. Conidia in more definite heads
 (m) Fertile hyphae simple, with 3-several heads of conidia on spines
 (n) Fertile hyphae several times 2-3-fold
- (2) Conidia borne on little stalks or sterigmata
 (a) Fertile hyphae simple
 (b) Fertile hyphae verticillate branched
- b. Conidia short cylindrical
 (1) Conidia without mucus
 (2) Conidia covered with mucus
2. Conidia catenulate
 a. Fertile hyphae inflated at apex
 (1) Fertile hyphae simple or nearly so
 (a) Sterigmata of apical vesicle none or simple
 x. Conidia terminal on sterigmata
 y. Conidia lateral and terminal on sterigmata
 (b) Sterigmata verticillate branched
 (2) Fertile hyphae dichotomous, branches curved
- b. Fertile hyphae little or not at all inflated
 (1) Fertile hyphae verticillately branched at tip
 (a) Tips equally verticillate; conidia doliform
 (b) Tips unequally verticillate; conidia globoid
- Busella* 18: 509
Hyalopus 4: 51
Gliobotrys 18: 510
Papulospora 4: 58
Doratomyces 4: 53
Cephalosporium 4: 56
Coemansiella 4: 55
Botryosporium 4: 54
Trichoderma 4: 59
Corethrospis 4: 62
Spicularia 4: 63
Cylindrocephalum 4: 63
Acontium 18: 512
Aspergillae
Aspergillus 4: 64
Dimargaris 4: 76
Sterigmatocystis 4: 77
Dispira 4: 77
Amblyosporium 4: 77

- x. Conidia without mucus
 y. Conidia enclosed in mucus
 (2) Fertile hyphae not verticillate at tip
- II. Conidia borne irregularly on simple or branched but not inflated or verticillate hyphae
 I. Conidia smooth or scarcely roughened
 a. Saprogenous
 (1) Conidia typically pleurogenous
 (a) Fertile hyphae 2-several-furcate
 (b) Fertile hyphae simple or nearly so
 x. Conidia globose or ellipsoid
 y. Conidia short cylindrical
 (2) Conidia acrogenous or pleurogenous
 (a) Some intermediate joints of the hyphae swollen and denticulate conidia-bearing
 (b) Intermediate joints equal
 x. Conidia-bearing hyphae of two sorts, the upright alone denticulate
 y. Conidia-bearing hyphae of one sort
 (x) Fertile hyphae simple or nearly so
 m. Hyphae not denticulate; conidia solitary
 (m) Hyphae forming a crust-like stratum
 (n) Hyphae loose, cobwebby
 n. Hyphae denticulate; conidia usually grouped
 (m) Hyphae everywhere denticulate, bearing conidia only at tip
 (n) Hyphae denticulate or proliferous at tip alone
 r. Apex denticulate, many-spored
 s. Apex inflated-ampulliform, 1-spored
 (y) Fertile hyphae branched
 m. Conidia globose to ovoid
 (m) Both sterile and fertile hyphae procumbent
 r. Sterile hyphae intracellular
 s. Sterile hyphae superficial
 (r) Fertile hyphae vaguely branched
 h. Conidia acro-pleurogenous
 i. Conidia on a one-sided symposium
- Penicillium* 4: 78
Gliocladium 4: 84
Briarea 4: 85
Haplaria 4: 85
Acladium 4: 87
Cylindrotrichum 4: 88
Physospora 4: 88
Blastomyces 10: 529
Hyphoderma 4: 89
Acremonium 4: 89
Thermomyces 18: 524
Xenopus 18: 544
Rhinotrichum 4: 91
Olpitrichum 11: 594
Hartigella 16: 1031
Sporotrichum 4: 96
Monopodium 10: 544

- (s) Fertile hyphae dichotomous; conidia acrogenous on spine-like branches
Langloisia 10: 535 *L. spinescens* ETE
- (n) Fertile hyphae erect or ascending
- r. Conidia solitary acrogenous
- (r) Fertile hyphae spiny-branched at apex
Plectothrix 18: 525 *P. globosa* Berk.
- (s) Fertile hyphae not spiny-branched
 ✓ **Monosporium** 4: 313 *M. spinescens* Berk.
 (incl. **Allescheriella** 14: 1075)
- s. Conidia loosely grouped about the apex
- (r) Conidia not involved in mucus
- h. Conidia on inflated muriculate apices
Phymatotrichum 16: 1033 *P. mellicollii* Berk.
- i. Apices not muriculate or inflated
 ✓ **Botrytis** 4: 116 *B. cinerea* Pers.
- (s) Conidia involved in mucus
Tolypomyria 4: 137 *T. mucospora* (Cha) Berk.
- n. Conidia fusoid to cylindrical
- (m) Fertile hyphae mostly procumbent
Sporotrichella 10: 534 *S. rosae* Berk.
- (n) Fertile hyphae erect or ascending
- r. Conidia fusoid on the upper side of curved branches
Martensella 4: 138 *M. fuscata* Berk.
- s. Conidia acrogenous
- (r) Conidia-bearing branches terete
Cylindrophora 4: 138 *C. tenera* Berk.
- (s) Conidia-bearing branches ellipsoid
Cylindrodendrum 4: 139 *C. album* Berk.
- b. Biogenous
- (1) Conidia smooth, solitary, more rarely subcatenate
Ovularia 4: 139 *O. ovata* Berk.
 (incl. **Ovulariopsis** 16: 1036) *O. spinescens* Berk.
- (2) Conidia densely spiny
Ramulaspera 18: 532 *R. pilosissima* Berk.
2. Conidia muricate or tuberculose-stellate
- a. Conidia globose
- (1) Conidia merely muricate
- (a) Hyphae loose, cobwebby
Sepedonium 4: 146 *S. chrysosporium* Berk.
- (b) Hyphae woven into a subgelatinous pellicle
Pellicularia 4: 149 *P. holeroa* Eke
- (2) Conidia setose at apex as well as muricate
Chaetoconidium 10: 544 *C. arachnoideum* Berk.
- b. Conidia tuberculose-stellate
 ✓ **Asterophora** 4: 148 *A. agrivivida* Cha.
- III. Conidia acrogenous on verticillate branches
- Verticilliae**
- r. Conidia solitary or loosely grouped, not in chains

- a. Conidia-bearing branches very short, ampulliform
Pachybasium 4: 149 *P. hamatum* Berk.
- b. Conidia-bearing branches terete or longer
- (1) Conidia globose to ovoid
- (a) Tips of branches clavate, in twos rectangularly
Verticilliospora 11: 600 *V. infectans* Berk.
- (b) Tips of branches normal
- x. Conidia conglutinate into a stratum
Corymbomyces 18: 533 *C. albus* Berk.
- y. Conidia not conglutinate
- (x) Conidia separating readily from the tips
 ✓ **Verticillium** 4: 150 *V. ageratum* Berk.
- (y) Conidia separating with difficulty from the tips
Cladobotryum 4: 160 *C. varians* Berk.
- (2) Conidia cylindrical or elongate
- (a) Conidia-bearing branches or sporophores 1-spored
Acrocyllindrium 4: 161 *A. elegans* Berk.
- x. Sporophores straight
Uncigera 4: 162 *U. cordata* Berk.
- y. Sporophores uncinata
- (b) Sporophores several-spored
- x. Sporophore inflated verrucose at apex
Calcarisporium 4: 162 *C. submarginatum* Berk.
- y. Sporophore incurved, with seriate conidia below
Coemansia 4: 162 *C. curvata* Berk.
2. Conidia capitate or densely spicate, not in chains
- a. Conidia sessile
- (1) Conidia capitate, involved in mucus
 ✓ **Acrostalagmus** 4: 163 *A. submarginatus* Berk.
 (incl. **Harziella** 16: 1037) *H. spinescens* Berk.
- (a) Fertile hyphae smooth
Gloeosphaera 18: 535 *G. globulifera* Berk.
- (b) Fertile hyphae asperate
- (2) Conidia densely spirally spicate at apices
Cionostachys 4: 165 *C. argyria* Berk.
- Sceptromyces** 4: 166 *S. spinescens* Berk.
- Spicaria** 4: 166 *S. spinescens* Berk.
 (incl. **Nomuraea** 18: 533) *N. crassa* Berk.
- b. Conidia on small stalks
3. Conidia in chains
Autonogonium
- IV. Joints of the hyphae inflated here and there and bearing pleurogenous conidia
- Gonatobotryae**
1. Joints smooth
- a. Conidia catenulate
Gonatorrhodium 4: 169 *G. spicatum* Berk.
- b. Conidia solitary
Nematogonium 4: 170 *N. curvatum* Berk.
2. Joints muricate or punctate
- a. Conidia solitary
 ✓ **Gonatobotrys** 4: 168 *G. spinescens* Berk.
- b. Conidia catenulate, forming a spheric head
Gonatorrhodiella 10: 548 *G. parvifera* Berk.
- Hyalodidymae**
 4: 176, 10: 548, 11: 600, 14: 1057, 16: 1038, 18: 530
 Conidia hyaline or bright-colored, 1-septate, ovoid oblong or short fusoid

I. Conidia not in chains

1. Saprophilous

a. Conidia smooth

(1) Fertile hyphae simple or nearly so

(a) Hyphae inflated at apex or joints

x. Hyphae denticulate inflated at apex; conidia fusoid, H

Diplorhynchium 18: 540 & conidia

y. Hyphae inflated at both apex and joints

Arthrotrichy 4: 181

(b) Hyphae not inflated

x. Conidia spirally pleurogenous

Haplariopsis 18: 539

y. Conidia solitary acrogenous or capitate

Cephalothecium 4: 180

(x) Conidia capitate at apex

(y) Conidia solitary at apex

m. Fertile hyphae long

Trichothecium 4: 178

n. Fertile hyphae very short

Didymiopsis 4: 182

(2) Fertile hyphae branched

(a) Fertile hyphae irregularly branched

Diplosporium 4: 178

(b) Fertile hyphae verticillate or dichotomous

x. Fertile hyphae verticillate

Diplocladium 4: 176

y. Fertile hyphae dichotomous; sterigmata subternate

Cylindrocladium 11: 600

b. Conidia echinulate; conidial cells unequal

Mycogone 4: 183

2. Biophilous

a. Conidia obliquely beaked

Rhynchosporium 18: 540

b. Conidia not beaked

(1) Hyphae mostly simple, not spirally twisted

Didymaria 4: 184

(2) Hyphae simple, spirally twisted

Bostrichonemia 4: 185

II. Conidia catenulate

1. Fertile hyphae simple, short

Hormiactis 4: 186

2. Fertile hyphae verticillately branched

Didymoelidium 4: 186

Hyalophragmiae

4: 188, 10: 551, 11: 601, 14: 1059, 16: 1041, 18: 544

Conidia hyaline or bright-colored, 2-several-septate, oblong, fusoid or elongate

Microneemae

Fertile hyphae very short and little different from the conidia

I. Conidia in chains, cylindrical or oblong

Septocylindrium 4: 223

II. Conidia not in chains

1. Sporophore 3-celled, upper cell much inflated

Milowia 4: 222

2. Sporophore not inflated, sometimes obsolete

a. Conidia ciliate at apex and upper septum

Mastigosporium 4: 220

b. Conidia not ciliate

(1) Hyphae lacking; conidia not aggregate

Fusoma 4: 220

(2) Hyphae distinct; conidia aggregate

(a) Conidia in mucose glomerules

Rotaea 4: 222

(b) Conidia in fascicles, not mucose

Paraspora 4: 222

Macroneemae

Fertile hyphae manifest and distinct from the conidia

I. Saprophilous

1. Conidia solitary or at least not capitate

a. Fertile hyphae simple

(1) Sterile hyphae lacking

Dactylella 4: 193

(2) Sterile hyphae abundant

Monacrosporium 4: 193

b. Fertile hyphae branched

(1) Hyphae verticillately branched

Dactylium 4: 188

(2) Hyphae irregularly branched

Blastotrichum 4: 191

2. Conidia capitate

a. Fertile hyphae vesiculose at tip; fimicole

Cephalophora 18: 544

b. Fertile hyphae not swollen

(1) Hyphae simple; sterile lacking

Dactylaria 4: 194

(2) Hyphae verticillate; sterile hyphae present

Mucrosporium 4: 190

II. Biophilous

1. Conidia mucose-conglobate, allantoid, often continuous

Allantospora 14: 1043

2. Conidia not mucose-conglobate

a. Conidia ciliate at apex

Trichoconis 18: 545

b. Conidia not ciliate

(1) Conidia ovate-cylindrical or elongate, often catenate

Ramularia 4: 196

(2) Conidia obclavate-piriform

Piricularia 4: 217

(3) Conidia long vermiform

Cercosporella 4: 218

Hyalodictyae

11: 608, 18: 561

Conidia hyaline, or bright-colored, muriform, ovoid to globose or cubic

I. Hyphae much branched; conidia elliptic or globose, cells uniform

Stemphyliopsis 18: 561

II. Hyphae little branched; conidia six-lobed colored, lobes hyaline

Synthetosporea 11: 608

Staurosporeae

4: 230, 10: 567, 11: 608, 14: 1067, 16: 1049, 18: 559

Conidia hyaline or bright-colored, stellate, radiate or forked, septate or continuous

- I. Hyphae lacking; conidia trident-shaped
 Tridentaria 4: 231 *T. talpa* M. S. Hill
- II. Hyphae present
 1. Conidia globose to cylindrical, permanently attached to 2-3 divergent sterigmata
 Tetracadium 14: 1067 *T. macrobotryum* M. S. Hill
2. Conidia themselves stellate or radiate
 a. Conidia bilobate-forked; lobes parallel, contiguous
 Pediospora 18: 559 *P. fraxinum* M. S. Hill
 Prismaria 4: 230 *P. alba* M. S. Hill
- b. Conidia narrowly digitate
 c. Conidia 3-4-radiate
 (1) Conidia ciliate at the apex
 Titaea 4: 231 *T. salicispora* M. S. Hill
- (2) Conidia muticate
 (a) Conidia 3-radiate
 Trinaerium 4: 231 *T. subtile* M. S. Hill
- (b) Conidia 4-radiate
 x. Fertile hyphae very short, simple
 y. Fertile hyphae branched
 Tetracium 18: 560 *T. aurantii* M. S. Hill
 Lemonnieria 14: 1067 *L. aquatica* M. S. Hill

Helicosporae

4: 233, 10: 568, 11: 608

Conidia hyaline or bright-colored, spirally curved, cylindrical

- I. Hyphae very short; conidia spiral
 Helicomycetes 4: 233 *H. croceus* M. S. Hill
- II. Hyphae various; conidia spirally twisted into a conic or ovate tube
 Helicoum 11: 609 *H. rosula* M. S. Hill

Family 76. DEMATIACEAE

Hyphae dark or black, cobwebby, loose, usually rigid, not cohering in definite fascicles; conidia typically dark and concolorous, but sometimes the hyphae are dark and conidia clear, or the conidia dark and the hyphae clear. This family is parallel with the Moniliaceae and certain intermediate forms must be sought in both places.

Amerosporae

2: 235, 10: 569, 11: 610, 14: 1068, 16: 1059, 18: 563

Conidia dark, or sometimes hyaline but the hyphae then dark, 1-celled, globose to oblong.

Micronemeae

Hyphae very short or scarcely different from the conidia.

- I. Conidia not in chains
 1. Conidia globose to elliptic
 a. Sterile hyphae nearly obsolete
 Cordella 10: 586 *C. sp.*
 b. Sterile hyphae elongate
 2. Conidia elongate, usually fusoid
 Fusella 4: 246 *F. patellata* M. S. Hill
- II. Conidia in chains
 1. Conidia of two sorts, larger catenate, smaller glomerate
 Heterobotrys 4: 267 *H. paradosa* M. S. Hill
2. Conidia all alike

- a. Hyphae dark
 (1) Chains breaking up readily
 (a) Conidia globose or ovoid
 Torula 4: 247 *T. hirsuta* M. S. Hill
 (b) Conidia clavate
 Gongromeria 4: 263 *G. conopsea* M. S. Hill
- (2) Chains breaking up with difficulty
 (a) Chains curved
 Gyrocera 4: 266 *G. conopsea* M. S. Hill
 (b) Chains straight or nearly so
 Hormiscium 4: 263 *H. conopsea* M. S. Hill
- b. Hyphae hyaline
 III. Conidia in heads or racemes; conidia usually piriform
 Echinobotryum 4: 268 *E. conopsea* M. S. Hill

Macronemeae

Hyphae manifest and distinct from the conidia

- I. Conidia dark, rarely subhyaline
 1. Conidia not in chains
 a. Conidia capitate
 (1) Fertile hyphae simple, but often with short apical branches
 (a) Hyphae with apical branches or basidia
 x. Biophilous
 Periconiella 4: 275 *P. volutaria* M. S. Hill
- y. Saprophilous
 (x) Apex with heterogeneous basidia
 m. Apex swollen; basidia 3-4
 Haplobasidium 10: 578 *H. thalictri* M. S. Hill
 n. Apex not swollen; basidia many
 Stachybotrys 4: 269 *S. atra* M. S. Hill
- (y) Apex short-branched, rarely simple
 m. Apex short-branched or simple
 (m) Apex not swollen
 (n) Apex swollen
 n. Apex capitate-branched; branches 2-3-furcate and spine-bearing
 Cephalotrichum 4: 275 *C. conopsea* M. S. Hill
- (b) Hyphae without apical branches or basidia
 x. Conidia globose
 Trichobotrys 18: 571 *T. conopsea* M. S. Hill
 y. Conidia boat-shaped curved; hyphae dark-ringed
 Camptoum 4: 276 *C. conopsea* M. S. Hill
- z. Conidia fusoid, sometimes subhyaline
 Acrotheca 4: 276 *A. conopsea* M. S. Hill
- (2) Fertile hyphae branched below the apex
 (a) Hyphae forked below apex; conidia oblong
 Synsporium 4: 278 *S. conopsea* M. S. Hill
 (b) Hyphae repeatedly dichotomous; conidia globose or elliptic
 Dicyma 18: 570 *D. conopsea* M. S. Hill
- b. Conidia verticillate-plenigerous
 (1) Hyphae dark nodose-inflated; conidia ovoid
 Gonatobotryum 4: 278 *G. conopsea* M. S. Hill
- (2) Hyphae hyaline, dark-ringed
 (a) Conidia globose-angulose
 Goniosporium 4: 280 *G. conopsea* M. S. Hill
 (b) Conidia fusoid
 Arthrinium 4: 279 *A. conopsea* M. S. Hill

c. Conidia inserted irregularly

(1) Hyphae loose, typically saprogenous

(a) Hyphae vesiculose-inflated here and there

x. Conidia-bearing vesicles pleurogenous

Oedemium 4: 297 *O. straminea* Ill.

y. Conidia-bearing vesicles acrogenous

Cystophora 4: 298 *C. craterioides* Rab.

(b) Hyphae not vesiculose-inflated

x. Fertile hyphae erect

(x) Branches circinate at apex; conidia mesogenous, muricate

Acrospira 4: 282, 14: 1056 *A. mirabilis* Berk.

(y) Branches spirally twisted; conidia exogenous

Streptothrix 4: 282 *S. fusca* Cha.

(z) Hyphae simple or with straight branches

Virgaria 4: 280 *V. nigra* Nees & Seb.

y. All hyphae more or less creeping

(x) Branches curved or lash-like

Campotrichum 4: 295 *C. unicolor* Berk.

(y) Branches not curved

m. Conidia spiny, rarely smooth

Zygodemus 4: 283 *Z. fuscos* Cha.

n. Conidia smooth

(m) Conidia sessile

Trichosporium 4: 288 *T. fuscum* Berk.

(n) Conidia on stalks or basidia

r. Conidia on tooth-like sterigmata

Rhinocladium 4: 295 *R. cephalogenum* Berk.

s. Conidia on jar-like basidia

Basidiosporium 18: 533 *B. gallinarum* Berk.

(2) Hyphae forming a crust, biogenous

Glenspora 4: 298 *G. variabilis* Berk.

d. Conidia solitary, acrogenous

(1) Fertile hyphae simple

(a) Sterile hyphae fasciated

x. Fertile hyphae short and fasciated at base

Hadotrichum 4: 301 *H. phragmitis* Berk.

y. Fertile hyphae longer, separate

Monotospora 4: 299 *M. phaeospora* Berk.

(b) Sterile hyphae present

x. Conidia with a loose hyaline membrane

Phaeoconia 18: 571 *P. (Nigrospora) n. paucisporia* Berk.

y. Conidia without a membrane

(x) Conidia with a large shining gutta

Sporoglena 14: 1074 *S. velutina* Berk.

(y) Conidia without a shining gutta

Acremoniella 4: 302 *A. atrata* Cha. (incl. Cordella 10: 586)

on p. 146 and ref. a Syn. 10: 586

(2) Hyphae branched; conidium at first enclosed in a vesicle from which it escapes at the apex

Conioscypha 18: 572 *C. leucophaea* Berk.

2. Conidia in chains

a. Sterile hyphae all creeping or obsolete

(1) Conidia of two kinds; larger catenulate fuscous, smaller internal catenulate cylindrical hyaline

Thielaviopsis 11: 612 *T. thalictroides* Mont.

(2) Conidia all alike

(a) Conidia produced in the hyphae

Sporendonema 10: 515 *S. torulosa* Berk.

(b) Conidia produced on the hyphae

x. Fertile hyphae spirally twisted, forming a head of conidia

Helicocephalum 10: 512 *H. sarcophilum* Berk.

y. Fertile hyphae not twisted

(x) Fertile hyphae simple, not branched at tip

Dematium 4: 308 *D. simplicium* Berk.

m. Chains of conidia lateral

n. Chains terminal

(m) Conidia without isthmi

(n) Conidia connected by cylindrical isthmi

Catenularia 4: 303 *C. simplex* Berk.Prophytroma 4: 309 *P. tubularis* Berk.

(y) Fertile hyphae branched

m. Hyphae dendroid

Hormodendrum 4: 310 *H. holocarpum* Berk.

n. Hyphae capitate branched at tip

Haplographium 4: 304 *H. delictatum* Berk.

b. Some sterile hyphae erect and mixed with the fertile

Hormiactella 4: 311 *H. fusca* Berk.

II. Conidia hyaline or subhyaline

1. Conidia acrogenous on short heteromorphic basidia at the lower part or at the base of erect hyphae

a. Conidia capitate glomerate

(1) Sterile hyphae simple and circinate at apex

Bolacotricha 4: 316 *B. (Bolacotricha) bolacotricha* Berk.

(2) Sterile hyphae much branched below

Myxotrichum 4: 317 *M. (Myxotrichum) myxotrichum* Berk.

b. Conidia not capitate

(1) Conidia solitary

(a) Eruptent; conidia fusoid, usually setose

Ellisiella 4: 315 *E. (Ellisiella) ellisiella* Berk.

(b) Superficial

x. Sterile hyphae simple

Botryotrichum 4: 313 *B. (Botryotrichum) botryotrichum* Berk.

(x) Conidia globose

(y) Conidia bacillar

m. Sterile hyphae tortuous

Sarcopodium 4: 312 *S. (Sarcopodium) sarcopodium* Berk.

n. Sterile hyphae circinate at apex

Helicotrichum 4: 313 *H. (Helicotrichum) helicotrichum* Berk.

y. Sterile hyphae branched

(x) Hyphae irregularly branched; basidia verticillate

Costantinella 16: 1054 *C. cristata* Berk.

(y) Hyphae repeatedly dichotomous

- m. Branches continuous; basidia terete, basal
Circinotrichum 4: 314 *C. maculiforme* n.
- n. Branches septate; basidia ampulliform, above base
 ✓ *Ceratocladium* 4: 315 *C. ampulliforme* n.
- (2) Conidia loosely catenate; conidia basilar, ovoid
Stirochaete 4: 316 *S. melanospora* n.
2. Conidia on hyphae of the same kind
- a. Conidia solitary, neither catenate or capitate
- (1) Hyphae erect, simple
- (a) Hyphae with a single lateral basidium near base
Zygosporium 4: 328 *Z. pschoides* n.
- (b) Hyphae with pleurogenous conidia
Chloridium 4: 320 *C. viride* n.
- (2) Hyphae branched
- (a) Hyphae erect, smooth
 x. Hyphae verticillate branched ✓ *Verticiladium* 4: 327 *V. trifidum* n.
- y. Hyphae more or less irregularly branched
 (x) Conidia ovoid ✓ *Mesobotrys* 4: 324 *M. fusca* n.
- (y) Conidia cylindric
Chaetopsis 4: 324 *C. fusca* n.
- (z) Conidia falcate, sometimes ciliate
Menispora 4: 325 *M. glauca* n.
- (b) Hyphae somewhat decumbent, more or less spiny
 x. Hyphae nodose-spiny here and there
 y. Hyphae spiny but not swollen ✓ *Gonytrichum* 4: 329 *G. capsum* n.
- b. Conidia capitate
- (1) Hyphae simple, with basidia only at the tip
- (a) Conidia globose
 x. Basidia verticillate *Fuckelina* 4: 330 *F. micropora* n.
- y. Basidia irregular
Pimina 16: 1054 *P. fasciculata* n.
- (b) Conidia ovoid, mucose
Scopularia 4: 330 *S. rufata* n.
- (2) Hyphae more or less verticillate branched
 ✓ *Stachylidium* 4: 331 *S. bicolor* n.
- c. Conidia catenate, arising within the hyphae
- (1) Conidia in simple chains
Chalara 4: 333 *C. fusoides* n.
- (2) Conidia conglutinate into a long curl
Cirromyces 18: 627 *C. curvatus* n.
- Didymosporae**
 4: 341, 10: 595, 11: 616, 14: 1077, 16: 1056, 18: 575
 Conidia 1-celled, dark, more rarely hyaline, ovoid to oblong
- Microneemae**
 Hyphae very short or scarcely different from the conidia.
- I. Conidia not in chains
1. Hyphae lacking
2. Hyphae present, circinate
- II. Conidia in chains
- ✓ *Dicoccum* 4: 342 *D. minutissimum* n.
- ✓ *Cycloconium* 4: 343 *C. elaeagninum* n.
- ✓ *Bispora* 4: 343 *B. maritima* n.

Macroneemae

Hyphae distinctly different from the conidia

- I. Conidia smooth, muticate
1. Conidia not capitate
- a. Conidia more or less catenulate at first
- (1) Hyphae and conidia biform, the latter 1-celled dark or continuous hyaline
Epochium 4: 375 *E. umbellatum* n.
- (2) Hyphae and conidia uniform
- (a) Hyphae here and there inflated ✓ *Cladotrichum* 4: 370 *C. polyphorum* n.
- (b) Hyphae not inflated
 x. Hyphae erect; conidia long-catenate
Diplococcium 4: 374 *D. spectabile* n.
- y. Hyphae somewhat decumbent; conidia short-catenate or finally solitary
Cladosporium 4: 350 *C. helveticum* n.
- b. Conidia not catenate
- (1) Hyphae beautifully flexuose-torulose ✓ *Polytrichium* 4: 350 *P. trifidum* n.
- (2) Hyphae not torulose or flexuose
- (a) Hyphae inflated at tip, branched
Pseudobeltrania 18: 578 *P. asserata* n.
- (b) Hyphae not inflated, usually short and little branched
 x. Conidia merely acrogenous
Fusicladium 4: 345 *F. clavaticum* n.
 (incl. *Passalora* 4: 344) *P. sarthogata* n.
- y. Conidia acro-pleurogenous
Scolecotrichum 4: 347 *S. virens* n.
- Cordana* 4: 376 *C. virens* n.
2. Conidia capitate
- II. Conidia muriculate or ciliate
1. Conidia muriculate
Trichocladium 4: 376 *T. asperum* n.
2. Conidia ciliate at apex; fertile and sterile hyphae intermixed
 ✓ *Beltrania* 4: 377 *B. beltrana* n.
- Phragmosporae**
 4: 380, 10: 606, 11: 621, 14: 1082, 16: 1060, 18: 581
 Conidia 2-several-septate, dark, rarely hyaline, ovoid to cylindrical or vermicular

Microneemae

Fertile hyphae very short or little different from the conidia

- I. Conidia not in chains
1. Conidia muticate
- a. Conidia united at base, fasciculate, cylindric
Cryptocoryneum 4: 395 *C. formosum* n.
- b. Conidia separate
- (1) Conidia ovoid to cylindric
- (a) Saprogenous
Clasterosporium 4: 382 *C. caricinum* n.
- (b) Phyllogenous
Stigmia 4: 394 *S. patens* n.
- (2) Conidia fusoid-falcate
 ✓ *Fusariella* 4: 395 *F. virens* n.
2. Conidia cuspidate or setose

DEMATIACEAE

- a. Hyphae dichotomous and broadened at apex
 Urosporium 4: 397 *U. curvatum* Fr.
- b. Hyphae not dichotomous or broadened
 Ceratophorum 4: 395 *C. helicospirum* Fr.
- II. Conidia in chains
 1. Conidia not connected by isthmi
 2. Conidia connected by isthmi

Macronemeae

Fertile hyphae distinctly different from the conidia

- I. Conidia solitary or nearly so, acrogenous for the most part
 1. Conidia muticate
 a. Conidia echinulate
 b. Conidia smooth
 (1) Biophilous
 (a) Hyphae creeping, radiate
 (b) Hyphae ascending or erect
 x. Conidia ovoid to oblong
 y. Conidia filiform or vermicular
 (2) Saprophilous
 (a) Hyphae rigid; conidia ovoid to elongate
 x. Conidia ovoid
 y. Conidia elongate
 (b) Hyphae flexuous, pannose
 2. Conidia 1-3-ciliate at apex
 II. Conidia verticillate or capitate
 1. Hyphae dark
 a. Conidia acrogenous, forming a head
 (1) Hyphae simple
 (2) Hyphae branched at the apex
 b. Conidia pleurogenous, somewhat verticillate
 (1) Hyphae rostrate and naked at apex
 (2) Hyphae not rostrate at apex
 2. Hyphae hyaline or bright-colored, apex denticulate
 Neomichelia 18: 593 *N. murrayana* Fr.
- III. Conidia catenate as a rule
 1. Conidia arising from the interior of the hyphae
 Sporoschisma 4: 486 *S. murchisonii* Fr.
2. Conidia arising from the apex, sometimes solitary
 Dendryphium 4: 487 *D. cornuatum* Fr.

Dictyosporae

4: 496, 10: 665, 11: 632, 14: 1090, 16: 1075, 18: 612

Conidia dark, rarely hyaline, muriform, globose to oblong

Micronemeae

Hyphae very short or scarcely different from the conidia

- I. Conidia not in chains
 1. Conidia muticate
 a. Conidia irregularly muriform or sarciniform
 (1) Conidia with a conic point at each side
 Oncopodium 18: 616 *O. autoniae* Fr.
- (2) Conidia muticate
 (a) Conidia globose to oblong
 x. Conidia ovoid to oblong, loose
 Sporodesmium 4: 497 *S. album* Fr.
- y. Conidia globose to ovoid, aggregated
 Stigmella 4: 507 *S. dryinella* Fr.
- (b) Conidia sarciniform, often coalescent
 Coniothecium 4: 508 *C. crassum* Fr.
- b. Conidia as if composed of parallel chains of cells
 (1) Chains of conidia never separating
 Dictyosporium 4: 513 *D. sphaeroides* Fr.
- (2) Chains of conidia separating
 Spira 4: 514 *S. torulosa* Fr.
2. Conidia corniculate at apex
 Tetraploa 4: 516 *T. corniculata* Fr.
- II. Conidia in chains, often asperate or with isthmi
 Sirodesmium 4: 516 *S. ghanulorum* Fr.

Macronemeae

Hyphae distinctly different from the conidia

- I. Conidia of the same form
 1. Conidia not in chains or capitate
 a. Conidia bearing little conidia on their surface
 Xenosporium 18: 612 *X. mirabile* Fr.
- b. Conidia normal
 (1) Hyphae alike
 (a) Conidia cruciate-divided, verrucose
 Tetracoccosporis 18: 617
 (Tetracoccosporium) *T. f. parvum* Fr.
- (b) Conidia muriform, typically smooth
 x. Hyphae decumbent
 Stemphylium 4: 519 *S. botryosum* Fr.
- y. Hyphae erect or ascending
 (x) Conidia globose, pleurogenous
 m. Conidia around the apex of the hyphae
 Coccosporium 4: 542 *C. maculiforme* Fr.
- n. Conidia conglobate around the base
 Trichaeum 4: 542 *T. maculiforme* Fr.
- (y) Conidia ovoid to oblong, mostly acrogenous
 Macrosporium 4: 523 *M. commune* Fr.
- (incl. Mystrosporium 4: 530 *M. sphaeroides* Fr.)
- (2) Hyphae of two kinds, longer sterile, shorter fertile
 Septosporium 4: 543 *S. atrum* Fr.
- Dactylosporium 4: 545 *D. macrosporum* Fr.

2. Conidia capitate

3. Conidia catenate
 a. Hyphae velvety, erect, subsimple; conidia caudate
 ✓ *Alternaria* 4: 545 *A. Tomii* Rees
 b. Hyphae crustose, various; conidia 2-celled; conidia-like ganglia sarciniform
 ✓ *Fumago* 4: 547 *F. vagans* Rees
 II. Conidia of two forms, dark sarciniform and subhyaline falcate
 ✓ *Sarcinella* 4: 548 *S. Tripospora* Rees

Staurosporae

4: 552, 11: 639, 14: 1107, 16: 1181, 18: 625

Conidia forked or stellate, usually dark, septate or continuous

- I. Conidia of two forms, small fusoid hyaline, large lobate many-celled, brown
 ✓ *Desmidiospora* 10: 568 *D. myrmecophila* Rees

II. Conidia alike

1. Fertile hyphae present; conidia 3-4-radiate
 ✓ *Triposporium* 4: 554 *T. agavecola* Rees
 2. Fertile hyphae lacking
 a. Conidia on a cellular stroma, 2-4-digitate
 ✓ *Chiomyces* 4: 554 *C. stellatus* Rees
 b. Cellular stroma lacking
 (1) Conidia 3-several-radiate; xylogenous
 ✓ *Ceratosporium* 4: 552 *C. fuscescens* Rees
 ✓ *Hirudinaria* 4: 553 *H. nishii* Rees

- (2) Conidia 2-radiate; phyllogenous

Scolecosporae

Conidia long-filiform or vermicular

One genus

✓ *Cercospora* 4: 431, 14: 1099 *C. sp.*

Helicosporae

4: 557, 10: 680, 11: 638, 14: 1107, 16: 1081, 18: 624

Conidia cylindrical, spiral or convolute, typically septe, dark or hyaline

- I. Hyphae obsolete
 II. Hyphae present
 1. Conidia septe transversely
 ✓ *Helicospis* 10: 680
 ✓ *Helicosporium* 4: 557 *H. palmatum* Rees
 ✓ *Helicoma* 11: 638 *H. muscicola* Rees

Family 77. STILBACEAE

Sterile hyphae creeping, scanty; fertile hyphae collected into stalk-like or stroma-like fascicles bearing conidia at the top, more rarely along the side, pale, bright-colored or dark.

Hyalostilbae

Hyphae and conidia pale or bright-colored, not dark or black

Amerosporae

4: 561, 10: 681, 11: 640, 14: 1107, 16: 1082, 18: 630

Conidia globose, elliptic or oblong, 1-celled, hyaline or pale, or bright-colored

- I. Conical part distinctly capitate or at least terminal

1. Conidia not in chains
 a. Head of conidia not gaping or splitting above

(1) Head not spiny

- (a) Conidiophores of head normal

- x. Conidia covered with mucus
 (x) *Synnema* monocephalous
 m. Conidiophores dendroid-verticillate
 (m) Without distinct sterigmata

- (n) With obpiriform sterigmata

✓ *Dendrostilbella* 18: 635 *D. prasinula* V. H.

✓ *Pirobasidium* 18: 638 *P. horridum* (Rees) V. H.

✓ *Stilbum* 4: 564 *S. eumbarbaricum* Rees

- n. Conidiophores not dendroid-verticillate

- (y) *Synnema* polycephalous

- m. Capitula on extremely short branches

✓ *Polycephalum* 4: 575 *P. aurantiacum* K. H.

- n. Capitula on spreading subulate branches

✓ *Tilachlidium* 4: 576 *T. piceum* Rees

- o. Capitula on erect branches

- (x) *Corallodendrum* 4: 576 *C. leucocapitatum* Rees

- (x) *Synnema* monocephalous

- m. Conidiophores spirally twisted

✓ *Martindalia* 4: 578 *M. quironensis* S. P. Rees

- n. Conidiophores more or less straight

- (m) Conidia rhombic or biconic

✓ *Rhombostilbella* 18: 636 *R. rosea* Rees

- (n) Conidia globose to fusoid

✓ *Ciliciopodium* 4: 577 *C. sanguinatum* Rees

(incl. *Clavularia* 10: 686)

- (y) *Synnema* polycephalous

- m. Terrestrial, large, 1-2 cm.; conidia ovoid

✓ *Macrostilbum* 16: 1083 *M. radicum* Rees

- n. Small, not terrestrial; conidia elongate-ovate

✓ *Chondromyces* 4: 576 *C. coccinella* B. C.

- (b) Conidiophores conidium-like, septe; monocephalous

✓ *Attractiella* 4: 578 *A. brunnea* Rees

- (2) Head spiny with radiating spicules

- (a) Spicules conic, granulate

✓ *Actiniceps* 4: 579 *A. thurstonii* Rees

- (b) Spicules with many curved branches at middle

✓ *Heterocephalum* 18: 642 *H. aurantiacum* Rees

- b. Head of conidia persistent below, splitting above

✓ *Pilacre* 4: 579 *P. pilacea* Rees

2. Conidia in chains

- a. *Synnema* with conidia above; conidia without mucus

- (1) *Synnema* not pubescent

✓ *Coremium* 4: 581 *C. longum* Rees

(incl. *Pritzeliella* 18: 644)

- (2) *Synnema* pubescent

✓ *Lasioderma* 4: 584 *L. flavo-virescens* Rees

- b. *Synnema* with conidia below; conidia with mucus

✓ *Microspatha* 10: 687 *M. glauca* Rees

II. Conidial part cylindrical or long-clavate

1. Conidia more or less equally scattered

a. Biophilous; sterigmata denticulate branched

Cladosterigma 11: 640 *Pat. C. fusiforme*

b. Saprophilous; sterigmata none or simple

Isaria 4: 584 *S. farinosa (Pat.) Fr.*

2. Conidia in lateral heads or racemes

a. Conidia in racemes; synnema lobate

Peribotryum 4: 595 *H. parvum Fr.*

b. Conidia in heads

(1) Conidiophores with lateral nodes, usually escaping through the stomata

Helostromia 18: 630 *H. album Pat.*

(2) Conidiophores without nodes, usually entomophilous

Gibellula 11: 643 *G. pubescens Pat.*

Didymosporae

18: 645

Conidia 2-celled, hyaline, globose to oblong

I. Synnema cylindrical, fimbriate at apex; conidia oblong

Didymobotryopsis 18: 645 *Didymobotryopsis*

II. Synnema capitate; conidia fusoid

Didymostilbe 18: 645 *Didymostilbe*

Phragmosporae

4: 598, 10: 691, 14: 1109, 18: 646

Conidia 2-several-septate, hyaline, oblong to bacillar

I. Conidia solitary

1. Conidia bacillar, aristate above, separating at joints

Stilbomyces 14: 1109 *Stilbomyces*

2. Conidia not aristate or separating

a. Conidia oblong

Arthrosporium 4: 598 *Arthrosporium*

b. Conidia elongate-falcate

Atractium 4: 599 *Atractium*

II. Conidia catenate, cylindrical

Symphyosira 4: 600 *Symphyosira*

Helicosporae

18: 658

Conidia filiform, spirally twisted

I. Synnema erect, setose

Helicostilbe 18: 657 *Helicostilbe*

Phaeostilbae

Hyphae and conidia or one or the other dark

Amorosporae

4: 603, 10: 692, 11: 643, 14: 1109, 16: 1086, 18: 648

Conidia 1-celled, dark, globose to elongate

I. Conidia not in chains

1. Synnema setose

Saccardaea 11: 643 *Saccardaea*

2. Synnema naked

a. Conidia asperate, on minute basidia

Basidiella 10: 698 *B. sphaerocarpa Fr.**not stillborn for asperate phragmosporae**in fascicles*

b. Conidia smooth

(1) Synnema carnosae, racemose-branched

Stilbothamnium 14: 1110 *Stilbothamnium*

(2) Synnema fibrous or corneous, not racemose

(a) Basidia lageniform

Ceratocladium 18: 649 *Ceratocladium*

(b) Basidia lacking, at least not lageniform

x. Synnema stalked, fibrous

(x) Conidia dark, globose to elliptic

Sporocybe 4: 604 *Sporocybe*

(y) Conidia hyaline

m. Conidia ovoid to oblong

Graphium 4: 609 *Graphium*

n. Conidia elongate or falcate

Harpographium 4: 619 *Harpographium*

y. Synnema sessile, corneous

Glutinium 4: 620 *Glutinium*

II. Conidia in chains

1. Synnema setose

2. Synnema not setose

a. Stalk scopulate branched above

Trichurus 14: 1112 *Trichurus*

b. Stalk simple or nearly so

Stemmaria 10: 696 *Stemmaria*

(1) Capitule loose

(a) Base of synnema subequal; usually on stems

Stysanus 4: 620 *Stysanus*

(b) Base of synnema perithecioid; usually on leaves

Graphiothecium 4: 624 *Graphiothecium*

(2) Capitule compact

(a) Conidia globose

Harpocephalum 14: 1111 *Harpocephalum*

x. Conidia echinulate

y. Conidia smooth

(x) Conidia pleurogenous

Heydenia 4: 625 *Heydenia*

(y) Conidia acrogenous

Brlosia 10: 698 *Brlosia*

(b) Conidia ovoid to oblong

Antromycopsis 14: 1113 *Antromycopsis*

Didymosporae

4: 626, 10: 699, 18: 654

Conidia 1-septate, dark or hyaline, oblong to cylindrical

I. Conidia muticate

Didymobotryum 4: 626 *Didymobotryum*

II. Conidia 1-ciliate at apex

Hochmeliella 18: 654 *Hochmeliella*

Phragmosporae

4: 627, 10: 699, 11: 644, 14: 1113, 16: 1089, 18: 655

Conidia 2-several-septate, dark or hyaline, oblong to cylindrical

I. Conidia capitate

1. Synnema simple

a. Synnema black; conidia densely capitate

Arthrobotryum 4: 628 *Arthrobotryum*

b. Synnema fuscous or pale; conidia loosely capitate

Isariopsis 4: 630 *Isariopsis*

2. Synnema dendroid branched

Xylocladium 16: 1089 *Xylocladium*

- II. Conidia not capitate
1. Conidia catenulate
2. Conidia not catenulate

a. Stalk fibrous

- (1) Synnema simple or branched; conidia acro-pleurogenous
✓ **Podosporium** 4: 627 *P. siegismundii* Massee
(2) Synnema branched; conidia acrogenous
Negeriella 14: 1114 *N. chilensis* P. H. Ravenel

b. Stalk parenchyma-like

- (1) Conidia pleurogenous, on a disk
Riccoa 18: 656 *R. actinensis* C. W. Coker
(2) Conidia acrogenous
Podosporella 11: 644 *P. humilis* P. H. Ravenel

Dictyosporae

4: 632

Conidia muriform, dark or hyaline, oblong

I. Synnema stalked, capitate

Sclerographium 4: 632 *S. atternum* Berk.

Staurosporae

I. Conidia of 4-5-radiate cells, hyaline

✓ **Riessia** 4: 627 *R. reniformis* P. H. Ravenel

Family 78. TUBERCULARIACEAE

Hyphae compacted into a globose, discoid or verruciform body or sporodochium; sporodochia typically sessile, waxy or subgelatinous, white, bright-colored or dark to black.

Mucedinae

Hyphae and conidia white or bright-colored

Amerosporae

4: 635, 10: 700, 11: 645, 14: 1115, 16: 1090, 18: 658

Conidia hyaline or bright-colored, 1-celled, globose to fusoid

I. Sporodochia smooth or nearly so

1. Conidiophores normal

a. Conidia multicate

(1) Conidia not covered with mucus

(a) Conidia not acrogenous capitate

x. Sporodochium girt by a heterogeneous cup

✓ **Patellina** 4: 677 *P. italicorum* P. H. Ravenel

y. Sporodochium without a heterogeneous cup

(x) Conidia not catenate or scarcely so

m. Conidia escaping from interior of hyphae

(m) Conidiophores branched **Endoconidium** 10: 708 *E. trapeziformis* P. H. Ravenel(n) Conidiophores simple **Trichotheca** 10: 714 *T. alba* Berk.

n. Conidia arising on outside of hyphae

(m) Conidiophores lacking

r. Conidia large, pellucid

(r) Conidia globose ✓ **Sphaerosporium** 4: 664 *S. lignorum* P. H. Ravenel

(s) Conidia oval

Diaphanium 4: 672 *D. murinum* P. H. Ravenel

s. Conidia small, not pellucid

Pactilia 4: 672 *P. mycophila* P. H. Ravenel

(n) Conidiophores present

r. Conidia pleurogenous or acro-pleurogenous

(r) Conidia globose **Beniowskaia** 16: 1091 *B. granensis* P. H. Ravenel(s) Conidia ovoid to oblong **Tubercularia** 4: 638 *T. vulgaria* P. H. Ravenel(t) Conidia fusoid to cylindrical **Fusicolla** 4: 664 *F. betulae* P. H. Ravenel

s. Conidia acrogenous

(r) Conidiophores verrucose

Dacrymycella 4: 671 *D. foetida* P. H. Ravenel

(s) Conidiophores not verrucose

h. Uredinicole

i. Not uredinicole

(h) Sporodochia globose

+ Conidia globose; conidiophores short

- Conidia ovoid; conidiophores branched

Granularia 4: 649 *G. auricularis* P. H. Ravenel

(i) Sporodochia pulvinate

+ Conidia acicular

- Conidia terete-oblong

(j) Sporodochia disk-shaped, or cupulate

+ Sporodochia disk-shaped

- Sporodochia cupulate

Hypostereum 11: 649 *H. penicillatum* P. H. Ravenel

(k) Sporodochia verruciform or effuse

+ Conidiophores simple

(-) Conidiophores not united at base

- Conidiophores united at base

Sphaecelia 4: 666 *S. sphaerulata* P. H. Ravenel

- Conidiophores dendroid branched

✓ **Dendrodichium** 4: 650 *D. aurantiacum* P. H. Ravenel

(y) Conidia in chains

m. Conidia covered with mucus

Collodochium 18: 661 *C. atropurpureum* P. H. Ravenel

n. Conidia without mucus

(m) Conidia globose

r. Conidia hyaline

s. Conidia blue

(n) Conidia elliptic to oblong

r. Sporodochium disk-shaped, orange-red

Necator 16: 1094 *N. decoloratus* P. H. Ravenel

(s) Sporodochium subglobose, whitish

Patouillardia 4: 677 *P. hibernica* P. H. Ravenel

- (o) Conidia cylindric
 r. Sporodochium dilated above, stalked *Spag.*
Bizzozzeriella 10: 716 *B. phyllaeppae Spag.*
- s. Sporodochia globose to verruciform
 (f) Sporodochia gelatinous, sessile *Bon.*
 ✓ **Cylindrocolla** 4: 673 *C. verticillata P. Br.*
- (s) Sporodochia not gelatinous, short-stalked
Sphaeridium 4: 675 *S. reticulatum Th.*
- (b) Conidia acrogenous capitate; sporodochia turbinate *Spag.*
Cephalodochium 4: 678 *C. album Bon.*
- (2) Conidia covered with mucus
 (a) Sporodochium globose, hardened *Hawk.*
Thecospora 4: 679 *T. bifida Hawk.*
- (b) Sporodochia verruciform or discoid, gelatinous or waxy
 x. Sporodochia verruciform or subeffuse *Spag.*
Illosporium 4: 656 *I. roseum Spag.*
 (incl. **Myxonema** 10: 714)
Epidochiopsis 11: 648 *E. m. arundinis Th.*
- y. Sporodochia discoid *Spag.*
 b. Conidia ciliate *Spag.*
 (1) Conidia 1-ciliate at base only
 (2) Conidia ciliate at both ends
 (a) Conidia 1-ciliate at each end
 (b) Conidia 7-8-ciliate at each end
2. Conidiophores with internal conidia-bearing areoles *Spag.*
Scoriomyces 4: 680 *S. oragum Th.*
- II. Sporodochia setulose, ciliate or uniformly woolly
 1. Sporodochia woolly or setulose
 a. Sporodochia setulose; conidia catenate *Spag.*
 ✓ **Periola** 4: 681 *P. thomensea Th.*
- b. Sporodochia woolly or velvety; conidia capitate *Spag.*
 (1) Conidia globose
Dacryodochium 14: 1122 *D. fuscum Th.*
Lachnodochium 14: 1122 *L. candidum Th.*
2. Sporodochia ciliate at the margin
 a. Sporophores none; conidia coeuvate
Volutellaria 4: 682 *V. leucostoma Th.*
- b. Sporophores distinct
 (1) Conidia in chains
 (2) Conidia not in chains
 (a) Conidiophores 6-ciliate above, united below *Spag.*
Guelichia 10: 720 *G. parvula Spag.*
- (b) Conidiophores not ciliate or united
 ✓ **Volutella** 4: 682 *V. ciliata (P. Br.) Th.*
- Didymosporae**
 4: 690, 10: 721, 18: 668
 Conidia 1-septate, hyaline or bright-colored
- I. Conidia in chains
 1. Sporodochia setulose
Endodesmia 4: 691 *E. glauca Th.*
2. Sporodochia smooth
Gymnodochium 18: 668 *G. fimbriatum Th.*

- II. Conidia not in chains
 1. Sporodochia setulose
 2. Sporodochia smooth
 a. Conidia verrucose
Leptotrichum 4: 690 *L. yunnanense Cda.*
- b. Conidia smooth
 ✓ **Cosmariospora** 4: 690 *C. hyoglossaria Bon.*
Patouillardella 10: 721 *P. parvula Spag.*
- Phragmosporae**
 4: 691, 10: 721, 11: 649, 14: 1123, 16: 1097, 18: 669
 Conidia 2-several-septate, hyaline or bright-colored, fusoid to falcate (in Fusarium sometimes short and simple).
- I. Conidia somewhat catenate, cylindric
Discocolla 11: 653 *D. bicolor Th.*
- II. Conidia rarely catenate
 1. Conidia cruciately 4-celled; sporodochium gelatinous *Spag.*
Sarcinodochium 18: 677 *S. heterosporum Th.*
2. Conidia not cruciate
 a. Conidiophores short, simple
 (1) Conidia very large, terete-oblong
 ✓ **Bactridium** 4: 691 *B. parvum Th.*
- (2) Conidia doliform
Pithomyces 4: 693 *P. flavus Th.*
- b. Conidiophores more or less branched
 (1) Conidiophores dichotomous; conidia key-like
Helicium 4: 693 *H. hyoglossaria Th.*
- (2) Conidiophores usually verticillately branched; conidia usually falcate,
 sometimes oblong
 (a) Sporodochium gelatinous
Pionnotes 4: 725 *P. capitata Th.*
- (b) Sporodochium waxy or byssoid
Fusarium 4: 694 *F. roseum Th.*
 (incl. **Microcera** 4: 727)
- Dictyosporae**
 18: 676
 Conidia muriform, hyaline, subglobose
Sporocystis 18: 676 *S. candida Th.*
- I. Sporodochia globose
Staurosporae
 4: 728, 16: 1104, 18: 677
 Conidia forked or cruciate, hyaline or bright-colored
- I. Conidiophores simple; conidia horseshoe-like
Lituria 4: 728 *L. signata Th.*
- II. Conidiophores branched
 1. Conidia with short irregular branches or lobes
Aegeritopsis 18: 677 *A. multispinosa Th.*
2. Conidia forked or cruciate
 a. Conidia 2-forked, septate
Dicranidium 4: 728 *D. falcata Th.*
- b. Conidia 3-forked or subcruciate, continuous
 ✓ **Triglyphium** 4: 728 *T. album Th.*
- Helicosporae**
 4: 729, 10: 732, 11: 653, 18: 678
 Conidia spirally convolute

- I. Conidiophores lacking
 II. Conidiophores present
 1. Conidia continuous
 2. Conidia septate

Dematiæ

Hyphae olive, to brown or black; conidia concolorous, rarely hyaline

Amerosporae

4:736, 10:732, 11:654, 14:1129, 16:1104, 18:678

Conidia 1-celled, globose to elongate, sometimes unequal

I. Conidia not in chains

1. Sporodochia not setose

a. Conidiophores lacking

- (1) Lichenicole
 (2) Not lichenicole

(a) Sporodochia gelatinous; conidia globose, vesiculose

Spilium 18:678

(b) Sporodochia not gelatinous

x. Sporodochia hemispheric, with a stratum of conidia

Spermodermia 4:742

Sclerodiscus 10:735

y. Sporodochia disk-like, applanate

b. Conidiophores present

(1) Sporodochia thick, tremelloid

(2) Sporodochia not tremelloid

(a) Conidiophores with a slender apical appendage; conidia globose

Bonplandiella 10:732

(b) Conidiophores not appendaged

x. Conidia globose

(x) Sporodochia cellular, uniform

(y) Sporodochia of three hyphal layers

Triplicaria 10:734

y. Conidia ovoid to bacillar

(x) Conidiophores bacillar; sporodochia subdiscoid

Hymenopsis 4:744

(y) Conidiophores branched

m. No brown radiate hyphae at base

Strumella 4:742

n. Brown radiate hyphae at base

Astrodochium 14:1117

2. Sporodochia ciliate or with exerted hyphae

a. Sporodochia with loose exerted conidiophores, verruciform

Trichostroma 4:752

b. Sporodochia margined with hairs or setae

(1) Setae dark

(2) Setae or hairs white

Chaetostroma 4:749

Myrothecium 4:750

II. Conidia in chains

1. Conidiophores lacking

Exosporina 18:684

2. Conidiophores present

a. Sporodochium tremelloid

b. Sporodochium not tremelloid

(1) Sporodochium ciliate

(2) Sporodochium not ciliate

(a) Sporodochia globose

(b) Sporodochia stellate

Hormodochia 4:749

Chaetodochia 4:750

Sphaeromyces 4:753

Actinomma 4:753

Dilymosporae

4:754, 10:737, 16:1105, 18:684

Conidia 1-septate, typically dark, elliptic to fusoid

Sclerococcum 4:754

I. Sporodochia lichenicole, globose

II. Sporodochia not lichenicole

1. Sporodochia foliicole

a. Sporodochia annuliform asteroid

b. Sporodochia subglobose

2. Sporodochia lignicole

Hypaster 18:685

Pucciniopsis 10:737

Epilinium 4:754

Phragmosporae

4:755, 10:738, 11:656, 14:1431, 16:1106, 18:685

Conidia 2-several-septate, usually colored, oblong to cylindrical

I. Conidia in chains; sporodochium discoid

Trimmatostroma 4:757

II. Conidia not in chains

1. Conidia 1-ciliate at each end

2. Conidia muticate

a. Sporodochium hairy

b. Sporodochium smooth

(1) Conidia laterally proliferate and joined in bundles

Amallospora 14:1131

(2) Conidia not proliferate and united

(a) Sporodochia convex-pulvinate

Exosporium 4:755

(b) Sporodochia vertically cylindrical or clavate

Listeromyces 18:685

Dictyosporae

4:758, 10:739, 11:656, 14:1131, 16:1107, 18:689

Conidia muriform, usually dark

Bonordeniella 18:689

I. Conidia in chains

II. Conidia not in chains

1. Sporodochia setulose

2. Sporodochia smooth

Chaetostromella 11:656

Spegazzinia 4:758

Scolecosporae

18:689

Conidia filiform, hyaline

Schizotrichum 18:688

I. Sporodochia globose, setulose

STERILE MYCELIA

Staurosporae

4: 753

Conidia angulose-stellate, hyaline

I. Sporodochia scutellate, pilose

Stephanoma 4: 753

Helicosporae

11: 654

Conidia spirally twisted, smoky

I. Sporodochia pulvinate

Troposporella 11: 654

Sterile Mycelia

14: 1138, 16: 1108, 18: 690

Conidia permanently absent so far as known

Lepitaria, Pulveraria, etc. Z. 239

I. Parasitic on algae

II. Not parasitic on algae

1. Tubercle-like

a. Tubercles connected with fibrils

Rhizoctonia 14: 1175
(Coccobotrys 16: 1108)

b. Tubercles without fibrils

(1) Cortex discrete

(2) Cortex not discrete

Acinula 14: 1174

Sclerotium 14: 1139

2. Maculiform; black stromata in leaves and stems

Ectostroma 14: 1177

3. Root-like

a. Filaments rigid, broad, terete or depressed, dark, white, within

Rhizomorpha 14: 1180

b. Filaments rigid, capilliform, dark, -loosely adhering

Capillaria 14: 1184

4. Clavariform; filaments terete, vertical, simple or branched

Anthina 14: 1184

5. Cobwebby or byssoid

a. Cespitose interwoven, primary hyphae joined in bundles

Ozonium 14: 1187

b. Cespitose interwoven, hyphae not fasciculate, black

Rhacodium 14: 1189

c. Cobwebby, soft, fleeting, white or pale

Hypha 14: 1192

d. Adpressed, creeping, dendritic, white to brownish, not forming a continuous membrane

Himantia 14: 1194

6. Membrane-like; densely interwoven, forming a continuous suberose or coriaceous membrane

Xylostroma 14: 1197

7. Deformed, discolored corky cells of plants

Phloeconis 14: 1197

Key to Spore Sections

- Amerosporae: spores one-celled, not stellate or spiral
 Allantosporae: spores sausage-shaped, mostly clear
 Hyalosporae: spores hyaline or clear, globose to oblong
 Phaeosporae: spores dark, yellow, brown or black, globose to oblong
 Leucosporae: spores clear, rarely faintly colored
 Rhodosporae: spores rose-colored
 Ochrosporae: spores yellow to yellow-brown
 Melanosporae: spores dark purple to black
 Didymosporae: spores 1-septate or 2-celled
 Hyalodidymae: spores hyaline, 2-celled
 Phaeodidymae: spores dark, 2-celled
 Phragmosporae: spores few-many-transeptate, 3-many-celled
 Hyalophragmiae: spores hyaline, 3-many-celled
 Phaeophragmiae: spores dark, 3-many-celled
 Dictyosporae: spores septate crosswise and lengthwise, i. e., muriform
 Hyalodictyae: spores hyaline, muriform
 Phaeodictyae: spores dark, muriform
 Scolecosporae: spores needle-shaped to filiform, continuous or septate
 Hyaloscoleciae: spores hyaline, filiform
 Phaeoscoleciae: spores dark, filiform
 Staurosporae: spores stellate or radiate, hyaline or dark, continuous or septate
 Helicosporae: spores spirally twisted, hyaline or dark, continuous or septate

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Glossary of Latin and English Terms

A

| | |
|--|--------------------------------------|
| a, without (in comp.) | adhibitus, used, applied |
| ab, from | adhuc, as yet, hitherto |
| abbreviatus, shortened | adinterim, meanwhile |
| abeuns, deviating | admo, to look, wonder at |
| abhorreo, abhor, differ from | admodum, at least, fully, very |
| abiegnus, fir | adnatus, adnate, touching broadly |
| abietinus, fir | adparenter, apparently |
| abnormis, abnormal | adproximatus, drawn near |
| abortivus, abortive | adscendens, ascending |
| abortus, aborted | adsociatus, clustered |
| abrupte, abruptly | adspectus, us, m., sight, appearance |
| abundans, abundant | adultus, fully grown |
| abunde, abundantly | adustus, burned, blackened |
| ac, and | acidiformis, acidium-shaped |
| acaudatus, without a tail | aecium, a cluster cup |
| accedo, to approach | acgre, poorly, with difficulty |
| accessory, additional | aemulans, rivalling |
| accipio, to accept | aemulus, similar |
| acerinus, maple | aeneus, brazen, coppery |
| acervulatus, heaped, massed | aequalis, equal |
| acervulus, i, m., a little heap | aequans, equalling |
| acervus, i, m., a heap | aequidistans, equally distant |
| achromaticus, without color | aerius, aerial |
| achrous, colorless | aerobius, growing in the air |
| acicularis, acicular, needle-shaped | aerophilus, aerial |
| acidulus, slightly acid | aeruginosus, copper-colored |
| acies, ei, f., edge | aeternus, eternal |
| acotyledon, nis, m., cryptogam | affectus, affected |
| acquire, to acquire | affixus, attached |
| acrogenus, acrogenous, borne at tip | affatus, swollen |
| acropleurogenus, borne at the tip and on the sides | agamicus, asexual |
| acris, sharp | agamus, asexual |
| aculeatus, spiny, pointed | ager, ri, m., field |
| aculeolatus, spiny, pointed | agglomeratus, heaped together |
| acuminatus, long-pointed | aggregatus, grouped together |
| acus, us, f., needle | albicans, whitening |
| acutatus, acute | albidus, white |
| acutiusculus, somewhat acute | albofarctus, white-stuffed |
| acutus, acute | albolutescens, whitish yellow |
| ad, to | albus, white |
| adesse, to be present | alcoholicus, alcoholic |
| | alienus, foreign, strange |
| | aliquantisper, for a while |

- aliquidulus, somewhat, a little
 alius, another, other
 alius,—alius, some—others
 allantoid, sausage-shaped, short and curved
 allantoides, a, um, allantoid, sausage-shaped
 alliaceus, a, um, of an onion
 alpis, mountain
 alte, deeply
 alternus, a, um, alternate
 altitudo, f., height
 altus, a, um, high
 alutaceus, grayish yellow
 alveolatus, a, um, with hollows
 amaricans, making bitter, irritating
 ambiens, surrounding
 ambitus, m., periphery
 amentum, n., catkin
 amerosporus, a, um, with one-celled spores
 amethysteus, a, um, amethyst-colored
 amissus, a, um, lost, dismissed
 ammoniacalis, e, like ammonia
 amnis, is, m., a brook
 amoebiformis, e, amoeba-form
 amoeboid, amoeba-like
 amoeboides, a, um, amoeba-like
 amoene, beautifully
 amoenus, a, um, beautiful, pleasant
 amoveo, to withdraw
 amphibius, a, um, amphibial
 amphigenus, a, um, borne on both sides
 amplectens, clasping
 amplecto, to wind or clasp
 amplus, a, um, broad, ample
 ampulliformis, ampulliform, cushion-like
 amyelicus, without mycelium
 amygdalinus, almond-like, pink
 analogus, similar
 anastomosans, anastomosing, running together
 anceps, cipitis, two-headed, double
 androgynus, with male and female
 angularis, angular
 angulosus, angulose, angular
 angustatus, narrowed
 angustus, narrow
 animalcula, ae, f., little animal
 annularis, ring-like
 annulatum, in a ring
 annulatus, annulate, with a ring, ringed
 annuliform, ring-like
 annulus, i, m., a ring
 annuosus, aged, old
 anomaliter, abnormally
 anserinus, of or pertaining to geese
 ante, before
 antecedens, preceding
 antheridiiformis, antheridium-like
 antheridium, ii, m., antherid
 antherozoidium, ii, n., antherozoid
 antice, in front
 aparaphysatus, without paraphyses
 apertus, open
 aperio, to open, uncover
 apex, icis, m., tip
 apiculatus, apiculate, with a point
 apiculiformis, like a little point
 apophysatus, with a supporting cell
 apothecium, ii, n., cup or disk containing asci
 appendicula, ae, f., little appendage
 appendiculatus, appendiculate, appendaged
 appendix, icis, f., appendage
 applanatus, applanate, flattened
 approximatus, close, near
 apricus, wild
 apud, at
 apus, odis, without a stalk
 aqueductus, us, m., aqueduct
 aquaticus, aquatic
 aquosus, watery
 arachnoideus, cobwebby
 araneosus, cobwebby
 arbor, is, f., tree
 arbusculiformis, shrub-like
 arcte, closely
 arcticus, arctic
 arcuatim, bow-like, curved
 arcuatus, arcuate, bow-like
 area, ae, f., space
 areola, ae, f., little space
 areolatus, areolate, marked by areas or spaces
 arescens, drying
 areresco, to become dry

- argenteus, silvery
 argentinus, silvery
 argillaceus, clay-color
 aridus, dry
 arista, ae, f., awn
 aristatus, aristate, awned
 arrectus, upright, stiff
 arrhizus, without roots
 articulatus, jointed
 articulus, i, m., joint
 asciger, ascus-bearing
 ascogenic, producing asci
 ascoma, atis, n., spore-fruit, ascus-bearing body
 ascophorus, ascus-bearing
 ascus, i, m., sac
 asiaticus, Asiatic
 asper, rough
 asperatus, asperate, roughened
 aspergo, to scatter, sprinkle
 asperulus, slightly roughened
 asser, eris, m., branch, beam, post
 assurgens, ascending
 asterigmaticus, without stalks
 asterineus, star-like, radiate
 asteroid, star-like, radiate
 asteroma-like, with radiate subicel
 astomus, mouthless
 astromatoideus, without a stroma
 asymmetricus, irregular
 ater, dark, black
 atomatus, with small particles
 atomisticus, tiny
 atque, also
 atrans, blackening
 atratus, dark
 atro-fuscus, dark
 atro-inquinans, blackening
 atro-nitidus, black and shining
 atropiceus, black as pitch
 atropurpureus, dark purple
 attenuatus, tapering
 attingens, touching
 attolens, raising
 atypicus, abnormal
 auctio, onis, f., growth
 auctor, is, comm., author
 auctus, enlarged
 audeo, to dare
 augmentum, i, n., increase, growth
 aurantiaceus, orange, golden
 aurantinus, orange
 auratus, golden
 aureus, golden
 auriformis, ear-shaped
 australis, southern
 aut, or
 autem, moreover
 authenticus, authentic
 autumnus, autumn
 avulsus, torn off, separated
 axicola, growing on the axis
 axiformis, axis-like
 axilaris, axillary
 azonus, without zones
 azygospore, a zygosporium formed without conjugation

B

- bacca, ae, f., berry
 baccatus, berry-like
 bacillaris, bacillar, rod-shaped
 bacteriformis, bacterium-like
 bactrosporus, with rod-shaped spores
 baculum, i, n., rod
 badius, brown
 basidiosporus, with spores borne on stalks
 basidium, ii, n., rod, basidium
 basilaris, basal
 basis, is, f., base
 bene, plainly, well
 benevole, kindly
 betulicola, growing on birch
 betulinus, birchen
 bi-, two, twice
 bibulus, absorbing
 biclavuligerus, bearing two club-shaped branches
 biconic, conic at each end
 biconvexus, biconvex
 bicornus, with two horns, two-branched
 bicorticus, with two barks
 bidentatus, two-toothed
 bifidus, split into two parts
 bififormis, or -us, of two forms
 bifrons, on both sides of the leaf
 bifurcatus, two-forked

biguttulatus, with two globules or vacuoles
 bilabellulatus, two-lipped
 bilabiatus, two-lipped
 bilobus, two-lobed
 bilocularis, two-celled
 binatim, by twos
 binucleolatus, with two oil-drops
 binus, two-fold
 biogenus, biogenous, growing on organisms
 biophilus, biophilous, growing on organisms
 bipunctatus, with two vacuoles
 bis, twice
 biscocitiformis, biscuit-shaped
 biserialis, in two rows
 biserialis, in two rows
 bisporus, two-spored
 bitunicatus, with two walls
 biuncinatus, two-hooked
 bombardus, cannon-like
 borealis, northern
 botryosus, botryose, clustered like grapes
 botuliformis, botuliform, sausage-shaped
 brachiatus, with arms
 bractea, *ae, f.*, bract
 brevicollis, short-necked
 brevis, short
 breviter, shortly
 brevisculus, somewhat short
 brunneolus, brownish
 brunneus, brown
 bulla, *ae, f.*, bubble
 bullula, *ae, f.*, a little swelling
 byssinus, cottony
 byssisedus, byssiside, seated on cotton
 byssoideus, byssoid, cottony
 byssus, *i, f.*, cotton

C

caerulescens, turning blue
 caesius, bluish-grey
 caespes, *itis, m.*, tuft
 caespitosus, caespitose, in tufts
 caesus, fallen
 calamus, *i, m.*, stem

calcareus, of lime, calcareous
 calcariferus, bearing lime
 calcifer, bearing lime
 caudarium, *ii, n.*, hot-house
 callosus, roughened
 calvescens, becoming bare
 calvitium, *ii, n.*, bald spot
 calvus, bare, bald, not pubescent
 calx, calcis, *f.*, lime
 calyciformis, cup-shaped
 calycicola, living on the calyx
 calycularis, cup-shaped
 calyptra, *ae, f.*, cap
 calyx, *ycis, m.*, calyx, cup
 campanulatus, bell-shaped
 campaniformis, bell-shaped
 campylotropus, curved
 canaliculatus, canalicate, channeled
 candicans, growing white
 cannabinus, of hemp
 canus, hoary
 capillaris, hair-like
 capillatura, *ae, f.*, mass of hair
 capilliform, hair-like
 capillitium, *ii, n.*, mass of threads
 capillus, *i, m.*, hair
 capitatus, capitate, in heads
 capitulatus, borne in little heads
 capitulum, *i, n.*, a little head
 capreolus, *i, m.*, goat
 caprinus, of or pertaining to goats
 capsula, *ae, f.*, capsule
 caput, *itis, n.*, head
 carbo, *onis, m.*, carbon, charcoal
 carbonaceus, like coal
 carbonicola, on burned-over ground
 or on charcoal
 carbonous, like coal or carbon
 carens, lacking
 caries, *ei, f.*, decay
 carinatus, keeled
 cariosus, decaying
 carneus, flesh-colored
 carnosus, carnose, fleshy
 caro, *carnis, f.*, flesh
 carpogenus, living on fruit
 carpogonium, *ii, n.*, carpogone
 cartilagineus, cartilaginous, tough but pliable
 caryopsis, *idis, f.*, grain

castaneus, chestnut brown
 catenate, in chains
 catenifer, chain-bearing
 catenigerus, bearing chains
 catenula, *ae, f.*, chain
 catenulatus, catenulate, in chains
 catenuliformis, chain-like
 catenulus, *m., -a, f.*, a small chain
 caterva, *ae, f.*, heap, crowd
 catervatim, in heaps, in groups
 cauda, *ae, f.*, tail
 caudatus, caudate, tailed
 caudex, *icis, m.*, stalk
 caudicula, *ae, f.*, a little stalk
 caulicola, growing on stems
 caulis, *is, m.*, stem
 caulogenus, on stems
 caverna, *ae, f.*, a cavern, hollow
 cavernosus, with hollows
 cavernula, *ae, f.*, a little cavity
 cavitas, *atis, f.*, cavity
 cavitatus, hollow
 cavus, *i, m.*, hollow
 celans, hiding
 cella, *ae, f.*, a cell
 celluliformis, cell-shaped
 celluloseus, cellular
 censeo, to think, estimate
 centrifugus, centrifugal
 centrum, *i, n.*, the centre
 cephalodium *ii, n.*, a globose to club-shaped projection on a lichen thallus
 ceraceus, waxy
 cerebriformis, brain-like
 cereus, waxy
 cerno, to perceive, separate
 cernuus, nodding, inclined
 cerumen, *inis, n.*, wax
 cervinus, tawny
 cespitose, clustered, crowded
 ceterum, remaining
 chalybeus, of steel
 character, *eris, m.*, character, style
 charta, *ae, f.*, paper
 chartaceus, papery
 chlamydosporicus, with chlamydo-spores
 chlorinus, greenish
 chlorophyllous, green, with chlorophyll

chorda, *ae, f.*, twine, a cord
 cibaria, *ae, f.*, food
 cicatrix, *icis, f.*, a scar
 ciliatus, slightly ciliate
 ciliatus, ciliate, with long hairs on the margin
 ciliolatus, ciliolate, with cilia
 cincinnatus, curled
 cinctus, surrounded
 cinerascens, becoming ashen
 cinereus, ashen
 cingens, surrounding
 cingulatus, surrounded
 cingulus, *i, m.*, a little belt
 cinnabarinus, orange red
 cinnamomeus, cinnamon-colored
 circa, near
 circinatus, circinate, coiled
 circino, to circle
 circiter, about
 circuitus, *us, m.*, a circuit
 circulus, *i, m.*, a circle
 circumambiens, encircling
 circumdatus, surrounded
 circumscissile, splitting circularly
 circumscriptus, circumscribed
 circumtextus, surrounded
 circumvallatus, surrounded
 cirrhatus, curled
 cirrhosus, curly
 citatus, cited
 cito, to name, mention
 cito, soon, rather
 citriformis, citriform, lemon-shaped
 citrinus, lemon yellow
 cladodium, *ii, n.*, a leaf, branch
 cladogenus, borne on branches
 clathratus, clathrate, latticed
 clausus, closed
 clava, *ae, f.*, a club
 clavaria-like, club-shaped, or coral-like
 clavatus, club-shaped
 claviformis, club-shaped
 clavis, *is, f.*, a key
 clavula, *ae, f.*, a little club
 clavulatus, club-shaped
 clypeatus, shield-like
 clypeus, *i, m.*, a shield

coacervatus, coacervate, heaped together
coadunatio, onis, f., a summing up
coadunatus, united, collected
coalescens, coalesced, running together
coalitus, joined, running together
coarctatus, crowded
coccineus, bright red
coccus, i, m., round cell, berry
cochleariformis, spoon-shaped
cochleatus, ear-like
coctus, cooked
coenobium, ii, n., a colony
coerulescens, turning blue
coffeatus, coffee-like
coffeicolor, coffee-colored
coffeiformis, coffee-shaped
cognatus, related
cogo, to act, collect
cohabitans, living together
cohaerens, cohering
collabasco, to fall in
collabens, collapsing, crumbling up
collabent, collapsing, falling in
collapsus, collapsed
collariatus, collared, attached to a collar
collectivus, collected
colliculosus, with tiny elevations
collum, i, n., a neck
colonia, ae, f., a colony
color, is, m., color
coloratio, onis, f., coloration, color
coloratus, colored
coloreus, colored
columella, ae, f., a small pillar, columella
columnaris, columnar
comatus, shaggy
comestibilis, eatable
commisura, ae, f., commissure, path, cleft
commixtus, commingled
communico, to share, communicate
communis, common
comosus, hairy
compactus, dense
compaginatus, united
complectens, comprising, clasping

complecto(r), to clasp
complexus, complex
compositus, composed, compound
compressus, compressed
concatenatus, in chains
concauus, concave
concentricus, concentric
conceptaculum, i, n., conceptacle
conchiformis, conchiform, shell-shaped
concolor, concolorous, of like color
concrecens, growing together
concretus, united
condensus, condensed
conditio, onis, f., condition
confero, to collect
confertus, crowded
confirmatio, onis, f., confirmation
confiatus, swollen
confluens, running together
confluo, to merge
conformis, all alike, similar
confundo, to mingle, confuse
congestus, crowded
conglobatus, conglobate, heaped together
conglomeratus, heaped
conglutinatus, conglutinate, glued together
congregatus, aggregated
congruo, to agree
conicus, conical
conidium, ii, n., an asexual spore
conidial, producing or pertaining to conidia
conidicus, conidial
conidiferus, conidia-bearing
conidiophorum, i, n., a hypha bearing conidia, a conidiophore
conjugatio, onis, f., conjugation
connatus, connate, joined
connexus, connected
connivens, connivent, approaching
conoideus, conoid, cone-shaped
consortium, ii, n., company
conspersus, sprinkled
conspersus, scattered
conspicuos, conspicuous
conspurcatus, polluted
constipatio, onis, f., a crowding

constituens, constituting
conuetudo, inis, f., a habit
consumptus, destroyed
contemno, to condemn, disparage
contextum, i, n., texture, context
contiguus, close
continens, containing
continuus, continuous, one-celled
contortus, twisted
contra, against
contractus, narrowed
contusus, bruised
conus, i, m., a cone
convergens, coming together
convolutus, convolute, coiled
convolutio, onis, f., a fold
copiosus, abundant
coprophilus, growing on dung
copulans, copulating
coralloid, coral-like
coralloideus, coralloid, like much-branched coral
coriaceus, leathery
corneus, corneous, horn-like
corniculatus, corniculate, horned
corniformis, horn-shaped
cornutus, horned
coronatus, crowned
corpusculum, i, n., a little body
corrugatus, corrugate, ridged
corruptus, corrupted, spoiled
cortex, icis, m., the bark
corticalis, cortical, of bark
corticatus, corticate, with a bark or epiderm
corticola, corticole, growing on bark
cortina, ae, f., veil
cortinate, with a curtain-like veil
corvinus, pertaining to the raven, black
costa, ae, f., ridge
costatus, costate, ridged
crassities, ei, f., thickness
crassitudo, inis, f., thickness, width
crassiusculus, somewhat broad
crassus, broad
crateriformis, crateriform, crater-shaped
creber, crowded
cremicolor, cream-colored

cribrosus, sieve-like
crinitus, hairy, crested
crispulus, somewhat crisp
crispus, crisp
crusta, ae, f., crust
crustatus, crested
crocatius, yellow
croceus, yellow
cruciatiu, cruciately, cross-like
cruentatus, bloody
crusta, ae, f., crust
crustaceus, crust-like
crustiformis, crust-shaped
crustose, forming a crust, more or less interrupted
crustula, ae, f., a little crust
cubile, is, n., a bed
cuuboideus, cuboid, cubical
cuucullatus, hooded
cucumeriformis, cucumber-shaped
culmicola, growing on grass-stems
culmus, i, m., culm, a stalk, stem
cultellus, i, m., a small knife
culter, tri, m., a knife
cultriformis, knife-like
cultus, cultivated
cum, with
cumulatus, heaped up
cuneatus, wedge-shaped
cuneiformis, wedge-shaped
cupniculus, i, m., a rabbit
cupreus, coppery
cuprinus, coppery
cupula, ae, f., a little cup
cupularis, cupulatus, cupuliformis, cup-shaped
curtus, short
curvatus, curved
cuspidatus, cuspidate, with a tooth
cuticula, ae, f., cuticle
cuticularized, with firm cover or cuticle
cutis, is, f., the skin
cyaneus, blue
cyathiformis, cup-like
cyclus, i, m., a cycle
cylandraceus, cylindrical, cylindrical
cymbiformis, boat-shaped
cyphella, ae, f., an opening or hollow

in a thallus, more or less cup-shaped
 cystidium, *ii*, *n.*, cyst
 cystophore, the stalk which bears a cell or cyst

D

daedaleus, labyrinthine
 dealbatus, whitened
 debilis, weak
 deciduus, falling
 decies, ten times
 decorticated, without bark
 decumbens, prostrate
 decurrens, decurrent, running down the stem
 defectus, lacking
 deficiens, lacking
 deficio, to lack
 definitus, definite
 deflexus, deflexed
 deformus, deformed
 degenero, to degenerate
 dehiscens, dehiscent, splitting
 dein, then, at length
 dejectus, fallen
 dejiciens, throwing down
 delicatulus, delicate
 delineatus, figured
 deliquesces, deliquescing, liquefying
 delitescens, hiding
 delitescio, to conceal, lurk
 deltoideus, delta-like, triangular
 dematium-like, black and cobwebby
 dematius, black and cottony
 demonstro, to show
 demum, at length
 dendritice, dendritically, tree-like
 dendriticus, tree-like
 dendroideus, dendroid, tree-like
 denigratus, blackened
 denique, at length
 densus, close, dense
 dentatus, toothed
 denticulatus, denticulate, with little teeth
 denudans, denuding
 denudatus, denuded
 deorsum, downward
 dependens, hanging
 deplanatus, flattened

depressus, depressed
 derumpens, breaking
 descendens, descending
 desciscens, leaving, deserting
 describo, to describe
 descriptus, described
 desicco, to dry up
 desinens, ending, closing
 desum, to fail, be absent
 destitutus, lacking
 destruens, destroying
 detergebilis, removable, breakable
 deustus, burnt
 diametralis, of the diameter
 diametrum, *i*, *n.*, diameter
 diaphanus, diaphanous, transparent
 diatrype-like, with a stroma different from the tissue of the matrix
 dichotomus, dichotomous, two-forked
 declinus, with separate sexes
 dictyosporus, spores having cross and longitudinal walls
 didymosporus, with two-celled spores
 didymus, two-fold or two-celled
 differo, to differ
 difficilis, difficult
 diffuens, diffuent, dissolving
 diffractus, broken
 difformis, of two forms
 digestus, broken up
 digitiformis, finger-shaped
 digitaliformis, digitate, finger-like
 digitatus, digitate, having fingers
 dignosco, to differ
 dignotus, to distinguish
 dilabens, breaking apart
 dilatatus, spread out
 dilute, dilutely
 dilutus, dilute
 dimidiatus, dimidiate, two-lobed, halved
 dimidius, half
 dimorphus, of two forms
 dioecious, sex organs on separate plants
 directio, *onis*, *f.*, direction
 directus, straight
 dirumpens, breaking apart
 disciformis, disc-shaped
 discolorus, discolorous, discolored

discretus, discrete, separate
 discrimen, *inis*, *n.*, difference
 disculus, *i*, *m.*, little disc
 disfractus, broken
 disparsens, disappearing
 dispergens, scattering
 dispositus, arranged
 disruptus, broken
 disseco, to cut up
 dissectus, cut up
 disseminatus, scattered
 dissentio, to disagree
 dissepimentum, *i*, *n.*, partition, wall
 distal, distant, further
 distans, remote
 distichus, distichous, in two rows
 distinguo, to distinguish
 du, long
 divaricatus, spreading
 divergens, diverging
 diversimodus, in different ways
 diversus, diverse, different
 divinans, conjecturing
 divisio, *onis*, *f.*, a division
 divisus, divided
 dolliformis, dolliform, cask-shaped, jar-shaped
 dolium, *ii*, *n.*, cask, jar
 donacinus, of a reed
 donatus, furnished
 dorsiventral, with two unlike sides
 dorsum, *i*, *n.*, back
 dothideaceus, like Dothidea, *i. e.*, loculate
 dubitantur, doubtfully
 dubius, doubtful
 duco, to lead
 ductus, led
 dulcis, sweet
 dumetum, *i*, *n.*, a thicket
 duo, two
 duodecim, twelve
 duplo, twice
 duriusculus, somewhat hard
 durities, *ei*, *f.*, hardness
 durus, hard

E

eburneus, ivory-white
 ecaudatus, without a tail
 eccentricus, eccentric, lateral

echinatus, spiny
 echinulatus, echinulate, spiny
 edulis, edible
 efiguratus, shaped, formed
 effectus, worn out
 efiguratus, formed
 eflusus, effuse, spread out
 egrediens, growing out
 elasticus, elastic
 elatus, tall
 elevatus, raised
 ellipticus, elliptical
 ellipsoideus, ellipsoid
 elongatus, lengthened
 emarginatus, without a margin
 emergens, emerging
 emergo, to emerge
 emersus, emerging
 emittens, emitting
 emortuus, dead
 enatus, arising from
 endobasidial, continuous with the basidium
 endobiotic, growing within living things
 endochroma, *atis*, *n.*, colored contents
 endogenus, endogenous, born within
 eroperidium, *ii*, *n.*, inner peridium
 endophytic, growing in plants
 endoplasma, *atis*, *n.*, protoplasm
 endoxylus, within wood
 endozoic, growing in animals
 enim, for
 endoparasiticus, internally parasitic
 entomogenus, entomogenous, living in insects
 epelliculosus, without a covering or pellicle
 epidermis, *idis*, *f.*, epiderm, the surface skin
 epigeus, epigeaeon, on the ground
 epigenus, borne above
 epiphloeodus, on the bark
 epiphragma, an upper wall or division
 epiphyllus, on the upper side of the leaf
 epiphytic, upon plants
 episorium, *ii*, *n.*, outer wall of spore
 epithecium, a layer above the asci, usually formed of the tips of the paraphyses

epizoic, growing on animals
 equinus, equine, belonging to horses
 erectus, erect
 ergo, therefore
 erostatus, without a beak
 erostis, without a beak
 erraticus, erratic, wandering
 error, is, m., error
 eructatus, thrown up
 erumpens, bursting out
 erysiphioideus, like Erysiphe, cobwebby
 esepate, without cross walls
 estriatus, without lines or markings
 etiam, also
 etsi, although
 eumorphus, well-formed
 eutype-like, eutypeous, cutypoid, with an effuse stroma similar to the tissue of the matrix
 evacua, emptying
 evacuatus, emptied
 evado, to escape
 evaginatus, without a sheath
 evanesens, evanescent, disappearing
 evanidus, vanishing
 evidentius, more clearly
 evolutus, developed
 evolutus, without a volva
 evolvens, developing
 exacte, exactly
 exalbescens, becoming white
 exalbidus, whitish
 exalbugo, to whiten
 exannulatus, without a ring
 exappendiculatus, not appendaged
 exaridus, dried out
 exasperans, roughened
 exasperatus, roughened
 exaspero, to roughen
 excavatio, onis, f., an excavation, hollowing out
 excavatus, hollowed out
 excedens, exceeding
 excentric, out of the centre, lateral
 exciple, the outer wall or covering of an apothecium
 excipuliformis, cup-shaped
 excipulum, i, n., exciple, margin
 excrescens, growing out

excutiens, shaking out
 exemplaris, model
 exemplarium, ii, n., specimen, sample
 exemplum, i, n., an example
 exesus, consumed, destroyed
 exhibens, exhibiting
 exigens, scanty
 exiguitas, atis, f., smallness, scantiness
 exiguus, little, small
 exilis, thin, slender
 eximie, exceedingly
 existimo, to estimate
 exitus, us, m., a departure, escape
 exobasidial, separated by a wall from the basidium
 exogenus, arising on the outside
 exoperidium, ii, n., outer peridium
 exoriens, arising
 exosporium, ii, n., exospore, outer wall of the spore
 expallens, becoming pale
 explodens, exploding
 expulsus, expelled
 exquisita, beautifully
 exsertus, exerted, thrust out
 exsiccatio, onis, f., a drying out
 exsiccatus, dried out
 exsiliens, escaping
 exsuccus, without milk or juice
 extensio, onis, f., extension
 externus, external
 extimus, outermost, ultimate
 extra, without, outside
 extrico, to extricate
 extrorsum, toward the edge
 extus, outside

F

fabiformis, bean-shaped
 fabrica, ae, f., texture
 facies, ei, f., face, form
 facilis, easily
 fagineus, beechen
 falcatus, falcate, scythe-shaped, curved
 falciformis, beak-shaped, scythe-shaped
 familia, ae, f., family
 familiola, ae, f., a little family
 farctus, stuffed

farina, ae, f., meal, flour
 farinaceus, mealy
 fascia, ae, f., fascicle
 fasciatus, grouped
 fasciculatus, fasciculate, fascicled, in bundles
 fastigiatus, bunched
 fatiscens, disappearing, breaking up
 favosus, hollow
 femineus, feminine
 fenestratus, with windows or openings
 fere, almost
 fermentatio, onis, f., fermentation
 fermentum, i, n., yeast
 ferruginascens, turning rust-colored
 ferrugineus, rust-colored
 ferrumequinum, i, n., a horse-shoe
 ferrum, i, n., iron
 fibra, ae, f., a fiber, filament
 fibrilla, ae, f., little fibril
 fibrillula, ae, f., a little fibril
 fibrosus, fibrous
 fictivus, fictitious
 filamentosus, filamentous, thread-like
 filia, ae, f., daughter
 filiformis, filiform, thread-shaped
 filiger, filament-bearing
 filum, i, n., thread
 fimbria, ae, f., fringe
 fimbrians, fringing
 fimbriatulus, slightly fringed
 fimbriatus, fimbriate, fringed
 fimicola, fimicole, dwelling on dung
 fimus, i, m., dung
 findo, to cleave, divide
 firmulus, somewhat firm
 fissilis, cleft, ruptured
 fissuratus, fissured, split
 fissus, split
 fistulosus, hollow
 flabelliformis, fan-shaped
 flaccidus, weak
 flagella, ae, f., lash
 flagellatus, bearing long bristles or threads
 flagelliformis, lash-like
 flammans, flame-colored
 flavens, yellowing
 flavus, yellow
 flexuosus, flexuous, full of turns or windings
 flexus, bent
 flocciformis, tuft-like
 floccosus, floccose, cottony
 floccus, i, m., tuft
 floralis, floral
 flumen, inis, n., river
 fluvius, ii, m., a river
 fluxilis, flowing
 foedatus, dark, soiled
 foetidus, with a bad odor
 foliicola, foliicole, living on leaves
 foliose, like a leaf in form
 folium, ii, n., leaf
 foramen, inis, n., a hole
 forma, ae, f., form
 formans, forming
 formo, to form
 formosus, beautiful
 fornix, icis, m., a vault
 forsan, perhaps
 forsitan, perhaps
 fortasse, perhaps
 forte, strongly
 fovens, nourishing
 fraccidus, soft, mellow
 fractus, broken
 fragilis, fragile
 fragmentum, i, n., a bit, fragment
 frequens, frequent
 friabilis, falling to pieces
 frigidarium, ii, n., a cold place, cold storage
 frondosus, leafy
 frcns, dis, f., a leaf
 fructicola, living on fruits
 fructiferus, fructifer, fruit-bearing
 fructificans, fruiting
 fructificatio, nis, f., fruiting
 fructus, us, m., fruit
 frustulatus, fragmentary
 frustum, i, n., a bit, piece
 fruticosus, fruticose, shrub-like
 fruticulosus, fruticulose, shrub-like
 fucatus, colored
 fugans, fleeting
 fulciens, supporting
 fuliginus, fuliginous, sooty

fuligo, inis, f., soot
 fultus, supported
 fulvellus, somewhat tawny
 fulvescent, becoming tawny
 fumagineus, fumaginous, smoky.
 fumosus, smoky
 fungicola, fungicole, growing on fungi
 fungillus, i, m., a little fungus
 fungus, i, m., a fungus
 funicularis, rope-like
 funiculus, i, m., a little rope
 funiformis, rope-like
 furcatus, furcate, forked
 furfur, uris, m., bran
 furfuraceus, bran-like
 furturellus, covered with bran
 fuscatus, darkened
 fuscellus, somewhat dark
 fuscescens, darkening
 fuscus, dark
 fuscidulus, dark
 fuscus, dark, or dark brown
 fusiformis, fusiform, spindle-shaped
 fusisporus, with spindle-shaped spores
 fusoides, fusoid, spindle-shaped

G

galeiformis, hood-shaped
 galeriformis, cap-shaped
 gamete, sex-cell
 gangliiformis, forming knots
 gangligerus, bearing knots
 gelatina, ae, f., gelatine
 geminatus, paired, twinned
 gemmiparus, producing buds
 generans, generating
 genesis, is, f., origin
 geniculatus, bent
 genuflexus, bent
 genuinus, genuine
 genus, eris, n., genus
 gerens, bearing
 germinans, germinating
 germinatio, onis, f., germination
 gibbosus, swollen
 gigantiosporus, with very large spores
 losporus
 gignens, producing
 gigno, to bear
 gilvus, brownish

glaber, smooth
 glabrescens, becoming smooth
 glacies, ei, f., glacier, ice
 glans, glandis, f., a nut,
 glaucescens, turning bluish-green
 glaucus, sea-green
 gleba, ae, f., soil, mass
 globosus, globose, rounded
 globuliger, bearing a ball
 globulus, i, m., a globule
 glomerula, ae, f., a little mass
 glomerulatum, in heaps
 gluten, inis, n., glue
 glutinosus, glutinous
 gonidium, ii, n., an algal cell
 gossypinus, cottony
 gracilis, graceful, slender
 gradatim, gradually
 gradus, us, m., grade, step
 gramen, inis, n., grass
 gramineus, grassy
 graminicola, growing on grass
 grandis, large
 grandiusculus, somewhat large
 granulatus, granular
 granulosus, granular
 graphoideus, long and cleft, like

Graphis

graveolens, of unpleasant odor
 gregarius, gregarious, in clusters
 gregatim, in clusters
 grex, gregis, m., a flock
 griseolus, grayish
 griseus, gray
 grossus, thick
 grumosus, heaped
 grumulus, i, m., a heap
 gumosus, gummy
 gutta, ae, f., a vacuole
 guttatus, with little drops
 guttula, ae, f., a drop or vacuole
 guttulosus, with drops
 gyalectoideus, Gyalecta-like
 gypseus, gypsum-like
 gyrosus, gyrose, spiral

H

habeo, to have
 habitatio, onis, f., habitat
 habitus, us, m., habit

hactenus, up to the present time
 haerens, adhering
 haereo, to hold to
 halos, o, f., a halo
 hamatus, hamate, hooked
 haud, not at all
 haustorium, ii, n., a sucker
 helicoideus, spiral-like
 heliotropicus, heliotropic
 helvolus, deep purple
 herba, ae, f., a plant
 herbicola, dwelling on herbs
 heterogamete, one of two unlike sex-cells
 heterogeneus, different
 heteroicus, on two hosts
 heteromorphus, heteromorphic, of different kinds
 hexagonus, hexagonal
 hexasporus, six-spored
 hians, gaping
 hiascens, gaping
 hibernans, resting
 hicilic, here and there
 hinc, hence
 hirtellus, somewhat shaggy
 hodiernus, of today
 homogeneous, homogeneous
 homoicus, on one host
 homomorphus, alike, of one form
 horizontalis, horizontal
 hornotinus, of this year
 hortus, i, m., a garden
 hospes, itis, m., a host
 hospitalis, of a host
 huc, hither, in this direction
 humectatus, wet
 humectus, moist
 humidulus, moist
 humilis, low, small
 humistratus, moist
 humus, i, f., the earth
 hyalinulus, somewhat clear
 hyalinus, hyaline, clear
 hyalosporus, with clear, one-celled spores
 hydrophilus, aquatic
 hygrometricus, absorbing moisture
 hygrophanus, translucent
 hymeniferus, membrane-bearing

hymenium, ii, n., fruiting surface, consisting of asci, or of basidia.
 hymenophorum, i, n., that which bears the hymenium
 hypertrophiens, hypertrophying
 hypha, ae, f., a fungus filament
 hyphasma, atis, n., the mycelium.
 hyphoideus, hypha-like
 hypomycetum, mould-like, cobwebby
 hypocreaceus, Hypocrea-like, fleshy and bright-colored
 hypodermicus, under the epiderm
 hypogaeus, hypogaeal, underground
 hypogenus, on the under side
 hypophloeodus, under the bark
 hypophyllus, on the under side of leaf
 hypostroma, atis, n., lower stroma
 hypothallus, i, m., hypothallus
 hypothecium, the area just below the layer of asci
 hysteriformis, Hysterium-like, long and cleft
 hysterinus, long and cleft as in Hysterium
 hysterothecium, an oblong or linear perithecium opening by a cleft

I

ibi, there, then
 icon, onis, f., an image, figure
 idem, the same
 ideoque, therefore
 idoneus, fit
 igitur, therefore, accordingly
 ignotus, unknown
 imbricatus, imbricate
 immaculatus, without spots
 immarginatus, without a margin
 immaturus, young
 immediate, directly
 immersus, sunken
 immutatus, unchanged
 impalpabilis, extremely fine and minute
 impervius, impervious
 implens, filling
 implexus, infolded
 impolitus, not polished
 impositus, imposed

imprimis, especially
 improbable, improbably
 imus, lowest
 inaequilateralis, unequal-sided
 inaequaliter, unequally
 inaequipolaris, with unequal poles
 inanis, empty
 inarticulatus, without divisions
 incarcerationis, hidden
 incarnatus, pink
 incertus, uncertain
 incisio, onis, f., incision, cutting
 incisus, cut
 inclinatus, bent
 inclusus, inclosed
 incoctus, not cooked
 incolens, dwelling in
 incoloratus, without color
 inconditus, confused, unformed
 incrassatus, somewhat thickened
 incrassatus, broadened, thickened
 incresco, to grow in, increase
 incumbens, lying upon
 incurvulus, somewhat incurved
 incusus, forged, made
 indeterminatus, indefinite
 indico, to indicate
 indigito, to utter, announce
 indivisus, undivided
 indoles, is, f., nature, natural ability
 indumentum, i, n., a covering
 induratus, hardened
 indurescens, growing hard
 indusium, ii, n., indusium
 indutus, covered
 ineptum, improper
 inermis, unarmed
 inferior, lower
 inferus, below, lower
 infestans, infesting
 inficiens, infecting
 infimus, lowest
 infixus, fastened in
 inflans, inflating
 inflatus, inflated
 infossus, sunken
 infra, lower, below
 infundibuliformis, infundibuliform, funnel-shaped
 infuscatus, darkened

initio, at first
 initium, ii, n., the beginning
 innatus, innate
 innotesco, to become clear
 innumerus, innumerable
 inordinatus, without order
 inquinans, blackening
 inquinatus, dirty
 inquirendus, to be investigated
 insculptus, insculptate, hollowed
 insectum, i, n., insect
 insertio, onis, f., insertion
 insertus, inserted
 insidens, seated upon
 insitus, ingrafted
 inspersus, scattered
 inspissatus, thickened
 instar, like
 instructus, built up
 insuetus, unusual
 insula, ae, f., an island
 integer, whole
 intense, intensely
 intercalary, in the midst of, between
 interdum, sometimes
 interim, meanwhile
 intermedius, intermediate
 intermixtus, mixed with
 internervius, between the nerves
 internus, internal
 interspersus, interspersed, scattered
 interstitium, ii, n., a space
 intertextus, intertwined
 intus, within
 intracellaris, within the cell
 intrans, entering
 intricatus, intertwined
 intumescens, swelling
 intus, within
 invasus, invaded
 inversus, inverted
 investiens, covering
 invicem, in turn, mutually
 involucrem, i, n., involucre
 ipse, self
 irregularis, irregular
 irregulariter, irregularly
 irrepens, creeping in
 irroratus, bedewed
 isabellinus, isabel-colored

isogamete, one of two similar sex-cells
 isthmus, i, m., a connection
 itaque, therefore
 iteratus, repeatedly

J

jacio, to throw
 jamdudum, this long time
 jodicus, of iodine
 jodus, i, m., iodine
 junior, younger, young
 jus, juris, n., law, right
 juvenilis, young
 juxta, near

L

labiatus, lipped
 labium, ii, n., lip
 labrum, i, n., a lip
 labyrinthus, labyrinthian, tortuose
 laccatus, milky
 lacerans, tearing
 laceratus, lacerate, torn
 lacerus, torn
 lacinia, ae, f., a tear
 lacinatus, lacinate, torn, lobed
 lacrimiformis, tear-like
 lactens, milky
 lactescens, milky
 lactiginosus, filled with milk, milky
 lacuna, ae, f., a hole
 lacunosus, lacunose, with hollows
 lac, lactis, n., milk
 lacus, us, m., a lake
 laeticolor, bright-colored
 laetus, bright
 laevis, smooth
 lageniformis, flask-shaped
 lamella, ae, f., gill
 lamina, ae, f., scale, layer, blade
 laminaris, leaf-like
 lanatus, woolly
 lanceolatus, lance-shaped
 languens, withering
 lanosus, woolly
 lanuginosus, woolly
 laricinus, of larch
 larva, ae, f., larva
 lateritius, brick red
 latitudo, inis, f., width
 latiusculus, somewhat wide
 latus, eris, n., the side
 latus, broad, wide
 laxus, loose
 lectus, collected
 lego, to collect
 leiosporus, with smooth spores
 leniter, slightly, gently
 lenticularis, lenticular, lens-shaped
 lentiformis, lens-shaped
 lentus, tough, flexible
 leporinus, of a hare
 leptodermus, thin-walled
 leprosus, scab-like
 leucosporus, with white spores
 levis, light, smooth
 levitas, atis, f., smoothness
 liber, free
 liberatus, freed
 lichenicola, lichenicole, growing on lichens
 lichenoides, lichen-like
 ligneus, woody
 lignatilis, of wood
 lignicola, lignicole, growing on wood
 lignum, i, n., wood
 lilacinus, lilac-colored
 limbatus, bordered
 limbum, i, n., limb, border
 limes, itis, m., limit
 limitatus, limited
 limoniformis, lemon-shaped
 linea, ae, f., line
 linearis, linear
 lineola, ae, f., little line
 linguiformis, tongue-shaped
 liquifaciens, liquifying
 liquo, to melt
 lirella, ae, f., furrow
 lirelliform, furrow-like
 lividus, livid, purple
 lobulatus, somewhat lobed
 locandus, to be located
 locatus, located
 locellatus, with chambers
 locellus, i, m., a little cell
 loco, to place, locate
 loculiferus, containing hollows
 loculus, i, m., locule, place, cell, hollow

locus, i, m., place
 longicollis, with long beaks
 longior, longer
 longitrossum, longitudinally
 longitudinalis, lengthwise
 longus, long
 lophus, i, m., a crest
 lubricus, slippery
 lucidus, clear, lucid
 ludibundus, playful
 lumen, inis, n., opening
 lunatus, crescent-shaped
 lunulate, crescent-shaped
 luridus, lurid
 luteus, yellow
 lutescens, yellowish
 lux, lucis, f., light

M

maceratus, softened
 macro-, large
 macrostylospora, ac, f., large stylo-
 spore
 macula, ac, f., a spot
 macularis, spotted
 maculicola, dwelling on spots
 maculiformis, spot-shaped
 madidus, moist, wet
 magis, more
 magniguttatus, with one or two large
 globules
 magnitudo, inis, f., size
 magnus, great, large
 majusculus, somewhat large
 male, poorly
 mamillaris, protuberant
 mamilliformis, shaped like a papilla
 manifestus, evident
 mappa, ac, f., a map
 marcescens, withering
 marginatus, margined
 margo, inis, m., and f., margin
 marmoratus, marble-like
 massa, ac, f., mass
 massula, ac, f., a little mass
 matricalis, belonging to the matrix
 matrix, icis, f., matrix, layer or tis-
 sue
 maturus, mature

maturescens, ripening
 maxime, greatly
 mazaedium, i, n., a dough-like mass
 of spores and paraphyses
 medietas, atis, f., middle
 mediocris, average
 mediocriter, moderately
 medius, i, m., medium
 medulla, ac, f., the pith, medulla
 medullary, belonging to the pith or
 medulla
 medullatus, stuffed, pithy
 melanosporus, with black spores
 melioideus, meliola-like
 melius, better
 melleus, honey-colored
 mellinus, honey-colored
 membrana, ac, f., membrane
 membranaceus, membranaceous, mem-
 branous, thin or membrane-like
 memoria, ac, f., memory
 mens, mentis, f., mind
 merenchymaticus, with many cells
 merens, deserving
 meridionalis, southern
 mesogenus, mesogenous, borne in the
 middle
 mesopodes, with stem in the middle
 mesopus, with central stalk
 metageneticus, metagenetic
 metallicus, metallic
 metiens, measuring
 metulaeformis, pyramid-shaped
 metuliformis, pyramid-shaped
 micro-, small
 microconidiophorus, bearing small
 conidia
 microcystis, small-celled
 micronemeus, with short hyphae
 micropycnidium, ii, n., small pycnidium
 um
 microscopium, ii, n., microscope
 microstylospora, ac, f., microstilo-
 spore
 migro, to move
 minutus, bright red
 minimum, least
 minor, smaller
 minuties, ei, f., detail
 minutus, minute

mitis, pleasant, mild
 mitratus, mitre-shaped
 mobilis, mobile, moving
 molecularis, molecule-like
 mollusculus, somewhat smooth
 mollis, smooth
 moneo, to caution, warn
 monile, is, n., a chain, necklace
 moniliformis, chain-like
 monoascus, with one ascus
 monocephalus, monocephalic, one-
 headed
 monocylus, with one cycle
 monoicus, monoicous
 monoplastus, uniform, with one pro-
 toplast
 monospermus, one-spored
 monosporus, one-spored
 monostichus, monostichous, in one
 row
 mons, tis, m., a mountain
 monstrosus, monstrous
 montanus, mountainous
 montosus, mountainous
 morbosus, diseased
 moriens, dying
 mos, moris, m., manner
 motilis, motile, able to move
 movens, moving
 mox, at length
 mucedineus, white and cottony
 mucilago, inis, f., mucilage
 mucosus, mucose, slimy, mucous
 mucus, i, m., mucus
 mucro, onis, m., a point
 mucronatus, pointed
 mucronulatus, with a little point
 mucronulus, i, m., a little point
 multifidus, multifid, many-divided
 multiguttatus, with many oil-drops
 multilocularis, many-celled
 multiloculatus, with many cells
 multinucleate, with many nuclei
 multisporus, many-spored
 multizonatus, with many zones
 multoties, many times, often
 multus, much
 munitus, furnished
 muralis, muriform
 muriculatus, muriculate, spiny

muriformis, muriform, with cross and
 longitudinal walls
 murinus, mouse-colored
 murus, i, m., wall
 muscosus, mossy
 mutans, changing
 mutatus, changed
 muticus, muticate, not pointed
 muto, to change
 mutue, mutually
 mutuus, mutual
 mycelialis, mycelial
 mycelicus, mycelial
 mycelium, ii, n., mycellum
 mycogenus, dwelling on fungi
 mycologus, i, m., a student of fungi
 myochrous, mouse-colored
 myriosporus, with many spores
 mytiliform, shell-like

N

nascens, arising
 nascor, to be born
 natalis, native
 naufragium, ii, n., shipwreck
 navel, point of attachment
 navicularis, boat-shaped
 nebulosus, nebulous, cloudy, dark
 nec, not
 nectriaceus, Nectria-like
 nemorosus, woody, shady
 neque, and not
 nervicola, growing on veins
 nervi-sequus, nervi-sequens, follow-
 ing the veins
 nidulans, nesting
 nidulor, to nest
 niduo, to nest
 niger, black
 nigredo, inis, f., blackness
 nigresco, to grow black
 nigricans, blackening
 nigrifactus, blackened
 nigrificatus, made black
 nigrolimitatus, black-lined
 nigropilus, black-hairy
 nigropunctulatus, black-dotted
 nigrostrigosus, black-hairy
 nimium, too, too much
 nisi, unless

nitens, shining
 niteo, to shine
 niveus, snow-white
 nobilis, grand
 nodosus, with joints
 noduliferus, bearing knots
 nodulosus, with joints
 nodus, i, m., a joint, knot
 nomen, inis, n., a name
 non, not
 nondum, not yet
 nonne, not
 nonnihil, somewhat
 nonnisi, except
 nonnullus, some
 normalis, normal
 notatus, marked
 notus, known
 novus, new
 nubecula, ae, f., a little cloud
 nubilosus, cloudy
 nucleatus, nucleate
 nucleiferus, nucleus-bearing
 nucleolus, nucleole
 nucleus, i, m., center, nucleus
 nudiusculus, somewhat naked
 nudus, naked
 nullimodus, in no wise
 nullus, none
 numerosus, numerous
 numerus, i, m., a number
 nunquam, never
 nunc, now
 nuntquam = ne-utiquam, by no means
 nuto, to incline
 nutrix, icis, f., host
 nux, nucis, f., a nut

O

ob, for, towards, on account of
 obclavatus, reversed club-shaped
 obconicus, reversed-conical
 obducens, covering
 obduco, to cover
 oblique, obliquely
 obliterans, disappearing
 obliteratus, lost, destroyed
 oblongatus, oblong
 oblongus, oblong
 obpyriformis, obpyriform, reversed
 pear-shaped

obrutus, covered
 obscurus, dark
 observandum, to be observed
 observatus, found
 obsessus, surrounded
 obsolesco, to become obsolete
 obsoletus, obsolete, lacking
 obtectus, covered
 obtegens, covering
 obturaculum, i, n., opening
 obtusangulus, with obtuse angles
 obtusatus, obtuse
 obtusus, obtuse
 obtutus, us, m., a looking at
 obvallatus, surrounded
 obvelo, to cover
 obvius, clear, open
 obvolvens, enveloping
 occellatus, with openings
 oculo nudo, with unaided eye
 occupans, occupying
 ochraceus, pale yellow, ochreous
 ochrosporus, with yellow or yellow-
 brown spores
 octavus, eighth
 octo, eight
 octonus, in eights
 octoseptatus, with eight cross-walls
 octosporus, eight-spored
 oleosus, oily, with oil drops
 oligosporus, few-spored
 olim, formerly
 olivascens, olivascens, becoming olive
 olivaceus, olive
 omissus, omitted
 omnino, everywhere, entirely
 oosporous, with resting spores formed
 by the union of unlike sex-cells, e.g.,
 of egg and sperm
 opacus, opaque
 opalinus, clear
 operculatus, operculate, with a lid
 operculiformis, lid-shaped
 operculum, i, n., a cover, lid
 oppidum, i, n., a town
 oppletus, filled
 oppositus, placed
 orbicularis, orbicular, round
 orbiculatim, circularly

orbis, is, m., a circle
 ordo, inis, m., order
 organicus, organic
 organum, i, n., an organ
 oriens, arising
 orientalis, eastern
 orificium, i, n., opening
 originalis, original
 origo, inis, f., origin
 orior, to arise
 ornatus, furnished
 orthotropus, straight
 ortus, arisen
 os, oris, n., mouth
 oscillans, oscillating
 osculum, i, n., mouth
 ostendo, to show
 ostiolatus, ostiolate, with a mouth
 ostium, i, n., ostiole, opening
 ovalis, oval
 ovaricola, growing in ovaries
 ovatus, egg-shaped
 ovinus, of or belonging to a sheep
 ovoideus, nearly egg-shaped

P

pachydermaticus, thick-walled
 pachypleurus, thick-walled
 paene, nearly
 paenultimus, next to the last
 pagina, ae, f., page, side
 paliformis, paliform, stake-shaped,
 palisade-like
 pallescens, turning pale
 pallidus, pale
 palmatus, palmate, hand-like, palm-
 like
 palmicola, growing on palms
 palpebra, ae, f., eyelid
 paludosus, marshy
 palumbinus, dove-colored, grayish
 palus, udis, f., a marsh, swamp
 panicula, ae, f., a panicle
 paniculatus, paniculate, branched
 panis, is, m., bread
 pannosus, pinnose, ragged
 pannum, i, n., a rag, cloth
 papillaris, papillate
 papillatus, with papilla, papillate
 papilliformis, like a papilla
 papillula, ae, f., a little papilla
 papillulatus, with a very small nipple
 or papilla
 papulosus, with many pustules
 papyraceus, papery
 paradoxus, strange, contrary
 parallelus, parallel
 parasiticus, parasitic
 parvus, few, scanty
 parenchymaticus, parenchyma-like
 paries, etis, m., a wall
 paritas, atis, f., equality
 parochia, ae, f., parish
 pars, partis, f., a part
 partitus, divided
 parum, too little
 parvulus, small
 parvus, small
 pascuum, i, n., pasture
 passim, everywhere
 patellaris, dish-like
 patelliformis, shaped like a dish
 patens, spreading
 patenter, openly
 patior, to support, endure
 patulus, spreading
 paucilocularis, few-celled
 paucus, few
 paulatim, gradually
 paulisper, for a little while
 paulo, a little
 pectinatus, comb-like
 peculiaris, peculiar
 pedatus, foot-like
 pedicellatus, with a pedicel
 pedicellus, i, m., pedicel
 pediculatus, pedicelled
 pedunculatus, stalked
 pedunculicola, growing on peduncles
 pellicle, skin, covering
 pellicula, ae, f., a little skin
 pelliculosus, with a covering
 pelluciditas, atis, f., clearness
 pellucidus, pellucid, clear
 peltatus, shield-shaped
 pendo, to hang
 pendulus, hanging
 penetrans, penetrating
 penicillate, brush-like
 penicilliformis, brush-like

pentagonus, pentagonal
 per, through
 perafinus, closely related
 perbrevis, very short
 percurus, run through
 perdurans, resting
 perduro, to last
 perennans, perennial
 perennis, perennial
 perexiguus, very thin
 perexilis, very slender
 perfectus, complete, perfect
 perforans, perforating
 perforatus, perforated
 perfoosus, hollowed out
 pericarpium, ii, n., pericarp, covering
 peridermicus, belonging to the periderm
 peridermium, ii, n., periderm
 peridium, ii, n., peridium
 periphericus, peripheral around the edge
 peristomium, ii, n., mouth
 perithecialis, perithecial
 perithecigerus, perithecium-bearing
 perithecioid, perithecium-like
 peritheciophorus, bearing perithecia
 peronatus, rough, rough-booted
 perparum, very little
 perrumpens, breaking through
 persicinus, peach-colored
 persistans, persistent
 perspicinus, transparent
 perspicuus, clear
 persuasus, convinced
 pertenuis, very thin
 pertineo, to belong
 pertusus, protruded
 pes, pedis, m., foot
 petiolum, i, n., petiole
 petrifactus, made like rock, hardened
 pezizoideus, pezizoid, cup-fungus-like, cup-like
 phaciodeus, like Phacidium, black and disk-like
 phaeophragmeus, with dark transeptate spores
 phaeosporus, with dark, one-celled spores
 phaseoliformis, bean-shaped

phomatoideus, Phoma-like
 phyllogenus, phyllogenus, borne on leaves
 phyllostictioideus, Phyllosticta-like
 phytogenus, growing on plants
 phytographus, i, m., a botanist
 phytophilus, phytophilous, growing on plants
 pictura, ae, f., a painting
 pictus, colored
 pileatus, cap-shaped
 pileus, i, m., a cap
 pilosellus, somewhat hairy
 pilosus, pilose, with hairs
 pilum, i, n., a hair
 pineus, piny
 pingo, to paint
 pinna, ae, f., a leaflet
 pinnatus, pinnate
 piperatus, peppery, pungent
 piscis, is, m., a fish
 pisum, i, n., pea
 placenta, ae, f., placenta
 placentiformis, placenta-like
 plaga, ae, f., a spot
 plagula, ae, f., a little spot
 plagiiformis, spot-like
 planta, ae, f., a plant
 plantula, ae, f., a little plant
 planus, plane, flat
 plasma, atis, n., plasm, mass
 plasmodium, ii, n., protoplasm-like mass
 pleiosporus, many-spored
 plenus, full
 plerumque, for the most part
 pleuroacrogenus, borne at the tip and at the sides
 pleurogenus, pleurogenous, borne on the walls or sides
 plica, ae, f., a fold
 plicatus, plicate, folded
 pliciformis, fold-form
 plumbeus, lead-colored
 plures, many
 pluriarticulatus, many-celled
 pluriciliate, with many cilia
 plurifurcatus, many forked
 pluriguttulatus, many guttulate
 plurilocellatus, with many hollows

pluriperforate, with several openings
 pluristratosus, many-layered
 poculiformis, cup-shaped
 podetium, i, n., a stalk-like or cup-like erect thallus
 polaris, polar
 politus, polished
 polleo, to be able, avail
 pollex, icis, m., thumb
 pollicaris, thumb-like, an inch long
 polus, i, m., a pole
 poly-, many
 polyascus, with many asci
 polyblastus, many-celled
 polycephalus, polycephalous, with many heads
 polyedricus, polyhedral
 polygonus, with many angles
 polyrrhizus, with many roots
 polystichus, polystichous, m many rows
 pondus, eris, n., weight
 populus, i, f., poplar
 porosus, with pores
 porrigo, to stretch out
 porus, i, m., a pore
 positus, placed
 possum, to be able
 postea, hereafter
 postice, at the back
 postremus, last
 potius, rather
 praecedens, preceding
 praecipue, especially
 praeclarus, distinguished
 praecox, early, abundant
 praeditus, furnished
 praefereudum, preferred
 praelongus, very long
 praeprimis, especially
 praesens, present
 praesertim, particularly
 praestans, distinguishing, excelling
 praesumptus, assumed, presumed
 praetereaue, besides, moreover
 praeteritus, past
 pratium, i, n., a meadow
 primitivus, primitive
 primitus, at first
 primus, first
 prioritatis, atis, f., priority
 prismaticus, prismatic
 privus, without, deprived
 pro, for
 probabilis, probable
 procerus, tall
 processus, projection
 procumbens, procumbent, prostrate
 prodeus, projected
 productus, carried out, produced
 proficiscor, to begin, arise
 profunditas, atis, f., depth
 profundus, deep
 projectus, thrown off
 proles, is, f., a race, offspring
 prolificus, prolificus, produced, proliferate
 proliger, bearing offspring
 prolongatio, onis, f., prolongation; lengthening
 promycelium, i, n., promycelium
 prope, near
 proper exiple, an apothecial covering or wall without algae
 propius, proper
 propinquus, adjacent
 propulsus, expelled
 proratione, comparatively
 prorsus, forwards, exactly
 prorumpo, to break through
 prosenchymaticus, prosenchymatic, consisting of long cells or filaments
 proteus, changing, variable
 protractus, extended
 protrudens, projecting
 protractus, prolonged, advanced
 proveniens, coming
 pruinulosus, somewhat powdery
 pruinosis, powdery, pruinose
 pseudo-, false
 pseudoparaphyses, false paraphyses
 pseudoparenchyma, false parenchyma, a tissue looking like parenchyma but formed of threads
 pseudoperidium, a covering
 pseudoplasmodium, ii, n., a false plasmodium
 pseudopodium, ii, n., false foot, lobe
 pseudostium, i, n., false ostiole

scaber, rough
 scabridus, rough
 scabriusculus, somewhat rough
 scalaris, of a ladder, or staircase
 scaliformis, ladder-like
 scarious, thin, papery
 scheda, ae, f., sheet of paper
 scio, to know
 scissilis, splitting
 sclerotiformis, sclerotium-like
 sclerotioideus, sclerotoid, sclerotium-like
 sclerotium, i, n., sclerotium, a hard black mass
 scoleosporus, with thread shaped spores
 scopulate, like a brush
 scrobiculatus, roughened, furrowed
 scrotiformis, bladder-like
 scruposus, rough
 scrutator, oris, m., an investigator
 scutatus, shield-shaped
 scutellatus, like a small shield
 scutiformis, shield-shaped
 secedens, separating
 secernibilia, separable
 sectio, onis, f., a section
 secundarius, secondary
 secundum, according to
 secus, otherwise
 sed, but
 sedulus, diligent, careful
 segmentiformis, segment-like
 sejunctus, separate
 semel, once
 semen, inis, n., a seed
 semi, half
 semiextertus, half extended
 semiimmersus, half immersed
 semiinossus, (cf. inossus)
 semiinsculptus, (cf. insculptus)
 seminalis, seed-like
 seminicola, growing on seeds
 semipellucidus, half-pellucid
 semiteres, half columnar
 semiuniversalis, a half inch
 semper, always
 senescens, growing old
 sensim, gradually
 sensus, us, m., opinion, sense

separabilis, separable, separating
 separo, to separate
 sepimentum, i, n., partition
 sepono, to separate
 septatus, septate, divided into cells
 septentrionalis, northern
 septulum, i, n., a little septum
 sepulchrum, i, n., grave
 sequens, following
 sericellus, somewhat silky
 sericeus, silky
 series, ei, f., a series
 serotinus, late
 serpens, creeping
 serpentinus, serpentine
 serratus, serrate
 serus, late
 sesqui, by a half
 sesquilinea, one inch and a-half
 sesquipedian, very long
 sessilis, seated, without a stalk
 seta, ae, f., a bristle
 setaceus, bearing one or more bristles
 setiformis, bristle-shaped
 setiger, bristle-bearing
 setosus, setose, with bristles
 setula, ae, f., a little bristle
 setulose, with bristles or spines
 seu, or
 sexilocularis, with six cells or locules
 sexsporus, six-spored
 sexsulcatus, six-furrowed
 siccans, drying
 siccus, dry
 sigillatim, seal-like
 sigmoideus, sigmoid, s-like
 signatus, marked
 sileo, to be silent
 silva, ae, f., a forest
 similaris, like
 similis, similar
 simple, not branched; one-celled (of spores)
 simplex, icis, simple
 simul, at the same time
 simulate, apparently
 simulo, to imitate, copy, represent
 sine, without
 singularis, peculiar, not in chains
 singulus, each

sinuatus, sinuate
 sinuosus, crooked
 sistens, comprising
 situs, placed
 socia, ae, f., society
 sociatus, grouped together
 scleo, to be accustomed
 solidiusculus, somewhat solid
 solitarius, solitary
 solitus, usual
 sollertus, distinguished
 solubilis, dissolving
 solutus, dissolved
 sordes, is, f., dirt
 sordidus, dirty
 sorus, i, m., spore mass
 spadiceus, brownish
 spatha, ae, f., a spathe
 spargo, to scatter
 sparsus, scattered, sparse
 spathulatus, spathulate
 spatium, i, n., space
 specialis, special
 species, ei, f., species
 spectans, looking
 specto, to look
 spermatogonium, ii, n., a pycnidium-like body
 spermatiferus, spermatia-bearing
 spermatiformis, like a spermatium
 spermatioideus, spermatium-like
 spermatium, ii, n., a conidium-like body
 spero, to hope
 sphaericus, spherical
 sphaeroideus, nearly spherical
 sphaerula, ae, f., a sphere
 spica, ae, f., a point, ear
 spicatus, spike-like
 spiculosus, spiny
 spiculum, i, n., a little spine
 spiniformis, spiny
 spinuligerus, spine-bearing
 spinulosus, with little spines
 spira, ae, f., a spiral
 spiralis, spiral
 spiralter, spirally
 spiritus, us, m., a spirit
 spissus, thick
 splendens, splendid

spongilliformis, sponge-like
 spongiosus, spongy
 sponte, spontaneously
 sporangiferus, bearing sporangia
 sporangioliferus, bearing small sporangia
 sporangium, i, n., a little sporangium
 sporangiophore, the stalk of a sporangium
 spore-print, the spore mass obtained by placing the cap of a mushroom flat on a piece of white paper
 sporicus, sporal
 sporidolum, i, n., a little spore
 sporidium, i, n., a spore
 sporiferus, spore-bearing
 sporodochium, a compact, conical body, mass of sporophores
 sporomorpus, spore-shaped
 sporophora, ae, f., sporophore
 spurius, false
 squama, ae, f., a scale
 squamosus, scaly
 squarrose, with spreading scales or hairs
 statura, ae, f., stature
 status, us, m., stage
 stellatus, stellate, star-like
 stelliformis, star-shaped
 stercoratus, manured
 stercus, oris, n., dung
 sterigma, atis, n., stalk
 stilbeus, stilbum-like, mallet like
 stilbiformis, stalk-like
 stilboid, with a stalked-head, Stilbum-like
 stipatus, crowded
 stipes, itis, m., a stalk
 stipitatus, stipitate, stalked
 stipitellus, i, m., a little stalk
 stipitiformis, stalk-like
 stoloniferus, producing runners
 stoloniformis, runner-like
 stramineus, straw-colored
 stratosus, in layers
 stratum, i, n., a layer
 strenuus, prompt, vigorous
 atria, ae, f., a line

umbilicatus, umbilicate, with a navel,
 sunken in the center, somewhat
 funnel-form.
 umbilicus, i, m., navel
 umbonatus, umbonate, with a boss
 umbra, ae, f., shade
 umbrinus, brown
 umbrosus, shady
 uncia, ae, f., an inch
 uncialis, an inch long
 uncinatus, hooked
 unde, whence
 undique, in all directions
 undulatus, wavy
 uniarticulatus, one-jointed
 unicus, single
 uniformis, of one form
 unilateralis, one-sided
 unilocular, with a single cavity or
 cell
 uniserialis, one-rowed
 uniseriatus, one-rowed
 unitus, joined
 unquam, ever
 urceolatus, pitcher-shaped
 uredinicola, growing on rusts
 uredospora, uredospore
 uredosporiferus, bearing uredospores
 urniformis, urn-shaped
 uromorphus, tail-like
 usque, up to
 usurpatus, usurped
 ut, as
 uterque, both
 ut-plurimum, for the most part
 utriculiformis, bladder-shaped
 utrimque, on both sides, in both di-
 rections
 uvidus, moist, wet

V

vaccinus, pertaining to a cow
 vacuus, empty
 vage, vaguely
 vagina, ae, f., a sheath
 vaginatus, sheathed
 vagus, vague
 valde, strongly
 validiusculus, more or less stout

valseus, valsous, valsoid, Valsa-like,
 with the perithecia in a circle in
 the stroma
 valva, ae, f., a valve
 valvatum, valvate, with valves
 variabilis, variable
 varie, variously
 variegatus, of different colors
 varius, different
 -ve, or
 vegetus, fresh, vegetating
 venementer, strongly
 vel, or
 velatus, veiled
 vellus, eris, n., fleece, wool
 velo, to cover
 velocitas, atis, f., swiftness
 velum, i, n., a veil
 veluti, as
 velutinus, velvety
 vena, ae, f., a vein
 venenatus, poisonous
 veniformis, vein-like
 ventricosus, swollen
 vere, truly
 vergo, to approach
 verisimiliter, apparently
 vermicularis, worm-like
 vermiformis, vermiform, worm-shaped
 vernalis, vernal, of or belonging to
 spring
 vero, truly
 verruciformis, wart-like
 verruculosus, verrucose, warted
 versatus, poured
 versicolor, of different colors
 versiformis, of different forms
 versus, towards
 vertens, turning
 vertex, icis, m., the tip
 verticalis, vertical
 verticillatim, in whorls
 verticillatus, verticillate, whorled
 vescus, small, weak
 vesicula, ae, f., vesicle, swollen cell
 vesiculosus, vesiculose, swollen, blad-
 dery
 vestiens, covering
 vestigium, i, n., remnant, vestige
 vestio, to cover

vestitus, furnished, covered
 vetustus, old
 vibrans, changing
 videor, to seem
 vigens, growing
 villosulus, somewhat woolly
 villus, i, m., a hairy covering
 vinarius, of wine
 vineus, of or belonging to wine
 vinum, i, n., wine
 violaceus, violet
 violascens, turning violet
 virgens, becoming green
 virgatus, rod-shaped
 viridarium, i, n., greenhouse
 virgultum, i, n., bush, copse
 viridifuscus, greenish brown
 viridulus, greenish
 viscidulus, viscid, somewhat sticky
 visibilis, visible
 visus, seen
 vitellinus, yellow
 vitreus, glassy
 vivens, living
 vividus, vivid
 vivus, alive
 vix, hardly

volva, ae, f., a cup-like sheath at the
 base of a stem
 volvaceus, with a volva
 volvatus, with a volva
 vulgatus, common
 vulgo, commonly
 vulpinus, of a fox

X

xylogenus, xylogenuous, growing on
 wood
 xylophilus, growing on wood

Z

zona, ae, f., a zone
 zonula, ae, f., a little zone
 zoogenus, on animals
 zoogonid, a motile propagative cell
 zoospora, ae, f., zoospore
 zoosporangium, ii, n., zoosporangium
 zoosporiferus, producing zoospores
 zygosporiacus, pertaining to a zygo-
 spore
 zygosporous, with resting spores
 formed by the conjugation of simi-
 lar sex cells
 zymogenus, ferment-producing

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