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A ..
PRELIMINARY
LIST
OF ..

Haslemere Fungi

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NOTE UPON CLASSIFICATION.

THE arrangement here employed is based upon that of the celebrated mycologist Brefeld, who propounded a natural system of hyphæ-forming fungi. There are two primary groups: the Phycomycetes, or lower algal-like sexual fungi; and the Mycomycetes, or higher asexual fungi. Each of these groups are again subdivided into classes and families as follows:—

PHYCOMYCETES.

ZYGOMYCETES.

(Sexual reproduction by zygospores)

OOMYCETES.

(Sexual reproduction by oospores)

MYCOMYCETES.

ASCOMYCETES.

(Reproduction by sporangia and conidia; spores in asci).

Gymnoascaceæ. **Hypocreaceæ.**

Perisporiaceæ. **Hysteriaceæ.**

Sphaeriaceæ. **Discomycetaceæ.**

Probably form-species { **Sphaeropsidiaceæ**
Melanconiaceæ
Hyphomycetaceæ

BASIDIOMYCETES.

(Reproduction by conidia only, conidia borne on basidia).

Gastromycetes.

Hymenomycetes.

Uredineæ.



THE British Fungus Flora numbers about five thousand species.

Of this huge aggregate no less than two thousand belong to the Basidiomycetes, the group which includes the gilled fungi or agarics; some one thousand two hundred and seventy-five are classed with the Ascomycetes, and the remainder are distributed amongst certain families containing microscopic forms popularly known as "rust," "mildew," and "mould."

The predominance and universal distribution of the Basidiomycetes are entirely accounted for by the immense hymenial surface (consisting of closely packed gills or plates,) protected from rain by a cap or pileus, and the facilities afforded for wind dispersal of the microscopically minute spores or seeds.

It is with the Basidiomycetes or gilled fungi that this list is chiefly concerned, but I have briefly alluded to the other groups, as they contain many well-known pests of farm and garden, it being desirable to emphasise the importance of a general knowledge of this fascinating branch of cryptogamic botany, especially to gardeners, florists, and foresters.

The majority of the species herein enumerated have been observed within a five mile radius of Haslemere Post Office, for the most part by the compiler, within the past five years. Several very interesting forms occur, and I much regret that it is impossible in the space at my disposal to give detailed notes upon these.

The late Mrs. Pratten took the keenest interest in our local fungus flora, and recorded many species.

The occurrence of a few species has been determined from drawings kindly loaned by Miss A. Whympier.

My friends, Dr. C. B. Plowright and Mr. Carleton Rea, have very kindly identified certain species.

I would emphasise the incompleteness of this list. Some four hundred species of Basidiomycetes are noted, but in all probability, an equal number remain to be recorded within the five mile radius.

Specimens for identification will be gladly received at the Museum, and such would be placed on view in the Vivarium. (September and October are the best months for collecting fungi).

PHYCOMYCETES.

THE comparatively small group known as the Phycomycetes or conjugating fungi are characterized by a unicellular mycelium, often parasitic, on plants and animals; sometimes saprophytic, developed in the air or in water. Reproduction sexual or asexual. The species are minute, and much resemble the true moulds (Hyphomycetaceæ) in superficial appearance; in a few, the creeping mycelium forms a large and expanded felt-like mass. The Saprolegniaceæ, or fish-moulds, belong to this group; also the Entomophthoraceæ, or insect moulds. Under the latter is included *Empusa muscæ*, which attacks the common house-fly in autumn. The dead fly, fastened to a window-pane by strands of white mycelium, is a familiar object.

Amongst the numerous garden pests we may allude to the seedling cabbage disease (*Oplidium brassicæ*), which attacks the stem, causing the plant to droop and die. The white rust of Crucifers (*Cystopus candidus*), a cosmopolitan species, upon cultivated and wild cruciferous plants, which is most frequently seen on the common shepherd's purse (*Capsella bursa-pastoris*), often covering it with a snow-white felt; the dreaded potato disease (*Phytophthora infestans*), which has been only too prevalent in our gardens during the past summer; the white mildew of lettuce (*Bremia lactucæ*); the well-known onion mildew (*Peronospora schleideni*); and the violet mildew (*Peronospora violæ*), which is not infrequently seen on the leaves of the cultivated Neapolitan violet.

MYCOMYCETES.

Class I. ASCOMYCETES.

THE second of the two great divisions into which the Mycomycetes are divided. The spores are enclosed in mother cells (asci) usually eight to a cell. The majority are minute fungi parasitic upon living and dead plants. A few of the largest forms are well-known esculents, and include the Truffles and Morels.

Family GYMNOASCACEÆ.

The lowest of the Ascomycetes; ascophore absent, asci naked from the first. The ten or a dozen species which comprise the total British list are divided into two groups (1) with scattered asci, saprophytic upon dung of various animals; (2) with crowded asci, parasitic upon living plants, causing the peculiar growths popularly known as "witches brooms," "bird's nests," and "pocket plums." We have recorded—

Exoascus deformans, causing the leaf curl of peach. It is also responsible for the "witches besoms" of plum, cherry, and bird cherry.

Exoascus pruni, causing the peculiar malformations of the fruit of plum, sloe, and bird cherry known as "pocket plums."

Exoascus turgidus, responsible for the "witches besoms" of the birch (*Betula alba*), so very common in this district.

Family PERISPORIACEÆ.

Perithecia coriaceous, not provided with a distinct mouth. The ascus splits irregularly to allow of the escape of the spores. This family contains several well-known garden pests, including the

Gooseberry-leaf mildew (*Microsphaera grossulariæ*).

Hop mildew (*Sphaerotheca castagnei*).

Hazel-leaf mildew (*Phyllactinia suffulta*).

Rose mildew (*Spherotheca pannosa*).

Family SPHAERIACEÆ.

The members of this group are provided with a distinct mouth for spore dispersal. We may mention the following pests—

Strawberry-leaf Spot (*Sphaerella fragariæ*).

Oak canker (*Diaporthe taleola*).

White root-rot (*Rosellinia necatrix*).

Family HYPOCREACEÆ.

Perithecia usually free, of reddish colour, never carbonaceous. Mouth distinct. Amongst the pests included in this group are—

Ergot (*Claviceps purpuræ*).

Apple-tree canker (*Nectria ditissima*).

Coral-spot disease (*Nectria cinnabarina*). The conidial condition with the bright coral-like spots may be frequently seen upon various trees and shrubs, more especially the red currant.

Family HYSTERIACEÆ.

Ascophore black, elongated; dehiscing by a narrow longitudinal slit. Minute gregarious fungi occurring for the most part on old wood and bark, sometimes on dry leaves.

The commonest species is *Dichaena quercina*. It may be found upon nearly every decaying oak branch lying on the ground in woods.

Lophodermium pinastri, the Pine leaf cast, is well-known to nurserymen.

Family DISCOMYCETACEÆ.

A large group, characterized by the more or less fleshy ascophore, the disc or hymenium being fully exposed at maturity. In many families the species are minute, usually more or less coriaceous and waxy, saprophytic upon dead leaves, wood, and bark. In others the ascophore is large, fleshy, waxy, or sometimes gelatinous. Among the larger forms mention may be made of the following as having occurred in the district—

Rhytisma

acerinum

Bulgaria

polymorpha

Ascobolus

furfuraceus

Chlorosplenium

aeruginosum

Lachnea

stercorea

Dasyscypha

virginea
calycina

Geopyxis

coccinea

Peziza

vesiculosa

linteicola

venosa

ochracea

badia

Otidea

leporina

onotica

aurantia

cochleata

luteo-nitens

Acetabula

vulgaris

Helvella

crispa

lacunosa

Leotia

lubrica

Cudonia

circinans

Morchella

esculenta

Gyromitra

esculenta

Mitrula

phalloides
viride

Spathularia

clavata

Geoglossum

glabrum

The species included under the three families

SPHAEROPSIACEÆ,

MELANCONIACEÆ,

HYPHOMYCETACEÆ,

probably represent but phases in the life-histories of higher (ascigerous) fungi.

The **Sphaeropsidiaceæ** are characterized by the absence of asci; the perithecia bearing conidia on the tips of slender conidiophores. To this group belong the pea-spot (*Ascochyta pisi*), the onion scab (*Vermicularia circinans*), and other parasites at present but imperfectly understood. It has recently been suggested by Dr. M. C. Cooke that certain peculiar brown patches with well-defined purplish margins, occurring somewhat frequently on *Aspidistra* plants in Haslemere, may be referred to the genus *Phyllosticta*, but we have not succeeded in finding any perithecia.

In the **Melanconiaceæ** perithecia and asci are absent. The conidia are produced on a cushion beneath the matrix, and become erumpent. We may mention the apple rot (*Glœosporium fructigenum*) which destroys ripe apples, causing sunken brown patches of very bitter taste; and the cherry-leaf spot (*Coryneum beyerinckii*) which attacks not only the cherry but also the peach, apricot, and plum; it appears as rosy spots on the under side of the leaves in spring, and finally perforates them.

The **Hyphomycetaceæ** are without asci, perithecia, or ascophores. They are usually superficial, a few are internal parasites occurring in the bodies of insects. All are microscopic, and are popularly known as "moulds." To this group belong the so-called brown rot of apple (*Monilia fructigena*)—fruit so attacked do not rot, but remain in a mummified state throughout the winter; the pale spots of the celery-leaf blight (*Cercospora apii*); the apple scab (*Fusicladium dendriticum*); the "shot-hole" fungus of peach, apricot, etc. (*Cerosphora circumcissa*); and the leaf curl of potatoes (*Macrosporium solani*), which is probably identical with the well-known *Macrosporium* of the tomato.

In connection with this group a new record for Great Britain was established in 1901, by the discovery, at Inval, of *Tubercularia maxima*, Rost., a fungus parasitic upon the yellow patches of *Peridermium pini*, which latter, at that time, was very abundant upon the Weymouth pines in that place. Many of the so-called species of *Tubercularia* are known to be the conidial stage of species of *Nectria*. In an allied genus (*Tuberculina*) many species are parasitic upon certain of the Uredineæ.

It is interesting to note that Hoffmann attributes the "witches brooms" of Scots Pine to a species of *Cladosporium*, a genus included in the

family under consideration. Lewis Wigram, Esq., of Redcourt, Haslemere, kindly presented to the Museum last year a very fine "witches besom" from a Scots Pine on his estate; his gardener had had it under observation for several years. I know of a few others in the district but the growth is not at all frequent. I have seen "witches brooms" on larches in the West of England, but in no case other than those on Silver Fir—alluded to elsewhere—have I seen the fungus which is said to be responsible for these peculiar fasciations. It may be remarked that the phenomenon is but imperfectly understood, and requires careful investigation.

Class II. BASIDIOMYCETES*

contains nearly all the fungi popularly designated "mushrooms and toadstools," and is divided into two orders:—

1. GASTROMYCETES.. Spore-bearing surface enclosed internally until mature, when the fungus ruptures and liberates the spores.
2. HYMENOMYCETES. Spore-bearing surface exposed during the development of the plant.

Order 1. GASTROMYCETES.

Divided into five families:—

1. HYMENOGASTREÆ. Hymenium enclosed in a single case (peridium), which does not open systematically; without threads (capillitium) amongst the ripe spores.
2. SCLERODERMEÆ. Hymenium enclosed in a single case which opens irregularly at the apex, threads absent or scanty.
3. NIDULARIÆ. Hymenium enclosed in one or more indehiscent peridiola, which are so completely differentiated as to have been at one time mistaken for the reproductive bodies.
4. LYCOPERDEÆ. Hymenium in a double case which opens at the apex to let out the ripe spores, spore threads present.
5. PHALLOIDEÆ. Hymenium enclosed in a volva, with a central gelatinous layer; when mature the volva bursts, and the spores are exposed immersed in gluten.

HYMENOGASTREÆ.

Rhizopogon
rubescens
Hymenogaster
pallidus

SCLERODERMEÆ.

Scleroderma
vulgare
verrucosum
bovista

NIDULARIÆ.

Cyathus
striatus
vernicosus
Crucibulum
vulgare
Sphaerobolus
stellatus

*The arrangement is Masee's "British Fungus Flora." Vol. I., II., III.

LYCOPERDEÆ.

Lycoperdon
 saccatum
 gemmatum
 pyriforme
 perlatum
 caelatum
 bovista
 pusillum

Geaster
 fimbriatus

PHALLOIDEÆ.

Ithyphallus
 impudicus

Mutinus
 caninus

Clathrus
 cancellatus

Order II. HYMENOMYCETES.

Hymenium not enclosed in a volva, but exposed from the first. In this order are six families:—

1. TREMELLINÆ. Hymenium covering the whole surface; gelatinous, collapsing when dry, regaining its form again when moistened.
2. CLAVARIÆ. Hymenium smooth and vertical.
3. THELEPHOREÆ. Hymenium smooth and horizontal.
4. HYDNEÆ. Hymenium on projecting spines.
5. POLYPOREÆ. Hymenium lining the interior of tubes.
6. AGARICINÆ. Hymenium on the surface of plates or gills.

TREMELLINÆ.

Auricularia
 mesenterica

Exidia
 albida
 glandulosa
 recisa

Ulocolia
 foliacea

Tremella
 intumescens
 mesenterica

Tremellodon
 gelatinosum

Calocera
 viscosa
 cornea

CLAVARIÆ.

Sparassis
 crispa

Clavaria

amethystina
 fastigiata
 muscoides
 cinerea
 cristata
 rugosa
 abietina
 fusiformis
 inaequalis
 fragilis
 vermicularis
 juncea

Typhula
 erythropus

THELEPHOREÆ.

Coniophora
 sulphurea
 olivacea
 cinnamomea

Thelephora
 laciniata

Soppitiella

sebacea
cristata

Peniophora

quercina
gigantea
incarnata
velutina

Hymenochaete

rubiginosa
corrugata

Corticium

sebaceum
laeve
nudum
arachnoideum
polygonium
caeruleum
comedens

Stereum

hirsutum
purpureum
sanguinolentum
rugosum
spadiceum
vorticosum

Craterellus

cornucopioides

HYDNEÆ.**Hydnum**

repandum
auriscalpium
coralloides
farinaceum

POLYPOREÆ**Merulius**

lacrymans

Daedalea

quercina
unicolor

Poria

vaporaria
vulgaris
incarnata

Polystictus

perennis
versicolor
abietinus

Fomes

ulmarius
fomentarius
igniarius
annosus
ribis
ferruginosus

Polyporus

Schweinitzii
squamosus
umbellatus
frondosus
sulphureus
betulinus
adustus
chioneus

Fistulina

hepatica

Boletus

luteus
flavus
chryserteron
et var. "nanus"
subtomentosus
aestivalis
radicans
badius
piperatus
bovinus
granulatus
pachypus
edulis
et var. "laevipes"
calopus
satanas
luridus
purpureus
felleus
rubiginosus?
scaber

Family AGARICINÆ.

Characterized by having the hymenium borne on lamellæ or gills, situated in the majority of cases on the under surface of the sporophore or cap. The species are usually fleshy, and soon decaying, but a few are tough and persistent. Agarics appear in great abundance after the first autumnal rains, that is, during the latter part of September and throughout October; a few species bear the frost well.

This large group is divided into five sections, based upon the colour of the spores.

1. MELANOSPORÆ. Spores black.
2. PORPHYOSPORÆ. Spores purple-black.
3. OCHROSPORÆ. Spores ochraceous, bright brown or bright-rust colour.
4. RHODOSPORÆ. Spores salmon colour or pink.
5. LEUCOSPORÆ. Spores white.

Section I. MELANOSPORÆ. Spores black.

Coprinus

comatus
 atramentarius
 picaceus
 niveus
 micaceus
 deliquescens
 ephemerus
 plicatilis

Anellaria

fimiputris
 separata

Panaeolus

papilionaceus
 campanulatus

Psathyrella

gracilis
 arata
 disseminata

Gomphidius

glutinosus
 viscidus

Section II. PORPHYROSPORÆ. Spores purple-black.

Psathyra

corrugis
 fatuus

Psilocybe

areolata
 udus
 bullacea
 semilanceata
 spadicea
 foenisecii

Hypholoma

sublateritius
 et var. "squamosus"
 capnoides
 fascicularis

HYPHOLOMA—*continued.*

velutinus
 appendiculatus

Stropharia

aeruginosa
 squamosa
 merdaria
 stercoraria
 semi-globata

Agaricus

campestris
 et var. "pratensis"
 arvensis
 haemorrhoidarius

Section III. OCHROSPORÆ. Spores ochraceous, bright brown, or bright rust colour.

Paxillus

involutus
atro-tomentosus

Sub-section CORTINARIUS.

A natural sub-division of the Agaricineæ, known by the bright ferruginous spores and the delicate cobweb-like veil. All the species are terrestrial and autumnal, growing in woods, or under trees in meadows. The gills are cinnamon colour at maturity.

Hygrocybe

castaneus
obtusus
acutus
subferrugineus

Telamonia

torvus
helvolus
hinnuleus
brunneus
triformis

Dermocybe

caninus
sanguineus
cinnamomeus
raphanoides

Inoloma

callisteus

Myxaciium

collinitus
et var. "mucosus"
mucifluus
elatior

Phlegmacium

triumphans
largus
glaucopus
calochrous
purpurascens
decoloratus

End of Sub-section Cortinarius.

Crepidotus

mollis
calolepis

Tubaria

furfuracea

Flammula

flavida

Galera

tenera
hypnorum

Naucoria

melinoides

Hebeloma

mesophœum
crustuliniforme
longicaudum
et var. "radicatus"

Inocybe

incarnata
fastigiata
rimosa
asterospora
geophylla

Bolbitius

fragilis
titubans

Pholiota

praecox
squarrosa
spectabilis
mutabilis

Section IV. RHODOSPORÆ. Spores salmon colour or pink.

Claudopus

variabilis
depluens

Clitopilus

prunulus
orcella

Leptonia

lampropoda
incana

Nolanea

pascua
pisciodora

Entoloma

sinuatum
lividum
jubatum
costatum
sericeum

Pluteus

cervinus
chrysophaeus

Volvaria

parvula

Section V. LEUCOSPORÆ. Spores white.

Lenzites

betulina
flaccida
saepiaria

Panus

stypticus

Cantharellus

cibarius
aurantiacus
tubaeformis
infundibuliformis

Nyctalis

parasitica

Hygrophorus

ceraceus
coccineus
miniatus
puniceus
conicus
psittacinus
nitratu
pratensis
virgineus
chrysodon
eburneus
cossus
olivaceo-albus
hypothejus

Pleurotus

ostreatus
reniformis
mastrucatus
tremulus

Omphalia

pyxidata
telmatiaea
muralis
fibula

Clitocybe

nebularis
odora
cerussata
phyllophila
pithyophila
dealbata
maxima
infundibuliformis
geotropa
inversus
flaccidus
ericetorum
cyathiformis
brumalis
metachroa
fragrans

Laccaria

laccata

Lactarius

torminosus
 turpis
 insulsus
 blennius
 circellatus
 flexuosus
 pyrogalus
 piperatus
 vellereus
 deliciosus
 quietus
 thejogalus
 rufus
 vietus
 mammosus
 volemus
 serifluus
 mitissimus
 subdulcis
 et var. "concauus"
 subumbonatus

Russula

alutacea
 integra
 lutea
 nitida
 puellaris
 nigricans
 adusta
 citrina
 heterophylla
 azurea
 furcata
 aeruginea
 lepida
 vesca
 cyanoxantha
 fellea
 rubra
 drimeia
 ochroleuca
 foetans
 et var. "subfoetans"
 consobrina
 emetica
 rosacea
 fragilis

Mycena

capillaris
 setosa
 corticola
 tenerrima
 vulgaris
 leucogala
 galopoda
 sanguinolenta
 haematopa
 vitilis
 alcalina
 galericulata
 polygramma
 lactea
 luteo-alba
 pura

Collybia

radicata
 longipes
 platyphylla
 fusipes
 lancipes
 butyracea
 velutipes
 confluens
 conigena
 tenacella
 dryophila
 rancida

Marasmius

peronatus
 porreus
 oreades
 fusco-purpureus
 erythropus
 ramealis
 rotula
 androsaceus
 Hudsoni
 epiphyllus

Tricholoma

sejunctum
 flavo-brunneum
 albo-brunneum
 stans
 rutilans
 columbetta
 imbricatum

Tricholoma—*continued.*

terreum
 saponaceum
 cartilagineum
 sulphureum
 inamoenum
 carneum
 gambosum
 personatum
 nudum
 grammopodium
 humile
 sordidum

Armillaria

mellea
 mucida

Lepiota

procera
 rachodes

Lepiota—*continued.*

prominens?
 cristata
 carcharias
 granulosa
 felina

Amanitopsis

vaginata
 strangulata
 adnata

Amanita

virosa
 phalloides
 mappa
 pantherina
 muscaria
 rubescens
 spissa
 nitida

UREDINEÆ.

Characterized by the mycelium being developed in the tissues of living plants, the spores vary according to the host plant upon which they occur. The members of this group are very destructive. Many are only too well known to agriculturists as causing the "rust" of cereals. It has been lately discovered that there are no less than six distinct biological species of *Puccinia graminis*, occurring respectively on oat, wheat, rye, aira, agrostis, and poa. In all of these the æcidiospores are produced upon the leaves of the common barberry, and are morphologically indistinguishable, yet infection from them depends entirely upon the host of the fungus in the uredo form. If the uredospores grew on oat then the æcidiospores will infect oat only, if on wheat they will infect wheat only, and so on. From this it is obvious that a field of mildewed wheat may be adjacent to one of oat without mildew, and the farmer may be quite easy in his mind that the one will not infect the other.

The theory that infection spreads from separate centres is no longer tenable. It has been found that the distance which the æcidiospores may be carried by atmospheric agency has been greatly exaggerated. In some parts of India the mildew spreads in spite of the fact that the nearest barberry bush is 300 miles away. Uredo spores have also been found before the æcidiospores.

The experiments carried out in Sweden by Professor Eriksson are so interesting that I may be pardoned for quoting at some length from Dr. Plowright's summary of them in the proceedings of the British Mycological Society, vol. I., p. 79 (1898).

"In Sweden the dominant rust is *Puccinea glumarum*, and this form Eriksson has made the subject of special study, with the particular object of elucidating this question. In the first place he noticed that the uredospores in spring appeared on the young plants of certain varieties four or five weeks after the wheat had been sown; and, in the second place, that sunny parts of the field were sometimes worse affected than the shady. These observations induced him to try the following experiment: young plants, immediately after the melting of the snow in spring, were enclosed in wide glass tubes carefully packed at both ends with cotton-wool. In from six to eight weeks *Uredo glumarum* appeared upon them. It is possible that this may have resulted from an infection in autumn, although it is not probable, for one would have *cæteris paribus* expected had this been the case that the uredo would have shewn itself sooner. He therefore sowed seeds of a variety of barley, extremely susceptible to yellow rust, in sterilized soil, and properly protected from external infection, yet, even then, a certain proportion became rusted. He therefore concludes that the fungus arose from "internal germs inherited from the parent plant," which can only be detected just before the eruption of the young pustules. Hence, the fungus lives for a long time a latent symbiotic life as a mycoplasma in the cells of the embryo, and only assumes the visible forms of mycelium just before the eruption of the sori. Therefore the severity of an attack of rust (or mildew) depends: (1) On the external surroundings, the environment of the plant, the weather, the soil, manuring, etc.; if these conditions be favourable the latent mycoplasma ceases its symbiotic existence and develops into mycelium and spores. (2) On the accession of external infective material, *i.e.* spores from without. The mycoplasmic symbiosis of *P. glumarum* is more energetic in such varieties as Horsford's Pearl, which is especially liable to this rust, than in Squarehead, which is practically exempt, because the symbiotic existence of the parasite with this variety is so languid as to be practically non-existent."

The following species have been observed in this district. The arrangement is that of Dr. Plowright's "Revised List of the British Uredinæ," *Brit. Mycol. Soc., Trans., vol. I., p. 100.*

UROMYCES.

<i>Uromyces</i>	<i>fabæ</i>	on	<i>Faba vulgaris</i>
"	<i>orobi</i>	"	<i>Lathyrus macrorrhizus</i>
"	<i>trifolii</i>	"	<i>Trifolium pratense</i>
"	<i>poæ</i>	"	<i>Ranunculus repens</i>
"	<i>rumicis</i>	"	<i>Rumex conglomeratus</i>
"	<i>ficariæ</i>	"	<i>Ranunculus ficaria</i>
"	<i>scillarum</i>	"	<i>Scilla nutans</i>

PUCCINIA.

Puccinia galli	on	<i>Galium mollugo</i>
„ asparagi	„	<i>Asparagus in gardens</i>
„ calthæ	„	<i>Caltha palustris</i>
„ lapsanæ	„	<i>Lapsana communis</i>
„ variabilis	„	<i>Taraxacum officinalis</i>
„ pulverulenta	„	<i>Epilobium montanum</i>
„ violæ	„	<i>Viola canina</i>
„ menthæ	„	<i>Mentha rotundifolia</i>
„ graminis	„	<i>Agrostis, Poa, etc.</i>
„ coronata	„	<i>Rhamnus frangula</i>
„ phalaridis	„	<i>Arum maculatum</i>
„ poarum	„	<i>Tussilago farfara</i>
„ suaveolens	„	<i>Carduus arvensis</i>
„ hieracii	„	<i>Crapis virens</i>
„ taraxaci	„	<i>Taraxum officinalis</i>
„ pruni	„	<i>Prunus domestica</i>
„ lychnidearum	„	<i>Lychnis diurna</i>
„ tragopogi	„	<i>Tragopogon pratensis</i>
„ campanulæ	„	<i>Campanula rotundifolia</i>
„ aegopodii	„	<i>Aegopodium podagraria</i>
„ fusca	„	<i>Anemone nemorosa</i>
„ bunii	„	<i>Conopodium flexuosum</i>
„ adoxæ	„	<i>Adoxa moschatellina</i>
„ glomerata	„	<i>Senecio jacobæa</i>
„ malvacearum	„	<i>Malva rotundifolia</i>

TRIPHAGMIUM.

Triphragmium ulmarie	on	<i>Spiræa ulmaria.</i>
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PHRAGMIDIUM.

Phragmidium fragariastrum	on	<i>Potentilla fragariastrum</i>
„ tormentillæ	„	<i>Potentilla tormentilla</i>
„ rubi	„	<i>Rubus fruticosus</i>
„ subcorticatum	„	<i>Rosa canina</i>

ENDOPHYLLUM.

Endophyllum euphorbiæ	on	<i>Euphorbia amygdaloides</i>
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GYMNOSPORANGIUM

Gymnosporangium clavariæforme	on	<i>Cratægus oxyacantha</i>
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MELAMPSORA

Melampsora lini	on	<i>Linum catharticum</i>
„ tremulæ	„	<i>Populus alba</i>
„ vitellinæ	„	<i>Salix fragilis</i>
„ populina	„	<i>Populus nigra</i>
„ hypericorum	„	<i>Hypericum androsaemum</i>
„ pustulata	„	<i>Epilobium angustifolium</i>
The <i>Æcidiospores</i> on Silver Fir		(<i>Abies pectinata</i>)

MELAMPSORIDIUM**Melampsoridium** betulinum on *Betula alba***COLEOSPORIUM****Coleosporium** senecionis on *Senecio jacobæa*. **Æcidiospores** on*Pinus sylvestris* = **Peridermium oblongisporium**.Uredo spores occur also on *Tussilago farfara* and *Sonchus arvensis*." euphrasiæ on *Euphrasia officinalis*." melampyri " *Melampyrum arvense*.**CRONARTIUM****Cronartium** ribicolum on leaves of red or black currant.**Æcidiospores** on Weymouth Pine (*Pinus strobus*).

We are told by Dr. Plowright that a single generation is sufficient to establish a permanent change in habitat. If red and black currant bushes are infected by **æcidiospores** from a certain pine tree and the resulting uredospores again infect that pine, it will then be found that a second infection of the currant bushes is no longer indiscriminate. The red currant leaves only will receive infection from **æcidiospores** produced by previous infection from the red, and the black from the black. The black will not infect the red, nor the red the black, a sort of "potential specificity," to use Mr. Jonathan Hutchinson's expression, is already conferred upon a fungus which, to all external appearances, remains exactly the same.

UREDO**Uredo** mulleri on *Rubus fruticosus***CÆOMA****Cæoma** mercurialis on *Mercurialis perennis***ÆCIDIUM (PERIDERMIIUM)****Æcidium** elatinum on *Abies pectinata*, causing "witches brooms." The needles of infected branches are always stunted and fall off in August. The **æcidiospores** are always upon the needles, never upon the branches. The **uredo** stage of this fungus is unknown." **oblongisporium** on leaves of *Pinus sylvestris*. **Æcidial stage** of **Coleosporium senecionis** already alluded to." **strobi** on the cortex of *Pinus strobus*. **Æcidial stage** of **Cronartium ribicolum** (see above)." **pini** on the cortex of *Pinus sylvestris*. It has nothing to do with *P. oblongisporium*, and the **uredo stage** is at present unknown. (See p. 7.)