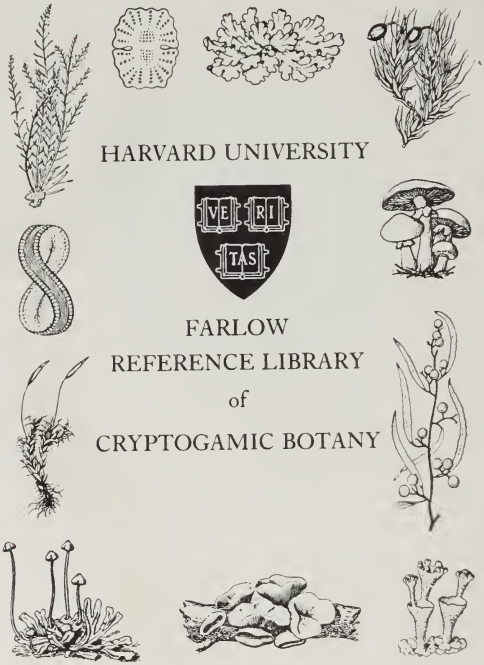

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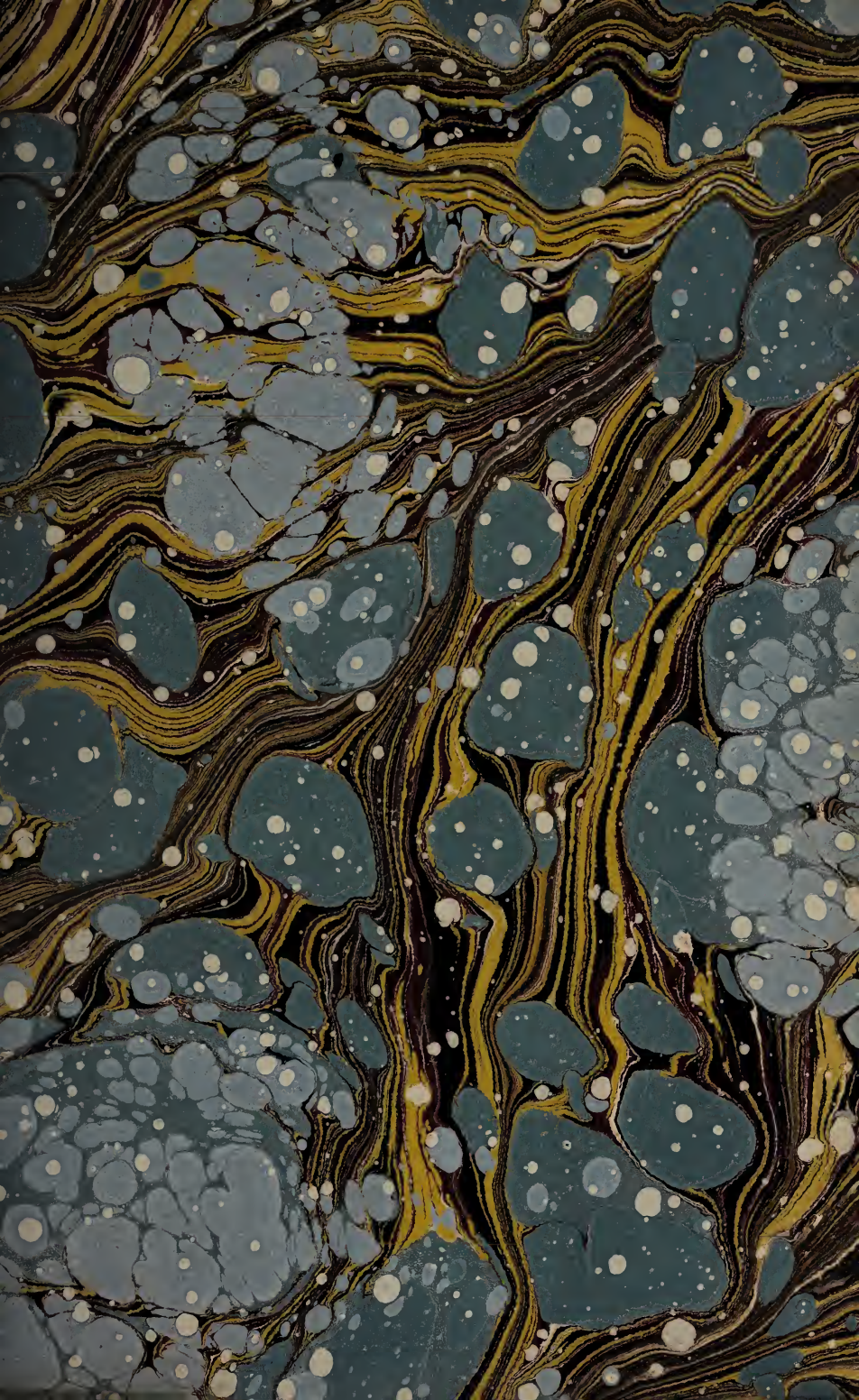

Grevillea,

A QUARTERLY RECORD OF

CRYPTOGAMIC BOTANY

AND ITS LITERATURE.

EDITED BY M. C. COOKE, M.A., A.L.S.,

Author of "Handbook of British Fungi," "Fungi, their uses," &c., "Rust, Smut, Mildew, and Mould," &c., &c.

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Grevillea,

A QUARTERLY RECORD OF CRYPTOGAMIC BOTANY AND ITS LITERATURE.

NEW JERSEY FUNGI.

By M. C. Cooke and J. B. Ellis.

(Continued from Vol. V., pp. 95.)

Solenia fasciculata. *Fr.*
On sticks, &c., lying on the ground. No. 2510.

Corticium læve. *Fr.*
On denudated branches. No. 2487.

Merulius corium. *Fr.*
On sassafras. No. 2603.

Tremella foliacea. *Fr.*
On oak. No. 2571.

Dacrymyces deliquescens. *Duby.*
On fallen limbs.

All the specimens are barren, but probably they may be referred as follows :—

2485. *D. deliquescens*, Duby.

2515. *D. lacrymalis*, Somm., which is, according to Tulasne, only a form of *D. deliquescens*, on oak.

2584, 2535. *D. stillatus*, Nees, on white cedar pole. The texture is firmer, but the barren clavate basidia are alike in all.—See Tulasne, Ann. Sci. Nat., ser. iii., vol. xix. (1853), pp. 220.

Bovista circumscissa. *B. & C.*
On the ground. Colorado (T. S. Brandigu). No. 2539.

Lamproderma arcyriodes. *Rost.* Var. **Ixidea.** *C.*
On dead leaves. No. 2622.

Coniothyrium herbarum. *C. & E.*
Peritheciis convexis, brunneis, primo tectis, membranaceis; sporis subglobosis, brunneis. (Pl. 96, fig. 32.)
On scape of *Yucca filamentosa.*
Spores ·004-·005 mm. diam. No. 2570.

Leptostroma filicinum. *Fr.*
On *Osmunda.* No. 2544.

Macroplodia cinerea. *C. & E.*

This has now the appearance of a *Discella*, but the specimens are old and weather beaten. In one or two instances there is the evidence of having been a perithecium covering the elliptic, simple, brown spores, ·008 mm. long, which are seated on hyaline sporophores.

On decorticated apple. No. 2590.

Phoma fibricola. *Berk.*

On cedar poles. No. 2609.

Phoma fibriseda. *C. & E.*

This is a *Phoma*, having precisely the habit and external appearance of *Sphæropsis fibriseda*, C. & E., but with the spores of a *Phoma*.

On decorticated *Rhus venenata*.

Undoubtedly the two forms called *Sphæropsis fibriseda* and *Phoma fibriseda* are respectively the macrostylospores and microstylospores of some *Sphæria*. No. 2579.

Sphæropsis Pericarpii. *Peck.*

The specimens on husk of hickory nuts, No. 2450, are probably this species, which were overlooked when they were referred to *S. caryæ*, a species now restricted to the form on hickory bark.

Sphæropsis punctum. *C. & E.*

Peritheciis sparsis, minutis, epidermide tectis, globosis; sporis ellipticis, brunneis. (Pl. 96, fig. 27.)

On *Lonicera*. Pennsylvania (W. C. Stevenson, jun.).

Perithecia small, covered with the thin cuticle; spores ·018-·025 × ·008 mm., brown. No. 2614.

Sphæropsis diatrypeum. *C. & E.*

Peritheciis confluentibus in stromate diatrypoideis, atris, erumpentibus, epidermide fissuratis cinctis; sporis ellipticis, hyalinis, in cirrhis pallidis emergentibus. (Pl. 95, fig. 6.)

On twigs of *Chionanthus*.

Spores ·012 × ·005 mm., issuing in a pallid tendril; perithecia united in a Diatrype-like stroma, surrounded by the lacerated epidermis. No. 2532.

Sphæropsis Rosarum. *C. & E.*

Subgregarium vel sparsum; peritheciis tectis, epidermide fissuratis; sporis ellipticis, uninucleatis, brunneis.

On Rose.

Probably, where fully ripe, the spores may become uniseptate, and hence *Diplodia*. Spores ·025 × ·01 mm., brown, uninucleate. See note to *Diplodia chionanthi*. No. 2523.

Sphæropsis rubicola. *C. & E.*

Subgregaria, erumpens. Peritheciis atris, primum tectis, demum epidermide fissuratis; sporis elongato-ellipticis, brunneis. (Pl. 95, fig. 9.)

On black raspberry cane.

Spores ·015-·03 × ·01 mm., often narrowest at one end, brown.

Probably the stylospores of one of the species of *Sphæria* on the same canes. See *Sphæria Hendersonia*. No. 2508*a*.

Sphæropsis fibriseda. *C. & E.*

On decorticated *Nyssa*. No. 2619.

Sphæropsis ilicicola. *C. & E.*

Peritheciis gregariis, atris, erumpentibus, epidermide cinctis; sporis ovoideis, hyalinis. (Pl. 96, fig. 28.)

On holly leaves.

Collected together on either side the leaves. Perithecia prominent, black, shining, splitting the cuticle; spores ovoid, hyaline, ·01-·012 × ·006-·007 m.m. No. 2560.

Sphæropsis phacidioides. *C. & E.*

Peritheciis erumpentibus, subglobosis, atris, epidermide cinctis; sporis cylindraceis, obtusis, hyalinis. (Pl. 96, fig. 29.)

On holly leaves.

Perithecia rather large, splitting the cuticle in a radiating manner, resembling *Phacidium ilicis;* spores cylindrical, hyaline, ·03-·035 × ·004 mm. No. 2600.

Diplodia ilicicola. *Desm.*

On holly twigs. No. 2593.

Diplodia atramentaria. *C. & E.*

Peritheciis paucis, congestis, erumpentibus, atro-brunneis, obtusis, apice magno perforatis; sporis arcte ellipticis, brunneis, profusis, profluentibus et inquinantibus.

On branches of *Morus*.

Spores ·015 × ·006 mm., profuse, issuing from the ostiola in black masses, and blackening the surface of the bark around them as in species of *Melanconium*. No. 2514.

Diplodia Chionanthi. *C. & E.*

Gregaria. Peritheciis tectis, papillatis, atris, ad basin mycelio profuso brunneo radiantibus; sporis ellipticis, brunneis, uniseptatis, vix constrictis.

On branches of *Chionanthus*.

Spores ·025 × ·01 mm. There are scarcely distinctive features for a great number of the species of *Diplodia*, and this amongst them, but as they are probably pycnidia of *Sphæria*, it appears somewhat justifiable to attach definite names *pro. tem.* until the *Sphæria* to which they appertain are determined. This remark is intended to apply to all the species of *Diplodia* and *Sphæropsis* included in these communications. No. 2531.

Hendersonia Robiniæ. *West.*

On *Rocinia*. No. 2612.

Hendersonia Lophiostoma. *C. & E.*

Peritheciis erumpentibus, atris, lateraliter compressis; ostiolis elongato-fissuratis; sporis clavatis, 1-3 septatis, hyalinis.

On wood of elm. New Hampshire (Rev. Joseph Blake).

Externally greatly resembling some species of *Lophiostoma*.

Spores clavate or narrowly pear-shaped, variable in length, ·015-·03 × ·01, hyaline, highly retractive. A very curious species. (Pl. 95, fig. 10.) No. 2540.

Hendersonia delicatula. *C. & E.*

Gregariis. Peritheciis subglobosis, atris, prominulis, erumpentibus, epidermide cinctis; sporis subfusiformibus, hyalinis, nucleatis, dein leniter 3 septatis. (Pl. 96, fig. 26.)

On branches of *Nyssa*.

Perithecia sometimes single, sometimes two or three together, breaking through the epidermis; spores fusiform, delicate, nucleate, at length faintly 3 septate, ·02 × ·004 mm. No. 2601.

Vermicularia dematium. *Fr.*

On *Clematis*. (W. C. Stevenson, jun.) No. 2613.

Excipula erumpens. *B. & C.* Var. **subhispida.**

Agreeing entirely with the description of *Excipula erumpens*, except that the perithecia are not smooth, although apparently so under a lens of a low power.

On *Phytolacca*. No. 2565.

Excipula microspora. *C. & E.*

Sparsa, atra. Excipulis superficialibus, sicco globosis, demum udo arcte apertis, hæmisphæricis, sursum lævibus, deorsum pilis rigidis obsitis, disco livido. Sporis allantoideis, hyalinis, minutis.

On hickory wood and decorticated holly. No. 2108.
(Pl. 95, fig. 18.) No. 2505.

Resembling when dry a hispid *Sphæria* of the section *Villosæ*, when moist opening with a narrow mouth and exposing the livid grey disc. Rigid erect hairs surround the base, but the upper portion is smooth. Spores ·008 mm. long.

Dinemasporium graminum. *Lev.*

On *Carex*. No. 2534.

Cytispora leucosperma. *Fr.*

On holly. No. 2596.

Melanconium magnum. *B.*

On *Juglans regia*. No. 2580.
On hickory. No. 2581.

Sporidesmium antiquum. *Corda.*

On wood of maple. No. 2483.

Sporidesmium Peziæ. *C. & E.*

On old oak stump.

There are also at one end of the specimen indications of another species, but the quantity is too small to determine. No. 2517.

Sporidesmium hysterioideum. *C. & E.*

On wood of maple. No. 2482.

Sporidesmium hysterioideum. *C. & E.*

This is the same as No. 2430 referred to as an early stage of the above species. No. 2573.

Cheirospora botryospora. *Fr.*

On *Carpinus Americana.* No. 2582.

Not differing at all from European specimens.

Pestalozzia funerea. *Desm.*

On *Smilax.* No. 2621.

Pestalozzia stellata. *B. & C.*

On leaves of *Ilex opaca.* No. 2599.

Torula sparsa. *B. & C.* (*?*)

On old pine stump.

The specimens are referred doubtfully to this species, which we have not seen. The tufts are brown and scattered; the joints more or less 3-4 globose, cells connate, ·007 mm. diam. No. 2486.

Torula binale. *C. & E.*

Effusa, atra, velutina. Floccis simplicibus; articulis subglobosis, plurimum in paribus connatis.

On old oak stump.

Flocci delicate, breaking up into joints consisting of two subglobose cells, so that the veritable joints are connate in pairs; sometimes three are united together; about ·006 mm. diam. No. 2518.

Fusarium roseum. *Link.*

Mixed with *Vermicularia.* On *Phytolacca.* No. 2567.

Spores ·33-·04 × ·004 mm.

Botrytis fuliginosa. *C. & E.*

Fuliginosa, maculæforma. Floccis dichotomis, apicibus furcatis, gracilis, septatis. Sporis subglobosis, minimis. (Pl. 95, fig. 15.)

On maple bark.

Forming orbicular or irregular dusky patches $\frac{1}{4}$-$\frac{1}{2}$ inch broad, composed of densely aggregated delicate flocci, about ·07 mm. long, two or three times forked in the upper portion. Spores globose, profuse, in large clusters at the tips ·003 mm. diam. No. 2501.

Polyactis cinerea. *B.*

On *Iris.* No. 2564.

Oidium compactum. *C. & E.*

Album, effusum. Sporis globosis, hyalinis, in pulvinulis subglobosis congestis. (Pl. 96, fig. 31.)

On *Vaccinium* wood.

A very curious species forming a thin white stratum an inch or more in length, consisting of globose white compact masses from $\frac{1}{30}$ to $\frac{1}{20}$ of a millemetre in diameter. These masses are composed of hyaline globose spores about ·005 mm. diam. No. 2575.

Graphium pubescens. *C. & E.*

Minutum, gregarium, atrum; floccis sursum explicatis. Sporis rectis, cylindraceis, uniseptatis, hyalinis. (Pl. 96, fig. 38.)

On twigs of *Smilax.*

Small, looking like a dark pubescence, stems dark brown, the threads separating above and hyaline. Spores cylindrical, uniseptate ·012 mm. long. Nearly all the spores had vanished, leaving

the bare flocci; those above described were free and very sparing at the base of the stems.

Epicoccum scabrum. *Ca.*

On woods of *Juniperus.* No. 2569.

Epicoccum sphærospermum. *B.*

On *Sorghum.* No. 2608.

Memnonium effusum. *Corda.*

On oak bark. (Pl. 95, fig. 17.) No. 2490.

Cladosporium lignicolum. *Corda.*

On oak wood.

Probably this species, but in an imperfect state. No. 2578.

Cladosporium delectum. *C. & E.*

Hypophyllis. Maculis parvulis, atris; floccis simplicibus, erectis, elongatis, multi-septatis, subfasciculatis. Sporis ellipticis 1-3 septatis. (Pl. 96, fig. 36.)

On leaves of *Magnolia glauca.*

Very small spots on the under surface of the leaves. Flocci erect, simple, long, with numerous septa, dividing the threads into short cells. Spores elliptic, with 1-3 septa, ·015-·025 × ·007 mm. The threads resemble those of a *Helminthosporium.* No. 2616.

Macrosporium cladosporioides. *Ca.*

On stems of *Phytolacca.* No. 2529.

Macrosporium fasciculatum. *C. & E.*

Effusum, atrum. Floccis fasciculatis, simplicibus, multi-septatis. Sporis clavatis, 5 septatis, torulosis, brunneis, deorsum attenuatis.

On holly leaves.

Forming black pulverulent patches. Threads fasciculate, simple, very much septate. Spores clavate, attenuated below, with about five septa, and here and there transversely divided, torulose. ·05, × ·0125 mm. (Pl. 96, fig. 30.) No. 2561.

Macrosporium abruptum. *C. & E.*

Effusum, atrum. Floccis elongatis, flexuosis, pluriseptatis. Sporis demum subquadratis, muriformibus, subopacis.

On *Phytolacca* stems. (Pl. 96, fig. 35.) No. 2566.

Some spores clavate others nearly quadrate ·03 × ·025 mm.

On *Yucca filamentosa.*

Probably a condition of the same, but the specimen was too small to ensure certainty. No. 2570.

Helminthosporium macrocarpum. *Grev.*

On maple. No. 2589.

Helminthosporium brachytrichum. *C. & E.*

Effusum, atrum. Floccis brevissimis, septatis, brunneis; sporis cylindraceis, obtusis, multi-septatis (9-12), rectis, vel curvulis, cellulis primo nucleatis, brunneis. (Pl. 95, fig. 13.)

On rotten maple.

Threads very short, not so long as the spores, often of but 2 or

3 cells. Spores cylindrical, rounded at the ends 9-12 septate, not constricted, each cell at first nucleate, ·07 × ·008 mm.

No. 2489.

Peziza (Humaria) orthotricha. *C. & E.*

Miniata, sessilis, sparsa. Cupulis hemisphæricis, glabris, demum applanatis; ascis cylindrico-clavatis; sporidiis ellipticis, asperulis, uninucleatis; paraphysibus superne clavatis, aurantio-tinctis.

Amongst *Orthotrichum* on bark.

Cups 1 mm. broad, margin entire, rather fleshy; disc orange-vermilion; asci approaching to clavate; sporidia elliptical, rough, with one large nucleus, ·02-·022 × ·01-·011 mm. (Pl. 96, fig. 33.)

No. 2546.

Peziza (Dasyscypha) virginea. *Batsch.*

On sticks. No. 2553.

On *Osmunda*. No. 2624.

Peziza (Dasyscypha) variecolor. *Fr.*

On rotten oak. No. 2548.

Peziza (Dasyscypha) fuscidula. *C. & E.*

On leaves of *Andromeda*.

Very variable in the length of the stem; sometimes almost sessile. No. 2550.

Peziza (Dasyscypha) Osmundæ. *C. & E.*

Sparsa, minuta, nivea. Cupulis demum applanatis; margine dentatis, subtus leniter pubescentibus; ascis clavatis; sporidiis linearibus.

On fronds of *Osmunda*.

Cups about one-tenth of a millimetre broad; sporidia minute, not exceeding ·005 mm. long. No. 2623.

Peziza (Tapesia) aurelia. *P.*

On leaves, &c. No. 2551.

Peziza (Tapesia) culcitella. *C. & E.*

Gregaria. Cupulis in strato brunneo nidulantibus, hemisphæricis, demum applanatis, albidis, glabris; asci cylindraceis; sporidiis linearibus.

On old oak stump.

Cups about 1 mm. broad, seated on a sparse brown byssoid stratum, at first milk-white, pallid when dry, externally quite smooth; sporidia ·008 × ·002 mm. No. 2552.

Peziza (Hymenoscypha) cyathoidea. *Bull.*

On *Nesæa verticillata*. No. 2547.

Peziza (Mollisia) vinosa. *A. & S.* **β. Minor.**

On maple. No. 2558.

Peziza (Mollisia) vinosa. *A. & S.*

On pitch pine pole. No. 2536.

Peziza (Mollisia) rufula. *Schw.*

Having been informed that the specimens referred to this species in "Grevillea," v., pp. 91 (No. 2463) do not agree with the

specimens under this name in the Schweinitz's herbarium, we must refer them to *Pez. rubella* as a variety. Hitherto we have failed to find any good features by which to distinguish *P. rubella* from *P. vinosa*, at least in some of their forms.

Peziza (Mollisia) vulgaris. *Fr.*

On old oak stump. No. 2522.

Peziza atrovirens. *Pers.*

On decorticated maple. (Sporidia immature.) No. 2555.

Peziza (Mollisia) atrocinerea. *Cooke.*

On herbaceous stems. No. 2545.

Peziza (Mollisia) subatra. *C. & P.*

On *Solidago*. No. 2543.

Peziza (Mollisia) Astericola, *pro. tem.*

On stems of *Aster*. No. 2502.

As only two cups of the *Peziza* could be found on the specimens sent us for examination, we can give no description, and no information beyond the fact that we do not regard it as absolutely identical with *Peziza Artemisiæ*, Lasch., to which it was referred. This circumstance gives us the opportunity of protesting against the supposition that any fragment is sufficient for the determination or description of a species. The opinion seems to be very current that this is the case; whereas no single specimen, be it ever so good, is unimpeachable, and to describe a plant satisfactorily a good series of specimens should be examined.

Peziza (Mollisia) stictoidea. *C. & E.*

Sessilis, erumpens, sparsa. Cupulis minutis, tectis, demum emergentibus, atrobrunneis; disco pallido; ascis clavatis; sporidiis arcte fusoideis, nucleatis.

On *Juncus*.

Very minute, cups $\frac{1}{10}$-$\frac{1}{8}$th mm. broad; margin longitudinally connivent when dry, and retracted, hence it resembles a minute *Stictis;* sporidia ·016 × ·003 mm. (Pl. 96, fig. 37.) No. 2556.

Peziza (Patellea) compressa. *P.*

On maple wood. No. 2554*b*.

Var. **Rubicola.** On *Rubus*.

Not differing apparently, but fragment so small, and so few of the asci are mature, that a definite judgment can scarcely be pronounced. No. 2554.

Peziza (Patellea) Artemisiæ. *Rehm.*

On *Artemisia*. No. 2617.

Ascobolus (Ascophanus) vicinus. *Boud.*

On cow dung. No. 2611.

Patellaria connivens. *Fr.*

On oak. No. 2554 *a*.

Patellaria subsidua. *C. & E.*

Gregaria. Cupulis atrobrunneis, depressis, inter fibrillis nidulantibus, difformis; ascis clavatis; sporidiis lanceolatis, quinque

septatis, hinc illic transversaliter divisis, hyalinis; paraphysibus clavatis, brunneis.

On decorticated *Morus*.

Cups scarce 1 mm. broad, irregular by compression, sunk in the wood when dry, looking like the bases of old *Sphæriæ*; sporidia lanceolate, obtuse at the ends, with about 5 septa, and an occasional transverse division ·025-·03 × ·01 mm.; in some cases only ·015-·018 × ·007 mm. (Pl. 96, fig. 34.) No. 2549.

Stictis stigma. *C. & E.*

Erumpens, orbicularis, urceolata, disco atra-fuligineo, ore contracto, integro, pallido; ascis longissimis, cylindraceis; sporidiis linearibus.

On twigs of *Cornus*.

Sporidia filiform, the length of the ascus; cups small, not exceeding 3 mm., like a small black dot encircled by a pallid ring. When the cuticle is gone outside, the ring is again blackened, so that it resembles a small semi-immersed Sphæria. No. 2526.

Agyrium herbarum. *Fries.*

On *Pteris aquilina*. No. 2598.

Cenangium urceolatum. *Ellis.*

Erumpens, olivaceo-atrum; cupulis urceolatis, ad basin attenuatis, extus pilis brevibus flaccidis adspersis, ore contracto, disco pallide-fuligineo; ascis clavato-cylindraceis; sporidiis arcte fusiformibus, hyalinis, uniseptatis.

On twigs of *Clethra alnifolia*.

Cups usually single, $\frac{1}{3}$-$\frac{1}{2}$ mm. wide, erumpent, very prominent, mouth contracted when dry almost to a pore, disc livid; externally clad with delicate flaccid hairs; sporidia narrowly fusiform, uniseptate, ·015 × ·004 mm. *Sphæronema clethrincola*, Ellis, in Bul. Torr. Club, is the stylosporous condition.

Hysterium pulicare. *Fr*

On yellow oak. No. 2592.

Hysterium virgultorum. *DC.* var. **petiolorum.**

On oak petioles. No. 2591.

Hysterium virgultorum. *DC.*

On *Smilax*. No. 2568.

Diatrypella olivacea. *C. & E.*

Erumpens, convexa, primum olivacea, demum atra; peritheciis magnis, paucis; ostiolis obtusis; ascis clavatis, subsessilibus; sporidiis numerosis, flavis, linearibus, obtusis, leniter curvulis.

On *Nyssa*.

Resembling *D. quercina* in habit, but at first olivaceous; this is at length rubbed off in the upper portion, which is then black; the asci are shortened below, almost sessile; sporidia numerous, yellow in the mass; slightly curved, about ·01-·012 mm. long. No. 2602.

Diatrype stigma. *Fr.*

On *Cerasus mahaleb*. No. 2588.

Diatrype Badhami. *Curr.*

On *Prinos glabra.* No. 2595.

Diatrype æthiops. *C. & E.*

Irregularis, convexa, atra ; peritheciis in stromate coriaceis congestis, ostiolis prominulis ; ascis cylindraceis ; sporidiis ellipticis, uniseptatis, brunneis.

On *Morus.*

Pustules irregular, consisting of 3-4 perithecia seated on the wood and penetrating the bark ; the wood is blackened around the pustules, but the specimens were old and in very bad condition, so that the description is necessarily not satisfactory ; sporidia .02 × ·01 mm., just like those of *Diatrype quadrata,* Schu., but the habit is different. No. 2495.

Eutypa spinosa. *P.*

On maple. No. 2519.

Valsa quaternata. *Fr.*

On maple.

Sporidia not mature, but apparently this species. No. 2606.

Valsa præstans. *B. & C.*

Sporidia minute, sausage-shaped, ·01 mm. long.

On *Nyssa.* No. 2542.

Valsa goniostoma. *B. & C.*

On *Rhus venenata.* No. 2577.

Valsa tetraploa. *B. & C.*

On Mahaleb cherry. No. 2604.

Valsa phomaspora. *C. & E.*

Pustulis ellipsoideis, erumpentibus ; peritheciis atris, globosis, in collis attenuatis, tectis ; ostiolis convergentibus, cylindraceis, atris, vix conspicuis ; ascis clavatis ; sporidiis arcte ellipticis, rectis, phomatoideis, primum binucleatis, hyalinis.

On branches of *Myrica.*

Elevating the bark, but only just penetrating it by the small convergent ostiola ; sporidia narrowly elliptic, with two nuclei, as in some species of *Phoma ;* ·01-·012 mm. long. (Pl. 95, fig. 12.) No. 2481.

No. 2528 appears to be the stylospores of a *Valsa.* On maple twigs.

Valsa delicatula. *C. & E.*

Pustulis minimis, erumpentibus ; peritheciis membranaceis, brunneis, tectis ; in stroma brunnea collecti ; ostiolis convergentibus, gracilis, ad apice tumidis ; ascis clavatis ; sporidiis allantoideis, hyalinis.

On branches of *Andromeda* and *Vaccinium.*

Pustules small, orbicular or elongated, covered with the bark, except the minute ostiola, which are clustered in a brown stroma ; perithecia shaped like a Florence flask, membranaceous, the neck equal in length to the perithecia, slender, swollen abruptly at the

apex; sporidia sausage-shaped, about ·0075 mm. long. (Pl. 95, fig. 11.) Nos. 2503, 2480.

Valsa decidua. *C. & E.*

Pustulis elongatis, erumpentibus; peritheciis minimis, atris, (12-20), ostiolis elongatis, demum partim deciduis; ascis clavatis; sporidiis allantoideis, minimis, hyalinis.

On twigs of *Azalea.*

The pustules are small, perithecia loosely collected together in an evanescent mealy brown stroma; some or all of the perithecia often fall out when mature, leaving the pallid liber naked; sporidia about ·01 mm. long, curved. No. 2491.

Valsa sociata. *C. & E.*

Minuta, tecta; peritheciis subglobosis, in corticis immersis, paucis 3-5, atro-cinctis; ascis clavatis; sporidiis ellipticis, uniseptatis, hyalinis.

On *Benzoin* twigs.

The pustules are small, covered, and scarce visible, except by tufts of black threads of a *Helminthosporium,* which proceed from nearly every pustule, the clavate spores of which are multiseptate; sporidia elliptical uniseptate, hyaline, ·012 × ·004. No. 2639.

Valsa mahaleb. *C. & E.*

Although we have applied this name to the specimens, the fruit is too immature for description. There is evidence that it is an undescribed species; but at present we can only apply the name, and say that the pustules are small, consisting of but 3 or 4 perithecia, and that the asci are somewhat clavate. The sporidia have the appearance of being very large.

On Mahaleb cherry. No. 2605.

Valsa subclypeata. *C. & P.*

On *Rubus.* N. Jersey (Ellis, 2506).

Valsa inconspicua. *C. & E.*

Apparently a good species, but the specimens are too small and poor for a satisfactory description. Sporidia 4 nucleate, then triseptate, narrowly fusiform, hyaline, ·015 × ·004 mm.

On *Alnus.* No. 2583.

Valsa ocularia. *C. & E.*

Pustulis epidermide tectis, ad basin ligno adnatis. Peritheciis in stromate pallido congestis, nigro-cinctis; ostiolis atris, cylindricis, erumpentibus; ascis clavatis; sporidiis fusiformibus, 4 nucleatis demum leniter triseptatis, hyalinis.

On branches of *Ilex glabra* (?)

Perithecia seated on the wood collected in a pallid stroma, and surrounded by a black line, so that when the bark is removed they have an ocellate appearance. The bark is only just pierced by the ostiola; sporidia fusiform, quadrinucleate, at length faintly triseptate, ·025 × ·004 mm. (Pl. 95, fig. 3.)

No. 2488.

Valsa nigrofacta. *C. & E.*

Peritheciis paucis (3-6) magnis, epidermide nigrofactis, nitidis, tectis; ostiolis convergentibus; ascis cylindraceis; sporidiis uniseriatis, arcte ellipticis, uniseptatis, medio constrictis, brunneis.

On branches of *Sassafras*.

Sporidia ·022 × ·009 mm., strongly constricted in the centre, each cell nearly globose, brown. Externally covered with the shining black cuticle as in *Sph. clypeata*. (Pl. 95, fig. 4.)

No. 2530.

Valsa apatosa. *C. & E.*

Orbicularis, tecta, convexa. Peritheciis (4-6) atris, congestis; ostiolis conjunctis in disco minuto, punctiformi, atro; ascis cylindraceis; sporidiis (4-8) ellipticis, uniseptatis, brunneis.

On branches of *Nyssa*.

Perithecia rather large, covered with the thin cuticle, to which they adhere; ostiola collected together, and perforating the cuticle with a very minute punctiform black disc; sporidia often only four in ascus, ·035 × ·015 mm. brown. (Pl. 95, fig. 1.)

Valsa profusa. *Fr.*

Microstylospores as described by Tulasne. Probably the same as *Cytispora abnormis*, B. & C.

On *Robinia*. No. 2597.

Cucurbitaria congesta. *C. & E.*

Erumpens. Peritheciis atris, opacis, congestis, quandoque confluentibus, poro pertusis; ascis cylindraceis; sporidiis ellipticis, medio constrictis, multiseptatis, muriformibus, brunneis; macrostylosporis ellipticis, uniseptatis, opacis, brunneis.

On *Magnolia* bark.

Clusters of perithecia erumpent, crowded together, sometimes confluent, opaque, flattened above, resembling in habit a *Melogramma*. Sporidia uniseriate, brown muriform, ·025 × ·012 mm.; stylospores mixed with the clusters of perithecia, diplodioid, broadly elliptic, uniseptate, opaque, brown, rather shorter than the sporidia. (Pl. 96, figs. 21 & 22.) No. 2594.

Cucurbitaria Comptoniæ. *C. & E.*

Cæspitosa. Peritheciis globosis, papillatis, transverse erumpentibus, lævibus, atris; ascis cylindraceis; sporidiis uniseriatis, ellipticis, medio constrictis, 5 septatis, muriformibusque, flavis.

On twigs of *Comptonia asplenifolia*.

Perithecia erumpent in small transverse tufts, not crowded, globose, with a papillate apex; sporidia ·02-·022 × ·01 mm., muriform, slightly constricted at the centre. (Pl. 95, fig. 5.)

No. 2496.

Lophiostoma scelestum. *C. & E.*

The name first applied to this species, *Lophiostoma microstoma*, having been pre-occupied, the above name is substituted.

Lophiostoma fenestralis. *C. & E.*

Immersa, sparsa. Peritheciis subglobosis; ostiolis lateraliter

compressis, hysterioideis; ascis cylindraceis (?); sporidiis obtusis fusiformibus, medio constrictis, fenestratis, olivaceo-brunneis.

On old decaying *Morus*.

Not in good condition. Asci dissolved, but free sporidia found, which were elongated elliptical, constricted in the centre, olive-brown, fenestrate, ·05-·06 × ·02 mm. No. 2437.

Sphæria ligniaria. *Grev.*

Sporidia elliptic, brown, ·014 × ·008 mm.

On *Cupressus thyoides*. No. 2498.

There has been much confusion of this species with *Sphæria hispida*, Tode, many of the specimens in herbaria bearing the latter name being referable to the present species. If Fuckel's determination proves to be accurate, then *Sphæria hispida* is very closely related to *Sph. hirsuta*. The sporidia are rather smaller and narrower than in Fuckel's specimens, which again are rather narrower than in British specimens.

Sphæria abietina. *Fckl.* (sub *Rosellinia).* var. β. **trichota,** C. & E.

Sporidia oval, or subglobose, brown.

On naked pine boards and poles. No. 2401.
No. 2537.

Sporidia ·012 × ·01 mm., often nearly globose; hairs ·09 mm. long.

After some deliberation, we think it better to refer the American specimens to this species. The perithecia have longer hairs, and the sporidia differ as much from the typical form as those of Fuckel's specimens from his *Sphæria ligniaria*, which again slightly differs from British specimens of Greville's plant. Only a careful examination of a series of specimens can determine whether they are really specifically distinct.

Sphæria (Denudatæ) arctespora. *C. & E.*

On *Andromeda*. No. 2585.

Sphæria scopula. *C. & Pk.*

On pine boards. No. 2610.

Sphæria (Pertusæ) melanostigma. *C. & E.*

Gregaria, minima, atra. Peritheciis subglobosis, papillatis, emergentibus, submembranaceis; ascis cylindraceo-clavatis; sporidiis ellipticis, parvulis, hyalinis, nucleatis.

On decorticated oak limbs.

Perithecia very minute, ·15 mm. diam., gregarious on bleached spots, surrounded by the fibres of the wood amongst which they are seated. Sporidia elliptical, hyaline, about ·008 × ·001 mm., at first with one or two nuclei; perithecia more coriaceous than in *S. diaphana*, C. & E., and sporidia much smaller. (Pl. 95, fig. 16.) No. 2520.

Sphæria (Pertusæ) pæcilostoma. *B. & Br.*

Probably this species. But there were only two or three perithecia upon the specimen.

On *Vaccinium*. No. 2575.

Sphæria (Immersæ) thyoidea. *C. & E.*

Gregaria. Peritheciis semi-immersis, atris, collo elongato; ascis clavatis; sporidiis naviculoideis, hyalinis; microstylosporis linearibus; macrostylosporis ellipticis, uniseptatis, brunneis (*Diplodia*).

On *Cupressus thyoides.*

In habit very similar to *Sphæria soluta*, C. & E., but different fruit. Sporidia naviculoid, ·035 × ·01, but certainly immature; probably becoming septate, sometimes elliptic and broader.

Accompanied by a *Diplodia*, with spores ·03 × ·01, constricted in the middle, doubtless the macrostylospores; the microstylospores are represented in No. 2334, and are ·008 mm. long. (Pl. 96, fig. 19.) No. 2618.

Sphæria microtheca. *C. & E.*

On bleached oak.

This appears to be a curious form of the above species, with the perithecia exposed as in the section *Denudatæ.* No. 2484.

Sphæria (obtectæ) viscosa. *C. & E. Grev. V., p.* 334.

On *Clethra*, accompanied by a *Pestalozzia*, but whether related we cannot say. No. 2513.

Sphæria (obtectæ) eriostega. *C. & E.*

Gregaria. Peritheciis leniter fusco lanosis demum glabris, tectis, in maculis bullatis congestis; ascis clavatis; sporidiis biseriatis, late lanceolatis, utrinque obtusis, demum biseptatis, brunneis. (Pl. 95, fig. 2.)

On *Sassafras*, in company with a barren *Diatrype*, resembling *D. bullata.*

Sporidia ·035 × ·012 mm. Apparently when mature biseptate and brown. Free sporidia of this character are mixed with the hyaline simple sporidia which are contained in the asci. No coloured sporidia were seen inclosed in asci, but the granular sporidia within the asci had every appearance of being immature. No. 2527.

On black raspberry canes.

This is evidently the same species with quite smooth perithecia, but the sporidia are equally immature. It is accompanied by a *Sphæropsis.* Closely allied to *S. viscosa.* No. 2508.

Sphæria (obtectæ) entaxia. *C. & E.*

Peritheciis seriatis, erumpentibus, globosis, atris, papillatis; ascis clavatis; sporidiis lanceolatis, hyalinis; pycnidiis in consortio similaribus, stylosporis diplodioideis, ellipticis, uniseptatis, brunneis.

On branches of *Andromeda.*

Similar in fruit to *S. viscosa*, C. & E, but the habit is different; sporidia ·03-·032 × ·012 mm.; stylospores of the Diplodia type, ·022 + ·01 mm. (Pl. 95, fig. 14.) No. 2494.

Sphæria (obtectæ) Hendersonia. *Ellis.*

Gregaria. Peritheciis epidermide nigrofacta tectis, tumidulis, nec fissuratis; sporidiis uniseriatis, lanceolatis, triseptatis, leniter constrictis, pallide fuscis.

On black raspberry canes.

Sporidia ·018 × ·004 mm., triseptate; the perithecia are gregarious, covered by the blackened cuticle, which is slightly elevated but not fissured; sporidia very similar to those of *Sphæria abbreviata*, C., but habit and asci very different. (Pl. 95, fig. 8.)

No. 2508 *b*.

Sphæria (Diaporthe) spiculosa. *Fr.* *var.* **Phytolaccæ.**

On stems of *Phytolacca*.

Sporidia too immature to determine whether really distinct from *Sph. euspina*, and some other very closely allied species, all of which are forms of *Sphæria spiculosa* of Fries. No. 2493.

Sphæria rostellata. *Fr.*

On *Rubus villosus*. No. 2509.

Sphæria anguillida. *C.*

Gregaria, mox nuda; peritheciis ovatis, atrobrunneis, lævibus, nitidis, papillatis; ascis cylindraceis; sporidiis filiformibus, multiseptatis, flaveolis.

On stems of *Bidens*.

The perithecia are twice as large as in *S. fulgida*, C. & P., the sporidia little more than half the length of those in *Sphæria acuminata*; sporidia ·12 mm. long. In a former paper referred to *S. acuminata*. Nos. 2390, 2500.

This Sphæria belongs to the small group which some mycologists recognize as a separate genus under the name of *Raphidospora*, on account of the vermiculate sporidia. It may be of advantage to enumerate here the American species which have come under our notice.

1.—*S. acuminata*, Sow., which is evidently *S. carduorum*, Wallr.. occurs on the stems of thistles, and has often been said to occur in the United States, although, up to the present, we do not remember to have seen the true form; the asci are at least ·2 mm. long. The specimens issued by Dr. Curtis, at least some of them, do not belong to this. *S. vibriospora*, B. & C., is subsequently referred by Berkeley to this species, but our specimens are certainly *S. rubella*.

2.—*S. anguillida*, C., has much more conical perithecia, and shorter asci, not exceeding ·15 mm. long. To this belongs the specimens on *Bidens*, which were previously referred by us to *S. acuminuta*, and also specimens issued by Ravenal as *Sphæria coniformis* (No. 1946), and by Dr. Curtis under the same name. Does *S. coniformis*, Fr., really occur in the United States? It must be remarked that the asci in both Ravenal's and Curtis's specimens are rather shorter than in the form on *Bidens*.

3.—The next species is *Sph. fulgida*, C. & P., with smaller, prominent, shining, black, but scarcely conical perithecia, and asci about ·1 mm. long. Sporidia are consequently not more than half as long as in *S. carduorum*. At present we have only seen this species from New York.

4.—*Sphæria rubella*, P., often has the perithecia seated on reddish-purple spots, but *not* invariably. The specimens of *S. vibriospora*, B. & C., from Dr. Curtis, are evidently this species.

5.—*Sphæria solidaginis*, Fries, and some which bear the name *Sphæria solidaginis*, Schweinitz, appear to us to be identical. The former represented in Rabenhorst's Fungi Europæi, No. 332, and specimen from Dr. Curtis named *Sphæria acuminata* on *Solidago* are the same as we have seen marked *S. solidaginis*, Schw., with vermiculate sporidia in asci about ·15 mm. long. The *Sphæria solidaginis* of Schweinitz should be a follicolous species.

There are some other closely allied species, but we have no specimens from the United States. These are *S. urticæ*, Rabh., on stems of *Urtica* and *Scrophularia*, *Sphæria Bardanæ*, Wallr., on *Arctium*, and several other less common species published by Rehm and Fuckel.

It is not always easy to distinguish at once the characteristic features of these closely related species, and whether all of them will stand the test of experience is doubtful, but those enumerated above as belonging to the United States appear to be irreproachable.

Sphæria (caulicolæ) clavigera. *C. & E.*

Peritheciis sparsis, subglobosis, tectis, atris, glabris, subprominulis; ascis clavatis; sporidiis biserialibus, clavatis, brunneis, 7-septatis.

On *Phytolaccæ*.

Sporidia brown, clavate, usually slightly curved, with about seven septa, ·04 × ·008 mm. (Pl. 96, fig. 25). No. 2565.

Sphæria (culmicolæ) Michotii. *West.*

On *Juncus Grernii*, N. Hampshire (Rev. J. Blake).

The brown biseptate spores readily distinguish this species. It is mixed with *Uromyces Junci*.

Sphæria (Pleospora) denotata. *C. & E.*

Peritheciis globosis, atris, prominulis, primo tectis; ascis clavatis, sporidiis elongato-ellipticis, medio constrictis, flavo-brunneis, multiseptatis, fenestratis.

On stems.

Perithecia mostly seated on pallid spots, large, prominent, soon exposed; sporidia muriform, ·05 × ·02 mm., larger than in *Sph. herbarum*. (Pl. 96, fig. 20.) No. 2507.

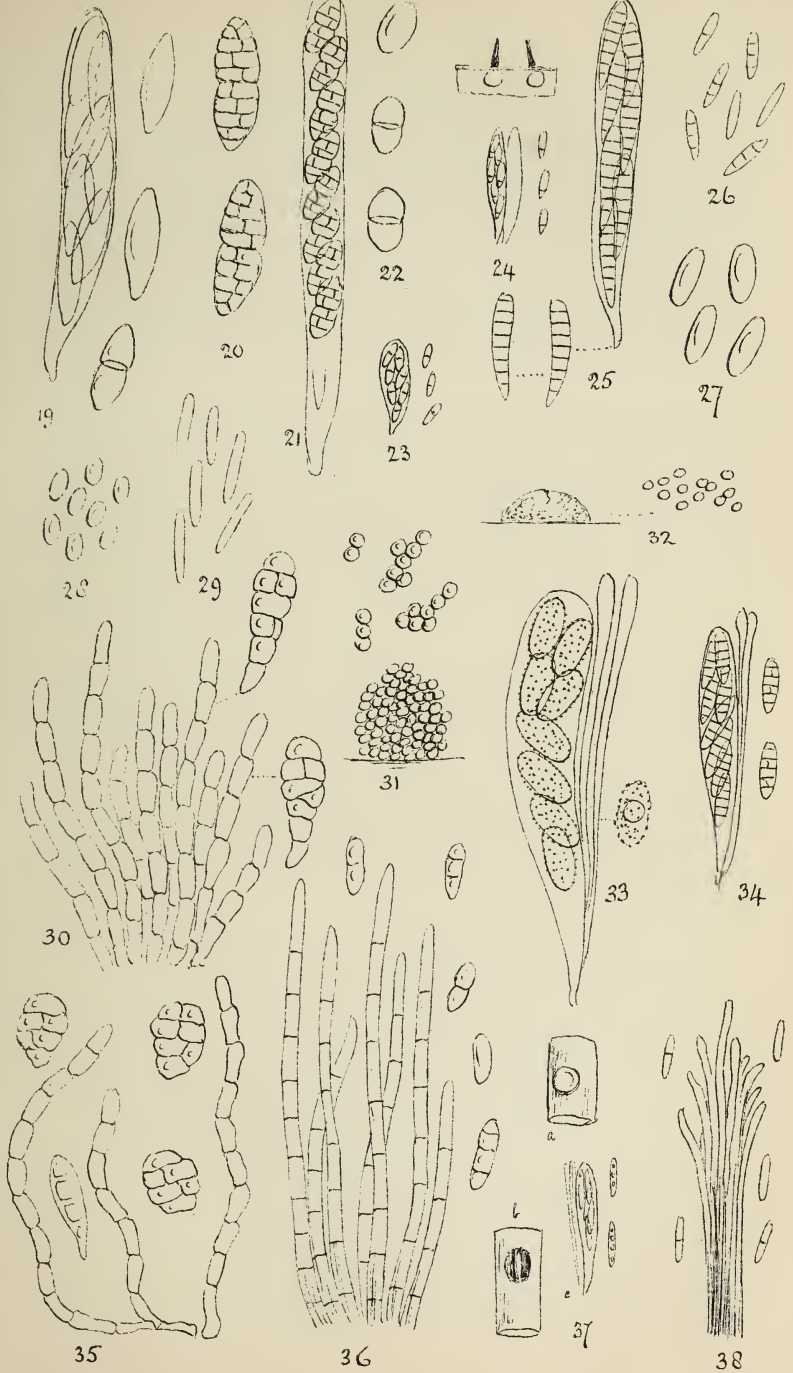
Sphærella pardalota. *C. & E.*

Peritheciis minutis, globosis, atris, semi-immersis, in maculis irregularibus congestis; ascis clavatis; sporidiis arcte ellipticis, uniseptatis.

On leaves with *Gnomonia Myricæ*.

Perithecia collected in irregular spots, limited by the veins of the leaf; asci small, clavate; sporidia ·008 × ·0035 mm., uniseptate. (Pl. 96, fig. 23.) No. 2576.

NEW JERSEY FUNGI.



NEW JERSEY FUNGI.

Gnomonia Myricæ. *C. & E.*

Peritheciis sparsis, immersis, collo elongato, rostrato ; ascis lanceolatis; sporidiis arcte ellipticis, inæqualiter uniseptatis.

On leaves of *Myrica cerifera*, mixed with an immature *Septoria*.

Small, only the rostrate ostiolum piercing the cuticle; sporidia narrowly elliptical, uniseptate, one cell scarcely half as large as the other, ·01 mm. long. (Pl. 96, fig. 24.) No. 2587.

Asterina cupressina. *Cooke.* (*Venturia Cupressina*, Rehm. Asc., No. 394.)

Mycelio prope obsoleto ; peritheciis brunneis, membranaceis, floccis radiantibus coalitis, subinde 3-6 pilis rigidis obsitis ; ascis clavato pyriformibus, stipitatis; sporidiis uniseptatis, sursum inflatis, globosis, brunneis.

On leaves of *Cupressus thyoides*.

A curious species, but clearly not a *Venturia*, four or five perithecia, which are quite smooth, are encountered to each one with three or four rigid hairs. When subjected to pressure the perithecia break up into their component radiating flocci, they are almost obsolete (or at least separate readily) at the base. The sporidia are coloured, the upper cell broadest, about ·018 × ·01 mm. Accompanied by pycnidia in larger perithecia containing elliptic brown stylospores, ·02 × ·01 mm.

The following are imperfect :—

No. 2586, on hickory. Myriads of exceeding minute spermatia oozing out in yellow tendrils—probably a state of some *Valsa*.

No. 2563, on maple—similar, but larger stylospores—with the habit of a *Valsa*.

No. 2562, on decorticated maple. A *Sphæria (Immersæ)* but the asci are imperfect, at present containing only granular plasma.

No. 2615 is a semi-immersed *Sphæria*, with broad saccate asci, but the sporidia are still unformed, and but indistinctly indicated. On pine poles. No. 2615.

Plate 95, fig. 1. Valsa apatosa, C. & E.
,, ,, 2. Sphæria eriostega, C. & E.
,, ,, 3. Valsa ocularia, C. & E.
,, ,, 4. Valsa nigrofacta, C. & E.
,, ,, 5. Cucurbitaria Comptoniæ, C. & E.
,, ,, 6. Sphæropsis diatrypeum, C. & E.
,, ,, 7. Sphæropsis baculum, Gerard.
,, ,, 8. Sphæria Hendersonia, Ellis.
,, ,, 9. Sphæropsis rubicola, C. & E.
,, ,, 10. Hendersonia Lophiostoma, C. & E.
,, ,, 11. Valsa delicatula, C. & E.
,, ,, 12. Valsa phomaspora, C. & E.
,, ,, 13. Helminthosporium brachytrichum, C. & E.
,, ,, 14. Sphæria entaxia, C. & E.
,, ,, 15. Botrytis fuliginosa, C. & E.
,, ,, 16. Sphæria melanostigma, C. & E.
,, ,, 17. Memnonium effusum, Corda.
,, ,, 18. Excipula macrospora, C. & E.

Plate 96, fig. 19. Sphæria thyoidea, C. & E.
" " 20. Pleospora denotata, C. & E.
" " 21. Cucurbitaria congesta, C. & E.
" " 22. Stylospores of the same.
" " 23. Sphærella pardalota, C. & E.
" " 24. Gnomonia Myricæ, C. & E.
" " 25. Sphæria clavigera, C. & E.
" " 26. Hendersonia delicatula, C. & E.
" " 27. Sphæropsis punctum, C. & E.
" " 28. Sphæropsis ilicicola, C. & E.
" " 29. Sphæropsis phacidioides, C. & E.
" " 30. Macrosporium fasciculatum, C. & E.
" " 31. Oidium compactum, C. & E.
" " 32. Coniothyrium herbarum, C. & E.
" " 33. Peziza orthotricha, C. & E.
" " 34. Patellaria subsidua, C. & E.
" " 35. Macrosporium abruptum, C. & E.
" " 36. Cladosporium delectum, C. & E.
" " 37. Peziza stictoidea, C. & E.
" " 38. Graphium pubescens, C. & E.

All the spores are drawn to a scale of 500 diameters.

NEW BRITISH LICHENS.

Communicated by the Rev. J. M. Crombie, F.L.S.

The following *new species* of Lichens, recently detected in Great Britain, have been described by Dr. Nylander, in the "Flora," 1877, Nos. 14, 15.

1. Collemopsis Leptogiella. *Nyl.*—Thallus olive-brown, thinly subcoralloideo-furfureous, effuse; apothecia testaceo-lurid, minute, leptogiomorphous, epithecium somewhat impressed or at length subplane, slightly margined; spores 8 næ., colourless, ellipsoid or oblongo-ellipsoid, 0·010-17 mm. long, 0·005-7 mm. thick, paraphyses slender, thicker at the apex; hymenial gelatine tawny wine red with iodine.

On quartzose rocks. Kylemore, Galway (Larbalestier). A peculiar species belonging almost to a distinct genus.

2. Lecidea epimarta. *Nyl.*—Thallus whitish, minutely depresso-granulate (K + yellow); apothecia brown, subcrowded, suboconical (as if tuberculiform), minute; above somewhat plane, immarginate; beneath, sub-narrowed, usually rusty ochraceo-suffused, internally dark pale-ochraceous; spores 8 næ., colourless, oblong, minute, 0·006-9 mm. long, 0·0025—0,0035 mm., thalamium somewhat ochraceous, paraphyses slender, scanty, hypothecium subcolourless or pale-ochraceous, thick, solid; hymenial gelatine bluish and then (especially the thecæ) tawny-yellow.

On the ground. Achosragan Hill, Appin (Crombie), associated with *Pycnothelia papillaria*. A small and singular species

approaching to the section of *Lecidea uliginosa* amongst the Biatoras. Very sparingly gathered.

3. Lecidea columnatula. *Nyl.*—Thallus sordid-yellow, subgranulato-unequal, of moderate thickness, rimoso-diffract, compacted, as it were, of erect connated columnules (above and internally K + yellow); apothecia black, superficial, somewhat plane, subimmarginate, small, when young with evanescent, obtuse margin, internally whitish; spores 8 næ., colourless, oblong, 1 septate, 0·012-16 mm. long, 0·004 mm. thick, paraphyses not very well discrete, epithecium and perithecium blackish; hymenial gelatine bluish, and then tawny wine-coloured with iodine. Spermogones with the sterigmata articulato-compound and branched, the spermatia oblong, 0·0030—35 mm. long, 0·0006 mm. thick.

On micaceo-schistose rocks. Kylemore, Galway (Larbalestier). This species belongs to a distinct section.

4. Lecidea rupicola. *Nyl.*—Thallus glaucous, thin, opaque, subrimulose; apothecia pale-livid or livid-brown, plane, margined, small, often with a spurious thalline margin; spores 8 næ., oblong, 1 septate, 0·010-11 mm. long, 0·004 mm. thick, paraphyses nearly moderate, epithecium sub yellowish, granulose; hymenial gelatine bluish, and then wine reddish with iodine.

On moist schistose rocks. Kylemore, Galway (Larbalestier). Perhaps not specifically distinct from *L. cyrtella.*

5. Lecidea littorella. *Nyl.* Thallus glaucous-green, very thin, rimulose; apothecia pale-yellow, biatorine, thin, small, submargined; spores 8 næ., oblong, 1 septate, 0·008-12 mm. long, 0·0035-45 mm. thick, paraphyses slender, epithecium and hypothecium colourless; hymenial gelatine bluish, and then wine-reddish with iodine.

On schistose rocks, shores of Lough Inagh, Galway (Larbalestier). Allied to the preceding species, but the apothecia have somewhat the appearance of those of *Lecanora polytropa.*

6. Lecidea valentior. *Nyl.* Thallus greyish or sub-greenish, thin, continuous, rimose; apothecia brown, immarginate, somewhat plane or convex, often obtusely submargined, the margin pale; spores ellipsoid, 0·012-17 mm. long, 0·006-8 mm. thick.

On moist friable quartz rocks, shores of Lough Inagh, Galway (Larbalestier). This seems to be only a subspecies of *L. sanguineoatra,* from which it scarcely differs, unless in the constantly larger spores.

7. Verrucaria submiserrima *Nyl.*—This is scarcely more than a subspecies of *V. pyrenastrella* with smaller apothecia and thinner spores (0·016-19 mm. long, 0·004-5 mm. thick, sometimes obsoletely spuriously, 3 septate.)

On the bark of holly, Kylemore, Galway (Larbalestier). This species has somewhat the appearance of *Mycoporum miserrimum.*

8. Verrucarina sparsula. *Nyl.* Thallus dark-olive or olive-brown, very minutely granulose, scattered; apothecia subglobulose, at length often somewhat depressed above, pyrenium entire, black, thin; spores 8 næ., colourless, ellipsoid, 3 septate, 0·023-27 mm. long, 0·010-13 mm. thick, paraphyses none; hymenial gelatine, wine-red with iodine.

On cretaceous stones, Dorking and Reigate Hill, Surrey (Joshua). The thallus is gonimic, and almost as in *Collemopsis.*

LICHENES BRITANNICI EXSICCATI.

Editit Rev. J. M. Crombie.

Centuria II.

No.
101. Pterygium Lismorense. *Cromb.*
102. Collema furvum. *Ach.*
103. Collema stygium. (*Del.*)
104. Collema nigrescens. (*Huds.*)
105. Collema aggregatum. (*Ach.*)
106. Leptogium plicatile. (*Ach.*)
107. Leptogium subtile f. latiusculum. *Nyl.*
108. Leptogium lacerum f. fimbriatum. *Hffm.*
109. Leptogium sinuatum. (*Huds.*)
110. Leptogium tremelloides. (*L.*)
111. Calicium elassosporum. *Nyl.*
112. Calicium lenticulare. *Ach.*
113. Calicium curtum. *Borr.*
114. Trachylia tympanella. (*Ach.*)
115. Gomphillus calicioides f. microcephalus. (*Tayl.*)
116. Bæomyces rufus f. sessilis. *Nyl.*
117. Bæomyces roseus. (*Pers.*)
118. Bæomyces icmadophilus. (*Ehrh.*)
119. Stereocaulon coralloides. *Fr.*
120. Stereocaulon evolutum. *Graewe.*
121. Pycnothelia papillaria. (*Ehrh.*)
122. Cladonia alcicornis. (*Lghft.*)
123. *Cladonia pungens. *Flk.*
124. Cladonia squamosa. *Hffm.*
125. Roccella fuciformis. (*L.*). frt.
126. Alectoria ochroleuca. (*Ehrh.*)
127. Alectoria bicolor. (*Ehrh.*)
128. Alectoria jubata (prolixa). *Ach.* frt.
129. Ramalina Curnowii. *Cromb.*
130. Ramalina pollinaria. *Ach.* saxicola.
131. Ramalina evernioides. *Nyl.*
132. Platysma cucullatum. (*Bell.*)

No.
133. Stictina fuliginosa. (*Dcks.*) frt.
134. Stictina sylvatica. (*L.*)
135. Stictina Dufourei. (*Del.*)
136. Sticta pulmonaria f. hypomela. *Del.*
137. Sticta pulmonaria f. pleurocarpa. *Ach.*
138. Ricasolia glomulifera. (*Lghft.*)
139. Evernia furfuracea f. ceratea. *Ach.*
140. Parmelia caperata. (*L.*)
141. Parmelia lævigata. (*Sm.*)
142. Parmelia acetabulum. (*Neck.*)
143. Parmelia Mougeotii. *Schær.*
144. Parmelia physodes var. labrosa. *Ach.*
145. Parmelia pertusa. (*Schrank.*)
146. Parmeliopsis ambigua. (*Wulf.*)
147. Peltidea aphthosa. (*L.*)
148. Peltigera polydactyla. *Hffm.*
149. Nephromium subtomentellum. *Nyl.*
150. Physcia leucomela. (*L.*)
151. Physcia leptalea (*Ach.*)
152. Physcia adglutinata. (*Flk.*)
153. Pannaria tripto phylla. (*Ach.*)
154. Pannaria carnosa. (*Dcks.*)
155. Placodium fulgens. (*Sw.*)
156. Placodium miniatum var. obliteratum. (*Pers.*)
157. Squamaria crassa. *D.C.*
158. Lecanora coniopta. *Nyl.*
159. Lecanora aipospila. (*Whlnb.*)
160. Lecanora piniperda. (*Krb.*)
161. Lecanora effusa. (*Pers.*)
162. Lecanora subintricata. *Nyl.*
163. *Lecanora homopis. *Nyl.*
164. Lecanora Hutchinsiæ. *Nyl.*
165. Lecanora frustulosa. (*Dcks.*)
166. Lecanora parella. (*L.*)
167. Lecanora gibbosa. (*Ach.*)
168. Lecanora rubra. (*Hffm.*)
169. Thelotrema subtile. *Tuck.*
170. Lecidea Salweii. *Borr.*
171. Lecidea atro-rufa. (*Dcks.*)
172. Lecidea vernalis. *Ach.*
173. Lecidea chlorotica. *Ach.*, *Nyl.*
174. Lecidea misella. *Nyl.*
175. Lecidea sabuletorum. *Flk.*
176. Lecidea syncomista. *Flk.*
177. Lecidea contristans. *Nyl.*
178. Lecidea canescens. (*Dcks.*)
179. Lecidea vesicularis. *Hffm.*
180. Lecidea aromatica. (*Turn.*)

No.
181. Lecidea parasema var. elæochroma. *Ach.*
182. Lecidea confluens. *Ach., Nyl.*
183. Lecidea lithophila. *Ach.*
184. Lecidea calcivora. (*Ehrh.*)
185. Lecidea tenebrosa. (*Flot.*)
186. Lecidea atrolba. (*Flot.*)
187. Lecidea pulverea. *Borr.*
188. Lecidea ostreata. (*Hffm.*)
189. Lecidea neglecta. *Nyl.*
190. Odontotrema lougius. *Nyl.*
191. Agyrium rufum. (*Pers.*)
192. *Ptychographa xylographoides. *Nyl.*
193. Graphis Ruiziana. *Fée.*
194. Graphis Lyellii. (*Sm.*)
195. Opegrapha confluens. *Ach.*
196. Arthonia ilicina. *Tayl.*
197. Normandina pulchella. (*Borr.*)
198. Verrucaria integra. *Nyl.*
199. Verrucaria elæomelana. (*Mass.*)
200. Strigula Babingtonii. (*Berk.*)

NEW AND RARE BRITISH FUNGI.

By W. Phillips, F.L.S., and Charles B. Plowright.

(*Continued from Vol. IV., p.* 124.)

* **Agaricus (Lepiota) metulæspora.** *B & Br. Ceylon Fungi. Linn. Journ. Vol. XI., p.* 512. *Ann. Nat. Hist. No.* 1182.

Amongst moss in a fir wood, near Kings Lynn, Oct., 1876. This small species is interesting on account of its wide geographical distribution, having been found in Alabama and in Ceylon.

* **Agaricus (Hebeloma) Bongardii.** *Weimm. Fries Hymen. Europæi, p.* 229.

For the name of this plant we are indebted to the Rev. M. J. Berkeley. North Wootton. June, 1876. Spores ·12-·15 * mk. by 7 mk., rough, but not very marked so.

* **Agaricus trechisporus.** *Berk.*

Kings Lynn. July. Not a very common species, but when once seen easily recognised.

* **Paxillus leptopus.** *Fr.*

In a fir wood near Kings Lynn. Oct., 1876.

* **Boletus sulphureus.** *Fr.*

Brandon. Nov., 1876. On a large heap of sawdust.

65. **Ramularia destructiva.** *n. sp.*

Cauline or hypophyllous, spores cream coloured, bursting

* 1 mk=1 micromill or ·001 millimeter.

through the epidermis of the bark in little pustules, which soon become confluent, surrounding the branch, circumferential pustules discrete, spores at length falling out and leaving cup-shaped depressions, surrounded by cuticle; spores 15 mk., long, oval, in short chains of two or three, terminal upon the ærial hyphæ.

On *Myrica Gale*. North Wootton. When it occurs upon the smaller branches it is in the manner of an encircling zone, 1 to 3 centemeters wide, which quickly causes loss of vitality of the parts beyond, very much in the same manner that *Rhytisma maximum* does. It also occurs on the under surfaces of living leaves, upon reddish brown spots.

t. 94 f. 1. *Ramularia destructiva* on leaves and branch of *Myrica Gale*, with spores and hyphæ magnified.

66. **Fusidium (?) asteris**. *n. sp.*

Spores emerging from the leaves in minute heaps, which are collected into clusters; the central portions confluent, the circumferential discrete. Spores cylindrical, about 25 mk. long, mixed with mycelial threads. Kings Lynn, on both surfaces of the fading leaves of *Aster tripolium*. Sept., 1876.

67. **Verticicladium trifidum.** *Preuss.*

Our specimens accord perfectly with the figure in Sturm. Deut. Flora., part iii., t. 56.

On pine leaves. Near Shrewsbury.

* **Peziza (Macropodes) Corium**. *Weber.*

North Wootton Heath, from April to November, 1876.

* **Peziza (Sarcoscyphæ) pygmœa.** *Fr.*

This curious little species occurred on gorse at Pulborough, Kent, Spring, 1877, and was sent us by Cecil H. Sp. Perceval, Esq.

* **Peziza (Hymenoscyphæ) caucus.** *Rebent.*

On catkins of poplar. Perth. Dr. Buchanan White.

68. **Peziza (Hymensoscyphæ) amentacea.** *Balb. Phillips El. Brit No.* 116.

Sporidia ·012×·0055 m. m.

This is hardly distinguishable from the preceding species. Fuckel says (Symbol. Mycol., p. 311), that it is separated by the darker colour, thicker stem, and flatter cup; he also finds the sporidia smaller. These differences were not perceptible in our specimens.

Spring. On catkins of willow. Perth. Dr. Buchanan White.

* **Peziza (Tapesia) domestica.** *Sow. Pez. plurialis. Cooke in Mycographia. Fig.* 90. *Ph. El. Brit. No.* 113.

This occurred in considerable quantity on a damp plaster wall at the Hereford Asylum in 1876, and was sent by Dr. Chapman. It has also appeared on damp wall paper in Shrewsbury. These specimens have been carefully compared with Sowerby's original specimens figured in "British Fungi," t. 351, in the possession of the Rev. M. J. Berkeley, and there can be no doubt of their identity.

69. **Peziza (Hymenoscypha) pallido-virescens.** *Phillips Elvellacei Brit. No.* 122.

Scattered or gregarious, stipitate, tough, pallid green; cup patelliform, often convex, margin quite entire; stipes slender, somewhat flexuous, often villose, more or less elongated, slightly attenuate below, immersed in the earth; asci cylindraceo-clavate; sporidia elliptic, ·015 × ·005 mm.; paraphyses filiform, filled with globules.

On dead twigs and petioles of *Acer* lying on the ground. Spring. Shrewsbury.

70. **Peziza (Mollisia) Mercurialis.** (*Fckl.*)

Niptera Mercurialis, Fckl. Symb. Myc., p. 293.

Cups sessile, half a line broad, at first closed and globose, then open, nearly plane, externally black, squamulose; margin connivent, whitish, fimbriate, disc grey; asci oblongo-clavate; sporidia obliquely uniseriate, sub-cylindrical, straight; hyaline, ·01×·002 mm.

On dead stems of *Mercurialis perennis*. April. Shrewsbury.

* **Peziza miliaris.** *Wallr.*

The specimen we referred to this species, "Grevillea," vol. iv., p. 121., turns out to be a distinct thing, and belongs to the section Mollisia. We distinguish it as follows:—

71. **Peziza (Mollisia) epithalina.** *n. s.*

Congregated, sessile, disciform, immarginate, pallid-white or yellowish-white; asci cylindraceo-clavate; sporidia eight, oblongo-elliptic, ·008×·002 mm.; paraphyses slender, slightly thickened upwards.

On the thallus of *Peltigera canina*.

72. **Helotium advenulum.** *Phillips. El. Brit. No.* 133.

Scattered or gregarious, very minute, stipitate, tough, white or yellowish-white; cup somewhat concave or plane; stipes equal, slender; asci cylindraceo-clavate, sporidia 8, uniseriate, oblongo-elliptic, ·008 × ·0025 mm.

On leaves of larch. Spring. Trefrew, North Wales.

73. **Dermatea Houghtonii** *Phillips. El. Brit. No.* 144.

Solitary or cæspitose, erumpent, turbinato-stipitate yellow, becoming brown; at first globose, then plane or convex, immarginate, pruinose; asci broadly clavate, thick walls; ·135 × ·023 mm.; sporidia oblong-ovate, often unequal sided, greenish-hyaline, plasma forming nuclei, or becoming spuriously tri-septate; paraphyses linear, branched.

The cups break through transverse slits in the bark forming elongated groups, arising from a common stroma; within they are cinnamon yellow.

On Portugal Laurel. Autumn. Lilleshall, Shropshire. Rev. W. Houghton.

73.* **Cenangium Ericæ.** *Fr. Syst. Mycol. ii., p.* 188.

On *Calluna vulgaris*. Near Shrewsbury. May, 1877.

* **Patellaria lignyota.** *Fr. Phillips El. Brit. No.* 146.

Our specimens agree perfectly with one received from our friend, C. E. Broome, Esq., under this name ; it also agrees with specimens of *Arthonia melaspermella*, Nyl., in the herbarian of the Rev. W. A. Leighton, and is described in his Lichen Flora as a British lichen. We submitted specimens to Dr. Nylander, who pronounced it to be his *A. melaspermella*. On dead wood. Shrewsbury.

74. **Ascomyces Tosquinetii.** *West. in Bulletin de l'Acad. Roy. de l'Belgique, 2me. ser. t. xl.*, 1861. *No.* 6, *p.* 16. *No.* 72, *fig.* 4. *f. g. Taphrina alnitorqua. Tul. Exoascus alni. De. By.*

On the living leaves of *Alnus glutinosa*. This fungus appears in two forms, either as a white bloom in patches upon the leaves, or in a more diffused manner, producing great distortion of the leaf, almost after the manner of *Exobasidium*. Messrs. Berkeley and Broome record one of these states upon the female catkins.

For an extended account of the life history of this plant see a paper by Dr. P. Magnus, in " Hedwigia." No. 9. 1874.

75. **Stictis Berkeleyana.** *Du. R. & Lev. Flora Alger, t.* 89, *f.* 8. *Fckl. Symb. Mycol., p.* 251.

On the dead stems of *Epilobium hirsutum*. North Wootton. Jan., 1877.

* **Claviceps purpurea.** *Tul.*

Abundant specimens were grown from ergot on *Phragmites communis* in June, 1876.

76. **Nectria lecanodes.** *Cès. in Rabh. Herb. Mycol. ii., No.* 525.

On the thallus of *Peltigera canina*. Near Kings Lynn. Oct., 1876.

77. **Gibbera flacca.** (*Wallr.*) *Flor. Cryp. Germ. ii., p.* 838.

On *Solanum dulcamara*, bursting through the bark in clusters, which are composed of very minute perithecia.

78. **Anthostoma cubiculare.** *Nke. Pyren. Germ., p.* 119.

Sphæria cubicularis, Fr. S.M. ii., p. 477. *Sordaria Fleischakii*, Awd.

Upon rotten wood. Kings Lynn.

79. **Melogramma rubricosum.** *Tul.*

Sphæria rubricosum, Fr. El. ii., p. 63.

On beech. Brandon. Nov., 1876. On alder. Ringstead. 1876.

Prof. Niessl (" Hedwigia," 1874, p. 130) regards the plant published in " Sphæriacei Britannici " ii., No. 22, as possibly being a form of this species; but on account of it growing on naked wood, and being destitute of any red stroma, he suggests the provisional name of *Myrmæcium cinctum*, Niessl. Mr. F. Currey, to whom specimens were sent some years ago, considered it his *Valsa cincta*. It may here be remarked that Prof. Niessl considers (in the above paper) that S. B. ii., No. 18 (*Dothidea tetraspora*, B. & Br.) to be a new species of the genus *Fuckelia*, which he describes under the name of *Fuckelia Plowrightii*, Niessl.

80. **Diaporthe (Euporthe) Dulcamaræ.** *Nke. Pyren. Germ., p.* 250.
Asci 60 × 8-10 mk.; sporidia 4-5 × 15 mk.
On dead stems of *Solanum dulcamara.* Terrington St. Clement's. April, 1876.

81. **Diaporthe (Euporthe) protracta.** *Nke. Pyren. Germ., p.* 255.
Asci 50 × 10 mk.; sporidia 10-15 × 3 mk.
On dead branches of *Acer campestris.* Dinmore Hill. 1876.

82. **Diaporthe (Euporthe) obsoleta.** *Sacc. Fung. Veneti iv., No.* 22.
Asci 60 mk. long; sporidia uniseptate 18 mk. long.
On *Hypericum calycinum.* Dec., 1873. In Mr. W. Phillips's garden, Shrewsbury.

83. **Diaporthe (Euporthe) Arctii.** *Lasch. Nke. Pyren. Germ., p.* 268. *Sphæriacei Brit. iii., in edit.*
On the dead stems of *Arctium Lappa.*
It is easily recognised by its prominent ostiola, which protrude through the blackened cuticle in lines following the grooves on the stems.

84. **Diaporthe (Tetrastagon) Sarothamni.** *Nke. Pyren. Germ., p.* 303.
Sphæria tetragona, Duby. *Sp. interrupta*, Mont. *Valsaria sarothamni*, Awd.
On the dead stems and branches of *Cytisus scoparius.* North Wootton. March, 1876.

85. **Diaporthe (Tetrastagon) Wibbii.** *Nke. Pyren. Germ., p.* 305.
North Wootton. Feb., 1876. On dead branches of *Myrica gale.*

86. **Diaporthe (Tetrastagon) putator.** *Nke. Pyren. Germ., p.* 306.
On dead twigs of *Papulus tremula.* North Wootton. 1876.

87. **Diaporthe (Tetrastagon) Ryckholtii.** *Nke. Pyren. Germ., p.* 319.
Sphæria Ryckholtii, West. Asci 50 mk. long; sporidia 12 mk. long.
On *Symphiocarpus.* Ringstead. 1877.

88. **Cucurbitaria Rhamni.** *Fckl. Sym Mycol., p.* 174.
On *Rhamnus frangula*, in company with a *Diplodia*, doubtless its Pycnidia. North Wootton. 1876.

89. **Massaria rhodostoma.** *Tul Sys. Fung. Carp. ii., p.* 238.
Sphæria rhodostoma, A. & S., Consp. p., 43.
On *Rhamnus frangula.* North Wootton. 1876.

90. **Sphæria helicoma.** *n.sp.*
Conidia consisting of dark brown septate threads, bearing spirally convolute septate spores, which are paler in colour than the threads.
Ascophore. Perithecia minute, globose, shining; ostiola not very obvious; asci cylindrical, 150 × 20 mk.; sporidia biseriate, cylindrical, vermiculate, indistinctly multiseptate, 65 × 5 mk.
Brandon. Nov., 1876. On the ground where sawdust had lain.
This species bears some external resemblance to *Chætosphæria innumera*, Tul.

t. 94 f. 9. *Sphæria helicoma* nat. size and magnified conidia, ascus and sporidia highly magnified.

1. **Sphæria caninæ.** *n.sp.*
Parasitic. Perithecia in clusters, at first covered, then exposed, conical; ostiola acute; asci tetrasporous, cylindrical, 65 × 18 mk.; sporidia triseptate, constricted, dark brown, 18 × 5 mk.
On the thallus of *Peltigera canina*. Oct., 1876. Dunsley (W. Joshua, Esq.).
t. 94 f. 8, asci and sporidia.

* **Sphæria bryoniæ.** *Fckl.*
North Wootton. On *Bryonia dioica* abundantly.

92. **Sphæria (Pleospora) Nardii.** *Fr. Obs. ii., p.* 334.
On *Nardus stricta*. Rev. J. Keith. Forres, 1876. North Wootton, 1877.

93. **Sphæria (Pleospora) aparinæ.** *Fckl. Sym. Mycol., p.* 136.
Asci 80 × 10 mk.; sporidia 40 + 6 mk.
On dead stems of *Galium aparine*. Terrington St. Clement's. April, 1876.

94. **Sphæria (Pleospora) Heleocharis.** *Karst. Myc. Fenn.* 72. *Karst. Exs.*, 882.
Asci 220 × 35 mk.; sporidia 45-50 × 13-15 mk.
South Wootton, 1877. On *Eleocharis*.

95. **Sphæria (Pleospora) rubicunda.** *Niessl. Neue und Krit. Pyren, p.* 31, *t. iv., fig.* 15. *Sphær. Brit. in edit.*
South Wootton. May, 1877.
Sporidia 35 × 10 mk. On *Juncus*.
Differing from *Sp. rubelloides*, Plow., "Grevillea," vol. v., p. 120, in the larger and muriform sporidia.

96. **Sphæria (Pleospora) vulgaris.** *Niessl.* forma Monosticha. *Neue und Krit. Pyren., p.* 27, *t. iv., f.* 11.
On *Senecio Jacobæa*. North Wootton. June, 1877.

97. **Sphæria (Pleospora) donacina.** *Fr.* Pl. donicina, *Niessl op. cit., p.* 23, *t. iv., fig.* 9.
On *Arundo donax*, in the garden of H. Newman, Esq., Leominster. May, 1877.
The occurrence of this species in so high a latitude is very interesting. The *Arundo* was introduced from the South of France some years ago; the fungus occurred upon last year's stems and sheaths.

98. **Didymosphæria acerinum.** *Rehm. Grev. No.* 237.
Upon *Acer campestris*. April, 1876. Kings Lynn. Sporidia dark brown 16-18 mk. long.

99. **Ohleria obducens.** *Winter. Hedwigia* 1871, *p.* 162. *non* Sphæria Obducens. *Fr.*
On elm. Near Shrewsbury. 1873.

100. **Plagiostoma devexa.** *Desm. Fckl. Sym. Mycol., p.* 119. *Sphær. Brit. Cent. iii, in edit.*
Asci 35-40 × 7-8 mk. Sporidia 15 × 2-3 mk. North Wootton. 1876.
On *Polygonum Persicaria*.

101. **Sphærella Euphorbiæ.** *n. sp.*

Perithecia minute, covered by the cuticle, flattened, crowded or scattered, asci subcylindrical 70 × 10-15 mk. Sporidia 8 biseriate elliptical, pointed at the extremities, granular, 15-20 × 6-8 mk.

On *Euphorbia amygdaloides*. Dinmore. 1876.

The absence of elongated ostiola, the comparative wideness of the sporidia, their larger size and different shape distinguish this species from *Plagiostoma Euphorbiæ*. Fckl.

* **Sordaria fimicola.** *Cès. & De Not. Cooke. Handbk. No.* 2596. *Winter Sord., p,* 17. *t vii, f.* 6.

Sporidia 20 × 15 mk.

On dog's dung. Forres Rev. J. Keith, 1876. North Wootton. 1876.

102. **Sordaria fimiseda.** *Cès. & De Not. Winter Sord. p.* 25, *t. ix, f.* 13.

On horse dung. Forres. Rev. J. Keith, 1876. Kings Lynn. On sheep dung.

103. **Sordaria minuta.** *Winter. forma* Tetraspora. *Winter Sord. p.* 36. *t. xi, f.* 21.

On rabbit's dung. North Wootton. March, 1876.

104. **Sordaria platyspora.** *n. sp.*

Perithecia scattered, semi immersed in the matrix, obtusely conical, medium sized, covered by a number of short stiff coarse hairs, or hair-like processes. Asci cylindrical, sessile 130 × 12 mk. Sporidia 8, nearly circular, disc-shaped as a rule, uniseriate 20 × 18-15 mk. 2-3 mk. in thickness.

On horse dung. Forres. Rev. J. Keith.

t. 94 f. 2. Perithecium, sporidia and ascus.

105. **Sordaria microspora.** *n. sp.*

Perithecia scattered, rather large, obtusely conical, the upper free portion covered by short stiff bristles, about 40 mk. in length; towards the base giving attachment to a few delicate mycelial threads. Asci cylindrical 45-50 × 6-8 mk. Sporidia 8 uniseriate, subrotund, discoid, minute, involved in gelatin, 5 × 7 mk. About 2 mk. in thickness.

On horse dung. Forres. Rev. J. Keith.

These two species of Sordaria (Nos. ·104 and ·105) are allied to *S. discospora*. Awd., but are obviously distinct.

t. 94 f. 3. Perithecium. Sporidia, ascus and two hair-like processes.

106. **Delitschia bisporula.** *Hansen. Fungi Fimicoli Danici p.* 107. *t. ix, f.* 7-11.

Hormospora bisporula. Crouan. Flora. Finistere p. 21.

Perithecia ·04 to ·045 m. high. Asci 150 × 15 mk. Sporidia uniseriate 27 × 10 mk.

On horse dung. Forres. Rev. J. Keith. On rabbit's dung. Kings Lynn.

This must be very closely allied to Niessl's *D. moravica*, described in *Neue and Krit. Pyrenomyceten.* p. 47.

t. 94 f. 4. Perithecium ascus and sporidia.

107. **Delitschia minuta.** *Fckl. Symb. Mycol. p.* 242.
Perithecia 250-300 mk. deeply buried in the matrix. Asci 145 × 15 mk. Sporidia uniseriate 20-25 × 8 mk.
On goat's dung. Forres. Rev. J. Keith.
t. 94 f. 5. Perithecia, sporidia and ascus.

108 **Sporormia megalospora.** *Awd. Hedwigia*, 1868. *p.* 68.
Asci 250 × 45 mk. Sporidia 100 × 20mk.
On horse dung. Forres. Rev. J. Keith.

109. **Sporormia octomera.** *Awd. Hedwigia*, 1868. *p.* 70. *t.* 1. *f.* 7.
Asci 100 × 15 mk. (parte sporifera.) Sporidia 50 × 5 mk.
On grouse dung. Forres. Rev. J. Keith.
t. 94 f. 6. Two asci and sporidia.

110. **Sporormia lignicola.** *n. sp.*
Perithecia subglobose, immersed in the matrix, at length naked and pertuse. Asci cylindrical, almost sessile, 200 × 27 mk. Sporidia tetramerous, involved in gelatin 60 × 14 mk.
On a piece of rotten wood (ash).
Kings Lynn. March, 1877. Allied to *Sp. ulmicola*, Passer, but obviously distinct.
t. 94 f. 7. Sporormia lignicola, ascus and sporidia.

CRYPTOGAMIC FLORA OF SILESIA.*

The first volume of this work, just received, is well printed, and on good paper, which is not always the case with Continental books; but, of still greater importance, it appears under auspices which warrant excellence. The general editor is Professor Ferdinand Cohn, and the volume before us contains the Higher Cryptogamia, by Dr. K. Gustav Stenzel; Mosses and Hepaticæ, by K. Gustav Limpricht; and Characeæ, by Professor Dr. Alex. Braun. The second volume is promised to contain the Algæ, by Dr. Oscar Kirschner and Dr. Bleisch, and Lichens by Professor Koerber. The third volume will contain the Fungi by Dr. Schroeter. This certainly is a programme which commends itself, and if executed as carefully throughout, it will be a most complete and satisfactory Cryptogamic Flora of an important province of Germany, which will, moreover, be unique, for Dr. Rabenhorst's Saxon Flora has never been completed. Cryptogamic Floras of countries or provinces in Europe are desirable, but laborious undertakings, and the Mycologia Fennica, which of course only contains the Fungi, proceed slowly. The present work deserves encouragement, and we trust that it will receive sufficient to ensure its completion, as it will be a valuable addition to the Cryptogamic Literature of the day. We can recommend it with confidence to our readers, on the faith of this first volume.

* Kryptogamen Flora von Schleisien, edited by Prof. Ferd. Cohn. Vol. i. Breslau : J. U. Kern. 1877.

ALGÆ EXSICCATÆ AMERICÆ BOREALIS.

We have received the first fasciculus of this collection, edited by W. G. Farlow, C. L. Anderson, and D. C. Eaton, containing fifty good and well prepared specimens, which are hereafter enumerated. It is the intention of the Editors to issue a series of Algæ Exsiccatæ which shall include the greater part of the marine species of the United States, as well as some of the more interesting fresh water species. In order that the rarer species may be represented in the series, the number of sets prepared will be limited to thirty, and of these only a small number will be offered for sale. The specimens will be arranged in fasciculi, each comprising fifty species. The fasciculi will be of two different sizes, one similar to the Musci Cubenses of Sullivant, including the smaller species; the other, of the size of the common herbarium sheet of American botanists, including the larger Fuci, Laminariæ, &c. The specimens are placed in folded sheets and fastened in board covers so that they can be inserted in herbaria without injury to the specimens. Owing to the small number of sets offered for sale, and the expense involved in procuring specimens from remote localities, the price of the smaller fasciculi is fixed at 800 dollars, and that of the larger at 1200 dollars. Orders may be addressed to W. G. Farlow, 6, Park Square, Boston.

Contents of Fasciculus I.

1. Dasya ramosissima, *Harv.*
2. Dasya mucronata, *Harv.*
3. Dasya Gibbesii, *Harv.*
4. Dasya plumosa, *Bail. & Harv.*
5. Polysiphonia Baileyi (*Harv.*), *J. Ag.*
6. Polysiphonia parasitica *var.* dendroidea *J. Ag.*
7. Rhodomela Larix (*Turn.*), *Ag.*
8. Acanthophora muscoides, *Bory.*
9. Acanthophora Thierii, *Lam.*
10. Nitophyllum violaceum, *J. Ag.*
11. Neuroglossum ? Andersonianum, *J. Ag.*
12. Eucheuma isiforme, *J. Ag.*
13. Gelidium cartilagineum, *Grev.*
14. Wurdemannia setacea, *Harv.*
15. Amphiroa fragilissima, *Lam.*
16. Galaxaura (Microthoe) lapidescens, *Lam.*
17. Lomentaria rosea (*Harv.*), *Thuret.*
18. Cordylecladia ? irregularis, *Harv.*
19. Stenogramme interrupta (*Ag.*), *Mont.*
20. Gigartina canaliculata, *Harv.*
21. Gymnogongrus linearis (*Turn.*), *J. Ag.*
22. Gymnogongrus leptophyllus, *J. Ag.*
23. Cryptonemia crenulata, *J. Ag.*

24. Prionitis Andersoniana, *Eaton.*
25. Halosaccion Hydrophora, *J. Ag.*
26. Endocladia muricata (*Post & Rupr.*), *J. Ag.*
27. Pikea Californica, *Harv.*
28. Farlowia compressa, *J. Ag.*
29. Microcladia borealis, *Rupr.*
30. Centroceras Eatonianum, *Farlow.*
31. Ceramium diaphanum (*Lightf.*), *Roth.*
32. Ptilota plumosa var. filicina, *Farlow.*
33. Ptilota hypnoides, *Harv.*
34. Callithamnion Dasyoides, *J. Ag.*
35. Callithamnion floccosum var. Pacificum, *Harv.*
36. Caulerpa Ashmeadii, *Harv.*
37. Caulerpa lanuginosa, *J. Ag.*
38. Caulerpa Paspaloides (*Bory*), *Harv.*
39. Caulerpa clavifera, *Ag.*
40. Halimeda Opuntia, *Lam.*
41. Halimeda tuna, *Lam.*
42. Acetabularia crenulata, *Lam.*
43. Penicillus capitatus, *Lamk.*
44. Blodgettia confervoides, *Harv.*
45. Hormactis Farlowii, *Bornet mscr.*
46. Lyngbya (Plectonema) Wollei, *Farlow.**
47. Lyngbya nigrescens, *Harv.*, var. major, *Farlow.*
48. Lyngbya luteo-fusca, *J. Ag.*
49. Calothrix crustacea (*Schousb.*), *Thuret.*
50. Calothrix pulvinata, *Ag.*

CORRIGENDA.

Hendersonia typhoidearum, Desm., on leaves of *Luzula albida*, in my copy of Thumen's Fungi Austriaci, No. 785, is *Sphærella Luzulæ*, C. Asci clavato-cylindrical, sporidia biseriate, hyaline, cylindrical, quadrinucleate, then uniseptate.

Hendersonia Cynosbati, Thumen, Fungi Austriaci, No. 1061 in my copy, is *Exosporium fructicola*, Sacc.

Hendersonia fusarioides, Sacc., Fungi Veneti, No. 998, has distinct and decided asci in my specimens, and is, therefore, a *Sphæria.*

M. C. C.

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* No. 46.—The name has to be rectified, but the rectification was not received.

REPRODUCTION OF THE ASCOMYCETES.

By Dr. Max Cornu.

(*Continued from Vol. V., pp.* 143.)

III.—Morphology of Conidia and Spermatia.

How ought we to consider the Spermatia in the Ascomycetes? —They are spores, with as much right to be called so as others, since they germinate and give out filaments which at times take the black tint and appearance of mycelial filaments, and which contain a plasma exactly resembling that which one observes in the *Ascomycetes.*

They are very small conidia, of a perfectly special form, and borne upon particular arbuscles in protecting conceptacles; they do not in general germinate in pure water, and have a rather slow development; their physiological rôle appears to be determined by their very reduced size and by the circumstances which their germination require.

The Spermatia do not belong at all to a Parasite.—The first idea that suggests itself to one's mind, now that the germinative faculty has been recognised in them, is that the spermatia might be parasitic organisms, living at the expense of others.

This is an ancient opinion which has been revived again. There are some examples of these parasites among the *Ascomycetes;* the more common is *Sphæria cupularis*, Pers., which frequently lives at the expense of *Tubercularia vulgaris*, Tode. One can further cite *Nectria episphæria*, Tode, which one rather often encounters upon the half decomposed spherias which it fills more or less completely. This opinion is reasonable; is it exact? One can affirm it is not.

The proofs are diverse. 1st. When the three sorts of reproductive bodies are immersed in the same stroma, there is a continuity of tissue between the different organs; good cuts can easily show this. When they are contained in different conceptacles and isolated from one another, the tissues present an identical aspect, and the mycelium which bears them offers everywhere the same appearance; in this last case it frequently happens that the exterior form, the similar diameter, the grouping which unites them, the manner in which the bark is raised or modified—in a word, the general bearing of the conceptacles, shows that one has to do with similar forms, having between them the greatest analogy. *Aglaospora profusa* gives a good example of these exterior characters. The spores are of three sorts, and very different in form; yet the pycnidia and the spermogonia which raise the bark under the form of regularly disposed little nipples have a very similar aspect, and, without the difference of size, one might confound them with one another.

The *Cucurbitaria* are another example of these facts; the circular groupings of these beautiful species are very similar in the three cases. One might yet invoke the precocious development of the

small spores which precede the others, the appearance of which takes place regularly around some spermogonia, supporting themselves upon the circinating disposition of the ascophorous conceptacles born after them. Many *Valsæ* can furnish examples.

2nd. Might they not be some perithecia hindered in their development, hollowed out, then filled by some parasitic Fungus, the reproductive conceptacles of which render them abortive, as really does take place by the fact that the *Exosporium* lives at the expense of the *Hercospora Tiliæ?*

The specific identity of the stylospores and of the endospores, which is not, by the by, doubted, is easy to prove; it suffices to cite *Cucurbitaria*, *Melanconis*, etc., of which the spores of both species offer the same form. In *Pleospora herbarum*, although different in appearances, all the reproductive forms may by germination give place to spores which have the form of the other. One might use (with regard to the spermatia) a similar reasoning.

One finds, in fact, in *Stictesphæria Hoffmanni* among certain *Valsæ*, in *Sphæria* (*Pleurostoma*) *Candollei*, some spermatia almost identical to the endospores, or very little different; in the *Cucurbitaria* the spermatia much recall certain stylospores, since M. Tulasne considers them as a form of these last, and in *Eutypa Acharii* certain conidia.

In other species one finds spermatia and stylospores, either separately or in the same conceptacle (*Aglaospora profusa*, De Not.). In a word, there are some profound analogies and a great kindred between the three sorts of reproductive organs.

Finally, the development of some of these reproductive bodies, both stylospores and spermatia, give place to black filaments, the appearance of which, the colour and internal plasma, are quite similar in the filaments which constitute the partitions of the conceptacles. The cavity is accordingly filled, not by a parasite, but by the reproductive body of the same Fungus as that which forms the partitions. The presence, in a great number of *Ascomycetes*, of three forms of spores, distinct in origin, and generally also in form, ought to be considered as necessary to signalise here. The importance is great; above all, in the case where these three forms of spores all germinate with facility, whether they are different (*Hypomyces*) or really have between them an evident analogy and some passages (*Pleospora*); this remark holds equally good in the preceding paragraph.

What is the distinctive character of the Spermatia?—M. Tulasne formerly considered the absence of germination as sufficient; that was even his criterion. We have seen that we ought to abandon this manner of looking at the subject, and search for another character without reference to the preceding considerations. It is, besides, a rather embarrassing question; the elements which we have united hitherto are not perhaps sufficient in order to resolve it; it is necessary to make a complete study of the whole of the *Ascomycetes*. In certain cases this might attain some importance.

If one species presents two sorts of conceptacles only, the one of them containing thecæ, ought the other to be named spermogonia or pycnidia? There are some excessively obscure cases; and how, in fact, to class the reproductive bodies named in the "*Selecta fungorum Carpologia*"—*stylosperes spermatiformes?* We will attempt to analyse these facts. It appears, in the first place, there are in these small bodies two groups well distinguished by their origin, which M. Tulasne has equally named spermatia. The one are born sessile upon some rather short filaments united in a dense and compact stratum (*Polystigma rubrum, Diatrype quercina, Rhytisma acerinum*); the others are carried by some divided filaments, each joint of which is fertile. These are the greater number of the Ascomycetes and Lichens.

This distinction seems sufficiently decided. The first category of the spores recalls the conidia of *Hypoxylon*, and, in certain cases, in a very complete fashion; these are in appearance microstylospores. The small spores of the sphacelus of the *Claviceps purpurea*, which M. Tulasne had at first named spermatia, come under this head; he recognised later on their germinative faculty, and no more considered them as such. The spores of this group are often curved like a bow, their longitudinal diameter being much superior to their transversal (*Diatrype quercina, Aglaospora profusa, Polystigma rubrum*). The others should be the spermatia properly so called; but, in many cases, there are some intermediaries between these two forms. One conceives, moreover, that if the divided filament is interlaced with others of the same nature in such a manner as that the sterigmate, generally short, wherein is born the small spore, may be upright, it must be relegated to the former class. If the divisions are very close together, the sterigmata becoming elongated a little, we fall back again into a very analogous position (*Entypa Acharii, Melanconis lanciformis*).

There are, therefore, some transitions between the two categories, of such sort that one must hesitate as to the interpretation to be put upon such or such a spore. One sees that we cannot find any distinctive character showing the manner in which they are borne upon the filaments.

A curious case to cite in the work of M. Tulasne is that of *Valsa (Nectria?) chrysoides;* we there see the kind of difference which may present itself many times. There is the greatest analogy between the figure 15, which gives the insertion of the *Conidia*, and the figure 11 of the *Melanconis lanciformis (loc. cit.)*, which gives that of the spermatia. It is necessary to remark, besides, that the divisions of the filaments have not been indicated in either case. What inference is to be drawn from this? It is that it is impossible to decide by these considerations only, if one has to do with either sort of spores, and henceforward one can conceive that, guided only by the criterion deduced from germination, M. Tulasne has committed some errors, and considered as stylospores some spores which were in reality spermatia, and reciprocally.

Perhaps it would be better, for the distinction of the two orders of spores, laying on one side or not their mode of development, to address oneself to known characteristics deduced from the nature of the envelopes and their number.

In the superior *Pyrenomycetes*, where the variation of the forms extends through very narrow limits, the insertion of the spermatia, that is to say, their birth, upon some more or less elongated branches, upon short sessile sterigmates upon the division, may be of some importance; but among certain less elevated Ascomycetes, where the variation is excessive, this consideration evidently loses some of its importance. While preserving it as a general indication, can we not obtain some better result from a *criterion borrowed* from the other order of ideas? We should give, then, a greater importance to the constitution of the spore itself: the spermatia are spores with slim partitions born upon the joints of particular branches; the stylospores appear to be in general spores with a double envelope. The first passes an extensible, dilatable membrane; the latter, clothed with an external membrane, dilatable also in a certain measure, must break through it in order to develop: their organisation is more complete. They are also acrogenous spores, but they are not conidia of the same order as the others: they are *Chlamydea* conidia.

We have seen in the preceding pages that, like the stylospores, the spermatia are endowed with a germinative property; the great resemblance of these last to certain conidia permits us to ask what is the definition of the spores which M. Tulasne designates under the name of conidia? This definition is contained in the fact that they are born perfectly freely at the surface of the Ascomycete, and not contained in any special cavities. But, in examining the series of the species presenting conidia, we see that there are some very different kinds: some small, with a slight membrane *(Xylaria)*, the others large, with a thick membrane *(Melanconis)*; it is then necessary to demand if, under this name of conidia, the first may not be the analogies of spermatia, the second of stylospores, and if under this appellation one does not confound the two orders of organs. In place of three orders of non-comparable spores, there will not be remaining more than two; this will be a great simplification in the study of the reproductive forms.

In order for us to be quite clear upon the exactitude of this conception, let us search, by the way, some stylospores and spermatia, still sufficiently clear of certain species, and recall those of the superior Pyrenomycetes, with the more variable and polymorphous organs of the inferior Ascomycetes, and there shall we find ourselves led to consider some forms of *Mucedines*.

We must not conceal from ourselves that, between the one and the other, there are some solutions of continuity, and that in some cases the analogy will, perhaps, be remote at first sight; this is the natural consequence of the facts themselves. It will, perhaps, be possible moreover, to fill up later on the more considerable gaps,

and to bind together the series of forms by some more solid chains and some more immediate intermediaries.

We have insisted above upon the great resemblance which exists between the spermatia and the conidia, an analogy already signalised by M. Tulasne. It is necessary, before undertaking the comparison of the different sorts of organs, to convince ourselves of this analogy. It is also to be found among the stylospores, in an almost equal degree, in such a manner that one ought not to be astonished to find free, and not situated in any conceptacles, the spermatiferous or stylosporic arbuscles. These last, when they are free, have been considered as like the first, and their spores have likewise received the name of conidia. It thus happens that under this name of conidia are found designated *both spermatia and stylospores:* it thus becomes necessary to separate with care these two cases, and to be thoroughly clear as to which belong to this or that category. But this second case is much more rare than the first. *Melanconis* offers a series of remarkable examples; one sees, among different species of this genus, some veritable spermatia associated with a second sort of spores named *conidia*, because they are born free upon the stroma; but their thick membrane, their deep colour, their general analogy with the stylospores of *Massaria* and *Cucurbitaria*, shows that we have really to do with free stylospores.

When one skilfully makes a delicate cut across a spermogone it is not rare, above all if one is dealing with an organ in full organic activity, to encounter upon the spermatiferous arbuscles, in all the stages of development, the spermatia still attached to the extremity of the branches. It is necessary, in order to study this properly, to operate upon living plants; if one has recourse to dried organs, one finds great difficulty in getting a proper observation; the cuts appear to be more easily obtained at the expense of a tissue which takes the consistence of wax, but the observation of the details is incomparably less easy.

The spermatia are developed in the following manner :—

At the extremity of the more or less elongated lateral branches some small swellings are formed; the sterigmate fringed in points is slightly swelled; the small part developed at its extremity becomes more or less elongated, but without its diameter much increasing; it preserves the transversal dimension of the filament which has given it birth. Sometimes the small spore remains rectilinear, sometimes on the contrary, and this is more frequently the case: it is slightly curved like a bow, in the case where the spermatia are very long, they are almost always strongly curved *(Diatrype, Aglaospora, Quaternaria.)* It is difficult to decide, as we have attempted to do with the spores of the *Hymenomycetes*, whence is derived this new formation, and what change the plasma undergoes at the extremity of the sterigmate; the most energetic swellings appear still insufficient.

As long as it has not acquired its final volume, the sperma-

tium remains adherent to the filament; it is separated by a rather sensible contraction, and it is there that the separation in two of the partitions takes place, which isolates the spore from its support. These small bodies are surrounded by a sort of mucus which appears to be exuded by each of them, and probably also by the filaments which gave them birth; this is very visible in the Lichens: when this mucus is swelled out under the influence of moisture, the spermatia are driven to the outside.

What has just been said applies wholly to the better characterized conidia; we shall see, in fact, by the examination of different conidia apparatus, the extreme resemblance which they present to the typical forms of the spermatiferous filaments.

The veritable stylospores (in restricting this name to the asexual forms which accompany the spermatia, microstylospores or microconidia) offer an *ensemble* of characters easily recognisable in certain cases. They are produced at the extremity of filaments, in general short, which line the cavity of the pycnidia, or which may be free and pluricellular. The extremity of the filament, primitively rounded or obtuse, swells out in a considerable fashion so as to exceed one or more times its proper diameter. At the same time as this swelling a considerable elongation manifests itself; if the stylospore is to present several partitions, they are produced at this instant. When the stylospore has attained its definite form it is still attached to the filament, and its membrane is still uncoloured; this membrane is not slow to thicken itself, but in order that the spore acquire its definite aspect it has frequent need of being submitted to contact with the air. The action of the air determines a peculiar browning of the more external part, notwithstanding the more internal part remains colourless: this last remains delicate, although the other is become notably increased and modified, in certain cases even the thickness of the partition is a considerable fraction of the contents of the spore. When the germination takes place, this external membrane bursts, and it is the inside which makes a rupture at the exterior.

It is not rare to see the spore embellished with prolongations, points, a fringe which takes no part in this blackening: certain cells, in general those of the poles, are sometimes in this case. The modification exerted by the action of the air is manifest upon the stylospores of *Massaria eburnea*, and upon the very probably stylosporic form described separately under the name of *Diplodia*. M. Tulasne has signalized both these facts, and refers to the last in more than one passage of his work.

The same as *Diplodia*, the *Hendersonia* and *Pestalozzia* ought probably to be considered as stylosporic forms of Ascomycetes.

Sometimes the stylosporous formation is more complicated; one may cite *Prosthemium betulinum*, a stylosporic apparatus of *Massaria siparia*, according to M. Tulasne, a *Prosthemium* placed in similar relation to *Nectria armeniaca*, and the curious *Asterosporium Hoffmanni*, evidently an ally of the preceding species, but the

typical form of which is not clearly established. One may see the different periods of the development of *Prosthemium betulinum*, certain prolongations of which remain sterile, although others grow and become partitioned. One will consult with interest the *Sel. Fung. Carpologia* (Vol. ii., p. 234 and 242, and t. iii., p. 76), where the near relation of these species is treated of.

It is probable that the genera *Triposporium*, Corda, *Hirudinaria*, Ces., *Speira*, Corda, *Dictyosporium*, Corda, &c., are very nearly related to the preceding forms, and these last insensibly conduct us to the *Pleospora*, *Fumago*, and other species, of which the membrane of the filaments and of the conidia becomes browned in the air, and becomes incrusted, although the small spores described by M. Tulasne as stylospores offer a greater resemblance to the microstylospores or spermatia. But, as my studies upon the different species of these groups have not been complete enough, I am forced, to my great regret, to stop myself sharply here without conclusion relative to these two last genera, and to retake the subject studied more specially, that is to say, the morphology of the spermatiferous apparatus.

For the particular study of the spermatiferous organs, it is necessary at first to take, as a starting-point, the organs assimilated to the spermogonia of the Lichens, and designated by the same name among the Ascomycetes. The spermatiferous arbuscles are formed of straight filaments, each cell of which is prolonged laterally at the underside of the cell which surmounts it; the short branch thus formed is the bearer of a small spore of variable form, but with a simple membrane and dense plasma. These are veritable conidia; the cells which give them birth are at times short, as in the *Physcia ciliaris*, at others, on the contrary, more elongated, *Parmelia acetabulum*.

Among most of the Ascomycetes the spermatiferous arbuscles affect a very analogous form. Among certain species they are constituted by short cells prolonging themselves into short lateral sterigmates; it is easy to see that these are some formations very nearly allied to those of the Lichens. Among other species the cells of the filaments are much more slim, the sterigmates constituting veritable lateral branches, and sometimes some of them are separated from the others by partitions; it is not rare to see at that time many born at the same height. Their nature is very evident when they prolong a joint of the filament, but one easily passes in thought from this case to that where the sterigmate is isolated and becomes itself a lateral cell. It is this which is the more frequently encountered in the Ascomycetes, and which has been represented in *Valsa ambiens*. This form scarcely differs from the preceding, and M. Tulasne proclaims it as identical with the other. It is a very general modification of the filament which bears the spermatia; this would be noticed in turning over the plates of the *Selecta Fungorum Carpologia*.

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Grevillea,

A QUARTERLY RECORD OF CRYPTOGAMIC BOTANY AND ITS LITERATURE.

DR. NYLANDER ON GONIDIA AND THEIR DIFFERENT FORMS.

Translated by The Rev. J. M. Crombie, F.L.S.

In the "Flora," 1877, No. 23, pp. 353-359, Dr. Nylander has made some valuable observations on this subject, which may be regarded as one of his most important contributions towards the solution of the "Lichen-Gonidia" question, and which so clearly prove the erroneousness, not to say absurdity, of the Schwendenerian hypothesis that, in the general interests of Botanical science, they may with great propriety be placed before the readers of "Grevillea." In the copy of the paper sent me by Nylander, there are a few additional notes communicated by him, in writing, which I have duly indicated in what follows by these marks [ ].

I.—Gonidia in Connection with the Neighbouring Parts of the Thallus.

There are different modes of existence which subsist between the gonidia and the internal surrounding thalline elements, according as the thalli themselves are either—1st, closed, involved in a continuous cortical stratum; or, 2nd, not closed, that is, where the cortical stratum is wanting (which, for example, takes place in pulverulent thalli). In the former case (in corticated thalli), the gonidia usually occupy a narrow proper stratum in the lower portion of the cortical stratum, or in the upper portion of the medulla; and there, being freely disposed amongst the radicles of the Myelohyphæ, they cannot be multiplied unless by slow division. On the contrary, in the other case (in ecorticated thalli), in leprose and analogous thalli, free gonidia are copiously present, and are most readily propagated by repeated divisions. Evidently soredia present a state of gonidia in those points similar to pulverulent thalli.*

* An excellent example, that soredia are endowed with the faculty of creating propagula may be seen in the "Flora," 1875, p. 8.

The gonidia in the lower portion of the cortical stratum originate and are inclosed in the cellules of that stratum, and subsequently, as the development of the same stratum progresses, the gonidia are observed in a free condition. In the "Flora," 1874, p. 60, when touching upon points relating to the nutrition of Lichens, I have recorded in what manner the thalline development advances from the external to the internal parts, so that the external portions are the younger, and on the contrary the interior or medullary parts are of more advanced age, and at length often pass into a thickened mass (*crassamentum*), thence called "tartareous" thalli—a circumstance which renders Lichens, in a certain way, comparable with Coralline Polypi, or Madrepores, compelling the active life in the thin cortical-gonidial stratum and the nearest portions of the medulla, the interior or lower parts being almost inanimate or deposed, and not rarely exhibiting the worn particles of the medullary stratum (filaments and chiefly broken crystals).*

The origin of chlorophyll (more correctly to be called, as I have formerly recommended, "phyllochlore,") takes place here not otherwise than in the cellules, *e.g.*, of Mosses or Hepaticæ. The primary difference to the eye consists in the circumstance that the gonidia often occur as discrete cellules, though, also (as will afterwards be seen), very many forms variously compounded are by no means wanting. True growing gonidia, either in a young or adult state, may be observed in the cortical cellules of Lichens best adapted for examination in this respect. I have mentioned *Umbilicaria*, in the "Flora," 1875, p. 303; while equally distinctly *Physcia lithotea*,† *endococcina*, *pulverulenta*, *Psoroma hypnorum*, &c., commend themselves to the same observation, and at the same time others, situated lower and free amongst the myelohyphæ, to which by reason of the gelatine penetrating all the elements the gonidia adhere, though they are by no means truly adnate, as writers who readily believe what they wish have affirmed. The cortical stratum gradually growing or unfolding itself, but during the same time being in like proportion dissolved beneath (or *resorbed*, as it is called in physiology), the gonidia become free. Thus whether inclosed in the cellules or conjoined together or discrete, these always constitute the organic system, and indeed the physiological centre, of the thallus. And since the biological

* This is best shown in the thicker crustaceous thalli. But chondroid axes (solid or hollow), *e.g.*, of *Usneæ* and *Cladoniæ*, present only another method of an analogous circumstance: for when rightly considered these axes answer to the lower surface of the thallus descending into itself; they play a part opposed to the upper (superficial) cortical stratum, and form in their own way an internal cortical stratum.

† This species is to be separated from *Ph. obscura*, inasmuch as it has a different thalline texture. Of *Ph. lithotea*, *sciastra* (Ach.), is a variety; and there is also another corticole variety, *sciastrella*, Nyl., collected near Eichstaett by Arnold. *Physcia endoccocina* is allied to *lithotea* and not to *Ph. obscura*.

action in Lichens is especially superficial, it thence results that the stratum of the gonidia increases but little in thickness, though it is extended along with the extension of the thallus, and there occurs at the same time a twofold method by which the gonidia are multiplied—the one intracellular and the other by the addition of a protococcoid division, the former, however, being the more prevalent.

I have made mention of the origin of gonimia in Bullet. Soc. Bot. Fr., 1873, p 264, Cfr. Nyl. in "Flora," 1868, p. 353.

It is evident that the notion of gonidia assumes at the present day a wider sense than that in which it was formerly regarded. The question, however, concerning zoospores developed in common gonidia remains very doubtful. Such I have not seen in gonidia subjected to experiment,* nor have I ever found in the gonidia of the thallus. It is plain, moreover, that zoospores, even if nature allowed them to be formed in gonidia, closely surrounded by the elements of the thallus, could not there have egress from the gonidia, and would have no space in which to move. Nature thus does not err, never commits such illogisms, and the formation of zoospores would truly be sheer stupidity, since their physiological action would thus be in vain without any possible effect. However, it is not to be denied that zoospores may be generated in free gonidia (that is, not stratified in the thallus) ; at least, there the thing is possible, and in no way absolutely contrary to the constitution of Lichens. And this, indeed, seems to be persuaded by *Chroolepus*,† which readily embraces Lichens, though most frequently in a sterile condition, just as, besides these, examples of types from other quarters, especially amongst the Lichenacei, are not wanting, which never fructify. Fertile chroolepa may be seen in the "Flora," 1873, p. 22, and 1875, p. 106.

Here, perhaps, in passing, it may be convenient to repudiate in a few words the Schwendenerian hypothesis, against which I have in several places, and in the "Flora," 1870, p. 52, brought forward certain observations, and especially have recorded that gonidia "algæ" (according to that hypothesis) would constitute singular and unhappy dwellers in darkness,‡ inclosed in thalli, detained in a

* There originate then, indeed, very readily, zoosporoid Infusoria (which I have seen multiply by a longitudinal *fissiparity*, as it is called), but I could never observe zoospores formed in the gonidic cellules themselves.

† *Chroolepus*, from τὸ λέπος λέπεος, and therefore neuter. The articulations which produce the zoospores in *Chroolepa* may be called by a very natural and very simple term ZOOGONIDIA. This name in Algology has been very perversely employed for zoospores, which may be compared with the contents of the gonidia, and not with the gonidia themselves. Equally improperly the zoospore-producing articulations of *Chroolepa* (our ZOOGONIDIA) have in Algology been termed "sporangia," a name elsewhere already bearing a different conception.

‡ Th. Fries, coming to the aid of his "friend" Schwendener, in Lich. Scand., p. 4, affirms that this is "not true." But *if* this were not true, all thalli in a moist state would become green. which "is not true," for only a very few thalli in the time of rain are truly green (*e.g.*, *Physcia ciliaris*,

very narrow prison, and entirely deprived of a normal manner of living. The kind of life, however, is in nature nowhere seen changed, unless through the intervention of a very great metamorphosis.

Certain other points may here be added against that hypothesis which none, indeed, but tyros can patronise, for experience speedily teaches that nothing of the kind can be rightly observed in nature.

1st. No FUNGUS is present in the formation of Lichens. This is demonstrated even from their very first beginnings, for the spores and the primary filaments of germination at once show themselves to be of a lichenose nature (elastic, licheninose* ENDURING [and not putrescent in maceration, all of which characters are peculiar to lichenohyphæ], entirely different from the spores and germens of Fungi (which have perishable hyphæ, very readily plicated, thin walls, dissolved by *K*, &c.). In the Lichen there is no Fungus.

2nd. No more is there any Algal present or intervening in the same formation. The gonidia of Lichens do not occur in thalli, and at the same time in nature living freely;† gonidia are never seen around the thalli and at the same time within the thalli, although we have made observations on young thalli everywhere growing (even their most tender beginnings). On the contrary, where Lichens most flourish and abound, there "Algæ" (Protococci, &c.) are entirely wanting. In the Lichen there is no Algal.

3rd. Gonidia are observed to be produced in the cellules of the thallus in the young growing‡ as well as in the adult Lichen; nor do these require a foreign origin for their gonidia. Why should they be added otherwise, and from what other source should they

Peltidea aphthosa), since in a few the cortical stratum is pellucid (Cfr., otherwise Nyl., in Obs. Lich. Pyr. Or., pp. 17, 18). The examples [of dwellers in darkness] which the same writer cites "GIGANTIC ALGÆ," living in the depths of the sea, and also Sarcinæ occurring in the intestines and other organs of distempered men and animals, are of no weight at all in science; for they are true sophisms and nothing else. If this had any logical application at all, it would be necessary that *Laminariæ*, *Sarcinæ*, &c., should enter into the thalli of Lichens. But in the present day what is not written and what is not believed! [Dr. Fries ought to have shown in defence of his thesis that "Algæ-lichen parasites," or regarded as such, themselves, indeed, live freely in alternating light and in perpetual darkness.]

* [That is, penetrated by lichenine, which lichenine consists of a gelatinose substance, which, when stirred in water, is dissolved and lost.]

† Some Protococci are subsimilar, but do not entirely agree with the very type of gonidia, and there is no *identity* whatever.

‡ In Tul. Mém. Lich. t. 3, f. 3, are sufficiently well figured the beginnings of the thallus, with the first cortical cellules producing gonidia. But the author says, erroneously, p. 20, "These cellules (gonidia) are produced directly from the filaments of the medulla," for the filaments themselves nowhere give origin to the gonidia, but these originate in the parenchymatose cortical cellules, which are observed growing upon the prothalline filaments of germination.

come (by what magical attraction?), when gonidia are able to originate, and indeed do originate, in the thallus itself?

4th. Not a few thalli are entirely cellulose, nourishing gonidia (or gonimia) in the cellules, and not having any lichenohyphæ, or others having them only sparingly.

5th. In young propagula of Collemacei we see constantly gonimia originating, and formed before the hyphæ.

6th. In endogenous cephalodia (*Solorina crocea*, *Stictæ*) we see gonimic strata formed deep in the thallus, according as this is expanded; nor in any way could gonimia from the outside be able to find an entrance into those thalline recesses. In what way could they penetrate the firm cortex?

7th. Very numerous parasitic Lichens, apothecia alone occurring, entirely want hyphæ,* and the most certain characters prove that these apothecia belong to Lichens.

Any one whatever of these points suffices to destroy all Schwerdenerism; others, also, might be added, such as the normal intraconceptacular origin of hymenial gonidimia in many of the Pyrenocarpei. Thus from every side there falls to pieces an hypothesis informal and absurd, supported by no serious observations.

II.—Different Forms of Gonidia.

The name GONIDIA employed in a general sense comprehends both *gonidia* in the stricter sense (or *eugonidia*) and *gonimia* (or *granular gonima*), between which there is a fundamental distinction. I do not here expound their differences, which have already often been treated of by me, and of which I have observed in the "Flora," 1866, p. 179, as follows:—"Of so great weight do these appear to be, that Lichens truly seem to afford as it were two parallel series—the one marked out by the *gonidia* and the other by the *gonimia* in the texture, which different anatomical elements are not without a certain biological analogy with the globules of the blood in animals, and similarly present absolute characters. The Collemacei embrace types in which the gonimic apparatus is preeminent, and occupies the whole thallus; but in *Nephromia*, *Pannaria Stictina*, &c., the same anatomical apparatus exists, though reduced or contracted to a peculiar stratum. It is, however, most deserving of notice (and this, indeed, marks out the very great weight of the character) that types in these gonimic Lichens agree with, and externally are very similar to other types in the series of those which have the thallus furnished with gonidia. This at the same time holds good of genera and species, so that there are gonimic species and genera parallel with gonidic species

* It may here be observed that sometimes apothecia, especially lecideine, are produced upon old dead apothecia and proliferous from the hypothecium (these dead apothecia being often caused by the hymenium being eaten by snails or larvæ).

and genera. Of so great importance, indeed, is this anatomical apparatus, that the gonimia put on the most diverse forms where the external aspect of the Lichen is but little or scarcely at all changed."

The following are the principal forms which we find in *Gonidia* and *Gonimia*. There is, also, to be added *Gonidimia*, which are intermediate between them.

A. *Gonidia* (or *Eugonidia*).

1. *Haplogonidia.*—A very frequent protococcoid form, constituting a globulose (or subglobulose) cellule, which is simple, or twice or thrice divided. There occur, indeed, in certain species (especially in Lecideas with granuloso-leprose thalli) glomerulose gonidia, with several small agglomerated gonidia, which are often more notable than chroolepoid gonidia. Elsewhere there are observed haplogonidia which are variously connated, and passing into the following form.

2. *Platygonidia*, or *platygonidic* syngonidia.—Such are the depressed gonidia variously membranosely connated, as are presented by certain epiphyllous thalli (Cfr. Nyl. Lich. Andam., p. 13).

3. *Chroolepogonidia*, or *chroolepoid* gonidia.—These are they which are more or less similar to Chroolepus, and which when simpler pass into simple gonidia. They are often of a violet scent.

4. *Confervogonidia*, or Confervoid gonidia.—These in a certain way imitate the Confervæ. They constitute the principal element of the thallus of the Coenogonii.

B. *Gonidimia.*

These (in the "Flora," 1866, p. 116) I have also called *Leptogonidia*, but the name *gonidimia* appeared to be preferable, as being shorter and more conformable to the others. They are intermediate between *Gonidia* and *gonimia*, smaller than the former, and having the parietal cellules less distinct, and the form otherwise oblong. To this pertains also *hymenial gonidimia.* Not rarely gonidimia are found (*i.e.*, in *Verrucaria œthiobola*) aggregated in syngonidimic glomeruli, and then on a passing inspection they scarcely differ from gonimia, unless in the greenish colour.

C. *Gonimia.*

These, whether occurring in thalli or cephalodia, present the same characters. Their colour is glaucous-bluish. A peculiarity is that they are not endowed with any cellular wall, but that there is only present superficially a very thin vesicle difficult to be distinguished, which, when superfused with ammoniac, is seen empty, in consequence of the phycochromatic contents being thus dissolved (Cfr. Nyl. Obs. Lich. Pyr. Or., p. 48).

The forms here to be distinguished are chiefly the following :—

1. *Haplogonimia.*—These present larger gonimia, which are simple, or two or several aggregated. They are very large in the genus *Phylliscum*, involved in a gelatinose stratulum, and scattered in the thallus.

2. *Sirogonimia.*—These present scytonemoid or sirosiphoid series of gonimia.

3. *Hormogonimia* (a name proposed in Bull. Soc. Bot. Fr., 1873, p. 264).—These are the most common gonimia, small in size, moniliformly arranged (few or several thus conjoined), very frequently contained in ellipsoid-deformed and various syngonimia. In *Collema* (or *Nostoc*) the whole thallus it would seem is to be considered as a single syngonimium; but the genus *Hormosiphon*, Kuetz., may be held as showing the existence of moniliform series typically vaginate, and that they singly constitute cylindrical hormogonimic syngonimia, the vaginæ being entirely confluent.

4. *Speirogonimia.*—Perhaps by this name may be appropriately called those smaller scattered gonidia, which are similar to hormogonimia, but make no attempt towards conjunction into moniliform series. The genera *Omphalaria* and *Synalissa** are examples of this gonimic form. The syngonimia are subglobose.

As bearing upon the above subject, I may here insert the two following observations from amongst many others in my note book :—

1. Dr. de Seynes, in *Assoc. Française pour l'avancement des Sciences, Congrès de Clermont—Ferrand*, 1876, p. 495, writes—"I may be permitted to remark the analogy which there is between the tissue of the cellules in the thickened walls of lignicole Fungi and that of the filaments (*hyphæ*) of certain Lichens, which have appeared to several authors, on account of their thickness or their proper structure, to remove them from the fungial cellules, and to overturn the theory of Algo-Lichen parasitism. The observations which I am about to make upon the effects produced in the Fungi which are internally rich in cellulose, appear to me of such a nature as not to permit the existence of any objections." Dr. de S. here errs in saying "several authors," for Nylander alone has observed and made known that protothalline lichenohyphæ (*i.e.*, the germinating filaments of Lichens) at once entirely differ in being penetrated, perfused, and for the greatest part composed of lichenine, and in various other characters, from the myceline hyphæ of Fungi. Why does not Dr. de S. compare those things which have been already compared? It was necessary for

* In the "Flora," 1876. p. 558, I have made mention of a rare arrangement, where (in *Synalissa*) gonimia at length reniform are beheld, and infixed singly to the apex of the filamentose ramule (in the impressed portion).

him to detect *Lichenine* in the hyphæ of Fungi before he could found a comparison of any value, and much less could he legitimately draw the conclusion which he too rashly and credulously accepts.

2. Dr. Nylander, in *litt.* recently received, has informed me that M. Larbalestier has detected at Kylemore a beautiful saxicole species of *Gongrosira*, Kütz., bearing the apothecia of a new *Lecidea* (*L. herbidula*, Nyl.). This algological genus is one which readily passes into Lichens.

REPRODUCTION OF THE ASCOMYCETES.

By Dr. Maxime Cornu.

(*Continued from p.* 38.)

Nectria cinnabarina—one of our most common species—presents itself in great abundance upon dead branches, in the winter and spring, in gardens and hedges. The first form under which it shows itself constitutes the *Tubercularia vulgaris*, Tode. If we make some skilful cuts of the *Tubercularia*, we recognise that it is formed of a red stroma, from which arise a great number of filaments disposed as a fan, and bearing a considerable mass of spores. These filaments are divided, and each of their divisions bears a short sterigmate, which gives birth to a conidium: this conidium is exceedingly small, oval, and full of a dense plasma; the filaments have the constitution of the spermatiferous filaments; the conidia the form and dimensions of the spermatia. One has to do with spermogonia with a free surface, as are, under a bed of bark, those of the *Stictosphæria Hoffmanni*, Tul., and not disposed in the form of a cavity. The filaments of the *Tubercularia* give birth to an enormous number of small spores, like those of the ordinary spermogones; they differ from the typical form by a greater elongation of the cells which constitute them, but their general disposition is absolutely the same.

If we study *Xylaria Hypoxylon*, so common upon old trunks in the woods, the fruitful stromas of which bear sometimes some ascophorous conceptacles, at others conidia, we should see that in the first case the stroma is of an intense black, and in the second of a glittering whiteness due to the conidiophore cells; a transversal cut shows that it is formed of straight filaments, very small, divided, the terminal cell of which gives birth to a small conidium; but the terminal cell is not the only one endowed with this property, that which is at the underneath part can also sometimes emit one. Have we not here some veritable spermatiferous filaments very much resembling the better characterised arbuscles of the Pyrenomycetes and of the Lichens?

In *Poronia punctata* a greater number of joints are prolific, but the sterigmates of the conidia are almost null; in some other *Hypoxylons*, *H. fuscum*, the prolific joints are freely branched.

If we pass to the *Hypomyces*, we shall encounter, besides the endospores, two forms of spores, equally free and borne upon arbuscles; one form, with thick membrane, coloured and double, evidently representing the stylospores; they are more or less allied to those of *Melanconis*, of *Massaria*, and of *Cucurbitaria;* the other form, pale and with a slight membrane, representing the spermatia.

The fact common to these species, which all live at the expense of other fungi, is that of presenting, besides the ascophorous conceptacles, two orders of spores perfectly homologous, and the complete parallelism of which ought not to be doubted for a moment. These curious parasites, of which M. Tulasne has given some magnificent drawings, will exhibit to us the possible variation in each of the two forms.

The *Hypomyces aurantius* possesses some conidiferous arbuscles, the sterigmates of which are very much elongated and form lateral branches. The existence of two other modes of reproduction does not allow of any doubt that the third does not correspond to the spermatia; one proves besides an analogy of form with the typical form described above.

At the extremity of the branches is borne an oval acrogenous spore, which becomes detached and falls. It may be adherent when the formation of a second spore, likewise borne at the extremity of the filament, and which raises it by degrees and becomes isolated from it, commences beneath it. The outermost spore will thus be the oldest.

There is a complete analogy with what happens in *Penicillium*, and the conidia *in a chaplet* of the allied genera of the *Hypomyces* (ex *Melanospora*, *Torrubia*) furnish some similar examples. There are besides, in *Torrubia* and *Hypocrea*, the identical representatives of the spermatiferous arbuscles, the chlamydean spores appearing to be often missing. In *Hypomyces aurantius*, as in *H. ochraceus*, Pers., the conidia are at times bilocular, although often simple; in *H. chrysospermus* they are more often bilocular; in *H. rosellus*, Tul., they are plurilocular.

It is pretty certain that in all these different cases we have always something to do with homologous forms, which ought to be considered as morphologically identical.

The *Hypomyces* possess accordingly a conidiferous apparatus representing the spermogones of the other Ascomycetes, which establishes and shows the transition between the typical form and other forms, at first appearing perfectly different. It is thus that the chaplets—spores produced in *Penicillium glaucum*—find their analogies; this resemblance is supported by the recent researches of M. Brefeld, who has obtained and described the conceptacles of this species, conceptacles with cellular partitions having, in my

opinion at any rate, some of the characters of the perithecia proper to the *Hypomyces*. The species, the conidia of which are plurilocular, lead us up to the curved spores of the *Selenosporium*, *Stilbum* (partim), and *Atractium*, *Fusisporium*, *Fusarium*, the analogy of which, with the Hypomyces, is evident; a general appearance, the tint of the plasma often coloured, the disposition of the spores, indicate an incontestible kindred. It is in consequence of this analogy that M. Tulasne, having been able to attach many of these conidial forms to their ascophorous form, has placed these last in the great group of Nectriacei, by the side of the *Hypomyces*. It is thus that according to M. Tulasne, the *Atractium flammeum*, Berk. and Ravenel., is the conidial form of the *Sphærostilbe flammea*, Tul.; the *A. cinnabarinum*, Mont., belongs to the *Sph. cinnabarina*, Tul.; the *Fusisporium Buxi* returns to the *Nectria Russeliana*, Mont., etc. I have been able, in a prolonged culture during many weeks, to verify the first of these facts.

This consanguinity has already been indicated by the illustrious French mycologist, and that which has just been said is with a view to recall it. He has shown the relation which allies all these forms; but in continuing the study of the Mucedines one can foresee that there are a certain number of species and, perhaps, genera which we ought to draw closer to one another, and thence deduce their place in the series.

Without appealing to any new considerations, one can remark the extreme analogy of certain forms of Mucedines with the *Hypomyces* of which we have just treated; it is thus that *Verticillium*, *Acrostalagmus*, *Acrocylindrium*, *Cylindrophora*, *Acremonium*, of which many forms are figured, constituting probably the representatives of the spermatiophorous arbuscles of species of Ascomycetes more or less allied to the Hypomyces; it is the same with *Dendrochium*, one of the species of which probably belongs to the *Sphærostilbe aurantiaca*, Tul.

In support of this way of looking at the matter, one can cite the opinion of M. Bonorden; he likewise has proved the analogy of *Verticillium* with the spermatiophorous arbuscles of the Ascomycetes, and thought he might consider his *Verticillium ruberrimum* as the spermatiophore form of *Trichothecium roseum*, Lk. M. de Bary, being assured that the spores, very small besides, still possessed the faculty of germinating, has disputed this assimilation. He has contended also that the *Verticillium* was a form of the *Trichothecium*—an opinion which appears in fact little admissible.

At the present time, and for some other reasons, one can retake the opinion of M. Bonorden and assimilate these small arbuscles to those of the *Hypomyces*, and, in consequence, to the spermatiophorous filaments of the Ascomycetes. Figure 11 of plate 10 represents a species developed in great abundance upon some decomposed leaves of the *Vitis riparia*, at Bordeaux, in the month of November, 1873; at the same time, upon the same sub-stratum, was found, in great abundance also, the spores of a

Sepedonium, brown, spiny, surmounting an empty cell; one can assimilate them to the chlamydospores of the *Hypomyces*, and report them to the preceding species. Without judging the second question (very doubtful besides), one cannot help remarking the great analogy which exists between this conidiophorous form and the *Hypomyces*. I should refer this species to *Acrostalagmus cinnabarinus*, Corda (*Verticillium ruberrimum*, Bonorden), of which we have just written.

It is to be remarked that as upon the *Hypomyces* the spores may remain at the extremity of the sterigmata, it may be that they are not always borne at the same point of the extremity of the filament, or that they rest stuck by a liquid which glues them. The presence of the viscous liquid is to be seen more clearly characterised in the spermogonia (*Valsa*, *Diatrype*, *Stictosphæria*, etc.), and likewise in the pycnidia. It is thus that at the extremity of the branches of the *Acrostalagmus* (like the *Hypomyces rosellus*), for example, are formed some globules or capitules of spores. There is not any sporangium around this mass of spores, as, according to Corda, is represented in the *British Fungi* of M. Cooke, who considers it a Mucorine.

This peculiar disposition, and the birth of many spores at the extremity of a sterigmate—a fact which can be easily observed, notably in the spermogones of the *Triblidium quercinum*—leads us to the forms in which many conidia are borne at the extremity of the filaments. We will consider, therefore, as representing the spermatiferous organs, *Polyactis cinerea*, Berk., a peculiar form of *Peziza Fuckeliana*, according to M. de Bary. There is a great number of genera allied to *Polyactis*, and many of them are exceedingly curious, which ought probably to be considered in the same manner, but it is necessary to make a more profound study before deciding with certainty.

Hypomyces asterophorus, Tul., presents a form of conidia very dissimilar in appearance to those of the others, but the morphologic value of which is the same; these are filaments simulating the antennæ of insects, and which become disarticulated in a crowd of small conidia. It suffices to represent the formation of the new spores, without the production of the contraction which accompanies the division; we have thus rows of rectangular conidia and not a chaplet of oval spores.

The comparison of the stylospores would give rise to some very interesting remarks, and we see, by the species which have just been passed in review, the difference which may be offered finally by homologous organs, and which really represent the spermatiferous apparatus.

The analogy with the preceding genera will probably allow us to range not far off from the *Acrostalagmus* and *Verticillium* the curious *Gonytrichum cæsium*, Corda, and not far off still from these species the *Cylindrodendrum album*, Bonorden; the remarkable *Ceratocladium microspermum*, Corda, is analogous to it, according

to M. Bonorden (*loc. cit.*). *Chætopsis Wauchii* is likewise a spermatiferous form, but it approaches more the typical form than those which have just been cited. M. Tulasne considers it as analogous to the conidiferous form of *Chætosphæria innumera*, Tul., described formerly under the name of *Dermatium virescens*, Pers.

I do not examine in this work the last form and its analogies which are often described under the collective name of *Deniatici*. This *ensemble* contains some species the membrane of which is encrusted and thickened; it would be necessary to make a particular examination of the different genera which enter into this case, whether they are known completely (*Fumago*, *Pleospora*) or incompletely (*Exosporium*, *Hirudinaria*, *Speira*, *Asterosporium*, *Sporocybe*, etc.). We have said something relative to the difficulties which would arise out of the study of this special point.

There are also some cases in which in place of three sorts of spores one finds in reality four; we see some examples of it among the Nectriacei (*Nectria pulicaris*, Fr.). There are some rare exceptions, which will merit a special examination; this is not the place to examine them, because we are occupied with more general facts. It is necessary to be careful not to confound these parasitic forms with their host; this confusion is impossible when one has to deal with two forms of ascophore (*Nectria cinnabarina* and *Sphæria cupularis*), but would be easy between organs of a sexual reproduction.

It is probably to some spermatiferous forms that belong the conidia of small Ascomycetes parasitic upon the leaves of languishing plants, where they form in pulverulent spots covering the dead and partially dried up tissue. The tufts of filaments come out by the stomates, just as happens among the Peronopores, and each filament is terminated by an elongated and colourless spore; others are borne upon the lateral parts of the filaments. Sometimes simple, sometimes partitioned, these conidia resemble those of *Fusisporium*, and probably have an identical morphological value. Many of these parasites have been confounded under the name of *Oidium fusisporoides*, Fr., given in general to the conidiiferous form; they have been designated also under different names, some of which have been already cited above, *àpropos* of other comparisons. Many species of the genera *Hormodendrum*, *Cylindrosporium*, and *Graphium* ought likewise to enter into the same category. They are very frequently encountered in our neighbourhood at times variable according to each different species. It is thus the case with the *Adoxa* and the Figtree, precocious plants, the *Stigmatea* are precocious also; it shows itself in summer upon the *Symphytum*, during the autumn and winter upon *Glechoma hederacea*. M. Tulasne has given some magnificent figures of the *Stigmatea Fragariæ*. The conidia, when the moist atmosphere favours their development, may form an adherent series, which imitate the curious disposition which is presented in *Hypomyces*

asterophorus. There is, therefore, a veritable consanguinity between all these forms appertaining to some species born in conditions so different and distinct from each other; but one cannot avoid remarking that there is a general resemblance which unites them.

In *Erysiphe* the conidiiferous apparatus (simplified and reduced to a single branch) is still allied to these. The spores are borne likewise in rows, and fall in a measure as they are ripe; they form some more or less lengthened chaplets, according to external circumstances.

From the exact appreciation of the different forms would result perhaps a more easy *rapprochement* of the species. From the comparison of the organs of the same value—perithecia, pycnidia, spermogonia (this last word employed in a modified sense)—there certainly would result a more perfect knowledge of the affinities of the different plants.

It is certain that the classing, according to the importance of the stroma only, is artificial, like all classifications founded upon a single characteristic, and many Ascomycetes with isolated conceptacles might be joined to *Hypoxylon* without destroying, by so doing, their natural analogies. Certain very clearly defined genera are defined by other characters than their stroma. One might thus join together *Stictosphæria Hoffmanni*, Tul., not with *Hypoxylon*, but with *Valsa*, with which it has much more analogy; it is likewise the case with many fimicolous species. According to these considerations the idea of the genus founded partly on the external form and value of the stroma will be profoundly modified.

It is necessary to take into consideration, principally in the case where they are represented by separate cavities, the comparison of the different modes of reproduction in perhaps an equal degree; but this estimate of the analogies ought to be preceded by a preliminary work. It would be necessary to establish what are, in each species, the reproductive bodies corresponding to the stylospores and those which one would call spermatia. It would above all be necessary in the case where the species want one of these forms; may be that they really are deprived; may be, on the contrary, that the plant may be incompletely studied. Thus, for example, the homology of the three modes of reproduction of *Hypomyces* is exceedingly clear, but one conceives that if among one of the species the conidia, among another the stylospores, were not known, it would be singular and contrary to all natural laws to attempt to establish any comparison whatever between the conidia on the one side and the stylospores on the other; whilst, on the contrary, an attentive comparison with a third species furnished with both sorts of spores, would permit a natural lien to be established between these two species by the intermission of a third.

Similar studies would find, therefore, their application in the grouping of different forms, and supported by some analogous

considerations, one will be able to reunite, if we may say so, in a corps of doctrine a method of induction in order to bring together some species hitherto considered as far removed from one another.

Thus the exact morphological value of the sexual modes of reproduction has a capital importance, both in the grouping of the different species already known, and in the research of the different members belonging to one and the same species, but at present only known in an incomplete fashion; one will be able to apply it, for example, to the picking out, so to say, of the Ascomycetes from among the numerous forms of the Mucedines.

These considerations have their importance, and it is easy to understand this, without the necessity of entering into more extensive details. But the comparison and assimilation of the different orders of reproductory organs require the most minute study probably carried on upon plants in course of development. That which has just been said is a general view of the whole subject at first; it will be necessary to return later, and to examine each case separately with care. These generalities would find place in an enumeration of the Ascomycetes, and certainly lead to a better knowledge of them; but these are still only indications permitted us of guiding one's self in an intuitive manner.

It is necessary, in fact, to represent to ourselves that from the ancient group of the Mucedines one has successively separated some plants belonging not only to the Ascomycetes (although this may be the greater number), but besides to the Peronospores and to the Mucorines.

In the facts signalised above, we have given an indication and not an assured classification. It is necessary to guard against, for example, taking the monosporous sporangia of the Mucorines for conidia, as one had already done, and the linear sporangia for the spores *en chapelet;* the development and the germination will permit of so calculating as to guard against such errors.

It is necessary to be prudent in similar researches as to the place which ought to be occupied by a genus, and to guard against committing any grave errors; the more frequent and more easy to commit would be that which consists of taking the entire genus such as is defined by one or two species. The ancient authors and, at times, their successors have often united some species belonging to some perfectly distinct groups, the nature and the very distinct development of which, during a lengthened period, still conduced to a rather similar final form. It is thus that M. Bonorden has included in his genus *Monosporium* some *Hypomyces* (*M. agaricinum*) and some *Peronospora* (*M. macrospermum*); it occurred in the same manner at another time in the great genus *Botrytis*, which comprehends some very different forms; *Torrubia* (*B. Bassania*), *Peronospora* (*B. nivea*, Ung.), some Peziçe (*B. cinerea*), etc., some Mucorines (*B. Jonesii*), etc.

It would be desirable that the confused group of the Mucedines, which contains such heterogeneous elements, already very much

broken up by the works of M. Tulasne, should see more and more diminished the number of its members, and that each species, united to its different forms, should be removed and placed in the natural range which belongs to it, and that one should finally suppress from mycology this group, which is only provisional. This fact, if it takes place, would mark a considerable progress of the science, the preceding remarks having in part been aimed at attaining this result.

The taxonomic importance of the asexual reproductory apparatus is evident among the seaweeds, and in this great group of vegetables it permits, concurrently with the mode of sexual reproduction, of making either some happy separations in some genera very much alike in appearance, or some important approachments between some others which appear far removed from one another; it is thus that the nature of the zoospores which are furnished with a ciliary coronet permits of allying the *Œdogonium* with the *Bolbochæte*, so different as to mien. Among Fungi one ought to obtain some similar results by analogous considerations.

En résume, the magnificent work, the "Selecta Fungorum Carpologia," shows that the Ascomycetes possess many modes of reproduction; the proofs which are there offered are irrefutable; these four modes of reproduction give place to the formation of four orders of spores:—

1st. The endospores.
2nd. The stylospores.
3rd. The spermatia.
4th. The conidia.

The spermatia have been considered, in consequence of their refusal to enter into germination, to be fecundatory bodies. One has seen above that many of the forms considered as not germinating may enter into vegetation under particular conditions, and that they are reproductive bodies like the others. Such is the first result of the present work.

The morphologic study of the spermatia has shown that many of the conidial forms may be considered as equivalent to the spermatia, and that they are the homologous form; one has been able to deduce some conclusions relative to the species removed from the confused group of the Mucedines. Still, under the name of conidia, M. Tulasne designates also certain spores entirely different from the first, and which resemble some stylospores; it is necessary henceforth to consider them as such. Thus results a considerable modification in the group of the Ascomycetes, and a great unity in the comparison of the organs. The Fungi possess two orders of asexual spores—the stylospores and the spermatia—which are endowed with the germinative property, may be born free or in the interior of cavities, and exist simultaneously, or show themselves isolated with the perithecia; such is the very simple conception which may be arrived at from the preceding pages.

FUNGI BRITANNICI EXSICCATÆ.

Cent. VI.

No.
501. Agaricus cirrhatus. *Schum.*
502. Agaricus cretatus. *B. & Br.*
503. Paxillus panuoides. *Fr.*
504. Hydnum niveum. *Fr.*
505. Agaricus autochthonus. *B. & Br.*
506. Cyphella Curreyi. *B. & Br.*
507. Cyphella villosa. *Pers.*
508. Solenia fasciculata. *Pers.*
509. Polyporus fraxineus. *Fr.*
510. Polyporus dryadeus. *Fr.*
511. Polyporus spumeus. *Fr.*
512. Polyporus abietinus. *Fr.*
513. Geaster fimbriatus. *Fr.*
514. Geaster hygrometricus. *Pers.*
515. Tulostoma mammosum. *Fr.*
516. Crucibulum vulgare. *Fr.*
517. Lycoperdon pyriforme. *Fr.*
518. Brefeldia maxima. *R.*
519. Physarum leucophæum. *Fr.*
520. Arcyria punicea. *Pers.*
521. Didymium farinaceum. *Schr.*
522. Stemonitis fusca. *Roth.*
523. Lamproderma arcyrioides var. iridea. *R.*
524. Trichia chrysosperma. *Bull.*
525. Diderma contextum. *Pers.*
526. Cribraria argillacea. *Pers.*
527. Trichia chrysosperma. *Bull.*
528. Tubulina cylindrica. *D.C.*
529. Cystopus candidus. *Lev.* (Oogonia).
530. Puccinia anemones. *Pers.*
531. Puccinia Adoxæ. *D.C.*
532. Puccinia Betonicæ. *D.C.*
533. Endodesmia glauca. *B. & Br.*
534. Microcera coccophila. *Desm.*
535. Illosporium carneum. *Fr.*
536. Fusarium tremelloides. *Grev.*
537. Sporotrichum sulphureum. *Grev.*
538. Ramularia destructiva. *P. & P.*
539. Peronospora violæ. *DBy.*
540. Peronospora densa. *DBy.*
541. Helvella crispa. *Fr.*
542. Peziza leporina. *Batsch.*
543. Peziza purpurascens. *Pers.*
544. Peziza sepulta. *Fr.*

No.
545. Peziza virginea. *Batsch.*
546. Peziza nivea. *Fr.*
547. Peziza aspidiicola. *B. & Br.*
548. Peziza escharodes. *B. & Br.*
549. Peziza Tripolii. *B. & Br.*
550. Peziza flaveola. *Cooke.*
551. Peziza punctoidea. *Karst.*
552. Peziza corium. *Web.*
553. Peziza hemispherica. *Wigg.*
554. Peziza scutellata. *Linn.*
555. Peziza cæsia. *Pers.*
556. Peziza fusca. *Pers.*
557. Helotium pallescens. *Fr.*
558. Helotium salicellum. *Fr.*
559. Ascobolus (ascophanus) ochraceus. *Boud.*
560. Ascobolus (ascophanus) lacteus. *C. & Ph.*
561. Cucurbitaria cupularis. *Fr.*
562. Nectria coccinea. *Fr.*
563. Nectria peziza. *Fr.*
564. Nectria lecanodes. *Ces.*
565. Sphæria ovina. *Pers.*
566. Sordaria fimicola. *Rob.*
567. Sporormia minima. *Awd.*
568. Sporormia Notarisii. *Awd.*
569. Sphæria juncina. *Awd.*
570. Sphæria maritima. *Cooke & Plow.*
571. Sphæria Nardi. *Fr.*
572. Sphæria perpusilla. *Desm.*
573. Sphæria Michotii. *West.*
574. Sphæria marram. *Cooke.*
575. Sphæria Bryoniæ. *Fckl.*
576. Sphæria ovina. *Pers.*
577. Polystigma rubrum. *Pers.*
578. Polystigma fulvum. *D.C.*
579. Dothidea Ulmi. *Fr.*
580. Dothidea graminis. *Pers.*
581. Venturia Myrtilli. *Cooke.*
582. Venturia glomerata. *Cooke.*
583. Venturia atramentaria. *Cooke.*
584. Sphærella Ostruthii. *Fr.*
585. Stigmatea Robertiana. *Fr.*
586. Stigmatea Geranii. *Fr.*
587. Venturia Potentillæ. *Cooke.*
588. Rhytisma salicinum. *Fr.*
589. Sphærotheca pannosa. *Lev.*
590. Sphærotheca Castagnei var. J. *Lev.*
591. Sphærotheca Castagnei var. F. *Lev.*
592. Sphærotheca Castagnei var. G. *Lev.*
593. Erysiphe Martii (Pisi). *Link.*

No.
594. Erysiphe Martii (Heraclei). *Link.*
595. Erysiphe lamprocarpa (Plantaginis). *Lev.*
596. Erysiphe lamprocarpa (Stachydis). *Lev.*
597. Uncinula adunca. *Lev.*
598. Phyllactinia guttata. *Lev.*
599. Erysiphe horridula. *Lev.*
600. Erysiphe communis. *Schl.*

ATLAS DER DIATOMACEEN KUNDE.

Nos. 13 and 14.

We have received a further portion of this work, and we regret to learn that the ill-health of Herr Schmidt has been the cause of the long delay in its appearance. Although the drawings have been made under the disadvantage of considerable personal suffering, they are not inferior to any that have hitherto appeared.

Part 13 contains two plates of Navicula, consisting of 103 figures; two plates of Campylodisci, with 29 figures. Three of the plates of Part 14 are also devoted to further species of that genus, of which 44 representations are given. The last plate is devoted to illustrations of the genus Surirella, and contains 26 figures.

Plate 49 contains 42 figures of the *Navicula firma* group; many new species and varieties are given, and for the most part very correctly drawn. We particularly notice Fig. 1, doubtfully referred to *N. columnaris*, E., but which we believe is the same form as *N. Iridis*, figured in Ehrenberg's Mikroscopischen Lebens in Amerika. Fig. 10 is an excellent representation of the tumid var. of *N. firma* var. δ Kitton (*N. firma*) var. *tumescens*, Grunow. According to Herr Schmidt this is not a variety of *N. firma* (Nach meiner Ansicht nicht mit *N. firma* zu vereinigen.) Fig. 12, *N. citrea* n.s., A. S., from Demerara, represents what might be taken as a short variety of the preceding species. The delineations of this group of forms are of especial interest to the Diatomist, exhibiting the widest divergence in outline and size, but the characteristic central blank space and the submarginal lines are as apparent in the pigmy *N. dubia* as in the gigantic *N. Iridis*. Figs. 43-53 represent the *N. sphærophora* group (the genus Anomæoneis of Pfitzer, and which he constituted to receive those forms with a blank space on one side of the median line only). The forms belonging to this group are *N. Bohemica*, E., *N. sculpta*, E. (not *sulpta* as in the description of the figures) = *N. tumens* of the Synopsis *N. rostrata*, E., Kütz. and Donkin, and *N. biceps*, E.

Plate 50 contains figures of the following species:—*N. robusta*, *N. sectilis*, *N.* (*maxima* var. ?) *excentrica*, *N. formosa*, do. var., *N. Liber*, *N. Bleischii*, *N. elongata*, *N. delata*, *N. maxima* var.

umbilicata, do. var. *bicuneata*, *N. Samoensis*, *N. probalis*, *N. hexapla*.

On plates 51-55 are figures of some of the most beautiful of the genus Campylodiscus, most of which are correctly delineated. We especially call attention to the following on Plate 51, and which we believe are considered by the authors to be new species and varieties (it would be advantageous if the new species were indicated by n.sp.):—1. *C. tæniatus* (this is very near *C. stellatus*, Grev.). 2. *C. ornatus*, Grev., *var. amphileia*, Grunow. 3. Do. *var. mesoleia*. 4. Do. *var.* 5. *C. adornatus*, a large and beautiful species.

Plate 52—Figs. 1-2 represent a very beautiful var. of *C. exinuus*, Grev., *var. Briocensis*, Grunow; 8, *C. bifurcatus* is remarkable for its pseudo median line, the ends of which become forked as they approach the margin.

C. Phalangium (figs. 16-17, pl. 53) closely resembles Greville's *C. ambiguus*. *C. Rotula* (fig. 20) might also be referred to the same author's *C. Brownei*. *C. Balearicus* is perhaps only a variety of *C. biangulatus*, Greville.

In some samples of the Yarra-Yarra deposits may be found a very beautiful form of this genus; it is somewhat variable in its markings, and in some instances would seem to be a connecting link between *C. clypeus* and *C. echenëis*. Herr Grunow names this form *C. Dœmelianus*, and two very excellent delineations are given. The figures of *C. clypeus* are very good. *C. echenëis* is well represented in f. 5, but the valvular views are perhaps the worst in the part, being too much like flat discs.

Several figures are given (Pl. 55) of *C. noricus* and *C. hibernicus*. To the latter Grunow (and I think rightly) refers *C. costatus* of the Synopsis, and which he considers distinct from *C. noricus*.

On plate 56 are given 26 figures of species of Surirella. Fig. 1, *S. Neumeyeri*, Janish = Plagiodiscus,* Neum., is probably only a distorted Surirella. *Surirella contorta*, Kitton, is well represented by fig. 4. Many figures are given of forms belonging to the *S. fastuosa* group. Figures 15 and 16 represent a supposed new species *S. cruciata*, but it is probably only a form of *S. striatula*, with some of the costae abnormally developed. I have occasionally seen it in some of the Breydon gatherings. *Campylodiscus spiralis*, Sm., is correctly referred to Surirella, in which genus Kützing originally placed it.

A scale of ·001 of an inch and ·01 of a mm., enlarged to 660 diameters, would be a useful addition to the plates.

F. Kitton.

* See figures of this genus, M. M. J., Oct. 1, 1877, pl. cxciv., figures 8 and 9.

THE SPHAGNACEÆ.

Dr. R. Braithwaite has recently issued a collection of dried specimens under the title "Sphagnaceæ Britannicæ Exsiccatæ," which are intended primarily to illustrate his forthcoming work on "The Sphagnaceæ, or Peat Mosses of Europe and America." The following is a list of the contents of the fasciculus :—

A. *Cymbifolia.*

1. Sph. Austini, *Sull.*
2. var. imbricatum.
3, 4. Sph. papillosum, *Lindb.*
5. var. confertum.
6. var. stenophyllum.
7, 8. Sph. cymbifolium, *Ehrh.*
9. var squarrosulum.
10. var. congestum.

B. *Subsecunda.*

11. Sph. tenellum, *Ehrh.*
12. var. longifolium.
13. Sph. laricinum, *Spruce.*
14. var. platyphyllum.
15, 16. Sph. subsecundum, *Nees.*
17. var. contortum.
18. var. obesum.
19, 20. var. auriculatum.

C. *Truncata.*

21. Sph. molle var. Mulleri.
21.* var. arctum.
22. Sph. Angströmii, *Hartm.* (exotic).
23. Sph. rigidum, *Nees.*
24. var. squarrosum.
25. var. compactum.

D. *Cuspidata.*

26. Sph. squarrosum, *Pers.*
27. var. squarrosulum.
28. var. subteres.
29, 30. var. teres.
31. Sph. acutifolium, *Ehrh.*
32. var. deflexum.
33. var. purpureum.
34, 36. var. rubellum.
35. var. elegans.
37. var. tenue.
38. var. læte-virens.
39. var. fuscum.
40. var. luridum.
41. var. patulum.
42. Sph. strictum, *Lindb.*

43. Sph. fimbriatum, *Wils.*
44. var. robustum.
45. Sph. Lindbergii, *Schimp.* (exot.).
46. Sph. Wulfii, *Girgens;* (exot.).
47. Sph. intermedium, *Hoffm.*
48. var. pulchrum.
49. var. riparium.
50. Sph. cuspidatum, *Ehrh.*
51. var. falcatum.
52. var. plumosum.
53. var. brevifolium.

"SESSION MYCOLOGIQUE" OF PARIS.

The following notice of this meeting was communicated to the "Gardener's Chronicle:"—

The second annual session of the Botanical Society, which is specially dedicated to mycology, commenced on Sunday, October 21, and closed on Friday, the 26th. Previously some of the members had made short excursions in order to collect specimens for the opening exhibition, and when we arrived at Paris on the Saturday evening these specimens were under arrangement in the large room of the Horticultural Society, in the Rue de Grenelle. The method adopted at Paris is a novel one, and for many reasons not the best, to commence the session with an exhibition. All the results of the week's excursions do not meet the public gaze, and it appears to throw considerable labour and responsibility on the officers of the Society to make excursions beforehand, and collect specimens for the exhibition.

On Sunday morning, October 21, the exhibition was opened to the public from ten o'clock until five, and during the whole time was well filled with visitors, who appeared to take considerable interest in the subject. About 180 feet of tables were filled with specimens of fungi displayed on white plates, after the manner adopted at Hereford this year. The walls were decorated with water-colour drawings, to the number of 350, by MM. Boudier, Dr. Bull (of Hereford), Cornu, Cuisin, Quelet, Richon, and Seynes. The drawings by M. Boudier were highly artistic, and the most exquisitely finished of any we ever remember to have seen. Unfortunately 700 of these excellent illustrations were burnt during the war. Many of the specimens exhibited on the tables were of considerable interest, but, on account of the unfavourable season, the fresh specimens were few in number. Several specimens of the rare *Battarrea Gaudichaudi* were sent from Florence. A collection of dried Hymenomycetes from M. Barla, of Nice, mounted for the herbarium, excited much attention from the excellent manner in which they were prepared. Each species was accom-

panied by a coloured drawing and sections, and one or two of the mounted specimens were also coloured up in body colour to a resemblance of life. One species only was mounted on each sheet, and this was sometimes represented by twenty specimens in different stages of growth. Several plates contained the dried fungi sold in the markets in different parts of France, strings of *Morchella deliciosa* from near Geneva, absolutely identical not only in the species, but also in the method of drying and stringing them with those we have received from Cashmere. Of course there were strings of the Chantarelle, and other species dried in fragments which could not be satisfactorily identified. In the evening at 8 o'clock Dr. M. Cornu gave an admirable popular lecture on the study of Fungi, in another room.

Monday, October 22.—The exhibition was again open from 10 to 5, after which it was closed, and the specimens and drawings returned to their owners. About twenty gentlemen met at the railway station after *déjeûner*, and proceeded on an excursion to the Forest of St. Germain.

In the evening, at 8 o'clock, a meeting was held at the rooms of the Society, with M. Duchartre in the chair, when a paper describing some new species of fungi was read by M. Boudier; also one of a similar character by Dr. Quelet, one by Dr. M. C. Cooke on some allied species of Æcidiacei, and finally a general conversation on the relations between the larger fungi and cold weather. Dr. Quelet thought that cold was not so injurious as generally supposed, as he had noticed some species revive after frost, especially the Hygrophori, and he instanced *Hygrophorus hypothejus* as not appearing until frosty weather. M. Cornu then reported the names of the species encountered during the excursion of the day.

Tuesday, October 23.—Excursionists were stirring early to leave the station of the Northern Railway by 8 o'clock, for a ride of nearly two hours to the Forest of Villers-Cotterets. This is a large crescent-shaped forest, of 32 miles in length, still inhabited in some parts by wild boars. After a hurried scramble to the station, which is in a remote corner of Paris, and a ride of two hours, breakfast was highly appreciated, and indulged in so leisurely that it was noon before the party were on their way to the forest. It was dark when the party returned to the hotel at 6 o'clock to dine. During this meal some large dried Polypori from the Vosges were on the table, and the conversation was very mycological. Dr. Quelet declared that *Hydnum gelatinosum* was an excellent fungus to eat raw, with sugar, like jelly, and of this he spoke from experience. Some Truffles collected during the day were pronounced to be *Tuber mesentericum*, sold usually at five or six francs per kilogramme, or about half the price of *Tuber brumale*. Before the dinner party made their way to the railway station, Dr. Cornu undertook the operation of slicing up a large specimen of *Polyporus resinosus*, which had been collected during the day, and was carried by one of the party mounted on the tip of his umbrella and

borne on his shoulder. It is noteworthy that in these excursions the party keeps very much together, and whenever anything rare or interesting is found a whistle or a "*voilà*" brings them all together, the specimen is examined by all before it is consigned to the vasculum, and whenever it is divisible it is divided between those most interested in that particular group to which it belongs. The vivacious and energetic Dr. Cornu, always on the spot whenever required, gave such explanations as the less experienced might desire, or Fries' *Epicrisis* was brought out and consulted under a tree, doubtful points cleared up on the spot, and, if new or rare, fresh specimens sought after at once. Paris was not reached again until 10 p.m., and hence no evening meeting could be held.

Wednesday, October 24.—The proposed excursion for this day was abandoned, and, instead thereof, at one o'clock a party, which had been organised for the purpose, was conducted by M. Cornu through the National Museum and Herbarium at the Jardin des Plantes. In the evening at half-past eight, another meeting was held at the rooms of the Society, when some short communications were read. One of these described a species of *Coprinus* which was developed on a surgical bandage. Mr. T. Howse read a paper on the fungi in the neighbourhood of London, which was followed by a general conversation on the fungi of London as compared with those of Paris; on the fungi of the markets in both countries, and on parasitism of Agarics, such as *Nyctalis* and *Agaricus Loveianus*. Dr. Cornu reported the species found at the excursion of the previous day.

Thursday, October 25.—The excursion was arranged for Montmorency, only a few miles distance, and consequently did not necessitate an arrival at the station before ten o'clock. Unfortunately, this was a thoroughly seasonable day, raining and pouring alternately, and all operations were conducted under umbrellas, including scratching for Truffles, for this was the "scratch day." Notwithstanding all these little inconveniences, five species of *Elaphomyces* were found, some of them in considerable number, and this was no small achievement when it is remembered that they are subterranean, and give no certain indication of their presence on the surface, but must be scratched for on "all fours." A most extraordinary crop of *Peziza badia* was found in one place where hundreds of specimens, some of them 3 or 4 inches in diameter, extended in a scattered manner over about half an acre. In another spot the bird's-nest fungus, *Cyathus striatus*, was in extraordinary profusion, in some cases growing in dense masses 6 to 9 inches in diameter, and prevailing over the whole "clearing" of some acres in extent. In the evening, at half-past 8, the results of the day were announced, and Dr. Cornu explained the structure and progress of the new Vine disease, of which specimens were exhibited. A report by M. de Seynes on the Hereford meeting was also read.

Friday, October 26.—The closing excursion to the Forest of

Fontainebleau raised some of us from our beds at 5 o'clock, in order to catch the 7 o'clock train at the other extremity of Paris. After a ride of 37 miles breakfast was welcome, but before it could be partaken of an outlying portion of the forest had to be explored, so that the hotel was not reached until 12 o'clock. Justice to the viands being fully rendered, the exploration was again undertaken, chiefly under the coniferous trees, this being the only spot around Paris where Fir trees are grown to a sufficient extent to produce the characteristic fungi. The shades of evening closed around the excursionists before they again reached the hotel for dinner, and at 8 o'clock the train was due to start for Paris. Dinner having been disposed of, compliments became general, and amongst the toasts which were duly honoured were "The Strangers," "The President" (M. de Seynes), whose unavoidable absence was universally regretted; "The Veteran Fries," "The Woolhope Club and Dr. Bull," "The Author of the *Handbook of British Fungi*," "Messrs. Quelet, Boudier, and Cornu," and "The Mycologists of France," the last two being proposed by the English visitors. Thus closed the Session Mycologique of 1877.

Necessarily this is only a brief outline of the work of the week. Amongst the species found which were of most interest to us were those either not yet found in Britain or very rarely, such as an old dilapidated pileus of Strobilomyces, found near Paris for the first time by Dr. Quelet; numerous specimens of the very characteristic *Russula Queletii*, first identified in Britain this year during the Woolhope foray; *Lactarius helvus*, not at all uncommon around Paris; *Cortinarius scutellatus*, *delibutus*, *isabellinus*, and *paleaceus*; *Irpex paradoxus*, *Coprinus lagopus* and *picaceus*, *Phlebia radiata*, *Hydnum argutum*, *fuscoatrum*, and *molle*; *Hygrophorus discoideus*, *Grandinia mucida*, a curious Marasmius resembling *M. rotula*, with lateral branches bearing abortive pilei, found in some quantity at Montmorency; *Elaphomyces Leveillei*, *muricatus*, *cyanosporus*, *echinatus* and *asperulus*, and many other of the larger fungi, which will be recorded in the *Bulletin* of the Society. Amongst the minute species, *Peziza umbrata*, Fr., for the first time definitely recorded in France; *Peziza trachycarpa*, Curr. Also for the first time, *Peziza maurilabræ*, C., a species almost simultaneously found in Britain, and which may thus be described:—

Peziza maurilabræ. *Cooke.* (Section *Humaria.*)

Sessilis, carnosa. Cupulis concavis, demum margine crispatis, crenulatis, extus atro-brunneis; hymenio carneo-rubricente vel subaurantiacis, 5 mm. diam.; sporidiis ellipticis, binucleatis, ·017-·02 × ·008 mm.; paraphysibus clavatis, aurantiacis, hinc illic furcatis.

On the ground.

This somewhat resembles *P. melaloma*, A. & S., but the external cells and margin are distinctly different.

In addition to these, *Saccobolus neglectus*, Boud., *Helotium serotinum*, Fr., *Helotium pallescens*, Fr., *Helotium phascoides*, Fr., in

great profusion, on the ground amongst moss, the short stems attached to the root-fibres of the moss; and *Helotium geogenum*, C., a species apparently undescribed.

Helotium geogenum. *Cooke.*

Candidum. Cupulis obconis in stipitem abbreviatem productis, hymenio plano-convexo, 2-3 mm. diam. Sporidiis fusiformibus, ·025-·035 × ·005-·007 mm. Paraphysibus attenuatis, linearibus.

It was found on the ground, but apparently attached to fragments of rotten wood.

Melogramma Bulliardi, Tul., and *Melogramma rubricosum*, Fr., were found in considerable quantity.

The long-continued dry and cold weather which preceded the session was quite unusual, and rendered the season one of the most barren and unfavourable in the memory of the oldest mycologist.

WOOLHOPE CLUB FORAY.

The Annual Woolhope Club Foray week commenced this year on the 1st of October, and was one of the most successful of the series, although Fungi were scarce, but the weather was unusually fine, and the presence of two illustrious visitors from the opposite side of the Channel gave additional interest to the meetings. The President of the Société Botanique de France, Professor Jules de Seynes, and Dr. Max Cornu, Botanical Lecturer and Conservator of the National Museum at the Jardin des Plantes, visited England for the first time in order to be present at the Woolhope Meetings. A full account of the proceedings has already been given in the "Gardener's Chronicle," to which we can add but little, except to name two or three new or rare fungi, which were too minute to excite the interest of the Chronicler of the Club. One of these was *Lindbladia effusa*, R., one of the Myxomycetes, only once before recorded in Britain, and of the others, a new species of *Peziza* on burnt soil, described in the present number as *Peziza Woolhopei*, in honour of this occasion. The rare *Agaricus cyphellæformis*, several specimens of *Helvella elastica*, *Peziza cæsia*, *Peziza succosa*, and some others of less interest.

Several papers were read, one of the most important of which—on a fossil *Peronospora*—has already been published elsewhere, and *Craterellus cornucopioides*, was for the first time cooked, and served at the dinner of the Club.

CATALOGUE OF DIATOMACEÆ.

We are requested to intimate that Mr. Fred. Habrishaw, F.R.M.S., of No. 6, West 48th Street, New York, is preparing a list of all known species of Diatomaceæ, with references to figures and synonyms, and would be glad of any assistance in rendering his Catalogue as complete as possible.

MINUTE PARASITIC ALGÆ.

Dr. Perceval Wright has recently communicated two papers to the Royal Irish Academy,* on new species of minute Algæ, to which we desire to direct attention. In the first paper a very explicit description is given of the two species of *Chlorochytrium*, both of which have been found in Ireland—the one, *Chlorochytrium Lemnæ*, a bright emerald green Algæ, living as a parasite in the intercellular spaces of the parenchymatous tissue of *Lemna trisulca*; and the other species discovered by himself, living in the thallus of various species of Schizonema, Polysiphonia, &c., which has been dedicated to Professor Cohn. The descriptions of genera and species are thus given:—

Chlorochytrium. *(Cohn.)*

Plant endophytic, green, unicellular; cells globose, or somewhat irregularly bi-, tri-, or multi-lobed, densely filled with chlorophyll, first dividing into large segments, and then these giving origin to innumerable pyriform zoospores, which escape through a tubular process.

Chlorochytrium Lemnæ. *(Cohn.)*

The zoospores impinging on the epidermis of the duckweed at the junction of two cells; after germination commences, a tube is produced which, entering between the walls of the dissepiments, proceeds as far as the mesophyllic parenchyma, growing into the intercellular spaces, and forms either a globose, elongated, or irregular-shaped cell—the diameter of the adult cell about 0·1 mm.

Living in the thallus of *Lemna trisulca*.

Chlorochytrium Cohnii. *(Wright.)*

The zoospores impinging on the fronds of several species of marine Algæ, quickly assuming a figure-of-eight form, the lower sphere growing into the frond, and rapidly assuming comparatively large dimensions, the upper sphere remaining as a tube-like neck portion to the larger mass. On the cell arriving at an adult stage, the whole of the green protoplasmic contents divide into a number of from ten to thirty, nearly circular zoospores, which escape through the neck-shaped portion.

Living in the thallus of various species of *Schizonema, Polysiphona*, &c.; also on Infusoria found at Howth.

Although there is some difference in the process of the formation of the zoospores, and the occurrence of large and small zoospores, between the latter species and the original diagnosis of the

* "On a new species of Parasitic Green Alga belonging to the Genus *Chlorochytrium* of Cohn;" and "On a Species of *Rhizophydium* Parasitic on species of *Ectocarpus*, with notes on the fructification of the *Ectocarpi*." By Edward Perceval Wright, M.A., M.D., F.L.S., Prof. of Botany in the University of Dublin, in the "Transactions of the Royal Irish Academy," Vol. xxvi. (1877).

genus, Prof. Wright has prudently abstained from any modification of that diagnosis until further research has thrown more light upon the subject.

Dr. Wright gives a summary of Cohn's description of the species found by him at Breslau to the following effect :—" Its zoospores attach themselves to the thallus of the duckweed often in hundreds. They force their way through between the epidermal cells, assuming, as the foremost portion gets into the hypodermal tissues, a more or less figure-of-eight shaped form ; the foremost portion getting into an intercellular space dilates ; the portion that has not entered remains unexpanded, and forms a colourless, nipple-like projection ; the portion within the thallus expands to many times its original diameter, sometimes dilating and filling up an intercellular space—at others, distorting the subadjacent cellular tissue, and frequently itself becoming variously distorted. The cell-wall becomes thicker, even laminated ; the chlorophyll contents get dark and dense, and the cell becomes of a dark nearly opaque green ; sometimes starch granules are seen. The cell contents become segmented, breaking up into a number of pear-shaped zoospores, which escape through the nipple-like projection ; their actual exit was not seen, nor was the number or position of the cilia observed. Of the zoospores, many never succeeded in penetrating the epidermis of the duckweed upon which they alighted, and such would remain as minute colourless pins' heads on the surface of the *Lemna*. Some would linger within the mother cell, and might possibly be resting spores."

Afterwards our author proceeds to describe the second species, which he found at first inhabiting the mucus tubes or fronds of several species of *Schizonema*. He says :—" I cannot better describe the outline of this unicellular form than by comparing it to a Stein wine bottle without a handle ; the short neck of the plant projecting from the outer surface of the mucus tube, and the body portion being imbedded therein. During the month of December the plant became so numerous, and crowded the *Schizonema* fronds to such a degree that it imparted to these a sufficiently green hue to make it easy to select those studded with the parasite with the unaided vision, as was the case when the more regular tubes of *Colletonema vulgare* were affected. I regret that I have never been able to witness the actual unassisted escape of the zoospores, and this, though I have watched for them at intervals during all the hours of the day and night for a period extending over three months ; yet towards the end of November the zoospores were to be found in thousands. In specimens examined quite fresh from the rock pools, they could be seen dancing round the mucus *Schizonema* fronds ; nearly circular in form, and apparently uniciliate, they would be seen very speedily, after impinging on the mucus, to bury themselves to about one-half their diameter in it, becoming in the act constricted into a figure-of-eight shape. At this stage the zoospore is colourless ; the nucleus is very apparent,

being a little eccentric, but nearer the base than the neck of the cell. Once within, the cell begins to expand laterally, increasing also in depth. Having reached nearly to an adult size, the protoplasm commences to develop green chromules. These generally arise as minute points along the inner surface of the cell-wall, from whence they radiate to the nucleus, giving at this period the appearance as if a number of necklaces were hung in loops from the sides of the cell to the nucleus. Shortly afterwards the green chromules appear evenly distributed through the protoplasmic mass, leaving, however, the neck portion colourless, and often not being found in the portion of the protoplasm immediately in contact with the cell-wall. This colourless portion would seem to lay down several fresh layers upon the first-formed cell-wall, giving the cell often quite a laminated appearance. After a few days the coloured portion of the protoplasm will be found to very slightly contract; this gradually increases, the outer margin presenting often a regular undulated appearance, as it is drawn away from the cell-wall. In the space of a few hours this mass becomes segmented into a well-marked series of oval or nearly circular spores, in each of which at this stage a nucleus is apparent. The number of spores varies immensely; as few as ten, and as many as thirty and more have been counted. While within the mother cell the spores have a green hue, not at all as bright as the cell contents were before cell division had taken place; but on the mother cells being artificially ruptured, if the zoospores have reached a certain stage they will be seen to escape destitute of colour; so that I am inclined to think that the colouring matter may, at this stage, be located in the thin protoplasmic pellicle surrounding the spore mass. There is without any doubt in this species two series of these zoospores—one very much smaller in size than the other. The true significance of this fact I am at present unable to determine. Cells containing the smaller zoospores, and cells containing the larger forms, will be found growing side by side; but the number of the former far exceeds that of the latter. The motions of the larger spores, when set free, are slower and less vivacious than are those of the smaller ones. In neither one nor the other could I at their first exit (artificial) detect a cell-wall; in neither, even with a one-eighth inch objective, could I be quite certain of the number or the exact position of the cilia. It would, however, seem as if the delicate protoplasm projected itself to one pole, and then became attenuated into a single cilium; but the cell-wall soon makes its appearance, and this, apparently, quite independently of whether the zoospore imbeds itself in a host plant or not. Sometimes these zoospores attach themselves in such masses around the *Schizonema* frond, that there is actually no room for them to force their way into the mass; often under these circumstances they will content themselves by simply adhering to the more or less adult chlorochytrium cells, and present quite the appearance of the little male plants of an Œdogonium sitting on their large oogonium;

but in a little time the small plants grow into unmistakable adult plants, producing zoospores. As might be expected, plants thus circumstanced exhibit a wonderful variety of cell outline; at times they scarcely show even a trace of the figure-of-eight form, and remain for the most part irregularly spherical. When the plants are much crowded in the frond of *Schizonema*, they will often assume an irregular hexagonal form; sometimes the diatom frustules will be almost completely pressed into the upper portion of the frond, then the lower portion will in turn become filled with the green parasite, so as to appear as if one solid tissue of nearly uniform-sized green cells; the more completely these filled the frond, the brighter the green colour seemed to be. The species became more and more common as the spring season advanced; but during the month of January there were difficulties in procuring fresh specimens. * * * * *

"When the *Schizonema* fronds grew quickly, the zoospores of Chlorochytrium were well off, for the newer portions of the fronds were then ready to form a resting place for them; and hence it was not until later in the season, and when the first growth of the *Schizonema* was over, that any great or undue crowding of the parasitic Algæ took place, nor all this time did I find it occurring in any other of the Algæ than the Diatoms; but once their fronds got fully formed, the lower portions thereof soon became more or less densely beset with other (epiphytic) Diatoms, species of Epistylis crowded amongst these; numbers of a pretty stipitate Rhizopod form, probably the *Lecythia elegans* of Strethill Wright, occurred; and more notable than any of these was a fine species of Vaginicola, possibly a variety of *Vaginicola crystallina*, which was found in abundance. Against one and all of these the zoospores of the Chlorochytrium would ever and anon impinge, and in several instances I observed and noted that the spores attached themselves to the stipes of the Vaginicola and Epistylis. Such specimens continued to grow, assuming a nearly spherical form, and differentiating green chromules, but never increasing to anything like the size of those which had entered into the mucus exudation that makes up the tube of the *Schizonema*. In many specimens thus located I have traced the growth to the stage in which it was quite easy to count the number of the within-contained zoospores."

Other details are given of the occurrence of this same parasite on other Marine Algæ.

The second paper contains much interesting matter, inasmuch as it evidently opens the question of the fructification of the *Ectocarpi*, since it is not impossible that some minute parasites, such as members of the Chytridiaceæ, may have been confounded with supposed forms of fruit, and hence a careful revision will prove desirable. The species described in this paper is referred, with some hesitation, to the genus *Rhizophydium*, and is thus described:—

Rhizophydium Dicksonii. (*Wright.*)

Unicellular, at first quite globular in shape, but during growth becoming very irregular in form, often assuming quite an oblong shape; living in the cells of *Ectocarpus granulosus*, and frequently distorting its filaments. The numerous zoospores make their escape through one or two apertures.

Parasitic in the cells of *Ectocarpus granulosus*, and occurring in great numbers. Howth, 1876-7.

These two papers demand careful and attentive perusal, as our remarks and quotations have been confined chiefly to the descriptive portions.

AUSTRALIAN FUNGI.

The following small collection of Fungi was made in the neighbourhood of Melbourne, by Mr. Le Fevre:—

Tremella mesenterica, *Fr.*
Polyporus cinnabarinus, *Fr.*
Polyporus carneus, *Fr.*
Polyporus igniarius, *Fr.*
Polyporus senex, *Nees.*
Polyporus hirsutus, *Fr.*
Polyporus conchatus, *Fr.*
Hexagona Gunnii, *Berk.*
Hexagona decipiens, *Berk.*
Stereum hirsutum, *Fr.*
Stereum decipiens,

and the following undescribed species:—

Trametes scrobiculata, *Berk.*

Ochracea; pileo dimidiato, parce sulcato, scrobiculata-punctato, contextu suberoso, concolore, poris punctiformibus.

Pileus 2 inches across, $\frac{3}{4}$ inch long; pores $\frac{1}{12}$ inch in diameter, longer behind than the substance of the pileus.

Edible Fungi.—At the Paris excursions of Mycologists stray observations were made on Edible Fungi. Dr. Quelet remarked that *Hydnum gelatinosum* is very excellent eaten raw with sugar, after the manner of a jelly. *Russula cyanoxantha* is certainly very good eating; and now it has been demonstrated by experiment at Hereford that *Craterellus cornucopioides* furnishes an excellent dish. All the large species of *Clavaria*, whether with white or yellow spores, are sold indiscriminately in some of the markets in France as articles of food. We have ourselves eaten *Agaricus (Lepiota) acutesquamosus*, and found it to be very similar to *Agaricus procerus* in substance, quality, and flavour. The Chantarelle, *Cantharellus cibarius*, dried in strings, is sold in some parts of France, and in the same manner *Morchella deliciosa* is vended in the neighbourhood of Geneva.

NEW BRITISH FUNGI.

By M. C. Cooke.

(*Continued from Vol. V., p.* 122.)

Plate 97.

Russula Queletii. *Fr.*

Acrid, pileus compact, campanulate-convex, then plane, even, viscid, dark violet or purple; margin slightly striate, purplish-lilac; stem spongy, farinose, purplish-violet; gills attenuated, or unequally furcate, distilling moisture, white.—*Fr. Ep. ii., p.* 448.

In pine woods.

Pileus 1-3 inches; stem about 2 inches high, half-an-inch thick. First detected in Britain during the late excursions of the Woolhope Club around Hereford.

Hygrophorus erubescens. *Fr.*

Pileus fleshy, gibbous, then convexo-plane, smooth or punctate; margin naked from the first, white, then rosy-sanguineous; stem solid, without ring, unequal, clad with reddish fibrils, and punctate with red dots at the apex; gills distant, soft, white, spotted with red.—*Fries. Epic. ii.*, 407. *Sver. Svamp. t.* 65.

In pine woods.

The fundamental colour is white, becoming everywhere reddish; pileus 2-4 inches across; stem 3 or 4 inches or more long. Found at the excursions of the Woolhope Club, 1877. Having seen this species in France, and *Agaricus russula*, Schff., in Austria—where the latter is eaten—we are satisfied that they are *not* identical, as some suppose.

Guepinia peziza. *Tul.*

Cup-shaped, subsessile, everywhere smooth, yellow, adnate behind; stem slender; spores triseptate.—*Fr. Epic. ii.*, 697.

On wood. Shere.

This was found many years ago, and has now been identified with the above species. It is a very interesting addition to the British Flora. (Pl. 97, fig. 19, 20.)

Cienkowskia reticulata. *A. & S.*

Plasmodiocarp creeping, in the form of an interwoven network, orange or brownish; capillitium containing yellow granules of lime; spores smooth, bright violet, ·009 mm. diam.—*Rtfki. Mon.*, *p.* 91.

On wood, &c. Sibbertoft (W. Phillips).

Trichia scabra. *Rost.*

Sporangia in the typical form gregarious, sessile, on a common strongly developed hypothallus; elaters cylindrical, running out into a smooth end, which is straight or slightly bent; spirals 3-4 clad with numerous short sharp-pointed spines; interstices even, rather broad; spores ·008-·011 mm., with a thick epispore covered with numerous stout warts.—*Rtyki. Mon.*, *p.* 258.

On rotten wood.

This species has, during the past year, been found two or three times in Britain, agreeing with specimen determined for us by M. Rostafinski.

Septoria Mori. *Lev.*

Conceptacles innate, globose, gregarious, seated on a bleached spot, with a brown border; ostiola inconspicuous; spores cylindrical, obtuse, at length 3-5 septate, hyaline, often curved, variable in length, about ·035 × ·003 mm.—*Cooke in Gard Chron.*, Nov., 1877.

On leaves of mulberry. Clevedon.

Apparently destructive in its effects. Common on the continent of Europe and in North America.

Hendersonia lirella. *Cooke.*

Scattered, linear, erumpent, exactly resembling *Sphæria lirella*, of which it is perhaps a condition; spores broadly fusiform, brown, triseptate, ·015-·008 × ·008 mm.

On stems of *Spiræa ulmaria.*

Hendersonia salicina. *Vize.*

Gregarious, erumpent; perithecia black, flattened, often confluent and dothidioid; spores elliptical, triseptate, usually with one transverse division, brown, ·015-·022 × ·008-·01 mm.

On old willow twigs. Forden (*Rev J. E. Vize*).

(Pl. 97, fig. 17.)

Peridermium corticolum. *Link.*

Pseudospores subglobose, ·02-·024 mm. *Peridermium Pini* var. *corticolum*, Link.

On young branches of Scotch fir.

Peridermium acicolum. *Link.*

Pseudospores elongated, ·034-·04 × ·018-·02 mm. *Peridermium Pini* var. *acicolum*, Link. *Peridermium oblongisporum*, Fckl. Sym. Myc.

On leaves of Scotch fir.

Both these species were originally included under *Peridermium Pini*, Chev.

MILESIA. *White.*

Peridium endophyllum reticulatum; basi inter cellulas matricis radicante; sporæ obovatæ echinulatæ, ex ostiolo minuto demum ejectæ.—*Scot. Nat. iv., p.* 162.

Peridium minute, reticulated, immersed on the substance of the matrix, into which the base sends root-like fibres; spores distinctly spiny, ejected copiously from a minute ostiolum at the summit of the peridium. Allied to *Endophyllum*, Lev.

Milesia polypodii. *White.*

Hypogeneum; peridiis sphæricis minutis, pallidis, dispersis; sporis albidis, obovatis, echinulatis.—*Scot. Nat. iv., p.* 162.

On underside of fading leaves of *Polypodium vulgare.* June, July. Perthshire.

Peridia scattered in an irregular manner on the underside of the

frond, appearing under a lens like little pallid mammiform projections, very slightly elevated; spores ejected copiously from the ostiolum, whitish, obovate, echinulate.

Coleosporium Cacaliæ. *DC.*

On the under surface; sori small, numerous, orbicular, plane, soon covering the whole under surface; pseudospores ovoid, deep yellow.—*Cooke Micro. Fungi, ed.* 4, *p.* 218.

On leaves of *Cacalia*, near Bath (Rev. J. E. Vize).

Puccinia linearis. *Rob.*

Spots none; sori numerous, very minute, linear, short, distinct, then confluent, seriate between the nerves, dark brown; pseudospores oblong, slightly constricted; apex obtuse, brown, paler below, subovoid; epispore thin, pedicel very short, sometimes obsolete.—*Desm. Ann. Sci. Nat. iv.* (1865), *p.* 125. *Puccinia sessilis*, Schroeter.

On *Phalaris arundinacea.*

First detected by Professor Saccardo on *Phalaris*, sent to him with a species of *Sphæria* from Shere.

Puccinia adoxæ. *DCand. Cooke Micro. Fungi, 4th ed., p.* 209.

On *Adoxa moschatellina.*

Puccinia saxifragarum. *Schl. Cooke Micro. Fungi, 4th ed., p.* 209.

On leaves of *Saxifraga granulata.*

These two species also have been confounded by English authors, but the pseudospores are quite different.

Urocystis sorosporioides. *Kærn.*

Mass of spores black, in the form of pustules, glomerules rounded, oblong-oval, obtuse ovoid, composed of eight or more central spores, dark yellow, almost opaque; cells of the periphery numerous, large, clear, olive-brown.—*Fischer Ustilaginees.*

On leaves of *Thalictrum minus* (C. Bailey, Esq.).

Entyloma Ungerianum. *DBy.*

(*Protomyces microsporus*, Unger.)

Described in a former number under the latter name.

On leaves of *Ranunculus ficaria.*

Sorosporium Trientalis. *Woron.*

This is the *Tubercinia trientalis* of the "Handbook."

On leaves of *Trientalis Europæa.*

Sorosporium scabies. (*B.*)

This is the *Tubercinia scabies* of the "Handbook."

On potato tubers.

Bactridium acutum. *Berk. & White.*

Candidum, parasiticum; sporis deorsum attenuatis; apice acutis, 1-3 septatis, articulo penultimo tumido.—*Scot. Nat. iv., p.* 162, *t.* 2, *f.* 4.

On hymenium of *Peziza cochleata*, Glen Tilt.

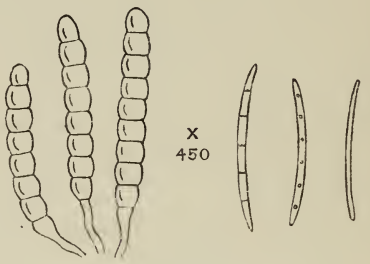
White, parasitic; spores attenuated downwards; apex acute, 1-3 septate, penultimate joint swollen. Distinguished from *B. helvellæ* by its constantly very acute apex, and attenuated base.

Sporidesmium parasiticum. *Cooke in Gard. Chron.*

Parasiticum, atrum; sporis cylindraceis, rectis, multiseptatis, torulosis, brunneis, breviter stipitatis.

On *Septaria Mori*, growing on mulberry leaves.

A curious parasitic species, in some respects resembling *Sporidesmium exitiosum*, Kuhn., but quite distinct. Forming black spots in the centre of the groups of *Septoria Mori*. Spores cylindrical, multiseptate, torulose, brown, ·05-·07 × ·01 mm., with short hyaline pedicels. Fig. A. Spores of *Sporidesmium parasiticum*. Fig. B. Spores of *Septoria mori*.



Dactylium modestum. *Berk. & White.*

Candidum e maculâ tostâ oriundum; floccis subrectis vel leviter flexuosis; sporis magnis uniseptatis elongatis medio constrictis.—*Scot. Nat. iv., p.* 162, *t.* 2, *f.* 2.

On underside of fading leaves of *Alchemilla alpina*. Glen Tilt.

White, seated on a scorched spot; flocci straight or slightly flexuous; spores large, uniseptate, elongated, constricted in the middle; flocci one-tenth mm. long; spores much narrower than in *D. spirale*.

Dactylium spirale. *Berk. & White.*

Candidum e maculâ tostâ oriundum; floccis simplicibus spiralibus; sporis magnis uniseptatis, medio-constrictis utrinque obtissimis.—*Scot. Nat. iv., p.* 161, *t.* 2, *f.* 3.

On living leaves of *Polygonum viviparum*. Glen Tilt.

White, seated on a scorched spot; flocci simple, spiral; spores large, uniseptate, constricted at the middle, and obtuse at both ends; flocci one-tenth of mm. long; spores ·022-·026 × ·012 mm.

Helminthosporium macilentum. *Cooke.*

Atrum, effusum; floccis erectis, septatis; sporis fusoideis vel subclavatis, multiseptatis (7-10) apicalibus.

On rotten wood. Shrewsbury (*W. Phillips*). Hereford (*J. G. Morris*).

Forming rather thin effused black patches; threads erect, simple, continuous with the spores, which are terminal, somewhat fusiform, multiseptate (7-10), much more firmly connected with the threads than usual, and when severed always exhibiting the cicatrice. A similar species occurs in the United States with the same peculiarity. Spores ·05-·065 × ·01 mm. (Pl. 97, fig. 18.)

Peziza (Cochleata) Adæ. *Sadler in Trans. Bot. Soc. Edin.* (1877), *p.* 45.

Sessile, often cæspitose, cochleate, irregular, at length expanded; margin sometimes lobed or inflexed; disc white, pale rose, violet, or ochraceous; substance rather thin and brittle, ½ in. to 2 in. diam.; asci cylindrical; sporidia elliptical, binucleate, ·0125 × ·007 mm; paraphyses slender.—*Peziza domiciliana*, Cooke, Gard. Chron, 1877.

On damp walls. Inverleith House, Edinburgh. (Pl. 97, fig. 1-3.)

This species was found many years ago on the ground in a garden at Hackney (fig. 2), but as only a single specimen was then found, it was not considered safe to describe it as a new species.

Peziza (Humaria) maurilabræ. *C.*

"Grevillea," vi., pp. 64 ante.

On the ground amongst mosses. Glamis (*Rev. J. Stevenson*).

Cups 3-5 mm. broad; cells of the cup large, elongated and hair like, but agglutinated together at the margin, which is very characteristic; sporidia ·019 × ·007 mm.

Peziza (Sarcoscypha) cretea. *Cooke.*

Cups hemispherical, soon expanded, scattered, externally brown, clad as well as the margin with straight erect brown hairs; disc chalky white, from one line in diameter; asci cylindrical; sporidia elliptical, ·012-·018 × ·008 mm.—*Trans. Bot. Soc. Edin.* (1877), *p.* 46, *t.* 3, *figs. K—n.*

On ceiling. Inverleith House, Edinburgh. (Pl. 97, fig. 4-7.)

Peziza (Sarcoscypha) Woolhopei. *Cooke & Ph.*

Sessilis, aquoso-griseis. Cupulis hemisphericis, demum subapplanatis extus pilis, erectis, subfasciculatis ornatis; ascis cylindraceis; sporidiis late ellipticis, uninucleatis, lævibus; paraphysibus clavatis.

On charcoal beds. Downton.

Cups 1-2 mm. broad, pallid, watery-grey, beset externally with fascicles of erect, sharp pointed hairs, which are colourless at the tips, about one-seventh mm. long; sporidia broadly elliptical, with a large central neucleus, ·02-·022 × ·013-·015 mm. Found during the excursion of the Woolhope Club, 1877.

Belonidium pullum. *Phillips & Keith.*

Sparsum. Cupulis sessilibus demum explanatis, aquoso-cinereis, extus brunneis; ascis cylindraceo-clavatis; sporidiis fusiformibus, nucleatis, dein 3-septatis; paraphysibus linearibus, apice ovatis, dissilientibus.

On *Poa* and *Typha*. Rev. J. Keith, Scotland.

Cups 1 mm. broad; sporidia ·025-·03 × ·003-·005 mm. The genus *Belonidium* was established by de Notaris for species of *Peziza* with the exterior of the cup formed of elongated cells, resembling adnate hairs, as at fig. 11, and fruit resembling *Helotium*, so that the genus is intermediate between *Peziza* and *Helotium*. (Pl. 97, fig. 8-11.)

BOUDIERA. *Cooke.*

Immarginata, orbiculare, discoidea, plana, vel convexa, carnosa; hymenio papillato; ascis clavatis vel clavato-cylindraceis, exclusis; sporidiis globosis; paraphysibus distinctis.

Immarginate, orbicular, discoid, plane or convex, fleshy; disc papillate; asci clavate or clavato-cylindrical, ejected; sporidia globose; paraphyses distinct. This genus belongs to the *Ascoboloidei*, and is allied to *Ascobolus*, but the receptacles are discoid or patellate, (not cup-shaped,) convex, and fleshy. The sporidia are globose, which is not the case in any genuine species of *Ascobolus*.

Boudiera areolata. *C. & Ph.*

Atro-brunnea. Cupulis orbicularibus convexis; ascis clavato-cylindraceis; sporidiis globosis, areolatis; paraphysibus robustis, clavatis, septatis, supra purpureo-brunneis.

On damp ground. N. Wales (W. P.).

Cups dark brown, orbicular, convex, 2-2½ mm.; asci clavato-cylindrical; sporidia globose, deeply areolate like the sporidia of some Truffles, ·03 mm. diam.; paraphyses robust, clavate, septate, coloured above. (Pl. 97, fig. 12-15.)

Boudiera microscopica, C., is the *Ascobolus microscopicus* of Crouan, not yet discovered in Britain.

Venturia Potentillæ. *Cooke Fungi Britt. No.* 587.

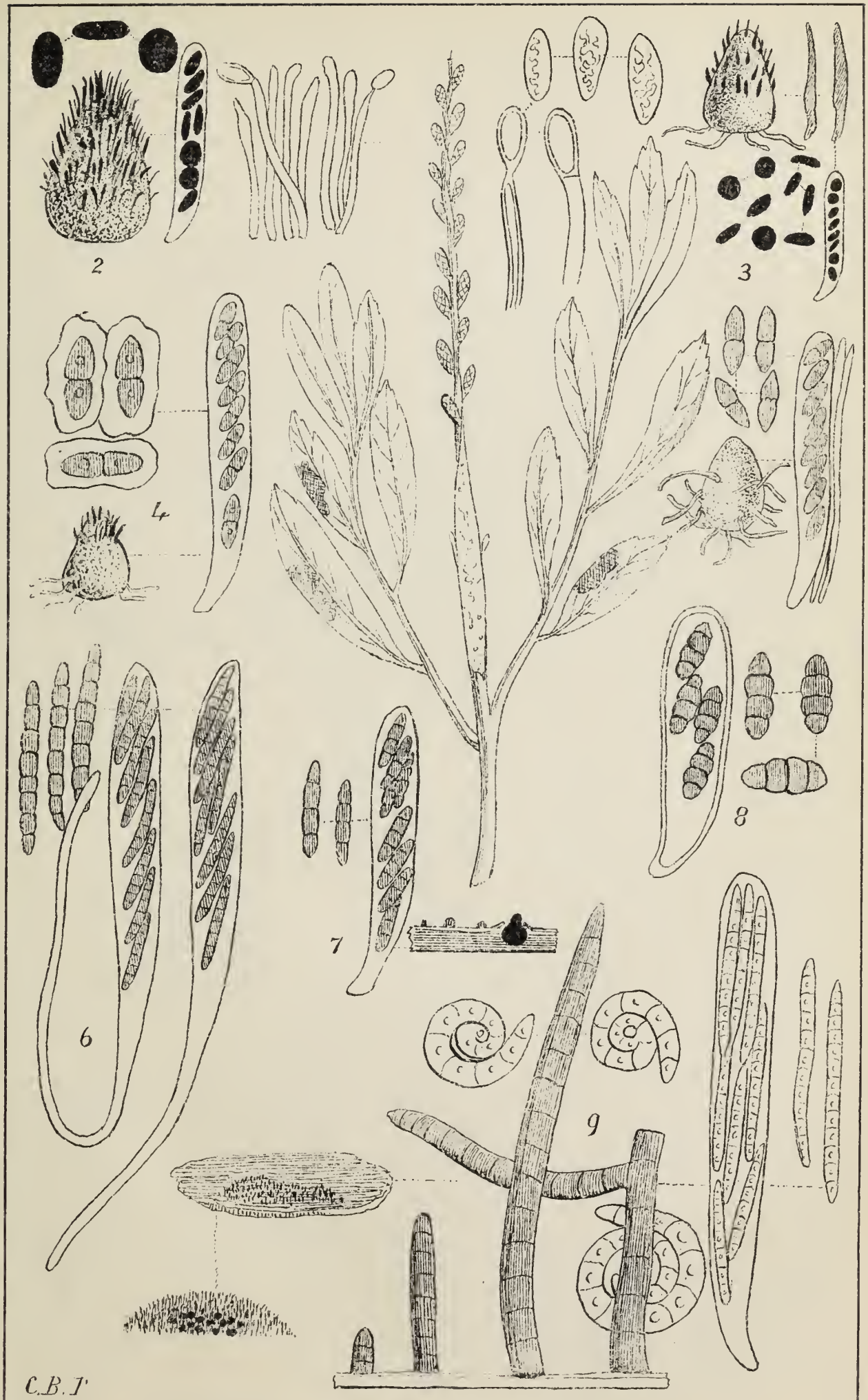
Stigmatea Potentillæ, Fries, Cooke "Handbk.," p. 929.

On living leaves of *Potentillæ*.

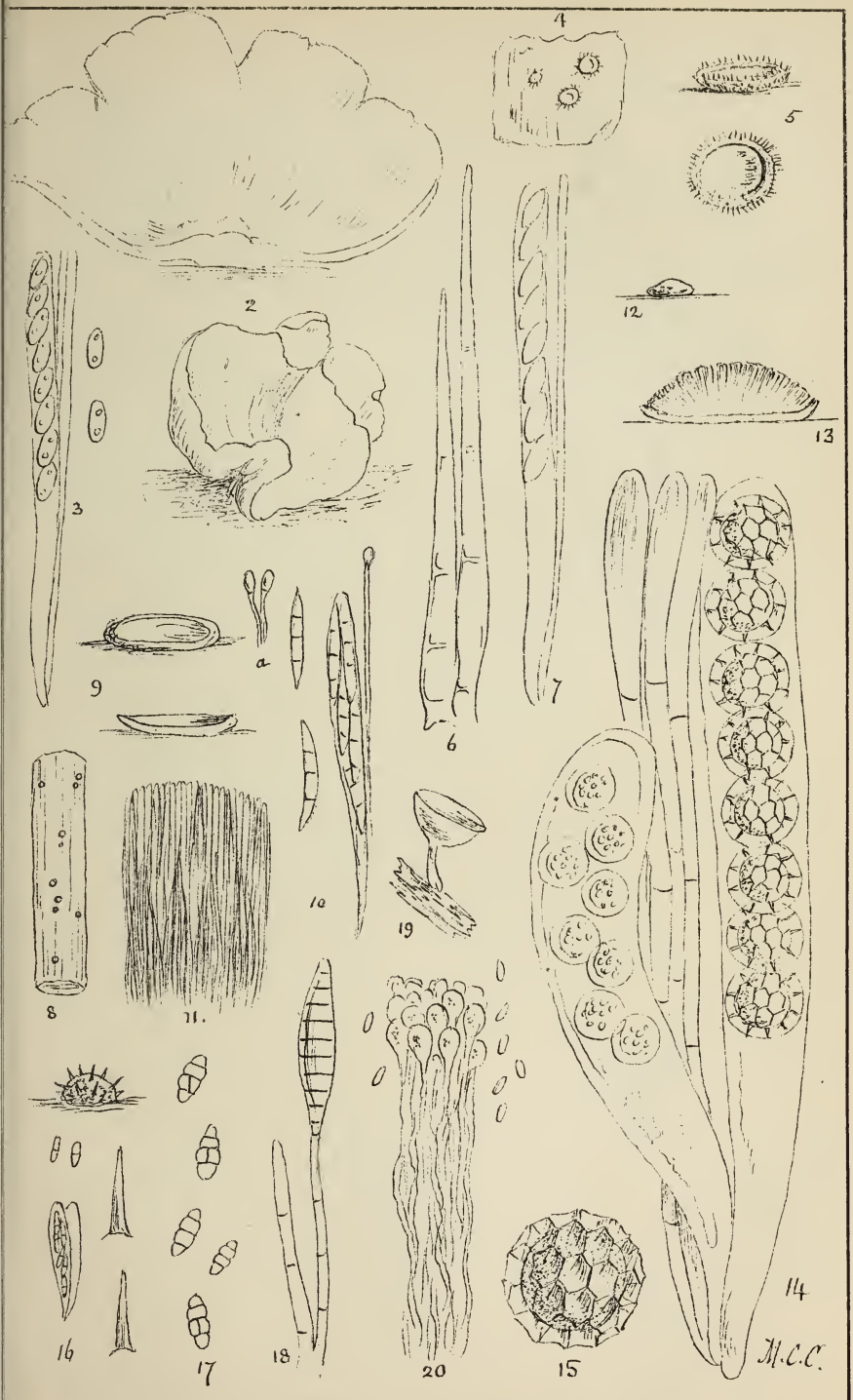
This is clearly a species of *Venturia*. (Pl. 97, fig. 16.)

CLAVIS HYMENOMYCETUM.

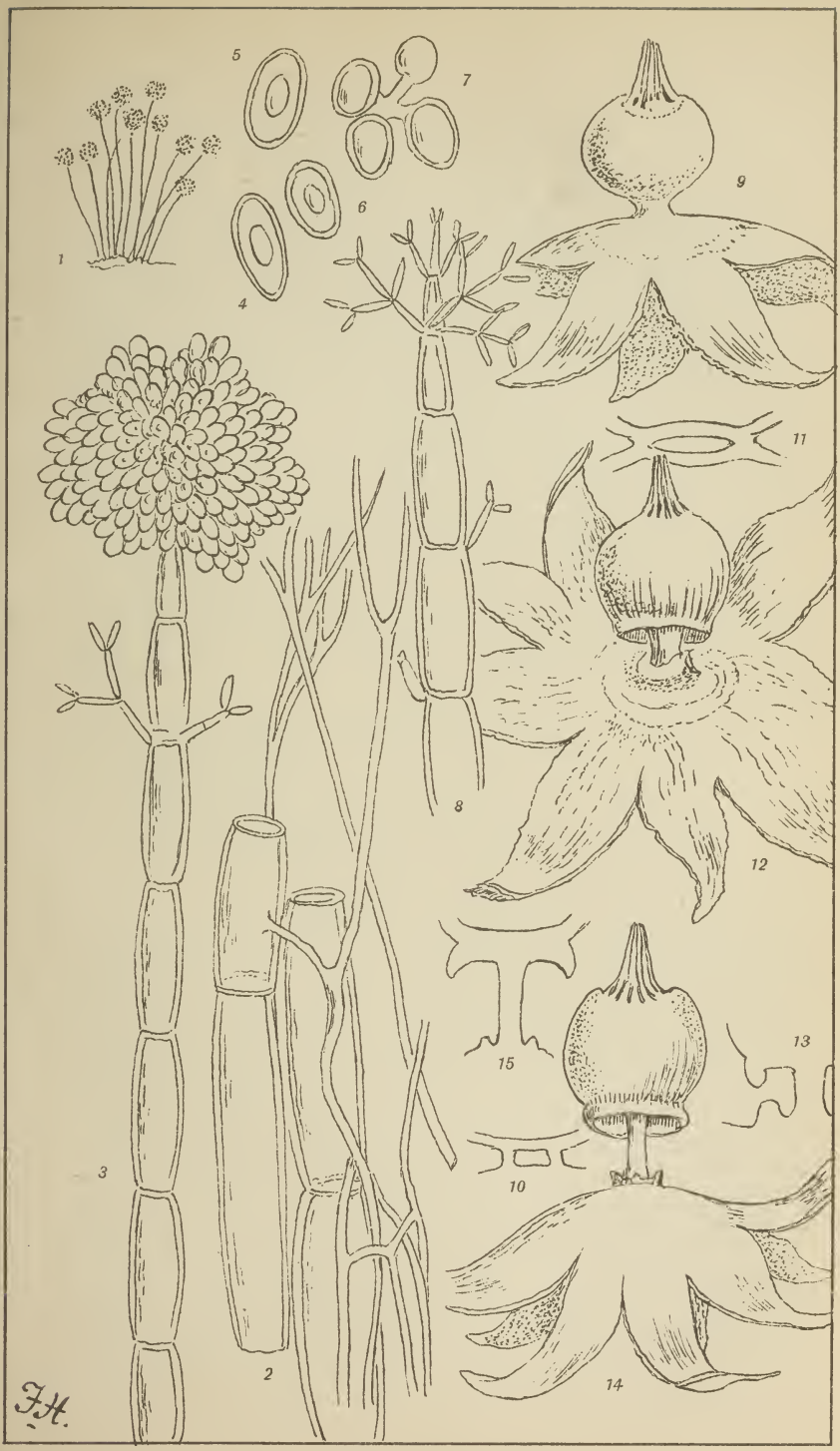
The necessity which collectors have long felt for a synopsis of all the species of European Hymenomycetes, in a portable form for the pocket, will probably be supplied during the coming year, as such a work is now in progress, with the brief distinctive features in Latin. The "Clavis" is intended to include not only all the species in the second edition of the "Epicrisis," but also all those since published by Kalchbrenner, Quelet, and other European mycologists. It will be published simultaneously in London, Paris, Berlin, Vienna, Milan, and New York, somewhere about midsummer next. The London publishers will be Messrs. Hardwicke and Bogue, 192, Piccadilly, to whom any communications may be addressed.



BRITISH FUNGI.



BRITISH FUNGI.



HUNGARIAN FUNGI.

POLYACTIS INFESTANS, (NOV. SPEC.)

By Professor F. Hazslinszky.

Polyactis corymbosa mycelio, in contextu celluloso plantæ vivæ, infra epidermidem, adiloso, filis continuis dichotoma ramosis sparsim anastomosantibus 0.001-0.002 mm. crassis chlorophyllum absorbentibus. Mycelio superficiali e floccis serpentibus parum crassioribus viridifuscis, contexto. Floccis fertilibus erectis simplicibus articulatis; articulis diametro ter quaterque longioribus, oblonga-cylindraceis viridi-fuscis. Inflorescentia corymboso-capitata, ramis solitariis vel binatis dichotome ramosis. Sporæ acrogene, obovatæ vel ovales 0.010-0.012 mm. longæ, albæ, diu persistentis.

Vegetat parasitice in caulibus mediis *Cannabis sativæ* ad urbem Iglò in Hungaria, et exugit caulex adeo ut pars superior marcescat. Primum occupat plantas masculinas serius etiam femininas. Caulis mycelio infectus e pro pigoo allicit oculos annulo albo tres usque sex uncias lato. Serius erumpit mycelium superficiale viridi fuscum in zona media annuli albi, et tandem in hoc cæspituli filorum fructificantium, capitulis albis.

Proxime affinis *Botryti parasiticæ* F. a qua tamen notis adlatis satis discrepat. Novam censeo speciem quamquam possibile est eam botanicis Indiæ orientalis unde *Cannabis* ad nos venit, notam esse.

Plate 98.

Fig. 1. Cæspes fructificans parum auctus.
„ 2. Pars mycelii asplori subepidermatis filis 0.001-0.002 mm. crassis.
„ 3. Stirps fructificans.
„ 4, 5, 6. Sporæ.
„ 7. Apex quadrisporus ramuli fructificantis.
„ 8. Stirps fructificans sporis abactis inflorescentiam monstrans.

PEZIZA COCHLEATA.

The Rev. M. J. Berkeley has recently published a figure of this species in the "Gardener's Chronicle," of an abnormal form, and at that time expressed a doubt that the figure in "Mycographia" (Fig. 212) is not the true species. Having had the opportunity of comparing a specimen from Mr. Berkeley himself, with the specimens consulted in the preparation of that figure, we have arrived at the conclusion that there is no *specific* difference between them. The curved paraphyses on which so much emphasis was placed, are sometimes present also in *P. onotica* and *P. leporina*, but in none do they always occur; and even supposing them to be curved when fresh, they will become straightened as the cup dries. With all deference to such an authority, we cannot hold that the difference is sufficient to warrant us in regarding the two forms as specifically distinct. Had we not adopted a broad view of the limits of species in "Mycographia," the large number already figured would have been nearly doubled.

FUNGI OF FLORIDA.

H. W. Ravenel, who is well known to Mycologists by the publication of his "Fungi Caroliniani Exsiccati," is now collecting specimens in the States of Florida and Georgia, with a view to their publication. The new series will probably contain about four fasciculi of one hundred specimens each, and will be issued to subscribers at twenty-one shillings each fasciculus. The series will be edited by M. C. Cooke, and each century will be issued as it is ready. As the preparation is undertaken in this country, no delay or extra cost of transmission will be incurred. As only a small number of sets will be made up, an early application to the Editor of this Journal is desirable.

FRIES'S FIGURES OF FUNGI.

We are glad to direct the attention of Mycologists to the fact that Professor Elias Fries has resumed the publication of his "Icones Hymenomycetum," by the publication of the first part of the second volume. It is to be hoped that he will receive encouragement to proceed with such a desirable work. There are a large number of species contained in the "Epicrisis," of which no figures have hitherto been published; it is manifestly a great advantage to have these species illustrated from the drawings, and under the superintendence of the illustrious Mycologist of Upsal. The parts contain ten folio plates each, with illustrative letter press, at a cost of thirteen shillings.

CRYPTOGAMIC SOCIETY OF SCOTLAND.

The third annual meeting of this Society was held during the week commencing October 17th, at Dunkeld, under the presidency of Colonel Drummond Hay. The same complaint was expressed here, as at other places, that the season was an exceptionally bad one for Fungi. The week, notwithstanding this, appears to have passed away satisfactorily, and it has been resolved to hold the next annual meeting at Edinburgh, under the presidency of Professor Balfour. We congratulate the Society upon its determination, and hope that the meeting will be strongly reinforced by Cryptogamists from the south.

Large Puff Ball (*Lycoperdon giganteum*).—There was an enormous puff-ball in a bank near the house of the writer this summer. It was eighteen and a-half inches in its greatest diameter, and four feet four inches in circumference. These puff-balls have come up in the same place for many years past, and always of a large size, but never before so large as the above.—*G. N. Nicholl, Cambridge, Glamorganshire.*

NOTICE AS TO PLATES.

Plate 98 will be issued with the next number, together with the first portion of a series of coloured figures of the *Cortinarii*, executed from drawings by the Mycologist of the Jura and Vosges, Dr. E. Quelet. The coloured plates in the present number are from drawings by Dr. Bull, of Hereford.

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Grevillea,

A QUARTERLY RECORD OF CRYPTOGAMIC BOTANY AND ITS LITERATURE.

NEW JERSEY FUNGI.

By M. C. Cooke and J. B. Ellis.

(*Continued from p.* 17.)

Polyporus (Resupinatus) farinellus. *Fr.*
On cedar rails. Newfield. No. 2669.

Polyporus (Resupinatus) molluscus. *Fr.*
On decaying leaves. Newfield. No. 2819.

Polyporus (Resupinatus) tenellus. *B. & Cooke.*
Totus resupinatus, albus, demum ochraceus, tenuissimus, pulveraceus; margine byssino, albo; poris angulatis, inæqualibus, brevibus, ad centro confertis.
On pine boards. Newfield.
Allied to *P. fatiscens*, B. & R., very thin, with a broad white sterile byssoid margin. No. 2819 a.

Trametes sepium. *Fr.*
On old oak trees. Newfield. No. 2820.

Porothelium confusum. *B. & Br. Ann. Nat. Hist. ser. v., vol. i., pp.* 24.
On pine pole on the ground. Newfield. No. 2687.

Irpex mollis. *Fr.*
On oak logs. Newfield. No. 2821.

Hydnum adustum. *Schw.*
Newfield. No. 815.

Corticium incarnatum. *Fr.*
On pine. Newfield. No. 2731.

Corticium subrepandum. *B. & Cooke.*
Subcoriaceum, primo pezizoideum, orbiculare, demum applanato-confluentum; hymenio marginato, subochraceo, sicco rimoso; margine libero.
On rotting wood. Newfield.
Allied to *C ochroleucum*. The small orbicular patches are soon confluent to the extent of an inch or two, the margin being free, and elevated in drying, by which process the hymenium is also cracked in a tessellated manner. No. 2487.

Tulostoma mammosum. *Fr.*

On the ground. Colorado. No. 2714.

Tulostoma obesum. *C. & E.*

Stipite brevi, nudo, deorsum leniter incrassato, obeso; peridii ore rotundo, obtuso, integro (?). Capillitio fusco, lævi. Sporis globosis, lævibus.

On the ground. Colorado.

About $1\frac{1}{2}$ inches high, of which one-half consists of the stem, one-third of an inch thick; an entire collar at the base of the peridium surrounds the stem. Spores and capillitium ferruginous, or colour of red ochre, about ·006 mm. (Pl. 100, fig. 24.)

No. 2715.

Physarum leucophæum. *Fr.*

An intermediate condition passing into plasmodiocarp.

On wood. No. 2816.

Physarum Schumacheri. *Rost.*

On dead wood. No. 2697.

Didymium squamulosum. *A. & S.*

On rotten wood. No. 2735.

Didymium squamulosum. *A. & S.* var. **leucopus,** *R.*

On Indian corn. No. 2691

Badhamia utriculare. var. **genuina,** *R.*

Stem short, violet-black, peridia somewhat elongated.

On rotten wood. No. 2817

Stemonitis ferruginea. *Roth.*

On wood. No. 2696 .

Comatricha Persoonii. *R.*

On dead wood. No. 2697, in part.

Comatricha Friesiana. *DBy.* var. **obovata,** *R.*

On wood. No. 2807

Comatricha typhina. *Roth.*

On wood mixed with *Arcyria.* No. 2808.

Clathroptychium rugulosum. *R.*

On white oak. Nos. 2711, 2713.

Hemiarcyria clavata. *P.*

On rotten wood. Nos. 2695, 2733.

Arcyria pomiformis. *Roth.*

On wood. Nos. 2690, 2808 partly.

Arcyria cinerea. *Bull.*

On rotten wood. Nos. 2734, 2692

Perichæna corticalis. *Batsch.*

On dead willow.

Although blackened and discoloured, we have referred the poor specimen to this species, with which its internal structure agrees.

No. 2694.

Leptostroma pinastri. *Desm.*

On pine leaves.

Spores ovate, ·003-·004 mm. long. No. 2783.

Phoma nebulosum. *Fr.*

On old potato stems, mixed with the spores of a *Fusarium.*

No. 2749.

Phoma loniceræ. *C.*

Sparsa, erumpens. Peritheciis prominulis, atris, valde tectis; sporis ellipticis, binucleatis, hyalinis.

On *Lonicera.*

Spores ·01-·012 mm. long, about one-third wide. No. 2811.

Phoma acuum. *C. & E.*

Sparsa. Peritheciis minutis, atris, prominulis, primum tectis. Sporis linearibus, rectis vel curvulis, utrinque obtusis, hyalinis.

On pine leaves.

Spores ·01 mm. long, sausage-shaped. Perhaps hardly a good *Phoma.* No. 2785.

Cryptosporium Loniceræ. *C. & E.*

Subgregaria, tecta, epidermide elongato-fissurata; perithecia distincta, atra; sporis cylindraceis, arcuatis, utrinque obtusis, hyalinis.

On twigs of *Lonicera.*

Spores ·025 mm., strongly curved. (Pl. 99, fig. 2.) No. 2812.

Cryptosporium Solidaginis. *C. & E.*

Gregaria, exigua, brunnea, tecta. Peritheciis subapplanatis, pertusis. Sporis numerosissimis, arcte fusiformibus, utrinque acutis, leniter curvulis, hyalinis.

On stems of *Solidago.*

Spores ·03-·035 mm., delicate. (Pl. 99, fig. 1.) No. 2748.

Vermicularia venturioidea. *C. & E.*

Gregaria. Peritheciis primum tectis, demum detectis, subglobosis, brunneis, supra pilis atris rigidis ornatis. Sporis fusiformibus, curvatis, hyalinis, nucleatis.

On stems of *Lactuca elongata.*

Perithecia one-fifth mm. diam., at length exposed and resembling a *Venturia.* Spores ·03-·035, acute at the extremities. No. 2757.

Vermicularia compacta. *C. & E.* var. **Ruborum.**

On *Rubus.* No. 2756.

Dinemasporium minimum. *C. & E.*

Sparsa, exigua, atra. Pilis rigidis, septatis, erectis. Disco vix conspicuo. Sporis linearibus, curvulis, nucleatis, utrinque ciliatis.

On leaves of *Andropogon.*

Scarcely visible to the naked eye. Hairs about one-tenth millemetre long. Spores ·02 mm., with the cilia ·04 mm. Nos. 2672, 2747.

Sphæronema subcorticalis. *C. & E.*

Gregaria, hinc illic seriata. Peritheciis cylindraceis, atro-brunneis, apice obtusis. Sporis globosis, hyalinis.

Inside the bark of oak.

Spores ·0035 mm. diam. No. 2743.

Sphæronema acerinum. *Peck.*

On bark of *Acer.*

Spores .018 × ·0045 mm. No. 2744.

Sphæronema corneum. *C. & E.*

Sparsa, cornea. Peritheciis cylindraceis, centro turgidis, apice rotundatis. Sporis linearibus, rectis, hyalinis, minutis.

On stems of *Œnothera.*

Spores ·008 mm. long. No. 2675.

Sphæronema rufum. *B.*

On *Clethra.* No. 2677.

On *Magnolia.* No. 2676.

Morthiera Mespili. *Fckl.* var. **Cydoniæ.** *C. & E.*

On leaves of *Cydonia.*

Scarcely a distinct species from the form on leaves of *Mespilus.* Spores ·012-·015 × ·0065 mm. (Pl. 99, fig. 3.)

Nos. 2682, 2738.

Sphæropsis Cydoniæ. *C. & E.*

Epiphylla. Peritheciis immersis, punctiformibus, in maculâ rubro-brunneâ insidentibus. Sporis ellipticis, brunneis.

On leaves of *Cydonia.*

Spores ·02-·022 × ·009 mm.

Growing in company with *Morthiera.* No. 2682.

Sphæropsis Ampelopsidis. C. & E.

Gregaria, tecta. Peritheciis subglobosis, atris, cortice elevatis, papillatis. Sporis lanceolatis, vel subellipticis, utrinque rotundatis, hyalinis.

On twigs of *Ampelopsis quinquefolia.*

Spores naviculoid, hyaline, ·03-·035 × ·012 mm. In company with an imperfectly developed *Sphæria.* (Pl. 99, fig. 8.)

No. 2704.

Sphæropsis clethræcolum. *C. & E.*

Erumpens, subseriata. Peritheciis subglobosis, atris, cortice elongato-fissuratis. Sporis ellipticis, brunneis.

On branches of *Clethra.*

Spores ·022 × ·01 mm. No. 2680.

Diplodia Moricola. *C. & E.*

Semi-immersa. Peritheciis atris, globosis, papillatis; sporis. ellipticis, brunneis, endochromatis divisis.

On decorticated *Morus.*

Spores ·018-·022 × ·01 mm. Endochrome divided, but no distinct septum distinguished. No. 2706.

Diplodia Rubi. *Fr.*

On *Rubus.* No. 2745.

Diplodia herbarum. *Lev.* Var. **Lactucæ.** *C. & E.*

On stems of *Lactuca.* No. 2768.

Diplodia Asclepiadea. *C. & E.*

Gregaria. Peritheciis globosis, atris, papillatis, lævibus, primo tectis, demum denudatis. Sporis ellipticis, brunneis.

On stems of *Asclepias.*

Spores ·02-·022 × ·01 mm., probably at length uniseptate, but only seen with the endochrome divided. No. 2703.

Diplodia maura. *C. & E.*

Gregaria. Peritheciis globosis, atris, tectis, demum epidermide stellato-fissuratis; sporis ellipticis, brunneis, uniseptatis.

On branches of *Pyrus communis.*

Spores ·025 × ·01 mm. No. 2791.

Diplodia Loniceræ. *Fckl.*

On *Lonicera.* No. 2811.

Diplodia decorticata. *C. & E.*

Subgregaria. Peritheciis breviter hysterii-formibus, atris, in fibrillis insidentibus; sporis ellipticis, forte constrictis, brunneis.

On decorticated *Sassafras.*

Spores ·02-·025 × ·012-·015. Strongly constricted; each cell a flattened sphæroid. No. 2746.

Hendersonia thyoides. *C. & E.*

Sparsa, epiphylla. Peritheciis subglobosis, atris, papillatis, superficialibus; sporis lanceolatis, 5 septatis, brunneis.

On *Cupressus thyoides.*

Spores ·025 × ·009 mm. (Pl. 99, fig. 4.) No. 2741.

Hendersonia Cydoniæ. *C. & E.*

Epiphylla. Peritheciis minutis, atris, in maculis pallidis congestis; sporis subfusformibus, triseptatis, brunneis.

On living leaves of *Cydonia.*

Spores ·015-·018 × ·006-·007 mm., pale brown. (Pl. 99, fig. 5,) No. 2737.

Pestalozzia stellata. *B. & C.*

On leaves of *Quercus tinctoria.*

It seems doubtful whether the discoloured spots of the typical form are really of specific importance. There are no discoloured spots in the specimens before us, but the spores are the same as described in that species. For the present, at least, we unite them. No. 2640.

Pestalozzia clavata. *C. & E.*

Pustulis punctiformibus, congestis vel circinatis, e macula pallida fusco-cincta oriundis; sporis subclavatis, tricellulatis, tricristatis; pedicellis hyalinis, distinctis.

On leaves of *Smilax.*

Spores larger than in *P. hysteriiformis*, more clavate, basal hyaline cell very distinct, coloured portion ·022 × ·008 mm. (Pl. 99, fig. 7.) No. 2740.

Disoella effusa. *B. & C.*

On rotting pears. No. 2815.

Septoria ilicifolia. *C. & E.*

Peritheciis punctiformibus, atris, semi-immersis, e macula pallida fusco-cincta oriundis; sporis minutissimis, hyalinis.

On holly leaves. No. 2688.

Septoria Œnotheræ. *Westdp.*

On leaves of *Œnothera biennis.* No. 2739.

Melanconium oblongum. *B. & C.*

On bark of *Juglans cinerea.* No. 2698.

Melanconium (?) grandis. *C. & E.*

Pustulis nigris, sparsis, epidermide cinctis, vix prominulis; sporis magnis, obtuse lanceolatis, brunneis, continuis.

On beech bark. Potsdam., N. York.

Spores ·055-·065 × ·018-·02 mm.; unusually large for this genus. (Pl. 99, fig. 11.) No. 1092.

Sporidesmium Lepraria *B.* (forma *minima.*)

On roots of Quercus. No. 2758.

Sporidesmium larvatum. *C. & E.*

Effusum, atrum; sporis cylindraceis, multiseptatis, constrictis, toruloideis, brunneis.

On cedar rails.

Spores very variable in length, resembling the larvæ of some insect ·04-·05 to ·08-1 mm. long, ·01-·012 mm. wide; paler at the ends. (Pl. 99, fig. 12.) No. 2770.

Torula binale. *C & E.* "Grevillea," vi., p. 5.

On oak wood. No. 2673.

Torula abbreviata. *Corda.*

On oak limb. No. 2742.

Septonema rude. *Sacc.* "Michelia," Jan., 1878.

On rotten wood of cedar.

Joints clavate ·06 × ·01 mm., with about five septa. (Pl. 99. fig. 13.) No. 2660.

Gymnosporium arundinis. *Ca.*

On *Andropogon.* No. 2766.

Æcidium compositarum. Schl. var. *Artemisiæ.*

On *Artemisia.* Rocky Mountains.

It is impossible from a single old specimen to say whether distinct or not, as no colour in spores or peridia remains. No. 2719.

Uredo ribicola. *C. & E.*

Hypophylla. Sporis subglobosis, flaveolis, epidermide cinctis. Pseudosporis globosis, asperulis.

On leaves of *Ribes.* Rocky Mountains.

Spores ·02-·022 mm. No. 2717.

Coleosporium miniatum, *Ler.*

On *Rubus.* Rocky Mountains. No. 2718.

Uromyces triquetra, *C. in Journ. Port. Soc.*

On *Elodes Virginica.* No. 2765.

Uromyces Lespedezæ, *Schw.*

On *Lespedeza violacea.* Potsdam, N.Y. No. 2806.

Fusarium heterosporium, *Nees.*

On *Secale cereale.* No. 2755.

Volutella flexuosa, *C. & E.*

Subglobosa, fulva, sparsa; hyphis elongatis, flexuosis, septatis; sporis cylindraceis, obtusis, hyalinis.

On decayed leaves of *Salvia.*

Threads ·2 mm. long. Spores ·018-·02 × ·003 m.m. No. 2678.

Illosporium pallidum, *C.*

On *Zea mays*. No. 2674.

Illosporium coccinellum, *C.*

On cedar rails. No. 2666.

Both the above species of *Illosporium* were received from South Carolina last year, through H. W. Ravenel.

Ægerita candida, *P.*

On dead limbs. No. 2730.

Hymenula fumosa, *C. & E.*

Epiphylla, erumpens, demum suborbicularis, griseo-fumosa, subgelatinosa. Sporis cylindraceis, obtusis, rectis, hyalinis.

On leaves of *Pinus*.

Pustules about $\frac{1}{2}$ mm. diam. at first punctiform, and reddish, at length flattened, discoid, smoky-grey. Spores ·014-015 mm. long. This genus seems quite out of place in *Hymenomycetes*, as the structure has more affinity with such genera as *Tubercularia* and *Myrothecium* than with the *Tremellini*. Nos. 2780, 2782.

Myrothecium verrucaria, *A & S.*

On stems of *Lactuca*. No. 2769.

Macrosporium Iridis, *C. & E.*

Punctiformis, vel tenue effusum. Hyphis robustis, septatis, flexuosis. Sporis truncatis, multicellulosis, pallide brunneis.

On leaves of *Iris*.

Inconspicuous. Threads thick. Spores with two or three rows of cells, epispore thin and pale brown ·03-·035 × ·015-·02 mm. No. 2736.

Macrosporium nigrellum, *C. & E.*

Late effusum, atrum, velutinum. Hyphis septatis, flexuosis, brunneis, supra pallidiore. Sporis clavatis, brunneis, multiseptatis.

On inner bark of trees.

Forming large velvety black patches. Spores clavate multiseptate, with one or two transverse septa ·06 × 018-·02 mm. No. 2716.

Macrosporium Maydis, *C. & E.*

Tenuissime effusum. Hyphis elongatis, gracilibus, subnodulosis, supra hyalinis. Sporis clavatis, pallide brunneis, multi-septatis.

On leaves of *Zea mays*.

Threads ·15-·2 mm. long. Spores ·06-0·8 × ·02 mm. No. 2642.

Macrosporium caudatum, *C. & E.*

Effusum, atrum, tenue. Hyphis flexuosis, sparsis, nodulosis. Sporis clavatis, multiseptatis, pallido brunneis, stipite elongatis tenuibus, hyalinis.

On stems of *Phytolacca* and *Lactuca*.

Spores ·05-·07 × ·02-·025 mm., with a long hyaline pedicel. (Pl. 99, fig. 14). Nos. 2751, 2752.

Macrosporium leptotrichum, *C. & E.*

Tenue effusum, griseum. Hyphis gracilibus, flexuosis, nodulosis, deorsum atro-brunneis, sursum subhyalinis. Sporis clavatis, multi-septatis.

On pine wood.
Spores ·05 × ·015 mm., shortly pedicellate. No. 2787.

Macrosporium cladosporioides, *Corda.*
On stems of *Lactuca.* No. 2767.

Macrosporium fasciculatum, *C. & E* "Grevillea," vi., p. 6.
On bean pods. No. 2750.

Septosporium prælongum, *Sacc.*
Hyphis fasciculatis, filiformibus, prælongis, simplicibus vel furcatis, multiarticulates, fuligineis, articulis gutinlatis; sporis ovatooblongis ·02-·025 × ·012-·014 mm. 2-3 septatis, muriformibusque, ad septa leniter constrictis, fuligineis.
On *Rubus occidentalis.* No. 2761.
On chips and sticks. No. 2762.
Threads ·4-·5 mm. long, and ·007-·008 mm. wide, multiseptate; joints about as long as the diameter of the threads. (Pl. 99, fig. 18.

Septosporium velutinum *C. & E.* in "Grevillea," v. pl. 75, fig. 1.
On Maple bark. No. 2771.

Fusicladium fasciculatum. *C. & E.*
Atrum, maculæforme, vel effusum. Hyphis fasciculatis, erectis, flexuosis, subnodulosis, septatis, brunneis. Sporis breviter fusoideis, hyalinis.
On leaves and stems of *Euphorbia.*
Spores ·0125 × ·006 mm. No. 2774.

Helminthosporium arctesporum. *C. & E.*
Tenue effusum, atrum. Hyphis rectis, elongatis, gracilibus, septatis, atro-brunneis. Sporis cylindraceis, utrinque obtusis, 3-5 septatis, brunneis.
On twigs of *Vaccinium.*
Threads slender, erect, not constricted at the septa, dark brown. ·25 mm. long. Spores not thicker than the threads ·03-·035 × ·005 mm. (Pl. 99, fig. 17.) No. 2659.

Helminthosporium persistens. *Cooke.*
Atrum, effusum. Hyphis rigidis, erectis. septatis, opacis. Sporis fusiformibus, nec secedentibus, 5 septatis, brunneis.
On decorticated *Acer.*
This was detected some years since on specimens communicated from South Carolina by H. W. Ravenel. In the above specimens are a few scattered perithecia of some *Hendersonia.* Spores persistently attached, ·06 × ·015 mm. No. 2649.

Helminthosporium subopacum. *C. & E.*
Effusum, atrum. Hyphis rectis, ad basin subbulbosis, atro brunneis, ad apicem hyalinis. Sporis cylindraceis, utrinque obtusis, 8-10 septatis, brunneis, demum opacis.
On rotting *Kalmia.*
Spores ·045 × ·01 mm. with 8 to 10 septa, ultimately opaque. No. 2779.

Helminthosporium inconspicuum. *C. & E.*
Tenuissime effusum. Hyphis elongatis, septatis, nodulosis, pallide-brunneis. Sporis lanceolatis, 3-5 septatis; episporio tenui.

On *Zea mays*.

Effused, but so thinly as not to be visible to the naked eye. Spores ·08-·12 × ·02 mm., at first with the endochrome divided, at length septate. (Pl. 99, fig. 19.) Nos. 2643, 2772.

Menispora ciliata. *Corda.*

On *Magnolia* bark. No. 2712.

Chalara acuaria. *C. & E.*

Effusa, atra. Hyphis rectis, ampullæformibus, fuligineis. Articulis supra connatis, hyalinis, cylindraceis, brevibus, dissilientibus.

On fir leaves.

Threads flask-shaped at the base ; dusky, surmounted by hyaline articulations ·012 mm. long and about ·0035 mm. thick. (Pl. 99, fig. 20.) No. 2786.

Cercospora Rhuina. *C. & E.*

Maculis brunneis, suborbicularibns, amphigenis. Hyphis simplicibus vel furcatis, hyalinis, brevibus. Sporis cylindraceis, sursum attenuatis, septatis, hyalinis.

On fading leaves of *Rhus glabra*.

Threads very short. Spores ·07-·08 mm.; very slender, 4-5 septate. No. 2656.

Cercospora betæcola. *Sacc. Myc. Ven.*, 597.

On beet leaves. No. 2721.

Cercospora grisea. *C. & E.*

On *Polygala cruciata*. No. 2775.

Cercospora Nymphæacea. *C. & E.*

Epiphylla. Maculis olivaceis, suborbicularibus. Hyphis dense fasciculatis, gracilibus, hyalinis. Sporis linearibus, multi-septatis, hyalinis.

On leaves of *Nymphæa odoarta*.

Spores ·08-·09 mm., very slender, scarcely perceptibly attenuated. No. 2684.

Cylindrium heteronemum. *Sacc.*

On cow dung. (Pl. 99, fig. 21.) No. 2700.

Polyscytalum sericeum. *Sacc.*

On leaves of *Quercus tinctoria*. No. 2641.

Oidium fructigenum. *Ca.*

On decaying peaches. No. 2686.

Zygodesmus fuscus. *Cord.*

On oak bark. No. 2759.

Zygodesmus olivascens. *B. & C.*

On old pine wood. No. 2830.

Botrytis nebularis. *C. & E.*

Effusum, fuligineum. Hyphis fasciculatis, rectis, sursum valde ramulosis, septatis ; ramulis furcatis, hyalinis. Sporis globosis, minutissimis, fuscis.

On rotting leaves.

Spores not more than ·003 mm. diam.; very numerous; clustered about the ends of the branches. Threads nearly half a millemetre long. (Pl. 99, fig. 23.) No. 2679.

Botrytis atrofumosa. *C. & E.*

Effusum, atro-fuligineum, lanosum. Hyphis brevibus, furcatis, fuscidulis, leniter septatis. Sporis numerosissimis, ellipticis, minutis, fuscis.

On rotten oak.

Threads very slender, not more than one tenth of a millemetre long. Spores clustered about the apices of the branches ·004 × ·0025 mm. (Pl. 99, fig. 22.) No. 2773.

Rhinotrichum ramosissimum. *B. & C.*

On pine wood.

Referred to this species with some hesitation; it may possibly prove to be distinct. No. 2760.

Fusisporium udum. *Berk.*

In small fragments, but probably this species.

On *Ostrya Virginica.* No. 2754.

Fusisporium graminum. *Ces.*

On stalks of *Zea mays.* No. 2818.

Ascophora mucedo. *Tode.*

On decaying peaches. No. 2685.

Mucer mucedo. *Linn.*

On decayed stems.

In bad condition from the journey, but possibly this species. No. 2689.

Peziza (Humaria) constellatio. *B. & Br.* Cooke, "Mycographia," fig. 81.

On the ground. No. 2663.

Peziza (Dasyscypha) Cupressina. *Batsch.*

On *Cupressus thyoides.* No. 2741.

Peziza (Dasyscypha) pteridis. *A. & S.*

On *Osmunda.*

Sporidia linear, ·007 mm. No. 2702.

Peziza (Dasyscypha) virginea. *Batsch.*

On *Salvia.*

Sterile, but probably this species. No. 2705.

Peziza (Tapesia) culcitella. *C. & E.* in "Grevillea."

On naked wood. No. 2701.

Peziza (Mollisia) rubella. *P.*

On decaying *Nyssa.* No. 2777.

Peziza (Mollisia) Œnotheræ. *C. & E.*

Sparsa, ochraceo-albida. Cupulis demum expansis, margine elevato, flexuoso. Ascis cylindraceis, sporidiis linearibus, rectis, obtusis. Paraphysibus filiformibus.

On stems of *Œnothera.*

Cups about ·1 mm. Sporidia ·008 mm. long. No. 2681.

Peziza (Mollisia) astericola. *C. & E.*

Sparsa, mollis. Cupulis demum applanatis, extus atrobrunneis; disco aquoso. Ascis cylindraceo-clavatis, sporidiis linearibus, leniter curvulis. Paraphysibus filiformibus.

On *Aster* stems.

Cups $\frac{1}{2}$-·1 mm. broad. Sporidia not exceeding ·01 mm. long. No. 2664.

Peziza (Mollisia) aquifoliæ. *C. & E.*

Foliicola, sparsa, subaurantia, ceracea. Cupulis sessilibus, concavis, margine incurvo, ad basim fibrillis albis radiantibus affixis. Ascis cylindraceis. Sporidiis arcte ovalibus, hyalinis. Paraphysibus vix distinctis.

On leaves of *Ilex opaca*.

Sporidia ·007-·01 × ·0025 mm. A very curious species which seems to diverge in its firm texture, and some other points from a true *Peziza*. No. 2559.

Peziza (Mollisia) atrata. *P.*

On twigs of *Lonicera*.

It is difficult to distinguish any difference between this and the typical form of *P. atrata*. No. 2810.

Peziza (Mollisia) regalis. *C. & E.*

Sparsa, miniata. Cupulis sessilibus, subhemisphæricis, demum expansis. Margine elevato, albocrenato. Ascis cylindraceo-clavatis. Sporidiis linearibus, rectis. Paraphysibus superne globoso-clavatis.

On apple bark.

Scarce ·1 mm. broad. Allied to *Peziza lasia*. B. & Br. Sporidia ·007 mm. long. No. 2778.

Peziza (Hymenoscypha) scutula. *P.*

On grape twigs. No. 2776.

Peziza (Hymenoscypha) culmicola. *Desm.*

On stems of grass. No. 2725.

Peziza (Hymenoscypha) fumosella. *C. & E.*

Stipitata, minuta, fumosa. Cupulis clavatis, demum apertis, cyathiformibus, margine discoque pallido ; stipite sursum in cupulis expansa. Ascis cylindraceo clavatis. Sporidiis linearibus, rectis, vel curvulis. Paraphysibus filiformibus.

On fir leaves.

Cups $\frac{1}{4}$-$\frac{1}{3}$ mm. broad, about $\frac{1}{2}$ mm. high. Stem darker. Sporidia ·01 mm. long. Growing with *Hymenula fumosa*, of which it is perhaps a fruitful condition. No. 2781.

Peziza (Durella) mauriatra. *C. & F.*

Subgregaria, atra. Cupulis demum applanatis, discoideis, vel ellipticis, margine elevatis. Ascis cylindraceis; sporidiis globosis, minutis. Paraphysibus filiformibus, hyalinis.

On decorticated *Andromeda*.

Cups $\frac{1}{4}$th mm. diam., punctiform, black, externally composed of elongated brown hair-like cells. Sporidia ·003 mm. globose. Resembling the species of *Patinella*, described by Saccardo, but the genus is illogical and unnecessary. No. 2667.

Patellaria Gnaphaliana. *C. & E.*

Sparsa, vel subgregaria. Cupulis demum convexis, extus marginique atro brunneis, disco pallide fuligineo. Ascis clavatis. Sporidiis ovalibus. Paraphysibus linearibus, furcatis.

On stems of *Gnaphalium decurrens.*

Cups $\frac{1}{2}$-·1 mm. diam. Sporidia ·008 × ·005 mm. No. 2665.

Elaphomyces muricatus. *Fr.*

On the ground. No. 2823.

Hypocrea olivacea. *C. & E.*

Carnosa, convexa, elliptica vel irregularis, olivacea, primum flavido-tomentosa, ostiolis subprominulis. Ascis cylindraceis. Sporidiis ·16, subglobosis, hyalinis.

On old pine board.

Stroma dirty greenish, at first covered with a yellowish tomentum. Sporidia ·003 mm. (Pl. 100, fig. 25.) No. 2826.

Xylaria corniformis. *M.* var. **obovata.**

Potsdam, New York.

A peculiar form of a species not uncommon in the States. No. 2796.

Diatrype (Diatrypella) irregularis. *C. & E.*

Erumpens, angulata, convexa, nigrescens, intus subconcolor, ostiolis prominulis, sulcatis. Ascis clavatis, longe stipitatis. Sporidiis numero-sissimis, allantoideis, flaveolis.

On branches of *Pyrus communis.*

Very similar to *D. quercina,* but the pustules more angular, and ostiola less distinct. Sporidia ·008 mm. No. 2798.

Diatrype stigma. *Fr.*

On chestnut branches. No. 2795.

Melanconis sigmoideum. *C. & E.*

Pustulis elevatis, erumpentibus, atris, discoideis, coryneoideis, stylosporis sigmoideis, ·3-·5 septatis, brunneis, breviter stipitatis. Peritheciis, 3-·5 congestis, ostiolis attenuatis, convergentibus. Ascis clavatis, magnis. Sporidiis lanceolatis, utrinque obtusis, ·5-·7 septatis, brunneis.

On *Quercus tinctoria & Q ilicifolia.*

Stylospores ·05-·06 × ·013 mm. (No. 2668) sigmoid or lanceolate (a species of *Coryneum*). Sporidia ·055-·065 × ·012 mm. (No. 2726, 2647.) A very elegant and distinct species. (Pl. 100, fig. 26, upper figures of stylospores, lower figures of ascospores.)

Valsa tetraploa. *B. & C.*

On *Alnus.* No. 2699.

Valsa pulchelloidea. *C. & E.*

Peritheciis globosis, decumbentibus, in circulum dispositis. Ostiolis elongatis convergentibus. Ascis clavatis. Sporidiis minutis, allantoideis, hyalinis.

On oak bark.

Perithecia small, numerous, 10-20, with long convergent necks, resembling small specimens of *Valsa pulchella,* but with larger perithecia, collected in circular groups. Asci ·025 mm. long. Sporidia ·005-·006 mm. No. 2804.

Valsa myinda. *C. & E.*

Tecta, demum epidermidem fissurata. Peritheciis paucis, atris, convergentibus. Ascis clavatis. Sporidiis lanceolatis, quadrinucleatis, dein uniseptatis, hyalinis.

On *Acer* bark.

Sporidia ·015 × ·004 mm. No. 2788.

Valsa ventriosa. *C. & E.*

Convexa, gregaria. Pustulis cortice tectis, ostiolis congestis, leniter sulcatis. Peritheciis paucis, magnis, nigro-cinctis. Ascis clavatis. Sporidiis allantoideis, fuscidulis.

On bark of *Aclanthus.*

When the perithecia are removed there is a circumscribing black line on the matrix. Perithecia rather large and few. Sporidia brown in the mass, sausage-shaped, ·01 mm. No. 2805.

Valsa pauperata. *C. & E.*

Gregaria, tecta, erumpens. Peritheciis 2-3 in pustulis minutis congregatis, atris. Ostiolis magniusculis. Ascis clavatis. Sporidiis allantoideis, hyalinis, confertis, cum stylosporis immixtis.

On branches of *Acer.*

The pustules are numerous, sometimes in irregular flexuous lines, the perithecia seldom more than 2 or 3 together, piercing the bark with their broad ostiola. Sporidia sausage-shaped, ·015 mm. Pustules of a *Cytispora*, mixed with the ascigerous pustules. No. 2792.

Valsa ceratophora. *Tul.* var. **Cratægi.**

On *Cratægus.* No. 2794.

Valsa Liquidambaris. *Schw.*

On *Liquidambar.*

Stylospores profuse. Asci not mature. Apparently the same as No. 2360. No. 2793.

Dothidea tetraspora. *B.*

On *Genista.* No. 2722.

Dothidea crustosa. *Schw.*

On *Mulgedium.*

Possibly this species. But the specimens are sterile. No. 2710.

Sphæria (Diaporthe) Phaseolarum. *C. & E.*

Gregaria, tecta. Peritheciis globosis, immersis, minimis. Ostiolis spinæformibus, atris, erumpentibus. Ascis clavatis. Sporidiis lanceolatis, quadrinucleatis.

On bean stalks.

More delicate than *S. euspina*, C. & E. Sporidia ·016 mm. (Pl. 100, fig. 39.) No. 2651.

Sphæria (Diaporthe) Desmodiana. *C. & E.*

Gregaria, tecta. Peritheciis semi-immersis. Ostiolis erumpentibus, obtusis, atris. Ascis clavatis. Sporidiis lanceolatis, quadrinucleatis, hyalinis.

On stems of *Desmodium.*

Ostiola shorter than in the last species, and more obtuse. Sporidia ·018 mm. No. 2653.

Sphæria (Diaporthe) orthoceras. *Fr.*

On *Solidago lanceolata.* No. 2729.

On *Aster.* No. 2650.

This may be called variety *lineare*, the perithecia being mostly collected in a linear series, the ostiola breaking through elongated fissures of the cuticle.

Sphæria (Diaporthe) cryptica. *Ntke.*

On *Lonicera.* No. 2814.

Sphæria (Villosæ) xylariæspora. *C. & E.*

Peritheciis gregariis, atris, velutinis, globoso-compressis, papillatis. Asci cylindraceis. Sporidiis ellipticis, utrinque attenuatis, brunneis, uninucleatis.

On decorticated *Andromeda.*

Hairs of the perithecia short and stout, ·04 mm. long. Sporidia resembling those of *Xylaria*, ·016-·018 × ·006 mm., brown, with a single nucleus. (Pl. 100, fig. 27.) No. 2800.

Sphæria (Villosæ) scopula. *C. & Pk.*

On old pine boards. No. 2646.

Sphæria (Villosæ) detonsa. *Cooke.*

On decorticated *Andromeda.*

The external hairs are so short as to be almost obsolete, It has been found in England and Scotland. Sporidia smaller than in *Sph. ligniaria.* No. 2723.

Sphæria (Denudatæ) cariosa. *C. & E.*

Peritheciis atris, subglobosis, papillatis, opacis, subgregariis, vel sparsis. Ascis cylindraceo-clavatis. Sporidiis biseriatis, lanceolatis, obtusis, leniter 3 septatis, hyalinis.

On decayed oak bark.

Sporidia ·02-·022 × ·0055 mm. (Pl. 100, fig. 28.) No. 2789.

Sphæria (Denudatæ) atriella. *C. & E.*

Peritheciis gregariis, atris, globosis, papillatis. Ascis cylindraceo-clavatis. Sporidiis biseriatis, lanceolatis, triseptatis, medio constrictis, cellulis nucleatis, hyalinis, leniter flaveolis.

On wood of *Acer.*

Sporidia ·03-·032 × ·006 mm. (Pl. 100, fig. 29.) No. 2790.

Sphæria (Denudatæ) pulveracea. *Elv.*

On wood. Potsdam, N.Y. No. 612.

Sphæria (Immersæ) caminata. *C. & E.*

Immersa. Peritheciis subglobosis, atris, sparsis, vel subgregariis, in collum elongatum productis. Ascis cylindraceis. Sporidiis uniseriatis, ellipticis, brunneis.

On decorticated *Acer.*

Only the erumpent thick necks of the perithecia are visible, and these project above the surface. Sporidia ·012 × ·006 mm. (Pl. 100, fig. 30.) No. 2648.

Sphæria (Obtectæ) fissicula. *C. & E.*

Tecta, epidermide elongato-fissurata. Peritheciis globosis, atris. Ostiolis obtusis, erumpentibus. Ascis pyriformibus. Sporidiis allantoideis, minutis, hyalinis.

On *Rosa*.
Sporidia ·008 mm. long. (Pl. 100, fig. 32.) No. 2683.

Sphæria (Obtectæ) segna. *C. & E.*

Tecta. Peritheciis gregariis, cortice elevatis, perforatis. Ascis cylindrico-clavatis. Sporidiis biseriatis, arcte ellipticis, uniseptatis, constrictis, hyalinis.

On branches of *Nyssa*.
Sporidia ·015 × ·007 mm. (Pl. 100, fig. 33.) No. 2727.

Sphæria (Obtectæ) aulica. *C. & E.*

Tecta, subsparsa. Peritheciis globosis, atris, prominulis, papillatis. Ascis clavatis. Sporidiis biseriatis, lanceolatis, 5 septatis, constrictis, cellulis nucleatis, hyalinis.

On twigs of *Lonicera*. No. 2813.
On *Solidago*. No. 2803.

Sporidia ·035-·04 × ·009 mm., strongly constricted at each septum. Resembling the fruit of *S. comatella*, but the perithecia are without the characteristic fringed ostiolum. (Pl. 100, fig. 34).

Sphæria (Obtectæ) dumetorum. *Niessl.*

On *Lonicera*. No. 2814.
On *Helianthus*. No. 2724.

Sphæria (Obtectæ) erratica. *C. & E.*

Gregaria, subcongesta. Peritheciis globoso-depressis, atris, demum erumpentibus, hinc illic confertis. Ascis clavatis. Sporidiis biseriatis, ellipticis, simplicibus, hyalinis.

On *Rosa* (No. 2799), *Lonicera* (No. 2822), and stems of *Solidago* (No. 2803).

Perithecia white within. Sporidia ·025-·026 × ·0125 mm. simple, hyaline, granular within, probably not fully matured. (Pl. 100, fig. 35.)

Sphæria (Caulicolæ) comatella. *C. & E.*

On *Baptisia tinctoria*. No. 2657.
On wild carrot. *Daucus carota*. No. 2644.
On old bean stalks. No. 2645.
On potato stems. *Solanum tuberosum*. No. 2657*a*.

In some of these the sporidia are quite mature, and in this state are of a clear brown colour. The original specimens had not acquired colour, hence the description must be amended, as far as this feature is concerned.

Sphæria (Caulicolæ) consessa. *C. & E.*

Peritheciis globosis, atris, nitidis, papillatis, primum epidermide tectis, demum denudatis. Ascis cylindraceis. Sporidiis uniseriatis, arcte lanceolatis, triseptatis, brunneis, leniter constrictis.

On stems of *Helianthus*.

Mixed with *Sphæria comatella* C. & E. Asci very long and slender. Sporidia ·02-·022 × ·005 mm. (Pl. 100, fig. 37.) No. 2657.

Sphæria (Caulicolæ) eriophora. *Cooke.*

On *Chenopodium* stems.

Originally described from specimens received from W. R.

Gerard, and collected in New York State. Sporidia brown, uniseriate, at length triseptate, constricted, ·025 × ·01 mm.

No. 2801, 2802.

Sphæria (Culmicolæ) stictispora. *C. & E.*

Tecta, cuticula nigrofacta, sparsa. Peritheciis semi-immersis, poro late pertusis. Ascis cylindraceis. Sporidiis filiformibus, continuis.

On dead grass.

A very singular species. In all points resembling a *Stictis*, except that there is a distinct globose perithecium, with a rather broad mouth. Sporidia as long as the ascus ·2 mm. Not at all resembling the sporidia in *S. acuminata*, *S. rubella* and their allies. (Pl. 100, fig. 36.) No. 2708.

Gibbera Saubinetii. *Mont.*

On *Asparagus* stems. No. 2753.

Chætomium olivaceum. *C. & E.*

Virido-flavum, vel olivaceum. Peritheciis gregariis, subglobosis, pilis flexuosis ornatis. Sporidiis subglobosis, utrinque acuminatis, brunneis.

On rotting stems of *Erigeron*.

Perithecia rather small, clad with dull olive green hairs, which are greenish-yellow at the tips, pale brown when magnified 450 diam., and minutely scabrous. The hairs are simple and flexuous. Sporidia ·012 × ·01 mm. (Pl. 100, fig. 38.) Nos. 2709, 2828.

Plate 99, fig, 1. Cryptosporium solidaginis, C. & E. Spores. 2. Cryptosporium loniceræ, C. & E. Spores. 3. Morthiera Mespili, Fckl. Spores. 4. Hendersonia thyoides, C. & E. Spores. 5. Hendersonia Cydoniæ, C. & E. Spores. 6. Hendersonia magna, C. Spores. 7. Pestalozzia clavata, C. & E. Spores. 8. Sphæropsis ampelopsidis, C. & E. Sporcs. 9. Sphæropsis glandulosum, C. Spores. 10. Vermicularia Cucurbitæ, C. Spores. 11. Melanconium grandis, C. & E. Spores. 12. Sporidesmium larvatum, C. & E. Spores. 13. Septonema rude, Sacc. Spores. 14. Macrosporium caudatum, C. & E. 15. Macrosporium compactum, C. 16 Helminthosporium subopacum, C. & E. 17. Helminthosporium arctesporum, C. & E. 18. Septonema prælongum, Sacc. Part of thread and spore. 19. Helminthosporium inconspicuum, C. & E. Spore. 20. Chalara arcuaria, C. & E. 21. Cylindrium heteronemum, Sacc. Spores. 22. Botrytis atrofumosa, C. & E. Threads and spores. 23. Botrytis nebularis, C. & E. Thread and spores.

Plate 100, fig. 24. Tulostoma opacum, C. & E. 25. Hypocrea olivacea, C. &. E. 26. Melanconis sigmoideum, C. & E. Stylospores and ascospores. 27. Sphæria xylariæspora, C. & E. 28. Sphæria cariosa, C. & E. 29. Sphæria atriella, C. & E. 30. Sphæria caminata, C. & E. 31. Sphæria botulæspora, C. 32. Sphæria fissicula, C. & E. 33. Sphæria segna, C. & E. 34. Sphæria aulica, C. & E. 35. Sphæria erratica, C. & E. 36. Sphæria stictæspora, C. & E. 37. Sphæria consessa, C. and E. 38. Chætomium olivaceum, C. & E. 39. Sphæria Phaseolarum, C. & E. 40. Massaria Curreyi, Tul. Sporidia.

Spores and sporidia all magnified 500 diameters.

NEW BRITISH FUNGI.

By M. C. Cooke.

(*Continued from p.* 76.)

The following enumeration includes species published by Messrs. Berkeley and Broome in the "Annals of Natural History" for January, 1878, and these will be continued until completed :—

Agaricus (Amanita) magnificus. *Fr. Hym. Eur. p.* 25.

Pileus convex then flattened, thin, nearly naked, reddish, margin striate, flesh turning red, stem stuffed, then hollow, nearly equal, squamulose, ring falling away, volva obliterated, gills attenuated decurrent.—*Berk. & Br. Ann. Nat. Hist., No.* 1631. *Fl. Dan. t.* 2146.

In fir woods. Glamis.

Agaricus (Lepiota) rachodes. *Fr. Sub. sp.* **puellaris.** *Fr. Hym. Eur. p.* 29.

Smaller than in the typical form, colour white, pileus floccoso-squamose.—*Berk. & Br. Ann. Nat. Hist., No.* 1632.

In woods. Coed Coch.

Agaricus (Lepiota) biornatus. *B. & Br. Journ. Linn. Soc.* XI., *p.* 502.

Pileus convex, broadly campanulate, white, silky, with scattered minute dark red scales, fleshy; flesh white, or slightly tinged with yellow, stem oblique, attenuated at the base, rooting, spotted with red, reddish within, stuffed, then hollow, ring descending, spotted at the edge, gills ventricose, approximate.—*Berk. & Br. Ann. Nat. Hist., No.* 1633.

In a melon frame.

Pileus 2in.; stem 4in. high; one-third in. thick; gills two lines broad. Spores ·01 × ·0075 mm.

Agaricus (Lepiota) seminudus. *Lasch. Fr. Hym. Eur. p.* 38.

Pileus rather fleshy, campanulate then expanded, umbonate, floccose mealy, at length naked, margin appendiculate with remains of the torn veil, stem hollow, thin, mealy, gills reaching the stem, white.—*Berk. & Br. Ann. Nat. Hist., No.* 1634.

In woods. King's Lynn.

Agaricus (Armillaria) hæmatites. *B. & Br.*

Pileus hemispherical, liver-coloured, rather hispid when dry, stem of the same colour, thickened downwards, solid; ring spongy; gills shortly decurrent.—*Berk. & Br. Ann. Nat. Hist., No.* 1635.

Amongst fir leaves. Glamis.

Pileus 1in.; stem, 2in. high; ¼in. thick at the base; ring scaly beneath.

Agaricus (Tricholoma) cerinus. *Pers. Sym. p.* 321.

Pileus fleshy, convexo-plane, obtuse or depressed, becoming smooth, even; stem stuffed, fibrillose striate, base smooth; gills adnexed, retreating, crowded, yellow.—*Berk. & Br. Ann. Nat. Hist., No.* 1636. *Fries Ic., t.* 39, *f.* 1.

On a lawn.

Pileus brown, sometimes yellow; flesh white; small.

Agaricus (Clitocybe) socialis. *Fries Ic., t.* 49, *f.* 2.

Pileus fleshy, convex then expanded, umbonate, even, flesh-colour; stem solid, nearly smooth, reddish, base rooting, hairy; gills plano-decurrent, scarcely crowded, becoming yellowish.—*Berk. & Br. Ann. Nat. Hist., No.* 1637.

Amongst fir leaves. Downton.

Agaricus (Clitocybe) amarella. *Pers.*

Pileus fleshy, plane, firm, somewhat umbonate, smooth; stem solid, tough, equal; base, whitish, downy; gills rather decurrent, crowded, pallid, somewhat shining.—*Berk. & Br. Ann. Nat. Hist., No.* 1638.

In woods. Coed Coch.

The taste is bitter and disgusting, the smell that of prussic acid.

Agaricus (Mycena) rubro-marginatus. *Fr. Hym. Eur. p.* 132.
var. **fusco-purpurens.** *Lasch.*

Smaller than the typical form, fragile, whitish or livid reddish, becoming pallid.—*Berk. & Br. Ann. Nat. Hist., No.* 1638.

Amongst dead leaves.

Very distinct from the usual form, having the appearance of an exotic *Marasmius.*

Agaricus (Mycena) zephirus. *Fr. Ic., t.* 78, *fig.* 6.

Pileus rather fleshy, campanulate-convex, expanded, obtuse; margin striate; stem rather striate, squamulose, lilac becoming reddish, base woolly; gills attenuated, adnate, broadly linear, connected by veins, white.—*Berk. & Br. Ann. Nat. Hist., No.* 1640.

On decayed wood. Scotland.

Rose-coloured.

Agaricus (Mycena) plicosus. *Fr. Ic. t.* 81, *f.* 4.

Fragile. Pileus membranaceous, campanulate, expanded, plicato-sulcate, opaque when dry, umbo rather fleshy, broad, obtuse; stem polished, even, smooth; gills adnate, distant, thick, connected by veins, grey.—*Berk. & Br. Ann. Nat. Hist., No.* 1641.

On the ground. Killin.

Agaricus (Mycena) amictus. *Fr. Ic. t.* 82, *fig.* 3.

Pileus membranaceous, conical-campanulate, striate to the middle, dry, smooth; stem filiform, equal, tough, villous pulverulent, root twisted, smooth; gills free, crowded, linear, grey, edge becoming pallid.—*Berk. & Br. Ann. Nat. Hist., No.* 1642.

Amongst leaves. Glamis.

Agaricus (Omphalia) hydrogrammus. *Fr. Ic. t.* 71.

Pileus submembranaceous, umbilicate, flaccid, smooth, livid, hygrophanous; margin patent, striate, somewhat undulated; stem fistulose, smooth, rather compressed; base rooting; gills decurrent, much crowded, white.—*Berk. & Br. Ann. Nat. Hist., No.* 1643.

Amongst leaves. Coed Coch.

Agaricus (Omphalia) umbilicatus. *Schæff.*

Pileus somewhat membranaceous, umbilicate, reflexed, at length infundibuliform, even, smooth, hygrophanous, regular; stem hollow, straight, at the apex silky with white fibrils; gills very decurrent, crowded, whitish.—*Berk. & Br. Ann. Nat. Hist., No.* 1644. *Fries Ic. t* 73, *fig.* 1.

Amongst moss. Perth.

Agaricus (Omphalia) maurus. *Fr. Ic. t.* 73, *f.* 2.

Pileus somewhat membranaceous, convex, deeply umbilicate, smooth, striate, hygrophanous, even when dry, silky shining; stem somewhat hollow, thin, rigid, straight; gills truly decurrent, arched, much crowded, whitish.—*Berk. & Br. Ann. Nat. Hist., No.* 1645.

On lawns. Coed Coch.

Agaricus (Omphalia) striæpileus. *Fr. Ic. t.* 73, *f.* 3.

Pileus membranaceous, convex, then flattened, umbilicate, smooth, entirely striate, livid brown, hygrophanous; stem hollow, smooth, thin, becoming brownish; gills slightly decurrent, slightly crowded, whitish.—*Berk. & Br. Ann. Nat. Hist., No.* 1646.

Amongst moss and leaves. Glamis.

Agaricus (Omphalia) pictus. *Fr. Ic. t.* 77, *f.* 4.

Pileus membranaceous, campanulate, hood-like, umbilicate, smooth, striate; stem stuffed, horny, bay, smooth, expanded at the base in a radiating brownish membrane; gills somewhat decurrent, very broad, distinct, distant, convex, pallid.—*Berk. & Br. Ann. Nat. Hist., No.* 1647.

On wood, chips, &c. Killin.

Agaricus (Pleurotus) reniformis. *Fr. Ic. t.* 89, *fig.* 3.

Pileus rather fleshy, horizontal, kidney-shaped, plane, cinereous, emarginate behind, with a very short villous stem; gills springing from a stem-like tubercle, thin, linear, greyish.—*Berk. & Br. Ann. Nat. Hist., No.* 1648.

On silver fur. Glamis.

Agaricus (Leptonia) æthiops. *Fr. Ic. t.* 97, *f.* 3.

Pileus rather fleshy, plano-depressed, without striæ, shining, black then sooty, smooth, but with innate fibrils; stem somewhat stuffed, thin, smooth, brown then blackish, punctated with black above; gills adnate, whitish, edge of the same colour.—*Berk. & Br. Ann. Nat. Hist., No.* 1649.

In grassy places. Scotland.

Agaricus (Nolanea) fulvo-strigosus. *B. & Br.*

Pileus conical, grey, rugulose; stem thin, furfuraceo-squamulose; base hispid with rigid red hairs; gills adnate, grey.—*Berk. & Br. Ann. Nat. Hist., No.* 1650.

On the ground in a wood. East Farleigh.

Pileus $\frac{3}{4}$in. across, $\frac{1}{2}$in. high; stem 2in. long, about 1 line thick. Spores ·0125 × ·0075 mm.

Agaricus (Eccilia) nigrella. *Pers. Syn. p.* 463.

Small, somewhat tufted; pileus smooth, umbilicate, growing blackish; gills flesh-coloured, then somewhat cinereous; stem short, glaucous.—*Berk. & Br. Ann. Nat. Hist., No.* 1651.

In mountain pastures. Perthshire.

"This appears to be quite distinct from *Ag. atrides;* the stem is not nigro-punctate above, nor are the gills nigro-denticulate."—*B. & Br.*

Agaricus (Pholiota) Vahlii. *Schum. Fl. Dan. t.* 1496.

Solitary, ferruginous orange; pileus hemispherical, even; stem long, thick, even, rather bulbous at the base; ring large, plicate, erect, punctate with white; gills narrower than the flesh of the pileus; rounded at the base.—*B. & Br. Ann. Nat. Hist., No.* 1652.

On grassy banks of the railroad. Dunkeld.

Fries considers this a variety of *A. aureus.*

Agaricus (Inocybe) dulcamarus. *Pers. Ic. Pict. t.* XV. *fig.* 2.

Pileus convex, umbonate, umber, clothed with adpressed fibres, the centre breaking up into areolate patches, about $\frac{1}{3}$-$\frac{1}{2}$ inch across; stem 1 inch or more high, 1 line thick, of the same colour as the pileus, scaly below, tomentose above; gills clay-coloured, ventricose, margin paler, waved, adnate, with a strong decurrent tooth; spores even; flesh white; taste at first pleasant.—*Berk. & Br. Ann. Nat. Hist., No.* 1653.

On the ground. Scotland.

Agaricus (Inocybe) cincinnatus. *Fr. Hym. Eur. p.* 228.

Pileus rather fleshy, convexo-plane, squarrose scaly; stem solid, thin, scaly; gills adnexed, crowded, ventricose, brownish-violet.—*Berk. & Br. Ann. Nat. Hist., No.* 1654.

Amongst moss. Coed Coch.

Spores granulated or irregular. "This appears to be what Quelet figures under the name of *A. dulcamarus*, his *A. cincinnatus* being rather referable to that species."—*B. & Br.*

Agaricus (Inocybe) carptus. *Fr. Hym. Eur. p.* 230.

Pileus fleshy, convex, then flattened, depressed; stem hollow, attenuated downwards, woolly, filamentose; gills affixed, ventricose, broad, tawny-brown.—*Berk. & Br. Ann. Nat. Hist., No.* 1655.

On naked soil. Coed Coch.

Spores even.

Agaricus (Inocybe) Trinii. *Weinm. p.* 194.

Pileus rather fleshy, hemispherical, obtuse, longitudinally fibrillose with reddish fibrils; stem stuffed, equal, slender, loosely fibrillose, whitish mealy; gills rounded, ventricose, cinnamon, with white flocci at the edge.—*Fries Hym. Eur. p.* 233. *Berk. & Br. Ann. Nat. Hist., No.* 1656.

In grassy places. Scotland.

Spores strongly granulated.

Agaricus (Galera) minutus. *Quelet. iii. p.* 10, *tab. i. fig.* 5. *Berk. & Br. Ann. Nat. Hist.,* No. 1656.*

In woods amongst moss. Wrotham, Kent.

AGARICUS ALNICOLA FR.

1 RUSSULA LUTEA 2 AGARICUS SAPINEUS FR

CORTINARIUS SAGINUS FR.

AGARICUS LEONINUS FR

Agaricus (Tubaria) cupularis. *Bull. t.* 554, *f.* 2.

Pileus rather fleshy, depressed, flattened, obtuse, even, smooth, rufescent, then yellowish, hygrophanous; stem fistulose, naked, attenuated upwards, whitish; gills decurrent, crowded, brownish.—*Fries Hym. Eur. p.* 272. *Berk. & Br. Ann. Nat. Hist., No.* 1657.

On the ground. Scotland.

Agaricus (Crepidotus) Phillipsii. *Berk. & Br.*

Small, somewhat umber; pileus oblique, striate, smooth; stem solid, incurved at the base, gills narrow, ventricose, shortly adnate. —*Berk. & Br. Ann. Nat. Hist., No.* 1658.

On grass. The Wrekin.

Pileus about 3 lines across, stem 1-1½ lines high, spores ·005 mm. long.

Agaricus (Stropharia) thraustus. *Kalch. Fung. Hung. t.* 15, *f.* 2.

Subgregarious, hygrophanous; pileus fleshy, conical, then expanded, rather viscid, smooth; margin even, cinnamon-orange; stem stuffed, soon hollow, nearly equal, or slightly thickened downwards, pulverulent, white, smooth above the ring, rufescent, below tawny and floccose; gills broadly adnate, slightly emarginate, distant, somewhat ventricose, at first cinereous, becoming blackish, spotted.—*Berk. & Br. Ann. Nat. Hist., No.* 1659.

In grassy places. Rannoch, Perthshire.

Spores oblong ovate, ·015 mm. long. Odour none, taste watery.

Agaricus (Stropharia) scobinaceus. *Fr. Hym. Eur. p.* 288.

Pileus fleshy, thin, hemispherical, then expanded, gibbous, rather sulcate, covered with crowded, adpressed, fugitive, blackish scales; stem hollow, fibrillose, white, mealy above; ring fugacious; gills adnate, crowded, crenulate, reddish-white, then purplish.—*Berk. & Br. Ann. Nat. Hist., No.* 1660.

On trunks. Glamis.

Agaricus (Psilocybe) ammophilus. *D. R. & M. Fl. Alg. t.* 31, *fig.* 8.

Pileus hemispherical, then expanded, ferruginous, pulverulent; stem brown above, clad below with dense whitish wool, hollow; gills adnate with a tooth, grey, then blackish.—*Berk. & Br. Ann. Nat. Hist., No.* 166.

On sand. St. Andrews.

Spores ·0127 × ·009.

Agaricus (Panæolus) sphinctrinus. *Fr. Hym. Eur. p.* 311.

Pileus rather fleshy, parabolic, obtuse, opaque, even, moist, when dry rather silky, at first appendiculate with the white veil; stem equal, straight, sooty-grey, apex even, pruinose; gills adnate, crowded, cinereous, becoming blackish, edge of the same colour.—*Quelet, t.* 8, *f.* 5. *Berk. & Br. Ann. Nat. Hist., No.* 1662.

On dung. Glamis.

The slender form figured by Quelet.

Cortinarius (Telamonia) quadricolor. *Fries Hym. Eur p.* 378.

Pileus fleshy, membranaceous, conical, then flattened, white, then yellowish; margin radiately striate; stem stuffed, then hollow,

equal, thin, elongated, violet, then whitish, ringed; gills adnate, broad, distant, serrate, purplish, then cinnamon.—*Berk. & Br. Ann. Nat. Hist., No.* 1663.

In beech woods. Coed Coch.

Cortinarius (Hydrocybe) dilutus. *Fr. Hym. Eur. p.* 389.

Pileus somewhat fleshy, convexo-plane, rather umbonate, smooth, even, opaque, tan-coloured; stem stuffed, then hollow, soft, pallid, thickened at the base; ring fibrillose; gills adnexed, emarginate, broad, crowded, pallid cinnamon.—*Berk. & Br. Ann. Nat. Hist., No.* 1664.

In moist woods. Coed Coch.

Cortinarius (Hydrocybe) erythrinus. *Fr. Hym. Eur. p.* 396.

Pileus rather fleshy, conical, then convexo-plane, becoming smooth, reddish-bay, umbo rather prominent, darker; stem stuffed, then hollow, equal, rather curved, violet upwards; gills slightly adnexed, ruther distant, ventricose, pallid cinnamon.—*Berk. & Br. Ann. Nat. Hist., No.* 1665.

In woods. Coed Coch.

Paxillus spilomæolus. *Fr. Hym. Eur. p.* 402.

Pileus spotted, and as well as the slender stem white, then yellowish; gills at length watery ferruginous, horny-grey at the base.—*Hoffm. Ic. t.* 10, *f.* 1. *Berk. & Br. Ann. Nat. Hist., No.* 1666.

Amongst fir leaves. Stoke Pogis.

"The spotted pileus and dingy spores at once distinguish it from any *Tricholomata* with which it might be confounded. The stem is sometimes incrassate at the base, sometimes quite equal."—*B. & Br.*

FUNGI EGYPTIACI.

Collecti per Dr. Georg Schweinfurth. Déterminati per F. de Thuemen.

1. **Cystopus candidus.** *Lév.*
   f. *Brassicæ nigræ.*
   Ad folia caulesque viva *Brassicæ nigræ*, Koch. Cairo, 3.77.
2. **Helminthosporium flexuosum.** *Cda.*
   In culmis subvivis nec non in spicis *Oplismeni crus galli*, Kuth., in campis. Alexandria, 11.76.
3. **Oidium Abelmoschi.** *Thuem.* nov. spec.
   O. cæspitulis late effusis, epiphyllis, arachnoideis, tenuibus, gregariis, grumulosis, albicantibus, subdetergibilibus; hyphis brevissimis e mycelio reptante erectis, solitariis, simplicibus, non septatis, tenuibus, hyalinis; sporis magnis, ovoideis, episporio tenuissimi, lævi, granulosulis, utrinque rotundatis, raro subacutatis, 24-28 mm. long, 14-18 mm. crass, hyalinis.
   In *Abelmoschi moschati*, Medic. (*Hibisci esculenti* Lin.), foliis vivis. Mansura, 7.76 (Etiam e Græcia recipi).

4 **Oidium erysiphoides.** *Fr.*
f. *Cucurbitæ maximæ.*
In *Cucurbitæ maximæ*, Duch., foliis vivis. Mansurah, 7.76.

5. **Oidium Lippiæ.** *Thuem.* nov. spec.
O. utraque paginas foliorum obducens indumento denso griseo-albicante; hyphis brevissimis, simplicibus, raro ramosis, non septatis, inæqualibus, hyalinis, tenuibus, lævibus; sporis valde variis; ellipsoideis, cum apicibus utrinque acutatis, ovoideis vel longe clavato-ovatis, uniseptatis, utrinque rotundatis, pallidissime griseis, solitariis, plerumque 4-10 mm. long, 4-7 mm. crass.
Ad folia viva *Lippiæ nodiflorœ*, A. Rich., in hortis. Gesirah pr. Cairo, 12.75.

6. **Oidium leucoconium.** *Desm.*
f. *Centifoliæ.*
Ad *Rosæ centifoliæ*, Lin., folia viva. Cairo, 12.75.

7. **Ustilago Carbo.** *Tul.*
f. *Hordei vulgaris.*
In ovariis *Hordei vulgaris*, Lin. Bulag pr. Cairo, 3.74. Vulgo "Homira."

8. **Ustilago Carbo.** *Tul.*
var. nov. *Lepturi*, *Thuem.*
U. sporis 5-7 mm. diam.
In spicis *Lepturi incurvati*, Trin. Damiette, 7.76.

9. **Ustilago Schweinfurthiana.** *Thuem.* nov. spec., in "Mycotheca Universalis," No. 726.
U. ovaria floresque toto replectens et demum minime deformans; sporis plus minusve globosis, epidermide tenui, sublævi, vix subgranulosula, fuscis, solitariis, 10-12 mm. in diam., raro etiam 8 mm. diam., occurrunt.
In spicis *Imperatæ cylindricæ*, Beauv. (*Saccharum cylindricum*, Lam.). Talcha pr. Mansurah, 7.76.

10. **Ustilago Phœnicis.** *Cda.*
In fructibus maturis *Phœnicis dactyliferæ*, Lin. Cairo, 1.76. Vulgo in Cairo, "Mohàttel"; in Mahas, "Kōk-Tussati"; in Chartum "Msōhfin."

11. **Sorosporium Ehrenbergii.** *Kuehn.*, in litt ad me.
Ustilago Reiliana, Kuehn., in Thuemen, "Mycotheca Universalis," No. 725.
S. sacculis firme membranaceis. fulvis, 8-13 mm. longis, 3-5 mm. latis; glomerulis varie magnis, aut subrotundis, ovoideis, oblongis aut varie irregularibus (glomerulis parvis rotundis diam. 37 mm., aliis 86 mm. long, 43 mm. lat., aliis 131 mm. long, 94 mm. lat.); sporis globosis, ellipticis vel polygonis, diam. medio 12·4 mm., aliis 17·2 mm., brunneis, explanate papillosis.
Supra germina *Sorghi cernui* Willd. Cairo, Damiette, 7.76.

12. **Uromyces Schanginiæ.** *Thuem.* nov. spec.
U. acervulis maximis, caulincolis, erumpentibus vel protuberantibus, confluentibus, badiis, bullas concavas formans; sporis globosis vel suboblongo-globosis, vix verruculosis, epidermide tenui,

vertice non incrassato, 24-26 mm. diam., ochraceo-fuscis; pedicellis longis, subrectis, in umbilico dilatatis, basi angustissime apicatis, 50 mm. long, superne 8-10 mm., inferne 3-4 mm. crass., hyalinis; paraphysibus nullis.

In *Schanginiæ baccatæ*, Moq. Tand. caulibus vivis. Rarissime. Damiette, 7.76.

13. **Uredo Schanginiæ.** *Thuem.* nov. spec.

U. acervulis magnis vel plerumque confluentibus, sæpe folias baccasve toto occupans, liberis, subinquinantibus, concavis, rubiginosis; sporis ovoideis vel ovato-globosis, episporio lævi, subtenui, æquali, luteo-fuscis vel dilute rhabarbarinis, intus subgrumulosis, 20-24 mm. long, 16-20 mm. crass.

Ad folia baccaque viva *Schanginiæ baccatæ*, Moq. Tand. Damiette, 7.76. (Fortasse *Uromycetis Schanginiæ*, Thuem., fungus stylosporiferus!)

14. **Uredo linearis.** *Pers.*

f. *Hordei vulgaris.*

Ad folia viva languidave *Hordei vulgaris*, Lin. Benisuef, 3.76.

15. **Phragmidium Rosarum.** *Rabh.*

f. *Centifoliæ.*

In *Rosæ centifoliæ*, Lin., foliis vivis. Cairo, 12.75.

16. **Melampsora Lini.** *Tul.*

f. *Lini usitatissimi.*

Fungus stylosporiferus (*Uredo Lini*, Dec.).

Ad folia viva *Lini usitatissimi*, Lin. Damiette, 4.76.

17. **Æcidium Cressæ.** *Dec.*

Ad *Cressæ creticæ*, Lin., folia viva. Damiette, 7.76. Thuemen, "Mycotheca Universalis," No. 823.

18. **Phyllachora Cynodontis.** *Niessl.*

In foliis culmisque vivis vel languidis *Cynodontis Dactylonis*, Lin. Abasia pr. Cairo, 4.72.

NEW BRITISH RICCIA.

By W. Joshua.

Whilst botanising at Llandyssil, Cardiganshire, during the month of May last, I discovered a curious and interesting plant, in patches two to three inches in diameter, growing in crevices of the rocks above the river Teivy. On referring it to Dr. Carrington, he pronounced it to be the *Riccia tumida*, Lindenb, "Lind. Ricciæen," p. 99, t. xvii., f. 2). It comes near *R. bifurca*, described in "Grevillea," vol. ii., p. 85, but has the peculiar ciliated frond unknown in any other British species, also the purple scales above and below.

The following rare Lichens were also found on the same rocks:—

Lecidea Salweii, Leight.
Lecidea concreta, Wahl.
Verrucaria umbrina, Whlrb.

REPRODUCTION OF THE ASCOMYCETES.

By Dr. Maxime Cornu.

(*Concluded from page* 55.)

IV.—Rôle of the Spermatia.

What, then, would be the function of the spermatia, since they serve no purpose in fecundation? We will endeavour, after what has been said above, to take account of the utility of these spores. Their immense number, very reduced size, and almost imponderable mass, ought to render them eminently suitable for the dissemination of the species which they represent. In the same manner as insects, by the diffusion of the grains of pollen, aid in the fecundation of phanerogamis, so the birds during winter serve to transport the spermatia and aid in the propagation of the *Ascomycetes*.

On the maturity of the spermogonia (which arrive very early in this state, even in the month of August), we see, under favourable conditions, long and slender tendrils oozing out, which contain, in these small, slender, and contorted cylinders, some millions of spores; the rain dissolves them, and washes them on the leaves which bestrew the ground, or are tossed about by the wind. Birds perch themselves here and there, and carry away a quantity of soil; they then perch themselves upon the trees, and are thus probably, in very many cases, together with rain and wind, the agents charged with depositing upon the branches the parasite which establishes itself there, and develops, by decomposing and assimilating the elements. This mode of transport is also applicable to the endospores and stylospores, but most likely in a more restricted manner. What is it which characterises the spermatia, such as M. Tulasne conceives them? Two properties which are not possessed by other spores: on the one part, their small size, which renders them more easy of transportation by an infinitely feeble agent, and, above all, the special fact that they do not germinate in all places, for which purpose they require some special circumstances. For endospores and stylospores moisture suffices, with a little warmth, to make them germinate, but it is probable that they do not germinate immediately that they are moistened; they may thus be carried to a great distance by the rain and wind. How many of these spores must still be lost after having germinated upon the soil, leaves, mosses, &c., under conditions unfavourable to an ulterior development.

When once the germ is developed, the spore is no more transported, except with the matrix on which it is growing; the germ filaments, which are rather strongly attached upon the slips of glass in our preparations, ought also to adhere to the roughened surfaces of the bodies upon which the spores fall. The spermatia,

on the contrary, placed upon a substance which does not suit them, remain without germinating, and wait until they are transported elsewhere. When the germination is very backward, which consists at first of an increase in diameter, they may still be swept away during a sufficiently long period, and develop themselves upon a perfectly identical substratum, upon which no spore was yet disposed.

If we examine the species which do not possess any spermatia, or at least which possess only one sort of spore, the germination of which is easy, we may, perhaps, obtain an idea of the physiological rôle of the spermatia. Among the *Pyrenomycetes* we shall find *Hypoxylon*, *Xylaria*, *Poronia*, &c., and the corresponding group of coloured *Sphæria* (*Torrubia*, *Cordyceps*) ; the Discomycetes offer us other genera, *Peziza*, *Ascobolus*, etc. All these genera are developed upon slightly compact bodies, old dead wood which is easily traversed, organisms living or diseased, dung, etc. These spores which germinate easily, in general are found singly ; it appears that this suffices, with the endospores, to assure the penetration of the species into substances which offer no resistance to their immediate development. Such is the general fact, but some exceptions may present themselves.

Without attaching more importance than is necessary to these theoretical considerations, we may with good reason be astonished at the facility with which Fungi exhibit themselves upon dead branches. It is rare to find such, which are not attacked by an *Ascomycete*, even whilst they are still attached to the tree.

The idea of a spontaneous generation ought not to present itself to the mind for a single instant. Instead of admitting the direct transport of the spores each year, we may solve some great difficulties by proposing a rather plausible explanation. The parasite deposited in the condition of spermatia most generally (or of some other sort of spore), so that it can lodge itself in a chink of the bark, germinates upon the pabulum which suits it ; it struggles against the foster plant which defends itself, and probably bars the route to the mycelium by a partitioning of its cells, as we often see examples. The Fungus at first remains confined to a small area, in which it is almost stationary—a small space of dead tissue, or the base of a leaf partially detached. When at last the branch is killed, perhaps subdued by the struggle, the parasite, installed some long time before, is finally dispersed through the mass of the wood which it seizes upon entirely. This explains the rapidity of the development of the *Ascomycetes* upon cut and fallen branches, or even those which are killed upon the tree ; each dead branch is very soon covered, at the epoch favourable to the fructification, by a species often special to itself.

Such should be the rôle of the true spermatia.

We may remark that the order of appearance is generally as follows : the spermatia are developed first of all, then the stylospores, finally the endospores. Thus, when there are none of the

conditions of humidity necessary for the development of the two last sorts of spores, the spermatia only are charged with the diffusion of the parasite.

In order to try to verify our remarks, some sowings of spermatia were made upon the species of vegetable which suited them; a comparative sowing of the other sorts of spores was also made. The branches were maintained in a moist chamber such as has been described above; with small supports formed of silver threads isolating them from the moist brick, bearing a metal ticket upon which was inscribed the date of the sowing, the designation of the species of vegetable and of the species of spores employed, tied by a thread of platinum. The spores were sown at the two extremities, and in some chinks made obliquely in cutting the wood and the bark.

A certain number of species were experimented upon, but the sowing only succeeded in two cases.

Some similar sowings were attempted simultaneously with *Cucurbitaria Laburni* upon *Cytisus Laburnum; Massaria Platani* upon the *Plane tree; Aglaospora profusa* upon *Robinia pseud-Acacia; Diplodia acerina* upon *Acer platanoides*, and other species besides.

It must be acknowledged that the development of a considerable number of different Mucedines, *Penicillium*, *Trichothecium*, *Fusisporium*, *Verticillium*, *Stysanus*, etc., etc., injured many of these cultures. Meantime, upon one of the fragments, after two months, we obtained the stylospores of *Aglaospora profusa*, upon which we had sown an excess of spermatia. The rose-coloured spores came out across the bark in long, rather recognisable tendrils. This species appears to develop itself very quickly upon the branches on which one observes it; the spermogonia are met with now and then in the bark still containing a little chlorophyll. As to the other rather doubtful example, it was a rather mixed sowing of *Cucurbitaria Laburni;* a stroma formed itself, but it had no emission of spores. Perhaps the complete development required a longer time.

These experiences, although incomplete, have their signification, but they should be repeated under more favourable conditions, such as protection from the mould, which, in laboratories, always obstructs cultures extending over long periods.

Thus, we may conclude that among the *Ascomycetes* the spermatia are not male organs, but very probably the agents for the dissemination of the species to a great distance. They are very numerous and very small. In order to attain their first development they only grow when they have arrived upon a substratum which suits them; they germinate there only, and there they remain.

It is, therefore, necessary to renounce the idea of considering the spermatia as fecundative bodies; but if their rôle is not that which had been primitively assigned to them, if the interpretation

of these small bodies ought to be modified, the researches of which they have been the object remain none the less admirable; they are recorded in a magnificent work in which the facts, without any theories, are exposed with an abundance and exactitude of detail absolutely marvellous. It assures to its author one of the most glorious places in the history of science: Polymorphism is in fact there established upon such solid bases that it is impossible for any question about it to arise hereafter; one of the more happy consequences is the simplification of a branch of science, the complete study of which was impracticable, and, so to say, impossible without it.

V.—Summary Review of the Group of Ascomycetes.

This final chapter concluding the memoir, is concerned chiefly with a summary of the points bearing on the subject of spermatia and conidia contained in Tulasne's "Carpologia." It was scarcely necessary to translate this portion, as it adds nothing to the views proposed in the previous chapters.

ON GEASTER ORIENTALIS, nov. spec.

By Professor Hazslinszky.

At the meeting of the Hungarian Scientific Academy of 3rd of December, 1877, I published a supplement to my former works about Myxogasteres and Hypodermia, as well as about some new Trichogasteres of Hungary. The most remarkable of these forms are *Battarea Stevinii*, Libosch., from the environs of Eger, in the county of Heves—a Hungarian specimen—and two Geasters of Transylvania. My works on Geaster chiefly being based upon the communications made in "Grevillea," I therefore submit these new forms to the critical examination of the *savant*. The minute form of *G. limbatus*—being of the size of a pea only—with its firmly sitting internal peridium, scarcely deserves particular notice as a miniature form.

The two Geasters of Transylvania, however, are more remarkable. They are from the environs of Kolosvár—one, *G. Rabenhorstii*, Kunze; the other, *G. orientalis*—the former being a *short-pedicellate*, or *a pedicellate G. limbatus*, with a multifid parchment-like outer peridium; the latter, a middle form between *G. Bryantii* and *G. limbatus*.

G. orientalis, *nov. spec.*—Interior peridium almost globular, dark brown, its deeply furrowed conical beak also dark brown, with a bitubular peduncle. The exterior tube bursts around like *G. Bryantii*—"Grevillea," plate xii.—after which the interior tube extends until its diameter attains the size of the interior peridium. It is constant yellowish white, pulverate. The larger portion of

this tube remains in the shape of a ring at the base of the interior peridium ; the smaller, in the shape of a vagina at the base of the peduncle, like in *G. Bryantii*. The exterior peridium is parchment-like ; it splits into 5 or 6, semi-lanceolate, acuminate lobes, bordered with a membrane, and it recurves semi-globularly. It very rarely splits irregularly as in Fig. 12. The upper (interior) surface is at first of a dirty brown-grey, like *G. rufescens*, ultimately of a bright chesnut-brown colour. The capillitium and the spores are dark brown, like *G. Rabenhorstii*. The spores are verrucose, and only 0·004 mm. in thickness.

From *G. Bryantii* it is distinguished by its large beak, its long peduncle of yellowish-white, and its parchment-like peridium; from *G. limbatus* by its double tube of the peduncle and the remanance thereof, and the grooves of the inner peridium above the ring.

PLATE 98.

Fig. 9. G. Rabenhorstii, Kunze.
„ 10. Perpendicular section of the peduncle of a short pedicellate, G. Rabenhorstii.
„ 11. Section of a G. Rabenhorstii, without a peduncle.
„ 12. G. orientalis, with a still shorter peduncle, shortly after the bursting of the exterior tube of the peduncle. The drawing has been taken of a specimen dried horizontally.
„ 13. The vertical section of the peduncle of the same.
„ 14. G. orientalis in its full development.
„ 15. Vertical section of peduncle of the same.

A NEW LICHEN.

By Professor Hazslinszky.

Belonia herculana, *nov. spec.*—Thallus effusus nitidulus subcartilagineus, verruculoso-rugosus, lutescenti-cinereus; protothallo subindistincto concolore. Apothecia in verrucis, thalli hemisphæricis, subglobosa, ostiolo rotundo, depresso, atro. Asci longissimi, polyspori, anguste fusiformes, utrinque acuti, in basim filiformem producti, 0·150-0·180 mm. longi et 0·010-0·014 crassi. Sporæ hyalinæ, aciculares, fragiles, utrinque acutæ, polyseptatæ, articulis diametro æqualibus, 0·100-0·140 mm. longæ et 0·002-0·003 mm. crassæ, hyalinæ, in ascis parum contortæ, egrassæ, rectæ vel parum curvatæ. Paraphyses copiosæ simplices flexiles, hyalinæ apice incrassato, rotundato.

In cortice fagorum ad thermas Herculis in Hungaria legerunt V. Borbas et H. Loyka.

Segestrellam in speciminibus ab utroque supra laudato botanico mihi submissis, observare mihi non licuit.

Beloniam novi sensu Körberiano nec Nylanderiano.

FUNGI EXSICCATI.

We have received Rabenhorst's "Fungi Europæi," Cent. xxiv., and are glad to notice that it maintains its position by the publication of interesting and valuable species. Notwithstanding all the care which the energetic editor bestows upon his work, errors will sometimes creep in unawares, and we note two or three numbers in the present century which require a passing observation. No. 2310, under the name of *Rhytisma Lagerstrœmiæ*, although sterile, and hence nothing can be affirmed of it with certainty, does not appear to differ from *Rhytisma Pongamiæ*, B. & Br., from Ceylon. No. 2311, *Peziza rufescens* is already occupied, so that this name will have to give place to *Peziza Schroteri*. No. 2314, *Peziza vinacea*, Rabh., offers no features distinct from those of *Peziza subhirsuta*. No. 2315, *Ombrophila Kriegeriana*, is a very interesting species, and is placed in the genus to which it has the closest affinity. *Peziza bulgarioides*, Rabh., has a very similar substance, and is doubtless congeneric. No. 2330, *Pleospora Meliloti*, appears to be distinct from *Pleospora Niessleana*, Kze., which occurs also on *Melilotus alba*. No. 2336, *Sphœria Bambusæ* must certainly be a *Dothidea*. No. 2338, *Sphœria Pandani* is a curious species from India. The brown sporidia are rough when mature, which is not indicated in the figure. It is the custom with some mycologists to institute a new genus for every form of sporidia. What an admirable chance of tacking his name to a new genus the editor has in this instance lost! No. 2341, *Sphœrella Bœhmeriæ*, we find nothing but a *Phoma*. No. 2355, *Coniothyrium globuliferum*, in our copy, is a decided *Dothidea* in good fruit, which does not appear to differ at all from our specimens of *Dothidea demersa*, Cda. No. 2372, *Uromyces Mucunæ*, is the same as we have under the manuscript name of *Pileolaria asperula*, and it appears to us to belong to that genus. No. 2375, *Uredo Tephrosiæ* is a *Trichobasis*. It would have been better had the difference been indicated between this and *Trichobasis fallens*, Desm.

Thumen's "Mycotheca Universalis," Cent. xi., is also to hand, and if more experienced editors do not escape error, this one must not be disappointed to find two or three points open to criticism. No. 813, *Peziza capitata*, is no other than *Peziza echinulata*, Awd. No. 846 is probably *Microsphœria Hedwigii*, but we have not examined the small specimen. No. 865 is too near European Quercicolous species of *Diaporthe* for any distinction to be indicated. No. 888 certainly cannot be a *Sporidesmium* according to the accepted character of the genus. *Apropos* of this, the genus *Rœsleria*, described in the same memoir with the foregoing species, is clearly untenable, since its type is a Lichen, being a well-known species of *Coniocybe*.

NEW BRITISH LICHENS.

Communicated by The Rev. J. M. Crombie, F.L.S.

The following *new species*—all of which, with a single exception, have been detected in N.W. Ireland—have recently been recorded by Dr. Nylander, in the "Flora," 1877, No. 29, pp. 457-463, and No. 36, pp. 562-568:—

1. **Lecanora refellens.** *Nyl.*—Thallus greyish, thin, continuous, unequal, minutely greenish-sorediate; apothecia pale-reddish, plane, small, subbiatorine, the thalline margin thin, subpulverulent, or at length evanescent; spores 8 næ, placodine, variable, 0,009-11 mm. long, 0,005-7 mm. thick, epithecium yellowish (K—), paraphyses thickish; hymenal gelatine, and especially the thecæ, intensely bluish with iodine.

On the bark of poplars, near Kylemore, Galway (Larbalestier).

A peculiar species, externally resembling *L. Sambuci.*

2. **Lecanora glaucocarnea.** *Nyl.*—Sub-similar to *L. Bœomma*, of which it may be a biatorine sub-species, but differs in the thallus (K + yellow), being greenish-glaucous, rugulose or subleprose, rimoso-diffract, determinate; apothecia pale flesh-coloured or livid, biatorine, the margin paler at length explanate.

On shady schistose rocks, Kylemore, Galway (Larbalestier).

3. **Lecidea albidocarnea.** *Nyl.*—Thallus whitish or whitish-glaucous, thin, unequal, rimose, or thinner and scarcely rimose; apothecia pale flesh-coloured, superficial, the margin indistinct or evanescent, plane or somewhat convex, small, internally corneous-white; spores fusiformi-ellipsoid or fusiformi-oblong, 1-3 septate, 0,010-18 mm. long, 0,0035-45 mm. thick; paraphyses submoderate; epithecium and hypothecium colourless; hymeneal gelatine, at first pale bluish and then wine-red with iodine.

On schistose rocks, near Kylemore (Larbalestier).

Belongs to the section of *L. sphæroides.*

4. **Lecidea discolorella.** *Nyl.*—Sub-similar to *L. leucophæa*, Flk., but with the thallus whitish, thin, areolato-rimose (K + yellow, K[Ca cl.] + red); spores 0,012-16 mm. long, 0,006-7 mm. thick; epithecium in thin section, reddish; spermatia arcuate, about 0,020 mm. long, 0,0005 mm. thick.

On maritime rocks, near Penzance, Cornwall (Curnow).

It may be rather a *Lecanora* than a *Biatora.*

5. **Lecidea Henrica.** *Larb.*—Thallus whitish, smooth, thin, rimose and rimulose (K + yellowish); apothecia pale yellow-flesh coloured, superficial, small, somewhat plane and obtusely or obsoletely margined, or somewhat convex and immarginate; spores 8 næ, ellipsoid or fusiformi-ellipsoid, simple, 0,015-20 mm. long, 0,006-7 mm. thick; paraphyses moderate, subarticulated; hypo-

thecium colourless; hymeneal gelatine bluish, and then somewhat yellowish (the thecæ violet-tawny coloured) with iodine; spermatia arcuate, 0,018-22 mm. long, 0,0005 mm. thick.

On schistose rocks by a rivulet, near Kylemore (Larbalestier).

Though apparently belonging to the section of *L. lævigata*, it differs in the form of the spermatia.

6. **Lecidea indigula.** *Nyl.*—Thallus scarcely any visible; apothecia blackish, somewhat prominent, plane, margined, internally concolorous; spores 8 næ, colourless, ellipsoid, simple, 0,013-16 mm., 0,006-7 mm.; paraphyses slender; epithecium colourless; hypothecium reddish, the upper subhymeneal portion thick, blackish; hymeneal gelatine at first pale bluish and then wine-red with iodine.

On schistose stones of a wall, near Kylemore (Larbalestier).

Belongs to the section of *L. sanguineoatra*.

7. **Lecidea albovirella.** *Nyl.*—Allied to *L. chlorotropa*, Nyl. (*vid.* "Flora," 1877, p. 567), but with the apothecia white-flesh coloured, immarginate, when moist hyaline; thallus bright green, thin, subleprose, continuous; hymeneal gelatine, bluish, and the thecæ violet-red with iodine.

On shady schistose rocks, Kylemore (Larbalestier).

8. **Lecidea chlorotopoides.** *Nyl.*—Similar to *L, albovirella*, but with the apothecia reddish-testaceous, the margin usually dark (perithecium in thin section, violet, as also sometimes the hypothecium); spores bacillar, simple, or 1-3 septate, 0,014-20 mm. long, 0,002-3 mm. thick; hymeneal gelatine bluish, then wine-coloured or wine-red with iodine.

On moist calcareous rocks, near Kylemore (Larbalestier).

9. **Lecidea herbidula.** *Nyl.*—Thallus yellow-greenish, opaque, subleprose, thin, rimulose or rimuloso-diffract; apothecia dark red-testaceous or testaceo-reddish, somewhat convex, small, internally pale; spores 8 næ, colourless, fusiform, 1-3 septate, 0,011-18 mm. long, 0,0025 mm. thick; paraphyses not very well discrete; epithecium and hypothecium colourless; hymeneal gelatine bluish.

On schistose rocks, Kylemore (Larbalestier).

The thallus is entirely peculiar, and if proper would be referable to a proper genus, for it constitutes *Gongrosira*, Ktz.

10. **Lecidea chloroticula.** *Nyl.*—Thallus greenish, very thin, subleprose; apothecia whitish-flesh coloured, plane, very minute, the margin whitish; spores 8 næ, acicular, thin, 0,020-35 mm. long, 0,001 mm. thick, substraight; paraphyses not very well discrete; hypothecium colourless; hymeneal gelatine wine-red with iodine; spermatia arcuate, 0,030-40 mm. long, 0,0008 mm. thick.

On schistose rocks of a stream, near Kylemore (Larbalestier).

11. **Lecidea subimbricata.** *Nyl.*—Thallus dark greyish, squamulose, squamules firm, subimbricated, subcrenate, concrescent; apothecia black, plane, margined, moderate, internally concolorous;

spores 8 næ, colourless, oblong, 3-septate, 0,013-16 mm. long, 0,0035-0,0040 mm. thick; epithecium blackish; paraphyses discrete, nearly moderate; hypothecium with the perithecium rubricose; hymeneal gelatine bluish with iodine.

On limestone rocks, near Kylemore (Larbalestier).

Allied to *L squamulosa*.

12. **Lecidea biloculata.** *Nyl.*—Thallus macular, diffuse, silvery-white; apothecia black, adnate, small, margined, internally dark in section; spores 8 næ, brown, ellipsoideo-fusiform, bilocular (placodiomorphous), 0,015-18 mm. long, 0,008 mm. thick; paraphyses sub-moderate, soft, the apices clavate, brown; hypothecium brown; hymenial gelatine deep blue with iodine.

On the bark of holly, near Kylemore (Larbalestier).

13. **Lectdea continuior.** *Nyl.*—Similar to *L. latypea* (Ach.), but differing in the thallus, being somewhat plane, rimoso-areolate, and with *Ca cl* + orange.

On schistose rocks, Kylemore (Larbalestier).

var. **subviridans.** *Nyl.*—Thallus yellow, plane, thin, areolato-diffract, sorediose (*Ca cl* + orange); perithecium blackish; hypothecium brown.

On walls, Kylemore, Galway (Larbalestier).

14. **Lecidea chloroscotina.** *Nyl.*—Thallus greyish-green, thin, rugulose, rimoso-diffract; apothecia black, somewhat plane or convex, moderate, subrugulose, concolorous within; spores 8 næ, colourless, oblongo-fusiform, simple, 0,008-0,014 mm. long, 0,003-4 mm. thick; paraphyses moderate, blackish and clavate at the apices; hypothecium black, bluish above (K somewhat violet); hymeneal gelatine bluish and then tawny-reddish; spermatia ellipsoid, 0,002 mm. long, 0,001 mm. thick.

On siliceous rocks, Kylemore, Galway (Larbalestier).

Allied to *L. chalybeia*, Borr., of which, perhaps, it is a subspecies, differing chiefly in the hypothecium and spores.

15. **Lecidea particularis.** *Nyl.*—Thallus none; apothecia black, plane, margined, moderate, internally subconcolorous; spores 8 næ, blackish-brown, ellipsoid, 1-septate, 0,008-0,010 mm. long, 0,0035-45 mm. thick; paraphyses slender, not very distinct; hypothecium and perithecium blackish; hymeneal gelatine deep blue with iodine.

Parasitic, on the thallus of *Bœomyces rufus*, Kylemore, Galway (Larbalestier).

Belongs to the section of *L. parasitica*, and readily distinguished by its 1-septate spores.

16. **Opegrapha atrula.** *Nyl.*—Thallus scarcely any; apothecia black, oblong, short simple; epithecium rimiform; spores 8 næ, colourless, fusiformi-oblong, 3 septate, about 0,016 mm. long, 0,0035 mm. thick.

On dry shady schistose rocks, Kylemore (Larbalestier).

Allied to *O. atra*.

17. **Arthonia paralia.** *Nyl.*—Thallus greyish-brown, thin, continuous, rimose, subsmooth (internally with simple eugonidia); apothecia brown, rotundate, small, somewhat plane, colourless within; spores 8 næ, colourless, oviform (or subconstricted in the middle), 3-4 septate, 0,018-22 mm. long, 0,007 mm. thick; epithecium reddish; hypothecium colourless; hymeneal gelatine wine-red (also the spores) with iodine.

On schistose rocks near the sea, Kylemore (Larbalestier).

18. **Graphis inustula.** *Nyl.*—Thallus milky-white, subrimulose (K + yellowish); apothecia in form as in *Gr. dendritica* less evolute, the lirellæ cæsio-pruinose, plane, 2-3 cuspidate; spores (as in *Gr. sophistica*) murali-divided, 0,038-48 mm. long, 0,015-20 mm. thick (bluish with iodine).

On the bark of holly, Westport, Mayo (Larbalestier).

Belongs to the section of *Gr. anguina*, Mont.

19. **Verrucaria peloclita.** *Nyl.*—Thallus griseous or greyish-brown, thin, smooth, areolato-rimulose; hypothallus none visible; apothecia minute, with the pyrenium black, and above slightly prominent, beneath colourless, the ostiole somewhat impressed; spores 8 næ, small, oblong, simple, 0,011-15 mm. long, 0,005-6 mm. thick.

On calcareous rocks, Kylemore (Larbalestier).

Allied to *V. truncatula*, but with thallus and spores somewhat different.

20. **Verrucaria devergescens.** *Nyl.*—Subsimilar to *V. latebrosa*, Krb., but with spores lineari-oblong, 0,019-29 mm. long, 0,007-0,010 mm. thick.

On micaceous rocks, Kylemore (Larbalestier).

Allied to *V. æthiobola*.

21. **Verrucaria humicolor.** *Nyl.*—Thallus darkish-umbrine, opaque, very thin, continuous (gonidia chroolepoid); apothecia usually crowded, globoso-prominulent, somewhat dark or umbrine-brown (the pyrenium entire, yellowish-brown in thin section, or with K orange-red), internally white; spores 8 næ, fusiform, 3-septate, 0,024-33 mm. long, 0,004-5 mm. thick.

On the ground in heaths, near Kylemore (Larbalestier).

22. **Verrucaria subviridicans.** *Nyl.*—Subsimilar to *V. inumbrata*, Nyl., of which it may be a subspecies with the thallus (gonimiose), whitish-green, thin, rugulose, continuous; spores 0,046-70 mm. long, 0,024-30 mm. thick.

On sandstone, in streams, near Kylemore (Larbalestier).

23. **Verrucaria insiliens.** *Larb.*—Thallus greyish, thin, rimoso-diffract; apothecia enclosed in monohymenean pertusarioid, convexo-prominent thalline verrucæ, colourless, externally above brown and somewhat prominent, naked around the pale punctiform epithecium; spores 8 næ, colourless, fusiform, 5-7 septate, 0,050-67 mm. long, 0,011-14 mm. thick; hymeneal gelatine not tinged with iodine.

On sandstone in a cave, near Kylemore (Larbalestier).
Belongs to the section of *V. chlorotica*.

In addition to the above, a few new British varieties are also described by Nylander, pp. 463, 567:—

Lecidea inundata * allecta. *Nyl.*—Apothecia white flesh-coloured; spores acicular, thin, 0,056-70 mm. long, 0,001 mm. thick.
On siliceous rocks, near Kylemore (Larbalestier).

Lecidea clavulifera f. **subviridicans.** *Nyl.*—Thallus sub-greenish.
On rocks, Kylemore (Larbalestier).
Belongs to the section of *L. lucida*.

Lecidea spodoplaca. *Nyl.* (= *L. baliola*, Nyl. typica).—Thallus greyish, thin, rimoso-diffract; apothecia small, prominent.
On moist siliceous rocks, Kylemore (Larbalesti er).
Belongs to the section of *L. lenticularis*.

Opegrapha diaphora var. **herbicola.** *Nyl.*—Apothecia more slender; spores somewhat smaller.
On the stems of *Rubus fruticosus* and *Pteris aquilina*, Kylemore (Larbalestier).
Analogous to *O. herbarum*, Mnt., which does not differ specifically from *O. atrorimalis*, Nyl.

CATALOGUE OF THE DIATOMACEÆ.*

This Catalogue is thus described by the author:—"The following Catalogue, made for private use, contains the references to the literature of the Diatomaceæ published prior to May, 1877.

"At the suggestion of Prof. Hamilton L. Smith, of Hobart College, fifty copies have been reproduced by the Edison electric pen process, for gratuitous distribution among those specially interested in this branch of Natural History, and I trust the errors or omissions will not be found sufficient to impair the value of the Catalogue. During the entire time spent upon this work, the kind assistance rendered by my brother, Dr. John Habirshaw, has greatly added to its early completion."

The fifty copies have been distributed as follows:—England, 13; Germany, 14; France and Belgium, 4; Sweden, 2; S. America, 1, and the remainder in N. America.

In a private communication Mr. Habirshaw remarks—"I trust that the book will meet your approval, and be of usefulness as a 'time-saver.' The matter of synonyms I am not accountable for, they being transcripts and not originals; it has been my intention, through the whole book, to be nothing more than the 'servile copyist."

* By Frederic Habirshaw, F.R.M.S., New York.

On the principle that "we should not look a gift horse in the mouth," we ought not to criticise the above work, but as the author wishes to be informed of any errors or omissions, we shall take the liberty of doing so in reviewing it.

A Catalogue of the Diatomaceæ has long been a *desideratum* with the student of these organisms, and Mr. Habirshaw has done good service in preparing this list. I need not say that it is imperfect; the literature of the Diatomaceæ is so scattered, that it would have been almost impossible to have produced a Catalogue free from errors or omissions. The author gives a list of one hundred works he has consulted (consisting of over 150 vols.), commencing with Müller's "Vermuim terrestium," (1773).

Professor H. L. Smith in his conspectus gives a list of 302 genera (Lens, vol. i, pp. 154-157).

Mr. Habirshaw's Catalogue contains 330 generic names, a large number in both lists being synonyms. (Professor Smith deletes above two hundred genera.)

The following is a list of genera omitted in Smith's list:—

Actinogramma.	Lauderia.	Porostaurus.
Actiniscus.	Lioneis.	Ralfsia.
Amphicampa (Rabenhorst).	Libellus.	Rhabdium.
	Mesasterias.	Scytonema.
Ardessonia.	Mölleria.	Stoschia.
Aristella.	Mainema.	Symbelpharis.
Auricula.	Neidium.	Temachium.
Brebissonia.	Perrya.	Toxosira.
Dichanienois.	Plagiotropis.	Trigonum.
Hyalodicta.	Podiscus.	Trochiscia.
Isthmiella.	Ponticella.	

Genera omitted by Mr. Habershaw:—

*Amphitropis.	Echinaria.	Syndetocystis.
*Anomeoneis.	Hystrix.	*Suriraya.
*Dictyocha.	*Mesocena.	Syrinx.

(* Omitted in both lists).

The genus Amphicampa (Rabenhorst) was constituted by Rabenhorst to contain certain species of Amphiprora; he was apparently unaware that Ehrenberg has previously published a genus Amphicampa. Rabenhorst afterwards referred his genus to Plagiotropis. The genera Actiniscus, Dictyocha aud Mesocena are now generally acknowledged to be not Diatomaceous, although considered so by early observers. Thautonema should be Thaumatonema. The number of specific names in the Catalogue is 6,186. Of the genus Navicula 830 names are given, of Actinocyclus 155 (now reduced to six or seven); of Eunotia, 173; Triceratium, 218; Surirella, 221.

We give the following specimen of the arrangement in the Catalogue:—

Navicula rhomboides. E. Amer., 3.1, f. 15; K. B., p. 94, 28, f. 45, 30 f. 44.; K. S. A., p. 73; Rab. S. D., p. 38, f. 15; S. B. D., Vol. i., p. 46, f. 129; Vol. ii., p. 90; Prat., p. 903, M.S., 1861,

p. 231 ; Grun., 1860, p. 549, 3 f. 14; 1865, p. 12, 2 f. 141 ; Schum., H. T., p. 68, 3 f. 41 ; Rab., E. D., 171 ; Donk, B. D. p. 42 6, f. 41; Lewis, W. M. D., p. 10, 2 f. 10, 11 ; N. & R. Sp. (sporangium), p. 6, 3 f. 3 ; AN. H., 1865, 4 f. 11-16 ; O'Meara, J. D , p. 374; H. L. Sm. in M. M. I., 1876, p. 279 ; Moll, T. P., 3, 4, 29 (*Frustulia saxonica & torfacea, N. crassinervia, Vanheneckia crassinervia*).

F. Kitton.

Norwich.

SOME INDIAN FUNGI.

By M. C. Cooke.

The following have recently been received, and are recorded as additions to the Indian Flora :—

Peridermium acicolum. *Link.* ("Indian Forester," iii., p. 91.)

On *Abies Smithiana*, Dalhousie, 7,000-7,500 feet, June, 1877 (Baden Powell) ; Mashobra, Simla, 7,000 feet (J. S. Gamble).

Peridermium orientalis. *Cooke.* ("Indian Forester," iii., 91.)

Spores globose, ·02-·022 mm.

On leaves of *Pinus longifolia*, Annandale, Simla, 6,000 feet; on *Pinus excelsa*, Mashobra, Simla, 7,000 feet (Mr. J. S. Gamble).

Peridermium Thomsoni. *Berk.* ("Indian Forester," iii. 94.)

On *Abies Smithiana*, Mahasu, Simla, 8,000 feet (Mr. J. S. Gamble).

Æcidium Berberidis. *Pers.*

On leaves of *Berberis*, Simla (Mr. J. S. Gamble).

Phragmidium mucronatum. *Fr.*

On leaves of *Rosa*, Kalatop Forest, Chamba, 7,000 feet (Mr. Baden Powell).

Lecythea salicina. *Ler.*

On leaves of *Salix elegans*, Jakko, Simla (4618c), 8,000 feet (Mr. J. S. Gamble); Dalhousie (Mr. Baden Powell).

Erysiphe Martii. *Lev.*

On leaves of *Populus ciliata* (5710), Simla (Mr. J. S. Gamble).

Polystigma fulvum. *DC.*

On leaves of *Prunus Padus* (5429), Chor., Jubal State, N.W. Himalayas, 18,000 feet (Mr. J. S. Gamble).

Erineum sp., in reality only diseased tissue, on leaves of *Pyrus ursina* (5704), Chor., Jubal (Mr. J. S. Gamble).

Diplodia embryopteris. n. s.

Gregaria. Perithecia atris, erumpentibus, poro pertusis ; sporis ellipticis, uniseptatis, brunneis (nec constrictis) ·025-·028 × ·011 mm.

On gab fruit (*Embryopteris glutinifera*), Midnapore.

Sphærella Bhauria. n. s.

Gregaria, hypophylla. Peritheciis minutis, punctiformibus, atro-brunneis, obtusis, poro pertusis; ascis cylindraceis; sporidiis ovalibus uniseptatis, leniter constrictis, hyalinis, ·007 × ·003 mm., cellulis nucleatis.

On leaves of "Bhauri" (*Symplocos spicata*), in large patches, sometimes occupying the greatest portion of the surface of the leaf. Dinagepore.

Micropeltis conferta. n. s.

Peritheciis conicis, dimidiatis, atris, nitidis, in maculis minimis confertis; ascis clavatis; sporidiis ellipticis vel clavatis, brunneis, ·012-·014 × ·005 mm.

On upper surface of leaves of "Bhauri" (*Symplocos spicata*), Dinagepore.

Micropeltis orbicularis. n. s.

Peritheciis dimidiatis, convexulis, atris, nitidis, in maculis orbicularibus circinatis; ascis cylindraceis; sporidiis ellipticis, hyalinis (immaturis).

On upper surface of leaves of *Symplocos spicata*. Dinagepore.

Perithecia larger than in *M. conferta*, not so much crowded, forming larger spots, each perithecium surrounded by a discoloured ring. Fructification evidently immature. In both the perithecia are scutate, attached by the margin.

Basidiella. *Cooke.*

Hyphæ clavatæ, fasciculatæ, superne spiculis brevis adspersæ; sporis subglobosis, asperulis, in massâ conglobatis.

The clavate or pyriform flocci are short, and collected in bundles; around the upper portion the rough globose spores, attached to short spicules, form a globose common head. It is a very curious and distinct genus, and its nearest ally perhaps is *Rhinotrichum*.

Basidiella sphærocarpa. n. s.

Effusa, fuliginosa. Hyphæ breviter clavatæ, fasciculatæ; sporis globosis, asperulis, fuligineis, ·004 mm.

On decayed roots of *Gloriosa superba*, Madras.

Aspergillus phæocephala. *DR & M.* (*Sterigmatocystis phæocephala* Sacc.)

On roots of *Asparagus racemosus*, Madras.

ERRATA.

In the description of *Polyactis infestans* at page 77, the following corrections should be made:—

Line 4	"adiloso"	read	"nidulante."
„ 13	"exugit"	„	"exsugit."
„ 13	"caulex"	„	"caules."
„ 15	"pro pigoo"	„	"propinquo."
„ 18	"capitulis"	„	"sporis."
„ 24	"asplori"	„	"aspori."

SIMBLUM PILIDIATUM, sp. nova.

By Dr. A. Ernst.

Peridium subglobosum, irregulariter circumscissum et apice in lobulos 3 inæquales partitum, album, pedunculum non arcte includens, basi radicibus paucis terræ adharens; pedunculus cilindricus longitrorsum rimosus albus utrinque attenuatus; receptaculum forma segmenti sphærici quod "calotte" vocant, pedunculo paulo crassius, profunde reticulatum, fasciis transverse striatis et margine denticulatis lateritiis; massa sporigera maculas implente atroverescente sporulas non visas.

Habitat adterram; exemplar nursum legi die 18 mensis Nov., 1877, in horto "El Paraiso" dicto, ad truncum et sub umbra Psidii Guavæ.

Peridium 15 mm. altum, totidem crassum; pedunculus 5 centim. altus, diam. centimetrali; receptaculum 15 mm. latum et 8 altum. Odor fœtidissimus!

Caracas.

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ELIAS MAGNUS FRIES,

Died at Upsal, 8th Feb., 1878,

In his 84th Year of Age.

Grevillea,

A QUARTERLY RECORD OF CRYPTOGAMIC BOTANY AND ITS LITERATURE.

NEW BRITISH FUNGI.

By M. C. Cooke.

(*Continued from pp.* 102.)

Hygrophorus pulverulentus. *B. & Br.*

Small. Pileus viscid, pulvinate, white; margin involute, tomentose; stem nearly equal, stuffed, or attenuated at the base, powdered with rosy meal; gills thick, decurrent, with an obtuse margin, whitish.—*B. & Br. Ann. Nat. Hist., No.* 1667.

Amongst pine leaves.

Pileus one-third inch across. Stem $\frac{3}{4}$ inch high, 1-2 lines thick.

Hygrophorus nemoreus. *Fr. Hym. Eur. p.* 413.

Pileus equally fleshy, convex, then expanded, gibbous, at length depressed, nearly smooth, orange ; stem stuffed, firm, squamulose, fibrously striate, attenuated at the base ; gills decurrent, thick, distant, of the same colour.—*B. & Br. Ann. Nat. Hist.*, 1878, *p.* 22.

In woods.

Hygrophorus cinereus. *Fr. Atl. Svam. t.* 30.

Pileus thinner than in *H. pratensis*, and as well as the gills cinereous; stem white.—*B. & Br. Ann. Nat. Hist., No.* 1669.

In mossy places.

Hygrophorus subradiatus. *Fr. Hym. Eur. p.* 416.

Pileus rather membranaceous, radiato-striate; disc somewhat fleshy, and umbonate, tawny ; stem hollow, equal, smooth, pallid, white at the base; gills plane, adnate, with a long decurrent tooth, ventricose, thin, distant, white.—*B. & Br. Ann. Nat. Hist., No.* 1670.

On heathy ground.

Pileus whitish, livid, or livid-reddish.

Hygrophorus glauconitens. *Fr. Hym. Eur. p.* 421.

Pileus fibrous, olivaceous, black or sooty, becoming paler ; stem equal, shining, gills becoming glaucous.—*Batsch. f.* 192. *B. & Br. Ann. Nat. Hist., No.* 1671.

In woody pastures.

Lactarius vietus. *Fr. Hym. Eur. p.* 432.

Pileus fleshy, thin, at first rather umbonate, viscid, then flattened, umbilicate, even, without zones, silky when dry, becoming pale; stem stuffed, then hollow, fragile, livid; gills somewhat decurrent, thin, whitish; milk whitish, then grey, slowly acrid.—*B. & Br. Ann. Nat. Hist., No.* 1672.

In woods.

Lactarius obliquus. *Fr. Hym. Eur. p.* 438.

Yellowish-white; stem somewhat excentric, curved, milk white.

On banks by the roadside.

The specimens, collected at Dinmore during the excursion of the Woolhope Club in 1876, are referred with some hesitation to this species. The pileus was pallid, with no tinge of yellow.

Lactarius Terrei. *B. & Br.*

Cæspitose. Pileus corrugated, depressed, bay; stem thickened at the base, clad with orange down, hollow; gills decurrent, pallid, with a sweet odour.—*B. & Br. Ann. Nat. Hist., No.* 1673.

In woods.

Pileus $\frac{1}{2}$ inch across. Stem $\frac{3}{4}$-1 inch high, 2 lines thick. Allied to *L. subdulcis.*

Russula semicrema. *Fr. Ep. p.* 350.

Pileus equally fleshy, firm, polished, white, unchangeable; margin involute, smooth; stem solid, stout, white, becoming blackish; gills decurrent, thin, crowded, white.—*B. & Br. Ann. Nat. Hist., No.* 1674.

Amongst leaves.

Stem short and thick, turning blackish when broken.

Russula xerampelina. *Schæff. t.* 214.

Mild; pileus fleshy, compact, convexo plane and depressed, dry, opaque, even and cracked; margin straight, even; flesh compact, white becoming yellowish; stem stout, firm, clavate, even, white or reddish, at length spongy; gills adnexed, rather crowded, forked behind, white, then clay-coloured.—*B. & Br. Ann. Nat. Hist., No.* 1675. *Fr. Hym. Eur. p.* 445.

In pine woods.

Russula consobrina. *Fr. Hym. Eur. p.* 447.

Very acrid. Pileus fleshy, rather fragile, expanded or depressed, flesh white, cinereous beneath the thick viscid pellicle; margin membranaceous, straight, even; stem stuffed, firm, white, becoming cinereous; gills fixed, crowded, white, with many shorter and forked.—*B. & Br. Ann. Nat. Hist., No.* 1676.

In pine woods. Glamis, N.B.

Marasmius scorteus. *Fr. Hym. Eur. p.* 668.

Mild. Pileus rather fleshy, convex then plane, obtuse, without striæ, at length rugose, becoming pallid; stem slightly hollow, equal, tough, white, becoming brownish, slightly pruinose at the apex; gills rounded, free, broad, distant, white.—*B. & Br. Ann. Nat. Hist., No.* 1677.

In woods. Perthshire.

Marasmius torquescens. *Quelet t.* 23 *f.* 3.

Pileus membranaceous, thin, convex plane, rugose, striate, pallid; disc brownish; stem rather filiform, delicately velvety, brown, smooth above and whitish; gills free, thin, ventricose, distant, white or becoming reddish.—*B. & Br. Ann. Nat. Hist., No.* 1678. *Fr. Hym. Eur. p.* 471.

Amongst oak leaves. Glamis.

Marasmius languidus. *Fr. Hym Eur., p.* 473.

Inodorous, whitish, pallid; pileus fleshy, convex, gibbous or umblicate, flocculose, rugose, sulcate; stem stuffed, thickened above, pallid, naked, brownish below; gills adnate, then decurrent, distant, narrow, connected by veins.—*B. & Br. Ann. Nat. Hist., No.* 1679. *Ag. grossulus, Pers. M. E., t.* 26, *f.* 6.

On dead leaves.

Panus patellaris. *Fr. Ep., p.* 400.

Resupinate, coriaceous, flattened or cup shaped, orbicular, externally pallid, clad with furfuraceous down; margin involute, gills concurrent, dark ochraceous.—*Fr. Hym. Eur., p.* 490. *B. & Br. Ann. Nat. Hist., No.* 1680.

On cherry. Forres, N.B.

Merulius læticolor. *B. & Br.*

Wholly effused, adnate, bright orange; margin tomentose, white; hymenium even, then plicate-rugose; folds distant.—*B. & Br. Ann. Nat. Hist., No.* 1681.

On sawdust and leaves.

Polyporus leucomelas. *Fr. Syst. Myc.* 1, *p.* 346.

Pileus and stem here and there changing to black; flesh soft, marbled, pinkish when exposed to the air; pores white, soon changing colour, unequal, slightly sinuated, shortly decurrent. Taste pleasant, slightly astringent.—*B. & Br. Ann. Nat. Hist., No.* 1682.

Aviemore, N.B.

A curious esculent species, which attains a considerable size.

Porothelium Stevensoni. *B. & Br.*

Substance rather thick, gelatinous, margin somewhat tow-like; warts distinct, interstices quite smooth, bearing at the apex a limped diaphanous yellow globule —*B. & Br. Ann. Nat. Hist., No.* 1683.

On naked wood. Glamis, N.B.

Porothelium Keithii. *B. & Br.*

Narrowly adnate, somewhat umber coloured; circumference very thin, subgelatinous, warts short, then collapsed, gelatinous in the centre.—*B. & Br. Ann. Nat. Hist., No.* 1684.

On branches. Forres, N.B.

Porothelium confusum. *B. & Br.*

Narrowly adnate, pallid; margin very thin, arachnoid; substance at first floccose, pulverulent, warts small.—*B. & Br. Ann. Nat. Hist., No.* 1685.

On branches.

Hydnum (Resupinatum) limonicolor. *B. & Br.*

Adnate, bright lemon-yellow, spines crowded, acute, short; mycelium white, sparing or obsolete.—*B. & Br. Ann. Nat. Hist., No.* 1686.

On stone amongst pine leaves. Glamis.

The mycelium, when present, is distributed amongst the decayed pine leaves.

Hydnum (Resupinatum) multiforme. *B. & Br.*

Ochrey white, at first even, resembling a *Corticium*, then here and there fertile; spines very acute, crowded, becoming pallid and fimbriate; texture floccose-mealy.—*B. & Br. Ann. Nat. Hist., No.* 1687.

Glamis.

Very variable, sometimes almost towy, with the margin inflexed.

Hydnum sordidum. *Weinm. Fr. Hym. Eur., pp.* 614.

Broadly effused, thin; soon separating, somewhat gelatinous, dingy yellowish, circumference gyrose, sulphureous; spines much crowded, compressed, incised, rather acute.—*B. &. Br. Ann. Nat. Hist., No.* 1686.

On rotten pine wood.

Hydnum nodulosum. *Fr. Hym. Eur., p.* 616.

Broadly effused, crustaceous, adnate, smooth, whitish, even, and then nodulose; spines elongated, in part even, depressed, and adnate; on the lower side free and pendulous.—*B. & Br. Ann. Nat. Hist., No.* 1689.

On fir stumps. Glamis.

Grandinia crustosa. *Fr. var.* **lignorum.** *Fr. Hym. Eur., p.* 627.

Often yellowish, granules unequal, excavated at the apex.—*B. & Br. Ann. Nat. Hist., No.* 1690.

On fir. Glamis.

Grandinia mucida. *Fr. Hym. Eur., p.* 626.

Between waxy and gelatinous, effused, subinnate, gilvous; margin determinate, somewhat radiating; hymenium contiguous; granules crowded, large, unequal, hemispherical, soft.—*B. &. Br. Ann. Nat. Hist., No.* 1691.

On birch. Glamis.

Cladoderris minima. *B. & Br.*

White, flabelliform, springing from a stem-like base, resupinate; pileus tomentose; hymenium of radiating branched ribs.—*B. & Br. Ann. Nat. Hist., No.* 1692.

On birch. Glamis.

Thelephora crassa. *Lev. Ann. Sc. Nat.* 1844, *p.* 209.

Pileus resupinate, coriaceous, velvety, pallid rufous, circumference thick, at length free; hymenium unequal, velvety, of the same colour. *Lev. in Voy. Bonite, t.* 139, *f.* 1.—*B. & Br. Ann. Nat. Hist., No.* 1693.

On trunks.

Corticium cinnamomeum. *Fr. Ep., p.* 561.

Effused, irregular adpressed, cinnamon, beneath and circumference fibrillose-strigose; hymenium fleshy, soft, smooth, naked, of the same colour; cracked when dry.—*B. & Br. Ann. Nat. Hist., No.* 1694.

On birch. Glamis.

Fuckel's specimens of what is presumably this species, is a good *Hymenochæte.* This appears to be a *Corticium.*

Corticium citrinum. *Pers. M. E., p.* 136.

Waxy, adglutinate, bright yellow; hymenium papillose.—*B. & Br. Ann. Nat. Hist., No.* 1695.

On thorn. Perthshire.

Corticium violaceo-lividum. *Fr. Hym. Eur., p.* 655.

Effused, adnate, indurated, livid violaceous; hymenium spuriously corrugated, tuberculose, sprinkled with a thin whitish pruinosity. —*B. & Br. Ann. Nat. Hist., No.* 1696.

On dead wood. Glamis.

Corticium limitatum. *Mont. Ann. Sci. Nat.*, 1836. *Fr. Ep., p.* 565.

Somewhat rounded, closely adnate, indurated, smooth, lurid, becoming pale, circumference with a black margin; hymenium naked.—*B. & Br. Ann. Nat. Hist., No.* 1697.

On *Cytisus.* Perth.

Corticium puberum. *Fr. Hym. Eur., p.* 652.

Broadly effused, waxy, closely adnate, indeterminate, white or clay coloured; hymenium even, velvety with short hairs, cracked when dry.

On bark. St. Mary Cray (T. Howse).

Cyphella stuppea. *B. & Br.*

Erumpent, sessile, pezizæform; externally tow-like, brown, becoming whitish; hymenium tawny.—*B. & Br. Ann. Nat. Hist., No.* 1698.

Bursting through the tender cuticle of broom. Scotland.

Typhula gracillima. *White.*

White; stem very slender, curved, smooth; club elongated.— *B. & Br. Ann. Nat. Hist., No.* 1699.

On herbaceous plants. Perthshire.

Dacrymyces vermiformis. *B. & Br.*

Minute, grey, worm-like; sporophores globose; spores globose, pallid tawny (·005 mm., sporophores ·0125 mm.).—*B. & Br. Ann. Nat. Hist., No.* 1700, *t. iii., fig.* 1.

On rotten wood.

Ostracoderma pulvinatum. *Fr. S. M.* III., 214.

Scattered or gregarious, roundish or hemispherical; peridia crustaceous but thin and fragile, even, smooth, whitish, collapsing in the middle; spores clay-coloured (·0075 mm.).—*B. & Br. Ann. Nat. Hist., No* 1701.

On old sack from a dunghill.

Looks at first sight like a white *Chondrioderma*, but not gelatinous when young.

Glæosporium Hendersoni. *B. & Br.*

Hypophyllous, scattered; gelatina placentæform; spores oblong, with a coloured nucleus (·0125-·015 mm.).—*B. & Br. Ann. Nat. Hist., No.* 1702.

On orange leaves in a conservatory.

Glæosporium violæ. *B. & Br.*

Spots pallid, at length white; pustules very small, or solitary; spores orange, effused over the matrix.—*B. & Br. Ann. Nat. Hist., No.* 1703.

On leaves of violet. Glamis.

Cylindrosporium longipes. *Preuss. in Sturm.* III., *t.* 35.

Effused; flocci simple, septate, brown, pellucid, apex catenate, simple or dichotomous, white, fragile, breaking up into cylindrical joints.—*B. & Br. Ann. Nat. Hist., No.* 1705.

On shell of walnut. Perthshire.

Probably the same as *Chalara fusidioides*, Sacc.

Trichobasis Lynchii. *B. Gard. Chron. Aug.* 25, 1877.

Spots small, pallid, scattered, rarely confluent; pseudospores yellow, obovate, beautifully echinulate, with a short pedicel.—*B. & Br. Ann. Nat. Hist., No.* 1706.

On exotic *Spiranthes.*

Protomyces comari. *B. & White.*

Pustules brown; spores ternate or solitary in the swollen cells of the matrix, broadly obovate (·025-·03 mm.)—*B. & Br. Ann. Nat. Hist., No.* 1708.

On *Comarum palustre.* Forfar.

Resembling at first sight *Isothæa pustula.*

Isaria sphingum. *Schwz. Car.*, 1298.

Gregarious on a silky mycelium, simple, very long, setaceous, compressed, rather powdery, whitish.—*B. & Br. Ann. Nat. Hist., No.* 1710. *Fr. Sys. Myc. iii.*, 275.

On pupæ of *Diptera.* Scotland.

Isaria tomentella. *Fr. Sys. Myc.* III., 276.

Aggregate, clavate-cylindrical, simple, dingy yellow, everywhere hairy with long white simple hairs.—*B. & Br. Ann. Nat. Hist., No.* 1711.

On beech leaves and mast.

Stysanus putredinis. *Corda* III., *f.* 36.

Tufts effused, crowded, white, then farinose, and pale reddish; stem erect, slender, flexuous, tomentose or sub-pilose, white; capitulum large, obovate, snow-white, chains of spores at first few and distant, then crowded, spores oblong elliptic—*B. & Br. Ann. Nat. Hist., No.* 1712.

On decayed leaves.

Stilbum Stevensonii. *B. & Br.*

Scattered; stem very short, black; head snow-white, globose; spores very minute, globose.—*B. & Br. Ann. Nat. Hist., No.* 1713.

On dead wood. Glamis.

Looks like a very minute *Didymium.*

Stilbum orbiculare. *B. & Br.*

White; forming patches an inch or more in diameter, springing from a white, thin, pulverulent stratum; stem cylindrical, tomentose; head globose; spores oblong, minute (·005 mm.).—*B. & Br. Ann. Nat. Hist., No.* 1714, *t.* 3, *f.* 4.

On *Lindbladia effusa.* Aviemore.

Peronospora affinis. *Ross. Rab. H. M.*, 489.

Flocci thick, regularly 5 to 7 times dichotomous; branches spreading, ultimate ramuli short, subulate, straight or curved; conidia ovoid, obtuse; oospores yellowish brown.—*B. & Br. Ann. Nat. Hist., No.* 1715. *De Bary, memoire, pp.* 118.

On *Fumaria.*

Dactylium cervinum. *B. & Br.*

Effused, pallid fawn-colour; flocci branched, septate; spores obovate, uniseptate, apiculate below.—*B. & Br. Ann. Nat. Hist., No.* 1716.

On *Cytisus laburnum.*

Aspergillus nigricans. *Auct.*

Fertile flocci erect, white, simple, continuous, swollen at the apex into a globose head to which are attached radiating linear sporophores, each of which bears a chain of fuliginous, globose spores (·005 mm. diam.).

In meatus auditorius of human ear (A. E. Durham, Esq.).

The heads are black to the naked eye, and one-tenth of a millemetre in diameter. It is probably the same as mentioned in the Chicago "Medical Journal," xxxiii, p. 913, as having been found in the ear. Not *A. nigrescens*, Robin.

Mucor stolonifer. *Ehrb. Syl. Myc.*

Fertile threads simple, emitting root-like stolons at the base; capitulum globose, olivaceous-black, spores globose.—*B. & Br. Ann. Nat. Hist., No.* 1719. *Rhizopus nigricans. Mycetog, t.* xi, *f.* 1-7.

On melon. Glamis.

Helvella atra. *Kön. Mycographia, fig.* 167.

Sooty black; pileus depressed, free, smooth beneath; stem stuffed, clad with furfuraceous down.; asci cylindrical; sporidia elliptical (·017 × ·008 mm.); paraphyses slightly thickened above. —*B. & Br. Ann. Nat. Hist.*, 1721.

On the ground. Scotland.

Peziza (Hymenoscypha) Candolleana. *Lev.*

Subfasciculate, becoming brownish, thin; cups quite entire, flattened, naked; stem filiform, naked or villous at the base, springing from a sclerotium; asci clavato-cylindrical; sporidia elliptical.—*Lev. Ann. Sci. Nat.*, 1843, xx, *p.* 232, *t.* 7, *f.* 4. *B. & Br. Ann. Nat. Hist., No.* 1723.

On *Sclerotium pustula.*

Peziza (Hymenoscypha) albida. *Rob.*

Cups somewhat flattened, whitish, rufescent when dry, stem equal; asci subcylindrical; sporidia linear, straight (·015-·018 ×

·004 mm.).—*Desm. Exs.*, *No.* 2004. *B. & Br. Ann. Nat. Hist.*, *No.* 1724.

On ash petioles.

Diatrype coramblycola. *B. & Br.*

Pustules elongated, bullate; ostiola rather prominent, rough; sporidia fusiform, 3-4 nucleate (·0085 mm. long).—*B. & Br. Ann. Nat. Hist.*, *No.* 1725.

On cabbage stalks. Forres.

Eutypa aspera. *Fr.*

Stroma effused; perithecia immersed; ostiola prominent, elongated, rough; sporidia sausage-shaped, hyaline. *Sphæria eutypa* var. b. *aspera.*—*Fries. Sys. Myc.* II, 478. *B. & Br. Ann. Nat. Hist.*, *No.* 1726.

On wood. Glamis.

Sphæria (Caulicolæ) maculans. *Desm. Exs.*, 1784.

Scattered, black, superficial or erumpent; perithecia minute, numerous, subglobose, seated on a blackened spot; ostiola papillæform; asci clavate; sporidia fusiform, with 4 or 5 nuclei, then 3-5 septate.—*Desm. Ann. Sci. Nat.*, 1846. *vi*, *pp.* 77. *B. & Br. Ann. Nat. Hist.*, 1727.

On stems of *Brassica.* Perth.

It is doubtful whether *Sphæria Alliariæ* Awd. is really distinct. Sporidia ·04 mm. long.

Sphæria Stevensoni. *B. & Br.*

Perithecia scattered, here and there crowded, ovate, attenuated upwards; asci very slender, sporidia uniseriate, narrowly elliptic, 2-3 nucleate (·005 mm.).—*B. & Br. Ann. Nat. Hist.*, 1728.

On dead wood. Glamis.

Sphærella Taxi. *Cooke. Gard. Chron.*

Epiphyllous; perithecia gregarious, occupying the whole surface of the leaves, black, slightly prominent; asci cylindrical; sporidia elliptical, apparently uniseptate when mature.

On leaves of *Taxus.* Cornwall. Hon. Rev. E. T. Boscawen.

Specimens will be published in "Fungi Britannici," Cent. vii.

Cephalotheca sulfurea. *Fckl. Rhen*, *No.* 2313.

Perithecia scattered, or gregarious, globose, covered with a sulphur coloured villosity, at length smooth at the apex and black, finally entirely smooth and soon broken; sporangia subglobose, sporidia oval.—*B. & Br. Ann. Nat. Hist.*, *No.* 1729, *t.* 4, *f.* 8.

On rotten wood.

The sporangia are produced on hyphæ within the perithecium. The structure of the perithecia is also singular, but not composed of such regular polygons as are figured as above.

Ascochyta metulæspora. *B. & Br.*

Spots orbicular, brown; perithecia minute, pallid; spores attenuated towards each end, like a "tipcat."—*B. & Br. Ann. Nat. Hist.*, *No.* 1730.

On leaves of ash. Scotland.

RAVENEL'S AMERICAN FUNGI.

By M. C. Cooke.

The following enumeration includes the species issued in the 1st and 2nd Centuries of Ravenel's "American Fungi," with other species, collected at the same time, in insufficient quantities for distribution:—

Agaricus cæspitosus. *B. & C.*—Rav. Fung. Amer. No. 101.
Aiken, S. Car.

Agaricus (Clitocybe) sinopicus. *Fr.*—Rav. Fung. Amer. No. 4.
In woods. Aiken, S. Carolina.

Agaricus (Mycena) Meliigena. *B. & Cke.*—Rav. Fung. Amer. No. 3.
Pileo tenui, rufo-violaceo, hæmisphærico, margine sulcato, stipiteque brevi, furfurello; lamellis adnatis, dente decurrente, concoloribus, sporis subglobosis.
On bark of *Melia*, *Diospyros*, &c.
Pileus 2-3 mm. broad, stem twice as long; spores subglobose, slightly papillate below (·01 mm.). Perhaps too near *Ag. (Mycena) corticola*, P.

Agaricus (Omphalia) muralis. *Sow.*
On the ground. Aiken, S. Car.

Agaricus (Flammula) spumosus. *Fr.*—Rav. Fung. Amer. No. 1.
On the ground. Aiken, S. Car.

Agaricus (Naucoria) subglobosus. *Fr.*—Rav. Fung. Amer. No. 102.
On the ground. Aiken, S. Car.

Agaricus (Naucoria) pediades. *Fr.*—Rav. Fung. Amer. No. 2.
In pastures. Aiken, S. Carolina.

Marasmius graminum. *Lib.* Rav. Fung. Amer. No. 105.
On stalks of Rye. Aiken, S. Car.

Marasmius semisquarrosus. *B. & Cooke.*—Rav. Fung. Amer. No. 106.
Pileo carnosulo, e convexo-plano, obtuso, albido, margine striato, stipite cavo, badio-fusco, supra glabra, substriato, infra floccoso-squarroso, leniter incrassato; lamellis adnexis, subconfertis, albidis.
Amongst fallen leaves. Gainesville, Florida.
Pileus $\frac{1}{2}$-$\frac{3}{4}$ inch, stem 2-3 inches, squarrose one-third the distance from the base.

Marasmius bombycirhiza. *B. & Cooke.*
Pileo membranaceo, convexulo, pallido, margine striato, stipite fistuloso, albido, superne glabro, inferne elongato radicato, albo-floccoso; lamellis adnatis, albis.
On fallen cones of *Magnolia grandiflora*. Gainesville, Florida.
Pileus $\frac{1}{4}$-$\frac{1}{3}$ inch broad; stem 2-3 inches long, of which the lower half is rooting, and clad with white cottony fibrils.

Xerotus lateritius. *B. & C.*
On bark. Gainesville, Florida.

Panus dorsalis. *Fr.*—Rav. Fung. Amer. No. 103.
On trunks. Gainesville, Florida.

Lentinus sipaxius. *Berk.*—Rav. Fung. Amer. No. 104.
On trunks. Gainesville, Florida.

Lenzites corrugata. *Klotsch.*
On trunks. Gainesville, Florida.

Polyporus (Pleuropus) lucidus. *Fr.*—Rav. Fung. Amer. No. 5.
On trunks. Gainesville, Florida.

Polyporus (Inodermei) Feathermanni. *Rav.*—Fung. Amer. No. 6.
Pileo rigido, coriaceo, setis crassis vestito, convexo-plano, nigrescente-umbrino ; poris rotundis, minutis, dissepimentis tenuibus, hymenio concolore.—*Rav. in litt.*
On trunks. Gainesville, Florida.
Very similar to *Trametes hydnoides.* Fr.

Polyporus (Inodermei) Floridanus. *B.*—Rav. Fung. Amer. No. 7.
On trunks. Gainesville, Florida.

Polyporus biformis. *Klotsch.*
On stumps. Gainesville, Florida.

Polyporus (Inodermei) mutabilis. *Fr.*—Rav. Fung. Amer. No. 109.
On trunks of *Persea.* Gainesville, Florida.

Polyporus (Resupinatus) Alabamæ. *B. & Cooke.* Rav. Fung. Amer. No. 110.
Effusus, determinatus, lobatus, albus, exsiccate ochraceus, marginque albo floccoso ; poris minoribus, subrotundis.
On branches of *Myrica cerifera.* Gainesville, Florida.
The distinct, barren, floccose margin is broad when young, but diminishes with age ; it is nevertheless always distinguishable as a paler marginal zone.

Polyporus (Resupinatus) dryinus. *B & Cooke.*—Rav. Fung. Amer. No. 111.
Effusus, innatus, albidus, demum ochraceus ; mycelio floccoso, albo ; poris quandoque subrotundis, quandoque angulatis et inæqualibus, in stratum persistens constipatis ; dissepimentis tenuibus.
On oak branches. Aiken, S. Car.
Resembling *P. vaporarius* in some conditions, but the pores smaller and more regular.

Polyporus (Resupinatus) radula. *Fr.*—Rav. Fung Amer. No. 107.
On pine stumps. Aiken, S. Car.

Trametes serpens. *Fr.*—Rav. Fung. Amer. No 112.
On trunks of *Carpinus.* Gainesville, Florida.

Dædalea Ravenelii. *Berk.*—Rav. Fung. Amer. No. 113.
On *Quercus.* Gainesville, Florida.

Dædalea rhabarbarina. *B. & Cooke.*
Pileo reniformi, umbrino, zonato, sulcato, tomentoso; margine obtuso, aureo-fulvo ; contextu rhabarbarino ; hymenio ochraceo-flavo ; poris demum sinuatis ; dissepimentis rigidis, leniter puberulis.
On pine logs. Gainesville, Florida (24.)
The marginal zone is tawny-orange, which contrasts strongly with the dark umber pileus.

Gleoporus conchoides. *Mont.*—Rav. Fung. Amer. No3
On trunks. Gainesville, Florida.

Hexagona sericea. *Fr.*
On trunks. Gainesville, Florida.

Merulius corium. *Fr.*—Rav. Fung. Amer. No. 136.
On *Nyssa*. Aiken, S. Car.

Merulius ambiguus. *Berk.*
On pine bark. Gainesville, Florida.

Merulius lacrymans. *Fr.* var. **tenuissimum.** *B.*—Rav. Fung. Amer. No. 134.
A very distinct thin form, without any thickened or white margin, and rather fragile.
On pine wood, and leaves. Aiken, S. Car.

Hydnum ochraceum. *Pers.*
On stumps. Gainesville, Florida.

Hydnum mucidum. *Fr.*—Rav. Fung. Amer. No. 114.
On *Persea*. Gainesville, Florida.

Hydnum (Resupinatum) Floridanum. *Berk. & Cooke.*
Fragile, subiculo albo, byssoideo; hymenio ceraceo, aurantio-rubro, aculeis subulatis, apice pallidis; margine albido.
On branches. Gainesville, Florida (No. 4).
Allied to *H. fragilissimum*, B. & C. The deep orange hymenium often surrounded by a broad, sterile, byssoid, white margin.

Irpex fusco-violaceus. *Fr.*—Rav. Fung. Amer. No. 108.
On bark. Aiken, S. Car.

Irpex pendulus. *Fr.*
On branches. Aiken, S. Car.

Irpex flavidus. *Klotsch.*
Gainesville, Florida.

Kneiffia setigera. *Fr.*—Rav. Fung. Amer. No. 115.
On *Magnolia* and *Persea*. Gainesville, Florida.

Kneiffia setigera. *Fr.* variety **B.**—Rav. Fung. Amer. No. 116.
Allied to *Kneiffia fulva*, but paler.
On *Magnolia*. Gainesville, Florida.

Kneiffia candidissima. *B. & C.*—Rav. Fung. Amer. No. 131.
On *Juniperus Virginiana*. Aiken, S. Car.

Thelephora terrestris. *Fr.*
On the ground. Gainesville, Florida.

Stereum bicolor. *Fr.*—Rav. Fung. Amer. No. 9.
On wood. Gainesville, Florida.

Stereum complicatum. *Fr.*—Rav Fung. Amer No. 117.
On *Quercus*. Gainesville, Florida.

Stereum papyrinum. *Mont.*—Rav. Fung. Amer. No. 118.
On *Quercus*. Gainesville, Florida.

Stereum pruinatum. *Fr.*
On *Carpinus*. Gainesville, Florida (75).

Stereum candidum. *Fr.*—Rav. Fung. Amer. No. 120.
On *Quercus obtusiloba*. Aiken, S. Car.

Stereum acerinum. *Fr.* var. **nivosum.**—Rav. Fung. Amer. No. 119.
On *Juniperus*. Aiken, S. Car.

Hymenochæte corticolor. *B. & R.*—Rav. Fung. Amer. No. 121.
On bark of *Magnolia*. Gainesville, Florida.

Hymenochæte rubiginosa. *Lev.*—Rav. Fung. Amer. No. 122.
On *Myrica cerifera*. Gainesville, Florida.

Hymenochæte crocata. *Lev.*—Rav. Fung. Amer. No. 123.
On bark. Aiken, S. Car.

Hymenochæte corrugata. *Lev.*—Rav. Fung. Amer. No. 124.
On *Alnus serrulata*. Aiken, S. Car.

Corticium ochroleucum. *Fr.*—Rav. Fung. Amer. No. 125.
On *Carpinus*. Gainesville, Florida.

Corticium calceum. *Fr.*—Rav. Fung. Amer. No. 126.
On *Myrica cerifera*. Gainesville, Florida.

Corticium tessulatum. *Cooke.*—Rav. Fung. Amer. No. 127.
Effusum, membranaceum, molle, candidum, subtus ambituque laxe albo-fibrillosum; hymenio lævi, glabro, pallide ochraceo, siccitate tessellato-partito; (sporis ovalibus).
On pine bark. Aiken, S. Car.
When the hymenium is fissured, the byssoid snow-white threads of the mycelium may be seen running over the matrix.

Corticium chlorascens. *B. & Br.*
On bark. Gainesville, Florida (41).

Corticium punctulatum. *Cooke.*—Rav. Fung. Amer. No. 128.
Persistenter niveum, effusum, tenue, indeterminatum, subtus ambituque albo-floccosum; hymenio primum punctulato, demum glabro, lævi; sporis globosis (·006 mm. diam.).
On pine chips, leaves, &c. Aiken, S. Car.

Corticium incarnatum. *Fr.*—Rav. Fung. Amer. No. 140.
On branches of *Baccharis*. Aiken, S. Car.

Corticium vagum. *B. & C.*—Rav. Fung. Amer. No. 132.
On pine bark. Aiken, S. Car.

Corticium læve. *Fr.*
On bark. Gainesville, Florida.

Corticium simulans. *B. & Rav.*—Rav. Fung. Amer. No. 10.
On bark of *Vaccinium*. Aiken, S. Carolina.

Hypochnus rubro-cinctus. *Ehr.*—Rav. Fung. Amer. No. 11.
On bark of *Magnolia*. Gainesville, Florida.

Hypochnus albo-cinctus. *Mont.*—Rav. Fung. Amer. No. 12.
On bark of *Magnolia*. Gainesville, Florida.

Cyphella fulva. *B. & Rav.*—Rav. Fung. Amer. No. 129.
On *Alnus serrulata*. Aiken, S. Car.

Cyphella Bananæ. *Cooke.*
Fuliginea, digitaliformis, postice porrecto-pendula, glabra; margine integro; disco niveo, rugoso; sporis linearibus, obtusis, curvulis (·01-·012 × ·0025 mm.).
On dead leaves of *Musa*. Gainesville, Florida.

Cyphella Curreyi. *B. & Br.* **(Peziza alboviolascens,** *P.*)
On twigs. Aiken, S. Car. (2349).

Cyphella Ravenelii. *B.*—Rav. Fung. Amer. No. 130.
On *Carya*. Aiken, S. Car.

Tremella mesenterica. *Fr.*
On branches. Aiken, S. Car.

Tremella Myricæ. *B. & Cooke.*
Cæspitosa, rotundata l. conglomerata, demum plicata, fuligineo-grisea, exsiccata nigrescens, obsolete punctata, basidiis globosis.
On bark of *Myrica* and *Persea*. Gainesville, Florida.

Hirneola scutellæformis. *B. & C.*—Rav. Fung. Amer. No. 133.
On *Liquidambar*. Aiken, S. Car.

Dacrymyces stillatus. *Fr.*—Rav. Fung. Amer. No. 135.
On pine wood. Aiken, S. Car.

Tulostoma mammosum. *Fr.*—Rav. Fung. Amer. No. 137.
On the ground. Gainesville, Florida.

Lycoperdon pusillum. *Fr.*—Rav. Fung. Amer. No. 138.
On the ground. Aiken, S. Car.

Lycoperdon leprosum. *B. & Rav.*—Rav. Fung. Amer. No. 14.
On trunks. Aiken, S. Carolina.

Geaster fimbriatus. *Fr.*
On the ground. Aiken, S. Car.

Cauloglossum transversale. *Fr.*—Rav. Fung. Amer. No. 13.
In moist woods. Gainesville, Florida.

Arachnion album. *Schw.*—Rav. Fung. Amer. No. 15.
On the ground. Aiken, S. Carolina.

Crucibulum vulgare. *Fr.*—Rav. Fung. Amer. No. 139.
On chips. Aiken, S. Car.

Octaviana Stephensii var. **Ravenelli.** *B.*—Rav. Fung. Amer. No 16.
On the ground. Gainesville, Florida.

Rhizopogon luteolus. *Fr.*
On the ground. Gainesville, Florida.

Phoma uvæcola. *B & Curt.*—Rav. Fung. Amer. No. 17.
On grapes. Aiken, S. Carolina.

Phoma ochra. *Cooke.*—Rav. Fung. Amer. No 18. "Hedwigia," March, 1878, p. 37.
On *Hibiscus esculentus*. Aiken, S. Car.

Phoma punctulatum. *Cooke.*—Rav. Fung. Amer. No. 19.
Subgregarium. Peritheciis epidermide nigrofacta tectis, centro albo-punctatis; spores ellipticis, binucleatis (.012 mm. long).
On stems of *Leguminosæ*. Gainesville, Florida.

Phoma verbascicolum. *Schw.* sub **Sphæria.**—Rav. Fung. Amer. No. 141.
On stems of *Verbascum thapsus*. Aiken, S. Car.

Phoma glandulosum. *Cooke.*—Rav. Fung. Amer. No. 142.
Sparsum vel subgregarium. Peritheciis epidermide nigrofacto-tectis, sporis ellipticis, hyalinis (·008 mm. long).
On petioles of *Ailanthus glandulosa*. Aiken, S. Car.

Leptostroma Smilacis. *Cooke.*—Rav. Fung. Amer. No. 20. "Hedwigia," March, 1878, pp. 37.

On stems of *Smilax laurifolia.* Aiken, S. Car.

Sphæronema rhoidis. *B. & C.*

On branches of *Rhus copallina.* Aiken, S. Car. (2318).

Coniothyrium ampelinum. *Cooke.*

Sparsum. Peritheciis minutis, inconspicuis, brunneis, membranaceis, hemisphæricis; sporis ovatis, hyalinis (·004 × ·003 mm.).

On leaves of *Vitis æstivalis,* in company with *Peronospora viticola.* Aiken, S. Car.

Sphæropsis Gleditschiæ. *Cooke.*—Rav. Fung. Amer. No. 145.

Subgregaria, erumpens. Peritheciis atris, sæpe 2-4 congestis, supra obtusis, vel depressis; sporis arcte ellipticis, hyalinis (·015 × ·003 mm.).

On legumes of *Gleditschia.* Aiken, S. Car.

Sphæropsis Macluræ. *Cooke.*—Rav. Fung. Amer. No. 146.

Gregaria, erumpens, in lineas disposita. Peritheciis atris, 2-4 congestis, intus albis; sporis ellipticis, demum brunneis, leniter striatis (·018-·02 × ·01 mm.).

On *Maclura aurantiaca.* Aiken, S. Car.

Sphæropsis Gallæ. *B. & C.*—Rav. Fung. Amer. No. 148.

On galls of oak. Aiken, S. Car.

Sphæropsis petiolata. *Cooke.*—Rav. Fung. Amer. No. 147.

Sparsa, tecta. Peritheciis subglobosis, prominulis, apice perforatis; sporis ellipticis, hyalinis (·012-·015 × ·066 mm.).

On petioles of *Platanus.* Aitken, S. Car.

Sphæropsis glandulosa. *Cooke.*—"Hedwigia," March, 1878, p. 38.

On bark of *Ailanthus glandulosa.* Aiken, S. Car. (Pl. 99, fig. 9.)

Diplodia Tecomæ. *Cooke.*

Erumpens, demum libera. Peritheciis globosis, vel pyriformibus, atris, sparsis; sporis ellipticis, uniseptatis, nec constrictis, utrinque nucleatis, atrobrunneis (·03 × ·012 mm.).

On wood of *Tecoma radicans.* Aiken, S. Car.

Diplodia punctipetiolæ. *Cooke.*

Tecta. Peritheciis globosis, prominulis, atris, sparsis; ostiolis papillatis; sporis ellipticis, nec constrictis, brunneis (·03 × ·01 mm.).

On petioles of *Magnolia grandiflora.* Aiken, S. Car.

Diplodia ampelina. *Cooke.*—Rav. Fung. Amer. No. 149.

Erumpens, subgregaria. Peritheciis atris, primum tectis, demum liberis, hunc illic congestis, obturbinatis, leniter rugosis; sporis ellipticis, nec constrictis, uniseptatis, brunneis (·025-·028 × ·021 mm.).

On bark of *Vitis.* Aiken, S. Car.

Differing from *D. Bacchi,* Thum. & Pass.

Diplodia Ailanthi. *Cooke.*—Rav. Fung. Amer. No 150.

Erumpens. Peritheciis in pustulis congestis, epidermide cinctis; sporis ellipticis, uniseptatis, nec constrictis, brunneis (·025-·028 × ·01 mm.).

On *Ailanthus glandulosa*. Aiken, S. Car.
Distinct from *D. scabrosa*, West.

Diplodia Virginiana. *Cooke.*—Rav. Fung. Amer. No. 151.
Sparsa, tecta. Peritheciis minimis, supra perforatis; sporis ellipticis, uniseptatis, nec constrictis, brunneis (·02-·025 × ·01 mm.).
On *Juniperus Virginiana*. Aiken, S. Car.

Discella leguminum. *Cooke.*—Rav. Fung. Amer. No. 152.
Pustulis punctiformibus, demum confluentibus, in maculis irregularibus dispositis; sporis ellipticis, hyalinis, utrinque obtusis (·012-·015 × ·006 mm.).
On legumes of *Prosopis*. Galveston, Texas.

Discosia rugulosa. *B. & C.*—Rav. Fung. Amer. No. 21.
On leaves of *Carya*. Gainesville, Florida.

Discosia minima. *B. & C.*—Rav. Fung. Amer. No. 22.
On leaves of *Tilia pubescens*. Gainesville, Florida.

Discosia artocreas. *Fr.* var. **viticola,** *C.*
Spores ·02 × ·0035 mm., nearly straight, triseptate, cilia very delicate.
On leaves of *Vitis æstivalis* with *Peronospora*. Aiken, S. Car.

Darluca filum. *Curt.*—Rav Fung. Amer. No. 23
A on leaves of *Potentilla*. **B** on *Juncus*. Aiken, S. Car.

Vermicularia rectispora. *Cooke.*
Sparsis, peritheciis minimis, tectis, membranaceis, supra setis rigidis septatis ornatis; sporis linearibus, obtusis, hyalinis (·02 × ·003 mm.).
On petioles of *Melia*. S. Car. (2388).

Vermicularia Cucurbitæ. *Cooke.*—Rav. Fung. Amer. No. 143.
"Hedwigia," March, 1878, pp. 38.
On gourds. Aiken, S. Car. (Pl. 99, fig. 10.)

Dinemasporium bicristatum. *Cooke.*—Rav. Fung. Amer. No. 144.
Erumpens. Receptaculis brunneo-atris, sparsis, pilis rigidulis obsitis; disco pallido-cinereo; sporis linearibus, brevibus, bicristatis (·012-·014 mm. long).
On *Zea mays*. Aiken, S. Car. (2281).
Spores with two cilia at the apex and one at the base.

Asteroma Rosæ. *Fr.*
On rose. Aiken, S. Car. (2115).

Pestalozzia hysteriiformis. *B. & C.*—Rav. Fung. Amer. No. 33.
On leaves of *Quercus nigra*. Aiken, S. Car.

Pestalozzia monochæta. *Desm.*—Rav. Fung. Amer. Nos. 34, 35.
On leaves of *Quercus alba*. Aiken, S. Car.

Pestalozzia concentrica. *B. & Rav.*—Rav. Fung. Amer. No. 36.
On leaves of *Quercus virens*. Gainesville, Florida.

Pestalozzia brevipes. *Cooke.*
Sparsa, minuta, tecta, apice, perforata; sporis subsessilibus, ellipticis, biseptatis, pallide fuscis, 3-4 cristatis (·018 × ·0075 mm.).
On petioles of *Aralia spinosa*. Gainesville, Florida.

Sacidium viticolum. *C.* (*Septoria viticola. B. & C.*)—Rav. Fung. Amer. No. 26.
Spores globose.
On leaves of *Vitis.* Aiken, S. Car.

Septoria ampelina. *B. & C.*—Rav. Fung. Amer. No. 29.
On leaves of *Vitis vulpina.* Aiken, S. Car.

Septoria Fraxini. *Lasch.*—Rav. Fung. Amer. No. 24.
On leaves of *Fraxinus.* Gainesville, Florida.

Septoria Ænotheræ. *West.*—Rav. Fung. Amer. No. 32.
On leaves of *Ænothera sinnata.* Aiken, S. Car.

Septoria Magnoliæ. *Cooke.* Linn. Journ. "Texas Fungi."—Rav. Fung. Amer. No. 153.
On leaves of *Magnolia.* Gainesville, Florida.

Septoria Baptisiæ. *Cooke.*—Rav. Fung. Amer. No. 30. "Hedwigia," March, 1878, p. 38.
On leaves of *Baptisia perfoliata.* Aiken, S. Car.

Septoria sonchifoliæ. *Cooke.*—Rav. Fung. Amer. No 31. "Hedwigia," March, 1878, p. 38.
On leaves of *Sonchus asper.* Aiken, S. Car.

Septoria niphostoma. *B. & C.*—Rav. Fung. Amer. No. 28.
On leaves of *Magnoilu grandiflora.* Gainesville, Florida.

Septoria platanifolia. *Cooke.*—Rav. Fung. Amer. No. 27. "Hedwigia," March, 1878, p. 38.
On leaves of *Platanus.* Aiken, S. Car.

Septoria chionanthi. *Cooke.*—Rav. Fung. Amer. No. 25. "Hedwigia," March, 1878, p. 38.
On leaves of *Chionanthus virginicus.* Aiken, S. Car.

Phyllosticta glauca. *Cooke.* sub. **Septoria.**—Rav. Fung. Amer. No. 93.
On leaves of *Magnolia glauca.* Gainesville, Florida.

Phyllosticta myricæ. *Cooke.*—Rav. Fung. Amer. No. 154.
Maculis suborbicularibus, rubro-brunneis; peritheciis minimis, tectis, in maculis nidulantibus; sporis minutis, arcte ovalibus, hyalinis (·007 mm.)
On leaves of *Myrica cerifera.* Aiken, S. Car.

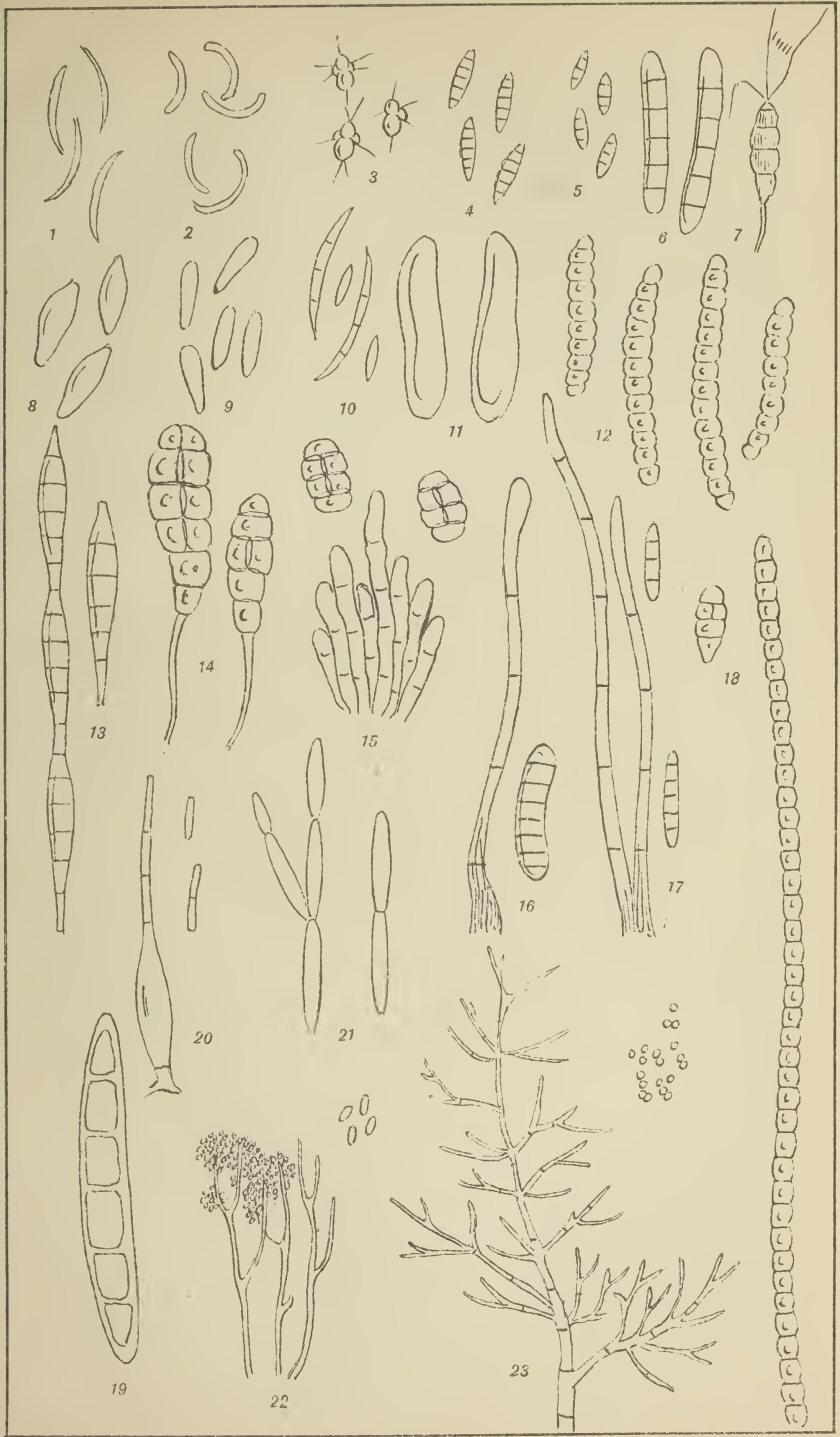
Phyllosticta Dioscoreæ. *Cooke.* (**Septoria Dioscoreæ.** *Cooke*, in "Hedwigia," March 1878, p. 38.)
On leaves of *Dioscorea.* Aiken, S. Car.

Torula herbarum. *Link.*—Rav. Fung. Amer. No. 164.
On gourds. Aiken, S. Car.

Torula graminis. *Link.*
On *Bambusa.* Aiken, S. Car. (2117).

Sporidesmium spiræacolum. *Cooke.* – Rav. Fung. Amer. No. 157.
Epiphyllum, fuligineum, maculæforme; sporis multiformibus, irregularibus, cellulosis, brunneis.
On leaves of *Spiræa.* Aiken, S. Car.

Sporidesmium irregularis. *Cooke.*—Rav. Fung. Amer. No. 158.
Effusum, atrum, tenue; sporis multiformibus, elongatis, vel clavatis, multicellulosis, brunneis.
On stems of *Eupatorium.* Aiken, S. Car.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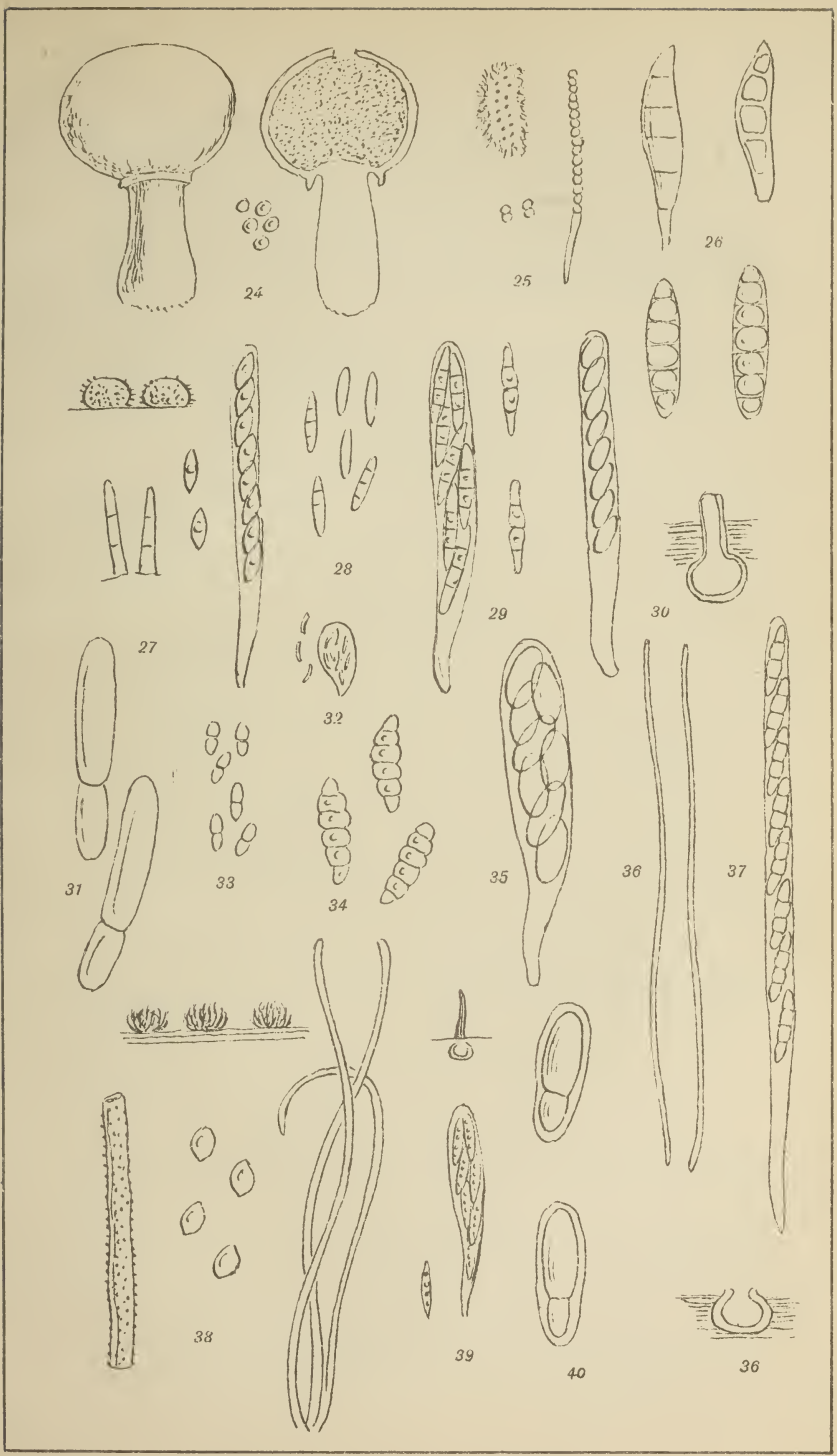
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Sporidesmium punctiphyllum. *Cooke.* - Rav. Fung Amer. No. 159.
Hypophyllum ; pustulis punctiformibus, atris; sporis ovatis, simplico-catenatis, cellulosis, brunneis (·02-·03 × ·012-·018 mm.)
On under side of leaves of *Magnolia.* Aiken, S. Car.

Sporidesmium sphæriforme. *Cooke.*—Rav. Fung. Amer. No. 161.
Aterrimum ; pustulis hæmisphericis, sphæriæformibus, dense gregariis ; sporis ovatis, e 3-5 cellulis compositis, opacis (·012-·015 × ·01 mm.)
On trunks. Gainesville, Florida.

Sporidesmium velutinum. *Cooke.*—Rav. Fung. Amer. No. 162.
Effusum, atrum, velutinum ; sporis ovatis, e cellulis subglobosis compositis, infra clavato-pedicellatis (·02-·025 × ·012-·014 mm.)
On wood of *Persea.* Gainesville, Florida.

Sporidesmium obclavatum. *Cooke.*
Tenue effusum, nigrum ; sporis obclavatis, elongatis, multiseptatis, brunneis (·06-·12 + ·01 mm.)
On stems of *Smilax.* Gainesville, Florida.
Of the same type as *S. exitiosum*, Kuhn.

Rœstelia hyalina. *Cooke.*—Rav. 'Fung. Amer. No. 37. "Hedwigia," March, 1878, p. 38.
On leaves of *Cratægus.* Aiken, S. Car.

Æcidium violæ. *Schum.*—Rav. Fung. Amer. No. 38.
On leaves of *Viola.* Aiken, S. Car.

Æcidium amorphæ. *Cooke.*—Rav. Fung. Amer. No. 39.
Maculis epiphyllis, orbicularibus, fuscis ; peridiis paucis, congestis, sporis ovalibus, leniter asperulis, luteis (·03 × ·02 mm.)
On leaves of *Amorpha.* Aiken, S. Car. (2015.)

Puccinia amorphæ. *Curt.*—Rav. Fung. Amer. No. 40.
On petioles of *Amorpha.* Aiken, S. Car.

Puccinia helianthorum. *Schw.* - Rav. Fung. Amer. No. 42.
On leaves of *Helianthus tuberosus*, and *H. heterophyllus.* Aiken, S. Car.

Puccinia Fuirenæ. *Cooke.*—Rav. Fung. Amer. No. 54.
Soris ellipticis, atro-brunneis, compactis ; pseudosporis lanceolatis, obtusis, rubro-brunneis ; pedicellis incrassatis, hyalinis (·08 × ·015 mm.)
On culms of *Fuirena squamosa.* Aiken, S. Car.

Puccinia crassipes. *B. & C.*
Aiken, S. Car. (2176.)

Trichobasis crotonis. *Cooke.*
Amphigenis ; soris minutis, subrotundatis, epidermide cinctis, fuscis ; pseudosporis globosis vel ovatis, verruculosis (·028-·03 mm. diam.)
On leaves of *Croton procumbens.* California (Dr. M. Edwards).

Trichobasis helianthi. *Schwz.* sub. **Uredo.** Rav. Fung. Amer. No. 41.
On leaves of *Helianthus.* Aiken, S. Car.

Trichobasis polygonorum. *Lev.*—Rav. Fung. Amer. No. 43.
On leaves of *Polygonum.* Aiken, S. Car.

Melampsora populina. *Lev.*—Rav. Fung. Amer. No. 45. (*Uredo*) 46.
On leaves of *Populus angulata*. Aiken, S. Car.

Melampsora liquidambaris. *Cooke.*—Rav. Fung. Amer. No. 47.
Epiphylla, castaneo-brunnea, maculæformis; sporis subclavatis, lateraliter compressis, supra convexis, infra obtusis, rubro-brunneis; (·04 × ·012 mm.)
On leaves of *Liquidambar*. Gainesville, Florida.
The *Uredo* form unknown.

Coleosporium apocynaceum. *Cooke.*—Rav. Fung. Amer. No. 44. "Hedwigia," March, 1878, p. 38.
On leaves of *Amsonia ciliata*. Aiken, S. Car.

Uredo smilacis. *Schw.*—Rav. Fung. Amer. No. 53.
On leaves of *Smilax glauca*. Aiken, S. Car.

Uredo citri. *Cooke.*
Epiphyllum; soris minutis, flavis, epidermide cinctis; sporis ovatis, vel subglobosis, leniter asperulis, luteis (·02-·025 × ·015 mm.)
On leaves of *Maclura aurantiaca*. Aiken, S. Car.

Uromyces Desmodii. *Cooke.*—Rav. Fung. Amer. No. 49. "Hedwigia," March, 1878, p. 39.
On leaves of *Desmodium canescens*.

Pileolaria brevipes. *B. & R.*—Rav. Fung. Amer. No. 48.
On leaves of *Rhus*. Aiken, S. Car.

Ravenelia sessilis. *Berk.* (**Ravenelia glandulæformis.** *Rav.* non *Berk.*)—Rav. Fung. Amer. No. 55.
On leaves of *Tephrosia*. Aiken, S. Car.

Ustilago syntherismæ. *Schw.*—Rav. Fung. Amer. No. 56.
In glumes of *Panicum*. Aiken, S. Car.

Uromyces spermacoces. *Schw.*—Rav. Fung. Amer No. 50.
On leaves of *Diodea*. Aiken, S. Car.

Uromyces junci. *(Schw.) Tul.*—Rav. Fung. Amer. No. 51.
On *Juncus*. Aiken, S. Car.

Uromyces tomentella. *Cooke.*—Rav. Fung. Amer. No. 52.
Amphigenis; soris ellipticis, subconfluentibus, atro-brunneis, sparsis; sporis ovatis, castaneo brunneis, pedicellis, elongatis, hyalinis, supra crassis, infra attenuatis (·032 × ·022, pedicel ·06 mm.)
On unknown plant *(Potentilla?)* Berkeley, California (Dr. Edwards.)

Illosporium coccinellum. *Cooke.*
Sparsum, coccineo-roseum, minutum, globosum; hyphis parce ramulosis.
On pine palings. Aiken, S. Car. (2277).

Illosporium pallidum. *Cooke.*
Sparsum, pruinosum, subglobosum, dein applanatum, pallido-carneum; hyphis intertextis, parce ramulosis, flexuosis.
On *Zea Mays*. Aiken, S. Car. (2280.)

Polyscytalum sericeum. *Sacc.*
On under side of dead leaves of *Magnolia*. Gainesville, Florida.

Fusisporium cerealis. *Cooke.*

Cæspitulis pallidis; floccis brevibus; sporis fusiformibus, curvatis, acutis, 3-5 septatis, constrictis, hyalinis (·05-·07 × ·008 mm)

On sheaths of *Zea Mays.* Gainesville, Florida.

Mixed with *Cladosporium*, &c.

Fusisporium pallido-roseum. *Cooke.*

Effusum, pallido-roseum; floccis hyalinis, ramosis; sporis fusiformibus, utrinque acutis, rectis vel curvulis, hyalinis (·04-·05 × ·005 mm.).

On *Chenopodium anthelminticum.* Aiken, S. Car. (2279).

Fusisporium leguminum. *Cooke.*

Sparsum, pallidum; pustulis subglobosis, floccis brevibus, subsimplicibus; sporis fusiformibus, utrinque acutis, arcuatis, hyalinis, demum triseptatis (·03 × ·04 mm. long.)

On legumes of *Acacia*, with *Cladosporium.* Aiken, S. Car. (2290).

Penicillium atrobrunneum. *Cooke.*—Rav. Fung. Amer. No. 59.

Elongato-effusum, atro-brunneum; hyphis erectis, sparse ramosis, septatis, apice bi-vel tri-furcatis; sporis elongato-ellipticis (·008-·01 + ·004 mm.).

On leaves of *Musa.* Gainesville, Florida.

Peronospora viticola. *B & Curt.*—Rav. Fung. Amer. No. 61.

On leaves of *Vitis æstivalis.* Aiken, S. Car.

Ramularia Desmodii. *Cooke.*—Rav. Fung. Amer. No. 62. "Hedwigia," March, 1878, p. 39.

On leaves of *Desmodium ciliare.* Aiken, S. Car.

Zygodesmus pannosus. *B. & C.*—Rav. Fung. Amer. No. 57.

On *Magnolia* (a) and *Myrica* (b). Gainesville, Florida.

Zygodesmus lævisporus. *Cooke.*—Rav. Fung. Amer. No. 58.

Ochraceo-fulvus, late effusus, pannosus; hyphis repentibus, sparse ramosis, septatis; sporis globosis, lævibus (·01 mm.).

On bark of *Magnolia.*

Rhinotrichum Curtisii. *Berk.*

On bark. Gainesville, Florida.

Sporocybe byssoides. *Fr.*

On leaves. Aiken, S. Car. (2131).

Cladosporium atriellum. *Cooke.*

Effusum, atrum, velutinum; floccis tenuibus, flexuosis, hinc illic nodulosis; sporis 1-3 septatis, olivaceo-fuscis (·015-·025 × ·005 mm.).

On decayed fruits of *Yucca aloifolia.* Aiken, S. Car. (2261).

Cladosporium fumago. *Lk.*

On leaves of *Salix.* Aiken, S. Car. (2103).

Imperfect condition of *Capnodium.*

Cladosporium graminum. *Link.*—Rav. Fung. Amer. No. 170.

On leaves of bamboo. Aiken, S. Car.

Cladosporium molle. *Cooke.*

Maculis atris, vel fuliginosis; cæspitulis olivaceis; floccis fasciculatis, flexuosis, fuscidulis, ramosis, septatis, tenuibus; sporis paucis, 1-3 septatis, ovatis vel subcylindraceis.

On under surface of dead leaves of *Asclepias*. Aiken, S. Carolina.

The tufts are seated upon large inky spots, which sometimes occupy nearly half the surface of the leaf.

Cladosporium tenuissimum. *Cooke.*—Rav. Fung. Amer. Cent. III.

Olivaceo-fuliginea; floccis elongatis, ramosis, flexuosis, septatis, fulvis; sporis numerosissimis, ovatis vel ellipticis, primo concatenatis (·008 × ·004-·02 × ·005 mm.).

On sheaths of *Zea Mays*. Aiken, S. Car.

Characterised by the long, thin, flexuous flocci, and the small but profuse spores.

Cercospora sphæriæformis. *Cooke.*—Rav. Fung. Amer. No. 63.

Amphigena; maculis fuligineis; hyphis fasciculatis, brevibus, fuligineis, simplicibus; sporis linearibus, supra attenuatis, multiseptatis (·06-·08 mm. long).

On leaves *(Ulmi?)* Gainesville, Florida.

Cercospora callicarpæ. *Cooke.*—Rav. Fung. Amer. No. 64.

Epiphylla; maculis vix determinatis, fuscis: hyphis brevibus, fuscis, subsimplicibus, septatis; sporis cylindraceis, vix attenuatis, 4-5 septatis (·06-·07 mm.).

On leaves of *Callicarpa*. Gainesville, Florida.

Cercospora occidentalis. *Cooke.*—Rav. Fung. Amer. No. 65. "Hedwigia," March, 1878, p. 39.

On leaves of *Cassia occidentalis*. Aiken, S. Car.

Cercospora polygonorum. *Cooke.*—Rav. Fung. Amer. No. 66. "Hedwigia," March, 1878, p. 39.

On leaves of *Polygonum acris*. Aiken, S. Car.

Cercospora Lupini. *Cooke.*—Rav. Fung. Amer. No. 67. "Hedwigia, March, 1878, p. 39.

On leaves of *Lupinus diffusus*. Aiken, S. Car.

Cercospora æruginosa. *Cooke.*—Rav Fung. Amer. No. 68. "Hedwigia," March, 1878, p. 39

On leaves of *Rhamnus*. Aiken, S. Car.

Macrosporium commune. *Rabh.*—Rav. Fung. Amer. Cent. iii.

On panicles of *Yucca filamentosa*. Aiken, S. Car.

Macrosporium subglobosum. *Cke. & Rav.*

Effusum, olivaceum. Floccis paucis, repentibus, nodulosis; sporis subglobosis, vel subpyriformibus, muriformibus, olivaceo-fuscis (·02-·03 × ·02 mm.).

On oak leaves. Aiken, S. Car. (2260).

Allied to *M. sarcinula*, B.

Macrosporium Floridanum. *Cooke.*

Effusum, fuligineum. Floccis elongatis, tenuis, nodulosis, septatis; sporis clavatis, demum ovalibus, cellulosis, brunneis, cellulis ultimis pallidiore (·03 × ·015 mm.).

On legumes of *Glotidium Floridanum*. Gainesville, Florida.

Macrosporium leguminum. *Cooke.*

Tenue effusum, fuligineum. Hyphis brevibus, paucis, nodulosis; sporis elongato-ellipticis, cellulosis, brunneis; pedicellis hyalinis, tenuibus, secedentibus (·05 × ·015 mm.).

On legumes of *Cassia occidentalis*. Aiken, S. Car (2233).

Helminthosporium inflatum. *B. & C.*
On bark of *Myrica*. Aiken, S. Car.

Helminthosporium Ravenelii. *B. & C.*—Rav. Fung. Amer. No. 165.
On *Sporobolus Indicus*. Gainesville, Florida.

Helminthosporium Petersii. *B. & C.*—Rav. Fung. Amer. No. 166.
On leaves of *Smilax glauca*. Aiken, S. Car.

Helminthosporium fragilissimum. *B. & C.*—Rav. Fung. Amer. No. 168.
On branches of *Smilax*. Aiken, S. Car.

Helminthosporium Sorghi. *Cooke.*—Rav Fung. Amer No. 167.
Tenue effusum, nigrum. Floccis flexuosis, supra diaphanis, paucis; sporis lanceolatis, utrinque obtusis, 3-7 septatis (·05-·07 × ·02 mm.).
On culms of *Sorghum*. Aiken, S. Car.

Helminthosporium interseminatum. *B. & C.*—Rav. Fung. Amer. No 172.
On *Phytolacca*. Aiken, S. Car.

Helminthosporium asterinum. *Cooke.*—Rav. Fung. Amer. No. 163.
Asteroideum, atro-olivaceum. Floccis erectis, simplicibus, rigidulis, septatis; sporis paucis, clavatis, 3-4 septatis, fuscis (·05-·06 × ·008 mm.).
On *Liquidambar*. Gainesville, Florida.
Spores scarcely broader than the flocci.

Helminthosporium subcaudatum. *Cooke.*
Effusum, nigerrimum. Floccis erectis, simplicibus, opacis, rigidis, crassis; sporis clavatis, infra longe attenuatis, 5-7 septatis, e mycelio productis.
On branches. Aiken, S. Car. (2364).
Spores scarcely so thick as the threads, constricted at the septa, ·06-·09 mm. long, in proportion as a longer or shorter portion of the pedicel remains attached. They seem to be confined to very slender threads rising from the mycelium.

Helminthosporium macrocarpon, var. **caudatum.** *B. & C.*—Rav. Fung. Amer. No. 171
On twigs of *Quercus obtusiloba*. Aiken, S. Car.

Helicoma Berkeleyi. *Curt.*—Rav. Fung. Amer. No. 60.
On *Carpinus* (a); on *Aralia spinosa* (b). Gainesville, Florida.

Haplaria fusca. *Cooke.*—Rav. Fung. Amer. No. 169.
Effusa, lanosa, fusco-ferruginea. Hyphis congestis, erectis, simplicibus, septatis; sporis hinc illic conspersis, globosis, fuscis, minutis (circa ·003 mm.).
On twigs of *Quercus*. Aiken, S. Car. (2361).

Geoglossum Peckianum. *Cooke.*
On the ground. Gainesville, Florida.

Leotia viscosa. *Fr.*—Rav. Fung. Amer. No. 173.
On the ground. Aiken, S. Car.

Peziza (Aleuria) acetabulum. *L.*
On the ground. Aiken, S. Car.

Peziza (Cupularis) funerata. *Cooke.*

Immersa. Cupulis campanulæformibus, fuscis, margine reflexis, subcrenatis vel sublobatis, tenuis, fragilis; ascis cylindraceis; sporidiis ellipticis (·015-·018 × ·005 m.m.).

Immersed in sandy ground. Gainesville, Florida.

Cups scarcely an inch broad.

Peziza (Humaria) fusispora. *B.*—Rav. Fung. Amer. No. 174.

On the ground. Aiken, S. Car.

Peziza lachnoderma. *B.*—Rav. Fung. Amer. No. 175.

On pine bark. Aiken, S. Car.

Peziza rubella. *Pers.*

On rotten wood. Aiken, S. Car.

Ascobolus (Ascophanus) carneus. *P.*—Rav. Fung. Amer. No. 176.

On rags, &c. Aiken, S. Car.

Stictis versicolor. *Fr.*—Rav. Fung. Amer. Cent. iii.

On oak twigs. Aiken, S. Car.

Ascomyces Quercus. *Cooke.*—Rav. Fung. Amer. No. 72.

Bullatum. Maculis fuscis, orbicularibus; ascis clavatis; sporidiis numerosis, ovalibus, hyalinis (·005 mm.).

On leaves of *Quercus cinerea* Aiken, S. Car.

Cenangium Magnoliæ. *B. & C.*—Rav. Fung. Amer. No. 70.

On branches of *Persea.* Gainesville, Florida.

Dichæna quercina. *Fr.*—Rav. Fung. Amer. No. 71.

On branches of *Quercus.* Gainesville, Florida.

Hysterium lineolatum. *Cooke* in Journ. Linn. Soc. "Texas Fungi."—Rav. Fung. Amer. No. 69.

On wood of *Persea Carolinensis.* Gainesville, Florida.

Hysterium (Lopodermium) maculare. *Fr.*—Rav. Fung. Amer. No. 179.

On leaves of *Quercus.* Gainesville, Florida.

Hysterium (Lophodermium) pinastri. *Schrad.*—Rav. Fung. Amer. No. 180.

On leaves of *Pinus australis.* Aiken, S. Car.

Hysterium (Hypoderma) commune. *Fr.*

On herb stems. Aiken, S. Car.

Rhytisma tostum. *B. & C.*—Rav. Fung. Amer. No. 177.

On leaves of *Quercus.* Gainesville, Florida.

Rhytisma decolorans. *B. & C.*—Rav. Fung. Amer. No. 178.

On leaves of *Andromeda.* Gainesville, Florida.

Asterina comata. *B. & C.*—Rav. Fung. Amer. No. 73.

On leaves of *Magnolia.* Gainesville, Florida.

Asterina orbicularis. *B. & C.*—Rav. Fung. Amer. No. 74.

On leaves of *Ilex opaca.* Gainesville, Florida.

Asterina pelliculosa. *Berk.*—Rav. Fung. Amer. No. 75.

On leaves of *Prinos coriacea.* Gainesville.

Asterina clavuligera. *Cooke.*—Rav Fung. Amer. No 76.

Mycelio atrobrunneo, conidiis ellipticis, brunneis, albo-fasciatis, septatis, medio-constrictis, pedicellis elongatis, hyalinis; peri-

theciis scutellatis; ascis subglobosis, ad basim apiculatis; sporidiis ellipticis (vix maturis).

On leaves of *Vaccinium*. Gainesville, Florida.

Conidia very peculiar ·045 × ·012 mm., without the pedicel.

Capnodium axillatum. *Cooke.*—Rav. Fung Amer No. 77. "Hedwigia," March, 1878, p 40.

On leaves of *Catalpa cordifolia*. Aiken, S. Car.

Capnodium quercinum. *B. & D.*—Rav. Fung Amer. No. 78.

On leaves of *Quercus obtusiloba*. Aiken, S. Car.

Capnodium pelliculosum. *B. & C.*—Rav Fung. Amer. No. 79.

On leaves of *Prunus chickassæ*. Aiken, S. Car.

Capnodium elongatum. *B & D.* var **Nerii** (*C. Nerii, Rabh.*)—Rav. Fung. Amer. No 80

On leaves of *Nerium*. Gainesville, Florida.

Meliola amphitricha. *Fr.*—Rav. Fung. Amer. No. 81, 82, 83, 84.

On leaves of *Sabal* (No. 81).

On leaves of *Persea* (82).

On leaves of *Magnolia grandiflora* (83).

On leaves of *Callicarpa Americana* (84). Gainesville, Florida.

Meliola Mitchellæ. *Cooke*—Rav. Fung. Amer. No. 88.

Peritheciis globosis, lævibus; floccis erectis, simplicibus; sporidiis elongato-ellipticis, 4-septatis, brunneis; hyphis conidiiferis septatis, brunneis, apice hyalinis, conidiis lanceolatis vel clavatis, triseptatis, hyalinis, fuscis (·02-·025 × ·004 mm.).

On leaves of *Mitchella repens*. Gainesville, Florida.

Meliola furcata. *Lev.*

On leaves. Gainesville, Florida.

Phyllactinia guttata. *Lev.*—Rav. Fung. Amer. Nos. 85, 86.

On leaves of *Catalpa cordifolia*, and *Ulmus alata*. Aiken, S. Car.

Microsphæria Ravenelii. *B. & C.*—Rav. Fung. Amer. No. 87.

On leaves of *Gleditschia*. Aiken, S. Car.

Glenospora Curtisii. *B. & Desm.*—Rav. Fung. Amer. Cent. iii.

On branches. Gainesville, Florida.

Torrubia capitata. *Pers.*—Rav. Fung. Amer. Cent. iii.

On *Scleroderma*. Ai..en, S. Car.

Nectria peponum. *B. & C.*—Rav. Fung. Amer Cent. iii.

On gourds. Aiken, S. Car.

Nectria cinnabarina. *Tode.*—Rav. Fung. Amer. Cent. iii.

On twigs of various trees. Aiken, S. Car.

Hypoxylon concentricum. *Grev.*—Rav. Fung. Amer. No. 181.

On *Persea*. Gainesville, Florida.

Hypoxylon annulatum. *Mont.*—Rav. Fung. Amer. No. 182. Var. **B.** 183.

On *Quercus*
On *Magnolia* } Gainesville, Florida.

Hypoxylon fuscum. *Fr.*—Rav. Fung. Amer. No. 184.

On *Quercus and Alnus serrulata*. Aiken, S. Car.

Melogramma ambiguum. *Schw.*—Rav. Fung. Amer. No. 185.
On bark of *Rhus*. Fernandina, Florida.

Melogramma meliæ. *Schw.*—Rav. Fung. Amer. No. 186.
On *Melia*. Aiken, S. Car.

Eutypa micropuncta. *Cooke.*—Rav. Fung. Amer. No. 187.
Effusa, atra, undulata; peritheciis mininis; ostiolis punctiformibus, dense stipatis, vix elevatis, nec sulcatis, convexulis; sporidiis allantoideis, hyalinis, minutis.
On *Quercus*. Gainesville, Florida.

Eutypa limæformis. *Schw.*—Rav. Fung. Amer. No. 92.
On wood. Gainesville, Florida.

Diatrypella discoidea. *C. var.* **Alni.**—Rav. Fung. Amer. No. 188.
On *Alnus serrulata*. Aiken, S. Car.

Diatrypella opaca. *Cooke*, in Linn. Journ. "Texas Fungi," Rav. Fung. Amer. No. 89.
On bark of *Ilex opaca*. Gainesville, Florida.

Diatrype atropunctata. *Schw.*—Rav. Fung Amer. No. 90.
On dead wood. Gainesville, Florida.

Diatrype disciformis. *Fr.*
On *Magnolia*. Aiken, S. Car.

Diatrype tenuissima. *Cooke.*—Rav. Fung. Amer. Cent. iii.
Tenuissimum, effusum, cinereum; ostiolis minutis, punctiformibus, vix elevatis; ascis subcylindraceis; sporidiis linearibus, vix curvulis, hyalinis (·007 mm.).
On bark of *Persea*. Aiken, S. Car.

Diatrype stigma. *Fr.*—Rav. Fung. Amer. Cent. iii.
On oak. Gainesville, Florida.

Diatrype discostoma. *Cooke.*—Rav. Fung. Amer. Cent. iii.
Elongato-effusum, nigrum, ostiolis vix elevatis, discoideis, applanatis; ascis clavatis; sporidiis minimis, linearibus, curvulis (·006 mm.).
On *Carpinus*. Aiken, S. Car.

Diatrype Duriæi. *Mont.*—Rav. Fung. Amer. No. 91.
On branches of *Magnolia glauca*. Aiken, S. Car.

Valsa ceratophora. *Tul.*—Rav. Fung. Amer. No. 189.
On *Quercus*. Aiken, S. Car.

Valsa tetraploa. *B. & C.*—Rav. Fung Amer. No. 190.
On *Maclura aurantiaca*. Aiken, S. Car.

Valsa Americana. *B. & C.*—Rav. Fung. Amer. No. 191.
On *Alnus serrulata*. Aiken, S. Car.

Valsa leiphemioides. *B & C.*—Rav. Fung. Amer. No. 192.
On *Quercus obtusiloba*. Aiken, S. Car.

Valsa juniperina. *Cooke.*—Rav. Fung. Amer. No. 193.
Pustulis epidermide tectis, disco farinaceo, pallido; peritheciis atris, paucis, ostiolis elongatis, cylindricis, leniter striatis; ascis subclavatis; sporidiis linearibus, obtusis, hyalinis (·008 mm.).
On *Juniperus Virginiana*. Aiken, S. Car.

Valsa nyssæ. *Cooke.*—Rav. Fung. Amer. No. 194, with spermagonia.

Pustulis cortice tectis, with stylospores; peritheciis ovatis, in collum longum attenuatis, atris; ascis clavatis; sporidiis linearibus curvulis, hyalinis (·008 mm.).

On *Nyssa.* Aiken, S. Car.

Often the centre of the pustules is occupied by a large spermogonium, around which the perithecia are clustered.

Valsa aculeans. *Schw.*—Rav. Fung. Amer. No. 195, with spermogonia.

On *Rhus.* Aiken, S. Car.

Valsa stellulata. *Fr.*

On branches. Gainesville, Florida.

Dothidea solidaginis. *Schw.* sub. *Sphæria.*—Rav. Fung. Amer. No. 97.

On leaves of *Solidago.* Aiken, S. Car.

Dothidea perisporioides. *B. & C.*—Rav. Fung. Amer. No. 98.

On leaves of *Rhynchosia.* Aiken, S. Car.

Dothidea flabella. *B. & C.*—Rav. Fung. Amer. No. 99.

On *Pteris.* Aiken, S. Car.

Dothidea atramentaria. *B. & C.*—Rav. Fung. Amer. No. 100.

On leaves of *Poa.* Aiken, S. Car.

Sphæria (Byssisedæ) pezizula. *B. & R.*—Rav. Fung. Amer. No. 196.

On stumps. Gainesville, Florida. Aiken, S. Car.

Sphæria helicophila. *Cooke.*

Sparsa, in hyphis *Helicomæ* nidulans; peritheciis subglobosis; ascis elongatis, cylindricis, sporidiis fusiformibus, multinucleatis, demum multiseptatis, luteolis (·06-·07 × ·006 mm.).

On fallen logs, mixed amongst the threads of *Helicoma Berkeleyi.* Aiken, S. Car.

Sphæria (Sporormia) fimetaria. *Not.*

On cow dung. Aiken, S. Car. (2263).

Sphæria gelsemiata. *Cooke.*

Tecta, sparsa vel subgregaria; peritheciis subglobosis, prominulis; ostiolis papillatis; ascis clavatis; sporidiis breviter lanceolatis, hyalinis (·03-·035 × ·01-·012 mm.).

On twigs of *Gelsemium.* Aiken, S. Car.

Sphæria Yuccæ. *Schw.*—Rav. Fung. Amer. No. 197.

On leaves of *Yucca aloifolia.* Aiken, S. Car.

Sphæria argyrostoma. *B. & C.*—Rav. Fung. Amer. No. 198.

On flower stalk of *Yucca filamentosa.* Gainesville, Florida.

Sphæria Baptisiæ. *Cooke.*—Rav. Fung. Amer. No. 200.

Sparsa vel subgregaria; peritheciis depressis, epidermide nigrofacta tectis; ascis obclavatis; sporidiis elongato-ellipticis, binucleatis (·014 × ·004 mm.).

On stems of *Baptisia perfoliata.* Aiken, S. Car., intermixed with *Phoma baptisiæ*, C.

Sphæria Ludwigiæ. *Cooke.*—"Hedwigia," Mar. 1878, p. 39. Rav. Fung. Amer. No. 199.

On *Ludwigia.* Aiken, S. Car.

Sphæria interspersa. *Cooke.*

Sparsa; peritheciis globosis, prominulis, brunneis, ostiolis papillatis; ascis clavato-cylindraceis; sporidiis biseriatis, fusiformibus, 7-septatis, læte brunneis, primo nucleatis.

On husks of *Zea Mays*, mixed with *Cladosporium*, *Fusisporium* and *Sphærella paulula*, C. Gainesville, Florida.

Sphæria rimularum. *Cooke.*

Tecta; peritheciis globosis, in lineas brevibus congestis, superne cuticula in rimas linearibus fissuratis; ascis clavatis; sporidiis fusoideis, hyalinis, 5-septatis, constrictis, nucleatis (·04-·05 × ·006 mm.).

On reeds. Gainesville, Florida.

The perithecia are collected in little elongated clusters, the cuticle cracked above them in parallel lines, but the ostiola do not penetrate.

Sphærella glauca. *Cooke.*—"Hedwigia," March, 1878, p. 39. Rav. Fung. Amer. No. 94.

On leaves of *Magnolia glauca*. Aiken, S. Car.

Sphærella smilacicola. *Schw.* sub. *Depazea.*—Rav. Fung. Amer. No. 95. (*Spermatia*) 155.

On leaves of *Smilax*. Aiken, S. Car.

Sphærella nyssæcola. *Cooke.*—"Hedwigia," March, 1878, p. 40. Rav. Fung. Amer. p. 96.

On leaves of *Nyssa*. Gainesville, Florida.

Sphærella paulula. *Cooke.*—Rav. Fung. Amer. Cent. iii.

Sparsa; peritheciis minutis, globosis, semiliberis (·07 mm. diam) ascis clavatis (·02 mm.); sporidiis ellipticis, demum uniseptatis (·005 mm. long).

On sheaths of *Zea Mays*. Gainesville, Florida.

One of the smallest representatives of the genus, masked by the *Cladosporium*, with which it is mixed.

Sphærella myriadea. *D.C.*—Rav. Fung. Amer. No. 156.

On oak leaves. Aiken, S. Car. Imperfectly developed.

Sphærella annulata. *Cooke.*—Rav. Fung. Amer. Cent. iii.

Sparsa, immersa; peritheciis depressis atris, subannulatis; ascis clavatis; sporidiis ellipticis, demum uniseptatis (·008 × ·003 mm.).

On upper surface of dead leaves of *Magnolia*. Aiken, S. Car.

Sphærella ailanthi. *Cooke.*—Rav. Fung. Amer. Cent. iii.

Gregaria, maculæformis; peritheciis parvis, atro-brunneis, in maculis irregularibus congestis; ascis clavatis; sporidiis ellipticis, uniseptatis (·006 × ·003 mm.).

On leaves of *Ailanthus*. Aiken, S. Car.

Sphærella panicum. *Cooke.*—"Grevillea," v., No. 153.

On *Panicum*. Aiken, S. Car. (2111).

Sphærella brunnea. *B. & C.* Sub. *Depazea.*

On leaves of *Acer rubrum*. Aiken, S. Car.

Microthyrium smilacis. *Not.*

On *Smilax*. Aiken, S. Car. (2324).

VINE DISEASES.

Two elaborate monographs on this subject have been recently published, one in Italy* and the other in Austria ;† the former containing an enumeration of 104 species and the latter of 224 species. Both of them are very useful works, and exhibit some care and perseverance in their production. On the whole they deserve commendation, although not entirely free from error. The latter is the largest, the latest, and the most pretentious work, and *that* we have been requested to criticise in the pages of this Journal. Some of our observations on species will, however, apply to both works.

It may seem surprising that Baron Thüemen should, in a work at once succeeding that of Dr. Pirotta, furnish more than twice as many species ; but we rather congratulate the latter that he has not been stimulated by the desire to make a big book, so that he has not fallen into the absurdity of classing with Vine diseases a number of Fungi which are either common to all kinds of decaying vegetable matter, or only exceptionally developed on the Vine. No one would expect to find among Vine diseases, or Fungi of the Vine, such species as *Agaricus melleus*, Vahl., *Auricularia mesenterica*, Pers., *Corticium calceum*, Fr., *Cyphella villosa*, Karst., *Cyphella alboviolascens*, K., *Merulius corium*, Fr., *Polyporus vaporarius*, Fr., *Lycoperdon giganteum*, Batsch., *Mucor stolonifer*, Ehr., *Acrostalagmus cinnabarinus*, Corda., *Aspergillus glaucus*, Link., *Cladosporium herbarum*, Link., *Trichothecium roseum*, Link., *Eurotium herbariorum*, Link., and a host of others which could have been added only for the purpose of book making. After these examples it may be imagined how it has occurred that one work contains double the number of species of the other, and it may be judged how far the greater is an improvement on the less.

There are, however, errors of a more serious nature which should be corrected in a future edition of the Austrian work. We have elsewhere stated, on the authority of one of our best Lichenologists, that the type of Thüemen's new genus *Rœsleria* is a Lichen, and that as his species *Rœsleria hypogœa* is *Coniocybe pallida*, Fr., it should have had no place amongst Fungi It has also been pointed out more than once, both by the Rev. M. J. Berkeley and ourselves, that *Peziza pruinata*, Schw., is also a Lichen (*Arthonia confluens*), and should not have been included (p. 81).

Cladosporium fumago, Lk., is included (at p. 22), but not the perfect condition *Capnodium elongatum*, B. & D., which has occurred in North America, if it has not been detected in Europe.

As to the two species of *Phoma* confounded under the name of *Phoma vitis*, Bon., of which the specimens issued in the first series of " Fungi Britannici " are named *Phoma Cookei*, Pir., whilst those

* "Funghi Parassiti dei Vitigni," del Dr. Romueldo Pirotta (Milan, 1877).
† "Die Pilze des Weinstockes," von Felix von Thüemen (Vienna, 1878).

of the second series are *Phoma Vitis*, Bon., it may be doubted whether the former is a good *Phoma*, being distinguished from the latter by having sausage-shaped spores. This feature seems rather to point to *Aposphæria*. That, however, is a subject of minor importance, since undoubtedly in both instances we have only to deal with a stylosporous condition of some species of *Sphæria* not yet identified. Dr. Pirotta describes, under the name of *Lasiosphæria Cookei*, a species of *Sphæria* which was found growing in company with *Phoma Vitis*, Bon., on the specimen issued in the second series of "Fungi Britannici," and it is not at all improbable that this may hereafter be traced to *Phoma Vitis*, Bon., as the complete, ascigerous condition of that *Phoma*. It is singular that all the specimens of *Phoma Vitis* issued in both series of "Fungi Britannici" were collected by our friend Plowright in the neighbourhood of King's Lynn, and it is to his quick and ready eyes that we must trust for finding again the species of *Sphæria* in company with the *Phoma*. Since the publication of the works now under notice, we have examined some specimens of *Phoma* on Vine found at Hampstead, which had been referred to *Phoma Vitis*, and found them correspond with *Phoma Cookei*, Pir., in the curved linear spores; whereas in *Phoma Vitis*, Bon., the spores are of the usual *Phoma* type—that is, narrowly elliptical, straight, containing at the first two nuclei.

There is much reason for condemning the practice of misappropriation, which although not meeting with the punishment which civilised communities inflict on social offenders, is nevertheless unworthy of praise. *Corticium albido-carneum*, Thüm. (p. 70), should have been *C. albido-carneum*, Curtis, for which see Curtis's Catalogue (1876), page 107. *Corticium armeniacum*, Thüm., has no claim for acceptance instead of *Cort. molle*, B. & C., because although there is a *Cort. molle*, Fries, which has priority, there is also a prior name for *Cort. molle*, B. & C., since specimens were published by Ravenel in his "Fungi Caroliniana" (1852), as *Corticium ceraceum*, B. & Rav. (Cent. iii., No. 29). There is very doubtful propriety in employing *Propolis prominula*, Thüm., instead of *Stictis prominula*, Schw., for a species which he had evidently never seen, or he would have supplied the description of the fructification. *Hendersonia viticola*, Thüm. (p. 145), is an alteration from *Hendersonia vitis sylvatica*, Pirotta, confessedly because he did not approve the compound name, forgetting that the reason was insufficient. *Phyllosticta viticola*, Thüm. (188), as an emendation of *Septoria viticola*, B. & Curt., is certainly an error; for according to specimens from the late Dr. Curtis, the *Septoria viticola*, B. & C., has globose spores and is a *Sacidium*, to which we have applied the name of *Sacidium viticolum*, in papers read at the Horticultural Society, and in course of publication in their Journal. Specimens are published in "Ravenel's Fungi Americana" (Cent. i.).

This reminds us of the omissions observed, in looking over the

volume, of *Septoria Badhami*, B. & Br., and *Ascochyta rufomaculans*, Berk. Our remarks on *Phyllosticta Badhami*, C., published in "Fungi Britannici" (1st series) as *Septoria Badhami*, and the determination of *Septoria Vitis*, Lev., as a *Phyllosticta*, on the faith of an original specimen from Leveille, will be found in the Journal above alluded to.

Baron Thüemen has also fallen into a dilemma with the conidia of *Sphærella vitis*, Fckl., through not examining Fuckel's published specimens, which evidently he has not done, or he would not have copied Fuckel's faulty figure, from which he has *assumed* it to be a *Septosporium*, and called it *Septosporium Fuckelii*, Thüm.; whereas it is not a member of that genus at all, but a good *Cercospora*, to which we have applied the name of *Cercospora ampelina*. This author seems to have vague notions of *Septosporium*, according to the evidence of the inaccurate figure.

Cyphella Curreyi, B. & Br. (1861), certainly has priority of *Cyphella albo-violascens*, Karst. (p. 76), which latter being one of the compound names condemned by our author, it is a marvel that he did not proceed in a similar manner as on another occasion already alluded to.

According to the description of *Diplodia fabæformis*, Pass. & Thüm. (141), it is technically a *Sphæropsis*, for the spores are said to be "non septatis," which is just the character separating *Sphæropsis* from *Diplodia*.

Had the paper on *Hendersonia*, which was published in "Giornale Botanico Italiano," been consulted, *Hendersonia longipes*, B. & C. (p. 145), would not have been added.

Under the name of *Exosporium Badhami*, Awd., *Septoria Badhami* is quoted as a synonym, although we do not know that it has anything in common with that genus; the description does not by any means apply to *Septoria Badhami*, B. & Br., which has no setulose perithecia, and no brownish two or three septate spores.

Of *Corticium crocicreas*, B. & C., it may be said that it is evidently only a form of *Corticium viticola* (Schw.), Fr.

We do not observe *Irpex viticola*, C. & Pk., in the enumeration, nor a form of *Discosia artocreas*, which occurs in the United States on leaves of *Vitis æstivalis*, in company with the *Peronospora*. We have before us twenty species, at the least, of fungi on the Vine, which find no place in either work.

Although Pirotta unites *Helotium hyalopus*, Fckl., with *Helotium vitigenum*, Not., Thüemen keeps them separate as distinct species. From a comparison of Fuckel's specimens with those published by Saccardo, we are convinced that they are undoubtedly the same. In fact, there is a peculiarity in the sporidia which is to be observed in both specimens, and leaves no room for doubt as to their identity.

Cladosporium ampelinum, Pass. (p. 170), is acknowledged to be the same as *Helminthosporium Vitis*, Pirotta, and *Cercospora Vitis*, Sacc.; and Pirotta has also included *Graphium clarisporum*, B. &

C., as a synonym, in which view he is undoubtedly correct, as we have ascertained by an examination and comparison of authentic specimens. All these names represent, therefore, one fungus, which is certainly unlike any known species of *Cladosporium*, and is not at all in harmony with the character of the genus. With his intimate acquaintance with *Cercospora*, we are surprised that Professor Saccardo should have placed it in that genus, with which it has no affinity. Whether it should belong to *Graphium* or *Helminthosporium* may be doubted by some, but we incline to the latter, as the threads are distinct, though densely fasciculate, and are not really combined into a complex stem. Just the same structure prevails in *Helminthosporium Petersii*, B. & C.

We have pointed out these discrepancies which we have observed in looking over the volume, and hinted at omissions, with the view of aiding Baron Thüemen in the revision of his work. The authors of both publications deserve the thanks of Mycologists for their labours, which they could never hope to find pecuniarily remunerative. Their only reward is in the consciousness of the benefit they have conferred on their fellow workers, and to this they are fully and thoroughly entitled.

CORTINARIUS.

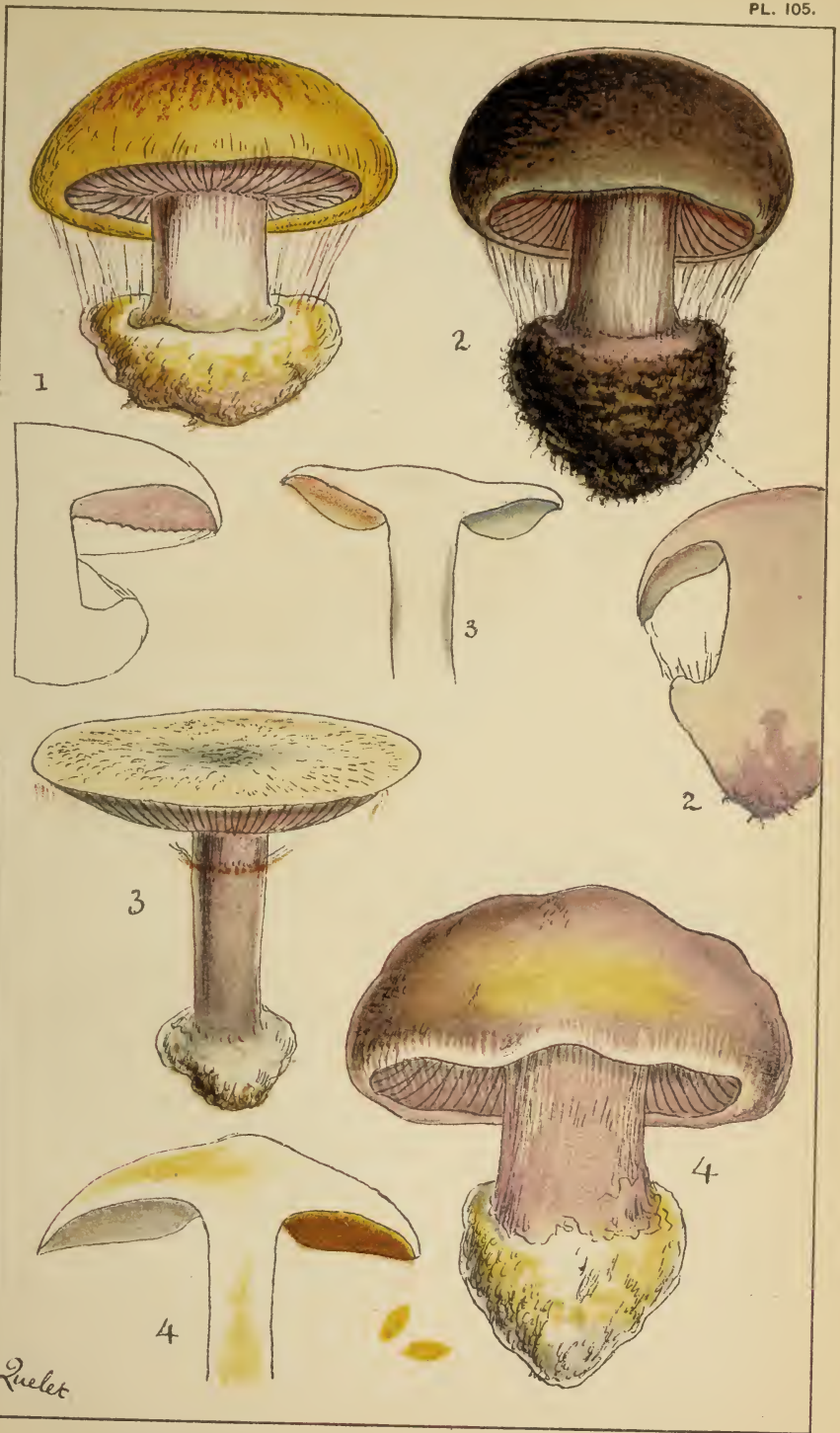
The following plates of species of *Cortinarius* from original drawings by Dr. Quelet are prepared, and will be published in consecutive numbers of this Journal:—

Plate 102—Fig. 1.	Cort. claricolor, Fr. Ep. ii., p. 336.
„ „ 2.	Cort. cyanopus, Fr. Ep. ii., p. 338.
Plate 103—Fig. 1.	Cort. largus, Fr. Ep. ii., p. 339.
„ „ 2.	Cort. variecolor, Fr. Ep. ii., p. 338.
Plate 104—Fig. 1.	Cort. Riederi, Fr. Ep. ii., p. 339.
„ „ 2.	Cort. percomis, Fr. Ep. ii., p. 340.
„ „ 3.	Cort. anfractus, Fr. Ep. ii., p. 341
„ „ 4.	Cort. multiformis, Fr. Ep. ii., p. 343.
„ „ 5.	Cort. glaucopus, Fr. Ep. ii., p. 344.
Plate 105—Fig. 1.	Cort. callochrous, Fr. Ep. ii., p. 345.
„ „ 2.	Cort. purpurascens, Fr. Ep. ii., p. 345.
„ „ 3.	Cort. cærulescens, Fr. Ep. ii., p. 345.
„ „ 4.	Cort. dibaphus, Fr. Ep. ii., p. 346.
Plate 106—Fig. 1.	Cort. orichalceus, Fr. Ep. ii., p. 348.
„ „ 2.	Cort. prasinus, Fr. Ep. ii., p. 348.
Plate 107—Fig. 1.	Cort. turbinatus, Fr. Ep. ii., p. 346.
„ „ 2.	Cort. scaurus, Fr. Ep. ii., p. 349.
„ „ 3.	Cort. crystallinus, Fr. Ep. ii., p. 350.
„ „ 4.	Cort. decoloratus, Fr. Ep. ii., p. 351.
Plate 108—Fig. 1.	Cort. salor, Fr. Ep. ii., p. 357.
„ „ 2.	Cort. delibutus, Fr. Ep. ii., p. 357.
„ „ 3.	Cort. vibratilis, Fr. Ep. ii., p. 358.
„ „ 4.	Cort. mucifluus, Fr. Ep. ii., p. 355.
Plate 109—Fig. 1.	Cort. turgidus, Fr. Ep. ii., p. 360.
„ „ 2.	Cort. tophaceus, Fr. Ep. ii., p. 363.

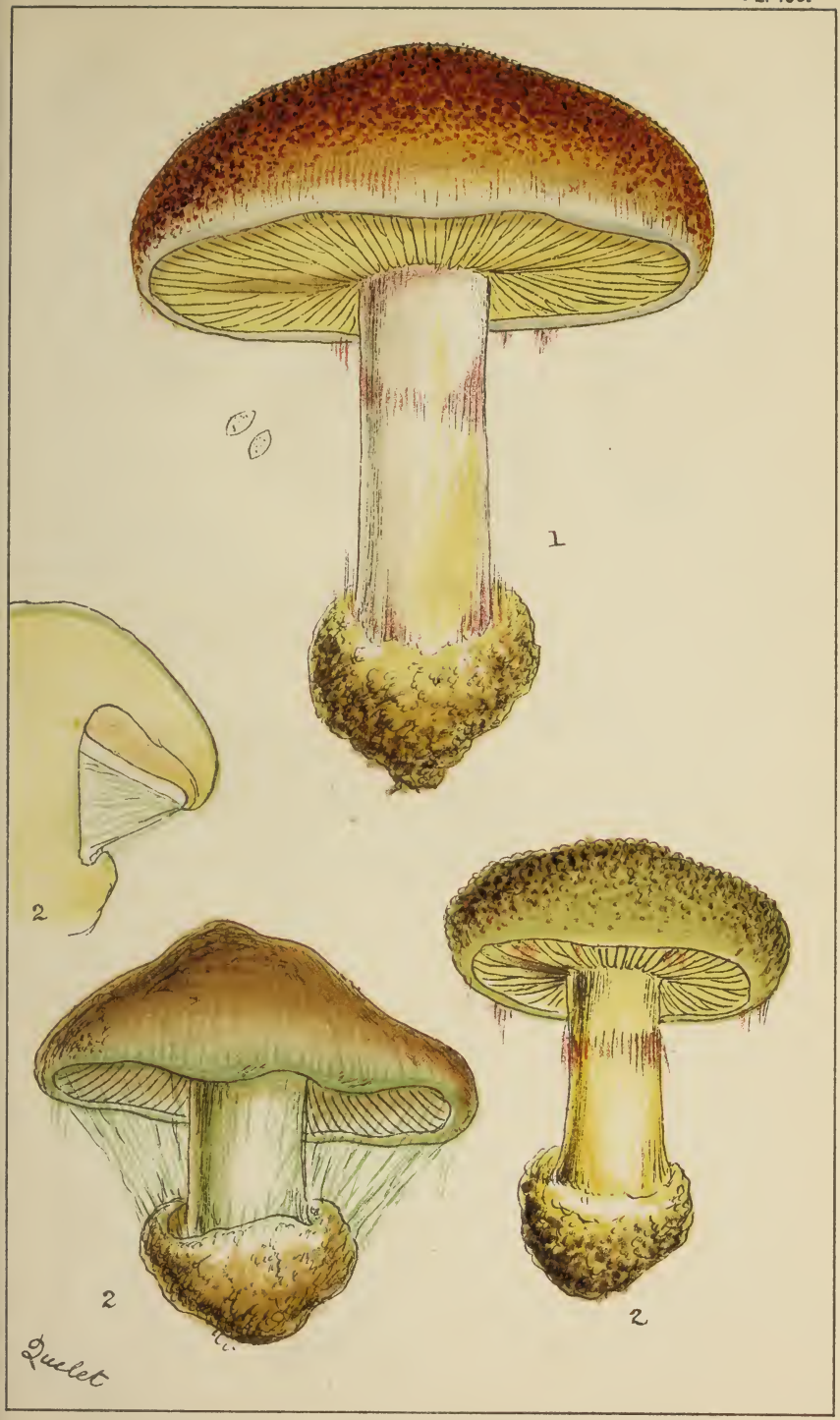
1. Cortinarius claricolor. 2. Cortinarius cyanopus.

1. Cortinarius largus. 2. Cortinarius variecolor.

1. *Cortinarius Riederi.* 2. *Cort. percomis.*
3. *C. anfractus.* 4. *C. multiformis.* 5. *C. glaucopus.*



1. *Cortinarius callochrous.* 2. *Cortinarius purpurascens.*
3. *Cortinarius cœrulescens.* 4. *Cortinarius dibaphus.*



1. Cortinarius orichalceus. 2. Cortinarius prasinus.

1. *Cortinarius turbinatus.* 2. *Cortinarius scaurus.*
3. *Cortinarius crystallinus.* 4. *Cortinarius decoloratus.*

1. *Cortinarius salor.* 2. *Cortinarius delibutus.*
3. *Cortinarius vibratilis* 4. *Cortinarius mucifluus.*

1. Cortinarius turgidus. 2. Cortinarius tophaceus.

BRITISH BOG-MOSSES (SPHAGNACEÆ).

Bryoligists have already pronounced in favour of the very valuable papers on Bog-Mosses, which Dr. Braithwaite communicated to the "Monthly Microscopical Journal," of which abstracts were republished in our pages. Since the period at which these were written, a collection of the specimens of *Sphagnum* therein described, has been published by the same gentleman, and we have the announcement of a complete monograph of the group, with introductory chapters on the history and bibliography of the subject, which will render the *Sphagnacæ* the most completely illustrated portion of British Bryology. Sufficient encouragement is only needed to induce its thoroughly competent author to advance still further, and perform similar good work on another group of our moss flora.

In connection with this identical subject, it is our privilege to remind readers that an excellent series of microscopical preparations have been made by the Rev. J. E Vize, of Forden, of Dr. Braithwaite's series of *Sphagnum* specimens, mounted in his usual neat and artistic manner, which will be exceedingly valuable to all who possess the specimens themselves, and scarcely less valuable to those who do not, as illustrations of the cell structure of the leaves of the Bog-mosses. Bryologists now, as well as the students of other cryptogamia, cannot ignore the microscope, or refuse the assistance which the microscope affords in the determination of closely allied species. Those who are acquainted with Dr. Braithwaite's papers need not to be reminded how much microscopical examination is needed for understanding properly and accurately the relations between the several species. It was, we believe, at the suggestion of Dr. Braithwaite, that the Rev. J. E. Vize was induced to prepare a limited number of sets of "slides," illustrating the *Sphagnaceæ*, and as these are prepared from authentic specimens, they have an undoubted scientific value, apart from their value as interesting microscopic objects. We are informed that a very few sets of these unique preparations are still unsold, and may be had on application to the above-named gentleman, at Forden, in Montgomeryshire. The complete set costs about a guinea, and doubtless their value will increase rather than diminish with time, since all authentic preparations made carefully, and accurately named, will always possess a market value, which does not become attached to vaguely named, or fancy preparations, such as may be fashionable at public soirées one week, and condemned to oblivion the next.

North American Algæ.—We have just received intimation that the second Fasciculus of specimens, prepared by Messrs. Farlow, Anderson and Eaton, is published.

THE SALMON DISEASE.*

By W. G. Smith, F.L.S.

For several weeks past the newspapers have contained accounts of the diseased condition of various fish in several of our northern rivers—principally the Esk and Eden. The disease of the fish is caused by an attack of a fungus, and therefore must have some interest to your readers. No doubt every one with a slight acquaintance with fungi suspected from the first that the disease was similar to the familiar disease of goldfish in aquaria, and no other than the common *Saprolegnia ferax*. From material kindly forwarded to the writer for examination from Carlisle by Mr. George Brookter, of Huddersfield, there seems to be no reason to doubt the identity of the parasite with the common pest of carp—*Saprolegnia ferax*.

According to the newspaper reports we find that the owners of the salmon fisheries on the Tweed, and the Commissioners to whom the protection of the fisheries is entrusted, have for years been disturbed, distressed, and annoyed by a great mortality which comes over the fish towards the end of the spawning season. Any time during February, and anywhere between Stobo and Berwick, dead salmon may be seen by the half dozen in every pool. The epidemic is thus described :—Large numbers of salmon—not only kelts, but clean fish lately arrived from the sea—appear to be affected with an epidemic which destroys hundreds of them. The head and tail first, and gradually the whole body is attacked by a disease which appears to eat away the flesh, turning it white, and giving the fish the appearance of being affected with the leprosy. Such fish are entirely unfit for food. Correspondents describe them as leaping out of the water, as if in pain and in frantic efforts to escape; some return to the sea, but many perish in their attempts to reach the salt water. The salmon caught in the estuary are not diseased in this way, and, as the epidemic is said to be spreading to the trout, it would appear that some peculiar condition in the fresh water is the cause of the remarkable phenomena. Some of these characteristics of the disease are not confirmed by a more correct observation and less hasty deduction, but what is said enables one to recognise the malady which for several years past has slain its thousands of salmon on the Tweed. In both rivers the afflicted animals suffer violent pain, and rush blindly about as if brain disease existed through generally inflammatory action, and in both rivers the dead bodies present a similar appearance.

The various theories which have been published in the daily papers as to the cause of the disease and the "cause of the fungus" have no foundation in fact. The most common theory seems to be that the salmon die from disease induced by inflammatory action arising from retention of the milt. The theory of the fishery

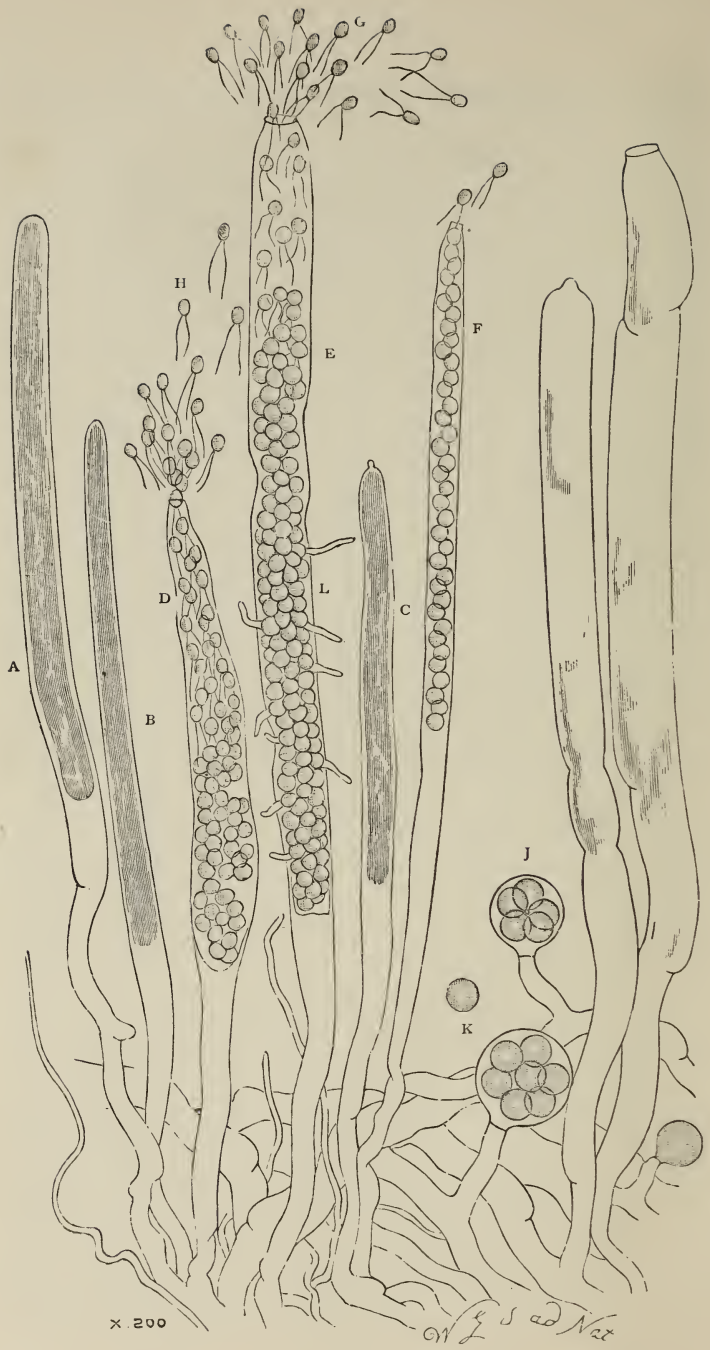
* By permission from the "Gardeners' Chronicle," May 4th, 1878.

owners and the Commissioners does not afford even the small consolation that the fish die a natural death, for they hold, and are ready to affirm on oath, that the vile pollutions of the woollen mills and towns on Tweedside cause all the evil. The controversy has continued for years, but now some facts have turned up in Cumberland and Westmoreland which must carry a verdict of acquittal for the millowners. A short time ago large numbers of dead salmon were found in the Kent, a river which is as pure as Thirlemere itself. No pollution, wilful or accidental, could be traced, and the authorities had to confess their ignorance of the cause of death, coming to the illogical conclusion that it arose from exhaustion after spawning, oblivious apparently that this has happened every year since Kent was a river, and the deaths have been heard of only now. From a statement in the "Times" it appears that things piscatorial are much worse in the Eden, which flows through a beautiful country guiltless of the offences of factories.

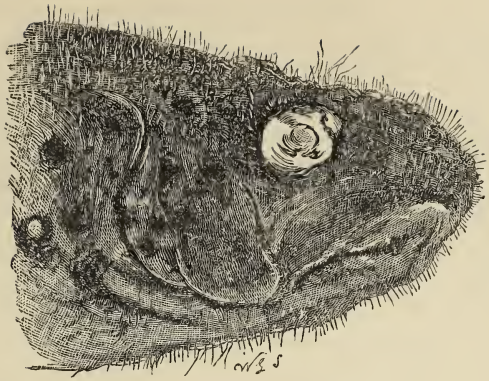
The "Carlisle Journal" says :—"Large numbers of kelts—that is, fish that have spawned—are found in pools and floating down the stream dead and dying. The appearance of the disease is that of a white fungus. This affects the head of the fish, then it attacks the tail, and subsequently the fins. In some instances the fungus grows so plentifully that the fish appears to be swimming about with a white nightcap over its head. Salmon smolts and trout are also affected by the disease.

"An unusual number of kelts have remained in the Eden this year, and many of them have died; so many, in fact, that the water bailiffs have been employed in picking them out of the water and burying them."

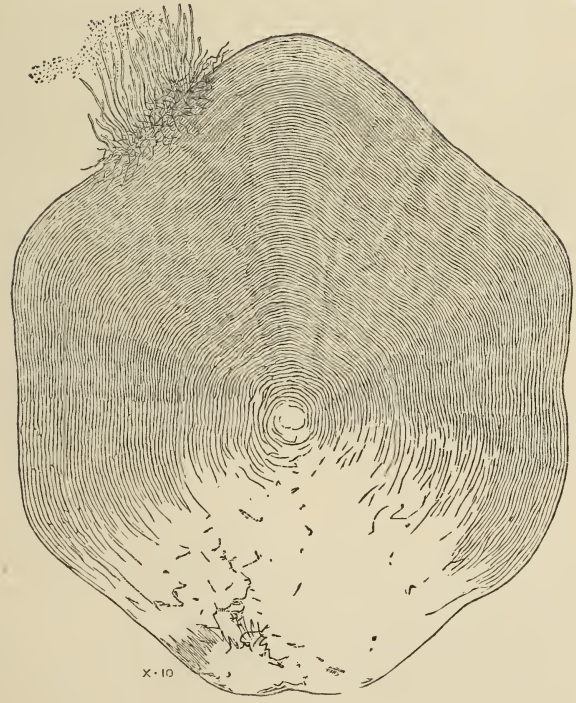
This disease is by no means confined to salmon and young salmon (smolts), but trout, eels, lampreys, flounders, minnows, and other fish, are equally affected. A watcher on the Esk informed Mr. Brookter that the disease nearly always starts at the nose, and gradually spreads over the head; the fish, he affirmed, would come to a still part of the river, with only a small patch on the nose, and in two or three days the patch would have extended over the head, and at the same time have appeared on the base of the fins and tail. The disease is said to be generally confined to the parts mentioned, unless the fish has had a bruise or scar anywhere so as to remove the scales. From an examination of actual specimens, however, it seems proved that the disease by no means always commences at the head. The accompanying illustration of the smolt's head (fig. 104) shows the external appearance of the disease and its effects; the scales appear to be covered with a fine white cottony bloom, which at length blinds the fish, envelopes the gills, or even entirely closes the gills and mouth. To give an idea of the relative size of the fungus in comparison with a fish, a single scale of a salmon, with the fungus *in situ*, is here engraved (fig. 106), enlarged ten diameters. With a very low power of the microscope the fungus will be seen to consist of a dense mass of matted



THE FUNGUS OF THE SALMON DISEASE (SAPROLEGNIA FERAX),
× 200 DIAM.



HEAD OF SMELT AFFECTED WITH FUNGUS.



SCALE OF SALMON, WITH FUNGUS IN SITU, × 10 DIAM.

threads without joints, and a thick forest of minute transparent clubs.

When the fungus is enlarged to 200 diameters the general appearance is like the representation in the accompanying engraving. The supporting threads are seen at the base, and these give rise to thick filaments filled with protoplasm. The protoplasm, A, B, C, rapidly becomes differentiated into zoospores, D, E, F, and these bodies float out of an orifice which opens in the apex of the club-like filament. The zoospores are each furnished with two fine hair-like flagellæ or tails, G, H, after the style of the zoospores in the fungus of the Potato disease. In the specimens of fish I have examined from the Esk and Eden, the parasitic fungus and all its individual parts have been uncommonly variable in size, so that a species maker might almost make as many species of fungi as of fish. The club-shaped heads are generally rounded when the parasites grow on salmon, and the apex suddenly goes to a point on the trout. The resting-spores are common enough ; they are contained in globular flasks, as at J, K. Both zoospores and resting-spores appear to be most eager to germinate, especially the former, for in many instances I have seen them germinating whilst still in the parent sac, as at L.

If asked for a reason for the uncommon abundance of the fungus this year, I should be inclined to refer it to the extraordinary mildness of the late winter. Severe weather, or a sudden change of temperature, will generally collapse fungi of the nature of *Saprolegnia ferax*, as will several dilute chemical infusions, and that without damaging the fish; but an experiment, though successful in an aquarium, might possibly fail in a large river.

The fungus has been described as infesting the dead, as well as the living, fish ; but with me the fungus has invariably vanished with the death of the fish. Dead fish are certainly covered with a white cottony coating, but on an examination of this flocculent mass, under the microscope, it is found to consist wholly of white granular matter, consisting of bacteria, monads, &c., and no fungus threads or fruit belonging to *Saprolegnia ferax* can be seen.

The disease has been so virulent on the Esk, during the present spring, that the watchers have in some instances buried as many as 350 fish in three days between Langholm and Longtown.

BOTANICAL NOMENCLATURE.

We commend to our readers a careful perusal of the papers on "Disputed Questions of Botanical Nomenclature," in recent numbers of the "Journal of Botany." It is much to be desired that some understanding amongst botanists should be arrived at, with the view of checking and diminishing the evils of an inordinate multiplication of synonyms. The evil is making itself so universally felt, that we hope some definite remedy will result from the controversy.

PERIDERMIUM.

The following species of *Peridermium* are enumerated in an article published by M. C. Cooke in the "Indian Forester" (Vol. iii., part 2):—

Peridermium corticolum, Link.
Peridermium acicolum, Link.
Peridermium orientalis, Cooke.
Peridermium columnare, A. & S.
Peridermium Thomsoni, Berk.
Peridermium abietinum, A. & S., including *P. decolorans*, Peck.
Peridermium Ephedri, Cooke.
Peridermium balsameum, Peck.

This is presumed to include all the species hitherto described.

HEPATICÆ BRITANNICÆ EXSICCATÆ.

We are happy to learn that dried specimens are being prepared for publication of the British Hepaticæ, by Dr. Carrington and W. H. Pearson, of which an advertisement appears on the cover of this journal. It is very many years since McIvor published his specimens of Hepaticæ, and hence the present will be very welcome, especially when authenticated by such an efficient authority as Dr. Carrington. The group is a small one, and therefore the whole will be inexpensive. The first fasciculus of seventy-five specimens, representing sixty species, is promised for fifteen shillings.

SIMBLUM PILIDIATUM.

The following corrections should be made in the description at p. 119, line 3, for "adharens," read "adhærens;" line 8, for "atroverescente," read "atrovirescente;" line 9, for "nursum," read "unicum." A. E.

Congres International de Botanique et d'Horticulture.—This Congress is to be opened in Paris on the 16th August, 1878, at the rooms of the Horticultural Society, 84, Rue de Grenelle, and one of the subjects proposed for consideration is "The Fecundation in Hymenomycetal and Ascomycetal Fungi." The Secretary to the Committee is Mons. E. Mer, the secretary of the Botanical Society, to whom communications may be addressed at 84, Rue de Grenelle, Paris.

CATALOGUE OF THE DIATOMACEÆ.

The following corrections should be made in the article at page 116, line 12, for "Vermuim," read "Vermium;" and, in list of genera, for "Dichaniensis" read "Dichomenis," and strike out "Mainema;" bottom line for "Prat," read "Prit;" at p. 117, for "*Vanhenckia*," read "*Vanheurckia*." F. K.

ASCOBOLUS ATROFUSCUS. Phillips.

By oversight Mons. Boudier has conferred the name of *Ascobolus carbonicola* upon the species which he confounded in his Memoir (published in "Annales des Sciences Naturelles"), with *Ascobolus viridis*, Curr. He evidently had not observed the description by Mr. W. Phillips in "Grevillea," Vol. II., p. 186 (June, 1874), of *Ascobolus atrofuscus*, Ph. & Pl., with its synonym *Ascobolus viridis*, Boud. Mem., t. 5, fig. 4, to which must now be added, as a second synonym, *Ascobolus carbonicola*, Boud. Bull. Soc. Bot. France, 1878, p. 310. The same species occurs, with its correct name, at p. 357 of the same journal.

Mycologia Scotica.—This work, entitled "Mycologia Scotica: Fungi of Scotland, and their Geographical Distribution," by Rev. Jno. Stevenson, will be issued in connection with the Cryptogamic Society of Scotland, and will contain lists of Scottish Fungi references for botanical descriptions, habitats, seasons of growth, ranges of altitude, and geographical distribution. It will include descriptions of the species new to science which have been recently discovered, and many additions to the British Flora. The volume of about 400 pages 8vo., with descriptive map of Scotland, is offered to subscribers at seven shillings and sixpence per copy. Communications to be addressed to the Author, Glamis, Forfarshire. As it is proposed to limit the number printed of this work to that of subscribers, it is essential that all who desire to possess a copy should communicate their wishes to the Author.

Belonia Nerculana. Hazs. Grevillea, vi., p. 109.— Having received intimation from Dr. Rehm that this species had already been published as *Segestrella herculina*, Rehm, we communicated with Prof. Hazslinszky, who informs us that it was first published by Nylander as *Verrucaria hungarica*, Nyl., and that the more accurate name would be *Belonia hungarica* (Nyl.), Hazs. The genus depends upon the views of the different authors. Koerber's *Belonia* is not Nylander's *Belonia;* one having paraphyses, the other none.

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