SEPTOMYXA FAGICOLA n.s.

Acervulis subconvexis, nigris, primo epidermide velatis dein erumpentibus in globulis nigris; sporis oblongo-fusiformibus, untrunque obtusis, rectis vel leniter curvatis, 4-guttulatis, uniseptatis, $12-24\mu \times 2-3\mu$, hyalinis.

In ramulis *Fagi sylvatici*, Hassop, Derbyshire, May 24, 1915.

The spores are indistinctly septate until treated with iodine, when the vacuoles disappear and the septum becomes prominently visible.

NEW OR RARE MICROFUNGI.

By A. Lorrain Smith, F.L.S., and J. Ramsbottom, M.A.

We are again indebted to Mr. D. A. Boyd for forwarding to us the interesting species of microfungi which he has gathered, and which include many new records for the country and many species new to science. In the present paper we have taken the opportunity to gather together many stray records of Phycomycetes, and have also included the species of Plasmodiophoraceae made known by the work of Dr. E. J. Schwartz.

PLASMODIOPHORACEAE.

SOROSPHERA Schroet. Kryptfl. Schles. III., 1, p. 135 (1886).

Occupying the interior of the host cells. Spores ellipsoid-cuneate, several united into hollow balls, surrounded by a common membrane.

S. Veronicae Schroet. l.c.

Spores cinnamon-brown: spore balls (sorospheres) globose or ellipsoid, $18-28\mu \times 18-23\mu$, several in one host cell formed of numerous ovate spores, wedge-shaped, with narrow part inwards, $8-9\mu \times 4-4.5\mu$, with a smooth clear-brown membrane thickened over the apex. Forming cylindrical, often curved tubercles about 3 mm. thick in stems and petioles of *Veronica Chamaedrys*.

Sevenoaks, Kent (Blomfield and Schwartz in Ann. Bot. XXIV., p. 35 (1910)).

LIGNIERA Maire and Tison in Compt. Rend. CLII., p. 206 (1911).

Parasitic in the unchanged cells of the host not forming tumours: spores united in variously shaped masses.

L. Junci (Schwartz) Maire & Tison l.c.

Spores smooth, wedge-shaped, $5-7\mu$, loosely aggregated or united into spherical or ellipsoid hollow balls.

In the root cells of *Juncus* spp. Sevenoaks, Kent. (*Sorosphaera Junci* Schwartz in Ann. Bot. XXIV., p. 236 (1910).)

L. graminis (Schwartz).

Spores smooth, subglobose, varying considerably in size with an average diameter of about 6μ , the hollow spore balls rarely spherical, usually oblong with slightly rounded ends.

In the roots of *Poa annua*, Sevenoaks, Kent. (*Sorosphaera graminis* Schwartz in Ann. Bot. XXV., p. 791 (1911).)

Maire and Tison (l.c.) described a parasite on *Poa annua* as a *Ligniera* akin to *L. Junci*. Schwartz (Ann. Bot. XXVIII., p. 231 (1914)) apparently accepts the generic transference.

L. Bellidis Schwartz in Ann. Bot. XXVIII., p. 232 (1914).

Amoebae rare in the cells of the host. Spores $5-6\mu \times 4-5\mu$, united in variously formed balls, usually ellipsoid.

In roots of Compositae. Sevenoaks.

"Closely related to *L. graminis* and *L. Junci*, but appears to be distinct, since grass and rush-roots in the immediate vicinity of diseased daisies were found free from infection."

L. Menthae Schwartz l.c.

Amoebae in the root cells of the host. Spores $3-5\mu \times 4-5\mu$, in globose or variously formed groups.

In roots of *Mentha Pulegium*. Chiselhurst.

L. Alismatis Schwartz in Tom. cit. p. 233.

Amoebae rare in the cells of the host. Spores $3\mu \times 4\mu$, the groups arranged similarly to those of *Spongospora*, or in rows or in spheres.

In roots of *Alisma Plantago*. Dunton Green, Kent.

PHYCOMYCETES.

Olpidium Gillii Wildeman, in Ann. Soc. Belge. Micros. XX., p. 42 (1896).

Zoosporangia elliptical, solitary or in groups of two or three in a diatom; neck of zoosporangium always single, piercing the valves and often of considerable length, sometimes reaching half the length of the diatom itself; zoosporangium membrane smooth. Zoospores numerous. Zoosporangia variable in size according to the diatom attacked and the number of parasites contained in a cell.

In *Pleurosigma attenuatum*, *Cocconema lanceolatum*, *Nitzschia* sp. New River, London.

This fungus was figured and described by C. H. Gill in Journ. Micros. Soc. I., p. 1 (1893) as *Ectrogella bacillariacearum* Zopf. Wildeman points out that Gill's figures 1-8 are of an *Olpidium*, and only figure 9 is *Ectrogella*.

O. tumaefaciens (Magnus) Berl. et De Toni ex Sacc. Syll. Fung. VII., p. 312 (1888).

Sporangia single or massed to the number of eight, globose or ellipsoid, with colourless smooth membrane, with long projecting beak, sometimes two beaks on one sporangium; zoospores globose, uniciliate; resting spores unknown.

Chiefly in the rhizoids of *Ceramium flabelligerum*, and *C. acanthonotum* in the end cell, and also in the middle and basal cells of the hairs, seldom in other parts of the plant; causing swelling of the affected host cells.

Recorded from near Edinburgh by Magnus. (Sitzungsb. d. naturf. Freunde Berlin 1872.)

The following two species are included in our British Flora on the authority of E. A. L. Batters in Grevillea XXI., p. 103 (1893), where he states in a review of G. Murray's paper *Parasites on Algae*:—"On our own coasts *Chytridium tumaefaciens* is commonly to be met with on species of *Ceramium*, *Ch. sphacelarum* on *Sphacelariae* and *Cladostephi*, and *Ch. plumulae* on *Antithamnion*."

O. sphacelarum (King) Fischr. in Rabenh. Krypt. Fl. I., 4, p. 26 (1892).

Sporangia single or massed to the number of nine, globose or angular through pressure, with smooth, colourless membrane, with projecting beak; zoospores elongate, uniciliate; resting spores unknown.

In the large apical cell of *Sphacelariaceae*, causing it to swell and become brown or blackish.

O. Plumulae (Cohn) Fisch. in Rabenh. Krypt. Fl. I., 4, p. 27 (1892).

Sporangia located between the wall and the contents of the host cells, single, subglobose or ovoid, reddish or brownish-red, about 15μ in diameter, beak not projecting; zoospores and resting spores not described.

In *Antithamnion Plumula*, causing swelling of the basal cells of the branches.

ECTROGELLA Zopf. in Nova Acta Acad. Leop. XLVII., p. 175 (1884).

Vegetative body long, unbranched, vermiform probably from the first provided with a membrane, the whole of it becoming a sporangium. Sporangia usually extended and vermiform with very thin colourless membrane with many short beaks. Zoospores small, feebly amoeboid, uniciliate. Resting spore and sexuality unknown.

E. bacillariacearum Zopf. l.c.

Sporangia either single, vermiform, 200μ or more long (often filling the whole length of the host cell) or short, spindle-shaped or ellipsoid, as many as thirty in a cell; mostly arranged in the long axis of the host, with one, or two rows of short papilla-like beaks which are always directed towards the girdle of the diatom host and empty on the falling apart of the valves: the diatom wall is not penetrated. Zoospores very small, spherical, $2-3\mu$ in diameter, weakly amoeboid, uniciliate, with diminutive oil-drops.

In *Nitzschia sigmoidea*, New River, London. C. H. Gill in Journ. Roy. Micros. Soc. I., p. 1 (1893).

PLEOLPIDIUM Fischr. in Rabenh. Krypt. Fl. I. iv., p. 43 (1892).

Fruit bodies endogenous, surrounded at first by a very delicate membrane and not clearly to be distinguished from the contents of the host cell. Sporangia clavate or barrel-shaped, single, terminal or intercalary, filling the whole breadth of the host cell and their walls closely adpressed to the wall of the host excepting in the transverse direction; beaks short. Zoospores reniform, spherical or ellipsoid, uniciliate, with irregular movement. Resting spores in spherical or club-shaped intercalary or terminal swellings of the host filament but not cut off by transverse septa; round, with large central oil drop and membrane with fine prickles. No sexuality yet known.

P. irregulare Butler, in Memoirs Depart. Agric. Ind. I., p. 123 (1907).

Sporangia formed in the hyphae of the host, irregular in shape, terminal and intercalary, averaging 23μ in diameter, with a single papilla; zoospores obclavate, with a single cilium borne posteriorly; durable spores single, free in the cavity of the host-filament, which is enlarged to contain them, numerous, $11-15\mu$ in diameter, spherical, of a pale yellow colour, with a moderately thick wall, provided with short regular spines; germination not observed.

Parasitic in *Pythium* ? *vexans*, Kew, 1900, from soil containing roots of *Ophioglossum vulgatum*.

P. cuculus Butler l.c.

Sporangia spherical or pyriform, formed in the spores of the host from which they cannot be distinguished, terminal, regular, about 20μ in diameter, with a single papilla; zoospores as in *Pleolpidium irregulare*; durable spores rare, spherical, single, free in the cavity of the spore of the host, $12-17\mu$ in diameter, (?) smooth, pale yellow; germination not observed.

Parasitic in *Pythium intermedium*, Cork.

WORONINA Cornu in Ann. Sci. Nat. ser. 5, XV., p. 114 (1872).

Sorus endogenous with scarcely recognisable membrane, consisting of a mass of zoosporangia free in the host cell and more or less filling it, without a common membrane. Single sporangium, globose or flattened by contact; zoospores biciliate issuing from a wart-like papilla which pierces the wall of the host plant. Resting stage a globose sorus of closely packed sporangia, which on germination swell up and produce zoospores.

W. polycystis Cornu Tom. cit. p. 176.

Sporangial sori in rows, about $104\mu \times 30\mu$, each sorus bounded by a wall; the sporangia loosely aggregated, almost globose up to 14μ in diam., with a papillate opening. Zoospores ovoid, biciliate, about $4\mu \times 2\mu$. Cystosori single or in rows, in swollen cells of the host, globose or irregular, greyish brown, $40-104\mu$ in diam., the outer membrane brown, with conical warts. Single sporangia angular through pressure, $4-5\mu$ in diam., with a strongly thickened membrane.

In *Saprolegnia* hyphae. Not uncommon.

RHIZOPHIDIUM Schenk, Über das Vorkommen kontraktile Zellen, 1858.

Vegetative body consisting of a usually spherical portion which is epiphytic and a branched or unbranched filamentous endophytic portion; the whole is surrounded by a membrane and is unicellular. The spherical portion enlarges and gives rise to a sporangium or a resting spore, after which the filamentous portion collapses. Zoosporangia sessile, spherical, elongate-clavate, or of some particular shape, with colourless, smooth, fairly thin membrane, emptying through one or more, sometimes slightly projecting, openings. Zoospores passing out in succession, uniciliate, spherical with refractive oil drops; movement darting. Resting spores sessile, spherical, with

colourless or slightly brownish, usually smooth, thick membrane, and a large central oil drop.

R. Eudorinae Hood in Proc. Birmingham Nat. Hist. and Phil. Soc. XII., p. 45 (1910).

Mycelium represented by a thin unbranched protoplasmic thread. Zoogonidangia resting upon the host-cell, flask-shaped, with a rather long neck and a colourless smooth wall, opening by an aperture produced by breaking down of the wall at the apex. Zoogonidia numerous, of ovoidal form, with a single cilium and a minute refractive oil drop. Resting-spores spherical, formed asexually and external to the host-cell, with a thick, colourless, and somewhat sparsely granulated wall, and containing a large oil drop. Length of zoogonidangia $20-35\mu$; breadth of zoogonidangia $10-17\mu$; diam. of zoogonidia 2μ ; diam. of resting-spores $10-16\mu$.

A parasite on the motile colonies of *Eudorina elegans*. Abundant in Bracebridge Pool, Sutton Park, Warwickshire (1908-9).

"The attack was most evident in the early autumn when the *Eudorina*-colonies were becoming very numerous, and material collected in October, 1909, showed all the early stages of attack. The temperature of the water at the time was 12°C . During the winter of 1908-9 the infection was extremely severe, whereas in the following winter it was comparatively slight, the *Eudorina* collected in February, 1910, having apparently completely recovered from the attack."

R. Dicksonii Wright in Trans. Roy. Irish Acad. XXVI., p. 369 (1877).

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

Parasitic in the cells of *Ectocarpus granulosus*, and occurring in great numbers; gathered at Howth, near Dublin, during the winters of 1876, 1877.

R. Barkerianum (Archer) Fischer in Rabenh. Krypt. Fl. I. iv., p. 103 (1892). *Chytridium Barkerianum* Archer in Quart. Journ. Micros. Sci. VII., p. 89 (1867).

Cells much depressed, three- or four-lobed, the lobes broadly rounded; upper surface of the cell concave, bearing at the centre a vertical, hyaline, very slender, terete, minutely capitate process; the cell contents mainly confined to the centre,

leaving the ends of the lobes empty; zoospores making their exit through the opened apices of the lobes.

On *Zygnema*, Callery Bog.

The zoospores make their exit from the opened ends of the radiating lobes. The cell-contents of the joint of the *Zygnema*, on which the fungi were established, were always effete and brown coloured, and destroyed. Occasionally the attachment and root-like appendages of the fungus could be seen penetrating into the *Zygnema*-cell, but more frequently, on a lateral view, the parasite seemed to be seated, merely superficially thereon, and without any apparent means of attachment.

Pythium monospermum Pringsh.

Saprophytic in soil, Cork. E. J. Butler in Memoirs Dept. Agric. India I, p. 71 (1907).

P. vexans de Bary.

Saprophytic in garden soil, Cork; Kew. E. J. Butler in Tom. cit. p. 93.

P. intermedium de Bary.

Saprophytic in garden soil, Cork; Kew. E. J. Butler in Tom. cit. p. 97.

Saprolegnia torulosa de Bary.

On dead fish in pond of Botanical Garden of Bristol University, Jan. 1910.

A. E. Lechmere in New Phyt. IX. p. 305 (1910) and X. p. 201 (1911).

DISCOMYCETES.

Taphrina Carpini Rostr. in Bot. Tidskr., XIV., p. 238 (1883).

Forming "witches' brooms" on *Carpinus Betulus*, causing the leaves to turn deep yellow. Asci formed on the under side of the leaves between the veins, $25\mu \times 8-12\mu$, cylindrical above with a broad base, 20-24 μ wide; spores about 4 μ in diam.

May to August. Not uncommon in Epping Forest.

OTIDEA VIOLACEA n. sp.

Ascomata substipitata, uno latere elongata, extus furfuracea, extus intusque violacea, ad 6 cm. lata; ascis cylindraceutis, c. $300\mu \times 10\mu$, apicibus iodo caerulescentibus; paraphysibus linearibus, vel tenuiter clavulatis; sporis ellipsoideis, hyalinis, $10\mu \times 5\mu$, biguttulatis.

In solo hortense.

Coll. W. B. Grove, Warwick, 1915.

There is a coloured drawing by Mrs. Russell in the Collection of the National Herbarium, of this fungus collected at Wick, Somerset, August, 1855. Differs from *O. leporina* in the violet colour, the spores and the straight paraphyses.

LASIOBOLUS OLIGOTRICHUS n. sp.

Ascomatis gregariis, sessilibus, conicis, levibus, aurantiacis, primum clausis dein irregulariter apertis, externe cellulis irregularibus compositis, $100-210\mu$ cr. $\times$ $280-300\mu$ longis, extus pilis pleurumque perpaucis obsitis, simplicibus, non septatis, rectis, acutis, hyalinis, c. $85-95\mu \times 5\mu$; ascis paucis subcylindraceutis sursum rotundatis, fere sessilibus, $90-140\mu \times 18-30\mu$ iodo non caerulescentibus; paraphysibus gracillimis, numerosis, ad $150\mu \times 2.5\mu$, vacuolatis, hyalinis, rarissime septatis vel ramosis, ad apices non dilatatis; sporis ellipsoideis, c. $20\mu \times 12\mu$.

In stercore Cuniculorum.

Coll. on foray of Essex Field Club, Epping Forest, Oct., 1915.

Somewhat similar to *Lasiobolus equinus*, but differing in the shape and size of most of its parts and especially in the colourless, generally unbranched paraphyses. The asci vary in number from two in the smaller forms up to about ten. The hairs may be entirely absent or vary in number from one to several.

The fungus can be grown on agar-agar made up with a decoction of rabbit dung, to which filter paper has been added. The amount of hairiness then appears to depend upon the amount of moisture.

Cenangella Ericae (Niessl.) Rehm. in Rabh. Krypt. Fl. I. 3, p. 232 (1889).

Apothecia solitary, at first closed, spherical, narrowed to a short stalk, then sessile, opening and exposing the greyish-white disc, externally brown, when dry, closed, wrinkled and almost black, very minute, .5-1 mm. wide; asci clavate, $70-90 \times 8-10\mu$; spores fusiform, straight, two-celled, mostly biguttulate, with a broad central septum, $15-18\mu \times 3-4\mu$; paraphyses filiform often forked, septate widening upwards.

On dead leaves of *Calluna vulgaris*. Coll. D. A. Boyd, Beith, Ayrshire, May, 1912.

The specimen from Ayrshire differs in some slight respects from Rehm's description. The apothecia and asci are somewhat smaller and the paraphyses appear to be filiform throughout.

Pyrenopeziza maculans (Rehm) Boud.

On dead leaves of *Nardus stricta*, Silpho Moor, near Scarborough, July.

C. Crossland in Naturalist 1915, p. 145 (T. B. Roe).

Anthostomella tomicoides Sacc. Fung. Venet. IV., p. 1 (1875).

Perithecia scattered or gregarious, seated under the blackened, shining epidermis, depressed globose, black, about $\frac{1}{2}$ mm. in diameter, the conical ostiole piercing the epidermis and slightly projecting; asci cylindrical with a short, thick stalk, $90-120\mu \times 7-10\mu$; spores obliquely uniseriate, ovoid, unequal sided, truncate at the lower end and provided with a short colourless appendage, $15\mu \times 8\mu$.

On decaying herbaceous stalks. Coll. by D. A. Boyd on stems of *Eupatorium Cannabinum*, West Kilbride, Ayrshire, June, 1914.

ROSELLINIA ALCHEMILLAE n. sp.

Peritheciis sparsis vel gregariis, atris, opacis et carbonaceis, epiphyllis, erumpentibus late globoso-conicis levibus, ad basim $300-350\mu$, vel interdum parviusculis $50-70\mu$, papillatis, poro tandem lato pertusis; paraphysibus teneribus interne granulosis, contortis, ascos superantibus; ascis cylindraceis, $100\mu \times 10-12\mu$; sporis late fusiformibus, utrinque subacutis, monostichis, biguttulatis, c. $17\mu \times 7-8\mu$.

Ad folia putrida *Alchemillae alpinae*.

Coll. D. A. Boyd, Glen Falloch, Perthshire, May, 1914.

Mycosphaerella Pelvetiae Suth. in New Phytol. XIV., p. 34 (fig. 1) 1915.

On the receptacles of *Pelvetia canaliculata*, where, according to the author, it lives in symbiotic union with the host. Everywhere on the British Coasts.

Stigmatella Pelvetiae Suth. in New Phytol. XIV., p. 37 (fig. 2), 1915.

Parasitic on the thallus of *Pelvetia* in Scotland.

Pharcidia Pelvetiae Suth. in New Phytol. XIV., p. 39 (fig. 3), 1915.

Parasitic on *Pelvetia* in Britain.

Pleospora Pelvetiae Suth. in New Phytol. XIV., p. 41 (fig. 4), 1915.

At first parasitic on *Pelvetia*, then saprophytic. (Locality not given.)

P. Euonymi Fuck.

On fallen leaves of *Euonymus* sp. South Cliff, Scarborough, March, 1913.

C. Crossland in *Naturalist* 1915, p. 145. (T. B. Roe.)

Orcadia pelvetiana Suth. in *New Phytol.* XIV., p. 183 (fig. 1), 1915.

Parasitic on *Pelvetia canaliculata*, Orkney and Clare Island.

Didymosphaeria pelvetiana Suth. in *New Phytol.* XIV., p. 185 (fig. 2) 1915.

Parasitic on *Pelvetia canaliculata*, Orkney and Solent.

D. fucicola Suth. *Tom. cit.* p. 188.

Parasitic on *Fucus vesiculosus*, Orkney.

Leptosphaeria Rusci Sacc. *Syll.* II., p. 74.

On cladodes of *Ruscus aculeatus*, Oxsted, Surrey, Nov., 1914.
Previously reported from Kew Gardens.

UREDINEAE.

Puccinia borealis Juel in *Ofvers. af. K. Vet. Akad. Förh.*, p. 413 (1894).

The aecidial stage of this fungus which occurs on *Thalictrum alpinum* was first described by Greville in his *Scottish Cryptogamic Flora*, I., f. 4 (1823) as *Aecidium Thalictri*. "This beautiful species was discovered on Ben Voirlich by Mr. Patterson, in one of Dr. Hooker's excursions to Ben Lomond and the neighbouring mountains in 1821: since which time I had received a specimen from Mr. Arnott, gathered by Mr. Macritchie in the Highlands." The fungus has been overlooked in the recent British lists of Uredineae. Juel showed that the aecidiospores of *Aecidium Thalictri* Grev. infected *Agrostis borealis*, producing uredospores and teleutospores upon it: *Anthoxanthum odoratum* probably served as a second host. The Ben Voirlich specimen is in the herbarium of the Royal Botanic Garden, Edinburgh. Dr. Malcolm Wilson was unsuccessful in a recent search for the fungus on Ben Voirlich.

M. Wilson in *Journ. Bot.* LIII., p. 44 (1915).

P. septentrionalis Juel, *Tom. cit.* p. 383 (1895).

The aecidial stage of this fungus on *Thalictrum alpinum* was described by Johanson from Iceland in 1885 and given the name *Aecidium Sommerfeltii*; he pointed out that it was distinguished from *A. Thalictri* Grev. by the production of its

aecidia on swollen red or violet coloured spots on the stems and leaves of the host plant. Juel, working with material from Norway and Sweden, showed that on infecting *Polygonum viviparum* and *P. Bistorta* with the aecidiospores of *A. Somerfeltii*, uredospores and teleutospores were produced.

Aecidial stage: Of common occurrence on many of the higher mountains of Scotland. Perthshire, Ben Lui, June 1913, Meall nan Ptarmachan, 1914 (in each case at an altitude of about 2,500 feet). Glen Callater, Aberdeenshire, 1845.

Teleutospore stage. Found in abundance on *Polygonum viviparum* on Ben Lui, Oct. 1914.

"Uredospores were not discovered, but this was no doubt due to the late date at which the specimens were collected. *Thalictrum alpinum* occurred in abundance in proximity to the infected plants, but no sign of the aecidial stage was found; it appears that the portions of the host bearing the aecidium die down before the uninfected parts. *Polygonum Bistorta* is not of common occurrence in the vicinity of the infected *T. alpinum*, and it appears probable that this species does not serve as a host for the fungus in these localities."

M. Wilson, Tom. cit. p. 45.

Melampsora alpina Juel, Tom. cit. p. 417 (1894).

On *Salix herbacea* on Ben Lui, at about 2,500 feet, Oct. 1914. Both uredospores and teleutospores present.

M. Wilson, Tom. cit. p. 48.

The differences between *M. alpina* Juel and *M. arctica* Rostr. seem very slight. The uredosori of the former are described as scattered, whereas those of the latter are gregarious and often cover the whole shoot. Dr. Wilson's measurements of uredospores ($19-22\mu \times 14-17\mu$) are greater than Juel's ($15-18\mu$): also he finds the paraphyses reach a length of 88μ as against previous measurements in *M. alpina* ($30-35\mu$) and *M. arctica* (50μ).

HYPHOMYCETES.

Cephalosporium Lefroyi Horne in Gard. Chron. Vol. LVII., p. 139 (1915).

Fungus entomogenous, white; sterile hyphae, septate, loosely interwoven or sometimes intricate, $1.7\mu-3.4\mu$ thick, bearing capitate conidiophores at short intervals; conidiophores simple, septate or continuous, $17-20\mu \times 1.7-2.4\mu$, fastigiate, with an acrogenous, slightly mucilaginous capitulum; capitula globose, $\pm 3.5-7\mu$ diam., thickly beset with spores (fourteen or more); spores hyaline, ellipsoid, ovoid, or oblong, straight or slightly curved, $\pm 7\mu \times 1.1-1.7\mu$.

On *Aleurodes vaporariorum* (white fly), both imago and

larva infesting leaves of *Centropogon* at R.H.S. Gardens, Wisley, Surrey.

Differs from *C. Lecanii* in colour and in dimensions of conidiophores, capitula and spores.

Ramularia arvensis Sacc. in Mich. II., p. 548 (1882). (*Cylindrospora arvensis* Schröt., *Ramularia anserina* Allesch.)

Leaf spots almost round, reddish-brown, often becoming white from the middle, often confluent and covering whole sections of the leaflets. Conidiophores emerging in tufts from the stomata, generally unbranched, non-septate, slightly bent, $20\text{--}35\mu \times 2\cdot5\text{--}3\mu$; conidia cylindrical, round at the ends, in short chains, simple with one, rarely two septa, $18\text{--}35\mu \times 2\cdot5\text{--}4\mu$.

On leaves of *Potentilla anserina*. Coll. D. A. Boyd, Colintrave, Argyllshire, Aug. 1913.

R. Campanulae-latifoliae Allesch. in Hedwigia XXXIV., p. 283 (1895).

Leaf spots small, scarcely 1 cm. across, almost round or irregular, greyish-green below, darker coloured above. Tufts generally hypophyllous, small, white, the conidiophores emerging from the stomata, short, simple, with few projections, $30\text{--}40\mu$ long, $4\text{--}5\mu$ thick. Conidia cylindrical, blunt at the ends, straight, usually 2-3-septate, sometimes slightly constricted at the septa, colourless, $20\text{--}40\mu \times 2\cdot5\text{--}4\mu$.

On fading leaves of *Campanula latifolia*, Largs, Ayrshire. Coll. D. A. Boyd, Sept., 1913.

The spores of the Largs specimen are somewhat wider than the measurements given by Allescher, otherwise the specimens are identical.

R. Cardui Karst. in Medd. Soc. Faun. et Fl. Fenn. XIV., p. 109 (1888).

Leaf spots rather large up to 1 cm. across, whitish grey with a brown margin, often falling out, conidiophores emerging from stomata in dense tufts, irregularly bent, colourless, $45\text{--}70\mu \times 4\text{--}5\mu$; conidia rod-shaped, straight, simple, rarely two-celled, colourless, often in chains, $10\text{--}22\mu \times 2\text{--}5\mu$.

On decaying leaves of *Cnicus arvensis*. Coll. D. A. Boyd, Dalry, Ayrshire, Aug., 1913.

HADROTRICHUM Fuck. Symb. p. 221 (1869).

Conidiophores united at the base in compact masses, rather stout, unbranched, brown. Conidia solitary at the tips, globose or somewhat elongate, one-celled, brown. Parasitic genus. The conidial forms of *Scirrha* and *Phyllachora*.

H. virescens Sacc. & Roum. in Rev. Mycol. III., p. 56 (1881).

Conidiophores forming linear or punctiform black masses, usually about 2 mm. $\times$ 1 mm., somewhat irregular. Conidiophores cylindrical, somewhat clavate, rarely septate, brown, 28-30 μ $\times$ 7-10 μ ; conidia globose, brown, smooth, 7-15 μ in diam.

On leaves of *Agrostis*. Coll. D. A. Boyd, Dalry, Ayrshire, Aug. 1913.

CERCOSPORA VERONICAE n. sp.

Maculis parvis, c. 500 μ diam., zona fulva circumdatis tandem paginam perforantibus caespitulis epiphyllis, numerosis, erectis, septatis, pallido-cinereis, 80-90 μ $\times$ 3-4 μ ; conidiis oblongo-ellipsoideis, 17-20 μ $\times$ 5-6 μ , rectis, continuis dein 1-septatis, hyalinis dein pallido-brunneis.

Ad folia viva *Veronicae Chamaedrys*.

Coll. D. A. Boyd, Island of Cumbrae, Buteshire, Aug. 1914.

DENDROSTILBELLA von Höhn. in Oester. Bot. Zeitschr. LV., p. 22 (1905).

Similar to *Stilbum* in outward appearance, but differing in the branched conidiophores.

D. GLABROVIRENS n. sp.

Synnematibus fasciculatis vel singularibus, erectis, viridibus c. 1 mm. altis, c. 50 μ crassis, capitulis minutis pyriformibus vel globosis, c. 200 μ $\times$ 150 μ diaphano-viridibus; conidiophoris filiformibus, ramulosis; conidiis ovoideis, perexiguus c. 1 μ longis.

In ligno dejecto, Swansea, Sept. 30th, 1915. Coll. Miss H. Smith (Nuneaton).

This fungus was associated with a species of *Corynella* which was considered in the field to be *C. atrovirens*, of which however we have been unable to secure a specimen for microscopic examination. The conidial stage of *C. atrovirens* is pulvinate and sessile, that of *C. glabrovirens* with which we have associated this conidial form is figured in Boudier's Icones Mycol. III., pl. 458, and resembles in outward appearance the specimen here described. *Dendrostilbella prasinula*, a very similar form associated with *Corynella prasinula* differs in the larger size of the head and of the conidia.

Torula epizoa Corda in Sturm, Deutschl. Flora. Pilze II. t. 45 (1829).

Forming small round patches, scattered or coalescent, brown. Conidiophores simple. Conidia in chains, globose.

On fat, &c. On a lubricating grease, "Asbestoline," Cornwall. Sent by Mr. Coon.

The specimen received from Cornwall forms dark and round patches on the grease. The chains are frequently branched and bend in all directions. The conidia are globose, smooth or minutely echinulate and measure about 5μ in diameter.

SPHAEROPSIDEAE.

PHYLLOSTICTA POLEMONII n. sp.

Maculis irregularibus, expansis saepe totum folium occupantibus, brunneis dein griseis; pycnidiis amphigenis laxe gregariis, minutis, immersis, epidermide velatis, $60-90\mu$ diam., pallide brunneis; sporis elliptico-cylindraceutis, utrinque obtuse rotundatis, $5-7\mu \times 2\mu$.

Ad folia languida *Polemonii* sp.

Coll. D. A. Boyd, Salcoats, Ayrshire, July, 1914.

Macrophoma Falconeri Henn. in Hedw. XLII, p. 219 (1903).

Spots marginal, reddish-brown, fading later. Pycnidia gregarious or scattered, superficially erumpent, hemispherical, black, shining, about $250-300\mu$ in diam.; sterigmata oblong or subclavate, $10-25\mu \times 3-4.5\mu$; conidia oblong with obtuse ends, with granular contents or 2-pluriguttulate, hyaline, $15-30\mu \times 10-14\mu$.

On the leaves of *Rhododendron Falconeri*, Berlin.

A fungus gathered on the leaves of *Rhododendron Falconeri* at Gower, Swansea, Oct. 1st, 1915, is in our opinion referable to Henning's species described above. There were the following differences however: the spots were not necessarily marginal, the pycnidia were rarely more than 250μ in diameter and the spores seldom measured more than $18\mu \times 7\mu$.

CONIOTHYRIUM PTERIDIS n. sp.

Pycnidiis gregariis erumpentibus, subglobosis vel sublenticularibus, atris, carbonaceis, ad 200μ diam.; sporulis ellipsoideis vel subglobosis, fuligineis, continuis, $2.5\mu \times 1.5-2\mu$.

In rhacidi et pinnis *Pteridis Aquilinae*.

Coll. D. A. Boyd, Ardrossan, Ayrshire,

ASCOCHYTA PSEUDACORI n. sp.

Maculis elongatis, griseis; pycnidiis epiphyllis, minutissimis, globosis, c. 150μ cr., nigrescentibus; sporis ellipsoideis, uniseptatis, $5\mu \times 2.5\mu$.

In foliis languidis *Iridis Pseudacoris*.

Coll. D. A. Boyd, Colentraive, Argyll, Aug. 1913.

Diplodia pinea (Desm.) Kickx. Fl. Crypt. Flandres I., p. 397 (1867). *Sphaeria pinea* Desm. in Ann. Sci. Nat. XVII., p. 14 (1842).

Pycnidia with globose projecting ostiole, black, ovoid, bursting through the epidermis or cortex, more or less gregarious, or often arranged in a sinuate series when corticolous, scattered when foliicolous; ostiole finally deciduous; spores elliptic-oblong, $35-45\mu \times 16-20\mu$, simple, yellowish, becoming uniseptate, scarcely constricted and reddish brown.

On the branches and needles of dying *Pinus sylvestris*, Swansea, Sept., 1915.

See also Masee, Diseases of Cultivated Plants and Trees, p. 574, where it is stated that the fungus "attacks the leaves and young shoots of various species of *Pinus* in Europe. The leaves fall prematurely and the shoots are eventually killed, but remain for some years before they fall, and produce annually a crop of spores which infect adjoining branches or trees. The disease is most injurious to nursery stock." Experiments conducted at Kew showed that species belonging to the genus *Pinus* could be readily infected by the spores, whereas species of *Picea*, *Abies*, and *Larix* resisted all attempts at infection. See also Board of Agriculture Leaflet No. 199.

STAGONOSPORA ARRHENATHERI n. sp.

Pycnidiis sparsis vel gregariis, immersis, pallide-brunneis, globosis, poro pertusis, minutis, $170-200\mu$ diam.; sporis cylindraceis leniter curvulis vel rectis, utrinque obtusis vel interdum acutiusculis, 3-septatis, hyalinis, non constrictis, $25-35\mu \times 4\mu$.

In culmis *Arrhenatheri elatii*.

Coll. D. A. Boyd, Dalry, Ayrshire, Aug., 1913.

Septoria acuum Oudemans in Nederl. Kruidk. Arch. IV., p. 234 (1885).

Pycnidia on both surfaces of the leaf, punctiform, black, immersed under the epidermis, convex, about $230-270\mu \times 150-200\mu$; sporophores short, about $8\mu \times 3\mu$; spores abundant, cylindrical, simple, $16-18\mu \times 2-2.5\mu$.

On leaves of *Pinus sylvestris*, Swansea, Sept., 1915.

The pycnidia of Oudemans' species were not described, but the habitat and spore characters recorded leave no doubt as to the identity of this minute species.

S. Oenanthis Ell. & Ev. in Proc. Acad. Nat. Sc. Phil. 1894, p. 567.

Spots scattered, small, 1-3 mm., white, subangular, definite.

Perithecia few on a spot (3-6), small, 75μ , black, subastomous. Sporules fusoid-cylindrical, hyaline, nucleate, $20-35\mu \times 1.5-2\mu$, ends subacute, slightly curved.

On leaves of *Oenanthe sarmentosa*, U.S.A.

Coll. D. A. Boyd, on fading leaves of *Oenanthe crocata*, Island of Cumbrae, Bute, and Ardrossan, Ayr., Aug., 1914.

S. Brissaceana Sacc. et Let. in Mich. II., p. 625 (1882).

Spots small up to 1 cm. across, ochraceous yellow with a darker border. Pycnidia epiphyllous, punctiform, about 100μ across, with an ostiole $25-40\mu$ wide, surrounded by dark brown cells; spores filiform, slightly bent and narrower at the ends, with a few oil drops, or obscurely 2-septate, $25-35\mu \times 1-1.5\mu$.

On leaves of *Lythrum Salicaria*. Coll. D. A. Boyd, Stevenston, Ayrshire, July, 1913, and Whiting Bay, Arran, Aug., 1913.

S. LEONTODONTIS n. sp.

Maculis amphigenis albidis et exaridis, c. 1 mm. cr., rotundatis, zona crassa rufobrunnea circumdatis; pycnidiis sparsis, globosis, brunneis, c. 80μ diam., poro pertusis; sporis acicularibus, $25\mu \times 1\mu$, uni- vel pluri-septatis.

In foliis *Leontodontis autumnalis*.

Coll. D. A. Boyd. Machrie Bay, Arran, Aug., 1913.

Possibly the same species as *Rhabdospora Leontodontis* Henn. (Hedw. 1904, p. 73), but the latter grows on the dried stalks of *Leontodon* apparently without forming spots.

S. BROMICOLA n. sp.

Maculis obsoletis; pycnidiis amphigenis, subgregariis, minutis, ad 80μ diam., brunneis, poro 20μ lato pertusis; sporis filiformibus leniter flexuosis, utrinque acutis, continuis, hyalinis, $50-60\mu \times 1\mu$.

In foliis languidis *Bromi mollis*.

Coll. D. A. Boyd, Machrie Bay, Arran, Aug., 1913.

This species differs from *S. Bromi* Sacc. in the absence of spots, the smaller pycnidia and constantly narrower spores which are not wider at the base.

*DISCULA JUNC*I n. sp.

Pustulis sparsis, numerosis, sordide brunneis, epidermide pustulata tectis eamque demum disrumpentibus dehiscentibus, contextu supra et infra imperfecto; sporophoris confertis, simplicibus, $5-7 \times 1\mu$, hyalinis; sporulis minutissimis, $.5-1\mu$, hyalinis.

In calamis *Junci communis*.

Coll. D. A. Boyd, Ardrossan, Ayrshire, Aug., 1914.

The dark colour of the pustules is apparently due to the decaying of the host tissue on which the sporophores are directly seated. Mr. Boyd informs us that this fungus seems to be always found on dead rush stems that have *Sclerotium roseum* (*Sclerotinia Curreyana*) inside them, and that the sclerotia in *Scirpus lacustris* are also associated with a somewhat similar fungus.

SPHAERIDIUM Fres. Beitr. p. 46 (1852).

Sporodochium globose, sessile or narrowing towards the base to a short stalk, fragile, not mucilaginous; conidiophores upright, rod-like, unbranched or branched; conidia apical in simple or branched chains, cylindrical, colourless.

Differing from *Volutella* in the absence of hairs.

S. FOLIICOLUM n. sp.

Sporodochiis sessilibus, subglobosis vel lenticularibus, confertis, c. 200μ diam., ochraceo-albis; conidiophoris simplicibus inferne arcte fasciculatis, tandem superne in conidia utrinque truncata dein ellipsoidea abeuntibus, $10-15\mu \times 3-4\mu$.

Ad folia languida *Salicis pentandrae*.

Coll. D. A. Boyd, Island of Cumbrae, Bute, Aug., 1914.

Gloeosporium Trifolii Peck in 33rd Ann. Report State Mus. Nat. Hist., Albany, p. 26 (1880).

Spots suborbicular often concentrically zoned, brown; spores oblong or cylindrical, obtuse, simple, colourless, $15-22\mu \times 4-6\mu$.

On living leaves of *Trifolium pratense*, U.S.A.

Collected on *Trifolium repens*, near Sandsend, Yorkshire, May, 1913 (C. Crossland in Naturalist 1915, p. 145).

G. Helicis (Desm.) Oud. Fung. Neerdl. No. 196.

Spots epiphyllous, dark brown, scarcely bordered. Spore pustules, lentiform, small, yellowish-brown; spores elongate-clavate, somewhat bent, granular, $20\mu \times 6-7\mu$, colourless.

On leaves of *Hedera Helix*. Coll. D. A. Boyd, Rosneath, Dumbartonshire, June, 1912.

G. Tiliae Oud. Mat. Myc. Neerl. II., p. 31 (1867). var *maculicolum* Allesch. in Rabenh. Kryptfl. I., 7, p. 504 (1902).

G. tiliaecolum Allesch. in Ber. Bay. Bot. Ges. V., p. 20 (1897); Salmon and Wormald in Gard. Chron. LVIII., p. 193 (1915).

This fungus has been known for some time on the Continent as causing a serious disease of lime trees. It appeared last

June in a garden at Bearstead, near Maidstone, on *Tilia cordata*.

Allescher gives the spore size as $8-14\mu \times 4-6\mu$. Laubert in Zeitschr. Pflanzenkr. XIV., p. 259 (1904) gives the length as $10-18\mu$, which Salmon and Wormald have verified. According to Allescher and Laubert the only difference between *G. Tiliae* and *G. tiliaeecolum* is in the more developed spots of the latter. Cf. Trans. Brit. Mycol. Soc. II., p. 55 (1904).

NEW OR RARE BRITISH FUNGI.

By Carleton Rea, B.C.L., M.A.

With Plate IV.

Tricholoma psammopum Kalchbr. Kalchbr. Ic., t. 3, f. 2.

Pileus 3-5 cm. wide, *tawny-brown*, fleshy, convex, minutely squamulose or smooth. Stem 5-7 cm. long, 1.5 cm. thick, *concolorous*, *granularly punctate* from the breaking up of the epidermis, apex *white*, attenuated at the base. Gills straw or flesh colour, emarginate, ventricose, sub-distant. Flesh white, reddish at the base of the stem. Spores white, subglobose $4-5 \times 3-4\mu$, 1-guttulate. Taste slightly bitter.

Under oaks and conifers, Edlington Wood, Yorkshire, 25th September, 1914, Mr. J. Ramsbottom.

Somewhat resembling small forms of *Tricholoma imbricatum* Fr., but distinguished by the granularly punctate stem and the gills not becoming spotted with red. It has also a superficial likeness to *Lepiota polysticta* Berk.

Omphalia scyphoides Fr. Sys. Myc. I., 163; Hym. Eur. 156, Monogr. I., 181.

Shining white, gregarious, pileus 1-3 cm. wide, *somewhat membranaceous*, *umbilicate*, then *cyathiform*, *silky*; margin undulate. Stem 2-6 cm. long, 1-3 mm. thick, solid, base *white strigose*. Gills *very narrow*, 1 mm. wide, decurrent, *crowded*. Flesh white. Spores white, hyaline, pip-shaped, $8-9 \times 5\mu$, with a large central gutta, rounded at one end, pointed at the other. Smell and taste none.

On bare soil in a garden, Bath Weston, Somersetshire, 25th August, 1915, Mr. C. J. Sharpe.

This shining white *Omphalia* is easily recognized by its