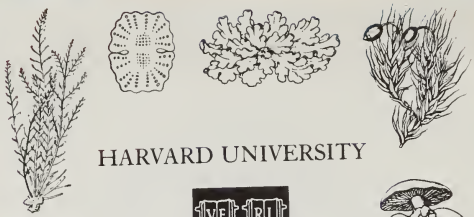

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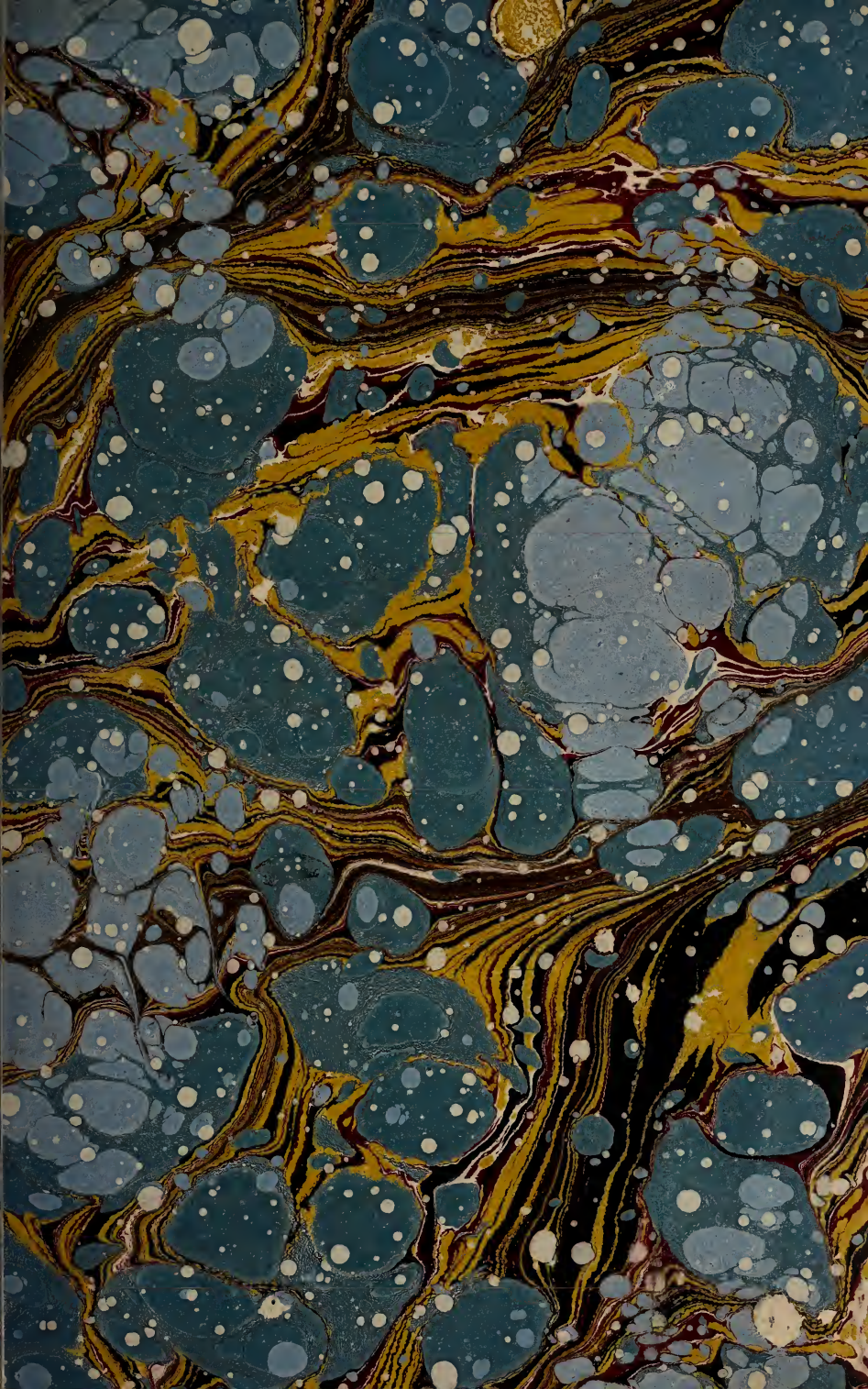

Grevillea,

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.

A MONOGRAPH OF THE BRITISH HYPOMYCES.

By Charles B. Plowright.

With Illustrations of all Species, by Dr. M. C. Cooke, M.A., A.L.S.

There are several points which render the members of this genus specially interesting to the mycologist, and which make it a promising field for the worker. In the first place, the nature of matrices upon which the species grow fungi. *Hypomyces* are *inter alia* fungi growing upon other fungi. These fungous hosts vary in nature and in quality very considerably. Some are living fungi, which afford the *Hypomyces* a home long ere they themselves have attained maturity; for example, *H. luteo-virens*, Fr., grows upon agarics. It has occurred near King's Lynn for three successive seasons, yet, although attention has been especially directed to this point, it has not, as yet, been possible to determine with certainty what the agaric is, for the simple reason that the *Hypomyces* attacks it before it appears above ground, and so alters its appearance, that beyond recognising the fact that it is an agaric, its genus, much less its species, cannot be determined. Prof. P. A. Karsten, however, has met with this *Hypomyces* in Finland, upon various species of *Lactarii*, and it is highly probable that, in the course of time, this observation will be confirmed in this country. More commonly, however, these parasites attack fungi which have attained, or even passed their maturity, as *H. chrysospermus*, *aurantius*, *rosellus*, &c. Some grow upon the fleshy *Agaricini* and *Boleti*, others upon the tough, coriaceous *Polyporei* and *Sterei*, while two species affect such ephemeral hosts as the *Myxomycetes* afford. But perhaps the most remarkable species grows, not upon the fungus itself, but upon the ground under or near where it has decayed, this decay being the result of the growth of an earlier stage of the *Hypomyces*. In other words the *Hypomyces*, in its conidial stages, first attacks the host fungus, and by causing its

decay, generates the pabulum necessary for the nourishment and perfection of the higher form of fructificatian (ascigerous) of the *Hypomyces*, which is found in a stroma developed on the ground.

The genus *Hypomyces*, however, is interesting, not only from its fungicolous habit, but also from the numerous phases of existence through which many of its members pass. In the highest condition under which we meet with it, it is ascigerous, and belongs to the large order *Sphæriacei*, inasmuch as it has its sporidia inclosed in asci, and its asci enclosed in perforate perithecia. The perithecia are membranous, coloured often brightly, pierced at the apex by minute ostiola, and are, as a rule, seated upon a web of floccose mycelium, which is tolerably permanent, and has usually the same colour as the perithecia. The asci are, as a rule, octosporous, and take the form of an elongated cylinder. The sporidia are of two types, (1) either rather large, fusiform, normally uniseptate, and produced at either extremity into an acute point or pointed appendage ; or (2) they are small, oval, with blunt extremities, and, as a rule, uniseptate.

The second form of fructification consists of *Macroconidia* or *Chlamydospores*. These are large spores having usually a thick, often echinulate or verrucose epispore, frequently globose, brightly coloured, and very abundant.

The third form of fructification, the *Microconidia* or *Conidia* proper, are, on the contrary, small hyaline spores, often extremely abundant, born singly upon the tips of hyaline tubes, or concatenately. Many of them have been described as autonomous species of *Mucedenes*, under the genera *Botrytis*, *Verticillium*, *Dactylium*, &c.

All three states of every *Hypomyces* have not as yet been observed, either in this country or elsewhere. As a rule, the ascigerous condition is the least frequently encountered, but this is by no means always the case ; perhaps, upon the whole, the microconidia are the most abundantly diffused.

M. Tulasne mentions two species of *Hypomyces*, which have been found in this country, but which cannot, I think, be fairly included in this genus, as it is at present limited, viz. :—

Hypomyces miliarius and *H. tuberosus*. Both these species have this in common, that they, while growing parasitically upon other fungi, develope sclerotia. They were both pointed out by M. Max Cornu at Hereford.

Hypomyces miliarius, Tul. This species consists of a thin white layer of mycelium running over the gills, and sometimes other superficial parts of various *Russulæ* (*R. emetica*, *fœtens*, and *adusta*). From this mycelium are produced erect conidiophores, which bear abundant narrow ovate oblong conidia ·004-·013 mm. in length. Intermixed with the mycelium are innumerable small globose sclerotia.

Tulasne, Sel. Carp. Fung., III , p. 43, note. Saccardo, Mich., I., p. 287.

Hypomyces tuberosus, Tul., is a much larger plant than the preceding. The sclerotia are large, globose or irregular, whitish or pallid, and externally a good deal resembling those from which *Agaricus cirrhatus* is developed, but there is this very marked difference between these two sclerotia—those of the agaric, when cut across, are pale yellow within, while those of the so-called *Hypomyces* are reddish brown. My friend M. Cornu last autumn gave me some fresh sclerotia of the latter kind, which I placed in incisions in the stem of a specimen of *Lactarius vellereus*, and kept under a bell glass. In due course the sclerotia developed a beautiful mould consisting of a central stem which, in the course of a few days from its first appearance, grew to the height of 2 to 3 c.m., and gave off at right angles branches bearing oval hyaline spores. The branches were very numerous, nearly at right angles to the central stem, not arranged in whorls. The erect direction of the stem soon became lost, and the branches interlaced with those of other specimens, so that an intricate mass was formed, from which was developed a fresh crop of sclerotia.

Tulasne, Sel. Carp. Fung., III., p. 58, note. Saccardo, Mich., I., p. 287.

There remain two species of *Hypocrea* which, only after mature consideration, have been excluded from the present monograph, namely, *H. alutacea* and *H. inclusa*, B. & Br. The former is a well known plant which has been figured and described by various authors under the generic designations of *Hypocrea*, *Cordyceps*, *Claviceps*, *Sphæria*, and *Clavaria*. As usually found in this country, it bears a stronger external resemblance to the *Torrubiæ*, than to the members of any other genus. Its fructification, however, clearly shows its affinity to the *Hypocreæ*. Its asci contain eight uniseptate hyaline sporidia, which at maturity fall into two separate halves at the septum, so as to appear as sixteen globose sporidia arranged in a linear series.

M. Tulasne regards this species as an ally of the *Hypomyces*, and considers it parasitic upon *Clavaria ligula*. Now *Clavaria ligula* is not properly speaking an English species, for although within the last few years it has been recorded from Scotland, it has not as yet been met with south of the Dee. In searching for *Hypocrea alutacea*, some few years ago, near Hereford, Mr. C. E. Broome casually mentioned the fact that he frequently found it growing in company with *Spathularia flavida*, and since which time I have found it several times, but always associated with the *Spathularia*, except on one occasion. So intimate and pertinacious has this association been that I cannot doubt its parasitism. The other occasion, alluded to above, was near King's Lynn, when it occurred upon an old stump, and although I cannot recognise the host upon which it grew (any more than the agaric which harbours *Hypomyces luteo-virens*), yet I have no doubt as to the parasitic nature of this plant.

The younger specimens are whitish in colour, and only assume

their alutaceous hue when the perithecia are developed. M. Tulasne (Sel. Fung. Carp., III., t. IV., f. 4) gives a figure of the conidia, which are globose hyaline bodies born upon verticillate septate threads.

Hypocrea inclusa, B. & Br., is a species remarkable, both on account of its curious habitat as well as for its fructification; it is virtually an eight-spored *Hypocrea*, growing internally upon the hymenium of *Tuber puberulum*.

The following seventeen species of *Hypomyces* naturally fall into two groups, viz., those of which the ascigerous fructification is known and those of which it is unknown. The former may further be divided into (a) those having larger acute sporidia, and (b) those with smaller obtuse sporidia.

Ascospores Known.

A. Sporidia acute.

1	Hypomyces	chrysospermus, Tul.
2	,,	asterophorus, Tul.
3	,,	lateritius, Tul.
4	,,	torminosus, Tul.
5	,,	rosellus, Tul.
6	,,	aurantius, Tul.
7	,,	ochraceus, Tul.
8	,,	Tulasneanus, Plow. & Cooke.
9	,,	luteo-virens, Tul.
10	,,	terrestris, Plow. & Boud.
11	,,	Broomeanus, Tul.

B. Sporidia obtuse.

12	,,	Berkleyanus, Plow. & Cooke.
13	,,	aureo-nitens, Tul.
14	,,	violaceus, Tul.
15	,,	candicans, Plow.

Ascospores Unknown.

16		Linkii, Tul.
17		cervinus, Tul.

1. Hypomyces chrysospermus, *Tul.* *Conidia*, small, white, ovate or oblong, obtuse at both ends, sometimes contracted in the middle; ·01 to ·02 mm. long by ·005 to ·006 mm. wide.

Chlamydospores. Sphærical, rough with warts, golden yellow, becoming yellow brown, very abundant; ·013 to ·02 mm. in diameter.

Perithecia. Numerous, crowded, upon and amongst the golden powder of the chlamydospores, ovoid, with a conico-attenuated apex; at first hyaline, then golden yellow, smooth; ·3 to ·32 mm. in height.

Asci. Cylindrical, attenuated below; ·12 to ·2 mm. long by ·001 mm. wide.

Sporidia eight, elongated, lanceolate, hyaline usually, unequally uniseptate; ·021 to ·03 mm. long by ·006 mm. wide.

Hypomyces chrysospermus, Tul. Ann. Sc. Nat., Series IV., vol. XIII. (1860), p. 16.
" " Karsten Mycol. Fenn. II., p. 209.
" " Sel. Fung. Carp. III., p. 49, t. VIII., f. 1-13.
" " Fuckel Symb. Myc., p. 182.
" " Berk. and Broome. Ann. N. H., No. 1832.
" " Phillips and Plow., Grev. VIII., p. 104.
" " Saccardo Mich. I., p. 285.
Mycol. Venet. sp. 124.

Chlamydospores :

Tubiporus sulphuratus. Paulet. t. 183, fig. 1, 2.
Reticularia chrysosperma. Bull. t. 476, f. 4.
Mucor chrysospermus. Bull. t. 504, f. 1.
" " Sow. t. 378, f. 13.
" " With. IV., p. 370.
" " Purton. II. & III., No. 1121.
Uredo mycophila. Alb. and Schw., p. 122.
" " Pers. Obs. Myc., p. 16.
" " " Synop., p. 214.
" " De Cand. Flor. Gall. II., p. 230.
Sepedonium mycophilum. Nees Syst. der Pilze., p. 44, t. III., f. 38.
" " Mart. Fl. Cryp. Erlang., p. 339.
" " Link. Obs. I., p. 16.
" " Willd. Sp. Plant. VI., p. 29.
" " Corda Icones. IV., p. 7, t. III., f. 23.
" " Grev. t. 198.
" " Chev. Fl. Par., t. III., f. 16.
" " Chev. Fung. et Byss., t. 16.
" " Rabh. Exs. 184.
" " " Cryp. Flor. I., p. 71.
Mycobanche chrysosperma. Pers. Champ. Com., p. 133.
" " Wallr. Fl. Germ. II., p. 272.
Sporotrichum mycophilum. Spreng. Sys. Veg. IV., p. 549.
Sepedonium chrysospermum. Link. Obs. I., p. 29.
" " Fries Sys. Myc. III., p. 438.
" " Fries Sys. Veg. Sc., p. 497.
" " Berk. Eng. Fl. V., pt. 2, p. 350.
" " Tulasne Act. Heb. Ac. Science, 1855, p. 616.
" " Berk. Outlines, p. 355.
" " Cooke Hdbk., p. 619.
" " Fckl. Exs., No. 141.
" " Stevenson Mycol. Scot., p. 286.
" " Berk. Cryp. Bot., pp. 298, 304, 306.
" " Kunze Exs. 223.
" " Bisch. f. 3806.
" " Bonord. Hdbk., t. 4, f. 103.
" " Karst. Exs. 387.

Common in the conidiferous state upon various Boleti, especially *B. scaber*, *chrysenteron*, *subtomentosus*, *badius*, and *edulis*. It also occurs on *Paxillus involutus*, and upon *Strobilomyces strobilaceus*. Tulasne records it upon *Scleroderma verrucosum*, *Octaviana asterosperma*, and *Melanogaster variegatus*.

The ascigerous state is much the most uncommon ; it was found by the Rev. M. J. Berkeley at Coed Coch, and in Chapelton wood near Forres by the Rev. J. Stevenson and myself in September, 1879. The infected Boletus first shows signs of being affected with the parasite by producing upon its surface, at some point, a crop of microconidia. If it be examined in this stage, numerous mycelial tubes will be seen making their way downwards or towards the centre of the matrix. These penetrate with great rapidity into the substance of the Boletus. Immediately beneath the microconidia will now be found upon the same mycelium the macroconidia. They are at first almost colourless, but soon become faintly tinged with yellow, then golden. The whole fungus in a short time becomes reduced to a mass of golden powder, which falls to pieces on the gentlest touch. What the precise conditions are which favour the production of perithecia I have failed to discover beyond that the too rapid development of Chlamydospores must not take place.

PLATE 146. *a*. Portion of a Boletus with the conidia growing in a white woolly mass upon its surface. Nat. size.
b. Part of the same × 400.
c. Microconidia × 400.
d. Macroconidia × 400.
e. Perfect fungus on Boletus. Nat. size.
f. Perithecia × 20.
g. Perithecium × 140.
h. *i*. Asci and sporidia × 400.
k. Sporidia × 600.

2. Hypomyces asterophorus, *Tul. Conidia*, cylindrical, produced from the extremities of the branching mycelial tubes ; ·01-·015 mm. long by ·0035 mm. wide.

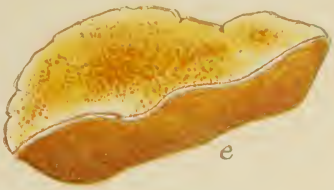
Chlamydospores produced singly upon the lower and thicker portions of the mycelial tubes ; sphærical, rough with warts, appendiculate, eventually falling into a copious fawn-coloured powder ; ·02 to ·025 mm. in diameter.

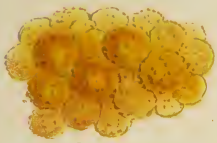
Perithecia formed in and by the effused mycelial tubes, crowded, sessile, sphærico-ovoid, more or less elongated at the neck ; with acute, pervious ciliate ostiola ; pale yellow brown, sub-hyaline ; ·15 mm. high by ·07-·09 mm. wide.

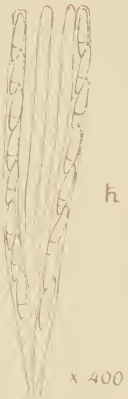
Asci broadly ovate, abruptly attenuated below.

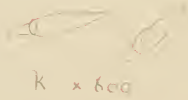
Sporidia narrowly lanceolate, curved, mucronate at either end, uniseptate, pale yellowish brown ; ·025-·035 mm. long by ·006 mm. wide.

Hypomyces asterophorus, Tulasne. Sel. Fungi Carp. vol. III., p. 54, t. 9.









Hypomyces chrysospermus Tul.

Hypomyces asterophorus, Fuckel. Symb. Myc., p. 181.
" " Karsten Myc. Fenn. II., p. 209.
" " Saccardo Mich. I., p. 285.

Conidia :

Elvella clavus. Schæff., t. 279.
" " Paulet., t. 190, f. 4.
Fungoidaster parvus, &c. Mich., p. 200, t. 82, f. 1.
Merulius lycoperdoides. De Cand. Fl. Fr., vol. II., p. 128.
Onygena agaricina Schweintz Fung. Car. Super, p. 65.
Agaricus lycoperdonoides. Bull. t. 166 and t. 516, f. 1.
" " Sow. t. 383.
" " Pers. Synop., p. 325.
" " Pers. Mycol. Europ., vol. III., p. 127.
Agaricus (Asterophora) lycoperdoides. Nees Syst. d. Pilze., p. 206, t. 24, f. 194.
Asterophora Linkii. Schrad. N. Jour. Bot., vol. III., p. 17.
" " " Mag. Nat. Fr. z. Berlin, III. (1809), p. 33.
" lycoperdoides. Ditm. Sturm. t. 26.
" " Rabh. Exs. No. 235.
" agaricoides, lycoperdoides, physaroides, and trichoides. Fries Obs. Myc. II., p. 367.
" agaricoides, lycoperdoides, and physaroides. Fries. Sys. Mycol. III., p. 205.
" lycoperdoides and trichoides. Fries Sys. Veg. Sc., p. 446.
" agaricoides and lycoperdoides. Berk. Eng. Fl., vol. v., pt. 2, p. 322. Wallr. Flora. Germ., pt. 2, p. 270.
" lycoperdoides and physaroides. Bonorden, p. 134, t. 11, f. 224.
Asterosperma agaricoides. Pers. Champ. Comes. t .I., p. 132 and 134.
Nyctalis asterophora. Fries Ep., p. 371. S. V. S., p. 312. Hymen., p. 463.
" " De Bary Bot. Zeit., t. 17 (1859), p. 385 and 397, t. 13, f. 1-11.
" " Berkeley Outlines, p. 217. Cryp. Bot., p. 305, 366.
" " Cooke Hdbk., p. 231.
" " Stevenson Mycol. Scot., p. 116.
" " Cooke and Quelet, p. 151.
" " Karst. Exs., 512.

Parasitic upon *Nyctalis parasitica*, certain years abundantly ; at other times scarcely a specimen is met with.

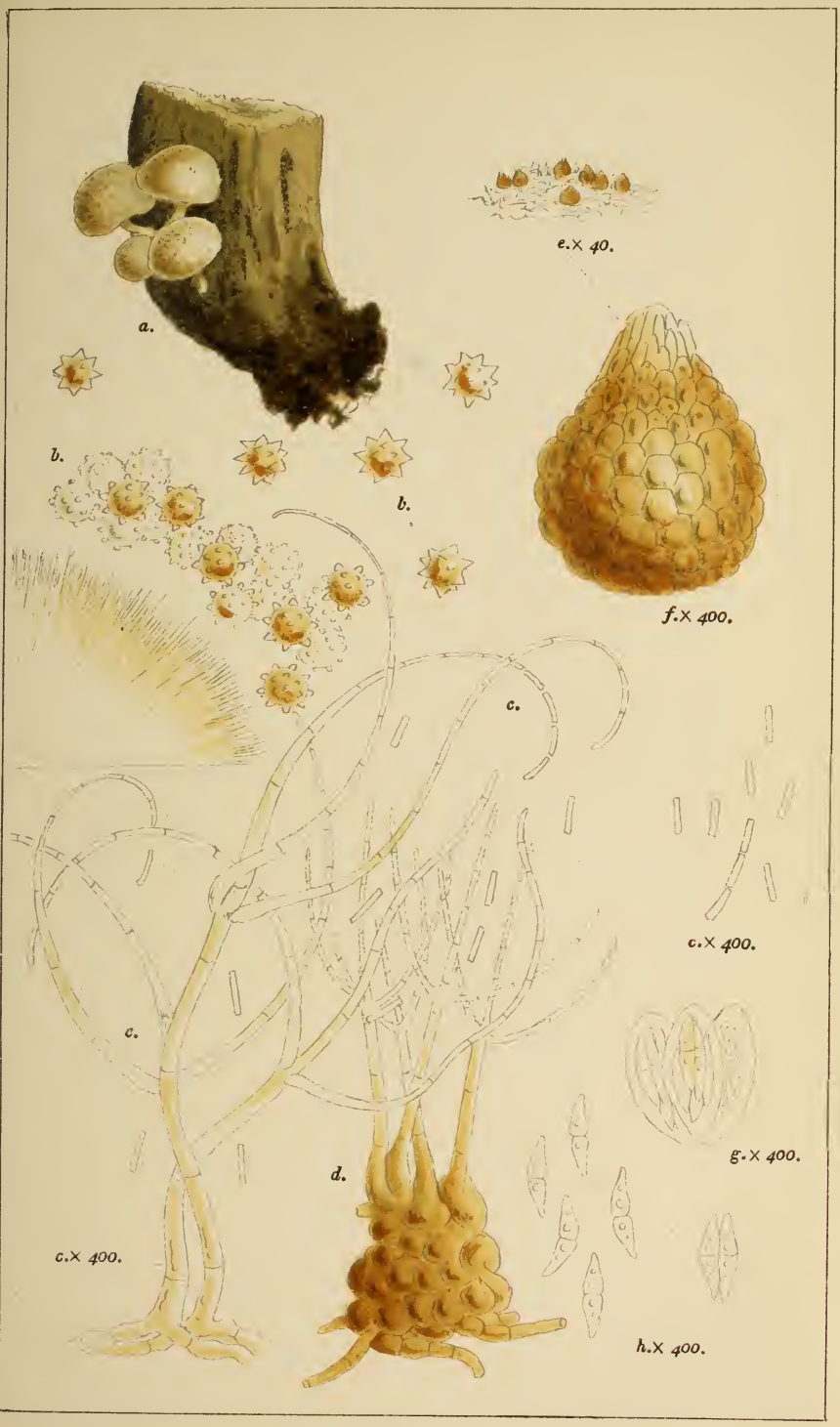
The perithecia of this species of *Hypomyces* differ considerably

from those of the other members of the genus. They are formed of very large polygonal cells, which become elongated and parallel where they form the ostiolum. The conidial state of this fungus has been known in this county since the time of Sowerby, but it was only in the month of September, 1880, that I was fortunate enough to meet with perithecia. Several specimens were then found in Hockering Wood in company with the Rev. J. M. Du Port. Their development was carefully watched by placing them attached to the matrix (*Russula nigricans*) upon damp sand under a bell glass. The conidia specially affect the pileus of the *Nyctalis*, often so freely as to arrest the growth of the plant, and to cause it to assume the appearance of an *Onygena*. The microconidia are produced by the tips of the hyphæ, which break off in little cylindrical bodies. Lower down upon the same hyphæ the macroconidia are produced often in great profusion. The lowest portions of the hyphæ are dilated and convoluted, and it is by an intertwining of these convolute bases that the perithecia are produced, pl. 147 *d*. As was the case with *Hypomyces chrysospermus*, too free a production of macroconidia is unfavourable to the development of perithecia. These are most frequently found upon or inside the stem of the *Nyctalis*, but they are by no means of common occurrence.

PLATE 147. *a*. Nyctalis bearing the parasite. Nat. size.
b. Macroconidia × 400.
c. Microconidia × 400.
d. Perithecium in formation × 400.
e. Perithecium × 40.
f. Perithecium × 400.
g. Asci and sporidia (after Tulasne) × 400.
h. Sporidia × 400.

ON THE HETERŒCISM OF THE UREDINES.

In a recent number of "Grevillea" a number of experiments performed by the writer upon the alternation of generation of *Puccinia granimis* with *Æcidium berberidis* were detailed. It will be remembered that so frequently were the check plants affected with *Uredo* that the obvious conclusion arrived at was that the *Æcidium* had very little to do with its production. This year another series of cultures was instituted, in which the promycelium spores of *Puccinia granimis* were sown upon young barberry plants with the unvarying result of producing the *Æcidium*, the check plants remaining free from the fungus. Young wheat plants, which were kept continuously covered by bell glasses from the time they were first sown till the experiment was concluded, were also found, when infected with ripe *Æcidium berberidis* spores, to become infected with *Uredo*, while similar plants not so infected remained healthy. But several other species of heterœcismal *Uredines* were



Hypomyces asterophorus. Tul.

made subject of experiment; some of the most strikingly successful were made with *Podisoma juniperi*, which produced the *Rœstelia* so abundantly as to cause the death of young hawthorns operated upon. It is proposed that an epitome of all these experiments be read at some of the Hereford meetings next October, when no doubt they will be fully criticised. Of course to those botanists who have already accepted the heterœcism of the *Uredines* these experiments will appear to be a work of supererogation, and a mere waste of time, but it must be remembered that many of us in this country have hitherto either declined altogether to accept the theory until further evidence was forthcoming, or else believed it in a half-hearted, provisional sort of way. It is hoped that this year's work has not been thrown away, but that those who were doubtful upon the point may see their way to accept it. Personally my own feelings, when this year's experiments were begun, were biased against it by the unsatisfactory result of the 1881 experiments. But by investigating the life-history of more species, especially such as are uncommon, where the liability to accidental infection was practically nil, the accumulated evidence became irresistible. It is worthy of notice that no less than three *Uredines* which were hitherto not known to be British were by those experiments brought to light, viz., *Æcidium zonale*, Duby, on *Inula dysenterica; Puccinia magnusiana*, Körnicke, on *Phragmitis communis*, hitherto regarded as a variety of *Puccinia graminis;* and *Puccinia poarum*, Nielsen, a fungus I have for many years known both in the *Uredo* and *Puccinia* form, but always regarded as a form of *Puccinia coronata*.

It is needless to add that our acceptance of heterœcism will entail a complete rearrangement of the *Uredines*, and it is hoped that a paper on this subject may also be submitted to the members of the Woolhope Club.

Had it not been for the kindness of my friend M. Cornu in giving me directions and hints as to the manner of conducting these experiments, we might have gone on in our old groove for some time to come—a proof, if any were needed, of the utility of our autumnal conferences.

Of course these experiments—amounting, as they do, to more than a hundred—have entailed some little work, and although there is no pretence of originality about them, yet the satisfaction of being able to see the germ-tube of a spore of *Æcidium berberidis* insinuating itself into the stoma of a wheat leaf, which I first watched at a very early hour one summer morning, was "pretty considerable."

CHARLES B. PLOWRIGHT.

NEW BRITISH FUNGI.

By M. C. Cooke.

(*Continued from vol.* x., *p.* 152.)

Agaricus (Tricholoma) exscissus, *Fr. Icon. t.* 44, *f.* 2. *Cooke Illus., t.* 171.

Pileus rather fleshy, campanulate, then expanded, at length umbonate, even ; *stem solid, even,* thin, equal, smooth, rather shining ; gills emarginate, crowded, *linear,* white.

In pastures. Cromer (Rev. J. M. Du Port), May, 1882.

Agreeing better with the figure in Fries' "Icones" than with his description. Pileus 2 inches, umbonate, umbo darker, opaque, mouse-grey, stem whitish, turning brownish at the base, 2 inches long, slightly striate. No perceptible odour.

Agaricus (Hypholoma) lacrymabundus, *Fries Icon., t.* 134, *f.* 1.

"The species figured in the 'Icones' occurred last October at Coed Coch, and near Hereford. What has usually passed under this name is *A. velutinus P.* We find the spores ·0003-·0004 inch long, and in *A. pyrrhotrichus* ·0005-·0006 inch."—*Berk. & Br. Ann. Nat. Hist.*, No. 1950.

Agaricus (Hypholoma) cascus, *Fr. Hym. Eur.*, 294.

"What we described in the 'Notices' as an abnormal state of *A. appendiculatus* is undoubtedly this species."—*Berk. & Br. Ann. Nat. Hist.*, No. 1950.*

Agaricus (Hypholoma) pilulæformis, *Bull. t.* 112.

Penzance, Mr. Ralfs. "This is possibly a veil-bearing state of the very common *A. spadiceus,* though Fries says 'velum etiam primitus absolute nullum.' We are inclined rather to consider it the young of *A. hydrophilus,* Bull. t. 511 ; still we think it right to record its occurrence in Cornwall. We do not suppose, with Fries, that it has anything to do with *Bolbitius.*"—*Berk. & Br. Ann. Nat. Hist.*, No. 1951.

Agaricus (Psilocybe) hebes, *Fr. Hym. Eur.*, 303.

Pileus rather fleshy, convex, then expanded, obtuse, smooth, hygrophanous ; margin slightly striate ; stem fistulose, smooth, equal, growing pallid ; gills *adnate, triangular,* crowded, whitish then fuscous. *Pers. Myc. Eur.* III. *t.* 28, *fig.* 5.

Amongst leaves, &c., in beech woods.

"Not exactly the form figured by Fries in his Icones as the stem is taller, but the colour of the hygrophanous pileus is the same exactly, the spores atro-purpureous. Pileus at first obtuse, but in drying it becomes spuriously and minutely umbonate. Spores ·0007 in. long."—*B. & Br. Ann. Nat. Hist.*, No. 1952.

Agaricus (Psathyra) corrugis, *P. Syn., p.* 424.

Shanklin. The short form figured by Corda, in Sturm, under the name of *A. vinosus.—B. & Br. Ann. Nat. Hist.*, No. 1952.*

We also found the same form in the autumn of 1881 at Kew gardens.—*M.C.C.*

Agaricus (Psathyra) gossypinus, *Bull, t.* 425, *f.* 2.

Found at Coed Coch, Oct., 1881.

Spores ·0004 to ·0005 in. long.—*B. & Br. Ann. Nat. Hist.*, No. 1953.

Agaricus (Psathyra) nolitangere, *Fr. Hym. Eur.*, 309.

Pileus membranaceous, campanulate, then expanded, *everywhere striate*, hygrophanous; squamulose about the margin; fragile, nearly naked, becoming brownish, *apex even;* gills adnate, broad, pallid fuscous.—*B. & Br. Ann. Nat. Hist.*, No. 1954.

Amongst twigs of oak.

Agaricus pennatus, Quelet. = *Agaricus semivestitus*, Berk.

Agaricus (Psathyra) microrhizus, *Lasch.*

Pileus membranaceous, campanulate, even, dry, sprinkled with shining atoms, at first *yellow-pilose;* stem thin, short, *rooting, silky*, whitish; gills adnexed, crowded, narrow, pallid, becoming blackish brown.—*Fr. Hym. Eur. p.* 309. *B. & Br. Ann. Nat. Hist.*, No. 1955.

In grassy places.

"Gregarious, varying in size from a few lines to 1½ inch, when it approaches the finer forms of *A. gossypinus.*"—*B. & Br.*

Agaricus (Psathyrella) trepidus, *Fr. Syst*, I, 238, *Hym. Eur., p.* 314.

Pileus membranaceous, campanulate, obtuse, smooth, very densely striate, hygrophanous; disk even, stem almost straight, smooth hyaline, pellucid; gills adnate, *ventricose, crowded*, thin, fuliginous, then black.—*Pers. Myc. Eur.* III. *t.* 29, *f.* 1. *B. & Br. Ann. Nat. Hist.*, No. 1956.

Hothorpe (Miss Berkeley).

Stem about 3 inches long. Pileus about an inch, or more.

Coprinus aratus, *Berk. Outl., p.* 176.

A group of this fine species, of large size, occurred at Hothorpe, Dec. 5, 1881. As the character given before was drawn up from a solitary specimen gathered in a very different situation, it requires a little amendment. The disk is sometimes rugose, sometimes even; the gills are at first attached, but so slightly that they easily part from the stem, so as to appear free, but they are still connected at the base, as if there were a slight collar. For "lamellis liberis," "lamellis secedentibus" should be substituted. —*B. & Br. Ann. Nat. Hist.*, No. 1956.*

Coprinus alternatus, *Fr. Hym. Eur., p*, 327.

Pileus rather fleshy, hemispherical, even, quite smooth, discoid, *pallid, chalky, disk pale umber;* stem hollow, attenuated from the thickened base, *smooth;* gills adnate, linear, cinereous, then black. *Fl. Danica, t.* 1961.—*B. & Br. Ann. Nat. Hist.*, No. 1957.

East Dereham (Rev. J. M. Du Port). This is scarcely a *Coprinus*, but rather a *Psathyrella*.—*B. & Br.* Stem 3 to 4 in., pileus 1½ inch.

Coprinus papillatus, *Fr. Hym. Eur.*, 326.

Pileus membranaceous, ovate, then campanulate, striate, mealy grey, then torn, disc *papillate with minute points*, livid, fuliginous ; stem fistulose, smooth except at the base, *hyaline pellucid ;* gills free, approximate, black.—*B. & Br. Ann. Nat. Hist.*, No. 1958. *Batsch, fig.* 78.

In a fern-case. Shrewsbury.

Cortinarius (Dermocybe) cotoneus, *Fr. Hym. Eur.*, 372.

Olive. Pileus fleshy, campanulate, then expanded, bullate, somewhat repand, *innate—velvety ;* stem solid, *girt with the fuscous veil*, base thickened ; gills rather crowded, olive, then cinnamon brown.—*B. & Br. Ann. Nat. Hist.*, No. 1959.

In oak woods. Clifton (*C. Bucknall*).

Pileus 3 in., stem 3 in.

Paxillus Fagi, *B. & Br. Ann. Nat. Hist., No.* 1961.

Beautifully gregarious, crisped, above pallid, beneath orange, gills crispate, orange.—*B. & Br.*

On beech stump. Coed Coch.

" Forming a wide crisped mass of great beauty, very different in appearance from *P. panuoides*, which is confined to fir wood, or saw-dust."—*B. & Br.*

Hygrophorus fusco-albus, *Fr. Hym. Eur.*, 410.

Pileus fleshy, convex, then plane, even, smooth, viscid, fuscous, then cinereous, stem solid, equal, *when dry white floccose at the apex*, gills decurrent, broad, rather thick, snow-white.—*B. & Br. Ann. Nat., Hist.* No. 1962. *Jungh, in Linn*, v. *t.* 6, *f.* 1.

In woods amongst moss.

Stem 2 to 3 inches long, 4 to 6 lines thick. Pileus about two inches. Remarkable for its distinct floccose veil.—*B. & Br.*

Hygrophorus Wynnei, *B. & Br.*

" A good figure of this beautiful species is given in ' Fungi Tridentini,' by Bresadola, under the name of *Clitocybe xantho-phylla*."—*B. & Br. Ann. Nat. Hist.*, No. 1962.*

By an error *Marasmius Wynnei*, B. & Br., is named in the " Notices " instead of the above species. It may also be added that M. Bresadola does *not* consider his species to be the same as the above *Hygrophorus*, and hence he takes exception to the above note.

Polyporus (Pleuropus) Michelii, *Fr. Hym. Eur., p.* 533.

Pileus between fleshy and tough, depressed, repand, *rather silky, somewhat squamulose*, white, then yellowish ; stem lateral, short, bulbous, rough, white, brownish at the base ; pores *large, rounded, oblong, entire*, white.—*Micheli* t. 61, f. 2. *B. & Br. Ann. Nat. Hist.*, No. 1963.

On willow trunks. Penzance.

Polyporus (Merisma) acanthoides, *Fr. Hym. Eur.*, 540.

Imbricated, multiplex, tough then leathery; Pileoli infundibuliform, incised and dimidiate, somewhat zoned, longitudinally rugose, *becoming ferruginous*, stems connate, branched, *pores sinuous, thin*, edge toothed, *white, then rufescent.—Pers. Ic. Pict., t.* 6. *B. & Br. Ann. Nat. Hist.*, No. 1964.

On trunks or the ground. Penzance.

Polyporus (Placodermei) pectinatus, *Klotsch. in Linn.* VIII. *p.* 485. *Fr. Hym. Eur.*, 559.

Pileus between corky and woody, hard, triquetrous, concentrically *plicate* above, *scaly, tomentose*, ferruginous brown, pores small, short, obtuse, *gilvous, naked.—B. & Br. Ann. Nat. Hist.*, No. 1965.

On trunks. Penzance.

"We follow Fries, though with some hesitation, in considering the European forms figured by Quelet identical with the Indian species. It cannot, however, be referred to either *P. salicinus* or *P. conchatus*."—*B. & Br.*

Polyporus (Resupinatus) mucidus, *Fr. Hym. Eur.*, 577.

Effused, *rather thick*, somewhat immersed, soft, white, growing pallid, *circumference indeterminate, byssoid*, pores of medium size, unequal and torn.—*B. & Br. Ann. Nat. Hist.*, No. 1967.

On old decayed wood of firs. Penzance.

Dædalea cinerea, *Fr. Sys.* I. 336. *Hym. Eur., p.* 588.

Pileus between corky and woody, thick, rather undulate, *zoned, tomentose, cinereous;* pores minute, obtuse, *quite entire*, some rounded, others very long and labyrinthiform, flexuous, intricate, white, or cinereous.

On beech. Penzance.

"The thick substance separates this from every form of *D. unicolor;* also the inciso-strigose surface of the pileus."—*B. & Br.*

Hydnum aureum, *Fr. Hym. Eur.*, 613.

Subiculum determinate, *rather cartilaginous, contiguous, smooth, golden yellow*, circumference dentate and radiating; spines subulate, equal, of the same colour.—*B. & Br. Ann. Nat. Hist.*, No. 1970.

Penzance.

"A fine species, with a meruloid aspect."

Hydnum denticulatum, *Pers. Myc. Eur.* II. 181.

Longitudinally effused, *rather fleshy, ochraceous-yellow, shining*, subiculum thin, smooth, rather farinaceous, spines crowded, equal, margin denticulate.—*B. & Br. Ann. Nat. Hist.*, No. 1971.

On wood. Penzance.

Irpex carneus, *Fr. Hym. Eur.*, 622.

Effused, between cartilaginous and gelatinous, membranaceous, adnate, growing reddish, teeth obtuse or subulate, entire, united at the base.—*B. & Br. Ann. Nat. Hist.*, No. 1972.

On bark. Penzance.

"When perfect it is a true *Irpex*."

Phlebia lirellosa, *Pers. Myc. Eur.* III. *p.* 2, *t.* 18, *f.* 2, 3.

Resupinate, umber-grey, margin free, sinuosities very minute, linear, intermixed with pores.—*B. & Br. Ann. Nat. Hist.*, No. 1973.

Penzance.

Stereum vorticosum, *Fr. Hym. Eur.*, 639.

"Noble specimens of this very beautiful species, remarkable for its costate hymenium, were sent from Penzance by Mr. Ralfs."—*B. & Br. Ann. Nat. Hist.*, No. 1973.*

Corticium umbrinum, *A. & S. Consp.*, 281.

Effused, soft, fleshy, umber, villose beneath, circumference radiating, short, of the same colour ; hymenium tuberculose, then collapsing, pulverulent ferruginous.—*Fr. Hym. Eur.*, 858. *B. & Br. Ann. Nat. Hist.*, No. 1974.

On rotting spruce, &c. Penzance, &c.

Corticium maculæforme, *Fr. Hym. Eur.*, 656.

Orbicular, then confluent, indurated, thin, somewhat roseate, circumference similar, smooth; hymenium spuriously papillose, bluish grey pruinose.—*Fl. Dan.*, *t.* 1738, *f.* 2. *B. & Br. Ann. Nat. Hist.*, No. 1975.

On bark. Penzance.

Clavaria pyxidata, *Pers. Comm.*, *t.* 1, *f.* 1.

Pallid, then clay colour, or reddish; trunk thin, smooth, branched; branches and branchlets all excavated in a cup-like manner at the apex ; margin of the cups proliferous.—*Fr. Hym. Eur.*, 669. *B. & Br. Ann. Nat. Hist*, No. 1976.

On wood. Penzance.

Calocera corticalis, *Fr. Hym. Eur.*, 681. *Batsch, fig.* 162.

Cæspitose, erumpent, soft, pellucid, pale flesh colour; clubs subulate, distinct.—*B. & Br. Ann. Nat. Hist.*, No. 1977.

On bark. Penzance.

Penicillium macrosporum, *B. & Br. Ann. Nat. Hist.*, No. 1978.

Orange ; spores globose, large.

On decaying *Lactarius* (J. D. C. Sowerby).

Drawing in the British Museum Collection.

Rhinotrichum ramosissimum, *B. & Curt.*

Pale tan-coloured, flocci very much branched, articulate, the ultimate joints elongated and covered with spicules ; spores obovate, apiculate below.—*North Amer. Fungi*, No. 662.

On rotten wood. Moffat, N.B. Dr. Bayley Balfour.

This peculiar variety had the flocci in tufts so as to simulate exactly *Trichia chrysosperma*, with the peridia ruptured.

Cercospora Bloxamii, *B. & Br. Ann. Nat. Hist.*, No. 1979.

Spots orbicular, pallid ; spores elongated, fusiform, acuminate at each end, multiseptate.

On decaying leaves of turnips.

Formerly distributed as *Septoria Bloxami.*

Ovularia elliptica, *B. & Br. Gard Chron.*, 1881, *p.* 340. *Ann. Nat, Hist., No.* 1980. *Grevillea, vol.* x. *p.* 51.

On various lilies.

Ovularia Syringæ, *B. & Br. Gard. Chron.*, 1881, II. *p.* 665. *Ann. Nat. Hist., No.* 1981.

Flocci for the most part decumbent, acrospores at first nearly globose, with a distinct terminal papilla, then elliptic, at length ovate, large. (·002-·003 in. long.)

On leaves of *Syringa*. Aberdeenshire (*A. S. Wilson*).

Ramularia pruinosa, *Speg. Dec.*, 106.

Spots ochraceous, at first small, round, soon occupying the entire leaf; tufts densely gregarious, covering the surface of the spots with a frosty whiteness. Threads hyaline, continuous (·04-·06 × ·003 mm.) apex 1-3 toothed; conidia cylindrical, rounded at the ends (·02-·03 × ·003-·004 mm.) continuous, or uniseptate, hyaline. *Sacc. in Michelia* II. p. 170

On living leaves of *Senecio Jacobæa*, Forres. (Rev. Jas. Keith.)

Mystrosporium alliorum, *Berk. Gard. Chron.*, 1878, *p.* 192. *Ann. Nat. Hist. No.* 1982.

Pedicels flexuose, articulated; spores terminal, or sometimes lateral, oblong, contracted at the middle, here and there pyriform, multi-articulate, dissepiments horizontal, and oblique.

On onions. Culver, Exeter.

Triphragmium filipendulæ, *Pass. Nuovo Giorn. Bot. Ital.*, VII. 255.

Stylospores, sori scattered, globose, covered by the epidermis, yellow, then girt by the ruptured epidermis, orange; spores globose or ovate, orange, stipitate.

Teleutospores, sori as above, brown, shining, then black, pulverulent; spores subglobose, at first orange then brown, even; stem hyaline, rather long.

On *Spiræa filipendula*. Mount Caburn, near Lewes, September 14, 1862 (*Herb. Currey*).

Puccinia Oxyriæ, *Buch. White MSS.*

No description given.

On leaves of *Oxyria reniformis*. Skye.

Spores including the short hyaline stem ·0024 in. long; the divisions of the head subglobose, even.

Glæosporium Lindemuthianum, *Sacc. Fungi Ital.*, 1032.

Spots roundish, brownish, at first with a rufous border, pustules dirty white in the middle of the spots, inflated, then erumpent; sporophores fasciculate, cylindrical, simple, conidia, terminal, oblong, straight or curved, ends rounded (·016-·019 × ·0045-·0055 mm.), granular within, hyaline.—*B. & Br. Ann. Nat. Hist.*, No. 1984.

On pods of *Phaseolus*. Sibbertoft.

Leotia chlorocephala, *Schwein.*

Pileus globose, quite smooth, rather pellucid, or verdigris-green. Stem elongated, twisted, powdery. Asci clavate-cylindrical. Sporidia cylindrical, obtuse, curved, nucleate (·02-·022 ×

·005 mm.); paraphyses filiform.—*Cooke Myco., fig.* 174. *B. & Br. Ann. Nat. Hist.*, No. 1985.

On the ground. Hampshire.

"The tint of the green is so dark that it is nearly black, so that house painters might call it 'invisible green.' *L. atrovirens*, P., occurred at Coed Coch in September, 1881; but it is clearly merely a state of *Geoglossum viride*, which accompanied it. The specimens agreed in every respect with the figure in Myc. Eur., t. 9, f. 1 to 3."—*B. & Br.*

Stigmatea Nicholsoni, *Cke.*

On both surfaces. Perithecia in circles, black, erumpent, shining, convex, at length collapsed, smooth; asci clavate; sporidia elliptical, rounded at the ends, uniseptate, constricted, pale brown (·018 × ·008 mm.)

On leaves of Portugal Laurel. Newcastle, Co. Tipperary (Mr. Geo. Nicholson.)

Accompanied by pear-shaped stylospores, (about ·016 × ·01 mm.), pale brown with two septa, the middle cell again divided longitudinally, or with 4-5 cells formed by irregular division, apparently the stylospores are produced in separate perithecia.

Sphæria leprosa, *Pers. in Fr. Sys. Myc.* II. 365.

Immersed, perithecia few, nestling in the bark; necks straight, united in a white stroma; disk minute, erumpent; ostiola small. —*B. & Br. Ann. Nat. Hist.*, No. 1986.

On lime bark. Penzance.

"Spores ·0008 inch narrow."—*B. & Br.*

Sphæria aggregata, *Lasch. in Kl. Herb. Myc.* II. 541. *Fckl. Rhen.*, 977.

According to Fuckel this is a *Cenangium* of which he had seen no asci, only stylospores. See *Symb. p.* 271.—*B. & Br. Ann. Nat. Hist.*, No. 1987.

On *Euphrasia officinalis*. Penzance.

Didymium effusum, *Link.*

Sporangia sessile, or without regular form, snow-white, or now and then yellowish white; capillitium of very fine fibres with branches combined into a thickly set net, colourless, provided with numerous small thickenings. Spores dull violet, almost smooth (·01-·011 mm. diam., rarely only ·008 mm.).—*B. & Br. Ann. Nat. Hist.*, No. 1988. *Smith in Gard. Chron.*, July 15, 1882, *with figs.* 11 *to* 13.

On fronds of Hart's tongue fern, Tregony, Cornwall.

COMING FUNGUS FORAYS.

Epping Fungus Foray.—The Essex Field Club has fixed Saturday, the 23rd September, for the Foray. The meeting place to be the Loughton Station, the first train from London after two o'clock p.m. When the party has assembled, to proceed towards Highbeech.

Woolhope Fungus Foray.—To assemble at Hereford on and after Monday, October 2nd. The Club Foray to take place on Thursday, October 5th.

Cryptogamic Society of Scotland.—The Eighth Annual Conference will be held at Kenmore, Perthshire, on September 4th and following days, under the presidency of Professor J. W. H. Trail, M.A., M.D., F.L.S. Fellows who purpose being present are requested to communicate as soon as possible with F. Buchanan White, Hon. Sec., Perth.—At a meeting of Council held in Aberdeen on July 26th, it was unanimously agreed that, in consequence of the lamented death of the President, Dr. Dickie, F.R.S., one of the founders of the Society, the meeting and public show arranged to take place in Aberdeen should be postponed till another year, and that instead a meeting should be held in some central place where there would be an opportunity of studying the Cryptogamic Botany of the higher hills.—Kenmore may be reached from Aberfeldy, on the Highland Railway, or from Killin Station, on the Callander and Oban Railway. It is situated at the east end of Loch Tay (on which a steamer has now been placed). The immediate neighbourhood has been favourably reported on as presenting a presumably rich fungus-flora, while Ben Lawers and other mountains are distant only a few miles, as is the celebrated Fortingal yew, supposed to be the oldest living tree in Europe.

MICRO-FUNGI.*

We are always glad to see well-directed efforts for the spread of scientific knowledge, and one of its means is the publication of cheap manuals, but the great essential of these is strict accuracy, or the injury they cause is proportioned to the extent of their distribution. We were quite disposed to welcome a little book on "Micro-fungi," at one shilling, in which, under each month, an "Old Collector" relates the species most likely to be found and where to find them. The idea is a very good one, and, with a little more care, might have been successfully carried out. It was hardly to have been expected that the erudite author, starting with a Latin quotation at page 12, would have permitted seventy-seven Latin names to have passed him, in the course of ninety pages, uncorrected and inaccurate. The beginner at a study has a right to expect that what he is learning will not have to be unlearnt again, and that the Latinity to which he is so freely introduced, will pass muster. Hence we regret to observe so obvious a mistake as sending out the printer's proofs with the orthographical errors unrevised. This might be tolerated in a local newspaper, but hardly in a scientific "Handbook."

* "Micro-fungi, When and Where to Find Them." By Thomas Brittain, Manchester.

FUNGI MACOWANIANI.

By Rev. C. Kalchbrenner.

(*Concluded from Vol.* x., *p.* 147.)

HYPODERMEI, *De Bary*.

Ustilago Dregeana, *Tul.* Conf. Körnicke Myc. Beitr., p. 26. Montg. Ann. d. Sc. Nat. vii., 1847, p. 176. Thumen in Flora, No. 115.

Sub nom. *Ustilago Carbo*.

Somerset East, leg. MacOwan, No. 1363. Planta nutrix est Cynodon dactylon L., cujus inflorescentiam, adhuc in vagina latentem, prorsus deformatam, pulvere atro obducit. Sporæ minutæ ·012-·015 mm. diam., leviter tuberculatæ.

Ustilago sacchari, *Rabenh.* Sitzungsber. d. Ges. Isis, 1870, iv.

Sporis globosis, lævibus, ·015-·018 mm. diam., atrofuscis.

Port Natal, leg. J. M. Wood.

In caulibus et paniculis Sacchari officinalis, præsertim in var. ejus "chinensi."

Cel. Rabenhorst speciei suæ, in Eriantho Ravennæ nascenti, sporas tribuis, flavo-fuscas, exasperatas ·007-·010 mm. diam.

Ustilago Danthoniæ, *K.*

Sporis globosis ·036 mm. diam., granulosis, atro-fuscis.

In spicis *Danthoniæ papposæ*, Nees. In summo monte Chumiberg, prope stationem Missionis evangelicæ "Lovedale" dictam leg. Rev. T. Buchanan. Haud procul distat *Ust. Salveii*, Cooke Brit. Fung. ii. p. 514: Sed haec soris linearibus folia modo occupat, non vero spicas.

Ustilago Carbo, *De C.*

In *Avenæ* leg. ad Somerset East, MacOwan, No. 1237.

Uromyces Avicularіæ (*P.*) *Schröt.* Die Brand. und Rostpiltze Schles., p. 8.

II. Fung. stylosporus = *Uredo avicularіæ*, Alb. et Sch.

In fol. vivis *Polygoni avicularis*, L., ad Somerset East, No. 1353.

I. et III. desunt.*

Uromyces Rumicum (*D.C.*) *Lev.* Ann. d. Sc. Nat. Bot., 1847.

I. *Æcidium Rumicis*, Gmel. = *Æcid. rubellatum*, Cooke Brit. Fung.

II. *Uredo Rumicum*, D.C. Thum. l.c. 85.

III. Non observatum.

In fol. viv. *Rumicis obtusifolii*, L. et R. Ecloni Meissn. Somerset East, No. 1308.

Uromyces microsorus, *K. & C.*

I. (Ignoti).

II. Hypophyllus. Soris minimis, pallidis. Stylosporis globosis brunneis ·022-·025 mm. Episporio asperulo.

* No. I. = Fung. hymeniiferus. II. = stilosporiferus. III. = telentosporiferus, designatur.

III. Soris compactis minimis (in consortio) ochraceis. Teleutosporis amygdaliformibus, pallido-fuscis ·03 × ·018-·02 mm.; episporio supra incrassatis.

In foliis ignotis (potius *Drupaceæ*).

Closely allied to *Uromyces Amygdali*, Pass.

Uromyces Valerianæ, *Fuckel.* Symb. Myc., p. 63.

I. *Æcidium Valerianacearum*, Duby.

II. = *Uredo Valerianæ*, D.C. Thum. l.c. 112.

III. Non obs.

In *Valeriana capensi*, Thunb. Som. East in mont. Boschb., No. 1057.

Uromyces Phascolorum, *D.C.*

I. *Æcidium Leguminosarum*, Link., pr. p.

II. *Uredo Dolichi*, B. et. Br. Fung. of Ceyl., 829 = *Caeoma rufum*, Bon. ?

Et III.

Som. E. in *Dolicho gibboso*, Thunb. Port Natal, No. 40.

Uromyces Urgines, *Kalch.*

I. Sporangiis hypophyllis, paucis, in macula flava congestis, cylindrico-elongatis, apice truncatis, pallide flavis.

II. Soris subamphigenis, sparsis, parvis, aurantiis, plerumque maculæ discolori, purpureo-cinctæ, insidentibus; sporidiis globosis = *Uredo Lepisclinis*, Thum. in Flor., No. 81.

III. In iisdem soris sporidia breviter ovata ·06-·07 mm. longa, breviter pedicellata, fusca.

Som. East in *Helychryso petiolato*, D.C., raro.

Uromyces Thwaitesii, *B. et Br.*

In fol. viv. *Sidæ rhombifoliæ*. Port Natal, No. 406.

Uromyces Ipomeæ, *Berkl.*

I. = *Æcidium Ipomaeæ*, Thum. in Flor., 1878, No. 23 (107).

II. et III. = *Uredo aterrima*, Thum. l.c. 114.

In fol. viv. et fructibus immaturis Ipomaeæ argyrioides Chois. Som. E., No 1225, 1226.

Sporæ aberrantes, sed certissime Uromyces. Affinis *Urom. sphæropleo*, Cke. Species pulcherrima !

Uromyces Geranii, *Otth. et Wartm.*

I. *Æcidium Geranii*, Otth. et Wartm = *Æc. Pelargonii*, Thum. l c. 89 ?

II. *Uredo Geranii*, D.C. Thum. l.c. 113 ?

III. Non obs.

In fol. vivis *Geraniorum*. Som. E., No. 1114 et 1154.

Conf. Thum. l.c. 47, 59.

Uromyces Prunorum v. Amygdali, *Grevill.* VII., p. 12.

II. Sporidia ovata, apiculata. In *Pucc. Cerasi*, Cda. Uredosporæ globosæ, echinulatæ.

In fol. viv. *Persicæ vulgaris*, Mill. Som. E., No. 1104. Ad *Bazuja Caffrariæ*, leg. Rev. Baur, No. 656.

Uromyces Fabæ (*P.*) *Schröt.* in Hedwigia, 1875. Thum. l.c. n. 30.

II. et III. In. fol. vivis *Fabarum* hortensium ad Som. E. leg. M.Ow. et Tuck., No. 1056.

Uromyces Junci, *Schw.*

II. In *Junco punctorio*, Thunb. ad Klyn Visch. Rivier., No. 1315.

III. Non obs.

Uromyces proeminens, *Lev.*

I. *Ædidium Euphorbiæ*, P. ?

II. et III. Non observati.

Ad fol. viva *Euphorb. inæquilaterœ*, Sond., in campis hortisque. Som. E., No. 1247.

Uromyces albucæ, *K. et C.*

II. = *Uredo sempertecta*, Thum. l.c., No. 60. Soris amphigenis, sparsis, elevatis, epidermide tectis, demum rima longitudinali apertis; sporis subglobosis, ·022 × ·18 mm., episporio inconspicue punctulato, tenui, dilute flavis.

In fol. viv. *Albucæ aureæ*, Jacq., et *A. minore*, Jacq. Boschberg, No. 1252.

III. *Uromyces alliorum*, Welwitsch. Fung. angolensis. In *Albuca juncifolia* ?

Ab *Urom. alliorum*, Berk. in Welwitsch. Crypt. Lusit. No. 22, diversus.

Uromyces Bulbines, *Thum.* l.c., No. 79.

II. et III. In fol. viv. *Bulbines latifoliæ*, Schult. Somerset E., No. 1019.

Cum *Uredine ambigua*, D.C., soris oblongis aut linearibus gandente, hand jungendus; sed ab. *Urom. concentrico.* Lev., vix distinctus.

Uromyces Betæ, *Tul.*

II. In fol. viv. *Betæ vulgaris* hortorum.

Som. E., No. 1034.

Uromyces Cluytiæ, *Kalch. et Cke.*

II. Soris hypophyllis, majusculis, sparsis, pulvinatis, epidermide vix colorata, demum rimose dehiscente tectis; sporis subglobosis ·02 mm. diam., pallide flavo-fuscescentibus.

P. Natal in *Cluytiæ* spec., by Wood, No. 52.

III. Soris hypophyllis, solitariis, minutis subpunctiformibus, umbrinis; sporis ovato oblongis, ·04-·045 × ·02, episporio granulato tuberculato, pulchre ferrugineo, stipite crasso, æquali.

In *Cluytia pulchella*, ad. Som. E., by M.Owan, No. 1325. Port Natal, by J. M. Wood, No. 51.

Uromyces papillatus, *Kalch. et Cke.*

II. *Uredo Heteromorphæ*, MacOwan in litt. Soris hypophyllis, irregulariter sparsis, minutis, fulvis, maculæ plerumque angustæ, flavæ insidentibus; sporis heteromorphis, pallidis, ·02 × ·01 vel ·03 × ·012 mm., episporio crasso, echinulato.

III. *Uromyces heteromorphæ*, Thumen (?) l.c. 80. Sporidiis ovatis, ·03 × ·018 mm., pedicellatis, fulvis echinulatis, apice pa-

pilla hyalina instructis, et nonnunquam fere rostratis. Haud multum distat ab Urom. apiculata.

In fol. viv. *Heteromorphæ arborescentis*, Cham. et Schld. in mont. Boschberg, No. 1144 et 1021. In posteriore planta, quam Thumen pro oculis habuit. Spora immaturæ videntur; et hac de causa, diagnosis ejus a nostra differt.

Uromyces eriospermi, *K. et Cke.*

Soris hypophyllis, inter-venas folii parallelas sparsis, bullatis.

II. Sporæ subglobosæ, ·015 mm. diam., echinulatæ, flavæ.

III. Sporæ subpyriformes, ·03 × ·015-·02, longe pedicellatæ.

In *Eriospermi* sp. Som. E., No. 1402.

C. MICRO-UROMYCES, *Schröt.*

Uromyces lugubris, *Kalch.*

Soris indefinite confluentibus, liberis, planis, hypophyllis, nigricantibus.

III. Sporidia ovata, vix diaphana, ·024 × ·18 mm., pedicello longo hyalino suffulea, atra.

In planta non-determinata. P. Natal, No. 15.

E. soris illimitate confluentibus folii pagine inferior fere tota quasi fuligine conspurcata apparet.

(Non vidi *Cooke.*)

Uromyces Oxalidis, *Lev.*

I. *Æcidium oxalidis*, Thum. l.c., No. 40.

In Oxalide purpurata, Jacq. Som. E., No. 1042.

III. In fol. vivis *Oxalid. corniculatæ*, S.

Som. E., No. 1295.

Species dubia, sporis haud evolutis.

In soris adest *Darluca filum*, Castg.

Uromyces Polemanniæ, *Kalch et Cke.*

III. Soris epiphyllis, sparsis, apertis, planiusculis, umbrinis; sporidiis ovalibus ·025 × ·015 mm. apiculatis, pedicello longo instructis, fuscis, episporio minute granulato vel reticulato.

In fol. viv. *Polemanniæ grossulariæfoliæ.*

E. et F., Somers. E., No. 1030.

Uromyces Trollipi, *K. et M.Ow.*

Soris hypophyllis, sparsis, punctiformibus; sporis subglobosis, brunneis, haud stipitatis ·022-·025 × ·02 mm., episporio hyalino, crasso.

In fol. *Hypophylli fœtidi*, Schrad. ad mont. Kagaberg pr. oppid. Bedford, leg. Stud. Trollip, No. 1404.

Puccinia lycii, *K.*

II. et III. Soris amphigenis, sparsis vel in maculas congregatis, apertis, planiusculis. Stilosporis sphæroideis, ·016 × ·018 mm. flavidis; teleutosporis ellipticis, utrinque rotundatis, ·03 × ·024 mm., opacis, fuscis, epidermide granulata, pedicello æquilongo aut longiore.

Som. E., leg. MacOw., No. 1410. In *Lycio tubuloso.*

Puccinia granularis, *K. et C.*

II. & III. Stilosporis subglobosis, ·025-·028 × ·02 mm. granulatis, fuscidulis (= *Uredo Pelargonii*, Thum.). Teleutosporis immixtis ellipticis, utrinque attenuatis, supra subpapillatis, lacte, brunneis, medio leviter constrictis, lævibus, ·04 × ·02 mm., pedicello brevioribus.

In fol. *Pelargonii*. P. Natal, 10.

Puccinia menthæ, *P.*

I. Æcidium menthæ, D.C.

II. Uredo Menthæ, P. (Som. East, No. 1158), cum III.

In fol. vivis Menthæ silvestris, L. Som. E., No. 1150. P. Natal, No. 112.

Forma, *Leonotidis*, No. 1330.

Puccinia caricina, *D.C.*

I. = *Æcidium urticæ*, Schum. et III. non observ.

II. Stilosporæ in fol. et bracteis *Cyperi marisci*, Nees., et *Cyp. tenuiflori*, Nees, Som. E., No. 1018. In *Carice pendula*, No. 1353.

Puccinia striæformis, *Westd.*

I.=*Æcid. asperifolii*, P., et III.

Puccinia straminis, Fuckel, non obs.

II. = *Uredo Rubigovera*, D.C. Forma, *Digitariæ sanguinalé*. Thum. in Flor., 1875, No. 24. In *Digit. sanguinali*.

Som. E., 1113. In *Avena sativa*.

Som. E., No. 1237, in gram. ignoto. P. Natal, No. 113.

Puccinia coronata, *Cda.*

I. = *Æcidium Rhamni*. II. et III. non observ.

In fol. viv. *Rhamni prinoides*, L'Herit.

Som. E. Boschberg, No. 1279.

Puccinia phragmitis (*Schum.*) *Körn.*

II. et III. Ad fol. viv. *Phragmitis communis*, L., Som. E., in ripis Klyn Visch. Rivier, No. 1316.

Inter stilosporas subglobosa observavi et alias majores, dacryoideas, ·03 × ·015 mm., episporio lævi. An ad *Pucc. Magnusianam*, referendæ?

Puccinia maydis, *Poetsch.*

In fol. Zeæ. Som. E., No. 1410.

Absque maculis, a *P. purpurea*, Cke., distincta.

Puccinia purpurea, *Cke.* in Grevillea.

II. = *Trichobasis purpurea*, Cke. II. *Pucc. purpurea*, Cke. Sporis ·04-·045 × ·022 mm., in maculis purpureis.

In fol. viv. *Zeæ*. Som. E., No. 1257. P. Natal, No. 229.

Ab *Uredine Maydis*. Desm. multum distat.

Puccinia æthiopica, *K. et Cke.*

I. Non observ.

II. Soris hypophyllis, gregariis, apertis, planiusculis, rufo fuscis. Stilosporis sphæroideis, rarius subellipsoideis, ·018 × ·020 mm., echinulatis, flavis.

III. Soris hypophyllis dense disseminatis, apertis, planis, atrofuscis. Teleutosporis breviter ovatis vel subglobosis ·028-·30 ×

·024-·026 mm. ad septum vix constrictis, articulis æqualibus utrinque obtusissimis, fuscis, vix diaphanis; pedicello hyalino, flexuoso, sporas longitudine superante.

In *Stachyde grandifolia* et *St. æthiopica*, E. Mey ad Somerset E., No. 1252. P. Natal, No. 47. In Leonotide ovata L., ad mont. Boschberg, No. 1330.

A *Pucc. Stachydis*, D.C., differt, soris atro-brunneis, nec fersugineis, sporisque robustioribus obscurioribus, pedicello multo longiore instructis.

Puccinia gladioli, *Castg.*

II. In *Gladiolo Eckloni*, Lehm., ad Bazuja, Caffraria, leg. Rev. Baur.

III. Non obs. Thum. l.c., No. 5.

Puccinia Salviæ, *Ung.*

II. *Uredo labiatarum*, D.C., pr. pr.

III. Soris epiphyllis, minimis, sparsis; sporidiis apioe obtusis, basi cuneatis, medio parum constrictis, breviter pedicellatis.

In *Salviæ* sp., ad Port Natal, leg. Wood, No. 27.

Puccinia Plectranthi, *Thum.* Flora, 1875, 24, No. 1.

II. et III. In fol. vivus, *Plectranthi taxiflora*, Berk. Som. E., 1106 et 1136. P. Natal, No. 1 et 5.

Puccinia Lychnidearum, *Fuckel.*

II. *Uredo Silenes*, Schleditd.

III. Non obs.

In *Silene capensi*, Ott. Boschberg, No. 1143.

In *Dianthi barbato*. Som. E., No. 1332.

Thum. l.c., 82.

Puccinia Pachycarpi, *K. et C.*

II. Soris amphigenis, sparsis, solitariis vel confluentibus, primum epidermide tectis, pulvinatis, rufo-fuscis. Sporis ovato-globosis ·018-·02 mm.; episporio crasso, ruguloso.

III. Teleutosporæ in iisdem soris oblongo-clavatæ, medio constrictæ, articulo inferiore in stipitem longissimum angustato, sine stipite ·06 mm.

In fol. vivis *Pachycarpi grandiflori*, D.C. Som. E., No. 1327. P. Natal, No. 36.

Puccinia Cephalandræ, *Thum.* Flora, 1876, No. 27 (111).

II. = *Uredo dolichospora*, K. olim. Sporidia ovato-oblonga ·02 × ·045 mm., glabra.

In iisdem cum III. soris.

In fol. viv. *Cephalandræ quinquelobæ*, Schrad., leg. MacOwan., No. 1146.

Puccinia exhauriens, *Thum.* Flora, 1876, No. 27.

II. et III. In fol. viv., *Jasmini tortuosi*, leg. MacOw., No. 1139.

Puccinia Stobeæ, *MacOw.*

I., II., & III. *Æcidium Stobeæ*, K. & C.

Sori hypophylli, subtomento araneoso folii latentes, demum etiam amphigeni sparsi, vel in accroos irregulares confluentes, atrofusci.

In II. stilosporæ globosæ ·015-·018 mm., echinulatæ.

In III. teleutosporæ ellipsoideæ, medio leviter constrictæ, fuscæ, pedicello sporæ acquilongo.

In *Stobea membranifolia*, D.C., et *Stob. speciosa*, D.C. Som. E., No. 1309. P. Natal, No. 62, 63, 67, 74.

Pucc. Hieracii affinis (Cooke).

Puccinia carbonacea, *K. et C.*

II. Soris hypophyllis in acervulos rudes confluentibus, nigricantibus; stilosporis subglobosis ·018 mm. flavo-fuscis.

III. Teleutosporis in iisdem soris breviter ovatis ·024 × ·02 mm., medio constrictis, breviter pedicellatis fuscis. Dissepimentum in plerisque ita obsoletum, ut Uromycetem mentiantur.

In *Abutili* sp. leg. MacOw., 1275. P. Natal, No. 23 et 111. In *Sida rhombifolia*, 406.

Puccinia exanthematica, *MacOw.*

III. Soris hypophyllis, distinctis, maculæ latæ, disciformi, carneo-purpurei coloris insidentibus, circinantibus, primum aurantiis demum ochraceis; sporis cylindricis ·024 × ·016 mm., pedicello æquilongo, flavidis, exosporio crassiusculo lævi.

In *Crassulæ* sp. Som. E., No. 1242 et 1347.

Pulchram iconem misis Domina Holland ex Port Elizabeth.

Puccinia æcidiiformis, *Thum.* Flora, 1875, No. 24.

In fol. viv. *Nidorellæ mespilifoliæ*, D.C. Boschberg, No. 1105.

Puccinia Malvaccerum, *Montg.*

In fol. *Althææ roseæ* hortorum et *M. parvifloræ*, L. Som. E., No. 1117, 1135.

Thum. l.c., No. 6, 110.

Puccinia Momordicæ, *K. et C.*

III. Soris hypophyllis, sparsis, minutis, apertis, brunneis, folio absque macula insidentibus. Teleutosporis ovatis, obtusis, medio haud constrictis ·03 × ·018 mm., breviter pedicellatis; lævibus.

In fol. viv. *Momordicæ cordifoliæ*, Sond. P. Natal, No. 141.

Puccinia Rhynchosiæ, *K. et C.*

II. *Uredo* (*Trichobasis*) *Rhynchosiæ*, *K.* Soris hypophyllis, segetis regularis instar folii paginam inferiorem occupantibus, punctiformibus, rufis; stilosporis globosis ·02 × ·022 mm., fuscidulis.

III. Non obs.

In *Rhynchosiæ* sp. P. Natal, No. 29.

Uredo Commelyneæ, *K.*

Soris hypophyllis, in acervulos oblongos congestis, ochraceo-fuscis; stilosporis variis subglobosis, ovatis pyriformibusv, ·021 mm. long, ·015 mm. crass., pellucidis, glabris, flavidis.

In *Commelynæ* sp. P. Natal, No. 231.

Uredo Moreæ, *K.*

Soris epiphyllis, ellipsoideis, rima longitudinali dehiscentibus, epidermide pallide flava cinctis; stilosporis globosis ·018-·02 mm., flavo fuscidulis.

In fol. viv. *Moræ grandifloræ*, Thunb. Som. E., No. 1065, 1240.

Uredo mixta, *Kunz.* Thum. l.c., No. 10.
In *Salice capensi*, Thunb. Som. E., No. 1029.

Uredo Polygalæ, *K.*
Soris hypophyllis sparsis confluentibusve subprominutis, primum epidermide tectis, ochraceis, maculæ flavæ innatis. Stilosporis ovato-rotundis ·015-·018 mm., episporio crasso, lævi, flavidis.
In fol. viv. *Polyg. Ohlendorfianæ*, E. et J. Somers. E., No. 1228.
Facile Puccinia, teleutosporis ignotis (Cke.).

Uredo Ecteinanthi, *K.*
Soris hypoph. sparsis, minutis, ochraceis; stilosporis ovato-rotundalis et irregularibus ·03 × ·024 mm., flavis, epidermide lævi.
In *Ecteinantho prolixa*, Nees. Grahamstown, leg. MacOw., No. 1258.

Uredo Pycnostachydis, *K.*
Soris hypophyllis, sparsis, minutis, prominulis, dilute ochraceis; stilosporis sphæroideis et difformibus ·02-·003 mm., granulatis, flavidis.
In *Pycnostachyde reticulata*, Bk. P. Natal, Inanda, No. 30.

Uredo linearis, *Pers.*
In gramine indeterm. P. Natal, 113.

Uredo Leguminosarum, *Link.*
In Leguminosa indeterm. P. Natal, 199.

Uredo Rumicum, *D.C.*
II. In Rumice indeterm. Port Nat., 115.
I. = *Æcidium Rumicis*, Hoffm. Thum. l.c., 108, in Rumice Eckloniana Meissn.

Uredo Myrsiphylli, *Thum.* Flora, 1877, 26.
I. *Æcidium Myrsiphylli*, K. Sporangiis hypophyllis, maculæ flavæ insidentibus circinatim congestis, semiimersis, urceolatis, margine subintegro.
II. Stilosporæ vid. Thum. l.c.
In *Asparago* (*Myrsiphyllo*) *medioloide*, Thunb. P. Natal, No. 209. Som. E., No. 1280.

Uredo Filicum, *Kl.*
In pinnulis *Aspidii capensis*, Willd. Som. E., 1025.
Huc fors *Caeoma nervisequum*, Thum. l.c. 91.

Uredo transversalis, *Thum.* l.c., No. 62.
In fol. viv. *Tritoniæ* (*Manbretiæ*) *securigeræ*, Ker. Som. E., No. 1254. In *Gladiolo Saundersii*, Hook. fil.

Uredo (Lecythea) Ricini, *Bernh.* Thum. l.c., No. 11.
In fol. vivis *Ricini communis*. Som. E., No. 1028.

Æcidium ornamentale, *K.* in Flora, 1876, p. 362, No. 39.
In surculis ramulisque *Acaciæ horridæ*, L. Som. E., leg. MacOwan, No. 1044. Species pulcherrima !

Æcidium inornatum, *K.*
Soris hypophyllis, sparsis, prominulis, vix apertis, pallidis.
In fol. viv. *Acaciæ horridæ*, L., cum *Ravenelia glabra*, K. et C. Somerset East, leg. MacOw., No. 1436.

Æcid. ornamentale, K., ramulos Æ. horridæ occupat et detorquet, folia non tangit. In hac vero specie multo teneriore nec unquam elongata contrarium accidit.

Æcidium Compositarum, *D.C.*

In fol. *Conyzæ ivæfoliæ*, Less. *Con. pinnatilobæ*, D.C. *et Con. podocephalæ*, D.C. Som. E., No. 1318, 1037. P. Natal, No. 18.

Æcid. MacOwanianum, Thum. l.c., No. 12 et 13, vix differre videtur.

Æcidium Senecionum, *Desm.*

In fol. viv. *Senecionis deltoidis*, Lev. *Sen. quinquelobi*, D.C. Som. E., No. 1026, 1033. In *Sen. micanoide*, Ott. P. Natal, No. 116.

Thum. l.c., No. 41, 86, 109.

Æcidium albilabrum, *K.* Thum. in Flora, 1875, No. 31.

In fol. viv. *Alepideæ amatymbicæ*, F. et J., et *Al. ciliaris*, La Rosch. Som. E., 1053.

Æcidium Crini, *K.*

Sporangiis hypophyllis, variis amphigenis in maculis olivaceo-fuscis, dimidium pollicom et ultra latis, rotundis vel ellipticis, congestis, ochraceis, profunde urceolatis, margine reflexo, pulverulento.

In fol. viv. *Crini capensis*, Harv. P. Natal, No. 68.

Æcidium Cussoniæ, *K.*

Sporangiis hypophyllis, in macula fuscescente congestis, semiimersis, concavis, ochraceis, ore subintegro.

In fol. *Cussoniæ spicatæ*, Thunb. P. Natal, No. 88.

Æcidium Hartwegiæ, *Thum.* l.c., 88.

= *Æcid. chlorophyli*, MacOw. in litt.

In fol. viv. *Chlorophyli* (*Hartwegiæ*) *elati*, R. Br. (teste Backer). Som. E., No. 1022.

In circulo Æcidiorum haud raro advest. Phoma, procut dubio Spermogonia Æcidii, Conf. De Bary uber die Brandpilze.

Hamaspora longissima (*Thum.*), Körn. Myc. Beitr., p. 16.

I. = *Uredo lucida*, Thum. l.c., 63.

II. *Phragmidium longissimum*, Thum. l.c.

In fol. viv. *Rubi rigidi*, Sond. Som. E., No. 1024. P. Natal, No. 24.

Genus insigne, medium tenens inter Phragmidium et Podisoma.

Coleosporium detergibile, *Thum.* l.c., No. 8.

In fol. viv. *Plectroniæ* (*Psilostomæ*) *ciliatæ*, Dietr. Som. E., No. 1107.

DIORCHIDIUM, *Kalch.*

Sporidia didyma, testiculæformia, basi connata, pedicello communi verticaliter insidentia.

Diorchidium Woodii, *K. et C.*

Soris hypophyllis, sparsis, liberis, planis, atris; sporidiis binis juxta se positis, ovatis ·02-·024 × ·016-·018 mm., eximie echinu-

latis, brunneis, in pedicello sursum incrassato, quam spora duplo longiore.

In fol. viv. *Milletiæ caffræ*, Meissn. P. Natal, No. 70. (Observante Cookio.)

Vix differt *Triphragmium binatum*, Berk. in Amer. Acad. Sci. p. 125. "Sporis fuscis, biccellulosis, spinis emarginatis, asperis, dissepimento verticali, membrana exteriore deglubente" (e Nicaragua). Sed nomen "*Tri*phragmium *bi*natum" contradictionem in adjecto exhibet!

Phragmidium obtusum, *Tul.*

II. = *Uredo Potentillarum*, D.C., conf. *Coleosporium ochraceum*, Thum. l.c., 9.

III. Non obs.

In fol. viv. *Agrimoniæ Eupatoriæ*, L., var. *capensi*. Som. E., No. 1113.

Phragmidium Rosarum, *Rbh.*

I. et. III. In *Rosa centifolia*. Som. E., No. 1343.

Cystopus candidus, *Lev.*

In fol. *Brassicæ Napæ*, L., et *Cardamines Africanæ*, L. Som. E., No. 1248, 1287. P. Natal, 199.

Cystopus Portulacæ, *D.C.*

In *Portulaca oleracea*, L. hortorum. Som. E., No. 1303.

Cystopus Amaranthi, *Berk.* (?)

= *Cyst. Bliti*, Thum. l.c., 116. Oogonia desunt. hinc sp. dubia. Conidia ut in C. amaranthi, B.

In fol. *Cyathulæ lappulaceæ*, Mog. Tand. Som. E., No. 1313.

HYPHOMYCETES.

Ceratium hydnoides, *Fr.* MacOw., 1050.

Stilbum (?) physarioides, *K.*

Som. East (MacOwan).

Stilbum fimetarium, *P.*

In excrementis Hyræis capensis. MacOw., No. 1178.

var. *Simiarum*. In excrem. *Cynocephalorum*, MacOw., 1382.

Vulgari forma mullo major.

Fusarium roseum, *Lk.*

An durren Stengelor von *Datura Tatula*, L. MacOw., 1068.

Verticillium pulvinulum, *K. et C.*

In foliis emorientibus Aloës. MacOw., 1170.

Album, hyphis verticillato ramosis, sporis oblongis.

Sporotrichum epiphyllum, *Link.*

In fol. mort. *Pelargoniorum*. MacOw., 1171.

Primo albidum demum cæsium.

Dendryphium MacOwanianum, *Thum.* in Flor., 1877, No. 26.

MacOw., 1285.

Sporidesmium polymorphum, *Cda.*

Cape, MacOwan, 1432.

AUSTRALIAN FUNGI.

By M. C. Cooke.

(Continued from Vol. x., *p.* 136.*)*

Ord. IV. **THELEPHOREI,** *Fr.*

Gen. 1. Craterellus, *Fr. Gen. Hym.*

Crat. pusio, *Berk. Fl. Tasm.* ii., 258.
Tasmania.

Crat. confluens, *B. & Curt. Linn. Journ.* ix., 423.
Endeavour River.

Gen. 2. Cladoderris, *Pers.*

Clad. dendritica, *Pers. in Freyc. Voy., t.* 1, *f.* 4.
Victoria, N. S. Wales.

Clad. Australica, *Berk. in Herb.*
N. S. Wales.
Pileo umbrino.

Gen. 3. Lachnocladium, *Lev.*

Lach. furcellatum, *Lev. Ann. Sci. Nat.*, 1846, 159.
Queensland.

Gen. 4. Thelephora, *Ehrb.*

Thel. decolorans, *Berk. & Curt. Linn. Journ.* x., 328.

Thel. congesta, *Berk. Linn. Journ.* xvi., 168.
Victoria, N. S. Wales, Queensland.

Thel. intybacea, *Fr. Hym. Eur.*, 635.
N. S. Wales.

Thel. exsculpta, *Berk. Linn. Journ.* xvi., 168.
Victoria.

Thel. riccioidea, *Berk. Fl. Tasm.* ii., 258.
Tasmania.

Thel. Archeri, *Berk. Fl. Tasm., t.* 183, *f.* 2.
Tasmania, Victoria.

Thel. viridis, *Berk. Fl. Tasm,* ii., 258.
Tasmania.

Thel. caryophyllea, *Fr. Hym. Eur.*, 634.
W. Australia,

Thel. concrescens, *Fr. Pl. Preiss.*, 136.
W. Australia.

Thel. lamellata, *B. & Curt. Sill. Journ.*, 1851, 95.
Queensland.

Thel. myriomera, *Fr. Pl. Preiss.*, 137.
W. Australia.

Thel. pedicellata, *Schwz. Syn. Car.*, 108.
Queensland.

Gen. 5. Stereum. *Fries.*

Stereum caperatum, *B. & Mont. Syll.*, 175.
Daintree River, N. S. Wales, Lord Howe's Island.

Stereum elegans, *Fr. Epic.* 545.
Victoria, N. S. Wales, Queensland.

Stereum Thozetii, *Berk. Linn. Journ.* XVIII., 385.
Queensland, S. W. Australia, Victoria.

Stereum nitidulum, *Berk. Hook. Journ.*, 1845, 638.
Queensland, Endeavour River.

Stereum lobatum, *Kze. in Fr. Epic.*, 347.
Victoria, N. S. Wales, Queensland, New Guinea.

Stereum Boryanum, *Fr. Epic.*, 547.
Queensland, Daintree River.

Stereum Sowerbeyi, *Berk. Fr. Hym. Eur.*, 633.
N. S. Wales, Tasmania, Victoria.

Stereum versicolor, *Fr. Epic.*, 547.
Victoria.

Stereum semilugens, *Kalch. Grevillea* IX., *p.* 1.
Queensland.

Stereum luteobadium, *Fr. Epic.*, 547.
N. S. Wales.

Stereum striatum, *Fr. Hym. Eur.*. 641.
N. S. Wales.

Stereum prolificans, *Berk.* (ined.)
N. S. Wales, Queensland.

Stereum hirsutum, *Fr. Hym. Eur.*, 639.
W. Australia, S. Australia, Tasmania, Victoria, N. S. Wales, Queensland.

Stereum spadiceum, *Fr. Hym. Eur.*, 640.
Victoria, Tasmania, N. S. Wales. Queensland.

Stereum purpureum, *Fr. Hym. Eur.*, 639.
W. Australia, S. Australia, Victoria, Tasmania.

Stereum radiato-fissum, *B. & Br.* Linn. Trans. (ined.)
Queensland.

Stereum Schomburgkii, *Berk. Linn. Journ.*, XVI., 168.
N. Australia, Queensland.

Stereum illudens, *Berk.* (=**S. decipiens**, *B.*) *Hook. Journ.*, 1845.
Victoria, N. Australia, W. Australia, S. Australia, Tasmania, N. S. Wales, Queensland.

Stereum vittæforme, *Fl. Pr. Preiss.*, 137.
W. Australia.

Stereum spongiæpes, *B. & Br. Linn. Journ.* XVIII., 385.
Illawarra.

Stereum Ostrea, *Nees. Fr. Nova. Sym.*, 93.
Queensland.

Stereum confusum, *Berk.* (ined.)
W. Australia.

Stereum vellereum, *Berk. Fl. N. Zeal.* II., 183.
Victoria.

Stereum sulfureum, *Fr. (vide Berk. in Grev.* I., 164*).*
Queensland.

Stereum concolor, *Berk. Fl. Tasm.* II. 259.
Tasmania.

Stereum acerinum, *Fr. Syst. Myc.* I., 453.
Tasmania.

Stereum umbrinum, *Fr. Pl. Priess,* 137.
W. Australia.

Stereum rugosum, *Fr. Hym. Eur.,* 643.
Clarence River.

Gen. 6. Auricularia, *Bull.*

Auricularia albicans, *Berk. Linn. Journ.* XIII., 170.
Queensland.

Auricularia minuta, *Berk. Hook. Journ.*
W. Australia, Tasmania.

Auricularia pusio, *Berk. in Linn. Journ.* XVII., *p.* 386.
Queensland.

Auricularia lobata, *Fr. Hym. Eur.,* 646.
Queensland.

Auricularia mesenterica, *Fr. Hym. Eur.,* 646.
Queensland.

Gen. 7. Dictyonema. *Bl. & N.*

Dictyonema æruginosum, *Nees Acta. N. Cur.* XIII., *t.* 2.
Queensland, Daintree River.

Gen. 8. Hymenochæte, *Lev.*

Hym. strigosa, *B. & Br. Linn. Journ.* XIV., 68.

Hym. rubiginosa, *Lev. Ann. Sci. Nat.,* 1846, 151.
W. Australia, Tasmania.

Hym. phæa, *Berk. Grevillea,* VIII., *p.* 146.

Hym. cacao, *Berk. Linn. Journ.* X., 333.
Queensland.

Hym. tenuissima, *B. & Br. Linn. Journ.* X., 333.
Queensland.

Hym. Archeri, *Berk. Fl. Tasm.,* II., 259.
Tasmania.

Hym. vinosa, *Berk. Grevillea* VIII., 149.
W. Australia.

Hym. Mougeotii, *Fr. Hym. Eur.,* 654.
Tasmania.

Hym. crassa, *Lev. Grevillea* VIII., 148.

Gen. 9. Peniophora, *Cke.*

Pen. papyrina (*Mont.*) *Cke. Grevillea* VIII., 20.
Victoria.

Pen. tephra (*B. & C.*). *Cke. Grevillea* VIII., 20.
S. Australia.

Pen. deglubens (*B.*). *Linn. Journ.* XVIII., 385.

Pen. sparsa (*B.*). *Cke. Grevillea* VIII., 21.
Queensland.

Gen. 10. CORTICIUM, *Fr.*

Cort. cæruleum, *Fr. Hym. Eur.*, 651.
N. S. Wales, Queensland.

Cort. Auberianum, *B. & Mont. Cuba*, 372.
Victoria.

Cort. arachnoideum, *Berk. Fr. Hym. Eur.*, 649.
S. Australia, Tasmania.

Cort. læve, *Fr. Hym. Eur.*, 649.
Tasmania, Queensland.

Cort. roseum, *Pers. Fr. Hym. Eur.*, 650.
Tasmania.

Cort. sulfureum, *Fr. Hym. Eur.*, 650.
Tasmania.

Cort. cretaceum, *Fr. Ep.* 566.
Tasmania.

Cort. luteo-cinctum, *Berk. Linn. Journ.*, XVI., 168.
Victoria.

Cort. Archeri, *Berk. Fl. Tasm.* II., 260.
Tasmania.

Cort. olivaceum, *Fr. Hym. Eur.*, 660.
Queensland.

Cort. nudum, *Fr. Hym. Eur.*, 655.
Queensland.

Cort. radicale, *Berk. Hook. Journ.*, 1845, 59.
W. Australia.

Cort. incarnatum, *Fr. Hym. Eur.*, 654.
W. Australia, Queensland.

Cort. comedens, *Fr. Hym. Eur.*, 656.
W. Australia.

Cort. miniatum, *Cke. Grevillea* IX. *p.* 2.
N. S. Wales, Queensland.

Cort. murinum, *B. & Br. Linn. Journ.* XIV., 70.
Victoria.

Cort. anthochroum, *Fr. Hym. Eur.*, 661.

Cort. ochroleucum, *Fr. Epic.*, 557.
Tasmania.

Gen. 11. HYPOCHNUS, *Fr.*

Hypoch. rubro-cinctus, *Ehr. Hor. Phys.*, 85.
Queensland.

Gen. 12. CYPHELLA, *Fr.*

Cyphella muscigena, *Fr. Hym. Eur.*, 663.
Victoria, Tasmania.

Cyphella Curreyi, *B. & Br. Ann. Nat. Hist.*, No. 935.
Victoria.

Cyphella capula, *Fr. Hym. Eur.*, 664.
Tasmania.

Gen. 13. Solenia, *Hoffm.*

Solenia ochracea, *Fr. Hym. Eur.*, 596.
Tasmania.

Ord. V. CLAVARIEI.

Gen. 1. Clavaria, *Linn.*

Clavaria botrytis, *Pers. Fr. Hym. Eur.*, 667.
W. Australia, Tasmania, Victoria, N. S. Wales.

Clavaria flava, *Pers. Fr. Hym. Eur.*, 666.
Victoria, N. S. Wales.

Clavaria abietina, *Schum. Fr. Hym. Eur.*, 671.
Victoria.

Clavaria crispula, *Fr. Hym. Eur.*, 673.
W. Australia.

Clavaria lorithamnus, *Berk. Linn. Journ.*, XIII., 169.
Victoria.

Clavaria rugosa, *Bull. Fr. Hym. Eur.*, 669.
Queensland.

Clavaria inæqualis, *Mull. Fr. Hym. Eur.*, 674.
Tasmania, Victoria, N. S. Wales.

Clavaria argillacea, *Pers. Fr. Hym. Eur.*, 675.
Victoria, N. S. Wales, Queensland.

Clavaria paludicola, *Lib. Exs. Ard., No.* 522.
S. Australia.

Clavaria setulosa, *Berk. Hook. Journ.*, 1845, 60.
W. Australia.

Clavaria juncea, *Fr. Hym. Eur.*, 667.
Victoria, Tasmania.

Clavaria pyxidata, *Pers. Fr. Hym. Eur.*, 669.
N. S. Wales.

Clavaria formosa, *Pers. Fr. Hym. Eur.*, 670.
Victoria, N. S. Wales, Queensland.

Clavaria aurea, *Schff. Fr. Hym. Eur.*, 670.
N. S. Wales.

Clavaria stricta, *Pers. Fr. Hym. Eur.*, 673.
Queensland.

Clavaria cristata, *Pers. Fr. Hym. Eur.*, 668.
Tasmania.

Clavaria lutea, *Vent., t.* 41, *f.* 4.
Tasmania.

Clavaria Archeri, *Berk. Fl. Tasm.* II., 261, *t.* 183, *f.* 3.
Tasmania.

Clavaria rhizomorpha, *Berk. Fl. Tasm.* II., 261, *t.* 183, *f.* 4.
Tasmania.

Clavaria plebeja, *Fr. Pl. Preiss.*, 137.
W. Australia.

Clavaria laetissima, *Pers. Linn. Journ.* XVIII., 386.
S. Queensland.

Clavaria Kunzei, *Fr. Hym. Eur.*, 669.
Trinity Bay, Mount Dryander, Daintree River.

Clavaria muscoides, *Fr. Hym. Eur.*, 667.
Paramatta.

Clavaria fastigiata, *Linn. Fr. Hym. Eur.*, 667.
N. S. Wales.

Clavaria coralloides, *Linn. Fr. Hym. Eur.*, 668.
Victoria.

Gen. 2. CALOCERA, *Fr.*

Calocera guepinioides, *Berk. Hook. Journ.*, 1845, 61.
W. Australia, S. Australia, Tasmania.

Calocera glossoides, *Fr. Hym. Eur.*, 681.
Victoria.

Calocera cornea, *Fr. Hym. Eur.* 680.
Victoria.

Calocera stricta, *Fr. Hym. Eur.*, 680.
Gipps Land.

ORD. VI. **TREMELLINI.**

Gen. 1. TREMELLA, *Dill.*

Tremella lutescens, *Fr. Hym. Eur.*, 690.
S. Australia, Victoria, Tasmania, N. S. Wales.

Tremella mesenterica, *Retz. Fr. Hym. Eur.*, 690.
W. Australia, Victoria, Queensland, S. Australia.

Tremella frondosa, *Fr. Hym. Eur.*, 690.
Tasmania.

Tremella foliacea, *Pers. Fr. Hym. Eur.*, 690.
W. Australia, Tasmania.

Tremella albida, *Huds. Fr. Hym. Eur.*, 691.
Tasmania, N. S. Wales.

Tremella olens, *Berk. Fl. Tasm.* II., 262, *t.* 183, *f.* 5.
Tasmania.

Tremella viscosa, *Berk. Fr. Hym. Eur.*, 691.
Tasmania.

Gen. 2. EXIDIA, *Fries.*

Exidia glandulosa, *Fr. Hym. Eur.*, 694.
W. Australia, Tasmania.

Gen. 3. HIRNEOLA, *Fr.*

Hirneola polytricha, *Fr. Fung. Nat.*, 27.
S. Australia, N. W. Wales, Queensland, Chatham Island, Lord Howe's Island, Tropical Australia.

Hirneola hispidula, *Berk. Ann. Nat. Hist.* III., 395.
Victoria.

Hirneola auricula-Judaæ, *Fr. Hym. Eur.*, 695.
Victoria, Tasmania, N. S. Wales.

Hirneola vitellina, *Fr. Fungi Nat.*, 27.
Tasmania.

Hirneola rufa, *Fr. Fungi Nat.*, 27.
Queensland.

Hirneola Lesueurii, *Mont.* (**Auricularia Lesueurii**, *Bory.*).
Queensland (=*H. auricula Judaæ*).

Hirneola fusco-succinea, *Mont. Syll.*, 182.
S. W. Australia, Clarence River.

Gen. 4. Guepinia, *Fries.*

Guepinia spathularia, *Fr. Elen.* II., 32.
N. S. Wales, Queensland.

Guepinia pezizæformis, *Berk. Hook. Journ.*, 1845, 60.
W. Australia, Tasmania, Queensland.

Gen. 5. Dacrymyces, *Nees.*

Dacrymyces rubro-fuscus, *Berk. Hook. Journ.*, 1845, 61.
W. Australia.

Dacrymyces deliquescens, *Duby. Fr. Hym. Eur.*, 698.
Tasmania.

Dacrymyces miltinus, *Berk. Fl. Tasm.* II., 363, *t.* 183, *f.* 7.
Tasmania.

Dacrymyces sclerotioides, *Berk. Fl. Tasm.* II., 263, *t.* 183, *f.* 8.
Tasmania.

Dacrymyces seriatus, *Berk. Fl. Tasm.* II., 263.
Tasmania.

Gen. 6. Sebacina, *Tul.*

Sebacina incrustans, *Tul. Linn. Journ.* XIII., 37.
Tasmania.

SACCARDO'S SYLLOGE FUNGORUM.*

The first volume is just published of this work, which promises to be a most valuable and indispensable one for the Mycologist. The want of some synopsis of all described species has long been felt, and at last Professor Saccardo has undertaken the Herculæan task. This volume consists of 766 pages, and includes the descriptions, in Latin, of 2,849 species of Pyrenomycetes, which are estimated to be about half of the entire number. The second volume is promised during next year. As far as we have yet been enabled to test it, the compilation appears to have been carefully and conscientiously performed. We are glad to see that incomplete diagnoses, and doubtful species also find a place in appendices, so that a degree of completeness is attained which would not have been consistent with their exclusion. We are also gratified to find that the reduction of species has not been indulged in so much as

* Sylloge Fungorum, omnium hucusque cognitorum. P. A. Saccardo, "Pyrenomycetes," vol. i., (Padua).

we had feared might be the case. We do not suppose that Professor Saccardo has equal faith in all the species that he has introduced, but it is well that he has not excluded all those which he held in doubt, but left this to the judgment of those who might use his volumes. The great desideratum was to bring all the scattered species together into one work for ready reference, this having been done, we do not feel justified in criticising too rigidly the classification adopted, although it is more artificial than we should have liked.

The Perisporiaceæ, and the first part of the Sphæriaceæ, are included in the volume before us, and to this we shall hereafter return to offer some observations on the details, which time and space does not permit us to enter upon now.

The "getting up" leaves nothing to be desired, as the type is clear and legible, and the descriptions are numbered on one side consecutively in each genus, and on the other side consecutively through the work, so that reference and quotation is rendered easy. It is to be hoped that an exhaustive Index will accompany the next volume, as the absence of such an Index is the greatest, and almost only practical deficiency in the first volume. We heartily wish the learned Professor health, patience, and perseverance to bring his labours in due time to a close.

M. C. Cooke.

THE PERISPORIACEÆ OF SACCARDO'S SYLLOGE FUNGORUM.

It is worthy of note that the artificial arrangement, according to the spores, is not adopted by Saccardo in the *Perisporiaceæ*, or, at least, in a very subsidiary manner. This seems to indicate a manifest admission of the defect of the system, or that the originator had no faith in his own doctrine. This proposed system has been vauntingly termed a "carpological arrangement," but this is evidently a false application of terms, since it is only "spermological," which is a very different thing from "carpological." If it had been carpological it would have taken into account the entire fructification, and not the seeds, ovules, or spores alone. It cannot be contested that a system, such as that adopted for the Sphæriaceæ is *artificial*, pure and simple, equivalent to the old Linnean system of counting the stamens. Hence, it is a reversion from the natural arrangement proposed by Fries, and is analogous to going back to the Linnean system. There can be but one opinion now a days that the Natural system is an advance upon the Artificial—as applied to the Phanerogamia. It must be proved that the natural system cannot be applied to Crytogamia or, if not, we are fully entitled to protest against going backwards in classification. Of course it will be expected that a new system will obtain adherents, because love of novelty will ensure that, but, to suppose that it will be *permanent*, will argue all lack of faith in the progress of the human mind. Inasmuch as

children and uncultured or deficient intellects prefer counting stamens to any more elaborate method for the determination of flowering plants, so will they accept the counting of septa as the perfection of simplicity.

As already intimated, the *Perisporiaceæ* are not absolutely spermologically classified, and therefore, generally, we take no exception to the first 87 pages of Professor Saccardo's "Sylloge." There are, nevertheless, a few minute details to which we will advert for the purpose of revision. In the *Erysiphei*, the arrangement is that of Leveille, with one or two additional genera, which in two instances are not desirable. *Erysiphella*, which only professes to differ from *Erysiphe* in the absence of definite appendages, whereas this is only a fanciful difference, since in many of the species of *Erysiphe* the interwoven threads of the perithecia defy distinction into mycelium and appendages. There is no real difference in this respect between so-called *Erysiphella* and some species called *Erysiphe*. We should be glad to know how the coloured appendages of *Erysiphe lamprocarpa* are to be distinguished from the mycelioid filaments of the perithecia. Leveille himself says "il faut de grandes precautions pour separer les appendicules." The other genus to which we allude is *Pleochæta*. The typical species is *Uncinula polychæta*, Berk. and Curt. The difference indicated between this genus and *Uncinula* is that the appendages are straight in the former, and curved at the tops in the latter, with a slight variation in the form of the asci. We are prepared to admit that the diagnosis of the genus *Pleochæte* presents a distinct difference, and that a species with straight appendages is not in its place if included in *Uncinula*, where the tips, in all the species are curved. But *Uncinula polychæta*, Berk & Curt, is a true *Uncinula*, with numerous appendages, curled at the tips, just as in *U. adunca*, except that they are thickened upwards, so as to be clavate. The specimens in the Berkeley Herbarium are accompanied by a drawing, exhibiting these features which have been confirmed by examination. The *Uncinula polychæta*, Berk & Curt, is a true *Uncinula*, and therefore it was an error to adopt it as the type of a genus with straight appendages. The description of *Erysiphe polychæta*, B. & C. (No. 990) is quite different, and so are the specimens. The perithecia are much larger, and are seated upon dense orbicular spots of matted mycelium. The appendages are far more numerous than in *Uncinula polychæta*, and hence there is no reason to suppose that the *Erysiphe* is a condition of the *Uncinula*. Therefore the cardinal error has been the assumption that the two species are identical, which has introduced an element of confusion. *Uncinula polychæta*, B. & C. will have to remain as a separate species, and if there is any good basis for *Pleochæta*, as a genus, then the *Uncinula* must be expunged from its synonyms.

Whilst on the subject of genera, we cannot see how in a *natural* arrangement, *Sporormia* could possibly be far removed from *Perisporium*, but we can find no mention of it in *Perisporiaceæ*, after Saccardo.

Further notes will be made in the order of species—

Page 11. *Microsphæra semitonsa*, B. & C., should have been *Microsphæra semitosta*, B. & C.

Page 19. *Erysiphe Martii*, Lev., occurs on *Populus ciliata* at Simla, in N.W. India, or at least a form which does not appear to be specifically distinct.

Page 21. *Erysiphe chelones*, Schwz.

Erysiphe phlogis, Schwz.

Neither of these can be separated from *E. lamprocarpa*.

Page 37. *Ascotricha* is so closely related to *Chætomium* that we cannot see grounds for their separation, except the exigencies of an *artificial* system.

Page 40. The large genus *Asterina* should properly be confined to species with flattened or depressed perithecia; hence some of the species now included will have to be transferred to *Dimerosporium*, such for instance as No. 35, *Asterina conglobata*, B. & C.; No. 50, *Asterina congregata*, B. & C.; *Asterina myriadea*, Cke. (appendix, p. 761); and most probably *Asterina melioloides*, B. & C. (No. 34), hereafter alluded to.

Page 45. *Asterina bullata*, B. & C. (No. 192), is repeated at page 51 (No. 230).

Page 46. *Asterina melioloides*, B. & C. (No. 195), is the same species as was described under *Meliola Baccharidis*, B. & C. (No. 238). By some error the same thing was twice described under different names, but only one species was intended.

Asterina exasperans, B. & C. (*Phacidium exasperans*, Schwz.), on leaves of *Kalmia*. This species is omitted. The perithecia are flattened, attached by a radiating brown mycelium, but authentic specimens are so old that the asci and sporidia appear to be diffused.

Page 50. *Asterina punctiformis*, Lev. In our specimen from Leveille—"Asci clavate, sporidia continuous hyaline, minute."

Page 51. *Asterina Azarræ*, Lev. Asci ovate, sporidia elliptic, continuous, most probably becoming septate, ·018 × ·008 mm.

Page 53. *Dimerosporium MacOwanianum*, Sacc. (No. 240), a repetition of *Asterina MacOwaniana*, K. & C. (No. 169), and a good *Asterina*.

Dimerosporium mangiferum, Sacc. (236), is repeated at p. 77, as *Capnodium mangiferum*, C. & B. (No. 340).

Dimerosporium molle (B. & Br.), Sacc. (No. 237), has the appendages of a *Meliola*.

Page 61. *Meliola capnodioides*, Thum. (No. 278), is *Meliola amphitricha*, Fr.; inaccurately described according to authentic specimens.

Meliola nidulans (*Schw.*) *Cke.*, is omitted. This is the *Sphæria nidulans* of Schweinitz, but a most distinct and decided *Meliola*. Asci pyriform, 2·4 spored, sporidia ·05 × ·018 mm., brown, quadriseptate, constricted, rounded at the ends.

Meliola bidentata, *Cke. in Rav. Fungi Amer.* (No. 128). Perithecia globose (·15 mm.), appendages few, erect, bidentate at the tips. Asci saccate, sporidia ·045 × ·018 mm., slightly constricted,

rounded at the ends, brown; usually two in each ascus. On leaves of *Bignonia*. Florida.

Page 63. *Meliola glabra*, B. & C.

There are four specimens in the Berkeley Herbarium, of which three are on *Rubiaceæ*, and one, apparently, on palm; the latter is probably *M. palmarum*, Kze., and the former the true *M. glabra*. The name is, however, misleading, since the perithecia have each cell prolonged into a conical wart, so that by their verrucose appearance these may be readily distinguished from the perithecia of any other described species.

Page 69. *Meliola quinquespora*, Thum. (No. 309).

We doubt the existence of any species corresponding to this description.

Meliola abietis, Sacc. (Apiosporium abietis, *Cke.*), 308. This is certainly not a *Meliola*, with which it has nothing in common. It is a victim to an *artificial* system. Although in all other respects it agrees with *Apiosporium*, it has not the requisite septum.

Page 70. *Meliola triseptata*, B. & Br. (No. 313). Further examination of authentic specimens has convinced me that the opinion furnished to Professor Saccardo was inaccurate, and that the sporidia are *not* as in *M. amphitricha*, but triseptate, ·035 × ·012 mm., constricted, brown, rounded at the ends.

Page 71. *Meliola seminata*, B. & C. (No. 317). To this description should be added "Asci saccate, sporidia quadriseptate, brown."

To these may be added—

Meliola octospora, *Cooke*.

Spots orbicular, rather small, velvety, perithecia of medium size, appendages erect, twice or three times dichotomous above (as in *M. mollis*, B. & C.). Asci large, saccate, usually with 8 spores, sporidia triseptate, strongly constricted, brown. ·045 × ·018 mm. On leaves. Mauritius.

Asterina oleina, *Cooke in Rav. Fungi Amer.* (No. 757). Scattered, punctiform; perithecia flattened, discoid, with a radiating brown mycelium at the margin, minute, asci clavate, sporidia hyaline, small, uniseptate (immature?). Pycnidia similar, but smaller, stylospores minute, oval, hyaline, ·005 mm. long.

On leaves of *Olea Americana*. Georgia, U.S.

The foregoing suggestions are not made in any captious spirit, since the majority are the result of examinations of authentic specimens, to which Saccardo had no access. They are offered with the desire that they may be of some service as "emendata."

M. C. Cooke.

BRITISH FRESH-WATER ALGÆ.

The subscription list to this work has been some time *closed*, and nearly all the copies of the parts already published are disposed of, with the exception of a limited number retained for the complete volume. This announcement is made to prevent correspondence, as we receive numerous applications. Unfortunately

we had no data on which to assume the probable demand, and hence a smaller number were printed than desirable, so that there is every probability that the parts will soon be out of print. We have no inclination to reprint the letter press, or reproduce the plates, so that anyone desiring to secure a copy should not delay, or they may be disappointed.

M. C. Cooke.

FUNGI OF SOCOTRA.

Stereum retirugum, *Cooke.*

Coriaceo-membranaceum, murinum; pileo effuso, e cupulari explanato, marginato; ambitu pallide fimbriato; hymenio subvelutino, reticulato-venoso, murinacco.

Ad ramos. Socotra (*Balfour*).

Trametes Socotrana, *Cooke.*

Pileo sessili, semi-orbiculari, tenui, coriaceo, zonato-sulcato, velutino, albo; contextu concolore; poris magnis, dentatis, demum confluentibus, umbrinis.

Ad truncos. Socotra (*Balfour*).

Proceedings Royal Society, Ediuburgh, vol. xi. 1882.

THREE NEW INDIAN FUNGI.

By the Rev. M. J. Berkeley, F.R.S.

Hygrophorus Hobsoni, *B.*

Pileo conico eximie umbonato glabro pallido; velo conspicuo appendiculato; stipite sursum incrassato; lamellis angustis pallidis ascendentibus.

Pileus about 1 inch in diameter, 1¾ high; stem 2½ inches high, 2 lines thick above.

Communicated by General Hobson, who gathered the specimen in Central India.

Dictyophora nana, *B.*

Gregaria glandiformis, capite conico expanso; reticulo ad basin stipitis brevis extenso; volva fusca.

Andaman Isles, Lieut.-Col. E. S. Berkeley. Differing from all published species in its dwarf gregarious habit.

Tilmadoche cavipes, *B.*

Mycelio reticulato candido; peridiis junioribus carneis, senioribus lateritio-effractis pulveraceis globosis, stipitibus candidis basi incrassatis gossypinis cavis; sporis atropurpureis globosis lævibus; capillitio parco flavo.

On leaves of different species of Phalænopsis. Andaman Isles, Lieut.-Col. E. S. Berkley, 1882.

The filmy reticulate mycelium at length disappears, and the peridia are scattered, looking at first sight from their white stems

like *Diachæa*. The species is altogether distinct from *T. lateritia*, Lev. The dust of the peridia consists of irregular fragments of a bright orange-red.

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Grevillea,

A QUARTERLY RECORD OF CRYPTOGAMIC BOTANY AND ITS LITERATURE.

A MONOGRAPH OF THE BRITISH HYPOMYCES.

By Charles B. Plowright.

With Illustrations of all Species, by Dr. M. C. Cooke, M.A., A.L.S.

(*Continued from p.* 8.)

3. Hypomyces lateritius, *Tul.* *Conidia* minute, sphærical, colourless, ·0035 to ·007 mm. in diameter; borne upon awl-shaped filaments, produced by the thick web-like mycelium.

Perithecia minute, ovato-globose, nestling in the white abundant mycelium; apex smooth and slightly papillate, emergent.

Asci cylindrical, scarcely attenuated below; ·2 to ·25 mm. long by ·006 to ·007 mm. wide.

Sporidia eight; uniseriate, uniseptate, acuminate, lanceolate, hyaline; ·015 to ·02 mm. long by ·0035 to ·0045 mm. wide.

Hypomyces lateritius, Tulasne. Sel. Fung. Carp. III., p. 62, and II., p. 273, t. 30, f. 5.
" " Ann. Sc. Nat., Ser. IV. 1860, p. 11.
" " Fuckel Symb. Mycol., p. 182.
" " Karsten Myc. Fenn. II., p. 211.
" " Cooke Handbk., p. 779.
" " Saccardo. Mich. p. 285.
" " Plow. Exs, I. No. 5.
" " Stevenson Myc. Scot., p. 359.
Merulius helvelloides. Sow., t. 402.
Hypolyssus ventricosus. Pers. Myc. Eur. II., p. 7.
Agaric délicieux, var. dénaturée. Secret. Myc. Helv. I., p. 567.
Lapacendro infarinato. Venturi Stud. Myc., p. 40, t. 13, f. 122 123.
Sphæria lateritia. Fries Sys. Myc. II., p. 338.
" " Fries Elench. II., p. 66.
" " Moug. and Nest. fasc. XIV., No. 1334.
" " Currey Linn. Trans. (1858), p. 267, t. 46, f. 47.
" " Kunze. Myc Heft. II., p. 42.
" " Berk. Eng. Fl. V., pt. II., p. 238.

Hypocrea lateritia. Fries Sum. Veg. Sc., p. 383.
„ „ Mazer. Pl. Cryp. Gall. XVI., 776.
„ „ Berk. Outlines, p. 383.

On the hymenium of *Lactarius deliciosus*. Whitfield and Merryhill Common, near Hereford, 1874; Coed Coch, Oct., 1880.

This is quite distinct from *Hypomyces torminosus*, with which it seems to be confounded by some Continental fungologists. It is thicker, more fleshy, and, especially in the earlier stages, frosted over with white meal.

PLATE 148 A. *a*. Lactarius deliciosus with its Hypomyces. Nat. size.
b. Perithecia enlarged.
c. Perithecium × 140.
d. Asci and sporidia × 400.
e. Sporidia × 800.

4. Hypomyces torminosus, *Tul.* *Perithecia* small, sphærical, depressed, honey-coloured, papillate, papilla darker; ·24 mm. in diameter; produced amongst the floccose subiculum, which varies in amount and colour.

Asci elongate, cylindrical; ·112 mm. long by ·006 to ·007 mm. wide.

Sporidia eight, uniseriate, uniseptate, lanceolate, acuminate, very pale yellow; ·018 to ·02 mm. long, by ·004 to ·0045 mm. wide.

Hypomyces torminosus. Tul. Sel. Fung. Carp. III., p. 40.
„ „ Cooke Hdbk., p. 779.
„ „ Plow. Sph. Brit. II., No. 4.
Nectria torminosa. Mont. Syll., p. 225, No. 788.
Hypocrea floccosa. Fries Sum. Veg. Sc., p. 564.
„ „ Berk. and Br. Ann. N. H., No. 593.
„ „ Berk. Outl., p. 383.

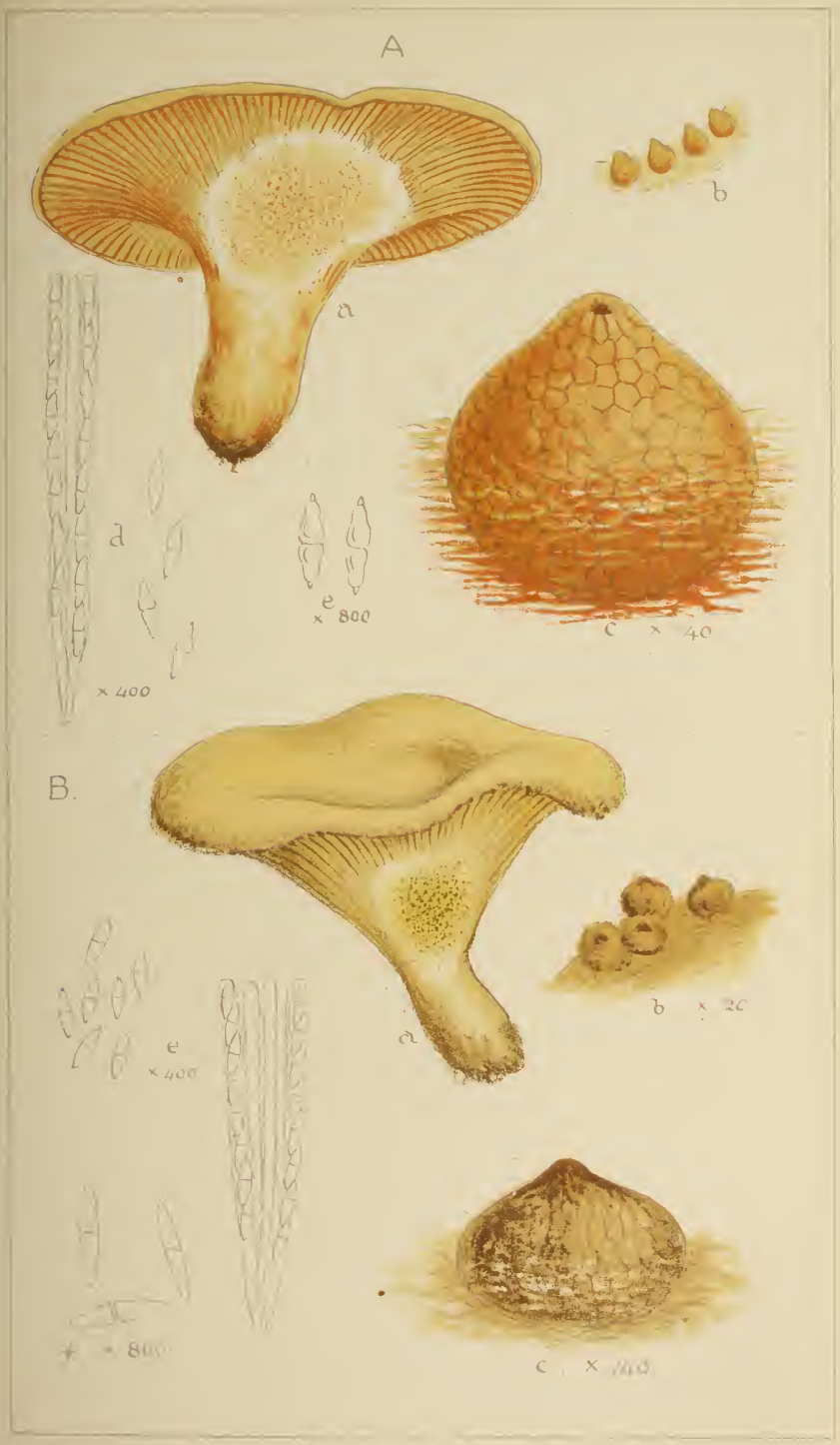
On the hymenium of *Lactarius torminosus*. Kings Cliffe, M. J. B.; Dinmore Hill, Oct., 1874, 1878, C. B. P.

At first forming a thin white floccose web upon the gills of the Lactarius, which gradually becomes pale yellow, then honey-coloured, and eventually, when the specimen dries, assuming a chocolate-brown hue.

PLATE 148 B. *a*. Lactarius torminosus with its Hypomyces. Nat. size.
b. Perithecia × 20.
c. Perithecium × 140.
e. Asci and sporidia × 400.
f. Free sporidia × 800.

5. Hypomyces rosellus, *Tul.* *Conidia*: Flocci aggregate, branched, white, branchlets numerous, 3-6, verticellate, bearing terminal conidia, which are hyaline, cylindrico-oblong, obtuse; 2 or more, usually 3, septate; ·025 to ·035 mm. long by ·01 to ·013 mm. wide.

Perithecia gregarious, emerging from a thin subiculum of an open texture, which is at first white, then rose-coloured; sphæroid-



a *Hypomyces lateritius*

b *Hypomyces terrestris*

ovoid, with an obtuse or acute papilla; deep rose-red, variable in size.

Asci narrow, linear; ·15 mm. long by ·0065 mm. wide.

Sporidia eight; uniseriate, narrowly lanceolate; apiculate at both ends, straight or curved, nucleate or spuriously 1-3 septate, often subunequilateral, hyaline; ·022 to ·037 mm. long by ·005 to ·007 mm. wide.

Hypomyces rosellus. Tulasne Sel. Fung. Carp. II., p. 273, t. 30, f. 6-9; III., p. 45, t. 5 and t. 6, f. 1-18.
„ „ Ann. Sc. Nat., 1860, p. 12.
„ „ Karsten Myc. Fenn. II., p. 208.
„ „ Saccardo Mich. I., p. 285.
„ „ Stevenson Myc. Scot., p. 359.
„ „ Cooke Handbk., p. 778, in part.
„ „ Plow. Sph. Brit. III., No. 4.

Conidia :

Trichothecium agaricinum. Bonord, t. 5, f. 114.
„ candidum. Bonord, t. 8, f. 167.
Dactylium dendroides. Fries Sys. Myc. II., p. 441.
„ „ Fries Sum. Veg. Sc., p. 491.
„ „ Berk. Eng. Flor. v., pt. 2, p. 345.
„ „ Berk. Outlines, p. 351.
„ „ Cooke Hdbk., p. 778.
„ „ Cooke Quek. Journ., 1870, t. 4.

Ascophore :

Sphæria rosea. Pers. Syn., p. 18.
„ „ Fries Sys. Myc. II., p. 338.
Sphæria rosella. Alb. & Schw., p. 38, t. 7, f. 3.
„ „ Fries Sys. Myc. III., p. 441.
„ „ Nees., p. 318, t. 44, f. 362.
„ „ Grev., Crypt. Fl. t. 138.
„ „ Currey Linn. Trans. XXII., p. 314, t. 57, f. 3.
Nectria Albertini. Berk. & Broome Ann. N. H. No., 971, t. 17, f. 24a.
„ „ Cooke Hdbk., p. 784.
Nectria rosella. Fries Sum. Veg. Sc., p. 388.
„ „ Berk. Outlines, p. 393.
Hypomyces roseus. Fuckel Sym. Myc., p. 182.
„ „ Saccardo Mich. I., p. 285.

Upon various decaying fungi, *Stereum hirsutum* most frequently, and upon the ground near where fungi have decayed.

There are two varieties of this species, one with larger, pointed perithecia, as figured by Greville and by Albertini and Schweinitz; the other with smaller and more obtuse perithecia. The sporidia vary a good deal in size, as does the colour of the subiculum, which is sometimes nearly absent. Sometimes it is almost white, but mostly rose-coloured, with a whitish circumference. Fuckel's *H. roseus* does not seem to differ from the type species except in the

size of the sporidia. This species is totally distinct from the species pointed out by Messrs. Berkeley and Broome in the "Annals of Natural History," No. 971* and described in this monograph as *Hypomyces Berkleyanus*.

PLATE 149 . *a*. Fungus nat. size.
b. Perithecia × 14.
c. Perithecium × 120.
d. Conidia × 400.
e. Asci and sporidia × 400.
f. Sporidia × 800.

6. Hypomyces aurantius, *Tul.* *Conidia:* Mycelium creeping, branched, septate, white (becoming orange), sending up erect branched, verticillate, conidiiferous threads, which bear upon their apices ovate or obovate, hyaline, unequally uniseptate, slightly constricted conidia ·016 to ·018 mm. long by ·008-·01 mm. wide

Perithecia springing from a more or less abundant effused, floccose, ochraceous subiculum, which is often white circumferentially, crowded, subconfluent, sphærical, with a conoid-attenuate apex, golden yellow or orange; ·3 mm. in diameter.

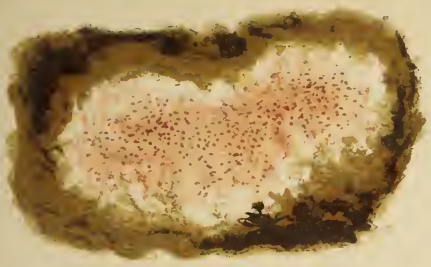
Asci cylindrical; ·11 to ·14 mm. long by ·006 mm. wide.

Sporidia eight; uniseriate, linear lanceolate, acute, often apiculate at either end; uniseptate or bipartite; hyaline, curved; ·015 to ·024 mm. long by ·004 to ·006 mm. wide.

Hypomyces aurantius.	Tulasne Sel. Fung. Carp. III., p. 43.
,, ,,	Fuckel Sym. Myc., p. 183.
,, ,,	Cooke Hdbk., p. 777.
,, ,,	Saccardo Mich. I., p. 285.
,, ,,	Stevenson Myc. Scot., p. 359.
,, ,,	Plow. Sph. Brit. I., No. 4.
Sphæria aurantia.	Fries Sys. Myc. II., p. 440.
,, ,,	Pers. Syn., p. 68.
,, ,,	Pers. Icones et Des., t. 11, f. 4.
,, ,,	Nees., f. 362.
,, ,,	Alb. & Schw., p. 35.
,, ,,	Schw. Fung. Car. Sup., No. 170.
,, ,,	Currey Linn. Trans., t. 57, f. 6.
,, ,,	Berk. Eng. Flor. v., pt. 2, p. 259.
Sphæria aurantiacea.	Gray Nat. Arr. I., p. 526.
Sphæria aurea.	Grev., Crypt. Fl. t. 47.
Nectria aurantia.	Fries Sum. Veg. Sc., p. 388.
,, ,,	Berk. Outlines, p. 393.

On various *Polyporei* and the tougher *Agaricini*, *Polyporus squamosus*, *versicolor*, *adusta*, &c.; also on *Panus torulosus*. Reffley Wood, Kings Lynn, Nov., 1879.

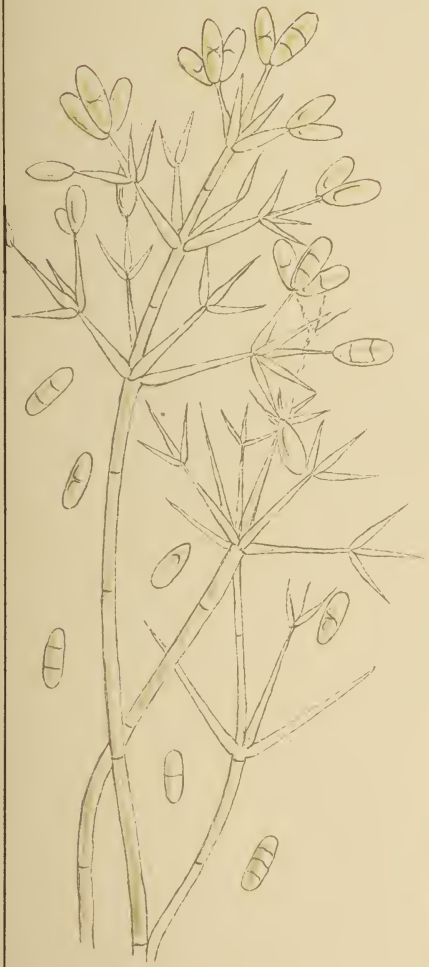
This species varies very much in the amount and colour of the subiculum. Sometimes this is nearly absent, it being invisible to the naked eye. The perithecia are then often crowded together in clusters, as Greville's figure (t. 47) represents. At other times the



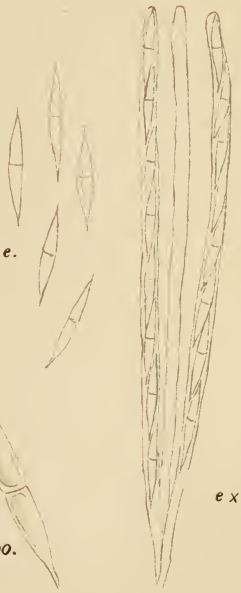
a n.s.

b. × 14.

c. × 140.



d. × 400.



e.

e × 400.

f. × 800.

Hypomyces rosellus. A & S.

subiculum spreads widely, producing only here and there a few scattered perithecia. Some of Greville's specimens of *Cryptosphæria aurantia* (t. 78) are undoubtedly this species.

PLATE 150 . *a*. Conidia on an old Polyporus. Nat. size.
b. Conidia ×400.
c. Hypomyces on Panus torulosus. Nat. size.
d. Perithecia × 20.
e. Perithecium × 140.
f. Asci and sporidia × 400.
g. Sporidia × 800.

7. Hypomyces ochraceus, *Tul.* *Conidia:* Tufts effused, wooly, white; flocci erect, septate, pellucid; branches and branchlets subulate, verticillate, patent; conidia diaphanous, ovate, obovate, or oblong, straight, usually simple, sometimes uniseptate; ·05-·06 mm. long by ·004-·006 mm. wide.

Chlamydospores produced by the deeper and larger flocci in linear series of 2-4; each chlamydospore is globose, ·02-·03 mm. wide, slightly rough, at first white, becoming dirty or vinous-red.

Perithecia crowded, roundish, yellowish, universal, with a short, thick, obtuse exserted mouth, seated upon a subiculum, which is at first white, then straw-coloured, ochraceous, and yellow.

Asci linear, cylindrical; ·025-·03 mm. long by ·0065 mm. wide.

Sporidia eight; oblong-lanceolate, uniseptate, constricted, mucronate at each end; ·035 mm. long by ·0065 mm. wide.

Hypomyces ochraceus. Tul. Sel. Fung. Carp. III., p. 41, t. 6, f. 19-20, t. 7.
Tul. Ann. Sc. Nat., 1860, p. 12.
Cooke Hdbk., p. 777.

Conidia:

Mucor dendroides., Bull, t. 504, f. 9.
Botrytis agaricina Link Obs. p. 15; Sp. Plant. VI., p. 54.
„ „ Ditmar, Sturm. Fl. t. 51.
„ „ Grev., Crypt. Fl. t. 126.
„ „ Pers. Myc. Europ. I., p. 34.
Botrytis dendroides. Pers. Myc. Europ. I., p. 34.
Verticillium agaricinum. Corda Icones II., p. 15, t. x, f. 68.

Chlamydospores:

Blastotrichum puccinoides. Preuss Sturm. XXV., t. 11

Ascophore:

Sphæria ochracea. Pers. Syn., p. 18.
„ „ Pers. Mycol. Europ. I., t. 1, f. 1-2.
Cryptosphæria aurantia. Grev., t. 78.

I have never met with this species, which seems more inclined to affect the fleshy Agaricini. Tulasne records it upon *Russula emetica*, and *adusta*. Ditmar's figure of the conidia is upon a *Russula* as well as Greville's figure of the conidia (t. 126) and of the perithecia (t. 78.) It is only right, however, to state that some of Greville's specimens now extant in the Kew Herbarium

are clearly *H. aurantius;* but *H. aurantius* was never known by me to occur upon a *Russula*. In the Edinburgh Herbarium, there is a specimen upon some Agaric which looks very like *H. torminosus*.

PLATE 150 bis. *a.* Hypomyces. Nat. size.
b. Perithecia × 15.
c. Perithecium × 60.
d. Conidia × 400.
e. Asci and sporidia × 400.
f. Free sporidia × 800.

8. Hypomyces Tulasneanus. *Plow.* *Conidia* hyaline, oval, smooth, borne singly on the end of branches of the mycelium; ·007-·015 mm. long by ·005-·006 mm. wide.

Chlamydospores large, yellow, narrowly oval, with an attenuated apex, attached at the base to the dilated extremity of a hyaline mycelial tube; ·016-·02 mm. long by ·01 mm. wide.

Perithecia small, ovato-globose, with a rather obtuse ostiola, which emerge from a dirty, yellowish green, thin subiculum; 0·25 mm. long by ·02 wide.

Asci elongate, cylindrical, ·12-·15 mm. long by ·01 mm. wide. *Sporidia* eight, hyaline, lanceolate, usually simple, ·02-·025 mm. long by ·008 mm. wide.

Hypomyces luteo-virens. *Tul.* Sel. Fung. Carp. III., p. 57, t. 8, f. 15-16.
„ „ Cooke Hdbk., p. 778.
Sphæria luteo-virens. Fries Sys. Myc. II., p. 339, in part.
Hypocrea luteo-virens. Fr. Sum. Veg. Sc., p. 383, in part.
„ „ Berk. & Broome Ann. N. H., No. 594.
„ „ Currey Linn. Trans. XXII., t. 46, f. 53.
On Boletus, Laxton, M. J. B. On Boletus. Mattishall. Sep., 1880, C. B. P.

This species is quite distinct from *H. luteo-virens* of Fries. It is much less brightly coloured, has very distinct chlamydospores, and affects *Boleti*.

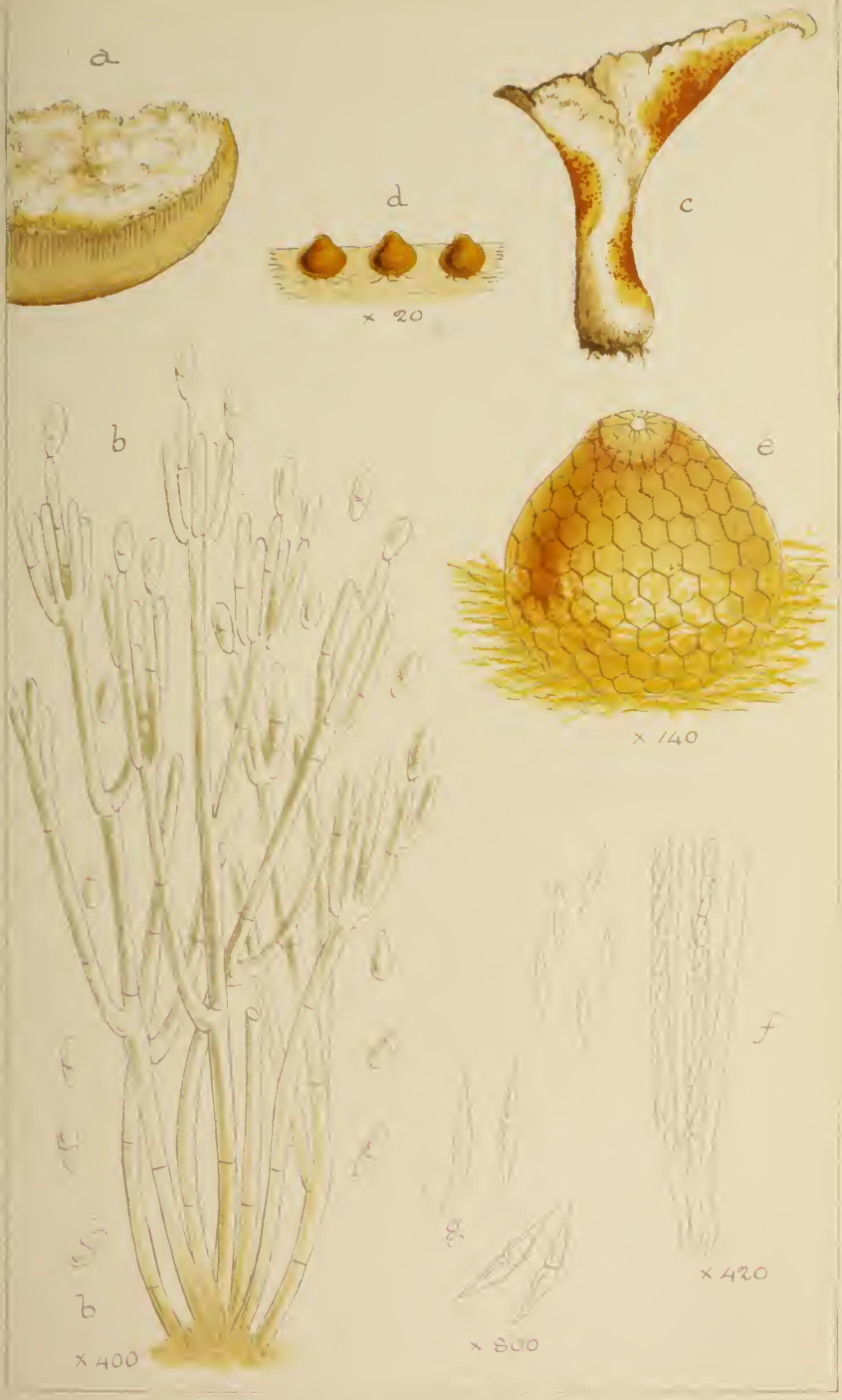
PLATE 152. 1. *a.* Boletus infested with the Hypomyces. Nat. size.
b. Perithecium × 20.
c. Perithecia × 140.
d. Chlamydospores × 400.
e. Asci and sporidia × 400.
f. Sporidia × 800.

9. Hypomyces luteo-virens, *Fries.* *Conidia* oval, hyaline, born on the tips of hyaline, verticillate, trivaricately branched tubes. Stroma, a widely effused, thin tomentum, at first bright egg-yellow, becoming greenish, then almost black.

Perithecia minute, crowded, ovoid or spherical with a conical apex. Emergent, pallid, the free portion becoming brown or nearly black; ·38 mm. high, ·3 mm. wide.

Asci cylindrical, ·16 mm. long by ·007 to ·008 mm. wide.

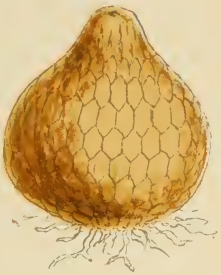
Sporidia eight, uniseriate, elongato-elliptic, acute, straight, mucronate at either end, greenish or yellowish, hyaline, simple, ·628 to ·03 mm. long by ·005 to ·006 mm. wide.



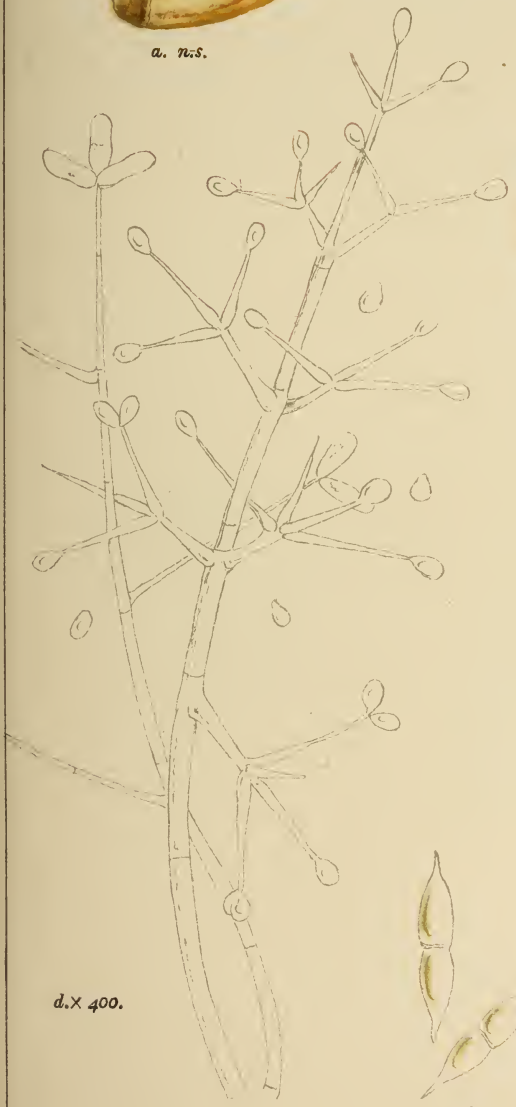
Hypomyces aurantius, Tul.

a. n.s.

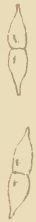
b. × 15.



c. × 60.

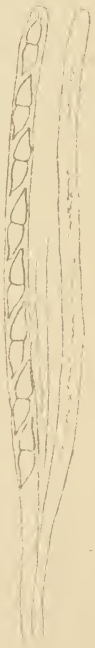


d. × 400.

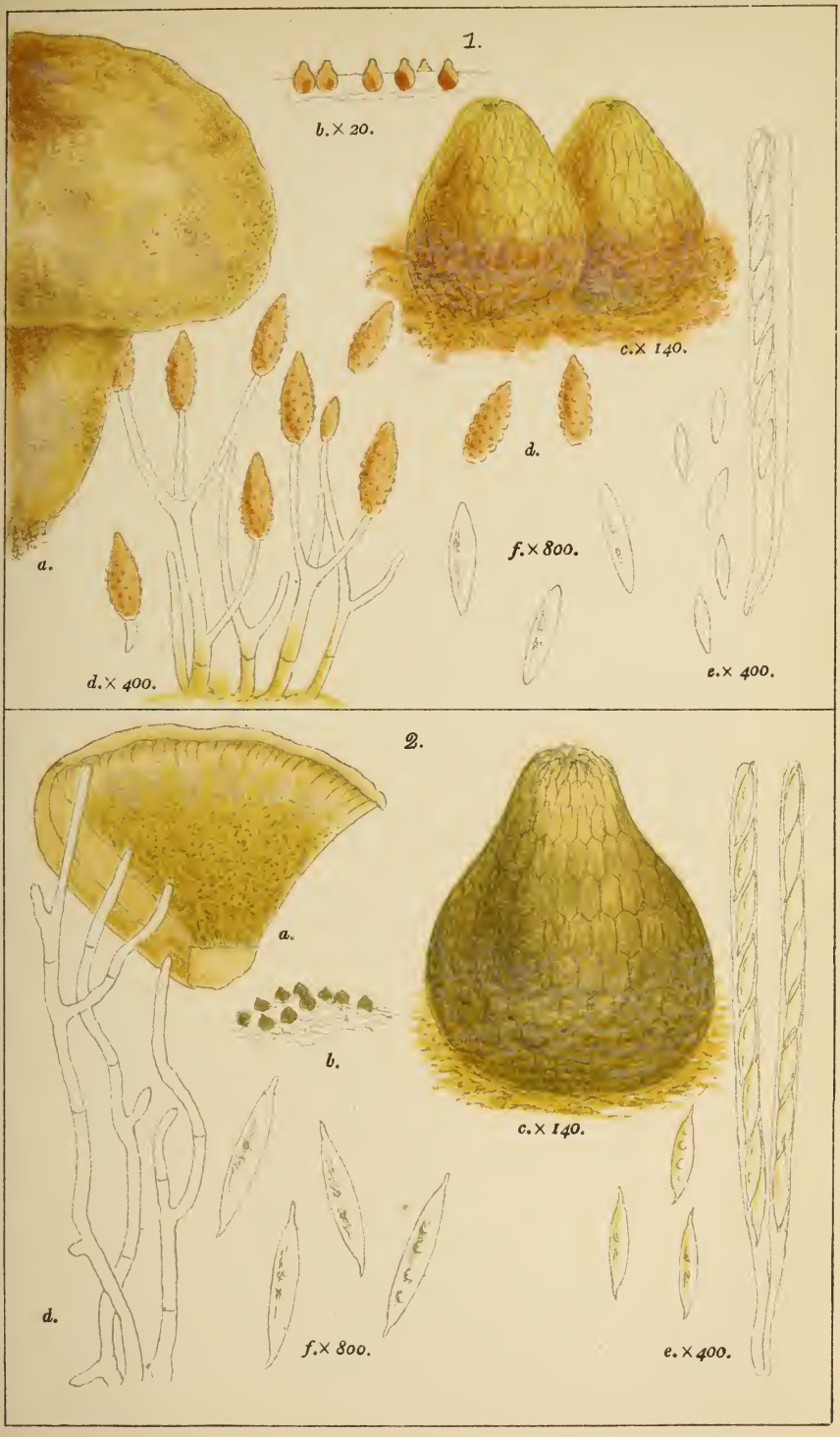


e. × 400.

f. × 800.



Hypomyces ochraceus. Tul.



1. *Hypomyces Tulasneanus. Cke. & Pl.*
2. *Hypomyces luteo-virens. Fr.*

Hypomyces viridis. Berk. & Broome. Ann. N. H., No. 1101.*
" " Karsten. Myc Fenn. II., p. 211.
" " Saccardo. Mich I., p. 286.
" " Phillips & Plow. Grev. VIII., p. 104, t. 130, f. 1 (*a-e*).
Sphæria viridis. Alb. & Schw. Consp., p. 8, t. 6., f. 8.
" luteo-virens. Fries Sys. Myc. II., p. 339.

On various agarics, especially *Lactarii*. Ray's Plantation, South Wootton, 1878-9-80, C. B. P.

This is a very marked species, which I have had one opportunity of watching through various stages of its development. It attacks the fungus (usually as *Lactarius*) before it appears above ground. In this early state, the agaric looks as if it had been dipped in the yolk of an egg. So completely were my specimens infected, that it was impossible to identify the host beyond being an agaric. In a short time the yellow colour darkens and becomes a dirty cinereous green, more or less dark in tint. The affected agaric usually increases *pari passu* with the *Hypomyces*, and does not tend to putrefaction to any abnormal degree.

PLATE 152. 2. *a.* Portion of Lactarius with the Hypomyces. Nat. size.
b. Perithecia enlarged.
c. Perithecium × 140.
d. Sterile threads of conidia × 400.
e. Asci and sporidia × 400.
f. Sporidia × 800.

10. Hypomyces terrestris, *Plow. & Boud.* *Conidia* parasitic upon agarics, consisting of branched hyaline septate tubes, bearing at their extremities oval or pyriform conidia, which are filled with transparent, granular endochrome; ·025 to ·03 mm. long by ·01 mm. wide.

Stroma at first a mere web of white arachnoid threads, spreading over the ground, which gradually becomes thicker and consolidates into *Corticium*-like patches of from 1 to 2 c.m. in diameter, of a pale flesh colour.

Perithecia subglobose, at first immersed in the stroma, then nearly half free, reddish in colour; ·3 mm. in diameter. Ostiola conoid red.

Asci cylindrical; ·15 to ·2 mm. long by ·015 mm. wide.

Sporidia eight, fusiform, acute, sometimes appendiculated, hyaline, uniseriate; ·03 to ·04 mm. long by ·008 to ·01 mm. wide.

Hypomyces terrestris. *Plow. & Boud.* Grevillea VIII., p. 105, pl. 130, f. 2.

On the ground, beneath or in close proximity to the place in which the conidiiferous agaric has decayed.

North Wootton, 1874-80. Leziate, 1880.

The conidia, in this county, occur most frequently upon *Lactarius rufus*. During the process of decay thus engendered in the agaric, the stroma of the Hypomyces makes its appearance upon the ground beneath it, which in due time produces perithecia and

sporidia. If, however, the conidiiferous agaric be by any accident removed while the development of the *Hypomyces* is in its earlier stages, ascigerous fructification is not produced. M. Boudier has sent me this fungus from Montmorency.

PLATE 153. *a*. Fungus nat. size. PLATE 153. *d*. conidia × 400.
b. perithecia enlarged. *e*. Asci and sporidia × 400.
c. perithecium × 100. *f*. sporidia × 800.

11. Hypomyces Broomeianus, *Tul.* *Conidia* hyaline, oval; borne on the extremities of branched, septate, hyaline tubes, which form a subiculum around the perithecia; ·005 to ·007 mm. in length.

Perithecia ovate, acute, clad with a dense short wool, except immediately around the ostiola; ·25 to ·5 mm. high by ·18 mm. wide.

Asci linear, cylindrical; ·13 to ·14 mm. long by ·0035 mm. wide.

Sporidia eight; linear, lanceolate, straight, uniseptate; ·013 mm. long by ·0035 mm. wide.

Hypomyces Broomeianus. Tulasne Sel. Carp. Fung. III., p. 108.
,, ,, Berk. & Broome Ann. N. H., No. 1175, t. 5, f. 3.
,, ,, Cooke Hdbk., p. 778.
,, ,, Plow. Sph. Brit. III., No. 5.
,, ,, Saccardo Mich. I., p. 286.
Hypocrea luteo-virens. Berk. & Broome Ann. N. H., No. 1101.*
,, ,, Rabh. Exs., No. 751.

Batheaston, Nov. On *Polyporus annosus*, C. E. B.; Castle Rising, Nov., C. B. P.

This minute species seems to be confined to the above Polyporus, over dead and living specimens of which it runs indiscriminately.

PLATE 154. *a*. Portion of Polyporus annosus with its parasite. Nat. size.
b. Perithecia enlarged.
c. Perithecia × 140.
d. Conidia highly magnified.
e. Asci and sporidia × 400.
f. Sporidia × 800.

12. Hypomyces Berkleyanus, *Plow. & Cooke.* *Perithecia* seated upon a delicate rose-coloured or pallid subiculum, globose or ovate, with a minute ostidolum; ·32 mm. in diameter.

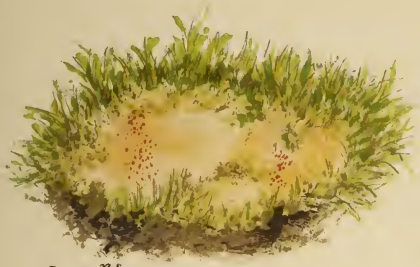
Asci cylindrical; ·01 to ·012 mm. long by ·007 to ·008 mm. wide.

Sporidia eight; oval or oblong, blunt at both ends, hyaline, uniseptate, uniseriate; ·008 mm. long by ·003 to ·004 mm. wide.

Hypomyces rosellus. Cooke Hdbk., p. 778, in part.
Nectria rosella. B. & Br. Ann. Nat. Hist., No. 971, t. 17, f. 24b.

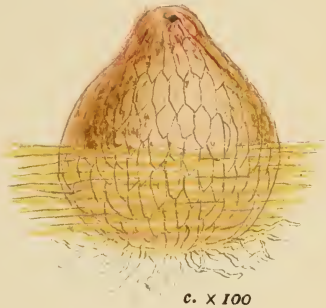
Downton, Herefordshire, Oct., 1878. On dead *Stereum hirsutum*. Sandringham, Nov., 1878. On dead wood, covered by some *Corticium*.

This species is far more uncommon than *H. rosellus*, from which



a. n.s.

b.



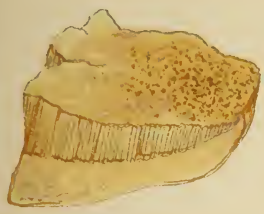
c. x 100

d. x 400.

f. x 800.

e x 400.

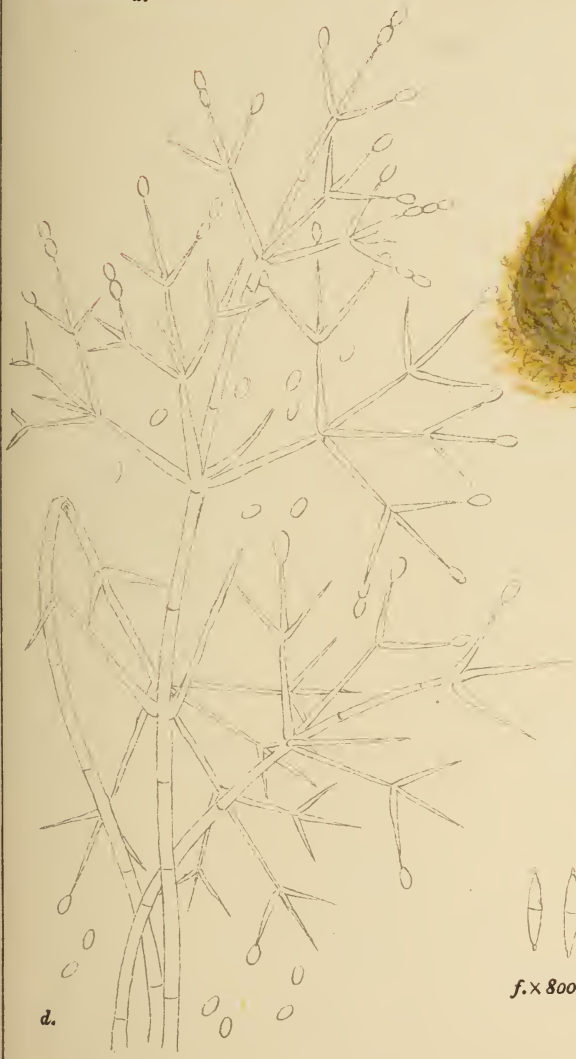
Hypomyces terrestris. Plow. & Boud.



a.

b.

c. × 140.



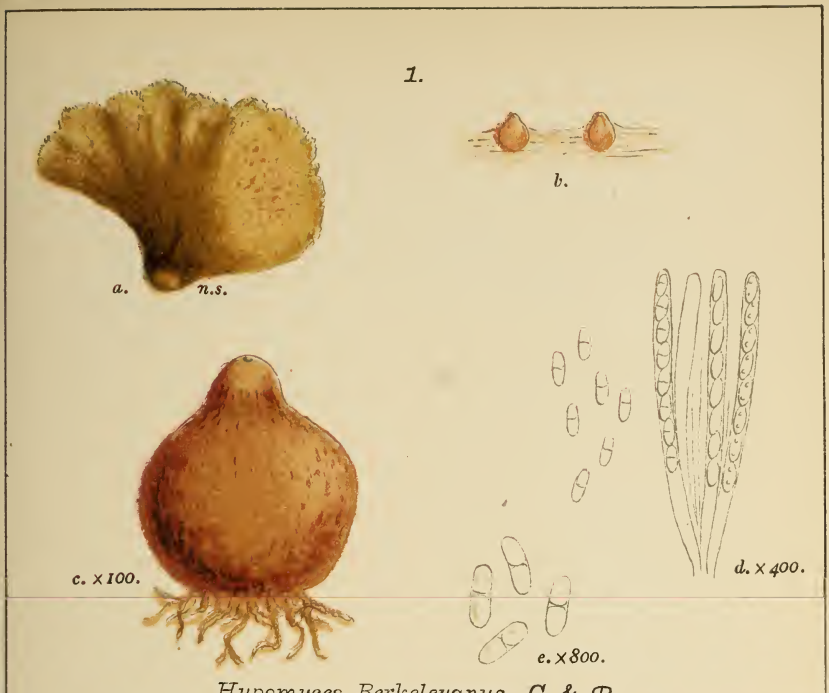
d.

e.

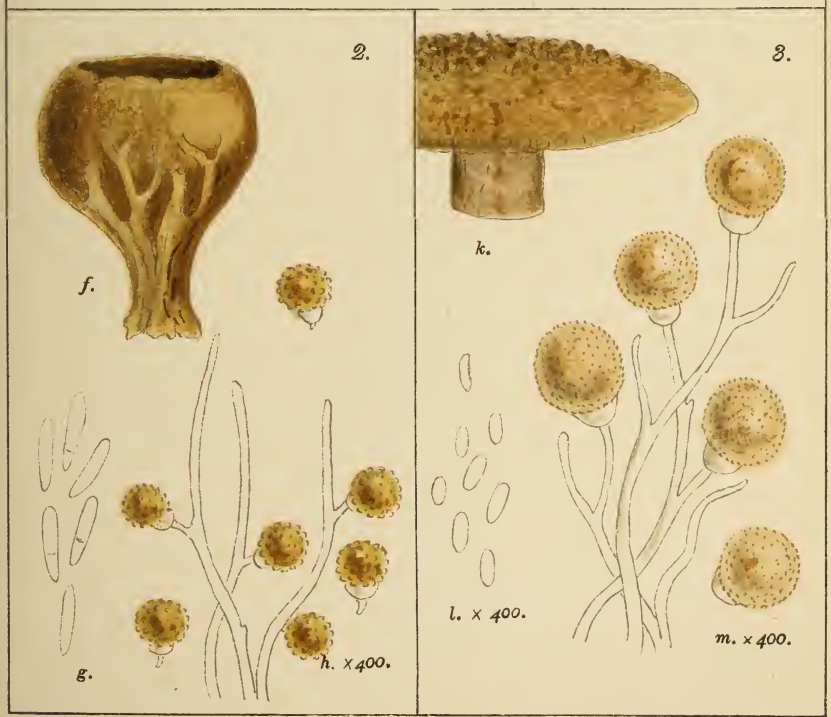
f. × 800.

e. × 400.

Hypomyces Broomeanus. Tul.



Hypomyces Berkeleyanus. C & P.

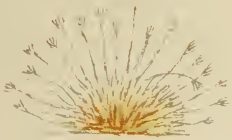


Hypomyces cervinus. Tul.

Hypomyces Linkii. Tul.

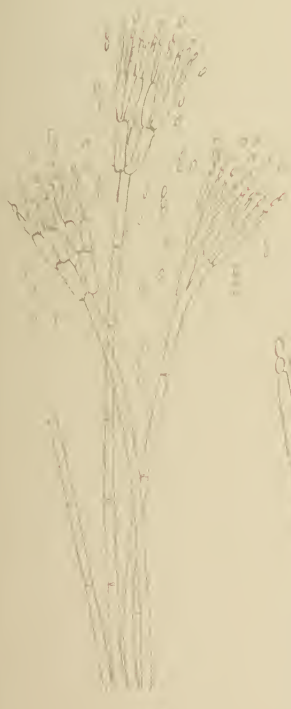
a

e × 15

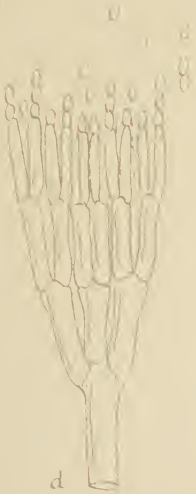


b × 40

f × 200



c × 400



d × 800

g × 400

h × 800

Hypomyces aureo-nitens Tul.

it is instantly distinguished by its much smaller, obtuse, Nectria-like sporidia.

PLATE 155, FIG. 1. *a*. Hypomyces on old Stereum.
b. Perithecia.
c. Perithecium × 100.
d. Asci and sporidia × 400.
e. Free sporidia × 800.

13. Hypomyces aureo-nitens, *Tul.* *Conidia* minute, hyaline, oval; ·003 to ·004 mm. long by ·002 mm. wide; in short chains, born terminally upon tassel-like heads.

Perithecia globose, obtuse, shining golden yellow, granular, not distinctly cellular, small; ·3 mm. high, ·25 mm. wide, nestling amongst the golden subiculum.

Asci linear; ·07 mm. long by ·005 mm. wide.

Sporidia eight; uniseriate, ovato-oblong, uniseptate, constricted, acute at either end; ·01 to ·013 mm. long by ·003 mm. wide.

Hypomyces aureo-nitens. Tulasne Sel. Carp. Fung. III., p. 64.
Saccardo Mich. I., p. 258.

On *Stereum hirsutum.* Pwllycrochon Wood, North Wales, 11th Oct., 1880.

PLATE 156. *a*. Hypomyces on hymenium of an old Stereum. Nat. size.
b. Tuft of conidia × 40.
c. Conidia × 400.
d. Apex of thread conidia × 800.
e. Perithecia × 15.
f. Perithecium × 140.
g. Asci and sporidia × 400.
h. Free sporidia × 800.

14. Hypomyces violaceus, *Tul.* *Conidia:* Mycelium very delicate, white, branching divaricately, bearing hyaline, oval, or linear oblong conidia, which are sometimes septate, straight, or curved; 01 to ·022 mm. long by ·005 to ·007 mm. wide.

Chlamydospores broadly ovate, obtuse at both ends, smoky-brown; ·023 to ·029 mm. long by ·016 to ·022 mm. wide.

Perithecia globose, very small, with obtuse ostiola, emergent, purplish violet.

Asci narrow, linear; ·055 to ·06 mm. long by ·004 mm. wide.

Sporidia eight; very small, oblong, obtuse at either end, straight or slightly unequal, simple or uniseptate, hyaline; ·006 to ·007 mm. long by ·002 to ·003 mm. wide.

Hypomyces violaceus. Tulasne Sel. Carp. Fung. III., p. 60.
„ „ Ann. Sc. Nat., Ser. 4, XIII., 1860, p. 14.
„ „ Fuckel Sym. Myc., p. 183.
„ „ Karst. Myc. Fenn. II., p. 211.
„ „ Karst. Exs., 270, 379.
„ „ Saccardo Mich. I., p. 286.
„ „ Phillips & Plow., Grev. VIII., p. 104.
Sphæria violacea. Schm. in Herb. Kunze.
„ „ Fries Sys. Myc. II., p. 441.

On *Œthalium septicum* (*Fuligo varians*) in an old sawpit at Cawdor Castle, N.B., Sept., 1879.

PLATE 157, FIG. 1. *a*. Hypomyces on Œthalium. Nat. size.
b. Perithecia.
c. Perithecium × 100.
e. Asci and sporidia × 420.
f. Free sporidia × 800.
g. Chlamydospores.
h. Conidia.

15. Hypomyces candicans, *Plow.* *Perithecia* globose, gregarious, upon and surrounded by a floccose, white mycelium, woolly except the ostiolum, which is naked, subhyaline ; ·2 mm. high by about ·15 mm. wide.

Asci cylindrical, rarely subclavate ; ·05 to ·06 mm. long by ·003 to ·005 mm. wide.

Sporidia oblong, oval, blunt at both ends, rarely uniseptate, binucleate, sometimes very highly constricted at the septum, generally uniseptate ; ·008 mm. long by ·003 mm. wide.

On some *Myxogaster*. Leziate, Aug., 1880 ; Bathford Down, Oct., 1880.

PLATE 157, FIG. 2. *a*. Hypomyces candicans. Nat. size.
b. Group of Perithecia enlarged.
c. Perithecium × 80.
d. Asci and sporidia × 400.
e. Sporidia × 800.

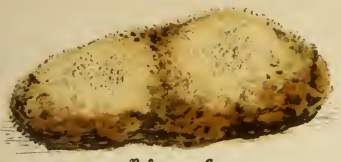
16. Hypomyces Linkii, *Tul.* *Conidia* ovate, oblong, or cylindrical, simple, rarely bilocular ; ·01 to ·02 mm. long by ·007 mk. wide ; smooth, colourless, born singly on the ends of the branches of the mycelium.

Chlamydospores sphærical, rose-coloured, verrucose, subtransparent ; ·03 mm. in diameter ; born on the swollen end of a floccus.

Perithecia unknown.

Hypomyces Linkii.	Tulasne Sel. Fung. Carp. III., p. 44.
,, ,,	Tulasne Ann. Sc. Nat., 1860, p. 16.
,, ,,	Saccardo Mich. I., p. 284.
,, ,,	Fuckel Symb. Myc., p. 182.
Mycogone rosea.	Link. Obs. I., 16 ; Berl. Mag. III., 1809, p. 18 ; Sp., p. 29.
,, ,,	Willd. Sp. Plant VI., p. 29.
,, ,,	Chev. Fung. et Byss, t. 15.
,, ,,	Tulasne Act. Heb. Ac. Science, 1855, p. 616.
Mycogone incarnata.	Pers. Myc. Europ. I., p. 26.
Sepedonium roseum.	Fries Sys. Myc. III., p. 438.
,, ,,	Fries Sum. Veg. Sc., p. 497.
,, ,,	Berk. Eng. Fl. V., Pt. II., p. 351.
,, ,,	Berk. & Broome N. H., No. 132.
,, ,,	Berk. Outlines, p. 355.

1.

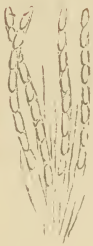


n.s. a.

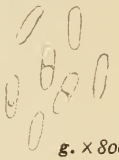
b.

c. × 100.

e.

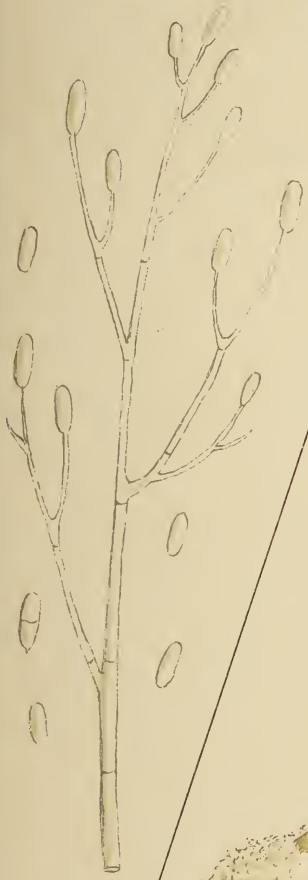


f. × 400.



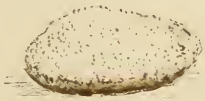
g. × 800.

Hypomyces violaceus. Tul.



d. × 400.

2.



h n.s.

i.

m. × 800.

l. × 400.

k. × 80

Hypomyces candicans. Plow.

Sepedonium roseum. Cooke Hdbk., p. 620.
„ „ Stevenson Myc. Scot., p. 286.
Mycobanche rosea. Wallr. Fl. Cryp. Germ., p. 273.
Puccinia mycogone. Corda. Icones I., p. 6, III., f. 99.

On *Agaricus rubescens*, Dr. Cooke; on the stem of a decaying *Boletus*, North Wootton, 1880, C. P. B.

Tulasne's specimens occurred on *Ag. rubescens* and *A. rimosus* in the neighbourhood of Paris.

PLATE 155, FIG. 3. *a*. Agaricus rubescens attacked with Hypomyces Linkii. Nat. size.
b. Microconidia × 400.
c. Macroconidia × 400.

17. Hypomyces cervinus, *Tul.* *Conidia* hyaline, ovate or lanceolate-oblong, simple or rarely uniseptate, borne on the ends of the filaments in a densely fasciculate manner, or sometimes subsolitary; ·013-·016 mm. long by ·003 to ·0035 mm. wide.

Chlamydospores nearly globose, rough, fawn-coloured, borne singly on the ends of the flocci, which are dilated at their extremities.

Perithecia unknown.

Hypomyces cervinus. Tulasne Sel. Fung. Carp. III., p. 51.
„ „ Tulasne Ann. Sc. Nat., 1860, p. 16.
„ „ Fuckel Sys. Myc., p. 182.
„ „ Saccardo Mich. I., p. 285.
Mycogone cervina. Ditmar Sturm. I., p. 107, t. 53.
„ „ Pers. Mycol. Europ. I., p. 26.
„ „ Link. Sp. Plant VI., p. 30.
„ „ Berk. Introd., p. 304.
„ „ Rabh. Exs., 672.
Racodium mycobanche. Pers. Myc. Europ. I., p. 72.
Sepedonium cervinum. Fries Sys. Myc. III., p. 439.
Mycobanche cervina. Wall. Fl. Germ. II., p. 273.
Puccinia cervina. Corda. Icones III., p. 4, t. 1, f. 12.
Sporotrichum fungorum. Corda. Icones III., p. 4, t. 1, f. 12.]

On *Morchella esculenta*, Castle Rising, 1871; on *Peziza acetabulum*, May, 1872, C. P. B.; on *Peziza macropus*, Sufton Court, Hereford, Oct., 1878, M. C. C.

At first appearing as a white floccose spot, which soon develops the fawn-coloured chlamydospores towards the centre in great profusion, so that in a very short time the affected fungus looks as if it had been dusted with snuff.

PLATE 155, FIG. 2. *a*. Peziza acetabulum attacked by Hypomyces cervinus. Nat. size.
b. Microconidia × 400.
c. Macroconidia × 400.

EXPERIMENTS UPON THE HETERŒCISM OF THE UREDINES.

By Charles B. Plowright.

The following thirty-five experiments are a portion of two series of experimental cultures conducted during the years 1881 and 1882 upon the physiology of the *Uredines*. They are published at the request of several of my friends who are interested in the subject, and who considered further evidence upon the phenomena of heterœcism desirable. It may be observed that the species with which these experiments were commenced, and which was the prime cause of their performance at all, was the *Æcidium* upon *Berberis vulgaris*. In the summer of 1881 a number of cultures were made with the spores of this fungus upon wheat; the result obtained was that in twelve out of thirteen of these experiments *Uredo linearis* followed the infection of the plants with the Æcidium spores; but in no less than eleven of them did the *Uredo* appear upon the uninfected wheat plants kept as control plants * The consequence was that my faith in the heterœcismal character of this species was so much shaken that I was hardly able to believe in it at all.

During the spring and summer of the present year (1882), however, a second series of experiments was instituted, which had not been long in existence before overwhelming evidence of the heterœcismal nature of several species was forthcoming. In these cultures various and less common *Uredines* were employed, so that the error of accidental sporadic infection, it is scarcely possible to believe, could have taken place time after time, with species after species. To take, for instance, the *Rœsteliæ*. Of all heterœcismal cultures the easiest successfully to conduct are those in which the *Podisomæ* are employed as infecting material; at least such is my experience, although Prof. Farlow has not been so successful with his cultures† in America. On every occasion upon which I have infected hawthorns with *Podisoma juniperi*, and pears with *P. sabinæ*, the corresponding *Rœsteliæ* have been produced. Now both these *Rœsteliæ* are very uncommon plants near Kings Lynn. With *Gymnosporangium juniperi* upon mountain ash, four out of five cultures were successful, which is the more noteworthy when it is remembered that the *Gymnosporangium* was sent from Forres, in the north of Scotland (some 400 miles away), by my friend the Rev. James Keith, it being a plant that does not grow in this district.

All the cultures of *Puccinia gramins* on barberry were successful, the control plants remaining free from the fungus.

* Plowright, "Grevillea," vol. x., p. 40.

† Farlow, "The Gymnosporangia of the United States," pp. 34, 35.

With *Æcidium berberidis* on wheat the three experiments performed were all entirely successful, the check plant remaining free from the fungus. Both the infected and the control plants in these last-named experiments were raised under bellglasses, and covered by them continuously, except for the few minutes necessary to perform the infection, until the end of the experiment, so that the source of error from accidental atmospheric infection was reduced to a minimum.

The culture of *Peridermium pini* on the common groundsel (*Senecio vulgaris*) has with me been one of the most difficult to perform. After several successive failures, however, I succeeded in two instances in producing the *Coleosporium*.

By the infection of *Poa annua* with the spores of *Æcidium tussilaginis*, the *Puccinia poarum* of Nielsen was in three out of four cultures produced—a *Puccinia* hitherto unknown in Britain.

Perhaps the most interesting of the series, however, was the production of *Æcidium zonale* on *Inula dysenterica* (also a fungus new to the British flora) by infection with *Uromyces junci*. This was successful in every experiment. The actual demonstration of this heterœcism had not hitherto, I believe, been made, although Fuckel* had the strongest ground for believing it to exist.

In one of these experiments some fragments of *Juncus obtusiflorus*, with numerous pustules of *Uromyces*, in active germination, on them, were placed upon the upper leaves of a plant of *Inula dysenterica;* in the course of ten or fifteen days these leaves began to show the yellow spots, which were the forerunners of the *Æcidium*. By this time the plant had grown taller, and had developed fresh leaves above those on which the *Juncus* had been placed. The fragments of *Juncus* were then removed from the leaves, on which they had been in the first instance placed, to the healthy, recently expanded leaves above, where in due course the *Æcidium* was developed. It was very interesting to observe how the *Æcidium* could thus be produced in successive crops.

Podisoma sabinæ and *Ræstelia cancellata.*

Exp. 2.—Six pear seedlings had fragments of *Podisoma sabinæ* placed on each on 19th April; on 6th May the spermogonia of *Ræstelia cancellata* appeared on them.

Exp. 6.—Three pear seedlings were infected on the 13th April with *Podisoma sabinæ;* on 24th April yellow spots appeared; on 6th May spermogonia were abundant on all three plants.

Exp. 10.—Four pear seedlings infected with *Podisoma sabinæ* on 14th April at 8 a.m. On 6th May every plant had spermogonia on it.

Exp. 25.—11th May. Some *Podisoma sabinæ*, which had been soaked for 48 hours in water in a watch-glass, was placed on some leaves of a pear tree in Mr. T. Pung's garden. Having some doubt of the efficacy of the material, these leaves were reinfected on

* Fuckel, "Symbol. Mycol.," p. 61.

the 25th May. On 11th June spermogonia appeared on one leaf. There were many pear trees in this garden, but this was the only pear leaf on which the fungus could be found. This leaf was gathered during the last week of September, and exhibited at Hereford. It never got beyond the spermogonial condition.

Podisoma juniperi and *Rœstelia lacerata.*

Exp. 4.—Two thorn seedlings (*Cratægus oxyacantha*) infected on 10th April with *Podisoma juniperi.* On 24th abundance of spermogonia; on 25th May perfect *Rœstelia lacerata* on both these plants.

Exp. 5.—Three similar plants were on 7th April infected with *Podisoma juniperi* very freely. 24th April the leaves were yellow with spermogonia; 25th May perfect *Rœstelia* was produced.

Exp. 15.—Two similar plants infected on 17th April. On 6th May spermogonia noted, and on 3rd June the perfect *Rœstelia* on both plants.

Exp. 16.—Three similar plants infected on 17th April. On 6th May spermogonia noted, and on 3rd June the perfect *Rœstelia* on all these plants.

Exp. 27.—On 11th May the leaves on the lower branch of a hawthorn tree in Mr. T. Pung's garden were infected with *Podisoma juniperi.* On the 21st the spermogonia appeared on five leaves, which in due time developed into the perfect *Rœstelia.* On no other part of this tree, nor on any other thorn, either bush or hedge, in this garden, was any specimen of either the spermogonia or the perfect fungus to be seen.

Gymnosporangium juniperi and *Rœstelia cornuta.*

Exp. 43.—Five small plants of *Sorbus aucuparia* were on the 29th May infected with *Gymnosporangium juniperi,* sent by the Rev. James Keith from Forres; on 25th July spermogonia appeared on three leaves; on 4th September the perfect *Rœstelia cornuta* was observed.

Exp. 44.—Five similar plants were infected on the 29th May. On 21st June yellow spots appeared; on 1st July spermogonia were seen, and on the 4th September the perfect *Rœstelia.*

Exp. 63.—One small mountain ash (*Sorbus aucuparia*) was infected on the 12th June with *Gymnosporangium juniperi,* sent by Rev. J. Keith from Forres. On 16th Aug. spermogonia were noted.

Exp. 73.—A similar plant was on the 18th June infected with the same material. On 1st July spermogonia appeared, and on 30th August the perfect *Rœstelia.* It should be observed that I had never seen this fungus in Norfolk until it was produced by artificial infection with the *Gymnosporangium.*

Puccinia graminis and *Æcidium berberidis.*

Exp. 11.—On 14th April a three-year-old plant of *Berberis vulgaris* was infected with the germinating teleutospores of *Puccinia graminis* (on *Triticum repens*), and covered with a large bellglass. As the supply of infecting material was on this occasion limited,

the process was completed on the following day (the 15th), and on the 17th. The bellglass was not removed until the 24th. On 6th May spermogonia appeared, and on the 24th the perfect *Æcidium* was noted on 20 leaves. A precisely similar barberry kept as a control plant had no *Æcidium* upon, although grown in the same garden, and carefully observed throughout the summer.

Exp. 14.—A similar barberry plant was on the 17th April infected with the same material. On the 6th May spermogonia and on 3rd June perfect *Æcidia* were noted, the control barberry remaining free from the fungus.

Exp. 19.—On 9th May a similar barberry was infected. On 25th spermogonia and on 15th June perfect *Æcidia* were noted. The control barberry remained free from the fungus.

Æcidium berberidis and *Puccinia graminis.*

Exp. 48.—24 wheat seedlings growing in a flower pot, which had been continually covered by a bellglass from the day the wheat was sown, were on 23rd May infected with ripe spores of *Æcidium berberidis*, sent for the purpose by Mrs. Howell, of Drayton Rectory. On the 3rd June sickly yellow spots appeared on some of the plants; on the following day (4th June) true *Ureco linearis* made its appearance. On 8th June the pot was removed from the garden into a room in the house, and the diseased plants removed. By the 30th every plant had the parasite on it. A similar pot of wheat seedlings grown under exactly similar conditions, but not infected with *Æcidium* spores, remained free from *Uredo.*

Exp. 80.—Five wheat plants which had been reared under a bellglass were on the 28th June infected with *Æcidium berberidis* spores from Exp. 14; on 17th June *Uredo* appeared on one leaf, and three days later on the others. The five control wheat plants remained healthy.

Exp. 81.—Many wheat seedlings reared under a bellglass were on 28th June infected with *Æcidium berberidis* spores; on 16th August *Uredo* was noted on them. A similar pot of wheat seedlings not infected with the Æcidia spores remained healthy.

Puccinia caricis and *Æcidium urticæ.*

Exp. 2.—On the 8th April three plants of *Urtica dioica* were planted in a flower pot; around them was laid a quantity of *Carex hirta*, with last year's *Puccinia caricis* on it. The pot was covered by a bellglass, and freely watered. On 2nd May two of the plants were heavily affected with *Æcidium urticæ;* on 6th May the nettles were planted out, and the Carex straw removed and destroyed. On 9th May all three plants were much distorted, both on their stems and on their leaves, with the *Æcidium.*

Æcidium urticæ and *Uredo caricis.*

Exp. 33.—On May 15th a clump of healthy *Carex hirta* grown in a flower pot under a bellglass for three weeks, had two leaves of nettle with *Æcidium* on them from the previous experiment (Exp.

9) laid upon it; on 15th June *Uredo caricis* made its appearance, and by 1st July it had affected many of the Carex leaves.

Exp. 49.—Three scions of *Carex hirta* from South Wootton were on the 26th May infected with spores of *Æcidium urticæ;* on 3rd June sickly spots were noted, which five days later (on 8th) were the site of *Uredo* pustules. On 21st all the plants were affected with the *Uredo.*

Exp. 26 (1881).—Four plants of *Carex hirta* were infected on 21st July with *Æcidium urticæ,* and four similar plants kept as checks. On 15th August *Uredo* appeared in two of the infected plants. The check plants remained free from the fungus, as did 33 other individuals of *Carex hirta* growing in the same garden.

Puccinia magnusiana and *Æcidium rumicis.*

Exp. 18.—Two plants of *Rumex hydrolapathum* and two of *P. obtusifolium* were planted in a large flower pot, and surrounded with leaves of *Phragmitis* communis, on which the teleutospores of last year's *Puccinia magnusiana,* were abundant. The pot was covered with a bellglass, and freely watered. On 3rd June red spots appeared on the leaves of the *R. hydrolapathum,* which, by the 6th June, developed into perfect *Æcidium rumicis.* No *Æcidia* appeared on the *R. obtusifolium.*

Exp. 32.—Three plants of *Rumex hydrolapathum* were similarly surrounded with reed leaves on 15th May. On 6th June perfect *Æcidium rumicis* was developed on all three plants.

Æcidium rhamni and *Puccinia coronata.*

Exp. 55.—A flower pot of seedling oats were infected on 7th June with *Æcidium rhamni.* On the 10th July there was an appearance like *Uredo.* On 10th August the *Uredo* of *Puccinia coronata* was gathered.

Exp. 76.—A number of oat seedlings were on 23rd June infected with *Æcidium rhamni.* On 12th June *Uredo* of *P. coronata* appeared.

Æcidium tussilaginis and *Puccinia poarum.*

Exp. 84.—Four plants of *Poa annua* were on 29th July infected with *Æcidium tussilaginis.* On 10th July *Uredo* appeared, and on the 18th the perfect *Puccinia,* which had hitherto not been recorded as British.

Exp. 85.—Three plants of *Poa annua* were on the 29th June infected with *Æcidium tussilaginis.* On 10th July the *Uredo* and on the 18th the *Puccinia* appeared.

Exp. 86.—A number of plants of *Poa annua* in a pot were infected with the *Æcidium* on 29th June. On 10th July the *Uredo,* and on the 18th July the *Puccinia* appeared.*

* Note *Poa annua* is a common weed in the garden in which these experiments were performed, as it is in every garden, but on no other plant of this grass could the *Puccinia* be found, although careful search was made, except those upon which the spores of *Æcidium tussilaginis* had been placed.

Uromyces junci and *Æcidium zonale.*

Exp. 40.—Germinating *Uromyces junci* was on the 25th May placed on three plants of *Inula dysenterica.* On 4th June yellow spots appeared on all these plants, which by the 21st developed into perfect *Æcidium zonale.*

Exp. 42.—Germinating *Uromyces junci* was placed on two plants of *Inula dysenterica* on 29th May. On 12th June abundant yellow spots were noticed, which by the 21st had developed into perfect *Æcidium zonale.*

Exp. 64.—Three plants of *Inula dysenterica* were on 8th June infected with *Uromyces junci;* by 30th perfect *Æcidium zonale* was abundantly produced on all three plants. To this experiment three control plants were kept which remained perfectly free from the fungus.

Peridermium pini and *Coleosporium senecionis.*

Exp. 31.—Two plants of *Senecio vulgaris* were on the 13th May infected with *Peridermium pini.* On 2nd June the *Coleosporium* appeared on both plants.

Exp. 54.—Four plants of *Senecio vulgaris* were on 7th June infected with *Peridermium pini.* On 28th the *Coleosporium* appeared. Many plants of *Senecio vulgaris* existed in the garden, but none of them, either at the time these experiments were performed, nor before, nor since, have had any trace of the fungus upon them.

AUSTRALIAN FUNGI.

By M. C. Cooke.

(*Continued from p.* 34.)

GASTEROMYCETES. *Fr.*

Ord. I. **PHALLOIDEI,** *Fr.*

Gen. 1. Phallus, *Linn.*

Phallus merulinus, *Berk. Intell. Obs.*, ix., *p.* 404.
Queensland.

Phallus tahitensis, *Schlecht Diss.*
N. S. Wales.

Phallus Novæ Hollandiæ, *Corda. Icon.* vi., *t.* 3, *f.* 46.
New South Wales.

Phallus multicolor *Berk. & Br. Linn. Trans., Ser.* 2, ii., 67.
Queensland, N. S. Wales.

Phallus quadricolor, *B. & Br. Linn. Trans* ii., 68, *t.* 14.
Queensland.

Phallus vitellinus, *Müll.* (description unknown).
Victoria.

Phallus curtus, *Berk. Hook. Journ. Bot.,* 1845, 69.
W. Australia.

Phallus calyptratus, *B. & Br. Linn. Trans.,* II., 67.
Queensland.

Phallus aurantiacus, *Mont. Ann. Sci. Nat.,* 1841, 277, *t.* 16, *f.* 1.
Queensland.

Phallus Watsoni, *Berk. Linn. Journ.,* XVIII., *p.* 367.
Burnett's River.

Gen. 2. CYNOPHALLUS, *Fr.*

Cynoph. papuasius, *Kalch. Grev.* IV., *p.* 74.
Queensland.

Cynoph. Caleyi, *Berk.* (Phallus libidinosus, *Cayley.*)
Clarence River, Queensland.

Gen. 3. CLATHRUS, *Mich.*

Clathrus crispus, *Turp. Berk. Ann. Nat. Hist.,* IX., 446.
Queensland.

Clathrus pusillus, *Berk. Hook. Journ. Bot.,* 1845.
Queensland, W. Australia.

Clathrus hirudinosus, *Lev. Ann. Sci. Nat.,* III., *t.* 8.
W. Australia.

Gen. 4. ILEODICTYON, *Tul.*

Ileodictyon gracile, *Berk. Hook. Journ. Bot.,* 1845.
W. Australia, Victoria, Tasmania, N. S. Wales.

Ileodictyon cibarium, *Tul. Corda. Icon.,* VI., 26.
Mount Dromedary.

Gen. 5. LYSURUS, *Fr.*

Lysurus Archeri, *Berk. Fl. Tasm.,* II., 264, *t.* 184.
Tasmania.

Lysurus aseröeformis, *Corda. Icon.,* VI., *t.* 4, *f.* 3—8.
Tasmania.

Gen. 6. ANTHURUS. *Kalch.*

Anthurus Mullerianus, *Kalch. Phall. Nov., t.* 3, *f.* 3.
Victoria.

Gen. 7. ASERÖE, *Labill.*

Aserö̈e rubra, *Labill. Voy. Austr.,* 145.
S. Australia, Victoria, N. S. Wales.

Aserö̈e pentactina, *Endl. Schlecht. Diss.,* 7.
N. S. Wales.

ORD. II. **LYCOPERDACEI,** *Fr.*

Gen. 1. PODAXON, *Desv.*

Podaxon pistillaris, *Fr. Syst. Myc.* III., 63.
Victoria, Queensland.

Podaxon carcinomalis, *Fr. Syst. Myc.* III., 62.
Queensland, S. Australia.

Gen. 2. Xylopodium, *D.R. & M.*

Xylopodium australe, *Berk. Linn. Journ.* xvi., 171.
S. Australia, Victoria, N. S. Wales.

Gen. 3. Phellorina, *Berk.*

Phellorina strobilina, *Kalch. Grevillea* ix., 4.
Queensland.

Gen. 4. Secotium, *Kunze.*

Secotium melanosporum, *Berk. Hook. Journ. Bot.*, 1845, 62.
W. Australia.

Secotium coarctatum, *Berk. Hook. Journ. Bot.*, 1845, 63.
W. Australia.

Secotium erythrocephalum, *Tul. Ann. Sci. Nat.*, 1844, 115.
Tasmania.

Secotium Drummondi, *Berk. in Herb. vide Hook. Journ.*, 1845, *p.* 63.
W. Australia.

Secotium Gunnii, *Berk. in Herb. Berk.*, *No*, 4412.
Sulphur springs, Tasmania.

Secotium Czerniavii, *Mont. Flor. Alg.*, 371.

Gen. 5. Mitremyces, *Nees.*

Mitremyces fuscus, *Berk. Ann. Nat. Hist.* iii., *p.* 325.
Victoria, Tasmania, Lake Muir.

Mitremyces luridus, *Berk. Hook. Journ. Bot.*, 1845, 65.
W. Australia.

Mitremyces viridis, *Berk. Hook. Journ. Bot.*, 1851, 201.
Victoria.

Gen. 6. Tulostoma, *Bull.*

Tulostoma mammosum, *Fr. Syst. Myc.* iii., 42.
Rockhampton.

Tulostoma fimbriatum, *Fr. Syst. Myc.* iii., 43.
W. Australia.

Tulostoma leprosum, *Kalch. Grev.* iv., 72.
Queensland.

Gen. 7. Battarrea. *Pers.*

Battarrea Muelleri, *Kalch. Grevillea* x., *p.* 3.
S. Australia.

Battarrea phalloides, *Pers. Syn. Fung.*, 129, *t.* 3, *f.* 1.
Between Murchison River and Shark's Bay.

Gen. 8. Mesophellia. *Berk.*

Mesophellia arenaria, *Berk. Linn. Trans.* xxii., 131, *t.* 25.
Tasmania, Harrietville, W. Australia.

Mesophellia ingratissima, *Berk. Linn. Journ.* xviii., 386.
River Goulburn.

[The proposed substitution of *Inoderma* for *Mesophellia* is inadmissible, as there is already a genus of Algæ bearing the same name.]

Gen. 9. Geaster. *Mich.*

Geaster hygrometricus, *Pers. Syn. Fung*, 135.
Rockhampton, W. Australia.

Geaster lageniformis, *Vitt. Mon. Lycop.*, *t.* 1, *f.* 2.
Tweed River.

Geaster fimbriatus, *Fr. Syst. Myc.* III., 16.
S. Australia, Tasmania, Victoria, Queensland.

Geaster Drummondi, *Berk. Hook. Journ. Bot.*, 1845.
W. Australia, Victoria.

Geaster minimus, *Schwz. Syn.*, *p.* 58, *No.* 327.
W. Australia, S. Australia, Victoria, N. S. Wales, Queensland.

Geaster striatus, *D.C. Fr. Syst. Myc.* III., 13.
W. Australia, Queensland.

Geaster striatulus, *Kalch. Grevillea* IX., *p.* 3.
S. Australia, Queensland.

Geaster saccatus, *Fr. Syst. Myc.* III., 16.
Tasmania, N. S. Wales, Queensland, W. Australia, Richmond River.

Geaster tenuipes, *Berk. Fl. Tasm.* II., 264, *t.* 183, *f.* 9.
Tasmania.

Geaster Archeri, *Berk. Fl. Tasm.* II., 264.
Tasmania.

Geaster lignicola, *Berk. Linn. Journ.* XVIII., 386.
Rockhampton.

Geaster Australis, *Berk. Fl. Tasm.* II., 265, *t.* 183, *f.* 10.
Tasmania, King George's Sound.

Geaster rufescens, *Pers. Fr. Syst. Myc.* III., 18.
W. Australia, N. S. Wales.

Geaster Guilfoylei, *Mull. in Herb. Berk.*, *No.* 4564. Apparently the same as **Geaster rufescens**, *Pers.*

Geaster dubius, *Berk. Linn. Journ.*, XVI., 40.
N. S. Wales.

Geaster vittatus, *Kalch. Grevillea* IX., *p.* 3.
Australia.

Geaster pusillus, *Fr. Pl. Preiss.*, *p.* 139.
W. Australia.

Geaster floriformis, *Vitt. Mon. Tub.*, 18.
Queensland.

Gen. 10. Bovista. *Pers.*

Bovista Mulleri, *Berk. Linn. Journ.* XVI., 171.
Queensland, Darling Range.

Bovista lilacina, *B. & M. Hook. Journ. Bot.*, 1845.
W. Australia, Tasmania, Victoria, N. S. Wales, Queensland.

Bovista brunnea, *Berk. Fl. N. Zeal.* II., 119.
N. S. Wales.

Gen. 11. Lycoperdon. *Tourn.*

Lycoperdon cælatum, *Fr. Syst. Myc.* III., 32.
N. S. Wales, Queensland.

Lycoperdon australe, *Berk. Fl. Tasm.* II., 266.
S. Australia, Victoria, Tasmania, W. Australia, N. S. Wales, Clarence River, Endeavour River.

Lycoperdon glabrescens, *Berk. Fl. Tasm.* II., 265.
Victoria, Tasmania.

Lycoperdon pyriforme, *Schff. Fr. Syst. Myc.* III., 29.
Victoria, Tasmania, N. S. Wales, Clarence River.

Lycoperdon gemmatum, *Fr. Syst. Myc.*, III., 36.
W. Australia, Tasmania, N. S. Wales, Queensland.

Lycoperdon Gunnii, *Berk. Fl. Tasm.* II., 265.
Tasmania.

Lycoperdon pusillum, *Batsch. Cont.* II., 123.
W. Australia, Queensland, King George's Sound, N. S. Wales.

Lycoperdon reticulatum, *Berk. Fl. N. Zeal.* II., 190.
Victoria.

Lycoperdon mundula, *Kalch. Grevillea* IX., *p.* 3.
Victoria.

Lycoperdon tephrum, *B. & Br. in Herb. Berk., No.* 4630.
Queensland.

Gen. 12. Mycenastrum. *Desv.*

Mycenastrum phæotrichum, *Berk. Hook. Journ.* II., 418.
W. Australia, Queensland, Port Denison, N. S. Wales.

Mycenastrum corium, *Berk. Hook. Journ.*, 1845, *p.* 518.
Queensland.

Gen. 13. Polysaccum. *Fr.*

Polysaccum marmoratum, *Berk. Linn. Journ.* XVI., 171.
W. Australia, S. Australia, N. S. Wales, S. W. Australia.

Polysaccum pisocarpum, *Fr. Syst. Myc.* III., 54.
W. Australia, Queensland, Moreton Bay.

Polysaccum crassipes, *Fr. Syst. Myc.*, III., 53.
W. Australia.

Polysaccum turgidum, *Fr. Syst. Myc.*, III., 53.
W. Australia.

Polysaccum olivaceum, *Fr. Syst. Myc.* III., 54.
Queensland, King George's Sound, Endeavour River.

Polysaccum australe, *Lev. Ann. Sci. Nat.*, 1848
Queensland.

Polysaccum tuberosum (*Mich.*). *Linnea.* V., 694.
Paramatta.

Polysaccum (?) degenerans, *Fr. Plant Preiss.*, 159.
W. Australia.

Gen. 14. Scleroderma, *Fr.*

Scleroderma geaster, *Fr. Syst. Myc.* III., 460.
W. Australia, S. Australia, Victoria, Tasmania, N. W. Wales, Queensland, S. W. Australia.

Scleroderma bovista, *Fr. Syst. Myc.* III., 48.
Victoria, N. S. Wales, Queensland, Endeavour River.

Scleroderma vulgare, *Fr. Syst. Myc.* III., 46.
W. Australia, S. Australia, Victoria, N. S. Wales, Queensland, S. W. Australia.

Scleroderma pandanaceum, *Müll. Linn. Journ.* XVI., 171.
Queensland.

Gen. 15. Arachnion, *Schwein.*

Arachnion Drummondi, *Berk. Linn. Journ.* XVIII., 389.
W. Australia.

Gen. 16. Paurocotyles. *Berk.*

Paurocotyles echinosperma, *Cke. Grevillea,* VIII., 59.
Victoria.

Ord. III. **NIDULARIACEI.** *Fr.*

Gen. 1. Cyathus. *Hall.*

Cyathus Lesueurii, *Tul. Ann. Sci. Nat.*, 1844, 79.
N. S. Wales, Clarence River, Rockhampton.

Cyathus intermedius, *Tul. Ann. Sci. Nat.*, 1844, 72.
Queensland, Daintree River.

Cyathus fimetarius, *DC. Fl. Fr.* V., 104.
Queensland.

Cyathus fimicola, *Berk. Linn. Journ.* XVIII., 387.
Rockhampton.

Cyathus pusio, *Berk. Linn. Journ.* XVIII., 387.
Rockhampton.

Cyathus desertorum, *Müll. Linn. Journ.* XVIII., 387.
Darling River.

Cyathus Colensoi, *Berk. Fl. N. Zeal.* II., 192.
S. Australia, Tasmania, N. S. Wales.

Cyathus vernicosus, *DC. Fl. Fr.* II., 270.
W. Australia, Queensland.

Cyathus Montagnei, *Tul. Ann. Sci. Nat.*, 1844, 70.
W. Australia, Queensland.

Cyathus pezizoides, *Berk. Linn. Journ.* XVIII., 387.
Rockhampton.

Gen. 2. Crucibulum. *Tul.*

Crucibulum vulgare, *Tul. Ann. Sci. Nat.*, 1844, 90.
Victoria, Queensland.

Gen. 3. Sphærobolus. *Tode.*

Sphærobolus stellatus, *Tode. Meckl.* I., 43.
Tasmania.

Ord. IV. **HYPOGÆI.**

Gen. 1. Hydnangium. *Wallr.*

Hydnangium Australiense, *B. & Br. Linn. Trans.* II., 68.
Queensland.

Gen. 2. Octaviana. *Vitt.*

Octaviana Archeri, *Berk. Fl. Tasm.* II., 263.
Tasmania.

Gen. 3. Hymenogaster. *Vitt.*

Hymenogaster Moselei, *B. & Br. Linn. Journ.* XVI., 40.
N. S. Wales.

Hymenogaster Klotschii, *Tul. Fungi Hyp., p.* 64.
W. Australia.

Gen. 4. Gautieria. *Vitt.*

Gautieria Drummondi, *Berk. in Herb. Berk., No.* 4446.
W. Australia. (Only a fragment.)

MYXOMYCETES.

Ord. I. **CALCAREÆ,** *Rostf.*

Gen. 1. Badhamia. *Berk.*

Badhamia hyalina (*Pers.*). *Rostf. Mon.* 140.
Tasmania.

Badhamia utricularis (*Bull.*), *Rostf. Mon.*
N. S. Wales.

Gen. 2. Physarum. *Pers.*

Physarum cinereum, *Batsch. Rostf. Mon., p.* 102.
W. Australia.

Physarum Berkeleyi, *Rostf. Mon., p.* 105.
W. Australia.

Gen. 3. Fuligo. *Hall.*

Fuligo varians (*Somm.*), *Rostf. Mon.*, 134.
Tasmania, Queensland.

Gen. 4. Craterium. *Trent.*

Craterium vulgare, *Ditm. Rostf. Mon.*, 118.
W. Australia.

Craterium minutum *Leers. Rostf. Mon.*, 120.
Tasmania.

Gen. 5. Leocarpus. *Link.*

Leocarpus fragilis, *Dichs. Rostf. Mon.*, 132.
Tasmania.

Gen. 6. Tilmadoche. *Fr.*

Tilmadoche nutans *Pers. Rostf. Mon.*, 127.
W. Australia, Tasmania, Queensland.

Tilmadoche mutabilis. *Rosft. Mon.*, 130.
Rockhampton.

Gen. 7. Chondrioderma. *Rostf.*

Chondrioderma spumarioides, *Rostf. Mon.*, 174.
Rockhampton.

Chondrioderma difforme *(Pers.). Rostf. Mon.*, 177.
Queensland.

Gen. 8. Didymium. *Schrad.*

Didymium farinaceum, *Schr. Rostf. Mon.*, 154.
Queensland.

Didymium squamulosum, *A. & S. Rostf. Mon.*, 159.
Tasmania.

Ord. II. **AMAUROCHÆTEÆ**, *Rostf.*

Gen. 1. Lamproderma. *Rostf.*

Lamproderma echinulata, *Berk. Fl. Tasm.* II., 268.
Tasmania.

Gen. 2. Comatricha. *Pers.*

Comatricha Friesiana, *De. Bary. Rostf. Mon.*, 199.
Tasmania.

Gen. 3. Stemonitis. *Gled.*

Stemonitis fusca, *Roth. Rostf. Mon.*, 193.
W. Australia, Tasmania, Queensland.

Stemonitis ferruginea, *Ehr. Rostf. Mon.*, 196.
Moreton Bay.

Ord. III. **ANEMEÆ**, *Rostf.*

Gen. 1. Tubulina. *Pers.*

Tubulina cylindrica, *Bull. Rostf. Mon.*, 220.
Tasmania.

Tubulina nitidissima, *Berk. Linn. Journ.*, XVIII., 387.
Rockhampton.

Gen. 2. Clathroptychium. *Rostf.*

Clathroptychium rugulosum (*Wallr.*). *Rostf. Mon.*, 225.
W. Australia.

Ord. IV. **ARCYRIACEÆ.**

Gen. 1. Arcyria. *Hill.*

Arcyria punicea, *Pers. Rostf. Mon.*, 268.
Queensland.

Arcyria incarnata, *Pers. Rostf. Mon.*, 275.
W. Australia, Queensland.

Arcyria pomiformis, *Roth. Rostf. Mon.*, 271.
Australia.

Arcyria nutans, *Fr. Syst. Myc.*, III., 180.
W. Australia, Queensland.

Arcyria cinerea *(Bull.)*. *Rostf. Mon.*, 272.
Queensland.

Arcyria ferruginea, *Sauter. Rostf. Mon.*, 280.
Rockhampton.

Gen. 2. Lycogala. *Mich.*

Lycogala epidendrum, *Buxb. Rostf. Mon.*, 285.
W. Australia.

Ord. V. **TRICHIACEÆ.**

Gen. 1. Prototrichia. *Rostf.*

Prototrichia flagellifer (*Berk.*). *Rostf. Mon. Supp.*, 38.
Tasmania.

Gen. 2. Trichia. *Hall.*

Trichia chrysosperma, *Bull. Rostf, Mon.*, 255.
Tasmania.

Trichia varia, *Pers. Rostf. Mon.*, 251.
Tasmania.

Trichia contorta (*Ditm.*) *Rostf. Mon.*, 259.
Tasmania.

Gen. 3. Hemiarcyria. *Rostf.*

Hemiarcyria rubiformis (*Pers.*). *Rostf. Mon.* 261,
Tasmania.

Braun's "Characeen."—Just as we are going to press we have received, through the kindness of Professor Nordstedt, a copy of Braun's "Fragmente einer Monographie der Characeen," edited by Nordstedt, and reprinted from the "Transactions of the Berlin Academy." At the present we can only call attention to it as a valuable contribution to the Geographical Distribution of the *Characeæ*.

SACCARDO'S "SYLLOGE."

The following is Professor Saccardo's defence in reply to our observations in the previous number of *Grevillea* :—

"Dear Colleague,—

"A few days ago I saw No. 57 of 'Grevillea,' and thank you very much for the notice of Vol. I. of my 'Sylloge.'

"As regards your criticism of my system, which you are determined to oppose, allow me to state that the fundamental question is doubtless this: Are the characteristics of the spores more or less *essential* and *constant* than the external characteristics (disposition, form, size, consistence, &c.) of the perithecia? Do you think, for instance, that a *Valsa*, &c., will more readily lose the allantoid form of its spores, or the disposition of its perithecia? I have never seen a *Valsa* vary essentially in the form of its sporidia; but I have seen many variations in the structure of the perithecia. There are some *Calosphœræ*—with all the characteristics of a *Calosphœria* —which are grouped circularly, and others which have their perithecia either circinate or subsolitary. *Leptosphœria Doliolum* has the varieties *tecta* and *denudata*, but the sporidia are always the same. *Anthostoma gastrinum* I find completely *Valsioid*, and later *Melogrammoid*, but the sporidia are always the same, &c. In my opinion, therefore, and in that of many other mycologists, the characteristics of the spores are more constant than the others. This being admitted, I think that in any classification we ought to prefer, for the primary division, those characteristics which are the most constant, and in our case these are the spores.

"When I see that Fries, in the primary division of the vast genus *Agaricus*, has preferred the *colour* of the spores to the characteristics of the annulus, volva, hymenophorum, &c., I feel no doubt that if he had had at his disposal the characteristics of the spores of his vast genus *Sphœria*, he would have preferred them.

"You say that the characteristics of the spores give rise to an *artificial* system. But why do you not consider Jussien's system, in which the primary divisions are fixed by the *number* of the *cotyledons*, artificial? Do you say that only *children and uncultured or deficient intellects* will count the number, not of the septa, but of the cotyledons? You say that the system *vauntingly termed* carpological is equivalent *to the old Linnean system.* Possibly! But I think I am much more correct in saying that the system of the Pyrenomycetes of Fries and of yourself are equivalent to that of Tournefort (about 1680?), in which plants are divided into trees, shrubs, and plants, without taking any account of the characteristics, which are much more important, but much more difficult to preserve. In fact both Fries and you distinguish groups and genera (what genera!) by the naked eye, as Tournefort did; by carpologists, on the other hand, characteristics which are

more intimate (and more constant), are studied and unveiled: precisely as, in the natural method in phanerogamy, great attention is paid to the intimate characteristics of the cotyledons, the albumen, the parts of the fruits and flowers, &c., &c. And it is worthy of notice that in phanerogamy you have at your disposal many distinctive characteristics which are entirely wanting in the groups of Pyrenomycetæ. I regret that I cannot make use of my own language with you, so as to be able to express my thoughts better.

"If I have not arranged the *Perisporiacei* carpologically,* it is merely because I did not wish to upset matters with which I was not sufficiently acquainted; moreover, the *keys* of the Perisporiacei are arranged carpologically, as you might have pointed out in your critique.

"As regards your special observations, I value them very much for the *addenda et emendata* to be published at the end of Vol. II. Only you might have added that I am not the author of the genera *Erysiphella* and *Ascotricha*, and that several of the identifications of the species were suspected by me, *e.g.*, *Dimerosporium* and *Capnodium mangiferum*, *Dimerosporium* and *Asterina Macowani*, &c. As regards the genus *Sporormia*, how can you for instance join *Sp. lageniformis* with a long ostiole to *astomous Perisporium?* Have you no confidence in your superficial system? I will end here.

"I should be very much obliged if you would translate this letter into English, and publish it in the next number of 'Grevillea.'

"Yours, &c.,

"P. A. SACCARDO."

REJOINDER.

Being satisfied that the only certain reward of controversy is waste of time and vexation of spirit, it is not my intention to prolong the present one. The above letter in no way alters my opinion, and I have nothing to retract. That I have protested against an "artificial system" is sufficient, and I have done so from a conviction that it is wrong in principle and retrogressive. It would have been discreditable to me, holding such views, if I had not been "determined to oppose it." That the proposed method *is* an artificial one, its author does not deny, but seeks to cover his retreat by an allusion to Tournefort, as a rhetorical flourish, although it has no analogy to the point in question. I do not consider it so criminal in Fries that he distinguished groups and genera by the naked eye, as some appear to do. The most

* I use this term in the sense of MM. de Notaris, Tulasne, &c. (Asci paraphyces, sporidia, and not only sporidia).

practical method would be to travel, as it were, from the known to the unknown, from that which may be distinguished by the naked eye, or a pocket lens, gradually upwards to the highest of microscopical powers, which are most essential to distinguish many of the so-called species of modern times, and often fail to reveal their differences. I am not prepared to condemn recklessly a system which originated half a century ago, because it may not have progressed with the perfection of the microscope. However imperfect a system may be which regards natural affinities, it is preferable, as a principle, to a more elaborate artificial one. No one denies that the arrangement adopted by Fries, for instance, however sufficient it might have been at the time, is capable of considerable improvement, and that it is insufficient in detail to meet the wants of the time; but that proves nothing for another system with a different basis. Undoubtedly there was ample field for a complete natural arrangement of the Pyrenomycetes, which should have taken cognizance of all the improvements in instruments and observations of half a century. I confess that I have opposed the system now in question, because it was not the arrangement which increased knowledge of the life history of the Pyrenomycetes led one to expect.

I do not admit that the characteristics of the spores are more constant than the external features of the plant, even after numerous species have been created out of the variations of the spores in one or other of the older species, which would find their way back again in a natural system. But I am indisposed to travel into details of the system as it is; suffice it for me that I do not accept the fundamental principle. I regret to have to differ from the indefatigable author of the "Sylloge," and I repeat again that his work has earned him the thanks of all mycologists, as a record of published species. Some will undoubtedly accept it, but some will not. This is in accordance with our knowledge of human nature. There never was a system or theory without its zealous advocates, but, if this does *not* meet with the universal acceptance which its author seems to have hoped, he will at least have the satisfaction of knowing that his labours will greatly lighten those of his successor, whoever he may be, who may hereafter elaborate a more philosophical system. If the present arrangement should be as generally accepted, and maintain its position as long as that of Fries has done, its author will have good reason to congratulate himself upon his success. I only hope that the prospective author of the new "Systema Mycologicum" of 1936 will, in that event, exhibit more veneration for Professor Saccardo, and a greater respect for his incessant toil, than he has evidenced on behalf of the greatest mycologist that Europe has yet produced.

M. C. Cooke.

NEW BRITISH FUNGI.

By M. C. Cooke.

(*Continued from p.* 16.)

Agaricus (Collybia) xylophilus, *Fr. Hym. Eur.*, 114.

Pileus rather fleshy, *campanulate*, lax, then expanded, broadly gibbous, smooth ; stem hollow, equal, rather flexuous, fibrillose-striate, whitish ; gills adnate, narrow, much crowded, white.—*Fr. Icon. t.* 63, *f.* 2. *Cooke Illus. t.* 202.

On stumps. Black Park, Langley.

" A very good species, allied to *Ag. ramosus*, Bull. Cæspitose. Stem hollow, 2-3 in. long, 3 lin. thick, equal, sometimes flexuous, fibrillose-striate, whitish, destitute of a veil, internally fuscescent. Pileus slightly fleshy, broad, deep, campanulate, 3 in. broad (when flattened 4 in.), commonly obtuse, sometimes furnished with a small umbo, but about the margin at length cracked and split when expanded, broadly gibbous, smooth, moist, whitish, or brownish clay-coloured in the middle. Flesh everywhere very thin, fragile, watery, brownish. Gills adnate, often with a decurrent tooth, rather narrow (1 line broad), much crowded, in our specimens entire. As to the gills allied to *Ag. confluens*, not to be compared in other points with any of our species."—*Fries Mon.* II., 290.

Agaricus (Mycena) pullatus, *Berk. & Cooke.*

Pileus membranaceous, campanulate, obtusely umbonate, dark brown, disc nearly black, sulcato striate to the middle, stem fistulose, elongated, thickened downwards, of the same color, whitish floccose at the base, sometimes rooting, gills scarcely crowded, adnexed, white ; odour slightly nitrous.

On the ground amongst dead leaves. Chingford, Oct., Nov., 1882. (*M. C. C.*). Norfolk, (*C. B. P.*)

Stem 3 inches long, 1 line thick. Pileus $\frac{3}{4}$in. broad, at first dark brown with a tinge of purple, almost black, growing a little paler with age, sometimes with a glaucous bloom. Gills rather broad, quite white. Spores elliptic, smooth. Allied to *Ag. atro-cyaneus* and *Ag. leptocephalus.*

Agaricus (Clitopilus) carneo-albus, *With. Arr.* IV., 218.

Pileus white, polished, centre rather depressed, edge turned down, about an inch over ; stem solid, white, cylindrical, about an inch high, thick as a crow-quill ; gills decurrent, salmon-coloured, mostly in pairs, narrow, not crowded.

Heathy places. Epping Forest, Sept., 1882.

The above is Withering's description, with which our plant agrees intimately, but it is doubtful whether Fries had the same plant in view (*Hym. Eur.*, 200), or, if he had, the figures quoted from Kalchbrenner (*Icon. t.* 12, *f.* 2) are but little like the Epping

specimens. It is, however, quite accurate that they were "inodorous, gregarious, pileus an inch broad, disc at length depressed, rufescent; spores angular." Size and habit very similar to *Agaricus atropunctus*, P.

Agaricus (Pholiota) mustelinus, *Fr. Hym. Eur.*, 225.

Pileus rather fleshy, campanulate, convex, even, *smooth, dry;* stem fistulose, even, pallid-whitish, farinose above the reflexed ring, *thickened at the base, and villose-white;* gills adnate, rather distant, tawny cinnamon.—*Mich. Gen. t.* 80, *f.* 6.

On stumps. Near Guildford (T. Howse).

Solitary. Pileus hardly an inch broad, rufous or testaceous; stem less than an inch long, thickened at the base, which is surrounded and attached by a white tomentum. Not included in Fries' Mon. Hym. Succiæ.

Agaricus (Inocybe) hæmactus, *Berk. & Cke.*

Pileus fleshy, compact, obtuse, campanulate, floccosely fibrillose, disc subsquamose, darker; stem solid, smooth, scarcely fibrillose, whitish above, æruginous at the base, nearly equal; gills adnate, pallid, at length clay-colour; flesh everywhere turning blood-red where touched or wounded.

On lawn. Credinhill Court, Oct., 1882.

Pileus about an inch broad, umber, margin pallid, clad with long, darker fibrils, the obtuse disc darkest, and somewhat scaly; stem nearly 2 inches long, 3-4 lines thick, æruginous at the base, the colour penetrating through the flesh. Everywhere changing slowly to blood-red when wounded. Spores elliptical, attenuated towards one end, smooth. In some respects agreeing with *Ag. calamistratus*, but not squarrose.

Cortinarius (Myxacium) mucifluus, *Fr. Hym. Eur.*, 355.

Pileus rather fleshy, campanulate, then expanded, *covered with an evanescent hyaline gluten, margin striate;* stem attenuated downwards, soft, viscid from the fugacious floccose squamose veil; gills adnate, distinct, clay-colour, then watery cinnamon.—*Fr. Icon. t.*

On the ground. Around Hereford, &c., Oct., 1882.

"Allied to *C. collinitus*, and for a long time united with it as a variety, but apparently quite distinct. It differs (1) in the spongy stem, attenuated downwards, white; (2) pileus thinner, campanulate, then expanded, at length reflexed and repand, membranaceous, margin striate; (3) colour of the pileus livid, clay colour, when dry of an opaque tan colour; (4) gluten of the pileus thin, hyaline, diffluent, not forming a thick persistent bright-coloured pellicle; (5) odour sweet. Gills clay-coloured, then cinnamon. No violet in the whole fungus."—*Fr. Mon.* II., 37.

Cortinarius (Hydrocybe) renidens, *Fr. Hym. Eur.*, 392.

Pileus rather fleshy, convex, then plane, even, smooth, *shining, tawny* (ochraceous); stem stuffed, firm, equal, smooth, *yellow as well as the fibrillose veil;* gills subadnate, crowded, thin, tawny.—*Fr. Icon. t.* 162, *f.* 1.

In shady woods. Highbeach, Epping.

"With the habit of *C. armeniacus*, but smaller and of a brighter colour, readily distinguished—especially by the yellow veil; stem firm, stuffed, $1\frac{1}{2}$ to 3 in. long, 3 to 4 lines thick, quite equal, externally rather cartilaginous, but wholly splitting into fibrils; colour of the pileus yellowish, growing pallid, then fulvous; veil lax, fibrillose, fugacious, yellow; pileus slightly fleshy, firm, convex, then plane, obtuse or gibbous, 1 to 2 in. broad, quite smooth, shining, when moist ferruginous, fulvous, when dry ochraceous, usually with the disc becoming pale; flesh thin, splitting, paler; gills adnate, but also seceding and free, rather crowded, entire, at first pallid cinnamon, then fulvous; spores dark ochre; odour faint, not at all radish-like."—*Fr. Mon.* II., 104.

Paxillus panæolus, *Fr. Hym. Eur.*, 402.

Pileus thin, convex, plane, then rather depressed, smooth, moist, whitish, margin involute, thin; stem stuffed, striate fibrillose, rufescent, incrassated downwards; gills slightly decurrent, crowded, narrow, at length *watery ferruginous.—Hoffm. Icon. t.* 10, *f.* 1.

On the ground in pine woods, &c. (*C. Bucknall*).

"Somewhat gregarious, at first externally and internally wholly dirty white, then becoming yellowish, gills at length watery cinnamon; stem fleshy, stuffed, 1 inch, or a little more, long, 3 lines thick, striate fibrillose, thickened below; pileus fleshy, compact, convex, then expanded, and somewhat depressed, even, smooth, spotted when moist, 1 to 2 in. broad; margin thin, involute, villose; gills slightly decurrent, crowded, narrow, rather veined at the base, separated by a horny line from the pileus; spores watery ferruginous."—*Fr. Mon.* II., *p.* 117. Gills readily separating; spores small, subglobose.

Lactarius pargamenus, *Fr. Hym. Eur.*, 430.

White. Pileus fleshy, tough, convex, then a little depressed, repand, without zones, rugulose, smooth; stem stuffed, smooth, becoming discoloured; gills *adnate*, very narrow, horizontal, *much crowded*, branched, white, then straw-coloured; milk acrid, white.—*Batsch, fig.* 59.

In woods. Hayward Forest, Epping, &c.

"Wholly white, filled with a very acrid white milk. Allied to *L. piperatus*, from which it differs in the stuffed stem, at length softer within, elongated (3 in.), unequal, attenuated downwards, and ascending, entirely smooth; pileus thinner, tough, elastic, often irregular and excentric, sometimes flexuous, at first convex (not umbilicate), then becoming plane, surface quite smooth, but unpolished, and in a peculiar manner rugose; gills adnate, either decurrent, very much crowded, very narrow (scarce 1 line broad), always straight and horizontal, or arcuate, or inclined upwards, soon straw-coloured; flesh very milky, but the gills slightly."—*Fries Mon.* II., 166.

Not uncommon, but hitherto confounded with *L. piperatus*.

Stereum ochroleucum, *Fr. Hym. Eur.*, 639.

Pileus between coriaceous and membranaceous, free, expanded, *flaccid, silky, zoned*, hoary; hymenium even, smooth, yellowish.

On prostrate trunks. Kew Gardens, Nov., 1882.

"Commonly broad, zones same colour, or tawny; coating of the pileus usually falling away; hymenium often rimose, as in *Corticium*."—*Fries*.

Often effused, and then resembling a *Corticium*, but sometimes the margin is reflexed, forming a white silky zoned pileus. Hymenium pale flesh colour or ochraceous, often cracked with age or drying, like *Corticium*. It has some resemblance to thin forms of *Stereum purpureum*, from which it is at once distinguished by the different colour of the hymenium. Probably the species of Fries, but neither the Rev. M. J. Berkeley or myself have seen an authentic specimen.

Ramularia Malvæ, *Fckl. Symb., p.* 360.

Tufts lax, pallid, seated on orbicular, elongated, or irregular bleached spots; flocci erect, mostly simple; conidia sub-cylindrical, obtuse, simple or at length uniseptate, hyaline (·03 × ·005 mm.).

On leaves of *Malva moschata*. Forres (*Rev. J. Keith*).

Probably only a variety of the species described by Fuckel, of which we have seen no specimen. Above is description of the Scotch form.

Cercospora Calthæ, *Cke.*

Spots small, orbicular, pallid, girt by a dark brown marginal ring. Threads very delicate, short, scarcely branched, hyaline. Spores cylindrical, obtues, 1-2 septate, thin, hyaline, but little thicker than the threads, (about ·015-·02 × ·002 mm.)

On leaves of *Caltha palustris*. Forres. (*Rev. J. Keith.*)

We have not been able to find such a delicate species described, although it is difficult in these days, when species are swarming like bees, to ascertain what have been described, especially with the "Jahresbericht" for 1878, still uncompleted.

FUNGUS FORAYS, 1882.

Cryptogamic Society of Scotland.—The Annual Conference of this Society was held at Kenmore, Pertshire, on September 4th and following days. We have no report of the meeting, but hear that it was satisfactory.

Essex Field Club.—The Annual Foray, in Epping Forest, took place on the 23rd of September, and was in all respects satisfactory. Several interesting species were found, notably *Cortinarius renidens* for the first time in Britain. And altogether, twenty-two species were added to the Forest list of Hymenomycetes. In the evening a meeting was held, at which the results of

the day were recounted, and papers read on "Edible Fungi," by H. T. Wharton, M.A. "Fairy rings," by W. G. Smith. "Marine Algæ of the Essex Coast," by E. M. Holmes, and a demonstration of "the Uredines of Wheat," by C. B. Plowright. Specimens collected during the day were labelled and exhibited in a separate room.

Woolhope Naturalists' Field Club.—The very popular and interesting meetings of the week commenced on Tuesday, October 3rd, by a visit to Wycliffe woods, near Ludlow. On Wednesday an excursion was made to Dinedor. On Thursday the Public Foray was made at Credenhill Camp—and on Friday the excursions concluded with a visit to Hayward Forest. Each evening was occupied by a conversazione, at which various papers were read—viz., "Heterœcism of the Uredines" and "the Classification of the Uredines," by C. B. Plowright. "Dimorphism in *Rhytisma radicale*," by W. Phillips. "On some English Bird names," by H. T. Wharton, M.A. On "Glæocapsa sanguinea," by the Rev. J. E. Vize. On "Breconshire Raptores," by E. Cambridge Phillips. In addition to an "Historical account of Credinhill Camp, by Dr. Bull, read at Credinhill, under the shadow of the camp, on the day of the excursion.

> And in the years that follow,
> When all of us are stiff,
> And can no longer clamber
> Up hillside, camp, or cliff.
> With weeping, and with laughter,
> Still be the story told,
> How the good "Doctor" stormed the camp,
> In the brave days of old.

A detailed account of these meetings, by C. B. Plowright, was printed in "The Gardener's Chronicle" for October 14, 1882.

Hackney Natural History Society.—This Society had a field day for the collection and study of Fungi in Epping Forest, on October 21st, when the members assembled at Chingford at noon amid a drenching rain, which continued without cessation throughout the rest of the day. Notwithstanding this drawback, some eighty species were determined or collected, and in the evening exhibited, and commented upon at Fairmead Lodge. An account of this Aquatic Foray, from the vigorous pen of Mr. Worthington Smith, appeared in the "Gardener's Chronicle," of November 4.

Hertfordshire Natural History Society.—The first Fungus Foray of this Society, took place in Cassiobury Park, Watford, on November 4th. Although late in the season, and a park not the very best of localities for variety of species, no less than upwards of seventy species of Hymenomycetes were collected aud determined, all of which were of interest, since no authentic record has hitherto been made of the Fungi found in the county. The party was in charge of Mr. Hopkinson, one of the secretaries.

With but one exception the weather was fine and favourable, but it cannot be said that this has been a prolific year for fungi. In London mushrooms have been scarcer, and higher in price than they have been known for many years, hence we have resorted to other species, to the great alarm of many of our personal friends, and can now add to our experience a knowledge of the flavour of *Agaricus (Amanita) vaginatus*, Fr., *Agaricus (Tricholoma) nudus*, Bull., *Agaricus* (*Armillaria*) *mucidus*, Schr., *Agaricus (Clitocybe*) *fragraus*, Sow., and *Hygrophorus coccineus*, Fr. with a repetition of *Russula heterophylla* and *cyanoxantha*. All these in turns suffered demolition, and we still live to record our preference for *Agaricus nudus*, and the *Russulæ*, although *Agaricus mucidus* is sufficiently delicate to warrant a better acquaintance. We had almost forgotten *Agaricus* (*Pleurotus*) *ulmarius*, Fr. *Agaricus* (*Clitocybe*) *nebularis*, Fr., *Coprinus atramentarius*, Fr., *Coprinus comatus*, Fr., *Hygrophorus pratensis*, Fr., and *Boletus granulatus*, L., as amongst other of the delicacies of the present season in which we have indulged.

BRITISH MOSS FLORA.

Dr. Braithwaite has issued the sixth part of his excellent "British Moss Flora." All we have to regret is that it does not come to hand so rapidly as we could wish, and this regret is shared generally by British Bryologists. The present part continues the *Dicranaceæ*, giving the genera *Seligeria, Brachydontium, Blindia, Didymodon, Campylopus, Dicranoweissia*, and the first part of *Dicranum*. The seventh part, completing the *Dicranaceæ*, is in preparation. The illustrations as well as the letterpress are so excellent that we appeal to them in justification of our impatience at the sober pace at which the work has hitherto progressed. Nevertheless we believe that no blame attaches to the author, but to difficulties he has had to surmount with the plates.

MYCOLOGIC FLORA OF BELGIUM.

Dr. Lambotte has just published, in three volumes, a Fungus Flora, entitled "Flore Mycologique de la Belgique," which will prove very useful in Belgium, as well as Northern France, as detailed descriptions are given in French, as well as analytical keys to the genera. We note that many of the species have indications useful to the mycophagist, such as edible, poisonous, suspected; and in some cases we were reminded of the edible qualities for which they are reputed, but which we had never put to the test, notably *Agaricus* (*Tricholoma*) *nudus*, which has proved so excellent that we are grateful to Dr. Lambotte for having reminded us. We can by no means endorse his very qualified opinion of *Ag. nebularis*, which is considered one of the safest and soundest of esculent fungi in this country.

SOME FRESH WATER ALGÆ.

Fungi are sometimes said to be very erratic organisms, but I doubt if their uncertainties are much greater than are found amongst the Fresh Water Algæ. In the past summer, quite unexpectedly, the very beautiful water-net (*Hydrodictyon utriculatum*) was found floating in a small pond in the pleasure grounds of Kew Gardens in such profusion that a barrowfull might soon have been collected. In three weeks another visit was paid to the same spot, in order to obtain some specimens for exhibition, and not a vestige could be seen on the surface. They might have gone to the bottom, but practically they were not obtainable. No one appears to have ever recognised the plant in this pond before, and possibly it may not be found again.

Passing through the propagating houses nearly at the same period of the year, the moss, which was growing freely on the damp walls, was observed to be encrusted with a glaucous Alga, not yet, as far I know, recorded as British. This was the species called in Rabenhorst's "Flora" *Scytonema cinereum*, variety *Micheli*, which is the *Drilosiphon muscicola* of Kutzing. It was such a prominent object that one could scare avoid feeling surprise that it should never have been recorded.

Passing on another occasion the large pond in the pleasure ground, I noticed some globose olivaceous tufts of an Alga floating freely in the water or attached to small fragments of dead grass. The tufts were about the dimensions of a marble. Finding myself in some doubt as to its determination, I sent specimens to Professor Nordstedt, the result being that he came to the conclusion that it was the species which Dr. Kirchner had included in his "Schlesischen Algen" under the name of *Plectonema mirabile*, as of Thuret, but which did not, from the dimensions, appear to be Thuret's species. The threads were very nearly the size of those given by Dr. Kirchner, and if not his species, it will come very near to it. If this assumption proves correct, the species will stand as *Plectonema Kirchneri*, whilst Thuret's name of *Plectonema mirabile* will still be retained to represent the old *Calothrix mirabilis*, Agardh, which is certainly distinct from the Kew specimens.

Apropos of new species, a minute green, filamentous Alga has been found in some five or six localities with a small radius in Yorkshire, which for some time has proved a puzzle, and even yet has not perhaps found more that a temporary location in the genus *Microthamnion*, much more delicate than either *M. strictissimum* or *M. Kutzingianum*, which for the time we have been content to call *Microthamnion vexator*. The figure 107 in Rabenhorst's "Algæ" (p. 302) is much more like our plant than it seems to be of *M. strictissimum*, supposing it to be magnified about 320 diameters. Professor Wittrock, to whom the plant has been submitted, does not recognise it as any described species, and suggests for it a location in the above-named genus.

M. C. C.

THREE ASIATIC FUNGI.

By M. C. Cooke.

The following were collected by Maingay at the same time that his collection of Lichens was made: —

Diplodia pterocarpi, *Cke.*

Sparsa, semi-immersa, punctiformis; peritheciis atris, opacis, subglobosis; sporis ovato-ellipticis, obtusis, uniseptatis, fuscis (·01-·012 × ·006-·007 mm.), vix constrictis.

On bark of *Pterocarpus Indicus*. Malacca.

The perithecia have somewhat the appearance of a *Verrucaria*, with which the species was probably confounded when gathered. The spores are smaller than usual in this genus, and less opaque.

Hypoxylon cocoinum, *Cke.*

Sparsa, emergens, atra, nitida, subconoidea vel hæmispherica, simplex vel confluens, ad basim applanata; ascis cylindricis, stipitatis; sporidiis ovato-ellipticis, obtusis, simplicibus, atrofuscis (·01-·012 × ·066 mm.).

On stems and petioles of cocoanut palm. Malacca.

Conisphæria Maingayi, *Cke.*

Sparsa, semi-immersa, atra, subconoidea, papillata; ascis cylindricis, stipitatis; sporidiis uniseriatis, fusiformibus, utrinque acutis, hyalinis, 3-5 septatis, nec constrictis (·025 × ·004 mm.).

On bark. Near Shanghai.

The above specimens are in the Herbarium of the Royal Gardens at Kew.

CRYPTOSPHÆRIA MILLEPUNCTATA, Grev.

By M. C. Cooke.

In 1826 Dr. Greville published in his "Scottish Cryptogamic Flora," a plate and description of a *Sphæria* which he named *Cryptosphæria millepunctata*, with this diagnosis: "Perithecia numerous, immersed beneath the epidermis, sub-regularly scattered, globose, black, the orifice very short, obtuse, scarcely exserted; thecæ acute at the apex; the sporidia linear, curved."— *Pl.* 201. And he says of it: "On the decaying branches of the common Ash (*Fraxinus excelsior*), the whole year, frequent." And again he says: "The branches of the Ash tree producing this species seem to the naked eye to be covered with innumerable minute black dots. Under the microscope these are found to be the orifices of perithecia concealed beneath the epidermis." And yet again he says: "I have never seen it except upon the Ash; but in this country it is of very frequent occurrence." Two years previous to this (1824) it had also been described in similar terms by Greville, under the same name in his "Flora Edinensis" (p. 360): "Nothing," he says, "is visible of this species to the

naked eye but the black dots on the epidermis. The sphærules, which are in the substance of the bark, fall with it."

One would have thought, with so circumstantial a description, there would never have been the slightest doubt as to what species it was which Greville intended.

In 1836 Berkeley, in the fifth volume of the "English Flora," transfers Greville's name as a synonym to *Sphæria corticis*, Sow., a small figure having been given in Sowerby's Fungi, pl. 372, fig. 5, at about 1797, and called by him *Sphæria corticis*, but without any statement as to what branches the *Sphæria* was attached, or the slightest indication of the fruit. It is possible, even probable, that it was the same as Greville's, judging from the figures, but the specimen in Sowerby's herbarium at once sets the question at rest. It is a piece of ash twig, with the *Sphæria millepunctata* upon it. Berkeley therefore was right, as proved by Greville's authentic specimens, and Sowerby's authentic specimens, in regarding the two as absolutely identical. Then, in addition, Berkeley quotes *Sphæria populina*, Pers. Ic. Pict. t. 21, f. 5, 6, as a synonym. Was he accurate in this? It might be that he was so, and it might *not*, for we have never seen an authentic specimen of the plant which Persoon called *S. populina*.

As if still further to mix up uncertainties, Fries, in his "Systema," published in 1822, adopts Sowerby's name of *Sphæria corticis*, and gives *Sphæria populina* of Persoon as a synonym, the habitat of Fries's plant being "In cortice *Populi*."

If we assume that there were two species similar in external appearance, one growing on ash, which was, as we have already seen, the *Sphæria millepunctata* of Greville, and the *Sphæria corticis* of Sowerby; the other growing on poplar, which was the *S. populina* of Persoon, and the *Sphæria corticis* of Fries, we have evidence that Sowerby's figure without description was insufficient, inasmuch as it could be made to represent two species, and therefore the name of *Sphæria corticis*, Sow., should have been dropped in favour of *S. millepunctata*, Grev., and the *S. corticis*, Fries, which was based on an insufficient figure, without description, should never have taken the place of *S. populina*, Pers. For our present aim we will assume two species, and call them *S. millepunctata*, Grev., on ash ("never seen except upon the ash"), and *Sphæria populina*, Pers., on poplar.

In the "Handbook" we restored the name of *S. millepunctata*, but quoted the synonyms of both species (supposing them really to be distinct) under the one name.

We come now to Nitschke "Pyrenomycetes Germanici" (1867), and, in so far as we understand it, we find him describing the *Sphæria* on poplar (p. 161), but giving it the name of *Valsa millepunctata* (Grev.), with *S. corticis*, Sow., and *S. populina*, Pers., as well as the figure of Greville under it. Just, in fact, reversing the species, for he has another, by the name of *Valsa eunomia* (Fr.), on ash, quoting *Sph. corticis*, Curr. (which we know was

the same as *S. millepunctata*, Grev., from the specimens still extant), and also Fuckel's specimen, No. 1800, which in our copy is on ash, and identical with Greville's species; whilst No. 908, which Fuckel quotes under *S. millepunctata*, Grev., is a species which we venture to say Greville never saw.

Afterwards (1869) Fuckel repeats, in his "Symbolæ" (p. 212), the same errors.

We come now to Saccardo's "Sylloge" (1882), the last and most comprehensive work on the *Pyrenomycetes* yet published. Here we are happy to recognize a manifest improvement. (For the time we can forget any differences of opinion.) We find in the first place Greville's old generic name restored, and the reasons we will not discuss, but the species is also put right, so that *Cryptosphæria millepunctata*, Grev., is just what he intended it to be, without quoting Sowerby's dubious figure of *S. corticis*, but adding as a synonym the *Sphæria eunomia* of Fries, in which he is doubtless justified. During the past fifteen years specimens have been distributed on the Continent under Greville's name, which were *not* his species; whilst Greville's species has persistently been issued under another name, and we have continued to protest against the error, in the full consciousness that we, on this side the Channel, must be permitted to know what was the species so common with us on the ash, to which Greville assigned a name. In addition *Cryptosphæria populina* (Pers.) is the name under which Saccardo records the *Sphæria populina* of Persoon, with the *Sph. corticis* of Fries as a synonym, at the same time admitting that it is the *Valsa millepunctata* of Nitschke, Fuckel, Karsten, and even of Saccardo himself (previously), but not of Greville. If the same care has been exercised in other species as in these (and there is no reason to suspect otherwise), then the more close our relationship with the "Sylloge" becomes, the more we shall appreciate its value, apart from any question of classification.

On the Chemical Reaction of the Thallus of Lecanora Smaragdula, *Wahl.* By E. G. Varenne.—In Mr. Leighton's "Lichen Flora," the chemical reaction of *Lecanora smaragdula*, Wahl., is symbolized thus: K— C—. In specimens of this Lichen met with in the neighbourhood of Penzance, and which were parasitical, as it were, on the thallus of rock crustaceous Lichens, such as *Lecidea petræa*, *Lecidea concentrica*, &c., the reaction clearly is K. yellow, then red, C—. Being anxious for the opinion of a Lichenologist of experience in this matter, I requested Mr. Holmes to test his specimens of *L. smaragdula* for me. Mr. Holmes found the action as described above, K. yellow, then red C—. Mr. Holmes's specimen was an authentic one undoubtedly, having been given to that gentleman by a distinguished Lichenologist, Dr. Crombie.

ILLUSTRATIONS OF BRITISH FUNGI.

The following notice has been issued with Part XII:—

"Notwithstanding the exercise of considerable care in the selection of figures for illustration, two or three corrections must be made in the Plates already issued.

"Plate 33, called *Agaricus aurantius*, Schf., is not that species, but evidently a form of *Agaricus robustus;* the true *Agaricus aurantius* will be illustrated shortly.

"Plate 60, called *Agaricus imbricatus*, is clearly *Agaricus vaccinus*. The figure of *Agaricus imbricatus*, prepared for the succeeding part, will exhibit the difference.

"Plate 84, called *Agaricus flaccidus*, should have been *Agaricus inversus*, as *Agaricus flaccidus*, and an intermediate form, *Agaricus lobatus*, Sow., are published on succeeding plates.

"It is hoped that the *Leucospori* will be completed with the 16th or 17th Part, and then Title Pages and Classified Index will be published for binding them in two volumes. Every effort will be made to render this portion as complete as possible, although it is certain that a few species will have to be omitted, as drawings of them cannot be obtained.

"M. C. Cooke."

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A QUARTERLY RECORD OF CRYPTOGAMIC BOTANY AND ITS LITERATURE.

ON XYLARIA AND ITS ALLIES.

By M. C. Cooke.

Having gone over the genus *Xylaria*, as represented in Saccardo's "Sylloge," we have determined upon presenting the results in a form which may serve as a supplement to that portion of the volume. To the limitation of the genus in the work cited we have no restrictions to offer, but, accepting the limits as defined, we have some few additions to suggest, some emendations to offer, and a re-arrangement to propose. These will be considered under their respective headings.

Measurements.—Annexed is a series of measurements of sporidia, obtained, as we believe, from authentic specimens, some in our own possession, others in the Paris Collection, and others in the Herbaria attached to the Royal Gardens, Kew; those of Montagne, Leveille, and Berkeley being from specimens derived from the authors. Wherever there was no original specimen at our disposal we have accepted the Rev. M. J. Berkeley's determination. The Borneo specimens were communicated to us by Baron V. Cesati. Although we have had access to 112 out of the 153 species enumerated in the Sylloge, there still remain 40 of which we have no practical knowledge.

11. **Xylaria melanaxis,** *Ces.*
Sporidia ·0035 × ·002 mm.

14. **Xylaria hæmorrhoidalis,** *B. & Br.*
Sporidia lanceolate, ·035-·04 × ·01 mm.

15. **Xylaria Gardneri,** *Berk.*
Sporidia ·003 × ·002 mm.

16. **Xylaria Guyanensis,** *Mont.*
Sporidia ·006-·007 × ·004 mm.

18. **Xylaria phosphorea,** *Berk.*
Sporidia ·01-·012 × ·004-005 mm.

22. **Xylaria fistuca,** *Berk.*
Sporidia ·01 × ·004 mm.

27. **Xylaria conocephala,** *B. & C.*
Sporidia ·022 × ·006 mm.

29. **Xylaria allantoidea**, *Berk.*
Sporidia ·01-·012 × ·0035 mm.

33. **Xylaria Domingensis**, *B.*
Sporidia lanceolate, ·02 × ·0035-·004 mm.

36. **Xylaria fistulosa**, *Fr.*
Sporidia ·02 × ·0035 mm.

40. **Xylaria grammica**, *Mont.*
Sporidia ·015-·018 × ·004 mm.

41. **Xylaria Kegeliana**, *Fr.*
Sporidia ·03-·035 × ·0065-·007 mm.

42. **Xylaria obovata**, *Berk.*
Sporidia ·03 × ·008 mm.

43. **Xylaria Poiteani**, (*Lev.*)
Sporidia ·018 × ·004 mm.

45. **Xylaria obtusissima**, *Berk.*
Sporidia ·01-·012 × ·0035 mm.

46. **Xylaria plebeja**, *Ces.*
Sporidia ·01 × ·003 mm.

51. **Xylaria rhytidophlæa**, *Mont.*
Sporidia ·01-·011 × ·005 mm. (Cayenne.)
„ ·01-·013 × ·006 mm. (Australia.)

61. **Xylaria zeylanica**, *Berk.*
Sporidia ·018 × ·0035 mm.

62. **Xylaria microceras**, *Mont.*
Sporidia ·012 × ·004 mm.

63. **Xylaria Wrightii**, *B. & C.*
Sporidia ·03 × ·0085 mm.
Scarce distinct from *X. involuta*, Kl.

64. **Xylaria cudonia**, *B. & C.*
Sporidia almond-shaped, ·013 × ·008 mm.

68. **Xylaria exalbata**, *B. & Br.*
Sporidia ·012 × ·003 mm.

70. **Xylaria anisopleura**, *Mont.*
Sporidia ·035 × ·01 mm.

72. **Xylaria complanata**, *Ces.*
Sporidia ·01-·012 × ·005 mm.

74. **Xylaria dealbata**, *B. & C.*
Sporidia ·04 × ·01 mm.

79. **Xylaria tabacina**, *Kickx.*
Sporidia ·022-·025 × ·005 mm.
=*Xylaria involuta*, *Klotsch*, which is the older name

85. **Xylaria rhopaloides**, (*Kunze.*) *Mont.*
Sporidia ·01 × ·005 mm.

98. **Xylaria collabens**, *Mont.*
Sporidia ·03 × ·01 mm.

102. **Xylaria radicata**, *B. & C.*
Sporidia elliptic, ·008-·01 × ·004 mm.

103. **Xylaria scruposa**, *Fr.*
Sporidia ·02 × ·005 mm.

105. **Xylaria Culleniæ,** *B. & Br.*
Sporidia ·016 × ·005-·006 mm.

108. **Xylaria spathulata,** *B. & Br.*
Sporidia ·006 × ·003 mm.

112. **Xylaria cupressiformis,** *Becc.*
Sporidia ·022-·025 × ·005 mm.

120. **Xylaria Guepini,** *Fr.*
Sporidia ·008 × ·004 mm. (sec Fries.)

Xylaria eupeliaca, *Ces.*
Sporidia ·005 × ·0025 mm. (sec Cesati.)

132. **Xylaria subterranea,** *Schuz.*
Sporidia ·017-·02 × ·005 mm.

133. **Xylaria ianthino-velutina,** *Mont.*
Sporidia ·013 × ·004 mm.
Also the same in *Xylaria monilifera,* Berk., and what we believe to be *Xylaria Apeibæ,* Mont.

139. **Xylaria scopiformis,** *Mont.*
Sporidia ·01-·012 × ·0035 mm.

144. **Xylaria phyllophila,** *Ces.*
Sporidia ·02 × ·01 mm.

150. **Xylaria gracillima,** *Fr.*
Sporidia cylindrical, ·013 × ·0035 mm.

151. **Xylaria rhizomorpha,** *Mont.*
Sporidia ·005-·006 × ·0025 mm.

Emendations.—We would suggest the following emendations in respect of species with which we are acquainted, presumably on sufficient authority.

All that regards arrangement will be alluded to hereafter, together with a proposed re-arrangement, which need not be discussed at length, as it would occupy a large amount of space, and there is no substantial difference between ourselves and Professor Saccardo on the principles upon which such arrangement should be based.

Primarily, we would exclude from the genus Nos. 24, 80, and 81, as these were relegated to a new genus, *Glaziella,* by Berkeley, in 1879, as—

24. Glaziella abnormis, (B.) Cke.
80. Glaziella aurantiaca, Berk.
81. Glaziella splendens, Berk., together with
Glaziella vesiculosa, Berk.
Glaziella ceramichroum, B. & Br.

They are nearer to *Hypocrea* than *Xylaria,* and would occupy an analogous position in *Hypocreacei* to *Daldinia* in *Xylariei.* The diagnosis of the genus is—"Stroma subglobose, brightly coloured, fleshy. Perithecia pallid, filled with hyaline gelatin." Although *Sphæria compuncta,* Jungh., is by no means a good *Xylaria,* it could scarcely be transferred to this genus (82) and would be better in Hypoxylon.

In the next place there are some species that are repeated under other names; for example—

35. *Xylaria escharoidea*, Berk., must include also *Xylaria piperiformis*, Berk. (131). *Xylaria mutabilis*, Curr., in Linn. Trans., and *Xylaria flagelliformis*, Curr. in Linn. Trans., which latter is only a sterile condition of his *Xylaria mutabilis*, as his own figures will show. The sporidia in all three species are absolutely identical.

55. *Xylaria Telfairii*, Berk. } should stand as synonyms of
79. *Xylaria tabacina*, Kickx. } *Xylaria involuta*, Klotsch, which is the other name, whilst 63 *Xylaria Wrightii*, B. & C., appears to present no specific difference.

67. *Xylaria acicula*, Ces., according to specimen from Cesati does not differ from *X. aristata*, Mont.

75. *Xylaria cerebrina* (Fee.), is certainly an *Hypoxylon* with a coloured stroma, according to specimens in Herb. Paris.

120. *Xylaria Guepini*, Fr., and
Xylaria eupeliaca, Ces, can scarcely be regarded as the same species.

133. *Xylaria ianthino-velutina*, Mont., and
153. *Xylaria Apeibæ*, Mont., as well as
Xylaria moniliformis, Berk. in Herb., must be held to constitute one species, as Saccardo suspected.

Although we are hardly prepared to expect that our suggestion would ensure Professor Saccardo's approval, we would transfer his Nos. 83 and 84 to the genus, or subgenus, *Rhopalopsis*, hereafter designated.

Additions.—The following species are not included in the "Sylloge," some of them never having been published. They are all described here, although some of them could not be included in any list except as "species dubiæ," such as *Xylaria tuberosa*. Their relationship to other species, as we comprehend it, will be indicated in the classified list at the close of this communication.

2. **Xylaria australis,** *Cooke.*

Stromate clavato, nudo ($\frac{1}{2} \times \frac{3}{4}$ in.), sursum incrassato, obtuso, lævi, fusco, ex ostiolis mimitissimis obscure punctato, intus albido dein cavo; stipite elongato ($1\frac{1}{2}$-2 in.) glabro, tenui ($\frac{1}{4}$ in.) nigricante; ascis cylindraceis, stipitatis, sporidiis arcte lanceolatis, fuscis (·615 × ·003 mm.).

On wood. Endeavour River, Australia.

Resembles very much the description of *X. euglossa*, Fr., but the sporidia are of a different form.

10. **Xylaria olobapha,** *Berk. in Herb. Kew.*

Stromate erecto, clavato, rufo, infra in stipitem brevem attenuato. Stipite tenui, glabro, æquali; peritheciis globosis, atris, ostiolis punctiformibus, planis; ascis cylindraceis, stipitatis; sporidiis lanceolatis, rectis vel curvulis, fuscis (·02-·022 × ·0085 mm.).

On trunks. Brazil, Mexico.

Whole plant 2-$2\frac{1}{2}$ inches high, of which the club occupies half. Club 1 c.m. thick.

20. **Xylaria Berkeleyi**, *Mont., Ann. Sci. Nat.*, 1855, III., 104.

Stromate erecto, suberoso, atro, cylindrico-clavato, obtuso, papillato; intus albo. Stipite gracili, glabro, concolori. Peritheciis globosis, numerosis, ostiolis prominulis, asperulis; ascis cylindraceis, stipitatis; sporidiis arcte fusiformibus, rectis, curvulisve, fuscis (·018-·022 × ·003-·004 mm.).

On wood. Cayenne.

From specimens communicated by Dr. Montagne.

23. **Xylaria escharoidea**, *Berk.*

To this species must be referred, as synonyms, *Xylaria nigripes*, Klotsch, *Xylaria piperiformis*, Berk., *Xylaria mutabilis*, Curr. Linn. Trans. (1876), and *Xylaria flabelliformis*, Curr. Linn. Trans. (1876), t. 21. The latter being the sterile form. The description by Klotsch ("Linnea," vii., p. 203) dates from 1832, so that his name certainly appears to demand precedence. We have had the good fortune to see and examine the type specimens of *all* the above-named species, and the sporidia are identical.

25. **Xylaria multifida**, (*Sphæria multifida Kunze*, sec Leveille, Ann. Sci. Nat., 1845, iii., 45.)

Stromate conidifero erecto, furcato-partito, palmato-que, albido. Stromate ascigero simplici, erecto, atro, clavato; stipite æquilongo, tenui, atro, glabro (?); peritheciis globosis, atris, prominulis: ascis cylindraceis, stipitatis; sporidiis fusiformibus, obtusis, inæquilateralibus, fuscis (·01-·012 × ·004-·005.)

On trunks. Java, and Central America, in Herb. Paris.

Greatly resembling *X. hypoxylon*, of which it may be a variety.

26. **Xylaria acicularis** (*Sphæria, Hypoxylon, acicularis*, Berk. Hook. Journ., 1842, p. 141.)

Suberosa, acicularis, simplex, rarissime furcato-palmata, lævis; stipite lævi, vel subplicato; clavulâ elongatâ, lineari, cum stipite confluente, crustâ laccato atro farinâ argillaceâ velatâ reticulato-rimosâ; peritheciis globosis; ostiolis prominulis.

On wood. Surinam.

3-3½ in. high, 1 line or more thick.

28. **Xylaria Cordovensis**, *Berk. in Herb. Kew.*

Stromate erecto, clavato, atro (1-1½ in.); stipite tenui, glabro, semi-unciali, clavulâ utrinque sub-attenuatâ, supra obtusâ; peritheciis globosis, prominulis; ascis cylindraceis, stipitatis; sporidiis arcte fusiformibus, rectis curvulisque, fuscis, (·015-·016 × ·004 mm.).

On trunks. Cordova, (Salle No. 95.)

34. **Xylaria Mellisii** (*Hypoxylon Mellisii*, Berk. in Herb.)

Stromate coriaceo, atro, stipitato, ramuloso. Clavulis cylindricis, ellipticis, lanceolatis, furcatis vel difformibus, in ramulis brevibus congestis, intus albo; stipite tenui, flexili, glabro, furcato; peritheciis globosis, atris; ostiolis prominulis, scabris; ascis cylindraceis, stipitatis; sporidiis elliptico-lanceolatis, fuscis (·012 × ·005 mm.).

On bark and wood. St. Helena.

Not more than half an inch or an inch high. Clubs densely crowded, about a quarter of an inch long, at the apex of a slender furcate or simple stem, which penetrates the bark or wood, so that only the cluster of small clubs is visible.

42. **Xylaria Willsii,** *Berk. in Herb.*

Carnosa, aurantio-fulva, stipitata. Clavulis simplicibus, vel furcatis, cylindraceis, obtusis (1-1½ in. long, ⅛ incrass.); stipite lævi (1 in. long), tenui, concolore; peritheciis minimis, brunneis, (immaturis); ostiolis planis, punctiformibus; spor. n. v.

On wood. Ste Fee de Bogota.

With a great resemblance to *X. persicaria*, Schwz.

46. **Xylaria cerebriformis,** *Cooke.*

Magna, suberosa, stipitata, fuliginea, stipite vix uncialis (crass. ⅓ unc.), lignoso, glabra, sulcato, interdum laterali; capitulo subelliptico (1½ × 1 unc.), profunde sulcato, aliter rugoso, cerebriformi, demum læviusculo, intus albo; peritheciis minimis, globosis, atris, confertis; ostiolis minutissimis, vix visibilis, planis; ascis cylindraceis; sporidiis arcte lanceolatis, rectis curvulisve, brunneis, (·009-·01 × ·0025 mm.).

On wood (?) Endeavour River, Australia.

Perithecia and sporidia smaller than in *X. lobata*, C.; ostiola scarce visible on the surface.

50. **Xylaria Emerici,** *Berk. in Herb. Kew.*

Magna, suberosa, clavata. Stromate erecto (5-6 in. long, 1½ in. lat.), glabro, fuligineo, ostiolis minuto, punctato, intus griseo-lilacino, demum centro cavo; stipite crasso, brevi, glabro, sursum in clavulam incrassato; peritheciis globosis, atris, nec prominulis; ascis cylindraceis, stipitatis; sporidiis lanceolatis, utrinque obtusis, rectis vel curvulis (·02 × ·008 mm.).

On the ground (?) Neilgherries, India.

54. **Xylaria regalis,** *Cooke.*

Suberosa, clavæformis, pyriformis, vel subglobosis, simplex, obtusa, magna (3-4 in. × 2-3 in.), atra, cum stipite brevi crasso nudo confluente; ostiolis prominulis, subnitidis; peritheciis magnis, globosis, atris; ascis cylindraceis, stipitatis; sporidiis ellipticis, utrinque attenuatis, rectis curvulisve, fuscis (·012 × ·004 mm.).

On wood. Botanic Garden, Calcutta (Kurz).

Closely allied to *X. Poiteani*, Lev., from which it differs in its rougher exterior, and smaller sporidia.

57. **Xylaria lobata,** *Cooke.*

Magna, suberosa, conchiformis, sessilis, ambitu lobata, fusca, lævis, subnitida, lobis rotundatis, intus albo; peritheciis confertis, globosis, atris; ostiolis minutissimis, punctiformibus, planis; ascis cylindraceis; sporidiis arcte lanceolatis, rectis, curvulisve, brunneis (·012 × ·003 mm.).

On wood. Endeavour River, Australia.

A noble species resembling nothing hitherto described.

76. **Xylaria salmonicolor,** *Berk. in Herb.*

Stromate erecto, suberoso, simplici, clavato-cylindrico, supra obtuso, infra attenuato, atro-brunneo ; intus rubente, salmoni colori ; stipite brevissimo ; peritheciis globosis, minutis, numerosissimis ; ostiolis planis punctiformibus ; sporidiis ignotis.

On wood. Neilgherries, India.

Clubs about $1\frac{1}{2}$. in long, $\frac{1}{4}$in. thick ; stem scarcely a quarter inch.

90. **Xylaria favosa,** *Berk. & Curt. in Herb. Kew.*

Suberosa. Stromate erecto, atro-fusco, rugoso, pyriformi, infra in stipite brevi attenuato, intus favoso-lacunoso, fusco ; peritheciis imperfectis.

On wood (?) Cuba.

$1\frac{1}{2}$ in. high, $\frac{3}{4}$in. thick. Possibly an *Hypoxylon*, but without fruit.

107. **Xylaria ventricosa,** *Berk. in Herb.*

Stromate erecto, ventricoso, fusco, longitudinaliter rugosulo, apice longe acuminato, intus albo, demum cavo ; stipite tenui ($\frac{3}{4}$ in.) ; peritheciis globosis ; ostiolis inconspicuis ; ascis cylindraceis ; sporidiis n. v.

On wood. Java.

Perhaps merely a variety of *X. gigantea*. About three inches high. Stem $\frac{3}{4}$ in., expanding into the oblong capitule, which is some $1\frac{1}{2}$ in. long, and $\frac{3}{4}$ in. thick, terminating in a long sterile apex $\frac{3}{4}$ in. long.

114. **Xylaria fustis,** *Mont. in Enum. Pl. Cubensis MSS.*

Stromate erecto, sub-clavato, stipitato ; supra acuminato, sterili, infra in stipite elongato, tenui, flexili, attenuato, glabro ; peritheciis globosis, atris, prominulis, magnis, paucis (10-12) ; ascis cylindraceis, stipitatis ; sporidiis ellipticis, utrinque subattenuatis, fuscis (·012 × ·0065-·007 mm.).

On trunks. Cuba.

Stem $1\frac{1}{2}$-2 in. long. Capitulum half an inch.

135. **Xylaria trachelina** (*Sphæria, Cordyceps, trachelina*, Lev. Ann. Sci. Nat. 1860, v. 304.)

Receptaculis elongatis, rugosis, tuberculosis, apice acutis, sterilibus, fuliginosis, intus albis, pedicello longissimo, tomentoso, suffultis ; peritheciis globosis, prominentibus, intus nigris ; ostiolis obsoletis ; ascis cylindraceis ; sporidiis obtuse lanceolatis, fuscis, (·02 × ·007 mm.).

On trunks. New Granada.

1-$1\frac{1}{2}$ in. high, stem $\frac{1}{2}$ inch. Clubs $\frac{3}{4}$ to 1 in. long, $\frac{1}{8}$-$\frac{1}{5}$ inch thick.

151. **Xylaria monilifera,** *Berk. in Herb. Kew.*

On legumes.

Evidently the same species as *Xylaria ianthino-velutina*, Mont., and *Xylaria Apeibæ*, Mont. The sporidia in all are the same. The stem is hairy, the stroma branched, terminating in sterile points.

157. **Xylaria tuberosa** (*Sphæria tuberosa*, Persoon in "Gaudichaud's Voyage," p. 180).

Clavulis elongatis, glabris, apice compressis, ramosis, basi tuberoso.

On rotten wood (?) Sandwich Isles.

"Intermediate between *X. hypoxylon* and *X. bulbosa* the radical tubercle is oval or oblong."

Specimens in Herb. Paris are sterile, except for the bulbous base, would at once be referred to *X. hypoxylon*, of which it is probably only a form.

158. **Xylaria furcellata**, *Berk. in Herb.*

Stromate erecto, aurantio, supra bi-vel tri-dichotomo-furcato; ramulis abbreviatis, obtusis, sub-clavatis, cinereis; stipite erecto, tenui, æquali, vel ventricoso, radicato; peritheciis ignotis.

The Neilgherries, India.

A very marked, but imperfect species, about 2 inches high, the branched apex scarce half an inch across.

159. **Xylaria xanthiceps**, *Berk. in Herb.*

This again is a minute corticolous species of which only conidia are developed. The small clubs are tipped with yellow.

161. **Xylaria hystrix**, *Berk. in Herb.*

This is merely a fasciculate, erumpent condition of some species in its young and sterile state, and cannot be described.

162. **Xylaria Carteri**, *Berk. in Herb.*

Globosa, stipitata, atra, nitida ($\frac{1}{4}$-$\frac{1}{2}$ in. diam.), intus fusca.

On wood. Bombay.

This also is evidently a species of *Phylacia*, whether that genus represents any condition of *Xylaria* or not.

163. **Xylaria ramulosa**, *Berk.* (*Sphæria ramulosa*, Schwz.).

This has every appearance of being a species of *Phylacia*—internally it is chiefly brown, there are no perithecia, and we have seen no spores.

On bark. Surinam.

Arrangement.—It only remains for us now to subjoin an amended arrangement of the species under the same four groups as proposed originally by Fries, and adopted by Saccardo. It may not be wholly egotistical to affirm that our facilities for becoming practically acquainted with a vast number of species have been great, and from this experience we have been enabled to determine more accurately their affinities than could be done from descriptions alone. The subdivision containing species with a discoid base has not commended itself to us for adoption, since it is by no means a permanent character, varying according to the hardness or softness of the matrix. Almost all, if not all, the specimens growing on hard wood expand at the base, so as to secure a firmer attachment, whereas when the wood is soft the base is more or less penetrating. Both conditions may be observed in a good series of *Xylaria hypoxylon*.

XYLARIA.

A. Xyloglossa. Club everywhere fertile, stem smooth.

a. Capitulum clavate; stem slender, elongated.

* *Simple.*

1. Xylaria euglossa, Fries.
2. „ australis, Cooke.
3. „ involuta, Klotsch.
   = *X. tabacina*, Kickx.
   = *X. Telfairii*, Berk.
4. „ Wrightii, B. & C.
5. „ Portoricensis, Klotsch.
6. „ hypœrythra, Mont.
7. „ Guyanensis, Mont.
8. „ clavicularis, Klot.
9. „ gigantea, Zipp.
10. „ olobapha, Berk.
11. „ exalbata, Berk.
12. „ grammica, Mont.
    = *X. ectogramma*, Berk.
13. „ melanaxis, Ces.
14. „ rhopaloides, Mont.
15. „ Schweinitzii, B. & C.
16. „ leptopus, Fr.
17. „ protea, Fr.
18. „ complanata, Ces.
19. „ fissilis, Ces.
20. „ Berkeleyi, Mont.
21. „ rhytidophlæa, Mont.
22. „ Zealandica, Cooke.
23. „ nigripes, Klotsch.
    = *X. escharoidea*, Berk.
    = *X. piperiformis*, Berk.
    = *X. mutabilis*, Curr.
    = *X. flagelliformis*, Curr.
24. „ Cubensis, B. & C.
25. „ multifida, Kunze.
26. „ acicularis, Berk.
27. „ scopiformis, Mont.
28. „ Cordovensis, Berk.
29. „ retipes, Lev.

** *Furcate.*

30. „ diceras, Lev.
31. „ biceps, Speg.
32. „ divaricata, Fee.

33. Xylaria arenicola, W. & Curr.
34. „ Mellisii, Berk.
35. „ Gardneri, Berk.
36. „ portentosa, Mont.
37. „ Scotica, Cooke.
38. „ ruginosa, Mont.
39. „ tortuosa, Sow.
40. „ gracilis, Klot.
41. „ rhizocola, Mont.
42. „ Willsii, Berk.
43. „ tentaculata, Rav.

b. Capitulum subclavate ; stem thick, abbreviated or obsolete.

44. Xylaria polymorpha, Grev.
45. „ variabilis, W. & Curr.
46. „ cerebriformis, Cooke.
47. „ gomphus, Fr.
48. „ papyrifera, Fr.
49. „ conocephala, B. & C.
50. „ Emerici, Berk.
51. „ Domingensis, Berk.
52. „ Titan, Berk.
53. „ Poiteana, Lev.
54. „ regalis, Cooke.
55. „ obtusissima, Berk.
56. „ turgida, Fr.
57. „ lobata, Cooke.
58. „ zeylanica, Berk.
59. „ lingua, Lev.
60. „ castorea, Berk.
61. „ aenea, Mont.
62. „ allantoidea, Berk.
63. „ fistulosa, Lev.
64. „ dealbata, B. & C.
65. „ fistuca, Berk.
66. „ siphonia, Fr.
67. „ curta, Fr.
68. „ plebeja, Ces.
69. „ echinata, Lev.
70. „ anisopleura, Mont.
71. „ microceras, Mont.
72. „ platypoda, Lev.
73. „ enterogena, Mont.
74. „ fulvella, B. & C.
75. „ phosphorea, Berk.
76. „ salmonicolor, Berk.
77. „ clavulata, Schw.
78. „ pumila, Fr.

c. Capitulum subglobose.

79. Xylaria piliceps, Berk.
80. ,, pyramidata, B. & W.
81. ,, marasmoides, B. & Cooke.
82. ,, stilboidea, Kalch. & Cke.
83. ,, cudonia, B. & C.
84. ,, obovata, Berk.
85. ,, tuberiformis, Berk.
86. ,, globosa, Mont.
87. ,, clavulus, B. & C.
88. ,, hæmorrhoidalis, B. & Br.
89. ,, intermedia, Ces.
90. ,, favosa, Berk.

B. Xylocoryne. Club everywhere fertile, stem villose.

a. Capitulum clavate ; stem elongated, slender.

91. Xylaria spathulata, B. & Br.
92. ,, longipes, Nke.
93. ,, hispidula, B. & C.
94. ,, Beccariana, Pass.
95. ,, fastigiata, Fr.
96. ,, geoglossum, Schwz.
97. ,, multiplex, Kunze.
98. ,, scruposa, Mont.
99. ,, polycladia, Lev.
100. ,, radicata, B. & C.
101. ,, comosa, Mont.
102. ,, tenuissima, Fr.

b. Capitulum clavate, stem abbreviated.

103. Xylaria corniformis, Mont.
104. ,, aphrodisiaca, W. & Curr.
105. ,, alpina, Speg.

c. Capitulum subglobose.

106. Xylaria collabens, Mont.

C. Xylostyla. Apex of club sterile, stem smooth.

a. Capitulum clavate, simple, or cristate.

107. Xylaria ventricosa, Berk.
108. ,, Kegeliana, Lev.
109. ,, pallida, Cooke.
110. ,, graminicola, Ger.
111. ,, coronata, West.
112. ,, cristata, Speg.
113. ,, inæqualis, B. & C.

114. Xylaria fustis, Mont.
115. „ myosurus, Mont.
116. „ mucronata, Schwz.
117. „ phyllophila, Ces.
118. „ phyllocharis, Mont.

b. Capituli connate or branched.

119. Xylaria digitata, Fr.
120. „ grandis, Peck.
121. „ cæspitulosa, Ces.
122. „ bulbosa, Pers.
123. „ rhizomorpha, Mont.
124. „ adscendens, Fr.
125. „ fasciculata, Speg.
126. „ coccophora, Mont.

c. Capitulum ovate or subglobose.

127. Xylaria vaporaria, Berk.
128. „ thyrsus, Berk.
129. „ axifera, Mont.

d. Stroma filiform, perithecia lax.

130. Xylaria tricolor, Fr.
131. „ filiformis, Fr.
132. „ gracillima, Mont.
133. „ axillaris, W. & Curr.
134. „ furcata, Fr.

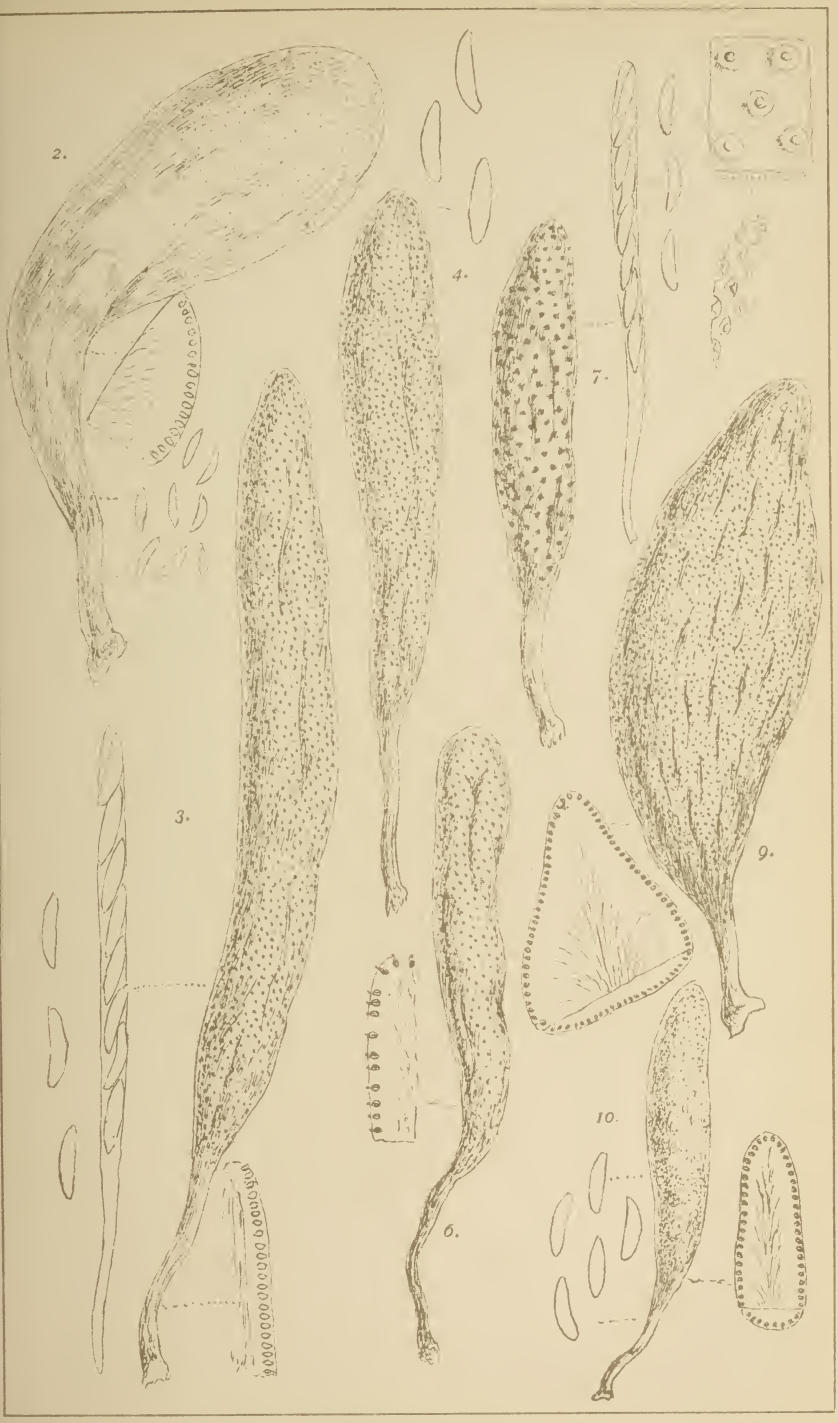
D. Xylodactyla. Apex sterile, stem villose.

a. Capitulum clavate, simple.

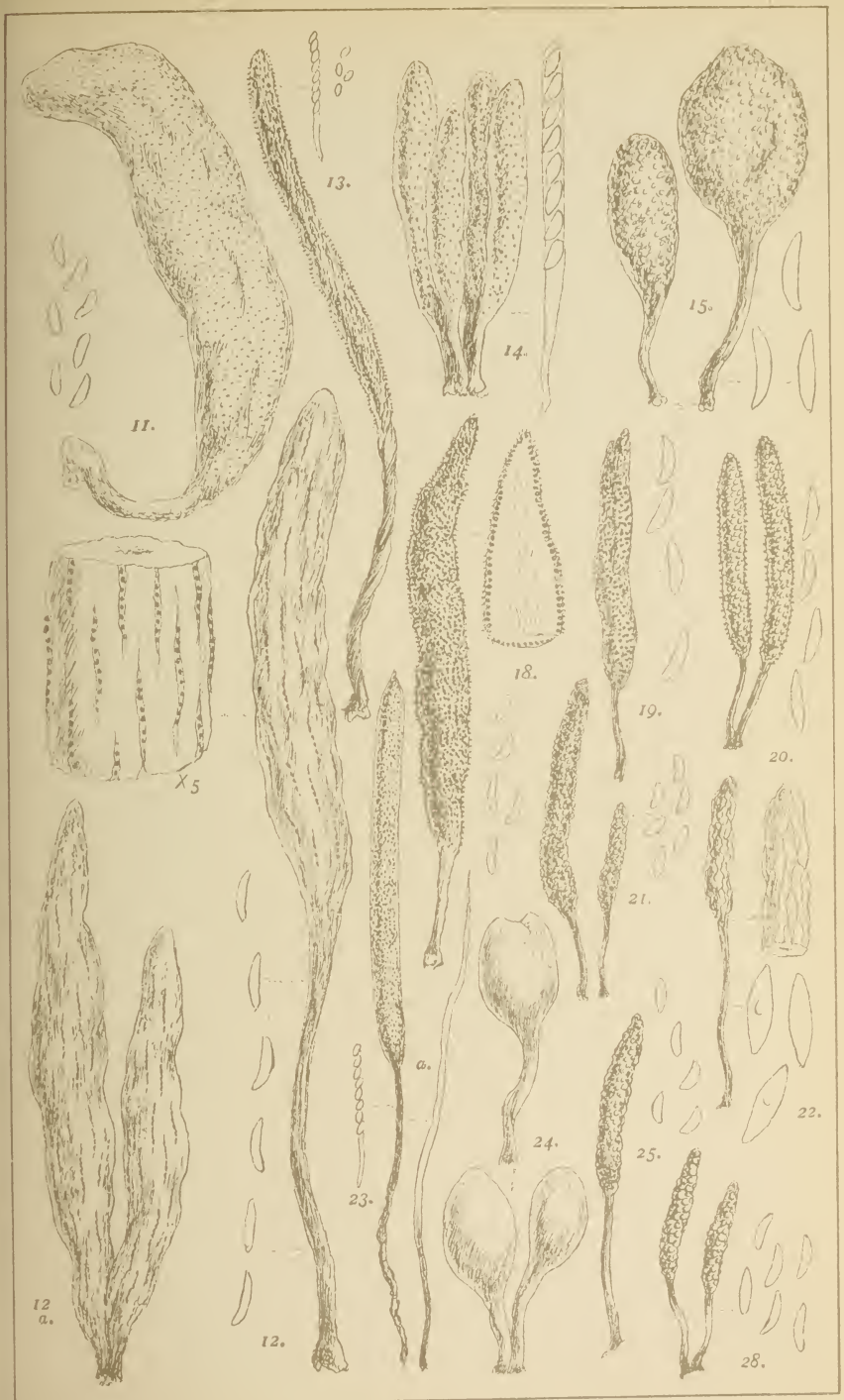
135. Xylaria trachelina, Lev.
136. „ apiculata, Cooke.
137. „ persicaria, Schwz.
138. „ carpophila, Fr.
139. „ oxyacanthæ, Lev.
140. „ Delitschii, Auers.
141. „ cupressiformis, Fr.
142. „ massula, Ces.

b. Capitulum furcate or divided.

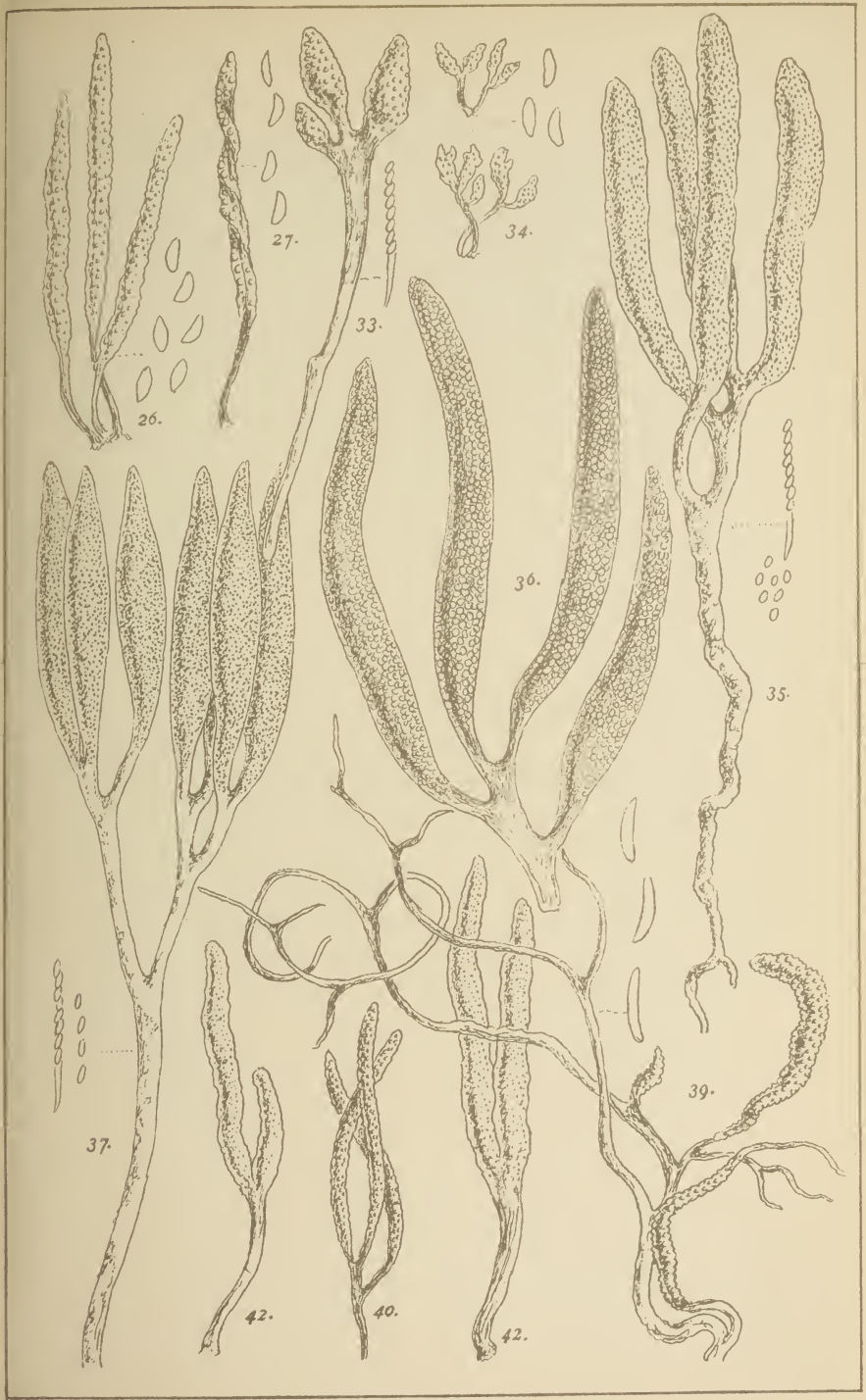
143. Xylaria cornu-damæ, Schwz.
144. „ Fejeensis, Berk.
145. „ hypoxylon, Fr.
146. „ Guepini, Fr.
147. „ eupeliaca, Ces.
148. „ arbuscula, Sacc.
149. „ dichotoma, Kunze.
150. „ subterranea, Schwz.



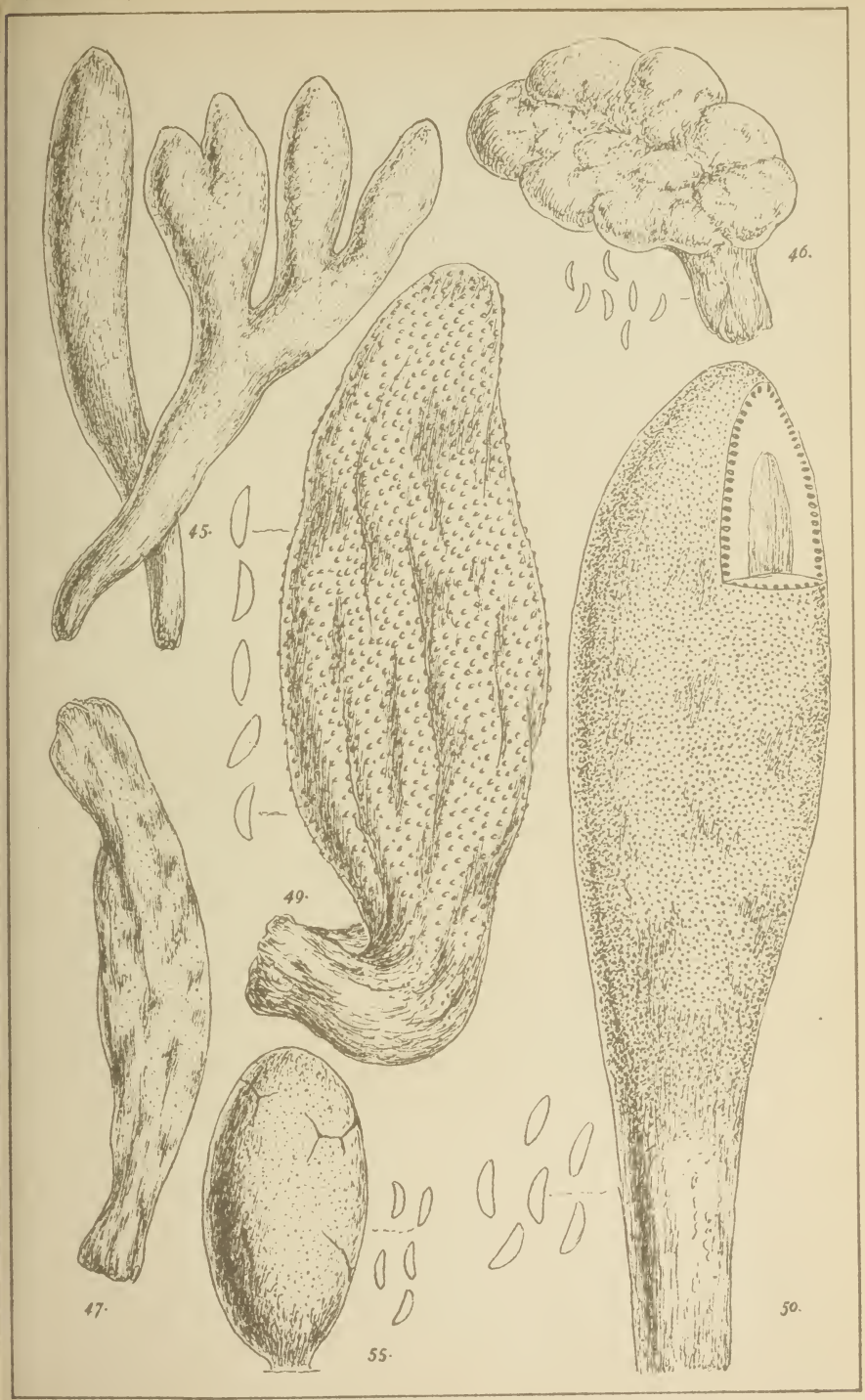
XYLARIA.– *Xyloglossa.*



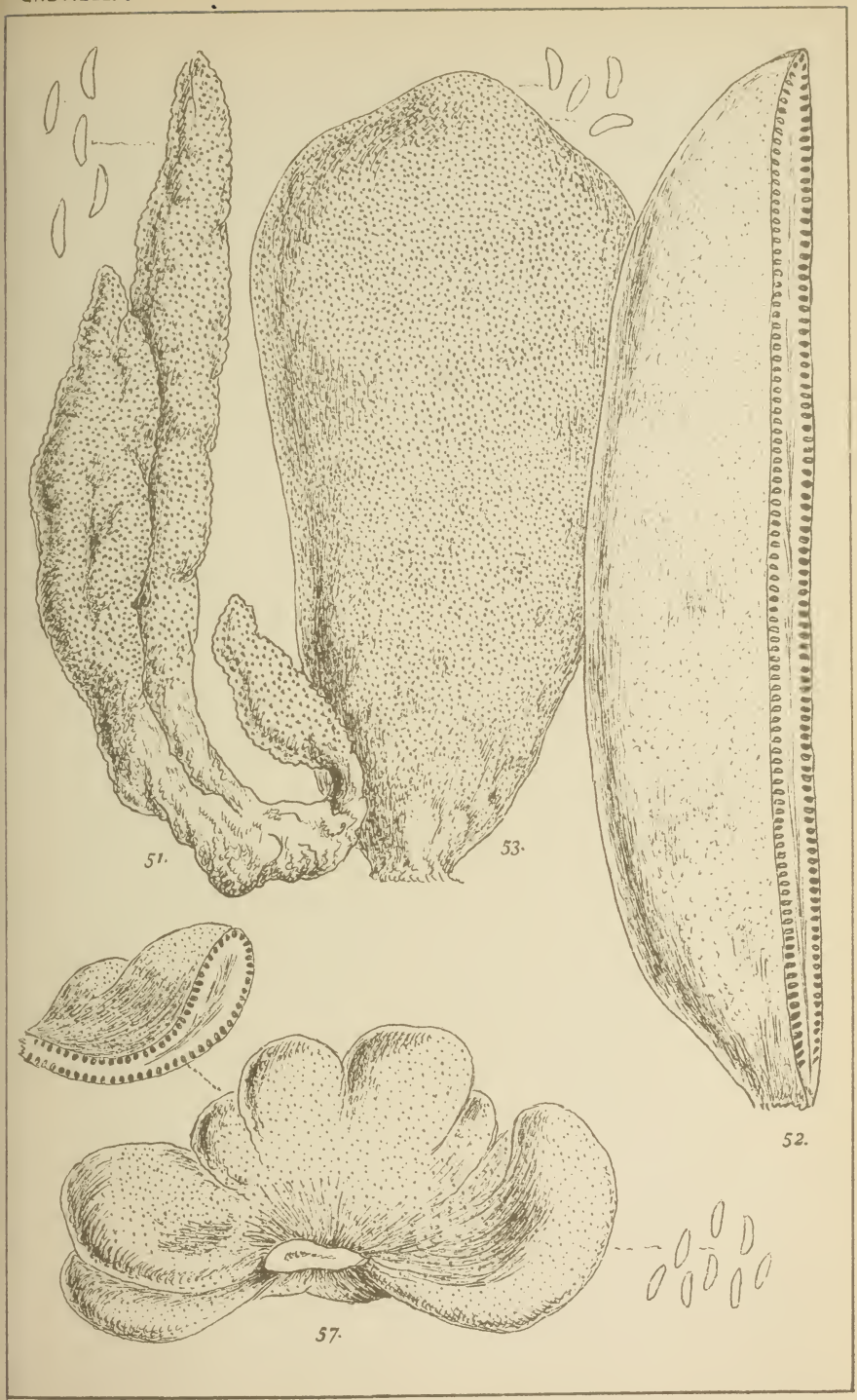
XYLARIA.- *Xyloglossa.*



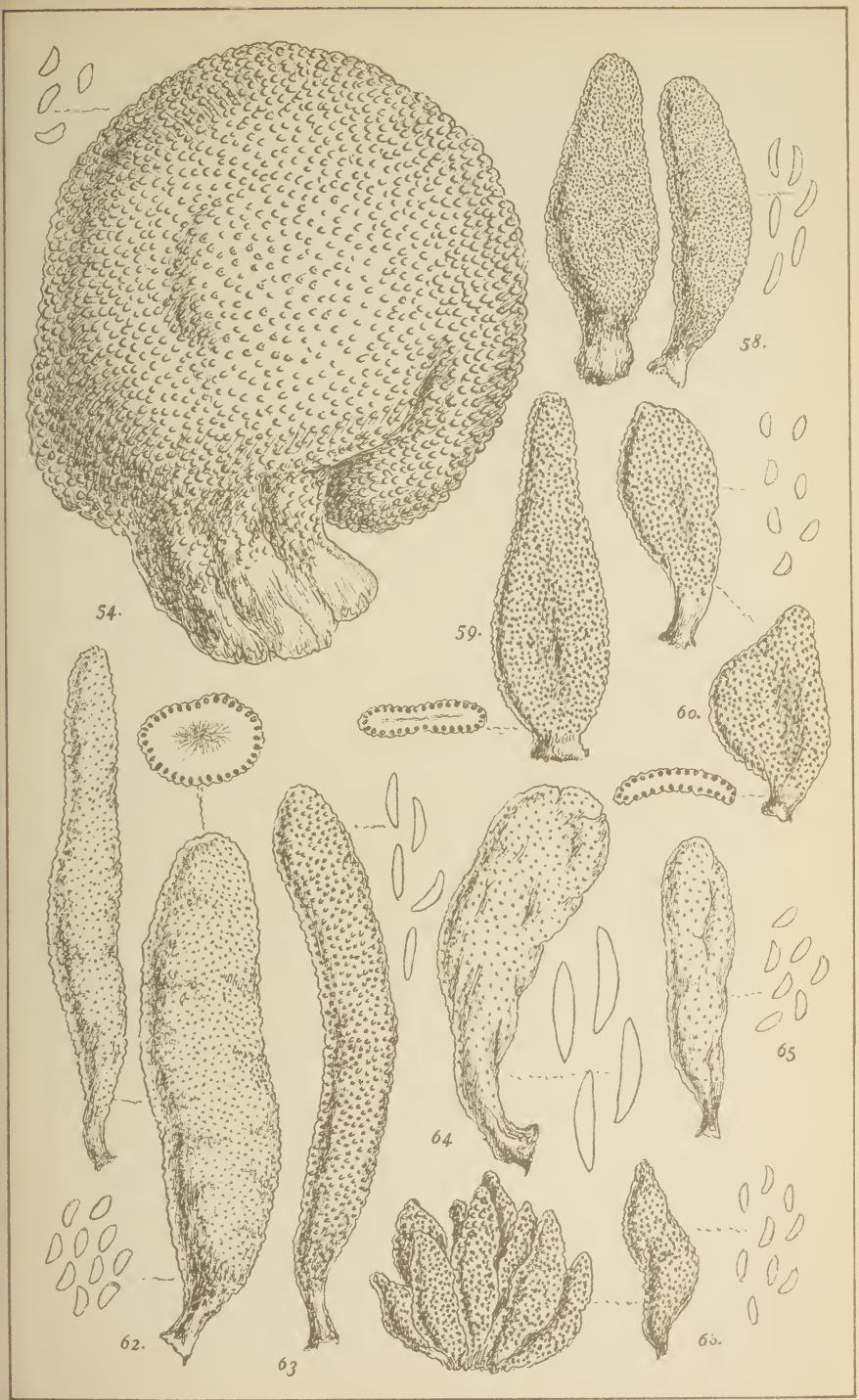
XYLARIA – *Xylogiossa.*



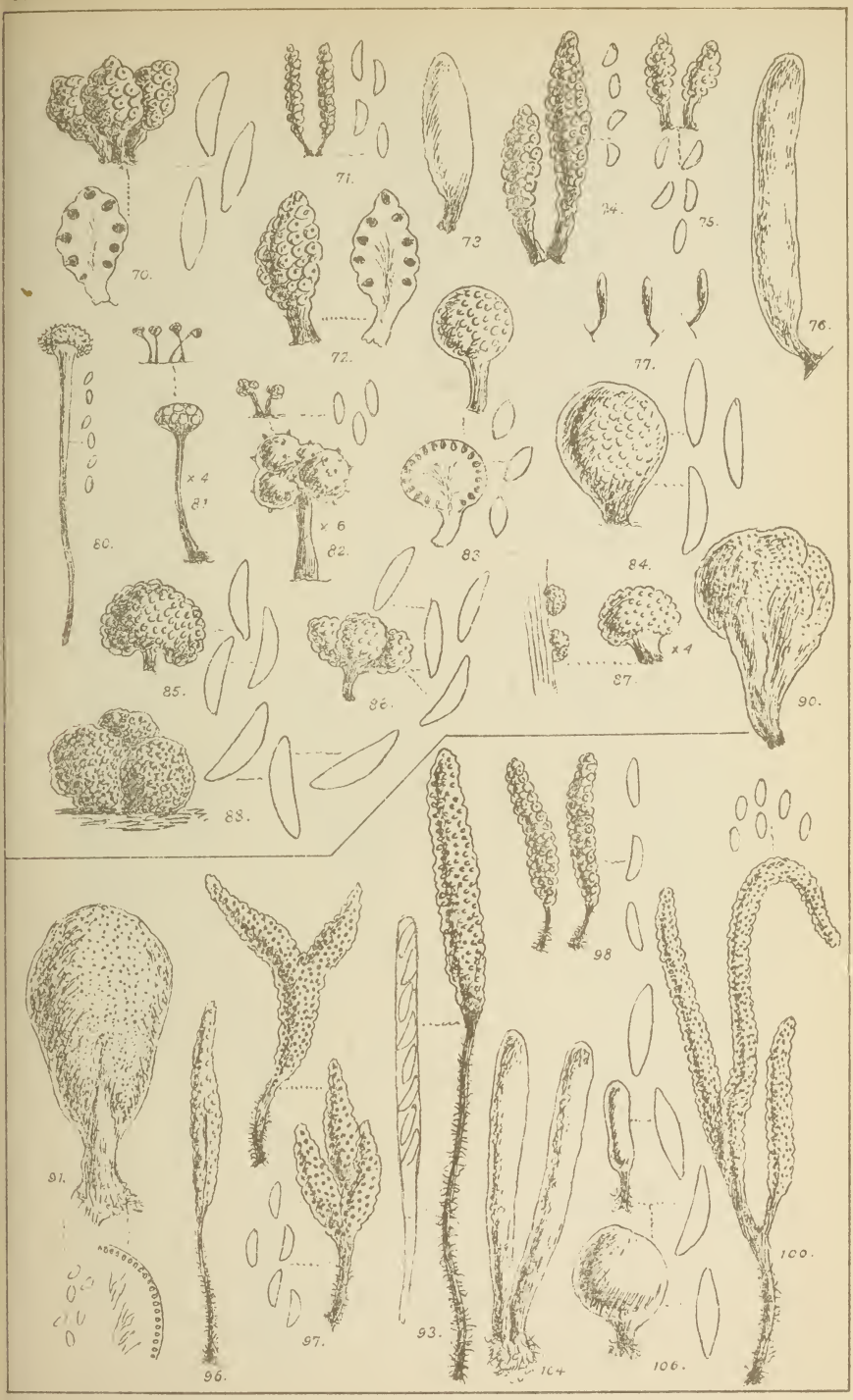
XYLARIA—*Xyloglossa*.



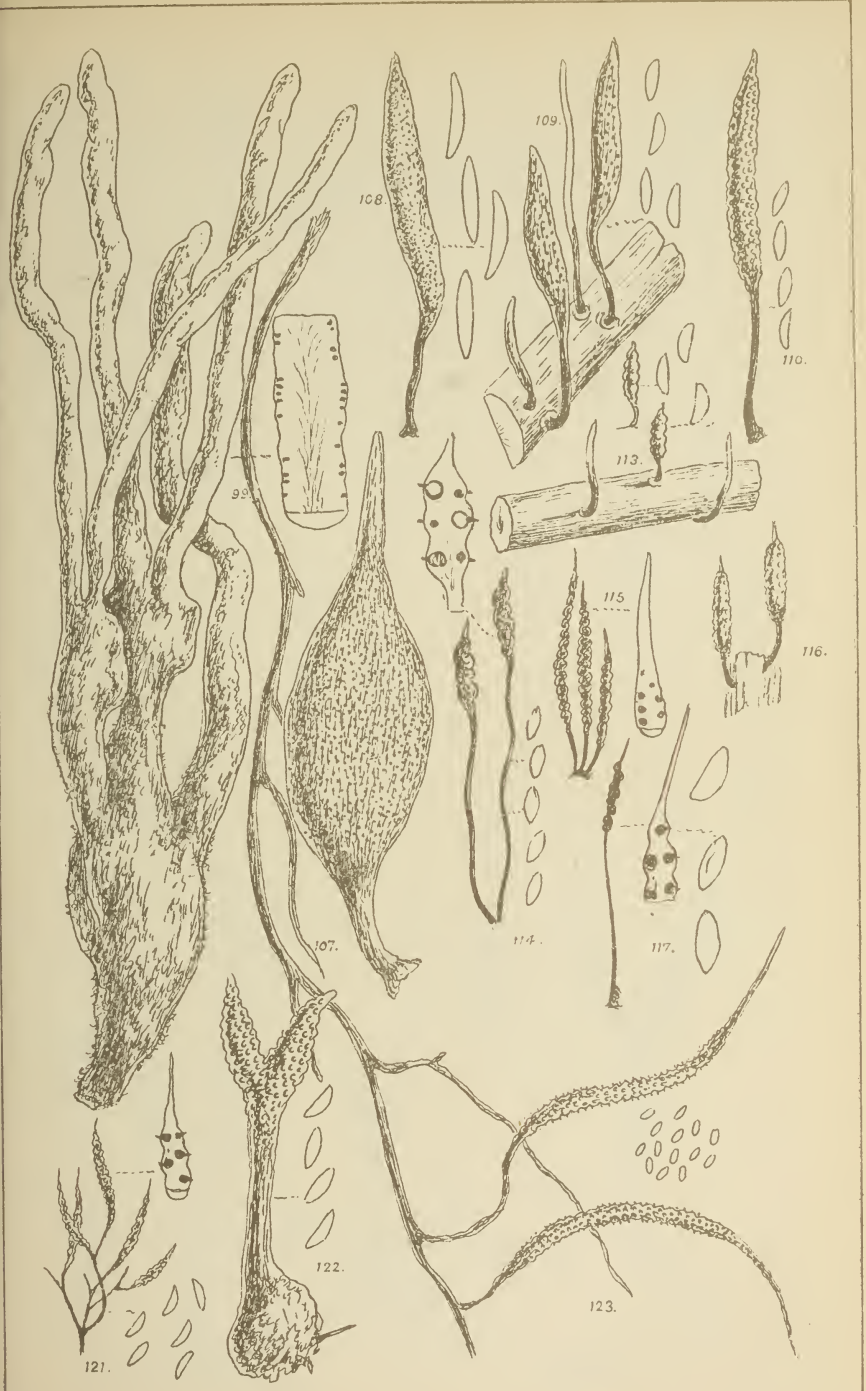
XYLARIA—*Xyloglossa.*



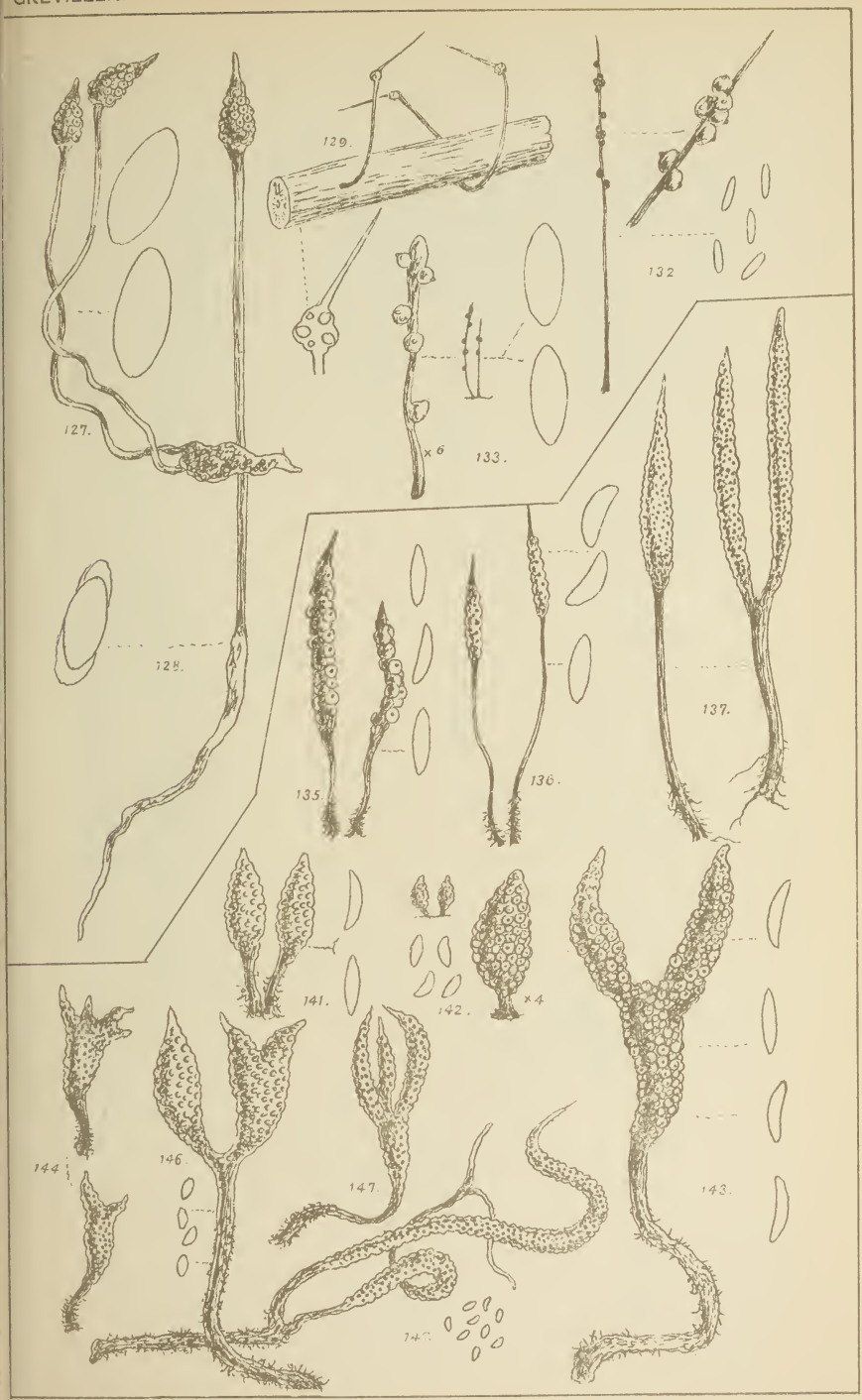
XYLARIA—*Xyloglossa.*



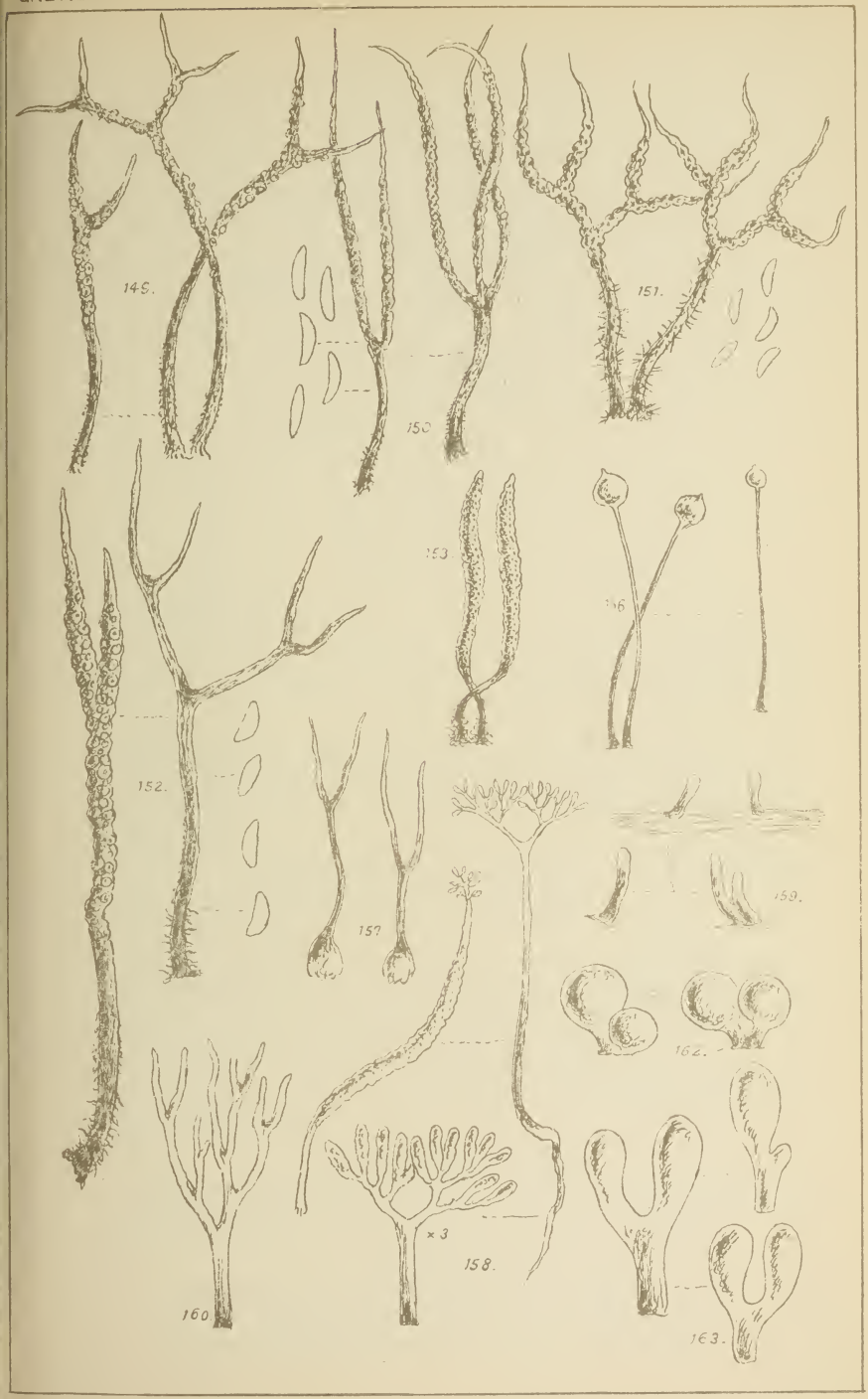
XYLARIA.- *Xyloglossa and Xylocoryne.*



XYLARIA.- *Xylostyla.*



XYLARIA.—*Xylostyla and Xylodactyla.*



XYLARIA. – *Xylodactyla.*

151. Xylaria ianthino-velutina, Mont.
= *X. apeibœ*, Mont.
= *X. monilifera*, Berk.
152. „ Cullenïæ, B. & Br.
153. „ flabelliformis, Schwz.

c. Capitulum subglobose.

154. Xylaria pedunculata, Fr.
155. „ Tulasnei, Nke.
156. „ aristata, Mont.
= *X. acicula*, Ces.

Incertæ sedis.

157. Xylaria tuberosa, Lev.
158. „ furcellata, Berk.
159. „ xanthiceps, Berk.
160. „ fulvo-lanata, Berk.
161. „ hystrix, Berk.
162. „ Carteri, Berk. } = *Phylacia.*
163. „ ramulosa, Schwz. }

THAMNOMYCES, *Ehr.*

It is of very little importance whether this genus is still maintained, or absorbed into *Xylaria* as a subgenus, as has been done by Saccardo. We have nothing to add to the species enumerated.

CAMILLEA, *Fr.* Sacc. Syll., p. 346.

There is an additional species in the Berkeley Herbarium, possibly without fruit, but we did not feel justified in cutting it for examination.

Camillea Javanica, *Mont. MSS.*

In external features similar to *C. cyclops*, but very much smaller. Not exceeding $\frac{1}{2}$ a line in diameter and height.

On wood. Java.

PORONIA, *Fr.* Sacc. Syll., p. 348.

Neither on this genus have we any observations to record. Unless *Poronia incrassata*, Jungh. in "Hœven and Vriese Tijdskr. v. Nat. Gesch," 1840, p. 288, may be considered specifically distinct from *Poronia Œdipus*.

The following genus has been referred to already in the foregoing remarks:—

RHOPALOPSIS, *Cooke.*

Densely cæspitose, capituli abbreviated, either simply and shortly stipitate, or seated on short ramuli of an intricate stroma.

a. Stroma simple.

1. Rhopalopsis cœnopus (Mont.). No. 1488.
2. Rhopalopsis aggregatum (W. & C.). No. 1427.
3. Rhopalopsis Angolense (W. & C.). No. 1519.

4. Rhopalopsis clavus (Fr.).
5. Rhopalopsis confusum (B. & C.).
6. Rhopalopsis micropus (Berk.). No. 1491.
7. Rhopalopsis congestum (B. & Br.). No. 1402.

b. Stroma multipartite.

8. Rhopalopsis cetrarioides (W. & Curr.). No. 1489.
9. Rhopalopsis lichenoides (B.).
10. Rhopalopsis Puiggarii (Speg.). No. 1232.
11. Rhopalopsis contracta (Speg.). No. 1233.
12. Rhopalopsis Kurziana (Curr.). No. 1429.
13. Rhopalopsis microcephala (Mont.). No. 1256.
14. Rhopalopsis xylarioides (Speg.). No. 1490.

The figures on the plates (162 to 171) are all numbered to correspond with our revised arrangement. Sporidia magnified uniformly about 380 diam. These plates will follow in successive numbers of "Grevillea."

ADDITIONS TO THE LICHEN-FLORA OF GREAT BRITAIN.

Beyond the list of lichens new to Great Britain, since the publication of "Leighton's Lichen-Flora," 1879, given us by the Rev. J. M. Crombie, in the "Journal of Botany," Sept., 1882, I beg to record the following, most of which have been examined and certified by Dr. Nylander :—

Sirosiphon ocellatus (*Dillw.*), *Ktz.*
On wet rocks at the foot of Bowness Knot, Ennerdale, Cumberland, 1881.

Lecanora citrina, *Hffm.*
Great Orme's Head, 1881, J. E. Griffith.

Lecanora subradiosa, *Nyl.*
On walls, East Allendale, Northumberland, 1881.

Lecanora galactina, *Ach.* Forma ferrotincto.
On slaty rocks, Lamplugh, Cumberland, 1881. Thallus thin, scattered, verrucose, ferruginous.

Lecidea enterochlora, *Tayl.* Forma tuberculuta.
On rocks, St. Bees, Cumberland, 1880. Thallus rimulosa, or verrucoso-diffract. Apothecia more or less confluent, convex, immarginate, tuberculose.

Lecidea Bouteillei, *Desmaz.* Forma rubicata (Cro.), Nyl.
On *Ulex Europæus*, by the roadside between Seascale and Gosforth, Cumberland, 1881.

Lecidea plumbina (*Anzi.*), *Nyl.*
Parasitic on the thallus of *Pannaria plumbina*, (Lightf.) Borrowdale roadside, Keswick, Cumberland, 1881.

W. Johnson.

RE-APPEARANCE OF CYCLODERMA.

By M. C. Cooke.

In the seventh volume of "Linnæa," now fifty years ago, Klotsch described two genera of Fungi, both of which appear to have been unknown to, and puzzled mycologists down to the present day. The first of these was *Testicularia*, of which the original specimens, with the name in Klotsch's own handwriting, are still extant in the Royal Herbarium at Kew. Whilst looking over a set of Ellis's North American Fungi (exsiccati) we found there a species called by Peck *Milleria herbatica*, corresponding so exactly to the figure and diagnosis by Klotsch that it seems scarcely pardonable that these should have been overlooked, and a new genus and species constructed. But so it is; *Milleria herbatica*, Peck, is no other than *Testicularia cyperi*, Klotsch, and both from the same locality.

The other genus is *Cycloderma*, which pertains to the Gasteromycetes. It was figured, and thus described in "Linnæa":—

"Peridium duplex, exterius coriaceum, molle, interius discretum papyraceum tenuissimum. Columella scyphiformis, centro peridii interioris adnata. Capillitium radiatum, columellam et peridium interius jungens, sporis minutis, nudis inspersum. Radiculosum, stipite nullo."

Then follows the species *Cycloderma Indicum*, from the West Indies.

Down to the present time, no mycologist seems to have met with a fungus, related to *Lycoperdon* and *Scleroderma*, which corresponded to the above description,* and the genus itself began to be regarded almost with doubt.

Very recently we received from our correspondent, A. P. Morgan, of Ohio, a Gasteromycete which had puzzled our transatlantic friends, and at once we recognised in it the long lost *Cycloderma*, by the distinct columella and the radiating capillitium. This, however, is not the precise species described by Klotsch, but closely allied to it. Externally it resembles some such a *Lycoperdon* as *L. pyriforme*, but is firmer to the touch, and smooth. There is no appearance of somewhat obscure scales, as in *C. indicum*, and the apex, instead of being depressed, is obtusely papillate, or umbonate. It may be thus described:—

Cycloderma Ohiensis, *Cke. & Morg.*

Subglobosum, album, læve. Peridium glabrum, coriaceum, superne umbonatum, inferne radicoso-fibrosum. Columella sub-

* Unless the species named by Montague, *Cycloderma Weddellii*, can be excepted.

cylindrica, æqualis, capillitioque radiante alba. Sporis minutissimis, globosis hyalinis.

On the ground. Ohio, U.S.

About an inch in diameter, or less, columella two-thirds the height of the peridium, wholly white within.

The double peridium is very distinct, especially as the individual advances in age. The outer peridium is composed of rather coarse, irregular, contorted fibres, closely interwoven. The capillitium is an exceedingly delicate membrane, much folded, and plicate. The spores are globose, hyaline, and very minute. We cannot say how the spores escape, whether by rupture of the apex, since the specimens are not old enough to determine, nor yet if they acquire colour when more mature. These are points to be determined hereafter. They were found growing several together on the bare ground.

The re-discovery of this old genus is to us of far more interest than a score of new genera of the modern Padovian type, and, in conjunction with *Testicularia*, attests the accuracy of Klotsch's observations, which were not always so fortunate with Phanerogamia.

For comparison we give a copy of his sketch of the original species on which the genus was founded.

PLATE 160. Figs. 1-2.—*Cycloderma indicum*, after figures by Klotsch.
Fig. 3.—*Cycloderma Ohiensis*, natural size.
Fig. 4.—Section.
Fig. 5.—Portion of section showing double peridium.
Fig. 6.—Capillitium and spores × 400.
Fig. 7.—Portion of capillitium denuded of spores × 400.
Fig. 8.—Spores × 400.
Fig. 9.—Threads of outer peridium × 400.
Fig. 10.—Individual with young specimens at the base.

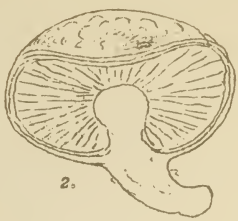
DOTHIDEA FROM LAKE NYASSA.

The following foliicolous *Dothidea*, collected by Thomson, has not yet been described:—

Dothidea Pentanisiæ, *Cooke.* Amphigena. Maculis suborbicularibus (1 cm.), brunneis. Peritheciis convexis, atris, nitidis, subrugosis, in maculas congestis. Ascis elliptico-clavatis, latis. Sporidiis ellipticis, uniseptatis, medio constrictis, loculo inferiore tenuiore, fuligineis (·018-·02 × ·006 mm.).

On leaves of *Pentanisia?* Lake Nyassa. (Thomson.)

1.



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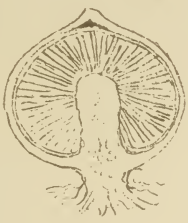

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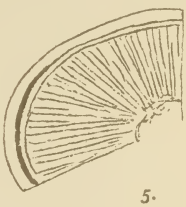

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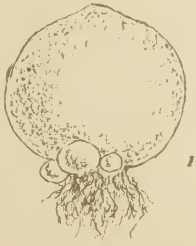
7.

8.

6.

9.



10.

AUSTRALIAN FUNGI.

By M. C. Cooke. (*Continued from p.* 65.)

ÆCIDIOMYCETES.

Ord. I. **PUCCINIÆI.**

Gen. 1. Rœstelia, *Rebent.*

Rœstelia polita, *Berk. Linn. Journ.* xiii., 174.
On *Muhlenbeckia Cunninghamii.* Victoria.

Gen. 2. Æcidium. *Pers.*

Æcidium Ranunculacearum, *DC. Berk. Linn. Journ.* xiii., 173.
On *Ranunculus.* Tasmania, Port Philip, Victoria, Falkland Islands.

Æcidium Goodeniacearum, *Berk. Linn. Journ.* xiii., 173.
On *Selliera.* S. Australia, Victoria.

Æcidium Lobeliæ, *Thum.* } vide *Puccinia.*
Æcidium microstomum, *Berk.* } *aucta* Müll.

Æcidium Senecionis, *Desm. Ann. Sci. Nat.,* 1836, vi., 244.
(*Æcidium compositarum,* DC., var. *Senecionis.*)
On *Senecio.* Victoria.

Æcidium apocynatum, *Schwz. Berk. in Linn. Trans. Ser.* 2, *vol.* i, *p.* 407.
On *Tabernemontana.* Queensland.

Æcidium soleniiforme, *Berk. in Fl. Tasm.* ii., *p.* 270.
On *Goodia latifolia.* Tasmania.

Æcidium cystoseiroides, *Berk. in Fl. Tasm.* ii., *p.* 270.
On *Opercularia.* Tasmania.

Æcidium veronicæ, *Berk. in Herb. No.* 5202.
Sparsum, semi-immersum, fimbriato-marginatum.
On *Veronica.* Australia (Müller).
Specimens are old and discoloured, and the spores are dispersed.

Æcidium cymbonoti, *Thum. in Müll. Supp. Phyt. Austr., p.* 96.
Victoria. (No reference given to diagnosis.)

Æcidium callixenis, *Berk. in Herb. No.* 5163.
On *Callixene marginata.* Falkland Islands.

Gen. 3. Cronartium. *Fr.*

Cronartium asclepiadeum, *Fries. Obs.* i., 220.
On *Jacksonia scoparia.* Queensland.

Gen. 4. Puccinia. *Pers.*

Puccinia malvacearum, *Mont. Fl. Club.* viii., 43.
On *Malva rotundifolia,* and *Athœa rosea.* Victoria.

Puccinia Dichondræ, *Berk. Linn. Journ.* xiii., 173.
Victoria.

Puccinia prunorum, *Link. Sp.* ii., 82.
Victoria.

Puccinia aucta, *Müll. Linn. Journ.* XIII., 173.
I. *Æcidium microstomum*, Berk. Linn. Journ. xiii., 173.
On *Lobelia pedunculata.*
Æcidium Lobeliæ, Thum. Grev IV, 75. (Victoria.)
II. *Uredo Lobeliæ*, Thum. (Victoria.)
III. *Puccinia aucta.* Müll. l. c.
On *Lobelia anceps.* S. Australia, Victoria.

Puccinia Chondrillæ, *Corda. Icon.* IV., *f.* 46.
II. *Uredo cichoracearum.* DC.
III. *Puccinia chondrillæ.* Corda.
S. Australia, Victoria, N. S. Wales.

Puccinia graminis, *Pers. Disp. Fung.*, 39.
II. *Uredo linearis.* Pers.
III. *Puccinia graminis.* Pers.
On grasses. S. Australia, Victoria, N. S. Wales, Queensland.

Puccinia straminis, *DeBary Ann. Sci. Nat.*, 1866.
II. *Uredo rubigo-vera.* DC.
III. *Puccinia straminis.* Fckl.
On grasses. S. Australia, Victoria, N. S. Wales.

Gen. 5. UROMYCES. *Lev.*

Uromyces Betæ, *Kuhn. in Bot. Zeit.*, 1869, *No.* 450.
II. *Uredo Betæ. Pers. syn.*
On beet leaves. Victoria.

Uromyces puccinioides, *Berk. & Mull Linn. Journ.* XIII., 173.
I. *Æcidium Goodeniacearum*, B. (?).
III. *Uromyces puccinioides.* Berk. l. c.
On *Goodenia.* S. Australia.

Gen. 6. MELAMPSORA. *Cast.*

Melampsora Lini, *Tul. Ann. Sci. Nat.*, 1854, ii.
On *Linum.* S. Australia, Victoria, N. S. Wales.

Melampsora phyllodiorum, *B. & Br.*
Queensland.

Gen. 7. UREDO. *Pers.*

Uredo restionum (*Nees.*), *Müll. Supp. Phyt. Austr.*, *p.* 96.
W. Australia.
We have no knowledge of this species.

Uredo angiosperma, *Thüm. in Müll. Supp. Phyt. Austr.*, *p.* 96.
W. Australia. (No reference to diagnosis.)

Uredo Maydis, *DC. Fl. Fr.* VI., 77. *Müll. in Supp. Phyt. Austr.*, *p.* 96.
Queensland.
This is an *Ustilago*, if the species of De Candolle, but we have no knowledge of Australian specimens.

Uredo antarctica, *Berk. Crypt. Antarct.*, *p.* 58.
On *Luzula.* Campbell Islands.

Gen. 8. CYSTOPUS. *Lev.*

Cystopus candidus, *Lev. in Orb. Dict.* XII., 787.
On *Cruciferæ.* Victoria.

Ord. II. **USTILAGINEI**, *Tul.*

Gen. 1. Ustilago. *Lamk.*

Ustilago carbo, *Tul. Mem. Ustil., p.* 78 (*U. segetum. Ditm.*).
Queensland.

Ustilago maxmorata, *Berk. Linn. Journ.* xiii., 174.
Mt. Gambier, S. Australia, Victoria.

Ustilago axicola, *Berk. Ann. Nat. Hist.* 1852, *No.* 55.
Queensland.

Ustilago Candollei, *var.* **Berkeleyana**, *Tul. Mem. Ustil., p.* 94.
Australia.

Ustilago pilulæformis, *Berk. Hook. Journ. Bot.* ii., 523.
Victoria.

Ustilago Muelleriana, *Thum. Myc. Univ., No.* 623.
Victoria.

Ustilago bullata, *Berk. Fl. N. Zeal.* ii., 196, *t.* 106, *f.* 12.
River Murray, S. Australia, Victoria, N. S. Wales.

Ustilago bromivora, *Waldh. Ustilag., p.* 215.
E. Australia, Murray River, S. Australia, Victoria, N. S. Wales.

Ustilago utriculosa, *Tul. Mem. sur les Ust., p.* 102.
Gipps Land, River Tambo.

Gen. 2. Sorosporium. *Rud.*

Sorosporium eriachnis, *Thum. Müll. Supp. Phyt. Austr., p.* 97.
Queensland.

Sorosporium Muelleri, *Thum. Müll. Supp. Phyt. Austr., p.* 97.
Victoria.

We have no reference to diagnoses of these species, which are unknown to us.

Gen. 3. Thecaphora. *Fing.*

Thecaphora globuligera, *B. & Br. Linn. Trans.*, 1879.
Queensland.

Thecaphora leptocarpi, *Berk. Linn. Journ.* xviii., 388.
On *Leptocarpus tenax*. Wilson's Promontory.

Gen. 4. Urocystis. *Rabh.*

Urocystis solida (*Berk.*). *Waldh. Ustilag., p.* 236.
Tasmania.

Gen. 5. Tilletia. *Tul.*

Tilletia caries, *Tul. Mem. Ustil., p.* 113.
S. Australia, Victoria, Tasmania, N. S. Wales, Queensland.

DISCOMYCETES.

Ord. I. **HELVELLACEI**, *Fr.*

Gen. 1. Morchella. *Dill.*

Morchella conica (*Pers.*), *Cooke, Myco., t.* 81, *f.* 315.
Victoria, Tasmania, Grampians, Upper Murray River, Macquarrie River.

Morchella semilibera (*DC.*), *Cooke, Myco., t.* 85, *f.* 321.
Victoria, N. S. Wales.

Gen. 2. Helvella. *Fr.*

Helvella monachella, *Fr. Sys. Myc.* II., 18.
Tasmania.

Gen. 3. Leotia. *Fr.*

Leotla lubrica (*Pers.*), *Cooke, Myco., t.* 44, *f.* 171.
Victoria, Tasmania.

Gen. 4. Mitrula. *Fr.*

Mitrula vinosa (*Berk.*), *Cke. Myco., t.* 46, *f.* 181.
Tasmania.

Gen. 5. Geoglossum. *Pers.*

Geoglossum Muelleri, *Berk. Cke. Myco., t.* 1, *f.* 2.
Australia.

Geoglossum Walteri, *Berk. Cke. Myco., t.* 1, *f.* 4.
Victoria.

Geoglossum hirsutum, *Pers. Cke. Myco., t.* 1, *f.* 3.
Victoria.

Geoglossum glabrum, *Pers. Cke. Myco., t.* 3, *f.* 1.
Victoria, Queensland.

Geoglossum Peckianum, *Cke. Myco., t.* 2, *f.* 5.
Australia.

Gen. 6. Peziza. *Dill.*

Sub.-gen. 1. Acetabula. *Fr.*

Peziza cinereo-nigra, *B. & Br. Linn. Trans. Ser.* 2, *vol.* I, *p.* 404, *t.* 46, *f.* 16-18.
Queensland.

Sub.-gen. 2. Tarzetta. *Cke.*

Peziza alutæcolor, *Berk. Cooke, Myco., t.* 50. *f.* 198.
N. S. Wales.

Sub.-gen. 3. Trichoscypha. *Cke.*

Peziza tricholoma, *Mont. Cke. Myco, t.* 51, *f.* 202.
Daintree River.

Sub.-gen. 4. Otidea. *Fckl.*

Peziza hirneoloides, *Berk. Cke. Myco., t.* 56, *f.* 220.
Victoria.

Sub.-gen. 5. Cochlearia. *Cke.*

Peziza aurantia, *Vahl. Cke. Myco., t.* 52, *f.* 203.
Victoria, Tasmania, Richmond River.

Peziza cochleata, *Bull. Cke. Myco., t.* 54, *f.* 212.
S. Australia, Victoria, Tasmania.

Peziza Drummondi, *Berk. Cke. Myco., t.* 56, *f.* 219.
W. Australia.

Peziza badia, *Pers. Cke. Myco., t.* 57, *f.* 226.
S. W. Australia.

Sub.-gen. 6. Discina. *Fr.*

Peziza repanda, *Wahl. Cke. Myco., t.* 62, *f.* 240.
Victoria, N. S. Wales.

Peziza lumbricalis, *Cke. Grevillea,* viii., 61.
Victoria.

Sub.-gen. 7. Geoscypha. *Cke.*

Peziza Thozetii, *Berk. Linn. Journ.,* xviii., *p.* 388.
Queensland.

Peziza vinoso-brunnea, *B. & Br. Linn. Trans. Ser.* 2, *vol.* i. *p.* 404, *t.* 45, *f.* 11-13.
Queensland.

Peziza recurva, *Berk. Cke. Myco., t.* 108.
Tasmania.

Sub.-gen. 8. Pyronema. *Car.*

Peziza melaloma, *A. & S. Cke. Myco., t.* 17, *f.* 67.
W. Australia.

Sub.-gen. 9. Humaria. *Fr.*

Peziza Mulleri, *Berk. Cke. Myco., t.* 7, *f.* 26.
Tasmania.

Peziza rutilans, *Fr. Cke. Myco., t.* 15, *f.* 57.
W. Australia, S. Australia.

Peziza fusispora, *Berk. Cke. Myco., t.* 8, *f.* 32.
Tasmania.

Peziza carbonigena, *Berk. Cke. Myco., t.* 8, *f.* 29.
Tasmania.

Peziza Archeri, *Berk. Fl. Tasm.* ii., 274.
Tasmania.

Peziza scatigena, *B. & C. Cke. Myco., t.* 18, *f.* 72.
Queensland.

Sub.-gen. 10. Sarcoscypha. *Fr.*

Peziza bulbosa, *Hedw. Cooke, Myco., t.* 48. *f.* 189.
Victoria.

Peziza coccinea, *Jacq. Cke. Myco., t.* 25, *f.* 95.
Tasmania.

Peziza splendens, *Quelet. Cke. Myco., t.* 112, *f.* 400.
S. W. Australia.

Sub.-gen. 11. Scutellinia. *Cke.*

Peziza scutellata, *Linn. Cke. Myco., t.* 34, *f.* 131.
W. Australia, Victoria, Tasmania, N. S. Wales, Queensland.

Peziza margaritacea, *Berk. Cke. Myco., t.* 34, *f.* 132.
Australia.

Peziza Dalmeniensis, *Cke. Myco., t.* 39, *f.* 153.
Victoria.

Peziza stercorea, *Pers. Cke. Myco., t.* 38, *f.* 147.
Tasmania.

Sub.-gen. 12. Dasyscypha. *Fr.*

Peziza glabrescens, *Cke. & Phil. Grev.* viii., 62.
On *Rhipogonum.* Melbourne.

Peziza lanariceps, *Cke. & Phil, Grev.* viii., 62.
On *Rhipogonum.* Melbourne.

Peziza virginea, *Batsch. Elench., p.* 125.
Tasmania.

Peziza lachnoderma, *Berk. Fl. Tasm.* ii., 274.
Tasmania.

Peziza hyalina, *Pers. Syn., p.* 655.
Tasmania.

Peziza epitephra, *Berk. Fl. Tasm.* ii., 275.
On fallen leaves. Tasmania.

Peziza arachnoidea, *Berk. Fl. Tasm.* ii., 275.
On dead wood. Tasmania.

Sub.-gen. 13. Hymenoscypha. *Fr.*

Peziza firma, *Pers. Syn., p.* 658.
Tasmania.

Peziza eucalypti, *Berk. Fl. Tasm.* ii., 274, *t.* 183, *f.* 13.
Tasmania.

Peziza ceratina, *Berk. Fl. Tasm.* ii., 275.
Tasmania.

Sub.-gen. 14. Mollisia. *Fr.*

Peziza cinerea, *Batsch. Cont.* 1, *p.* 196, *f.* 137.
Tasmania.

Sub.-gen. 15. Patellea. *Fr.*

Peziza Adamsoni, *Berk. Linn. Journ.* xiii., *p.* 176.
Victoria.

Gen. 7. Helotium. *Fr.*

Helotium Berggreni, *Cke. & Phil. Grev.* viii., 63.
Victoria.

Helotium citrinum, *Hedw. Musc.* ii., *p.* 28.
Tasmania.

Helotium nigripes, *Fr. Sys. Myc.* ii., 132.
Tasmania.

Helotium pateræforme, *Berk. Fl. Tasm.* ii., 276.
Tasmania.

Helotium claroflavum, *Grev. Fl. Ed., p.* 424.
Victoria.

Helotium byssigenum, *Berk. Fl. Tasm.* ii., 275.
On dead sticks. Tasmania.

Helotium gratum, *Berk. Fl. Tasm.* II., 275.
On dead wood.

Helotium terrestre, *B. & Br. Proc. Linn. Soc. N. S. W.*, 1880, *p.* 89.*
Queensland.

Gen. 8. CHLOROSPLENIUM. *Tul.*

Chlorosplenium æruginosum, *Tul. Fung. Carp.* III., 187.
Victoria, Queensland.

Chlorosplenium omniverens, *Berk. Fl. Tasm* II., *p.* 275.
Tasmania.

Gen. 9. PHILLIPSIA. *Berk.*

Phillipsia subpurpurea, *B. & Br. Proc. Linn. Soc. N. S. W.*, 1880, *p.* 88.
Queensland.

Phillipsia polyporoides, *Berk. Linn. Journ.* XVIII., 386.

ORD. II. **BULGARIACEI.** *Fr.*

Gen. 1. CYTTARIA. *Berk.*

Cyttaria Gunnii, *Berk. Hook. Lond. Journ.*, 1848, 576.
Tasmania.

Gen. 2. ASCOBOLUS. *Pers.*

Ascobolus furfuraceus, *Pers. Syn.*, *p.* 672.
On dung. W. Australia.

Ascobolus Archeri, *Berk. Fl. Tasm.* II., 276.
On charcoal. Tasmania.

Ascobolus australis, *Berk. Linn. Journ.* XVIII., 389.
Rockhampton.

Gen. 3. BULGARIA. *Fr.*

Bulgaria sarcoides, *Fr. Sys. Myc.* II., *p.* 168.
Victoria, Tasmania.

Gen. 4. OMBROPHILA. *Fr.*

Ombrophila violacea, *Fr. Sum. Veg. Scan.*, *p.* 357.
Victoria.

ORD. III. **PATELLARIACEI.** *Fr.*

Gen. 1. PATELLARIA. *Fr.*

Patellaria Tasmanica, *Berk. Fl. Tasm.* II., 276.
On dead wood. Tasmania.

Gen. 2. CENANGIUM. *Fr.*

Cenangium lichenoideum *B. & Br. Linn. Trans. Ser.* 2, *vol.* I, *p.* 404, *t.* 45, *f.* 9.
Queensland.

* A number of names are recorded in this Journal, but without diagnoses, and therefore absolutely useless.

Gen. 3. URNULA. *Fr.*

Urnula rhytidea (*Berk.*), *Fl. N. Zeal.* II., 200, *t.* 105, *f.* 6.
Richmond River.

ORD. IV. **STICTIEI.** *Fr.*

Gen. 1. STICTIS. *Pers.*

Stictis radiata, *Pers. Obs.* II., 73.
Tasmania.

ORD. V. **HYSTERIACEI.** *Fr.*

Gen. 1. HYSTERIUM. *Tode.*

Hysterium elongatum, *Wahl. Flor. Lapp., p.* 528.
W. Australia.

Hysterium tardum, *Berk. Fl. Tasm.* II., 281.
Tasmania.

Hysterium pulicare, *Pers. Syn., p.* 98.
Clarence River.

Gen. 2. GLONIUM. *Mühl.*

Glonium stellatum, *Mühl. Cat. Am.*, 101.
Tasmania.

ORD. VI. **TUBERACEI.** *Fr.*

Gen. 1. MYLITTA. *Fr.*

Mylitta australis, *Berk. Ann. Nat. Hist.* III., 325.
Victoria, Tasmania, N. S. Wales, Queensland.

Mylitta pseudacaciæ, *Berk.*
Tasmania.

NOTES ON VAUCHERIA.

The structure and development of *Vaucheria* has been so often and so well studied and illustrated that the observation of any new features is quite unexpected, and will probably encounter some opposition, or at least excite some doubt. One of the generally accepted conclusions is, that the threads of *Vaucheria* are continuous throughout their length, only presenting septa at the time of reproduction when the short branchlets are isolated for that purpose. At all events, successive septation of the main filament does not appear to have been recognised by any one who has written upon this family. Of its development it is stated that "the lower part of the germ cell grows out into a branched, pale-coloured root, and the upper part is elongated in a still more considerable degree into a stem-like filament, which grows on and on by apical development until its growth is finally arrested by fruc-

tification." That is, in effect, the recognition of *Vaucheria* as unicellular.

During the keen weather at the commencement of the present winter, Mr. Frederic Bates of Leicester collected some filaments of *Vaucheria* from under the ice, and upon submitting them to the microscope discovered that the main threads were much divided by septa. He sent me portions of these threads mounted, and as there was no positive evidence of the filaments belonging to *Vaucheria*, at once I was prompted to reject his conclusion, and affirm that some filaments of *Cladophora* must have been mixed with the *Vaucheria*, for not only were the threads distinctly septate, but there was an accumulation of plasma in the cells, and an appearance as of differentiation. Subsequently, however, all doubts were removed, for I obtained a part of the gathering, and saw the oogonia and antheridia so characteristic of *Vaucheria* seated on filaments which, at a short distance, were septate in a similar manner to the previously examined thread. The whole gathering showed a great preponderance of septate filaments, divided completely, and somewhat constricted at the joints, some of the cells being two, and others three times, or more the diameter, in length, filaments which did not bear oogonia, or only one or two, being most divided. Approaching the subject with a strong feeling adverse to the production of veritable septa, every precaution was taken, I think, to prevent any misinterpretation, and I was compelled against my first impression to accept the fact that the filaments of this undoubted *Vaucheria* had become divided off into cells at the period of fructification.

The appearance of these cells in some sense differed from continuous threads, in that the plasma was collected towards one end, or the centre of the cells, and in many instances was dense, apparently mingled with oval bodies as if undergoing, or had undergone, differentiation. It must be stated that the filaments were very much coated with small *Diatomaceæ* and other minute Algæ, so that the view was obstructed.

The question which at once suggested itself was—as to the object of this septation. And here it may be suggested that the single asexual zoospore, produced in small numbers, and the single oospore produced in the oogonium, always has appeared to be a very sparse provision for the reproduction of the species, as compared with the large number of zoogonidia which are produced in every fertile cell of *Cladophora* and *Chætomorpha*. Even in the *Botrydiaceæ* the multiplex modes of reproduction are strongly in contrast with what has been known as the reproductive process in *Vaucheria*. For these reasons there does not appear to be any improbability in the supposition that zoogonidia may be produced in *Vaucheria*, in cells divided off for that purpose. The formation of the cells, the accumulation of the cytioplasm, acquiring density and, as I strongly believe, differentiation, lend strength to the probability that reproduction by zoogonidia may

yet be discovered in *Vaucheria*. We failed, both Mr. Bates and myself, to detect any active zoogonidia, but we have both seen bodies of a definite form, resembling zoogonidia at rest, in the cells; and in the water in which the gathering was kept were found similar bodies outside the threads, some in a state of germination, as shown on our plate. It must not be supposed that we affirm, or have direct evidence to affirm, either that zoogonidia *are* produced in the cells, or that the free germinating bodies are escaped zoogonidia, but these circumstances are mentioned as showing how necessary it is that *Vaucheria* should again become the subject of investigation, for the purpose of discovering, beyond doubt, what is the cause and true interpretation of this unsuspected septation of the filament.

M. C. Cooke.

Plate 161. Fig. 1.—Portion of filament of *Vaucheria* bearing oogonia and antheridium.

Figs. 2, 3, 4.—Portions of filaments divided into cells by transverse septa, the contents accumulated, and undergoing differentiation at *a*, *a*.

Figs. 5-6.—Cells from the water in which the *Vaucheria* was kept, in process of germination.

Note.—The septation above described differs materially from that detailed by Stahl in "Bot. Zeit.," 28 Feb., 1879, called by him the *Gongrosira* form, from its apparent identity with the *Gongrosira dichotoma*, Kutz.

NORTH AMERICAN FUNGI.

By M. C. Cooke.

Polyporus (Anodermei) leucospongia, *Cke. & Hark.*

Albus; pileo spongioso, mollissimo pulvinato, gibbo, margine tenui, incurvo; poris subangulatis, æqualibus ($\frac{1}{3}$-$\frac{1}{2}$ mm. diam.), dissepimentis tenuibus, fragilibusque, albis.

On trunks. California.

Pileus 3 to 4 inches by 1 to $1\frac{1}{2}$ inches; not unlike in some points *Polyporus labyrinthicus* Schwz. but spores much smaller, and not toothed or lacerated, whole substance very soft and spongy.

Hymenochæte purpurea, *Cke. & Morg.*

Læte purpurea, tota resupinata, spongiosa; margine pallidiore, fibroso-radiato, hymenio velutino, contexto lilacino-pallido; setis longioribus, leniter asperulis.

On bark. Ohio, U.S. (A. P. Morgan.)

This agrees with two or three species only in its spongy texture, and in the facility with which the long setæ are isolated, adherent and continuous with their pedicels. Setæ ·1 to ·14 mm. long, with pedicels of equal length. Its nearest ally is *Hymenochæte crassa*, Lev. More spongiose, with the setæ twice as long as in *H. scabriseta*, and of a different colour.

Hymenochæte scabriseta, *Cke. in Rav. Fungi Amer., No.* 717.

Resupinata, purpureo-fusca, molle, sub-spongiosa; margine tenuiore pallidiori, demum leniter libero; Hymenio velutino, lævi,

VAUCHERIA.

setis elongatis, clavatis, stipitatis, superne asperatis (·1 mm. long, stipite incluso).

On bark of *Myrica*. Darien, Georgia.

The seti are stipitate, as in the spongy species generally, with the stem equal in length to the scabrous head.

Cycloderma Ohiensis, *Cke. & Morg., for diagnosis see Grevillea* XI., *p.* 95.

Geoglossum Farlowi, *Cke.*

Hirsutum, nigrum, clavula elongata compressa, sicco subplicata. Ascis cylindrico-clavatis. Sporidiis inordinatis, linearibus, leniter curvulis, 3-septatis, brunneis (·07 × ·005 mm.). Paraphysibus ut in *G. hirsuto*.

Amongst grass.

It is very much a matter of opinion whether this, and *G. Walteri* C., and *G velutipes* Pk. should be regarded as varieties of *G. hirsutum*, or as distinct species.

Cenangium rubiginosum, *Cke. in Rav. Fungi Amer., No.* 635.

Sparum vel gregarium, rubiginosum; cupulis erumpentibus, coriaceis, breviter stipitatis, glabris, disco pallidiore. Ascis cylindraceis. Sporidiis ellipticis, vel utrinque leniter acuminatis, hyalinis, nucleatis (·016 × ·008 mm.).

On *Ostrya Virginica*.

Stictis strobilina, *Cke. in Rav. Fungi Amer., No.* 636.

Sparsa, pallida, in strobilos immersa. Cupulis (1-3 mm. long), sublanceolatis, primitus marginatis, ochraceo-pallidis, siccitate cinereis. Ascis cylindrico-clavatis. Sporidiis arcte ellipticis, (·008-·013 × ·004-·005 mm.). continuis, nucleatis, hyalinis.

On scales of cones of *Pinus Australis*.

Ascomyces Quercūs, *Cke.*

Maculis orbicularibus, brunneis, bullatis. Ascis hypophyllis, breviter claxatis. Sporidiis minutis, numerosissimis, ellipticis, hyalinis (·005 mm. long).

On leaves of *Quercus cinerea*. S. Carolina.

Hysterium (Hysterographium) stygium, *Cke.*

Superficiale, sparsum; peritheciis lanceolatis, atris, nitidis, glabris (½-1 mm. long). Ascis clavatis. Sporidiis ellipticis, ovatisve, multiseptatis, muriformibus, fuscis (·03 × ·013 mm.).

On bark of *Quercus*, &c.

Hysterium lineolatum, *Cke.*

Sparsum vel gregarium, erumpens, lineolatum. Peritheciis angustis, obtusis, atris, longitudinaliter striatulis, demum subhiantibus. Ascis clavatis. Sporidiis fusoideo-ellipticis, multiseptatis, muriformibus, hyalinis (·025-·035 ·008-·015 mm.). Paraphysibus sursum incrassatis, brunneis.

On stumps of oak. Texas, Florida, New Jersey.

Hysterium ovatum, *Cke. in Rav. Fungi Amer., No.* 321.

Gregarum, superficiale. Peritheciis ovatis, utrinque obtusis, atris, longitudinaliter striatis, labiis arcte conniventibus. Ascis subcylindraceis. Sporidiis sublanceolatis, utrinque rotundatis, ·015-·018 × ·008 mm., hyalinis, nucleatis, demum pseudo-triseptatis.

On old oak stumps.

Nectria (Calonectria) chlorinella, *Cooke in Rav. Fungi Amer., No.* 736.
Sparsa, superficialis, globosa, citrina. Peritheciis lanato-tomentosis, papillatis, ostiolo nudo. Ascis clavatis. Sporidiis elongato-ellipticis, utrinque obtusis, rectis vel sub-curvulis, 1-3 septatis, hyalinis (·018-·02 × ·005 mm.).
On bark of *Ulmus Americanus,* Seaboard of S. Carolina.

Nectria rimincola, *Cooke in Rav. Fungi Amer., No.* 644.
Gregaria, vel subsparsa, superficialis, coccinea, in rimis corticis nidulantibus ; Peritheciis subglobosis, dein depressis, glabris, subnitidis (⅓-mm.). Ascis cylindraceis. Sporidiis ellipticis, uniserialibus, uniseptatis, hyalinis, nec constrictis (·012 × ·004 mm.).
In cracks of bark of *Liquidambar*, Seaboard of S. Carolina.

Nectria rhizogena, *Cooke in Rav. Fungi Amer., No.* 645.
Cæspitosa, erumpens, stromatica, aurantio-rubra, demum coccinea. Peritheciis subglobosis, glabris, vix papillatis (10-12) in cæspitulis parvis erumpentibus. Ascis cylindraceis. Sporidiis arcte ellipticis, uniseptatis, hyalinis (·008-·009 × ·003 mm.), conidiis tuberculariodeis, roseis (·005 × 002 mm.).
On roots of *Ulmus*. Seaboard of S. Carolina.
Clusters, 1 mm. diam.; perithecia, ⅙ mm. diam.

Nectria fimeti, *Cooke in Rav. Fungi Amer., No.* 646.
Gregaria, vel subsparsa, aureofulva. Peritheciis subglobosis, in stromate byssoideo aureo nidulantibus, superne nudis, glabris, inferne tomentosis. Ascis cylindraceis. Sporidiis ellipticis, continuis (·015 × ·008 m m.) hyalinis.
On cow dung. Aiken, S. Carolina.

Dothidea Tamaricis, *Cke. in Rav. Fungi Amer., No.* 668.
Erumpens. Pustulis atris, truncatis, suborbicularibus, cellulis (4-8) in stromate immersis; Ascis clavatis. Sporidiis inordinatis, elliptico-lanceolatis, hyalinis, continuis (·018 × ·008 mm.).
On branches of *Tamarix*. Aiken, S. Carolina.

Dothidea Baccharidis, *Cke. in Rav. Fungi Amer., No.* 738.
Erumpens. Pustulis atris, depressis, ovatis ellipticisve, cellulis in stromate immersis. Ascis clavatis. Sporidiis subellipticis uniseptatis, fuscis, loculo inferiori multo minori (·02 × ·012 mm.).
On branches of *Baccharis*. Seaboard of S. Carolina.

Melogramma (Botryosphæria) ficus, *Cke. in Rav. Fungi Amer., No.* 797.
Erumpens. Peritheciis minimis, obtusis, atris, opacis, in cæspitulis lineasque erumpentibus. Ascis clavatis. Sporidiis elliptico-lanceolatis, continuis, hyalinis (·025 × ·01 mm.).
On bark of *Ficus carica*. Aiken, S. Carolina.

Melogramma Callicarpæ, *Cke. in Rav. Fungi Amer., No.* 767.
This is in too imperfect a condition for diagnosis.

Diatrype Azedarachtæ, *Cke. in Rav. Fungi Amer., No.* 744.
Erumpens. Stroma atra, convexa, suborbicularis, intus concolor. Peritheciis compressis. Ascis clavatis. Sporidiis allantoideis, pallido-fuscis (·012 × ·003 mm.).
On branches of *Melia*. Seaboard of S. Carolina.

Valsa atomæspora, *Cke. in Rav. Fungi Amer., No.* 660.

Immersa. Peritheciis (4-6) subglobosis, atris, in ligno immersis, ostiolis elongatis, convergentibus, erumpentibus. Ascis minutis (·015 × ·005 mm.), clavato-lanceolatis. Sporidiis allantoideis, minutissimis (vix ·0025 mm. long. superantibus) hyalinis.

On *Cornus.* Seaboard of S. Carolina.

The fruit is the most minute of any species with which we are acquainted.

Valsa niphoclina, *Cke. in Rav. Fungi Amer., No.* 748.

Lineato-erumpens. Peritheciis ovatis, in stromate niveo nidulantibus, ostiolis brevibus, convergentibus, sulcatis, in lineas transversas erumpentibus. Ascis cylindrico-clavatis. Sporidiis allantoideis, hyalinis (·008 × ·002).

On bark of *Betula nigra.* Florence, S. Carolina.

Valsa tecta, *Cke. in Rav. Fungi Amer., No.* 747.

Tecta, inconspicua. Peritheciis circinatis, paucis, in corticem nidulantibus, ostiolis minimis, brevibus. Ascis clavatis. Sporidiis inordinatis, sublanceolatis, quadri-nucleatis, demum uniseptatis, hyalinis (·018 × ·005 mm.).

On bark of *Myrica.* Darien, Georgia.

This has nothing of the habit of a *Diaporthe,* as we comprehend that genus.

Byssosphæria corynephora, *Cke.*

Effusa, aterrima. Hyphis repentibus, septatis, ramulosis, ramulis assurgentibus, conidiis clavatis, infra longe attenuatis, fuscis, multi-septatis (9-11) superne truncatis (·15 × ·018 mm.). Peritheciis subglobosis, depressis, superne glabris, ad basim tomentoso intertextis. Ascis cylindrico-clavatis. Sporidiis lanceolatis, continuis, hyalinis (·02 × ·004 mm.).

On *Ostrya Virginica.*

Sphæria ceratotheca, *Cke. in Rav. Fungi Amer., No.* 677.

Superficialis, subiculo atro conidiifero nidulans. Peritheciis minimis, atris, opacis, hæmisphæricis ; Ascis lanceolatis, sursum acute cornuto-apiculatis. Sporidiis lanceolatis, triseptatis, hyalinis, (·025 × ·005 mm.), conidiis pluri-septatis, muriformibus, brunneis, (·045-·05 mm. long).

On culms of *Zea Mays.* Aiken, S. Carolina.

Ceratostoma hystricina, *Cke. in Rav. Fungi Amer., No.* 674.

Gregaria, subimmersa, demum emergens, subsuperficialisque. Peritheciis atrofuscis, globosis, tomentosis, rostellatis; ostiolis cylindricis, subflexuosis. Ascis cylindraceis. Sporidiis ellipticolanceolatis, hyalinis (·016-·018 × ·006 mm.).

On bark of *Ficus.* Aiken, S. Carolina.

Sphæria (obtectæ) uvæsarmenti, *Cke. in Rav. Fungi Amer., No.* 678.

Tecta, sparsa, vel subgregaria. Peritheciis globosis, atris, subprominulis. Ascis clavatis. Sporidiis lanceolatis, continuis, hyalinis, (·04 × ·008 mm.).

On twigs of *Vitis.* Aiken, S. Carolina.

Sphæria Baptisiæcola, *Cke. in Rav. Fungi Amer., No.* 680.
Tecta, punctiformis, caulicola. Peritheciis tenuis, minimis, vix prominulis, tectis. Ascis clavatis. Sporidiis biserialibus, sublanceolatis, uniseptatis, hyalinis (·015 × ·0035 mm.).
On *Baptisia leucantha.* Aiken, S.C.
Technically, this is perhaps a *Sphærella.*

Sphæria (Foliicolæ) hederæfolia, *Cke. in Rav. Fungi Amer., No.* 683.
Foliicola, gregaria. Peritheciis globosis, semi-immersis, atris. Ascis clavatis. Sporidiis elliptico-lanceolatis, vel clavatis, triseptatis, hyalinis (·02 × ·008 mm.).
On leaves of *Hedera helix.* Aiken, S. Carolina.

Sphærella (Læstadia) leucothöes, *Cke. in Rav. Fungi Amer., No.* 687.
On *Leucothöe.* Pinopolis, S. Car.
See "Journal of Botany," March, 1883.

Sphærella Taxodii, *Cke. Rav. Fungi Amer., No.* 686. *Journal of Botany, March,* 1883.
On *Taxodium distichum.* Seaboard, S. Carolina.

Sphærella cornifolia (*Schwz*), *Cke. in Rav. Fungi Amer., No.* 688. *Journal of Botany, March,* 1883.
On *Cornus florida.* Aiken, S. Car.

Sphærella populifolia, *Cke. Rav. Fungi Amer., No.* 689. *Journal of Botany, March,* 1883.
On *Populus angulatus.* Seaboard, S. Carolina.

Sphærella aquatica, *Cke. Rav. Fungi Amer., No.* 690. *Journal of Botany, March,* 1883.
On *Quercus aquatica.* Seaboard, S. Carolina.

Sphærella Prini, *Cke. in Rav. Fungi Amer., No.* 753. *Journal of Botany, March,* 1883.
On *Prinos glaber.* Pinopolis, S. Carolina.

Sphærella oleina, *Cke. in Rav. Fungi Amer., No.* 754. *Jouraal of Botany, March,* 1883.
On *Olea.* Darien, Georgia.

Sphærella convexula (*Schwz*), *Cke. in Rav. Fungi Amer., No.* 755. *Journal of Botany, March,* 1883.
On *Carya.* Aiken, S. Carolina.

Sphærella platanifolia, *Cke. Rav. Fungi Amer., No.* 756. *Journal of Botany, March,* 1883.
On *Platanus occidentalis.* Darien, Georgia.

Sphærella Gardeniæ, *Cke. in Journal of Botany, March,* 1883.
On *Gardenia florida.* Aiken, S. Car.

Sphærella Gordoniæ, *Cke. in Journal of Botany, March,* 1883.
Sphærella Gardeniæ, *Cke. in Rav. Fungi Amer., No.* 799.
On *Gordonia.* Darien, Georgia.
The above error in the Exsiccati should be corrected.

Sphærella lenticula, *Cke. in Rav. Fungi Amer., No.* 800. *Journal of Botany, March,* 1883.
On *Cerasus Caroliniana.* Aiken, S. Carolina.

Sphærella minimæpuncta, *Cke. in Rav. Fungi Amer., No.* 681. *Journal of Botany, March,* 1883.
On stems of *Gladiolus.* Aiken, S. Carolina.

Sphærella Californica, *Cke. in Journal of Botany, March,* 1883.
On grass. California (No. 1242).

Sphærella philochorta, *Cke. in Journal of Botany, March,* 1883.
On grasses. Maine.

ENUMERATION OF THE BRITISH CLADONIEI

(With their Arrangement, General Distribution in Great Britain and Ireland, and Reference to British Published Exsiccati).

By The Rev. J. M. Crombie, F.L.S.

Genus I. **PYCNOTHELIA** (*Ach.*).

1. **P. papillaria** (*Ehrh.*).—Exs. Leight. 208, Mudd 22, *Clad.* 80, Cromb. 121. Not uncommon in Great Britain and Ireland.—F. *molariformis* (Hffm.). Rare in S. England.

2. **P. apoda,** *Nyl.*—Rare in W. Ireland, Galway.

Genus II. **CLADONIA** (*Hffm.*).

A. **Phæocarpæ.**

a. *MACROPHYLLINÆ.*

3. **Cl. endiviæfolia** (*Dcks.*).—Exs. Dcks. Hort. Sic. 24. Apparently rare in S. England, and only sterile.

4. **Cl. alcicornis** (*Lghft.*).—Exs. Leight. 15, Mudd *Clad.* 1, Cromb. 122, Larb. *Cæsar.* 56. Not uncommon. A spadiceous state occurs at Lydd beach.—F. *gracilescens,* Cromb. "Laciniæ very narrow, much divided, podetia narrow, and narrowly scyphiferous." Rare in S. Wales.

5. **Cl. firma,** *Nyl.*—Exs. Larb. *Cæsar.* 57. Rare in the Channel Islands and S. England.

b. *MICROPHILLINÆ.*

† *Scyphophoræ.*

6. **Cl. pyxidata** (*L.*).—Exs. Mudd *Clad.* 6. General and common.—F. *lophyra* (Ach.). Rare in S.W. England and the S.W. Highlands.—F. *epiphylla* (Ach.). Rare in E. England.

var. **symphicarpa** (*Ach.*).—Sparingly in S.W. England and the S.W. Highlands.

var. **pocillum** (*Ach.*).—Rare in Britain, and not seen from Ireland.

var. **chlorophæa,** *Flk.*—Exs. Mudd *Clad.* 7-11, Leight. 399. General and not uncommon in Britain.—F. *lepidophora,* Flk. Apparently rare in England and in N.E. Scotland.—F. *myriocarpa* (Coëm.).—Exs. Larb. *Cæsar.* 58. Rare in the Channel Islands, S. and W. England, and amongst the S. Grampians.

7. **Cl. leptophylla** (*Ach.*).—Very rare in S. England.

8. **Cl. pityrea**, *Flk.*—Exs. Mudd *Clad.* 27-29, Larb. *Cæsar.* 8. Somewhat local in England, rare in the S.W. Highlands.—F. *hololepis*, Flk. (not Mudd Exs. 33 *s.n.*). Rare amongst the S. Grampians.

9. **Cl. acuminata** (*Ach.*).—Very local in the Highlands of Scotland and in Galway. From this

* **Cl. Lamarckii** (*Del.*), differs chiefly in the less decided reaction with *K*. Rare in the W. Highlands.

10. **Cl. cariosa** (*Ach.*).—Exs. Mudd *Clad.* 5. Rare in Britain and S.W. Ireland.

11. **Cl. fimbriata** (*L.*), including ff. *denticulata* (Flk.), *costata* (Flk.), *pterygota* (Flk.).—Exs. Mudd 8, *Clad.* 14, 15, 17, 18. General and abundant.

var. **conista** (*Ach.*).—Exs. Mudd *Clad.* 13. Local and rare in S.W. and N. England, and amongst the Grampians.—F. *exigua* (Huds.). Very rare in E. England.

var. **tubæformis** (*Hffm.*).—Exs. Mudd 7, Leight. 377. Sparingly in England and the Highlands.—F. *macra* (Flk.). Exs. Mudd *Clad.* 12. Local in England, the W. Highlands and S. Ireland.

var. **carneopallida** (*Flk.*).—Very rare in E. England.

* **Cl. fibula** (*Ach.*).—The type of this has not yet apparently been gathered in Britain.

var. **abortiva** (*Flk.*).—Local in N. England and the W. Highlands.

var. **subcornuta**, *Nyl.*—Exs. Mudd *Clad.* 19-21. Pretty general in Britain and Ireland.

var. **radiata** (*Schreb.*).—Exs. Mudd *Clad.* 23, Leight. 376. Somewhat local in Britain and Ireland.—F. *nemoxyna* (Ach.). Rare in N. England and amongst the S. Grampians.

11 *bis.* **Cl. gracilis** (*L.*) = CHORDALIS, *Flk.*—Exs. Leight. 296, Mudd 10, 11, *Clad.* 34, 37, Larb. Lich. Hb. 207. General and common.—F. *abortiva*, Schær.—Exs. Mudd *Clad.* 36. Local in N. England and the Highlands.—F. *aspera*, Flk.—Exs. Leight. 402. Rare in Central and N. England.

var. **hybrida**, (*Hffm.*).—Local amongst the Scottish Grampians.

* **Cl. gracillima**, *Norrl.*—Scarce in N. England and in N.E. Scotland.

12. **Cl. cornuta** (*L.*)—Rare amongst the Scottish Grampians.

13. **Cl. ochrochlora**, *Flk.*—Exs. Mudd *Clad.* 24-26. Local in England and the W. Highlands.—F. *ceratodes*, Flk.—Exs. Mudd *Clad.* 23. Seen only from N. England.

14. **Cl. verticillata** (*Hffm.*)—Exs. Mudd *Clad.* 3. Rather local in Britain, and rare in W. Ireland —F. *laciniolata*, Nyl. "Laciniæ elongated and narrower at the base, the scyphi laciniolose at the margins." Rare in S.W. England and the W. Highlands.

15. **Cl. cervicornis** (*Ach.*)—Exs. Mudd 9 in pt. General and not uncommon.—F. *stipata*, Nyl. Local in W. England and W. Ireland.

16. **Cl. sobolifera** (*Del.*).—Exs. Leight. 14, Mudd 9 in pt., *Clad.* 2, Larb. Lich. Hb. 322. Somwhat local in Britain and Ireland.

17. **Cl. macrophylla** (*Schær.*).—Local amongst the Scottish Grampians.

18. **Cl. degenerans,** *Flk.*—Extremely local and rare amongst the N. Grampians.—F. *haplotea* (Ach.). Local and scarce in the Highlands.—F. *granulifera*, Cromb. "Podetia densely verrucoso-granulose, simple or shortly branched above, obscurely scyphiferous." Only a single specimen gathered in Braemar.

var. **anomæa** (*Ach.*).—Apparently local and scarce in E. and S. England and in S. Scotland.

var. **hypophylla**, *Nyl.*—Exs. Mudd *Clad.* 18. As yet seen only from N. England. Since, however, the reaction is *K*+, it probably descends rather from *Cl. cervicornis.*

* **Cl. trachyna** (*Ach.*).—Very rare amongst the N. Grampians.—F. *subfurcata*, Nyl. Very local in Braemar.

†† *Ascyphæ.*

19. **Cl. turgida** (*Ehrh*).—Extremely rare amongst the N. Grampians.

20. **Cl. furcata,** *Hffm.* = SUBULATA (*L.*).—Exs. Mudd 16 in pt., *Clad.* 50, 51. Probably general and common.—F. *exilis,* Mudd.—Exs. Mudd *Clad.* 53. Sparingly in N. England and the Highlands.—F. *spinosa* (Huds.). Rare in England and S. Scotland.

var. **corymbosa** (*Ach.*).—Exs. Leight. 401. Local in England, the W. Highlands, and S. W. Ireland.

* **Cl. racemosa** (*Hffm.*).—Exs. Mudd *Clad.* 46, 47. Probably general and not uncommon.—F. *recurva* (Hffm.).—Exs. Mudd *Clad.* 48, 49. Very local in Britain, not seen from Ireland.

** **Cl. coralloidea** (*Ach.*), *Nyl.*—Exs. Mudd. 4. Rare in N. England.

21. **Cl. pungens** (*Ach.*).—Exs. Leight. 16, Mudd 16 in pt., *Clad.* 54, 55, Cromb. 123. General and common in England, rarely in Scotland and Ireland.—F. *foliosa*, Flk. Somewhat local in England.

* **Cl. muricata** (*Del.*).—Exs. Leight. 369. Local in S. and Central England, where a folioliferous state also occurs.

22. **Cl. crispata** (*Ach.*).—Exs. Mudd *Clad.* 45. Rare in N. England and amongst the Grampians.

* **Cl. furcatiformis,** *Nyl.*—Exs. Mudd 12. Very local, and scarce in N. England.

23. **Cl. scabriuscula** (*Del.*).—Rare in the Channel Islands, S. W. England, and the W. Highlands.

24. **Cl. cenotea** (*Ach.*).—Apparently very rare and local in the W. Highlands. *Cl. glauca,* Flk. seems to be a subspecies of this. Rare in W. England.

25. **Cl. squamosa,** *Hffm.*—Exs. Mudd 13, Cromb. 124, Larb. *Cæsar.* 10 in pt. Pretty general and common in Britain and Ireland —F. *ventricosa* (Ach., not Huds.). Rather local in England and Scotland.—F. *frondosa* (Del.). Rare in the W. Highlands.—F. *cucullata* (Del.)—Exs. Mudd 14, *Clad.* 33, 50 *fide* Nyl. Local in N. England and W. Ireland, but perhaps nothing very typical.

* **Cl. adspersa** (*Flk.*).—Nyl. Local and scarce in Britain and Ireland.

26. **Cl. subsquamosa,** *Nyl.*—Exs. Mudd 14, Larb. *Cæsar.* 10 in pt., Leight. 405. Somewhat local in Britain and Ireland.—F. *tumida* Cromb., analogous to f. *ventricosa* of *Cl. squamosa.* Rare in S. England and the W. Highlands.

27. **Cl. speciosa** (*Del.*)—Exs. Mudd *Clad.* 41 (s. n. *asperella*, Flk). Extremely rare in N. England.—F. *polychonia* Flk.—Exs. Mudd *Clad.* 42. Extremely rare in N. England, as also apparently in other countries.

28. **Cl. cæspititia** (*Pers.*).—Exs. Mudd *Clad.* 44, Larb. *Cæsar.* 9, Leight. 368. Somewhat local in Britain and Ireland.

29. **Cl. delicata** (*Ehrh.*).—Exs. Mudd 15, *Clad.* 43, Leight. 382. Rather scarce in England and the W. Highlands.

B. Erythrocarpæ.

30. **Cl. coccifera** (*L.*).—Exs. Mudd 23, *Clad.* 65-67, Leight. 375, 404. General and common.

var. **asotea** (*Ach.*).—Local and scarce amongst the N. Grampians.

* **Cl. pleurota** (*Flk.*).—Very local in Britain and Ireland.

31. **Cl. bellidiflora** (*Ach.*).—Rare in W. and N. England, more frequent amongst the Grampians; doubtful in Ireland. N.B. *Cl. vestita* Leight. is nothing typical.—F. *gracilenta* (Ach.). Local and rare amongst the N. Grampians.

var. **Hookerii** (*Tuck.*).—Extremely rare amongst the N. Grampians.

32. **Cl. deformis** (*L.*).—Exs. Mudd 25, *Clad.* 68. Somewhat local in Britain, and not seen from Ireland.—F. *gonecha* (Ach.). Rare in N. England and amongst the Grampians.

33. **Cl. digitata** (*L.*).—Exs. Mudd *Clad.* 76 (juvenilis) *fide* Nyl. Apparently local in England and Scotland; not seen from Ireland. —F. *monstrosa* (Ach.). Rare in the Highlands of Scotland.

34. **Cl. macilenta** (*Ehrh.*).—Exs. Mudd 29, *Clad.* 75, Leight. 297, Larb. Lich. Hb. 283. Pretty general in Britain, rarer in Ireland.—F. *styracella* (Ach.). Apparently local in S. and N. England.—F. *scolecina* (Ach.). Rare and local in S., E. and Central England, and extremely rare with apothecia.—F. *clavata* (Ach.).—Exs. Mudd *Clad.* 79, Leight. 403 in pt. Local and scarce in W. and N. England, and amongst the N. Grampians.—

F. *scabrosa* Mudd, Exs. Mudd *Clad.* 73. Rare in S. and N. England.—F. *deminuta* Cromb. "Thallus at the base and the podetia very minute; apothecia numerous, minute, bright scarlet." Extremely rare in the W. Highlands.

var. **polydactyla** (*Flk.*).—Exs. Leight. 274, Mudd 27, 28, *Clad.* 77, 78. Somewhat local in Britain, rare in S. W. Ireland.

var. **carcata** (*Ach.*).– Exs. Mudd 23, *Clad* 72. Local in W. and N. England, and amongst the Grampians; not certain from Ireland.

var. **ostreata**, *Nyl.*—Exs. Mudd *Clad.* 69, Leight. 371. Local in S., W. and N. England.

35. **Cl. bacillaris** (*Ach.*).—Nyl.—Exs. Mudd *Clad.* 70 (juvenilis) *fide* Nyl. Local and scarce in W. and N. England and amongst the Grampians.—F. *pityropoda*, Nyl. Local and scarce in the W. Highlands.

36. **Cl. Floërkeana**, *Fr.*—Very local and rare in the Scottish Highlands and in S. W. Ireland.—F. *trachypoda*, Nyl.—Exs. Mudd *Clad.* 71, Larb. Lich. Hb. 84. Not unfrequent in Britain and Ireland.

Genus III. **CLADINA**, *Nyl.*

37. **Cl. rangiferina** (*L.*)—Probably general and common, but certainly less so than the following species.—F. *gigantea* (Ach.). Rare amongst the Grampians.

38. **Cl. sylvatica** (*Hffm.*).—Exs. Leight. 57, Mudd 19, 20, *Clad.* 37, 58, 60, Larb. Lich. Hb. 242, 243. General and abundant.—F. *lacerata* (Del.). Rare in N. E. Scotland.—F. *portentosa* (Duf.). Local in S. W. and Central England.

var. **alpestris** (*L.*).—Exs. Larb. Lich. Hb. 85. Rather local and scarce in Britain and Ireland.—F. *pumila* (Ach.).—Exs. Mudd *Clad.* 59. Local and rare in England and Scotland.

39. **Cl. uncialis** (*L.*).—Exs. Leight. 58. General and common.—F. *bolacina* (Ach.).—Exs. Mudd 17, *Clad.* 61. Rare in N. England and amongst the Grampians.—F. *aduncа* (Ach.).—Exs. Mudd 21, *Clad.* 62. Probably general, and not uncommon.—F. *obtusata* (Ach.). Somewhat local in Scotland and W. Ireland.—F. *turgescens* (Fr.). Rare in S. and W. England and amongst the Grampians.

40. **Cl. amaurocræa** (*Flk.*).—Rare amongst the N. Grampians, and in Connemara. N.B. Var *myriocræa* (Flk.), Mudd Exs. 18, *Clad.* 63, is very doubtfully referable to this species, the specimens seen being imperfect.

* **Cl. destricta,** *Nyl.*—Exs. Mudd *Clad.* 64. Local in N. England; more frequent amongst the Grampians, but always sterile.

There is no doubt that further research will add at least a few more species and varieties to the above extensive list, as our Islands are certainly very rich in Cladonias.

CLASSIFICATION OF THE UREDINES.

By C. B. Plowright.*

The following arrangement of British species is founded upon that of Schröter, as modified and applied by Dr. Winter and the present writer.

UROMYCES, *Link.*

A. **Lepturomyces.** Teleutospores only; which germinate at once.

B. **Micruromyces.** Teleutospores only, which easily fall from their stems, and germinate only after a period of rest.

U. ficariæ, Schum, ; *U. ornithogali*, Wallr. ; *U. scillarum*, Grev.

C. **Hemiuromyces.** Uredo and teleutospores.

U. scutellatus, Schr. (U. excavata, *DC.*); *U. tuberculatus*, Fckl.; *U. rumicis*, Schum. (U. apiculatus; U. bifrons, *DC.*); *U. alchemillæ*, Pers. (U. intrusa, *Lev.*); *U. sparsus*, Kze. & Schm.

D. **Uromycopsis.** Æcidio—and teleutospores.

U. scrophulariæ, DC. (U. concomitans, *B. & Br.*); *U. behenis* DC.

E. **Euromyces.** Having æcidio, uredo and teleutospores.

(a.) *Auteuromyces.* All three spore forms on the same host plant.

U. polygoni, Pers.; *U. betæ*, Pers.; *U. salicorniæ*, DC.; *U. limonii*, DC.; *U. valerianæ*, Schum.; *U. phaseoli*, Pers. (U. apiculatus); *U. orobi*, Pers. (U. fabæ, *Pers.*); *U. trifolii*, A. & S. *U. parnassiæ*, Grev.

(b.) *Hetereuromyces.* Spermogonia and æcidio-spores on one host-plant, uredo and teleutospores upon another.

U. dactylidis, Otth. (U. graminum, *Cke.*); Æcidiospores on *Ranunculus acris, repens*, and *bulbosus*. Teleutospores on *Dactylis glomerata.*

U. poæ, Rabh. Æcidiospores on *Ranunculus ficaria.* Teleutospores on *Poa nemoralis* and *P. pratensis* (not British.)

U. junci, Desm. Æcidiospores on *Inula dysenterica*, L. Teleutospores on *Juncus obtusifolius*, Ehr.

U. pisi, Pers. Æcidiospores on *Euphorbia cyparissias*, L. (British ?) Teleutospores on *Vicia cracca*, L.; *Pisum arvense*, L., *Pisum sativum*, L., *Lathyrus tuberosus*, L., *Lathyrus pratensis*, L., and *L. sylvestris.*

PUCCINIA, *Pers.*

A. **Leptopuccinia.** Having only teleutospores which are firmly fixed to the host-plant, and germinate at once while still attached.

P. buxi, DC.; *P. annularis*, Str. (P. Scorodoniæ, *Lk.*); *P. verrucosa*, Schultz (P. glechomatis, *DC.*) ; *P. veronicæ*, Schum. ;

* Read before the Birmingham Natural History and Microscopical Society, 20th Feb., 1883. We are unable for lack of space to print the introductory observations.—Ed.

P. asteris, Duby. (P. millefolii, *Fckl.*); *P. valantiæ*, Pers. (P. acuminata, *Fckl.*); *P. chrysosplenii*, Grev.; *P. circææ*, Pers.; *P. malvacearum*, Mont.; *P. arenariæ*, Schum. (P. lychnidis, P. Dianthi, P. mœhringiæ, &c.)

B. **Micropuccinia.** Having only teleutospores, which soon fall off, and germinate only after a period of rest.

P. asarina, Kunze; *P. betonicæ*, A. & S.; *P. campanulæ*, Carm.; *P. virgaureæ*, DC.; *P. ægopodii*, Schum.; *P. saxifragæ*, Schlecht; *P. rhodiolæ*, B. & Br.; *P. Fergussonii*, B. & Br. (P. nidificans, *Magn.)*; *P. Thalictri*, Chev.; *P. umbilici*, Guep.

C. **Hemipuccinia.** Having only uredo and teleutospores.

P. Baryi, B. & Br. (P. linearis, *Rob.*); *P. phragmitis*, Schum. (P. arundinacea, *DC.*); *P. scirpi*, DC., King's Lynn; *P. oblongata*, Lk. (P. luzulæ, *Lib.*); *P. iridis*, DC. (P. truncata, *B. & Br.*); *P. polygoni*, A. & S.; *P. polygoni-amphibii*, Pers. (P. amphibii, *Fckl.*); *P. bistortæ*, Strauss; *P. oxyriæ*, Fckl.; *P. vincæ*, DC.; *P. suaveolens*, Pers. (P. cirsii, *Lasch.*); *P. bullata*, Pers. (P. conii, æthusæ, apii, &c.); *P. pruni-spinosæ*, Pers. *P. argentata*, Schulz (P. nolitangeris, *Corda*); *P. hydrocotyles*, Pers., Epping, Sept., 1882.

D. **Pucciniopsis.** Having only æcidio and teleutospores.

P. conglomerata, Strauss (P. syngenesiarum, *Lk.*; P. senecionis, *Lib.*, P. glomerata, *Grev.*); *P. bunii*, DC. (P. bulbo-castani, *Fckl.*); *P. grossulariæ*, Gmel.; *P. fusca*, Relh. (P. anemones, *Pers.*); *P. smyrnii*, Corda.

E. **Eupuccinia.** Having æcidio, uredo, and teleutospores.

(a.) Auteupuccinia. All spore-forms on the same host-plant.

P. porri, Sow. (Uredo alliorum, *DC.*); *P. asparagi*, DC.; *P. Thesii*, Desm.; *P. soldanellæ*, DC. (?); *P. primulæ*, DC.; *P. menthæ*, Pers. (P. clinopodii, DC.); *P. flosculosorum*, A. & S. (P. compositarum, *Schl.*; P. lapsanæ, *Fckl.*; P. syngenesiarum, *Corda*; P. cirsii, *Fckl.*; P. centaureæ, *DC.*; P. hieracii, *Mart.*; P. variabilis, *Grev.*); *P. tragopogi*, Pers. (P. sparsa, *Cke.*); *P. tanaceti*, DC. (P. discoidearum, *Lh.*); *P. Galii.*, Pers. (P. valantiæ, *A. & S.*; P. difformis, *Kunze*); *P. adoxæ*, DC.; *P. pimpinellæ*, Strauss (P. umbellifearum, *DC.*; P. Heraclei, *Grev.*; P. angelicæ, *Fckl.*; P. chærophylli, *Purt.*); *P. saniculæ*, Grev.; *P. epilobii-tetragoni*, DC. (P. epilobii, *DC.*, P. pulverulenta, *Grev.*); *P. silenes*, Schrot; *P. violæ*, Schum.; *P. calthæ*, Link.

(b.) Hetereupuccinia. Spermogonia and æcidiospores upon one host-plant, uredo and teleutospores upon a different host-plant.

P. graminis. Æcediospores on *Berberis vulgaris*, L. Teleutospores on wheat and various grasses.

P. rubigo-vera, DC. Æcidiospores on *Lycopsis arvensis*, L. *Echium vulgare*, L. *Symphytum officinale*, L. Teleutospores on various grasses. Var. *simplex*, Körn; on barley and various species of *Hordeum.*

P. coronata, Corda. Æcidiospores on *Rhamnus frangula*, L., and *R. catharticus*, L. Teleutospores on various grasses.

P. moliniæ, Tul. Æcidiospores on *Orchis maculata*. Teleutospores on *Molinia cærulea*.

P. poarum, Niel. Æcidiospores on *Tussilago farfara*, L. Teleutospores on *Poa annua* and *P. pratensis*, L.

P. Magnusiana, Körn. Æcidiospores on *Rumex hydrolapathum*, Huds. Teleutospores on *Phragmitis communis*.

P. sessilis, Schneider. Æcidiospores on *Allium ursinum*, L. Teleutospores on *Phalaris arundinacea*, L.

P. caricis, Schum. Æcidiospores on *Urtica dioica*, L. Teleutospores on various Carices.

P. sylvatica, Schröter. Æcidiospores on *Taraxacum officinale*, W. Teleutospores on *Carex muricata*, L.

GYMNOSPORANGIUM, *DC.*

G. sabinæ, Dicks. Æcidiospores on *Pyrus communis*. Teleutospores on *Juniperus sabina*, L.

G. clavariæforme, Jacq. Æcidiospores on *Cratægus oxyacantha*. Teleutospores on *Juniperus communis*, Lk.

G. juniperinum, Linn. Æcidiospores on *Sorbus aucuparia*, L. Teleutospores on *Juniperus communis*. L.

TRIPHRAGMIUM, *Link.*

T. ulmariæ, Schm.

PHRAGMIDIUM.

A. **Phragmidiopsis.** Having only æcidio and teleutospores.

P. carbonarium, Schl.

B. **Euphragmidium.** Having æcidio, uredo, and teleutospores.,

P. subcorticatum, Schrank ; *P. fragariæ*, DC. ; *P. rubi*, Pers., *P. violaceum*, Schultz ; *P. rubi-idæi*, Pers.

CRONARTIUM, *Fries.*

C. flaccidum, A. & S.

MELAMPSORA, *Cart.*

A. **Micromelampsora.** Only teleutospores known.

B. **Hemimelampsora.** Having uredo and teleutospores.

M. betulinæ, Pers. ; *M. salicis-capreæ*, Pers. ; *M. helioscopiæ*, Pers. ; *M. hypericorum*, DC. ; *M. lini*, Pers. ; *M. cerastii*, Pers. ; *M. circeæ*, Schum. ; *M. epilobii*, Pers. ; *M. vaccinii*, A. & S. ; *M. padi*, K. & S. (Uredo porphyrogenita, *Link.*).

C. **Melampsoropsis**. Having only æcidio and teleutospores, the uredospores being wanting.

M. goeppertiana, Kühn. Æcidiospores on *Pinus pinea*, L. (Æ. columnare, *A. & S.*), not British. Teleutospores on *Vaccinium vitis-idæa*, L.

D. **Eumelampsora.** Having æcidio, uredo, and teleutospores.

M. populina, Jacq. Æcidiospores on *Clematis vitalba*. Uredo and teleutospores on *Populus nigra*.

COLEOSPORIUM, *Lev.*

A. **Hemicoleosporium.** Having only uredo and teleutospores.

C. euphrasiæ, Schum.; *C. campanulæ*, Pers.; *C. sonchi-arvensis*; Pers.

B. **Eucoleosporium.** Having æcidio, uredo and teleutospores.

C. senecionis, Pers. Æcidiospores on *Pinus sylvestris*, L. (*Peridermium pini*). Teleutospores on various species of *Senecio*.

ENDOPHYLLUM, *Lev.*

E. euphorbiæ-sylvatica, DC. (?); *E. sempervivi*, A. & S.

APPENDIX.

Isolated spore-forms of *Uredo* and *Æcidium*, the affinities of which are at present doubtful.

Uredo. Spores borne singly on the apex of each basidium.

U. agrimonia-eupatoriæ, DC.; *U. polypodii*, Pers.; *U. phillyreæ*, Cooke; *U. quercûs*, Brond; *U. symphyti*, DC.

Cæoma. Spores produced in chains, but without any pseudoperidium, with or without paraphyses.

C. orchidis, A. & S.; *C. mercurialis-perennis*, Pers.; *C. empetri*, Pers.; *C. euonymi*, Grev.; *C. tropæoli*, Desm., on *Tropæolum aduncum*.

Æcidium. Spores in chains, surrounded by a pseudoperidium.

Æ. ari, Desm.; *Æ. strobilinum*, A. & S. (Licea strobilina, *A. & S.*); *Æ. elatinum*, A. & S.; *Æ. pedicularis*, Libosch.; *Æ. compositarum*, on *Bellis perennis*, L.; *Æ. periclymeni*, DC.; *Æ. phillyreæ*, DC.; *Æ. barbareæ*, DC.; *Æ. punctatum* (Æ. quadrifidum, *DC.*); *Æ. incarceratum*, B. & Br.; *Æ. thalictri*, Grev.; *Æ. depauperans*, Vize (?) *Æ. dracontii* Schwz.

Of the following species I have no personal knowledge; further research is necessary in order acurately to place them in the above scheme. *Uromyces urticæ*, C.; *Puccinia fallens*, C.; *Xenodochus curtus*, C.; *Uredo plantaginis*, B. & Br.

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No. 60.] [June, 1883.

Grevillea,

A QUARTERLY RECORD OF CRYPTOGAMIC BOTANY AND ITS LITERATURE.

HYPOXYLON AND ITS ALLIES.

By M. C. Cooke.

In our last number we ventured to offer some observations on "Xylaria, and its allies," as represented in Saccardo's "Sylloge." We proceed now to make a similar series of suggestions on the remaining genera of his "Composite Phœosporæ." Before doing so we will enumerate the genera, and their distinctive characters.

Ustulina.—Stroma repando-pulvinate, thick, becoming hollow when old.

Bolinia.—Stroma effused, solid, perithecia immersed, with rather long necks.

Hypoxylon.—Stroma effused or subglobose, solid, perithecia innate, necks hardly any.

Daldinia.—Stroma subglobose, concentrically zoned within, perithecia immersed, necks hardly any.

Nummularia.—Stroma disc-shaped, or cup shaped, adnate, marginate.

All the above five genera are included in a section (b) which is said to have the superficial stroma carbonaceous, or coriaceous, with immersed carbonaceous perithecia.

In the previous section (a) the stroma is immersed in the matrix, and the perithecia *membranaceous*. The only genus is—

Anthostoma.—Stroma effused or limited, somewhat valsæoid.

These features will have to be borne in mind, because, if they mean anything at all, they characterize the salient features of the genera.

We should have preferred to have followed Nitschke, and merged *Daldinia* (*Hypoxylon concentricum*) and *Bolinia* (*Hypoxylon tubulina*) in *Hypoxylon*. A comparison of the above characters will show that the only difference in *Daldinia* is the concentric stroma, although several of the globose *Hypoxyla* exhibit faint concentric zones when in good condition. The difference in *Bolinia* is that the perithecia are immersed, with rather long necks. These are very slight generic differences indeed, as compared with

some which might have been isolated, such as the very singular *Hypoxylon lycogaloides*, B. &. Br., and the equally strange and anomalous *Hypoxylon solidum*, Schwz. If any species deserved to be raised to a generic rank it was these.

We note, too, especially, the membranaceous perithecia in *Anthostoma*, and the carbonaceous perithecia in the other genera. This is an important distinction, and there can be no doubt of the word, and of its correct translation, "perithecia membranacea," without any qualification; and the same phrase is applied to *Venturia* and *Gnomonia*, with a qualification, as "perithecia submembranacea," hence we must expect to find the perithecia in *Anthostoma* more membranaceous than in *Venturia* and *Gnomonia*. Of course all species included by error in *Anthostoma*, which have perithecia as carbonaceous as in *Hypoxylon*, are out of place, and do not belong to the genus. If, therefore, we suggest the transfer of certain species from *Anthostoma* to *Hypoxylon*, it is with a full recognition of this important difference. The other feature of stroma immersed, or not immersed in the matrix, seems, from the examples we recognise in both genera, to be of doubtful value, and cannot be taken into account beside "perithecia membranacea."

As in the former instance we shall commence with the larger genus *Hypoxylon*, leaving *Anthostoma*, as a whole, for a future opportunity.

Measurements.—It cannot be considered as highly satisfactory that, in a genus depending so much on the size of the sporidia in determining closely allied species, the measurements given in this work are so few. Out of 178 species, which the genus contains, only about one half has the measurements, *i.e.*, there are 85 species with no measurements of the sporidia. Of the 93 species for which there are measurements given, we are responsible for 10; Nitschke for about 24; Cesati for 5, the majority of which are wrong; and the original diagnoses for 32 measurements; leaving 22 as a balance, not over large, for which the author of the "Sylloge" is responsible. We doubt if it should be considered sufficient for the author of a work of such pretensions to aim at nothing beyond compilation, or so little, that it is almost indistinguishable. However, the following may be accepted as a supplement, although contributed by one who has no *pretensions* to such a profound study of sporidia as to enable him to advocate an entire carpological system based upon a long and universal experience.

4. **Hypoxylon hypomiltum,** *Mont.*
Sporidia in specimen from Montagne, ·012-·013 × ·006 mm.

6. **Hypoxylon Howeianum,** *Peck.*
Sporidia ·006-·007 × ·003 mm.

8. **Hypoxylon distillatum,** *B. & Br.*
Sporidia ·01-·011 × ·004-·005 mm.

9. **Hypoxylon sclerophœum,** *B. & C.*
Sporidia ·012 × ·005 mm.

10. **Hypoxylon lycogaloides,** *B. & Br.*
Sporidia ·02 × ·01 mm., verruculose, olive.

11. **Hypoxylon Blakei,** *B. & C.*
Sporidia ·02-·022 × ·008-·009 mm.

20. **Hypoxylon solidum,** *B. & C.*
Sporidia ·035-·04 × ·007 mm. lanceolate, uniseptate, pale brown.

22. **Hypoxylon decorticatum,** *Schwz.*
Sporidia ·012-·014 × ·004 mm.

23. **Hypoxylon enteromelum,** *Schwz.*
Sporidia ·01 × ·004 mm.

27. **Hypoxylon suberosum,** *B. & C.*
Sporidia ·022 × ·007 mm.

28. **Hypoxylon notatum,** *B. & C.*
Sporidia ·012-·014 × ·008 mm.

30. **Hypoxylon endoxanthum,** *Mont.*
Sporidia ·013 × ·005 mm.

31. **Hypoxylon discolor,** *B. & Br.*
Sporidia ·012 × ·0075 mm.

32. **Hypoxylon glomiforme,** *B. & C.*
Sporidia ·014-·015 × ·0035 mm.

37. **Hypoxylon gemmatum,** *B. & Rav.* *Hypoxylon Walterianum, Rav. Fung. Car.*
Sporidia ·01-·012 × ·006 mm. distinctly uniseptate, brown.

42. **Hypoxylon pavimentosum,** *Ces.*
Sporidia fusiform ·05 × ·009 mm., from specimen communicated by Baron Cesati.

46. **Hypoxylon stigmoideum,** *Ces.*
Sporidia ·012 × ·008 mm., original specimen.

52. **Hypoxylon annulatum** *(Schwz.), Mont.*
Sporidia ·009 × ·003 mm. in American specimen.

53. **Hypoxylon areolatum,** *B. & C.*
Sporidia ·035-.04 × ·012 mm.

55. **Hypoxylon leucocreas,** *B. & Rav.*
Sporidia ·005 × ·0025 mm.

59. **Hypoxylon xanthocreas,** *B. & C.*
Sporidia ·01 × ·005 mm.

60. **Hypoxylon Fragaria,** *Ces.*
Sporidia lanceolate ·055-·06 × ·012 mm.

64. **Hypoxylon Murrayi,** *B. & C.*
Sporidia ·013-·015 × ·005-·007 mm.

66. **Hypoxylon Bomba,** *Mont.*
Sporidia ·016 × ·007 mm.

70. **Hypoxylon deciduum,** *B. & Br.*
Sporidia ·015-·018 × ·003 mm.

72. **Hypoxylon scriblitum,** *Mont.*
Sporidia ·038-·04 × ·012 mm.

73. **Hypoxylon Petersii,** *B. & C.*
Sporidia ·008 × ·003 mm.

74. **Hypoxylon turbinulatum** *(Schw.)*, *Berk.*
Sporidia ·012 × ·0035 mm.

80. **Hypoxylon malleolus,** *B. & Rav.*
Sporidia ·02-·022 × ·004 mm.

81. **Hypoxylon marginatum** (*Schw.*), *Berk.*
Sporidia ·009-·01 × ·005 mm. (North America.)
,, ·008-·009 × ·004 mm. (Africa.)
,, ·0075 × ·0035 mm. (Cuba.)

102. **Hypoxylon hæmatostroma,** *Mont.*
Sporidia ·01-·012 × ·0035 mm.

103. **Hypoxylon chrysoconium,** *B. & Br.*
Sporidia ·01-·011 × ·0035 mm.

104. **Hypoxylon crocopeplum,** *B. & C.*
Sporidia ·013-·014 × ·008 mm.

106. **Hypoxylon trugodes,** *B. & Br.*
Sporidia nearly ·01 mm. long.

107. **Hypoxylon florideum,** *B. & C.*
Sporidia ·01 × ·0035 mm.

108. **Hypoxylon Morsei,** *B. & C.*
Sporidia ·025-·027 × ·009-·01 mm.

109. **Hypoxylon anthochroum,** *B. & Br.*
Sporidia ·01 × ·0045 mm.

112. **Hypoxylon jecorinum,** *B. & Rav.*
Sporidia ·009 × ·004 mm.

113. **Hypoxylon fusco-purpureum,** *Schwz.*
Sporidia ·014 × ·007 mm.

114. **Hypoxylon durissimum** (*Schw.*), *Berk.*
Sporidia ·008 × ·004 mm.

118. **Hypoxylon sassafras** (*Schw.*), *Berk.*
Sporidia ·012-·014 × ·005 mm.

123. **Hypoxylon oodes,** *B. & Br.*
Sporidia ·015-·017 × ·007 mm.

124. **Hypoxylon epixhodium,** *B. & Rav.*
Sporidia ·009 × ·0035 mm.

125. **Hypoxylon Lenormandi,** *B. & C.*
Sporidia ·01-·012 × ·007 mm.

127. **Hypoxylon Broomeianum,** *B. & C.*
Sporidia ·012 × ·004 mm.

132. **Hypoxylon tormentosum,** *Ces.*
Sporidia ·0075 × ·0035 mm.

133. **Hypoxylon Phœnix,** *Fr.*
Sporidia ·022-·025 × ·008-009 mm.

134. **Hypoxylon bipapillatum,** *B. & C.*
Sporidia ·014-·016 × ·006-·007 mm.

136. **Hypoxylon gregale** (*Schwz.*), *Berk.*
Sporidia ·012-·014 × ·0035 mm. decidedly (and not spuriously) uniseptate.

137. **Hypoxylon investiens** (*Schwz.*), *Berk.*
Sporidia ·008-·01 × ·004 mm.

139. **Hypoxylon callostroma** (*Schwz.*), *Berk.*
Sporidia ·012 × ·005 mm.

141. **Hypoxylon concurrens,** *B. & C.*
Sporidia ·01 × ·005 mm.

142. **Hypoxylon umbrino-velatum,** *B. & C.*
Sporidia ·022-·025 × ·01 mm.

143. **Hypoxylon colliculosum,** (*Schw.*)
Sporidia ·012-·013 × ·005 mm.

145. **Hypoxylon murcidum,** *B. & Br.*
Sporidia ·01 × ·005 mm.

146. **Hypoxylon polyspermum,** *Mont.*
Sporidia ·005 × ·002 mm.

155. **Hypoxylon cœnopus,** *Fr.* (*Mont.*).
Sporidia ·035-·04 × ·009-·01 mm.

160. **Hypoxylon teres,** (*Schwz.*)
Sporidia ·016 × ·008 mm.

163. **Hypoxylon? Ravenelii,** *Sacc.*
Sporidia allantoid, hyaline ·005 mm. long.

164. **Hypoxylon erinaceum,** *Mont.*
Sporidia subglobose, ·004 mm. diam.

172. **Hypoxylon transversum,** (*Schwz.*)
Sporidia ·012 × ·004 mm.

174. **Hypoxylon xanthostroma,** (*Schwz.*)
Sporidia ·012 × ·006 mm.

176. **Hypoxylon Catalpæ,** (*Schw.*)
Sporidia ·013 × ·006 mm.

177. **Hypoxylon caries,** (*Schw.*)
Sporidia ·01 × ·0035 mm.

178. **Hypoxylon illitum,** (*Schw.*)
Sporidia ·014-·016 × ·004 mm.

The following species in their order of arrangement will have to be removed altogether from this genus :—

1342. Hypoxylon lycogaloides, *B. & Br.*
Stroma fleshy, not at all carbonaceous.

1343. Hypoxylon Blakei, *B. & C.* = See H. Morsei, *B. & C.*

1351. Hypoxylon sclerotioideum, *B. & C.*
No perithecia to be seen. Doubtful if sphæriaceous at all.

1352. Hypoxylon solidum, *B. & C.*
No affinity with *Hypoxylon.*

1357. Hypoxylon ceramichroum, *B. & Br.*
Fleshy. Referred to *Glaziella.*

1358. Hypoxylon gangrena, *Ces.*
Only a *Sclerotium.*

1361. Hypoxylon Peckianum, *Sacc.*
The same species as *H. xanthocreas,* B. & C., vide No. 1392.

1369. Hypoxylon gemmatum, *B. & Rav.*
= H. Walterianum, *Rav. Car. Exs.*
Sporidia uniseptate. *Cfr. Valsaria.*

1372. Hypoxylon sertatum, *DC. & Mont.*
= *Nummularia Sertata.*

1374. Hypoxylon pavimentosum, *Ces.*
Undoubtedly a species of *Ustulina.*

1375. Hypoxylon pauxillum, *Ces.*
Must be referred to *Xylaria.*

1377. Hypoxylon Kalchbrenneri, *Sacc.*, is *Nummularia placenta*, Cke.

1379. Hypoxylon pseudo-tubulina, *Ces.*
Not *Hypoxylon.* It has the structure of *Dothidea*, and fruit of *Botryosphæria.*

1380. Hypoxylon heterostomum, *Mont.*
This is a *Nummularia.*

1383. Hypoxylon anthracodes, *Fr.*
Is a *Nummularia*, but not the Borneo specimens of Cesati, which hereafter are described as *Hypoxylon Cesatianum*, Cke.

1385. Hypoxylon diathrauston, *Rehm.*
Out of place in this genus. It is not carbonaceous, and should come near *Anthostoma gastrina.*

1389. Hypoxylon comedens, *Ces.*
The confluent condition is *Nummularia*, the solitary form is *Rhop. cœnopus* (Fr.) according to specimens from Cesati.

1394. Hypoxylon glomus, *B. & C.*
Has every appearance of a *Diatrype*, and, as the only specimens are sterile, it must be referred to "species dubiæ."

1395. Hypoxylon Berterii, *Mont.*
The white stroma strengthens the impression that this is a peculiar form of *Xylaria.*

1400. Hypoxylon Carabayense, *Mont.*
We have never seen this species, but from the description should consider it a *Nummularia.*

1402. Hypoxylon congestum, *B. & Br.*
Transferred to *Rhopalopsis.*

1405. Hypoxylon scriblitum, *Mont.*
Is clearly a *Nummularia.*

1408. Hypoxylon cycliscum, *Mont.*
Is also *Nummularia.*

1411. Hypoxylon macrocenangium, *Ces.*
Should also go to *Nummularia.*

1412. Hypoxylon macromphalum, *Mont.*
Is such a curious and aberrant form that one hesitates to pronounce upon it, but it certainly approaches nearest to *Camillea.*

1415. Hypoxylon microstictum, *Mont.*
Belongs to *Nummularia.*

1416. Hypoxylon melanaspis, *Mont.*
We should also transfer this to *Nummularia.*

1417. Hypoxylon pachyloma, *Lev.*
We have not seen, but should regard it as a *Nummularia.*

1418. Hypoxylon Moselei, *Berk.*
Is referred to *Nummularia* without hesitation.

1423. Hypoxylon ? aceris, *C. & E.*
Cannot possibly belong to *Hypoxylon;* better in the *Fuckelia* section of *Anthostoma.*

1426. Hypoxylon globosum, *Fr.*
Is referred to *Xylaria.*

1427. Hypoxylon aggregatum, *Welw. & Curr.*
Removed to *Rhopalopsis.*

1428. Hypoxylon tuberiforme (*Wallr.*)
Seems to be undoubtedly *Ustulina.*

1429. Hypoxylon Kurzianum, *Curr.*
Was *not* described in " Linn. Trans," or anywhere else that we are aware. *Rhopalopsis Kurzianum,* Cke., is the *Xylaria Kurzianum,* Curr. Linn. Trans. Hence our quotation of No. 1429 in " Grevillea " xi., p. 94, was an error ; as *Xylaria* is *not* included at all in the " Sylloge."

1441. Hypoxylon Morsei, *B. & C.*
There is no apparent difference between this and *Hypoxylon Blakei,* B. & C. (No. 1343). They have membranaceous perithecia, and go to *Anthostoma.*

1447. Hypoxylon durissimum (*Schwz.*).
It is impossible to separate this from *Hypoxylon annulatum.*

1455. Hypoxylon fossulatum, *Mont.*
Equal to *Nummularia fossulata,* C.

1461. Hypoxylon bicolor, *B. & C.*
Sporidia allantoid, hyaline. = *Diatrype bicolor.*

1469. Hypoxylon gregale (*Schwz.*).
Perithecia not confluent, hence not *Hypoxylon.* Sporidia uniseptate, without the least doubt. Entered again as *Valsaria gregalis* (Schwz.) under No. 2847, but it belongs to neither of these genera.

1475. Hypoxylon umbrino-velatum, *B. & C.*
Perithecia scattered, distinct. Allied to *Sphæria subiculosa,* Schwz.

1488. Hypoxylon cœnopus (*Fr.*).
Transferred to *Rhopalopsis.*

1489. Hypoxylon cetrarioides, *Welw. & Curr.*
Also in *Rhopalopsis.*

1490. Hypoxylon xylarioides, *Speg.*
Similarly a *Rhopalopsis.*

1491. Hypoxylon micropus, *Fr.*
Transferred to *Rhopalopsis.*

1492. Hypoxylon Colensoi, *Berk.*
Specimen in a bad condition, but also probably a *Rhopalopsis.*

1494. Hypoxylon glebulosum, *Ces.*
This is doubtless referable to *Xylaria.*

1495. Hypoxylon palmigenum, *B. & C.*
Clearly not *Hypoxylon*, sporidia colourless, structure that of *Dothidea.*

1496. Hypoxylon erinaceum, *B. & Rav.*
Valsa, with long-necked perithecia, and hyaline allantoid sporidia.

1497. Hypoxylon erinaceum, *Mont.*
Not *Hypoxylon.* Perithecia distinct, woolly. Sporidia subglobose (16 ?), texture and habit of an aggregated *Melanospora*—or perhaps allied to *Scopinella.*

1498. Hypoxylon allantosporum, *B. & C.*
Not *Hypoxylon.* Sporidia 5-7 septate.

1502. Hypoxylon afflatum, *Schwz.*
Allied to *Diatrype stigma*, with hyaline sporidia.

After removing these 50 species there still remain a few of the balance of 130 of which we have no actual knowledge, but the number is comparatively small. Other emendations will be covered by our remarks on "additions," and a proposed "rearrangement" to correct errors in interpretation as to the section in which certain imperfectly known species have been placed.

Additions.—The following species will be found in their places in the subsequent rearrangement of the genus. The three species with a non-carbonaceous stroma, transferred to *Sarcoxylon*, will be noticed in conjunction with *Anthostoma* to which they bear a closer relationship than to *Hypoxylon.*

1. **Hypoxylon cerebrinum** (Fee). *Xylaria cerebrina*, Sacc. Syll., No. 1224.
Ascis elongato-cylindricis. Sporidiis lanceolatis, fuscis, ·03 × ·008 mm.
On trunks. Brazil.
Internally olivaceous, faintly concentric.

3. **Hypoxylon cœlatum** (*Sphœria cœlata*), Fries Linn. v. 540.
Turbinatum ($\frac{1}{2}$in. alt.) submarginatum, disco convexo, stromate suberoso-indurato nigricante, apice determinati excavato, stratis cellulosis verticalibus reperto, peritheciis in crusta exteriori cornea peripheric is minimis. Ascis cylindraceis. Sporidiis sublanceolatis, fuscis, ·014 × ·004 mm.
On trunks. Cayenne, Sarawak.

4. **Hypoxylon corrugatum** (*Fr.*). *Sphæria corrugata*, Fr. El. II. 70.
Difformes, confluens, tuberculosum, rimoso-corrugatum, ater, intus cinerascens ; peritheciis profunde immersis, ostiolis papillæformibus rugosis. Ascis cylindraceis. Sporidiis ellipticis, rectis curvulisve, fuscis, ·008 × ·0035 mm.
On dead wood.
Extending for 2 or 3 inches, rugose, indurated.

9. **Hypoxylon viridi-rufum** (*B. & Rav.*) *Hypocrea viridi-rufa*, Berk. N. Amer. Fungi, 803.
Major, subglobosum, congestum, viridi-rufum; ostiolis impressis. Ascis linearibus. Sporidiis oblongis, continuis, fuscis, primum binucleatis (·012 × ·004 mm.).
On *Alnus serrulata*. North America (Carolina).
Seems to have been referred to *Hypocrea* in error, since it possesess none of the features of that genus.

11. **Hypoxylon ovinum**, *Berk. in Herb. Kew.*
Hemisphæricum vel confluento-elongatum, purpureo-nigricans, durum, læve, subnitidum, intus fuscum. Peritheciis stratosis, atris, subglobosis. Ostiolis obsoletis. Ascis cylindricis. Sporidiis ellipticis, fuscis, dein atro-fuscis, ·016-·018 × ·007 mm.
On wood. Orizaba, Mexico, and Tristan d'Acunha.

20. **Hypoxylon vera-crucis**, *Berk. & Cke.*
Subglobosum, superficiale, sæpe confluens (1-2 cm. diam.) læte rubiginosum, intus fuligineum. Peritheciis mediis, ovatis, perisphericis, prominulis. Ascis cylindraceis. Sporidiis ellipticis, utrinque attenuiatis, fuscis (·02 × ·008).
On rotten wood. Vera Cruz (Salle).

33. **Hypoxylon multiforme**, *Fr.* var. **australe**, *Cke.*
With the habit and external aspect of the typical form, at least of the most globose state, but the sporidia smaller (·008 × ·003 mm.). The difference seems to be scarcely specific.
On bark and wood. Melbourne, Australia.

37. **Hypoxylon hians**, *Berk. & Cke.*
Hemisphæricum vel subglobosum, superficiale, atrum, nitidum, intus atro-fuligineum. Peritheciis magnis, subglobosis, conico-elevatis, ad apicem cupulato-excavatis, centro ostiolo papillato gerentibus. Ascis cylindraceis. Sporidiis ellipticis, obtusis, fuscis (·01-·012 × ·006-·007 mm.).
On wood. Tasmania.
Most distinct in the cup-shaped depression around the ostiolum. Stroma about an inch in diameter.

40. **Hypoxylon Hookeri**, *Berk. in Herb. Kew.*
Subglobosum, mox atrum (1 cm. et ult.) intus fuliginosum. Peritheciis magnis, globosis, elevatis; ostiolo papillato. Ascis cylindraceis. Sporidiis ellipticis, fuscis (·01 × ·004 mm.).
On wood. India (Sir J. D. Hooker).
Resembling *H. majusculum*, but the perithecia much larger, and more prominent, in which latter respect it approaches *H. annulatum*.

41. **Hypoxylon nodulorum**, *Lev. in Herb. Kew.*

Globosum, superficiale, nigrum, opacum (1-2 cm.), rugosum, intus pallidum, duriusculum. Peritheciis globosis, mediis, perphericis. atris; ostiolo minuto papillatis. Ascis cylindraceis. Sporidiis ·02-·022 × ·005 mm.

On wood. Marquesas (1854).

63. **Hypoxylon pruinatum**, *Klotsch.* *Rosellinia pruinata*, Sacc. Syl., No. 942.

Sporidia ·02-·022 × ·008-·009 mm.

An undoubted *Hypoxylon*, in which relationship it was placed by Klotsch.

65. **Hypoxylon eterio**, *B. & Br. Anthostoma eterio*, Sacc. Syll., No. 1133.

It is difficult to comprehend why this species has been removed to *Anthostoma*. *H. pruinatum*, Kl., *H. discolor*, B. & Br., and *H. eterio*, B. & Br., are closely allied.

67. **Hypoxylon Holwayi**, Ellis, in Amer. Nat., xvii., p. 193.

Stromate orbiculari (2½-5 mm. diam.) tenui, primum pruinoso, intus nigro, ostiolis atris, prominulis, acute papillosis. Peritheciis (20-30) uniseriatis. Ascis cylindricis. Sporidiis uniserialibus oblongis, fuscis, 1-2 nucleatis (·022-·027 × ·011 mm.).

On *Populus*. Iowa (U.S.A.)

The stroma is surrounded by a fringe of conidiiferous processes.

71. **Hypoxylon exiguum**, *Cooke.*

Pulvinatum, convexo-applanatum, atrum, ovale vel discoideum (2-3 mm. lat.) hinc illic confluens. Peritheciis minutis, numerosis, papillatis. Ascis cylindraceis. Sporidiis minutissimis, ellipticis, fuscis (·0035 × ·002 mm.).

On rotten wood. Mauritius. Alabama, Carolina, U.S.A.

A most distinct species, easily recognized by the exceedingly minute sporidia, which are a little larger in American specimens.

74. **Hypoxylon Pouceanum**, *Berk. & Cke.*

Pulvinatum, atrum, nitidum, superficiale. Peritheciis paucis, subglobosis, ostiolis in disco plano, annulato marginato papillatis, ut in *H. annulato*. Ascis cylindraceis. Sporidiis sublanceolatis, rectis vel curvulis, fuscis (·015 × ·004 mm.).

On bark. Mauritius (Dr. Ayres).

Externally this has the appearance of *H. annulatum*, and we hesitated to describe it separately, on account of the difference in the fruit. It may be only a variety of *H. annulatum*, to which it is closely allied.

82. **Hypoxylon rimarum**, *Berk. & Cke.*

Pulvinulis atris, nitidis, elongatis, rimis epidermidis corticis erumpentibus. Peritheciis magnis, prominulis, papillatis, in crustam nigram confluentibus. Ascis cylindricis. Sporidiis ellipticis, obtusis, fuscis. (·006-·007 × ·0025 mm.).

On bark of branches. Mauritius (Sept., 1858.)

With somewhat of the habit of *H. sassafras*—the elongated pustules mostly parallel, following the fissures of the epidermis, soon quite superficial. 1 cm. long; 1-2 mm. broad.

76. **Hypoxylon chalybeum,** *B. & Br.* *Rosellinia nitens,* Sacc. Syll., No. 945.

If this is a *Rosellinia*, then *Rosellinia* must practically be synonymous with *Hypoxylon*—because there is really no feature whereby this can be distinguished from *Hypoxylon annulatum.*

There are seven reputed species in this section with annulate ostiola.

1. **H. polyspermum,** *Mont.*, (1479.)
   Sporidia ·005 × ·002 mm.
2. **H. marginatum,** *Schwz.* (1414.)
   Sporidia ·007 × ·0035 mm. Cuba.
   „ ·008-·009 × ·004 mm. Africa.
   „ ·009-·01 × ·004 mm. U. States.
3. **H. durissimum,** *Schwz.* (1447.)
   Sporidia ·008-·009 × ·0035 mm.
4. **H. annulatum,** *Schwz.* (1384.)
   Sporidia ·012 × ·0035 mm. Montagne.
   „ ·01-·011 × ·0035 mm. U. States.
5. **H. chalybeum,** *B. & Br.* (945.)
   Sporidia ·012 × ·005 mm. Ceylon.
   „ ·009-·012 × ·0045 mm. Cesati.
6. **H. Pouceanum,** *Berk. & Cke.*
   Sporidia ·015 × ·004 mm.
7. **H. obesum,** *Fr.* (1401.)
   This species we do not know.

Our conclusions as to these species are—that *H. polyspermum*, Mont., is a distinct species not only in difference of habit, but in its very small sporidia. That *H. marginatum* comes next, with *H. durissimum* as a synonym. That *H. annulatum* follows with *H. chalybeum* as a synonym, and *H. Pouceanum* finally—with the largest sporidia, if it be not really a variety of *H. annulatum.* Thus the seven species (reckoning *H. obesum* as probably a good species) would be reduced to four or five. In *H. chalybeum*, the original specimens extend for some inches with the perithecia immersed in a thick black carbonaceous stroma. If the specimens of *H. chalybeum* and *H. annulatum* now before us, some 40 in number, had their labels removed, and were mixed up together, it would be impossible to separate them again either by external features or fructification, although it is not difficult to separate *H. marginatum* from *H. annulatum* both by external features and by the fructification.

90. **Hypoxylon mascariensis,** Berk. in Herb. nec Montagne.

Hemisphericum, atrum, nitidum (2 mm.). Peritheciis globosis, majusculis, atris, subprominulis, ostiolo papillato præditis. Ascis cylindraceis. Sporidiis subellipticis, fuscis (·012 × ·005 mm.).

On bark. British Guiana.

Externally resembling Montagne's species, but not truly erumpent, and fruit quite different.

91. **Hypoxylon leucostomum**, *Cke.*

Convexum, subhemisphericum, atrum (2 mm. lat.) Peritheciis subglobosis, paucis, prominulis, ostiolo atro-impresso, annulo albo circumdato. Ascis cylindraceis. Sporidiis ovatis, continuis, atro-fuscis (·0075 × ·004 mm.).

On twigs. Panure (Brazil).

Distinguished from its allies by the white disc round the ostiolum.

93. **Hypoxylon Ayresii,** Berk. in Herb.

Hemisphæricum, depressum, hinc illic confluens, atrum, fragile. Peritheciis globosis vix confertis, ostiolo punctiformi, leniter prominulo. Ascis cylindraceis. Sporidiis ellipticis, rectis curvulisve, fuscis, ·01-·012 × ·0045 mm.

On bark. Mauritius.

Usually less than a centimetre in diameter.

95. **Hypoxylon spondylinum,** Fr., Summa, V. Scan. p. 383. *Nummularia spondylina*, Sacc., No. 1542.

Hemispherical, not at all resembling *Nummularia*. Authentic specimen too small for analytical examination.

96. **Hypoxylon ramosum,** *Schwz.* (ubi ?) in Herb. Berk.

Convexum, pulvinatum, erumpens, atrum (1 cm.) Peritheciis subglobosis, sparsis, atris, nec prominulis, ostiolo pertusis. Ascis cylindraceis. Sporidiis sublanceolatis, continuis, fuscis, rectis, curvulisve, ·016-·018 × ·0035 mm.

On branches. Indiana, U.S.

109. **Hypoxylon piceum** *Ellis* in Amer. Nat., xvii., p. 193.

Effusum, subellipticum vel elongatum, plerumque confluens. (4-8 cm. long), atro-fuscum, rugosum, pulvero luteolo tectum, intus nigrum. Peritheciis 2-3 seriatis, confertissimis, compressis, ostiolo minuto, vix visibili. Sporidiis naviculoideis, fuscis (·011-·012-·012 × ·004 mm.).

On rotten wood. Iowa (U.S.A.).

110. **Hypoxylon Fendleri,** Berk. in Herb.

Effusum, determinatum, crassum, rugosum, fulvum, demum atro-fuscum. Peritheciis distinctis, globosis, elevatis, ostiolo papillato nigro. Ascis cylindraceis. Sporidiis arcte ellipticis, rectis curvulisve, fuscis (·012-·013 × ·004 mm.).

On rotten wood. Venezuela.

Somewhat like an effused state of *H. multiforme*, or a thick form of *H. ferruginosum*. At first tawny, then dark-brown, nearly black, but not at all purplish or ferruginous.

114. **Hypoxylon ianthinum,** *Cke.*

Stromate in ligno effuso, pulvero ianthino obsito, demum nigricante. Peritheciis stipatis, obovatis, vertice sub-rotundatis, confluento-planisve. Ostiolo minute papillato. Ascis cylindraceis. Sporidiis ellipticis, obtusis, continuis, fuscis, ·015 × ·006 mm.

On naked wood. U. States. (Ravenel, No. 1579.)

115. **Hypoxylon atropunctatum,** *Schwz. Anthostoma atropunctata*, Sacc. Syll., No. 1102.

Sporidia ·03 × ·01 mm.

We cannot accept this as a species of *Anthostoma*.

116. **Hypoxylon capnodes,** *B. & Br.* *Anthostoma capnodes,* Sacc Syll., No. 1113.

Sporidiis ellipticis, continuis, fuscis, ·01-·012 × ·005 mm.

On wood. Swan River, Australia.

106. **Hypoxylon hæmatites,** *Lev. in Herb. Berk.*

Effusum, crustaceum, indeterminatum, rugosum, læte aurantio-rubrum, demum ferrugineo-rubrum, intus nigricans. Peritheciis densissime stipatis, sub-globosis, prominulis, pertusis. Ascis cylindraceis. Sporidiis ellipticis, utrinque attenuatis, atro fuscis (·018 × ·005 mm.).

On wood. Marquesas Islands, and Endeavour River, Australia.

Brighter in colour than *H. rubiginosum,* and sporidia much larger.

122. **Hypoxylon ochraceo-fulvum,** *Berk. & Cke.*

Effusum, tenue, ochraceo-fulvum, primitus sub-orbiculare, margine sterili, byssoideo, dein confluens irregularique. Peritheciis atro-fuscis, globosis, minimis, sub-prominulis, papillatis. Ascis cylindraceis. Sporidiis ellipticis, continuis, fuscis, ·008-·01 × ·0045 mm.

On bark. Nirwab Jungle, India.

124. **Hypoxylon Cesatianum,** *Cke.* (*Hypoxylon anthracodes,* Cesati. Fungi Born.)

Effusum, indeterminatum, aterrimum, sub-rugosum. Peritheciis irregularibus, majusculis, prominulis, ostiolis punctiformibus. Ascis cylindraceis. Sporidiis amygdalæformibus, atro-fuscis (·02-·022 × ·01 mm.).

On bark. Sarawak (Cesati).

Certainly quite distinct from *Nummularia anthracodes,* to which it was referred by Baron Cesati.

131. **Hypoxylon hypoleucum** (*B. & Br.*). *Sphæria hypoleuca,* B. & Br. Ceylon Fungi, No. 1116.

Peritheciis globoso-depressis, confluentibus, in mycelio arcte adnato parce innatis. Ascis cylindraceis. Sporidiis ellipticis, continuis, fuscis (·012 × ·004 mm.).

On bark. Ceylon.

Resembling in habit *Hyp. udum.*

134. **Hypoxylon tinctor,** (*B.*) *Diatrype tinctor,* Sacc. Syll., No. 744.

Sporidiis ellipticis, rectis curvulisque, fuscis (·018 × 008-·009 mm.).

On wood of *Platanus.* U. States.

153. **Hypoxylon irregulare,** *Cke.*

Irregulariter effusum, atrum, tenue, rugoso-undulatum. Peritheciis stipatis, immersis, sub-globosis, in superficie externa vix elevatum. Ostiolis papillatis, demum deciduis. Ascis cylindraceis. Sporidiis allantoideis, fuscis (·01 × ·0035 mm.).

On rotten wood. Mauritius (Ayres, 1861).

Allied to *H. investieus,* S., which it much resembles, but the perithecia are less distinctly indicated.

154. **Hypoxylon glomeratum,** *Cke.*
Pulvinatum, convexum, mox confluens effusumque, atrum, crassum, in ligno nigrificato expansum. Peritheciis mediis, globosis, leniter vel vix prominulis. Ostiolis punctiformibus. Ascis cylindraceis. Sporidiis arcte ellipticis, fuscis (·008 × ·003 mm.).
On decorticated branches. Mauritius.
Thicker than *H. irregulare*, and sporidia smaller. Confluent masses effused for several inches.

155. **Hypoxylon Beaumontii,** *B. & C.* North Amer. Fungi, No. 864. *Valsaria ? Beaumontii*, Sacc., No. 2848.
Sporidiis ellipticis, continuis, fuscis.
On branches of *Coniferæ*. U. States.
The sporidia are certainly not septate in the original specimens. It is an effused *Hypoxylon*.

162. **Hypoxylon Massaræ,** *De Not. Anthostoma Massaræ*, Sacc. Syll., No. 1141.
Said by Saccardo "Perithecia not carbonaceous," and hence not *Hypoxylon*, but allied to *A. gastrinum*, a conclusion in which we do not concur.

163. **Hypoxylon prorumpens** (*Fr.*). *Sphæria prorumpens*, var. *lignatilis*, Fries. Scler. Suec., No. 383.
Erumpens, inæquabile, nigrum, sub-innatum, lineari-extensum. Peritheciis irregulariter confluentibus. Ascis cylindraceis. Sporidiis arcte ellipticis, fuscis (·006 × ·002 mm.).
On naked wood.
This is clearly not the *Eutype prorumpens*, Sacc. Syll., No. 642, but an evident *Hypoxylon*.

Arrangement.—It appears to us that the two main divisions into *Eu-hypoxylon* and *Placoxylon* are insufficient for facility of reference, which, after all, is the practical utility of sub-divisions of genera. We therefore propose, after removing the three species with a fleshy stroma to the genus *Sarcoxylon*, to make the following distribution of the species of *Hypoxylon*:—

I. Macroxylon.—Large indurated irregular forms, with a firm and rather fibrous internal substance, of which *Hyp. cerebrinum*, Fee, is the type.

II. Phylacia.—With an erect, smooth, shining (laccate) stroma, of which *Hyp. turbinatum*, Berk., is the type.

III. Sphæroxylon.—Including species with a globose or subglobose stroma.

IV. Clitoxylon.—Including pulvinate species with a more or less convex, determinate stroma.

V. Placoxylon.—With the stroma more or less widely effused.

VI. Endoxylon.—Stroma more or less immersed in the matrix.

HYPOXYLON.

I. Macroxylon. Large, indurated, irregular, fibrous within.

a. Perithecia monostichons.

1. Hypoxylon cerebrinum, Fee. 1224.
2. „ Wrightii, B. & C. 1533.
3. „ cælatum, Fr.
4. „ corrugatum, Fr.
5. „ sclerophæum, B. & C. 1341.
6. „ placentiforme, B. 1535.
7. „ suborbiculare, Curr. 1536.
8. „ Broomeanum, B. & C. 1460.
9. „ viridi-rufum, B. & Rav.

b. Perithecia stratose.

10. Hypoxylon Petersii, B. & C. 1406.
11. „ ovinum, Berk.

II. Phylacia. Stroma erect, laccate.

a. Species perfectæ.

12. Hypoxylon turbinatum, Berk.

b. Species imperfectæ.

a. Hypoxylon sagræanum, Mont.
b. „ globosum, Lev.
c. „ poculiformis, Lev.
d. „ Carteri, Berk.
e. „ ramulosum, Schwz.

III. Sphæroxylon. Stroma superficial, globose or subglobose.

a. Externally coloured, not black.

13. Hypoxylon coccineum, Bull. 1333.
14. „ Howeianum, Peck. 1338.
15. „ commutatum, Ntke. 1350.
16. „ deciduum, B. & Br. 1403.
17. „ enteromelum, Schwz. 1355.
18. „ suberosum, B. & C. 1359.
19. „ pulchellum, Sacc. 1335.
20. „ vera-crucis, B. & Cke.
21. „ argillaceum, Pers. 1337.
22. „ palumbinum, Quel. 1339.
23. „ rutilum, Tul. 1344.

24. Hypoxylon Laschii, Ntke. 1345.
25. ,, luridum, Ntke. 1347.
26. ,, Bagnisii, Sacc. 1348.
27. ,, notatum, B. & C. 1360.
28. ,, gilvum, Jungh. 1353.
29. ,, scleroderma, Mont. 1334.
30. ,, distillatum, B. & Br. 1340.
31. ,, botrys, Ntke. 1349.
32. ,, fuscum, Pers. 1368.

b. Stroma externally black.

33. Hypoxylon multiforme, Fr. 1376.
34. ,, teres, Schwz. 1493.
35. ,, majusculum, Cke. 1369.
36. ,, malleolus, B. & C. 1413.
37. ,, hians, B. & Cke.
38. ,, areolatum, B. & C. 1386.
39. ,, avellana, Ces. 1425.
40. ,, Hookeri, Berk.
41. ,, nodulorum, Lev.
42. ,, fragaria, Ces. 1393.
43. ,, cohærens, Pers. 1370.
44. ,, leucostigma, Lev. 1391.
45. ,, comaropsis, Mont. 1398.
46. ,, bomba, Mont. 1399.
47. ,, Murrayi, B. & C. 1397.
48. ,, placenta, Link. 1404.
49. ,, turbinulatum, Schwz. 1407.
50. ,, campsotrichum, Mont. 1409.
51. ,, porosum, Mont. 1381.
52. ,, glomiforme, B. & C. 1364.

IV. CLITOXYLON. Stroma pulvinate, more or less convex, not effused.

a. Stroma externally coloured, not black.

53. Hypoxylon xanthocreas, B. & C. 1302, 1361.
54. ,, hæmatostroma, Mont. 1435.
55. ,, epiphlæum, R. & C. 1444.
56. ,, hypomiltum, Mont. 1336.
57. ,, decorticatum, Schwz. 1354.
58. ,, irradians, Mont. 1424.
59. ,, discoideum, Cke. 1346.
60. ,, vinosum, Mont. 1365.
61. ,, vividum, B. & Br. 1356.
62. ,, quisquilarum, Mont. 1366.
63. ,, pruinatum, Klot. 942.
64. ,, discolor, B. & C. 1363.
65. ,, eterio, B. & Br. 1133.

66. Hypoxylon endoxanthum, Mont. 1362.
67. „ Holwayi, Ellis.

b. Stroma externally black.

68. Hypoxylon leucocreas, B. & R. 1388.
69. „ lucidulum, Mont. 1390.
70. „ microsporum, Ces. 1417.
71. „ exiguum, Cke.
72. „ stigmoideum, Ces. 1378.
73. „ annulatum, Schwz. 1384.
74. „ Pouceanum, B. & Cke.
75. „ durissimum, Schwz. 1447.
76. „ chalybeum, B. & Br. 945.
77. „ obesum, Fr. 1401.
78. „ marginatum, Schwz. 1414.
79. „ polyspermum, Mont. 1479.
80. „ callostroma, Schwz. 1472.
81. „ smilacicolum, Howe. 1371.
82. „ rimarum, B. & Cke.
83. „ sassafras, Schwz., including also H. fuci-color, B. & C. 1451.
84. „ xanthostromum, Schwz. 1507.
85. „ Catalpæ, Schwz. 1509.
86. „ approximans, Ces. 1481.
87. „ exsurgens, Mont. 1387.
88. „ transversum, Schwz. 1505.
89. „ Javanicum, Lev. 1382.
90. „ Mascarensis, Berk. not Mont.
91. „ leucostomum, Cke.
92. „ pauperatum, Karst. 1373.
93. „ Ayresii, Berk.
94. „ undosum, Lev. 1410.
95. „ spondylinum, Fr. 1542.
96. „ ramosum, Schwz.
97. „ monticulosum, Mont. 1396.
98. „ Mauritanicum, D. R. & M. 1418.
99. „ Phœnix, Fr. 1466.
100. „ culmorum, Cke. 1416.
101. „ Kurzianum, Curr. 1429.

v. Placoxylon. Stroma broadly and widely effused.

a. Externally coloured, not black.

102. Hypoxylon purpureum, Ntke. 1430.
103. „ perforatum, Schwz. 1431.
104. „ atropurpureum, Fr. 1433.
105. „ rubiginosum, Pers. 1434.
106. „ hæmatites, Lev.
107. „ trugodes, B. & Br. 1439.

108. Hypoxylon murcidum, B. & Br. 1478.
109. „ piceum, Ellis.
110. „ Fendleri, Berk.
111. „ anthochroum, B. & Br. 1442.
112. „ fuscopurpureum, Schwz. 1446.
113. „ florideum, B. & C. 1440.
114. „ ianthinum, Cke.
115. „ atropunctatum, Schwz. 1102.
116. „ capnodes, Berk. 1113.
117. „ jecorinum, B. & Rav. 1445.
118. „ crocopeplum, B. & C. 1437.
119. „ crocatum, Mont. 1438.
120. „ miniatum, Cke. 1432.
121. „ subgilvum, B. & Br. 1443.
122. „ ochraceofulvum, B. & Cke.
123. „ chrysoconium, B. & Br. 1436.

b. Externally black.

124. Hypoxylon Cesatianum, Cke.
125. „ stygium, Lev. 1452.
126. „ tormentosum, Ces. 1465.
127. „ stigmateum, Cke. 1453.
128. „ oodes, Berk. 1456.
129. „ bifrons, Not. 1483.
130. „ æneum, Ntke. 1483.
131. „ hypoleucum, B. & Br.
132. „ epirhodium, B. & R. 1457.
133. „ punctulatum, B. & R. 1534.
134. „ tinctor, Berk. 741.
135. „ macrosporum, Karst. 1473.
136. „ serpens, Pers. 1448.
137. „ Archeri, Berk. 1449.
138. „ effusum, Ntke. 1450.
139. „ Vogesiacum, Pers. 1454.
140. „ fragile, Ntke. 1459.
141. „ Lenormandi, B. & C. 1458.
142. „ investiens, Schwz. 1470.
143. „ concurrens, B. & C. 1474.
144. „ crustaceum, Ntke. 1453.
145. „ reticulatum, K. 1454.
146. „ subterraneum, Fckl. 1462.
147. „ unitum, Fr. 1476.
148. „ colliculosum, Schwz. 1477.
149. „ caries, Schwz. 1510.
150. „ allantoideum, Cke. 1480.
151. „ Michelianum, Not. 1482.
152. „ illitum, Schwz. 1511.
153. „ irregulare, Cke.
154. „ glomeratum, Cke.

155. Hypoxylon Beaumontii, B. & C. 2848.
156. „ atramentosum, Schwz. 1503.
157. „ bipapillatum, B. & C. 1467.
158. „ incrustans, P. 1504.

VI. Endoxylon. Stroma more or less immersed.

159. Hypoxylon udum, Pers. 1485.
160. „ minutum, Ntke. 1486.
161. „ semi immersum, Ntke. 1487.
162. „ Massaræ, Not. 1141.
163. „ prorumpens, Fr.

Dubiæ.

164. Hypoxylon sclerotoideum, B. & C. 1351.
165. „ gangrena, Ces. 1358.
166. „ lobatum, Fr. 1499.
167. „ glomus, B. & C. 1394.
168. „ Uraniæ, Mont. 1500.
169. „ exertum, Fr. 1501.
170. „ exaratum, Schwz. 1506.
171. „ sphæriostomum, Schwz. 1508.
172. „ hydnicolum, Schwz. 1471.
173. „ arecarium, Bory. 1468.

Two questions of nomenclature must be alluded to here. *Hypoxylon crustaceum* (Sow.) Ntke. From the small figure, scarcely an inch square of external habit only, Nitschke ventured to call a species *H. crustaceum* (Sow.) without any knowledge of what the fruit of Sowerby's *H. crustaceum* was. This was certainly not justifiable, but he did not venture to cite "Britain" as a locality for the species. We have no knowledge of Nitschke's species as British at all. It was undoubtedly unknown to Sowerby, and the species must *not* be associated with Sowerby's name, or figure, at all. Saccardo has repeated these errors, and thus made them his own. It is similar to the case of *Sphæria millepunctata*, Grev., which for some time continental mycologists persisted in applying to the wrong species.

The other instance is that of *Hypoxylon confluens*. Whether there is sufficient evidence to determine what was, or was not, the species of Tode, we have certainly not been in the habit of applying the name to *H. udum*, but as we believe, with considerable uniformity, to the species which Nitschke calls *H. semi-immersum*. There is very little doubt that this latter species has generally been called *Hypoxylon confluens*. Hence, instead of introducing a new name and merging *Hyp. confluens* in *H. udum*, it would have been more in accordance with botanical rule and practice to have retained the name of *Hypoxylon confluens* for what has been denominated

Hyp. semi-immersum. We find that the Rev. M. J. Berkeley regarded *Hypoxylon confluens* as the species now answering to the name of *Hypoxylon semi-immersum*, and we doubt not, as far as British Botanists are concerned, we should have their sympathy in restoring the name of *Hyp. confluens* instead of *H. semi-immersum.*

This communication has already extended to such a considerable length that the remaining allied genera must stand over until next issue of this Journal.

NEW BRITISH MARINE ALGÆ.

By E. M. Holmes, F.L.S.

(*Continued from Vol.* x., *p.* 111.)

Phæosporeæ.

* **Phyllitis Fascia**, *Ktz. Phyc. gen. p.* 342 (*non* **Laminaria Fascia** *Harv*).

Elie, Fifeshire, E. M. Holmes. Berwick-on-Tweed, E. Batters.

* **Dictyosiphon fæniculaceus**, *Grev. subsp.* **hispidus** *Kjellm, om Spets. Thall.* II., *p.* 39, *tab.* II.

Joppa, near Edinburgh, G. W. Traill. Growing usually on *Scytosiphon lomentarius*, *Phyllitis cæspitosa* and *Chondrus crispus.*

* **D. hippuroides**, *Aresch. Obs. Phyc.* III., *p.* 27; *Phyc. mar. Sc. tab.* 6, A.

Parasitical on *Chordaria flagelliformis.*

Portobello, Dunbar, Braxmouth, Earlsferry, Kinghorn, North Berwick, G. W. Traill. Berwick-on-Tweed, E. Batters.

* **D. Mesogloia**, *Aresch. Obs. Phyc.* III., *p.* 33, *Exs. n.* 106.

In shallow pools at Elie, Fifeshire, E. M. Holmes. Longniddry, G. W. Traill.

* **Phlœospora subarticulata**, *Aresch. Bot. Not.* 1873, *p.* 132; *Lyngb. Hydr., t.* 14, c. *f.* 3.

Occurs in Cock's fasciculi, v. 43, *sub* **Dictyosiphon fœniculaceus**, *fide* Bornet Etudes Phyc., p. 16. Kildonan, J. Cooke. Carnarvon, E. M. Holmes. Cullercoats, Miss E. Bainbridge. Connemara, Mrs. Stokes in Herbaruim Gray.†

The specimen in Cock's fasciculus under *Dictyosiphon fæniculaceus* was probably obtained from the North of England or Scotland, since there is no record of the plant as a southern species in this country. The transverse lines seen on the frond under a good lens distinguish it at sight from *D. fæniculaceus*, which it otherwise closely resembles in appearance.

* The species marked with an asterisk will be published in forthcoming fasciculi.

† Mrs. J. E. Gray's collection of Marine Algæ is now in the University Herbarium at Cambridge.

* **P. tortilis**, *Aresch. Bot. Not.* 1876, *p.* 34; *Kjellm. on Spets. Thall.* II., *t.* 1, *f.* 21.

Cullercoats, Miss E. Bainbridge. Joppa, G. W. Traill. Kildonan, Herb, Landsborough, Berwick-on-Tweed, E. Batters. Filey, 1868, C. Stevens, in Herbarium Gray.

* **Streblonema investiens**, *Thur.*

Parasitical on *Gracilaria compressa*. Weymouth, E. M. Holmes.

* **S. reptans**, *Crn.*

Parasitical on *Cladophora*. Trebarwith, Cornwall, Miss A. Cresswell. On *Chætomorphœrea*, Weymouth, Miss K. Appleford. On *Cladophora lætevirens*, Sidmouth, E. M. Holmes.

* **Ectocarpus simplex**, *Crn. Flor. du Finist. p.* 163; *Desm. Exs.* 1806.

On *Codium tomentosum*. Lizard, E. M. Holmes.

* **E. insignis**, *Crn. Flor. du Finist. p.* 163; *Alg. Mar. Finist. exs.* 14.

On *Zostera* roots. Smallmouth, near Weymouth, E. M. Holmes.

E. elegans, *Thur. Alg. Mar. de Cherb. p.* 77, *pl.* II., *fig.* 1-2.

On *Desmarestia aculeata*. Falmouth, F. W. Smith.

E. ramellosus, *Ktz. Phyc. germ. p.* 235.

Padstow, R. V. Tellam.

E. terminalis, *Kutz. Phyc. germ. p.* 236; *tab. phyc.* V., *t.* 74, *f.* 2.

On *Chætomorpha ærea*. Smallmouth, near Weymouth, Miss K. Appleford. On *Corallina*. Fowey, R. V. Tellam.

* **Giraudia sphacelarioides**, *Derb. et Sol. in Cast. Cat. pl. Mars. suppl. p.* 101; *Phys. des Algæ. pl.* XIV,, *f.* 12-16; *Aresch. Obs. Phyc.* III., *fig.* 1.

On decaying *Zostera* leaves. Smallmouth, near Weymouth, E. M. Holmes.

* **Sphacelaria plumigera**, *Holmes.*

Eastbourne, W. Borrer. Joppa, G. W. Traill. Carnarvon, J. E. Griffiths. Cullercoats, Miss E. Bainbridge. Folkestone, E. M. Holmes. Herne Bay, Torquay, Herbarium Gray.

This plant has long passed as Lyngbye's *Sphacelaria plumosa*, but is really a *Cladostephus*, since it has fruit on minute special branches on the main axis, as in that genus, with which also it agrees in stem structure. I have therefore named it *Cladostephus plumosus*. *S. plumigera* is a true *Sphacelaria*, with sporangia only on the ultimate ramuli. Borrer's specimen, found at Eastbourne in 1808, and now in the Herbarium of the British Museum, has unilocular sporangia.

* **S. scoparioides**, *Lyngb. Hydr. p.* 107, *t.* 32. *fig.* C.

Bognor, 1831, Mrs. Gray, in Herb. Brit. Mus. Brighton, 1859, Mrs. Merrifield.

* **S. pseudoplumosa**, *Cr. Flor. du Finist. p.* 164, *pl.* XXV., *fig.* 161.

Ilfracombe. Mixed with *S. sertularia*, and so named in Herb. Griffiths, in Linn. Soc. Brighton, Mrs. Merrifield, 1859. Smallmouth, near Weymouth, E. M. Holmes.

* **Sp. cæspitula**, *Lyngb. Hydr. p.* 105, *t.* 32, *fig.* A.

Berwick-on-Tweed, E. Batters.

* **Cladostephus plumosus**, *Holmes* **Cladostephus distichus,** *Holmes MSS.* (*Traill in Algæ of Firth of Forth Proc. Royal Phys. Soc. Edinb.*, 1882).

Sphacelaria plumosa, *Lyngb. Hydr. p.* 100, *t.* 30, *fig.* c.
Ardrossan and Portincross, Rev. D. Landsborough. Anglesea, J. E. Griffiths. Kinghorn, G. W. Traill. Killbride, Ayrshire, sub *S. plumosa* in Herb. Brit. Mus.

Stilophora Lejolisii, *Thur. in Alg. Mar. de Cherb., pr.* 8-9.
Looe, Cornwall, R. V. Tellam. Brighton, Mrs. Merrifield. Arran, Herb. Gray.

ALGÆ BRITANNICÆ RARIORES EXSICCATÆ.

Fasc. I.

By E. M. Holmes.

Of the twenty-five species contained in the first fasciculus, twenty are new to Britain since Harvey's Phycologia Britannica was published, and the other five are rarely met with in herbaria. No. 6, *D. Mesogloia*, has probably been mistaken in the North of England and Scotland, for *Mesogloia virescens*, from which it is only distinguishable when seen growing by the acute apices of the fronds. Nos. 19 and 20, *Phlæspora subarticulata* and *P. tortilis* have undoubtedly passed unnoticed in collections under the name of *Dictyosiphon fœniculaceus*. The fruits of *Sphacelaria plumigera* (23), and of *Cladostephus plumosus* (1), have only recently been described, and the two plants so closely resemble each other in the sterile state that only a careful examination of a series of specimens, or a microscopic section of the frond, would render it easy to separate them.

1. Cladostephus plumosus, *Holmes.* (Sphacelaria plumosa, *Lyngb.*)
   Ardrossan, August, 1882, Rev. D. Landsborough.
2. Corallina Mediterranea, *Aresch.*
   The Lizard, July, 1882, E. M. Holmes.
3. Cordylecladia erecta, *J. Ag.* (*Tetraspores*).
   Folkestone, November, 1881, E. M. Holmes.
4. Dictyosiphon fœniculaceus, *Grev.* subsp., hispidus, *Kjellm.*
   Joppa, near Edinburgh, June, 1881, G. W. Traill.
5. Dictyosiphon hippuroides, *Aresch.*
   Dunbar, June, 1881, G. W. Traill.
6. Dictyosiphon Mesogloia, *Aresch.*
   Longniddry, July, 1881, G. W. Traill.

7. Ectocarpus granulosus, *Ag.* (*plurilocular sporangia*).
Exmouth, July, 1881, E. M. Holmes.
8. Ectocarpus simplex, *Crn.* on Codium tomentosum, *Ag.*
The Lizard, July, 1882, E. M. Holmes.
9. Elachista Grevillii, *Arn.*, on Cladophora rupestris, *Ktz.*
Berwick-on-Tweed, October, 1882, E. Batters.
10. Giraudia sphacelarioides, *Derb.*, on Zostera.
Weymouth, August, 1882, E. M. Holmes.
11. Lomentaria reflexa, *J. Ag.* (*Tetraspores*).
Sidmouth, June, 1882, E. M. Holmes.
12. Melobesia Corallinæ, *Crn.*, on Corallina officinalis, *L.*
The Lizard, July, 1882, E. M. Holmes.
13. Melobesia Laminariæ, *Crn.*, on Laminaria Cloustoni, *Le Jol.*
Weymouth, August, 1882, E. M. Holmes.
14. Melobesia Thureti, *Bornet*, on Jania corniculata, *Lmx.*
Sidmouth, June, 1881, and The Lizard, July, 1882, E. M. Holmes.
15. Monostroma laceratum, *Thur.*
Wadebridge, May, 1881, R. V. Tellam.
16. Nitophyllum reptans, *Crn.*, on Laminaria Cloustoni, *Le Jol.*
Berwick-on-Tweed, 1882, E. Batters.
17. Nitophyllum uncinatum, *J. Ag.*
Exmouth, June, 1882, The Lizard, July, 1882, E. M. Holmes.
18. Phyllophora palmettoides, *J. Ag.*
Sidmouth, February, 1881, E. M. Holmes.
19. Phlœospora subarticulata, *Aresch.*
Carnarvon, April, 1881, E. M. Holmes.
20. Phlœospora tortilis, *Aresch.*
Elie, Fifeshire, July, 1881, G. W. Traill.
21. Prasiola marina, *Crn.*
Joppa, near Edinburgh, April, 1881, G. W. Traill.
22. Sphacelaria cirrhosa, *Ag.* VAR. patentissima, *Grev.* on the roots of Zostera.
Weymouth, August, 1882, E. M. Holmes.
23. Sphacelaria plumigera, *Holmes* (S. plumosa, *Harv.* partim), (unilocular sporangia).
Joppa, near Edinburgh, January, 1881, G. W. Traill.
24. Sphacelaria pseudo-plumosa, *Crn.*
Weymouth, August, 1882, E. M. Holmes.
25. Streblonema investiens, *Thur.*, on Gracilaria compressa, *J. Ag.*
Weymouth, August, 1882, E. M. Holmes.

MYCOLOGIC ART.

Tabulæ Analyticæ Fungorum, by M. Patouillard. Part i., 8vo. Poligny. 100 figs.

Fungi Agrumicoli, by Dr. O. Penzig. 8vo. 136 plates. Padua.

Figures Peintes de Champignons, by L. Lucand. Part iii., 4to. 25 plates.

Fungi Italici, by Prof. P. A. Saccardo, fasc xxix-xxxii.

At no period, perhaps, during the past fifty years has illustrative art, as applied to Mycology, been so devoid of art as at the present time, if we may judge by the examples which have come under our notice. We have named four works above, of which certainly none pass beyond mediocrity, even if they attain it. In some the efforts at reproduction result in complete caricatures. Doubtless the authors themselves have a good opinion of their works, but most persons will regard that as an hallucination. The well-intentioned efforts of M. Patouillard have ended in the production of a number of very extraordinary outlines, drawn, it may be, from his inner consciousness, and especially in the case of *Pistillaria*, of a very low grade of art.

Dr. Penzig reprints, without any intimation that he is doing so, letterpress from one work without altering the paging, and illustrations from another. These are sold to unsuspecting victims as a new and original work, but when they arrive are found to be reprints, of which one copy is quite sufficient. The execution is exceedingly rough, and the colouring equal to the bright red and green examples of the artistic efforts of an infant school.

The third part of Lucand's Iconographie is no better than its predecessors. This part contains 25 plates, illustrating as many common and well-known species, and the price is thirty shillings. Its artistic merits are of a very low order, and by no means such as the purchaser would expect to get for his money. The work is announced as a continuation of the Champignons of Bulliard, but we venture to think that had it appeared in his day Bulliard would scarcely have felt flattered by the compliment.

The "Fungi Italici" gives an immense number of figures. Some would wish that these were fewer in number if they were only better in quality. They are evidently in many cases intended rather to illustrate the author's views as to what a species ought to be than what it is. As, for instance, in the so-called *Cercospora vitis*, the spores are turned topsy-turvy, and attached by the wrong end so as to justify its inclusion in *Cercospora*. If the figures are not very artistic, it would be some counterpoise if they made up by fidelity.

AUSTRALIAN FUNGI.

By M. C. Cooke. (*Continued from p.* 104.)

PYRENOMYCETES.

Ord. I. **HYPOCREACEÆ**, *de Not.*

Gen. 1. Cordyceps. *Fr.*

Cordyceps Gunnii, *Berk. Fl. Tasm.* II., 278.
Victoria, Tasmania.

Cordyceps entomorrhiza, *Fr. Summ. V. Scan.*, 381.
Victoria.

Cordyceps menesteridis, *Berk. & Mull. in Gard. Chron.*
Victoria.
Only a variety of *C. entomorrhiza.*

Gen. 2. Hypocrea. *Fr.*

Hypocrea cerebriformis, *Berk. Linn. Journ.* XIII., 179.
S. Australia.

Hypocrea semiorbis, *Berk. Fl. Tasm.* II., 278.
Tasmania.

Hypocrea citrina, *Fr. Summ. V. Scan.*, 185.
Tasmania.

Hypocrea rufa (*Pers.*), *Fr. Summ. V. Scan.*, 383.
Tasmania.

Hypocrea membranacea, *B. & Br. Proc. Linn. Soc. N. S. W.* V, 89.
Queensland.

Gen. 3. Hypomyces. *Tul.*

Hypomyces tomentosus *(Fr.)*, *Grev.* IV., 15.
Tasmania.

Hypomyces rosellus, *A. & S. Consp.* 55, *t.* 7, *f.* 3.
W. Australia.

Gen. 4. Sphærostilbe. *Tul.*

Sphærostilbe dubia, *Berk. Linn. Journ.* XVIII., 389.

Sphærostilbe cinnabarina (*Mont.*), *Tul. Carp.* III., 103.
Clarence River.

Gen. 5. Nectria. *Fr.*

Nectria quisquilaris, *Cke. Grevillea* VIII., 65.
Victoria.

Nectria sanguinea (*Sibth.*), *Fr. Summa.*, 388.
W. Australia.

Nectria agaricicola, *Berk. Fl. Tasm.* II., 278, *t.* 183, *f.* 14.
Tasmania.

Nectria tephrothele, *Berk. Fl. Tasm.* II., 278.
Tasmania.

Nectria coccinea, *Fr. Summa.* 388.
Tasmania, N. S. Wales, Queensland.

Nectria fusarioides, *Berk. Fl. Tasm.* II., 279.
Tasmania.

Nectria Tasmanica, *Berk. Fl. Tasm.* II., 279.
Tasmania.

Ord. II. XYLARIACEÆ.

Gen. 1. Xylaria. *Schr.*

Sect. A. *Xyloglossa.* Fr.

Xylaria australis, *Cooke Grevillea* XI., *p.* 84.
Endeavour River.

Xylaria involuta, *Klotsch. in Linnea.*
N. S. Wales, Daintree River.

Xylaria grammica, *Mont. Syll., No.* 680.
Endeavour River, Daintree River.

Xylaria ectogramma, *Berk. Linn. Journ.* XIII., 177.
Victoria.

} One species.

Xylaria rhytidophlæa, *Mont. Syll., No.* 687.
Victoria, Queensland.

Xylaria polymorpha, *Grev. Fl. Ed.* 355.
Queensland, Port Denison, Daintree River, Richmond River, Bellenden Ker Range, Endeavour River.

Xylaria cerebriformis, *Cooke Grevillea* XI., *p.* 86.
Endeavour River.

Xylaria lobata, *Cooke Grevillea* XI., *p.* 86.
Endeavour River.

Xylaria allantoïdea, *Berk. Hook. Journ.*, 1839, *p.* 397.
Endeavour River.

Xylaria phosphorea, *Berk. Linn. Journ.* XIII., *p.* 177.
Victoria.

Xylaria tuberiformis, *Berk. Fl. N. Zeal.* II., 204.
Bellenden Ker Range.

Xylaria cretacea (*Hypoxylon, B. & Br. Linn. Trans.*, 1879, 405).
Queensland.

Sect. B. *Xylocoryne.* Fr.

Xylaria corniformis (*Mont.*), *Fr. Summ.*, 381.
Tasmania.

Xylaria aphrodisiaca, *Well. & Curr. Fung. Ang., p.* 280.
Queensland.

Sect. C. *Xylostyla.* Fr.

Xylaria digitata, *Grev. Fl. Edin., p.* 356.
Clarence River.

Sect. D. *Xylodactyla.* Fr.

Xylaria hypoxylon, *Grev. Fl. Edin., p.* 355.
Queensland.

Gen. 2. Poronia. *Fr.*

Poronia punctata, *Fr. Sum. V. Scan.,* 382.
W. Australia, Tasmania.

Poronia œdipus, *Mont. Ann. Sci. Nat.,* 1855.
Queensland, Clarence River.

Poronia pileiformis, *Berk. Hook. Journ.,* 1842.
Queensland.

Gen. 3. Rhopalopsis. *Cke. Grev.* xi., 93.

Rhopalopsis cetrarioides (*Well. & Curr. Fung. Ang., p.* 282).
Queensland.

Rhopalopsis Angolense (*Well. & Curr. Fung. Ang., p.* 282).
Queensland.

Gen. 4. Hypoxylon. *Fr.*

Hypox. (Daldinia) concentricum, *Grev. Sc. Crypt. Fl., t.* 324.
Victoria, Tasmania, N. S. Wales, Queensland, S. W. Australia, Port Denison.

Hypox. (Macroxylon) sclerophæum, *B. & C. Linn. Journ.* xiii., 177.
S. Australia.

Hypox. (Macroxylon) placentæforme, *Berk. & Curt. Cuban Fungi, No.* 815.
Endeavour River.

Hypox. (Sphæroxylon) coccineum, *Bull. Champ.,* 174.
Tasmania.

Hypox. (Sphæroxylon) argillaceum, *Pers. Syn.,* 10.
Tasmania.

Hypox. (Sphæroxylon) rutilum, *Tul. Carp. Fung.* ii., 38.
Queensland.

Hypox. (Sphæroxylon) multiforme, *Fr. Summa. V. S., p.* 384.
W. Australia, Tasmania.

Hypox. (Clitoxylon) annulatum (*Schwz.*), *Mont. Syll., p.* 213.
Tasmania.

Hypox. (Placoxylon) hæmatites, *Lev. Grev.* xi., p. 133.
Endeavour River.

Hypox. (Placoxylon) Archeri, *Berk. Fl. Tasm.* ii., 280.
Tasmania.

Hypox. (Placoxylon) capnodes, *Berk. Hook. Journ.,* 1845, 72.
W. Australia.

Gen. 5. Nummularia. *Tul.*

Nummularia Bulliardi, *Tul. Carp. Fung.* II., *p.* 43.
Tasmania.

Nummularia australis, *Cooke.*
Stroma cortice innascens, erumpens, effusa, determinata, sæpe disciformis, convexa, impolita, atra. Peritheciis subglobosis, parvulis, 1-2 serialibus; ostiolis externis vix visibilis. Ascis cylindraceis. Sporidiis vere polymorphis, aliis fusiformibus (·021×·009 mm.) aliis ovatis (·012×·008 mm.); aliis intermediis, plerumque magnis fuscis.
On bark. Clarence River (Miss Thorneton).

Ord. III. **DOTHIDIEI.** *Fr.*

Gen. 1. Melogramma. *Fr.*

Melogramma rubricosa. (*Fr. Elench.* II., 63.)
W. Australia, Queensland.

Gen. 2. Dothidea. *Fr.*

Dothidea perisporioides, *B. & C. North Am. Fungi, No.* 880.
Victoria, N. S. Wales.

Dothidea graminis, *Pers. Obs.* 1, 18, *t.* 1, *f.* 1, 2.

Gen. 3. Rhytisma. *Fr.*

Rhytisma hypoxanthum, *B. & Br. Proc. Linn. Soc. N. S. W.*, v. 89.
Queensland.

Ord. IV. **VALSIÆI.**

Gen. 1. Diatrype. *Fr.*

Diatrype elevata, *Berk. Hook. Journ.* 1845, 298.
W. Australia. Tasmania.

Gen. 2. Valsa. *Fr.*

Valsa echidna, *Cke. Grevillea* IX., 4.
N. S. Wales. Queensland.

Gen. 3. Eutypa. *Tul.*

Eutypa lata, (*Fr.*) *Tul. Carp. Fung.* II., *p.* 56.
Tasmania.

Ord. V. **SPHÆRIÆI.**

Gen. 1. Cucurbitaria. *Grev.*

Cucurbitaria Archeri, *Berk. Fl. Tasm.* II., 280.

Gen. 2. Gibbera. *Fr.*

Gibbera Saubinetii, *Mont. Fl. Alg. p.* 479.
Tasmania.

Gen. 3. Massaria. *Fr.*

Massaria australis, *Cke. Grevillea* XIII., 65.
Victoria.

Gen. 4. Lasiosphæria. *Cke.*

Lasiosphæria ovina, (*Pers.*) *Grevillea* VII., 85.
Victoria.

Lasiosphæria pulvinula, *Berk. Hook. Journ. Bot.* 1845, 299.
W. Australia.

Gen. 5. Psilosphæria. *Cke.*

Psilosphæria inspersa, *Berk. Hook. Journ. Bot.* 1845, 299.
W. Australia.

Psilosphæria Schomburgckii, *Berk. Linn. Journ.* XVIII., 389.
Queensland (?)

Psilosphæria congesta, *Cke.*
Gregaria, conferta, atra. Peritheciis sub-cylindricis, convexis, glabris, poro pertusis. Ascis subclavatis. Sporidiis fusiformibus, triseptatis, leniter constrictis, fuligineis (·04 × ·01 mm.).
On bark. Twofold Bay.

Gen. 6. Byssosphæria. *Cke.*

Byssosphæria byssiseda, *Tode Meck.* II., 10.
Tasmania.

Gen. 7. Melanospora. *Corda.*

Melanospora caprina, *Fr. Summ. V. Sc.*, 396.
Tasmania.

Gen. 8. Sphæria. *Hill.*

Sphæria polyasca, *B. & Br. Proc. Linn. Soc. N. S. W.* v. 91.
On Bottle Gourd. Queensland.

Gen. 9. Sphærella. *DeNot.*

Sphærella destructiva, *B. & Br. Proc. Linn. Soc. N. S. W.* v. 91.
On *Medicago.* Queensland.

Ord. VI. **PERISPORIÆI.**

Gen. 1. Corynelia. *Fr.*

Corynelia uberata, *Fr. Sys. Myc.* II., 535.

Gen. 2. Meliola. *Fr.*

Meliola amphitricha, *Fr. Elen.* II., 109.
Victoria.

Meliola Tetraceræ, *Thum. Sym. Myc. Austr.* II., *No.* 92.
Queensland.

Gen. 3. Asterina. *Lev.*

Asterina Baileyi, *B. & Br. Proc. Linn. Soc. N. S. W.* v. 89.
On *Hakea.* Queensland.

Asterina pelliculosa, *Berk. Antarct. Crypt. p.* 137.
Queensland.

Gen. 4. Antennaria. *Link.*

Antennaria scoriadea, *Berk. Hook. Journ.* 1845, 70.
W. Australia. Gipps Land.

PYRENOMYCETES INCOMPLETÆ.

Ord. I. **SPHÆRONEMEI.**

Gen. 1. Sphæronema. *Tode.*

Sphæronema rufum, *Fr. Act. Hohn.* 1818, 357.
Tasmania.

Gen. 2. Phoma. *Fr.*

Phoma ampelinum, *B. & C. North Amer. Fungi. No.* 380.
Australia.

Gen. 3. Excipula. *Fr.*

Excipula strigosa, *Corda. Icon.* III., *f.* 78.
W. Australia.

Gen. 4. Gymnosporium. *Corda.*

Gymnosporium inquinans, *Berk. in Welw. Crypt. Lusit. No.* 60.
W. Australia.

Gen. 5. Phyllosticta. *Pers.*

Phyllosticta fragaricola, *Desm. Pl. Crypt. No.* 686.
On strawberry leaves. S. Australia (Crawford).

Phyllosticta circumscissa, *Cke.*
Amphigena. Maculis orbicularibus, rufo-fuscis, demum delapsis. Peritheciis paucis, minutis, innatis. Sporis ellipticis (·008 × ·002 mm.).
On leaves of apricot and cherry. S. Australia (Crawford).
Very common in South Australia, leaving the leaves perforated with small round holes by the falling away of the spots; hence called the "shot-hole fungus." It is believed to be causing considerable injury to the fruit trees.

CLASSIFICATION OF THE UREDINES.

By M. C. Cooke.

It was not our intention to have made any remarks on the communication at page 116, had we not been challenged to give our reasons for sanctioning the change of specific names there proposed, as if we assumed responsibility. We beg, therefore, at first to observe that we are responsible only for our own communications, and it should not be assumed that we accept the views of our contributors, because we do not rush forward and challenge them. There are one or two points on which we may be permitted to offer an explanation.

The writer in question has adopted the views of Continental authors, as he admits, and is only responsible for his acceptance of them—without conditions—in order "to be in harmony."

With the barbarous combinations that are employed for the subgenera, we do not intend to occupy space. That "Euromyces" should be a sub-genus of "Uromyces" we leave to the consciences of Schröter and Co., but classical authorities contend that "Lepturomyces" and "Micruromyces" as representatives of *Lepto-uromyces* and *Micro-uromyces* is too barbarous, even for botanical "dog-Latin."

On the general scheme of classification we have no strictures to offer, except such as concern what are called the hetercœcismal species, and on this point we have already spoken.

As to the proposed changes in old and well established specific names we must protest.

I.—Because the changes are wholly unnecessary. These names have been in use many years, are thoroughly well known, are open to no plausible objection, and answer all the purposes of science. Only sentimental reasons can be offered for the changes, and not practical ones. Everyone is well enough satisfied with *Puccinia anemones* and only theorists—not practical men—desire to change it and add another synonym to the list. To the law and to the testimony "Next in importance is the avoidance of any useless introduction of new names." *Laws of Botanical Nomenclature. Cap.* I., *Art.* 3.

II.—Because the proposed changes are in opposition to the principles of Botanical nomenclature. If it were desired at all to go behind an accepted name, that name must clearly belong to the same specific plant. *Puccinia flosculosorum* A. & S. for instance, which is proposed to be substituted for *P. compositarum*, Schl. What is gained but confusion by the change? There is no such species as *Puccinia flosculosorum* in Alb. & Schw. or any having correspondence with the same specific plant. *Uredo flosculosorum*, Alb. & Schw. was an *Uredo*, with simple ovate spores. No one who reads the description would dream of applying it to a *Puccinia*. There was no such species known to Alb. & Schw. as *Puccinia flosculosorum*, and therefore the name cannot be applied to it—as

the species of Alb. & Schw. It is useless to argue that the *Uredo* of Alb. & Schw. was an imperfect state of *Puccinia compositarum*, because in that case it becomes only a dropt name, representing only a part of the plant, and cannot be applied to a condition subsequently discovered, and wholly unknown to the authors.

The principles of Botanical nomenclature would authorize us not to go further back than *Puccinia* for a specific name, unless to some previous genus which recognized the salient features of the genus *Puccinia*.

"Nobody is authorized to change a name because it is badly chosen or disagreeable, or another is preferable or better known, or for any other motive, either contestable, or of little import." *Laws of Bot. Nom. Sect.* VI., *Art.* 59.

"Every author who has limited a species somewhat otherwise than his predecessors, so as to exclude, or include a form more or a form less, may be considered to have *destroyed* the ancient species, and to have *created another*, under the same name." *Commentary on Laws*, p. 64.

Plowright then, under the name of *Puccinia flosculosorum* destroys the old species of *Uredo flosculosorum*, A. & S., by adding other forms, and creates another species under the same name, *Puccinia flosculosorum*, Plowright. But, as there is already a name current for the same species, *Puccinia compositarum*, Schl., which has priority, therefore the new name cannot be adopted.

"Publishing a name that cannot be adopted is uselessly throwing a synonym into circulation." *Commentary on Laws*, p. 51.

III.—Because, in some instances, the changes are opposed to the law of priority. Take the proposed *Puccinia tragopogi*, Pers., substituted for *Puccinia sparsa*, Cooke. There is no such species as *Puccinia tragopogi*, Pers., only *Æcidium Tragopogi*, Pers., and the diagnosis of this species will not apply to *Puccinia* at all. Even if it were permitted to take the specific name from Persoon in one genus, and apply it in another, it could not stand as *Puccinia Tragopogi*, Pers., because it implies more than Persoon intended, but it must appear as *Puccinia Tragopogi* (Pers.), Plow. Here we encounter another difficulty, because the law of priority gives the name of *Puccinia Tragopogonis* to Corda. (*Icon.*, 1842), and this cannot be superseded by a later name, that of *Puccinia Tragopogi*, Plow. They are *not* the same species, because *P. Tragopogonis*, Corda, has smooth spores, whilst that called *P. Tragopogi*, Plow., has rough spores. The names are too similar to be permitted together in the same genus.

"Avoid in the same genus names too similar in form—above all, those that only differ in their last letters." *Laws of Bot. Nom., Cap.* III., *Art.* 36.

We might proceed through the whole series in a like manner, but we forbear, and will rest content with this protest against unsettling specific nomenclature, on such insufficient grounds, in order that we may be *in harmony* with those who have done wrong elsewhere, whether Teutons or Titans.

ILLUSTRATIONS OF BRITISH FUNGI.

With the eighteenth part, shortly to be published, the first section of the "Illustrations" will be completed. This will contain 292 plates of the *Leucospori* division of the genus *Agaricus*, and will form two volumes, with an analytical systematic Index. A few species that have been recorded as British will be found omitted, as it was impossible to obtain drawings of them. The following is a list of the deficiencies:—

Agaricus (*Lepiota*) *cinnabarinus* var. *Terrei*, B. & Br. This variety was figured by W. G. Smith in his "Illustrations," and we have no knowledge of its having been found since.

Agaricus (*Armillaria*) *aurantius*, Schæff. This species is said to have been once found in Scotland, and was figured at the time by W. G. Smith, from the Scotch specimens. This figure we produced on Plate 33, but it is certainly not the true *Agaricus aurantius*, Schæff. So that, for the present, we must consider the species as doubtfully British.

Agaricus (*Tricholoma*) *auratus*, Fr., seems to be doubtfully British.

Agaricus (*Tricholoma*) *pessundatus*, Fr. All the specimens or figures which we have yet seen of British individuals under this name are referable either to *Ag. stans* or *Ag. imbricatus*.

Agaricus (*Tricholoma*) *loricatus*, Fr. Of this we have seen no fresh specimens, and have at present no drawing. It is figured by Fries in his "Icones."

Agaricus (*Tricholoma*) *civilis*, Fr. The same remark applies to this species.

Agaricus (*Clitocybe*) *gangrenosus*, Fr., and its variety *nigrescens*, Lasch. The only drawings we have seen cannot belong to the genuine species, and we have found nothing which answers to the description by Fries. We are not aware that it has ever been figured.

Agaricus (*Clitocybe*) *amarella*, Fr. The specimens found and recorded under this name do not correspond with the figure submitted to Fries by Dr. Quelet. It is therefore doubtfully British.

Agaricus (*Clitocybe*) *subalutaceus*, Batsch. We have been unable to obtain drawings of this species.

Agaricus (*Clitocybe*) *polius*, Fr. This seems to be doubtfully British, as far as we can ascertain.

Agaricus (*Clitocybe*) *cryptarum*, Letell. We do not know this species, and have no drawing of the specimens referred to it.

Agaricus (*Clitocybe*) *infundibuliformis*, variety *membranaceus*, Fr., was figured in W. G. Smith's "Illustrations." We have no other drawings.

Agaricus (*Clitocybe*) *trullæformis*, Fr. We have no drawing of British specimens.

Agaricus (*Clitocybe*) *concavus*, Fr.

Agaricus (*Clitocybe*) *pausiacus*, Fr. The same observation applies to these two species.

Agaricus (*Collybia*) *racemosus*, P. The drawings of this species made by Rev. M. J. Berkeley have been mislaid.

Agaricus (*Collybia*) *extuberans*, Fr. We have been unable to secure drawings of British specimens.

Agaricus (*Collybia*) *ozes*, Fr. Unfortunately the only specimens found in this country were not drawn at the time. It has never been figured.

Agaricus (*Collybia*) *murinus*, Batsch. This is unknown to us, and we have seen no figure of British specimens.

Agaricus (*Mycena*) *aurantio-marginatus*, Fr. We have no figure of this species.

Agaricus (*Mycena*) *atro-albus*, Bolt. We only know this species from Bolton's figure.

Agaricus (*Mycena*) *peltatus*, Fr. We have not seen this singular species.

Agaricus (*Mycena*) *mirabilis*, C. & Q. It seems to be doubtful whether this differs from *Ag. iris*, B. & Br.

Agaricus (*Omphalia*) *umbilicatus*, Schæff.

Agaricus (*Omphalia*) *chrysophyllus*, Fr.

Agaricus (*Omphalia*) *glaucophyllus*, Lasch.

Agaricus (*Omphalia*) *rusticus*, Fr.

Agaricus (*Omphalia*) *infumatus*, B. & Br.

Agaricus (*Pleurotus*) *pulmonarius*, Fr.

Of all these species we have no figures, but should any of them be secured hereafter, they will be published, with any additions, as an appendix, at the end of the genus *Agaricus*.

It has been suggested that a reprint of the descriptions of *all* the British species would be desirable, to accompany these plates. The subject is having serious consideration, and will doubtless be adopted.

The pink spored Agarics will be proceeded with at once on the completion of the two volumes of white-spored species. A few vacancies in the list of subscribers, on account of deaths, may be filled up with the commencement of the third volume.

M. C. Cooke.

NEW BRITISH FUNGI.

By M. C. Cooke.

Agaricus (Collybia) psathyroides, *Cooke. Illus. t.* 266.

Ivory-white. Pileus campanulate, obtuse, rather viscid, margin regular, even ; stem erect, slender, hollow, equal, rather tough. Gills very broad, triangular, adnate with a decurrent tooth, rather distant, persistently white. Spores elliptic, colourless. ·015 × ·007 mm. On the ground. Epping Forest.

Pileus ¾ inch broad, nearly an inch high; stem 3-4 inches long, slender. Allied to *Ag. Stevensoni*, B. & Br. Wholly white. Resembling in habit some *Psathyra* or *Panœolus*, but the spores are absolutely colourless when fully mature.

Agaricus (Omphalia) cæspitosus, *Bolton, t.* 41.

Pileus submembranaceous, convex, subhemispherical, umbilicate, ochrey white, margin crenate, sulcate nearly to the top, smooth ; stem curved, fistulose, slightly bulbous at the base ; gills distant, rather broad, shortly decurrent, whitish.—*Cooke Illustrations, t.* 209, *f*, B. On banks near King's Lynn (C. B. P.).

This species has been confounded with *Ag. oniscus*, Fr., both in the " Handbook," and by Fries himself. It is exactly the plant figured in the English edition of Bolton, but the German reprint is coloured quite differently. The colour is entirely of a delicate ochraceous white.

Agaricus (Pleurotus) acerinus, *Fr. Hym. Eur.* 175.

White, tough, pileus fleshy, thin, unequal, clad with silky fibrils ; stem rather lateral, thin, or obsolete villous. Gills decurrent, much crowded, thin, white, then becoming yellowish.

On trunks. Epping Forest (*W. G. Smith*).

Pileus 1-4 inches broad, not hygrophanous. By some oversight this species has not been recorded as British. An excellent figure by Mr. Worthington Smith is in the British Museum.

Thecaphora Trailii, *Cooke.*

Developed in the florets, purplish-brown, pulverulent. Spores globose, usually in fours, rarely 2 or 3, compressed on the inner face ; epispore finely verruculose. ·012-·014 mm. diam.

On *Carduus heterophyllus*. Scotland (*Professor J. W. H. Trail*).

Having very much the habit and appearance of *Ustilago Cardui*, but differs in being a true *Thecaphora*, and in the epispore being verrucose and not reticulate.

Ramularia Cochleariæ, *Cke.*

Epiphylla, orbicularis, alba. Maculis pallidis. Sporis elongato-cylindricis, rotundatis, continuis, hyalinis. 025-·028 × ·0035 mm.

On leaves of *Cochlearia officinalis*. Banks of Don (*Prof. Trail*).

Cylindrosporium niveum, *B. & Br.*

The species described as *Cercospora Calthæ*, in " Grevillea," p. 72, should be referred to the above.

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