

www.e-rara.ch

Outlines of British Fungology

Berkeley, Miles Joseph

London, 1860

ETH-Bibliothek Zürich

Shelf Mark: Rar 3453

Persistent Link: <https://doi.org/10.3931/e-rara-17128>

Chapter V. Growth of fungi.

www.e-rara.ch

Die Plattform e-rara.ch macht die in Schweizer Bibliotheken vorhandenen Drucke online verfügbar. Das Spektrum reicht von Büchern über Karten bis zu illustrierten Materialien – von den Anfängen des Buchdrucks bis ins 20. Jahrhundert.

e-rara.ch provides online access to rare books available in Swiss libraries. The holdings extend from books and maps to illustrated material – from the beginnings of printing to the 20th century.

e-rara.ch met en ligne des reproductions numériques d'imprimés conservés dans les bibliothèques de Suisse. L'éventail va des livres aux documents iconographiques en passant par les cartes – des débuts de l'imprimerie jusqu'au 20e siècle.

e-rara.ch mette a disposizione in rete le edizioni antiche conservate nelle biblioteche svizzere. La collezione comprende libri, carte geografiche e materiale illustrato che risalgono agli inizi della tipografia fino ad arrivare al XX secolo.

Nutzungsbedingungen Dieses Digitalisat kann kostenfrei heruntergeladen werden. Die Lizenzierungsart und die Nutzungsbedingungen sind individuell zu jedem Dokument in den Titelinformationen angegeben. Für weitere Informationen siehe auch [Link]

Terms of Use This digital copy can be downloaded free of charge. The type of licensing and the terms of use are indicated in the title information for each document individually. For further information please refer to the terms of use on [Link]

Conditions d'utilisation Ce document numérique peut être téléchargé gratuitement. Son statut juridique et ses conditions d'utilisation sont précisés dans sa notice détaillée. Pour de plus amples informations, voir [Link]

Condizioni di utilizzo Questo documento può essere scaricato gratuitamente. Il tipo di licenza e le condizioni di utilizzo sono indicate nella notizia bibliografica del singolo documento. Per ulteriori informazioni vedi anche [Link]

CHAPTER V.

GROWTH OF FUNGI.

FUNGI consist of two principal parts, the vegetative and the fructifying. If we take for instance a common Mushroom, the vegetative is represented by the spawn, which for a time carries on all the existing functions of the plant; the fructifying by the stem with its cap and gills, which bears nearly the same relation to the spawn, as the flower with its various organs to the stem on which it grows. The spawn may flourish for years without ever bearing any fruit, but fruit can never be produced without spawn. This fact is generally overlooked, because the fruit bears usually so very large a proportion to the spawn; but the proportion is not greater than in many parasitic plants—as, for instance, in the *Rafflesia*, which grows on the roots of *Cissus*, with but a very slight apparatus between the flowers and the matrix; and the same may be said of *Balanophora*, of which one is represented in Plate 2, fig. 8.

The spawn of Fungi, whether in a cellular or filamentous condition,—for it undergoes an infinite variety of modifications,—is developed in various situations, and even when present beyond a doubt amongst the tissues of plants at whose expense it lives, is very difficult to detect, in consequence of

the ease with which it may be confounded with the divided walls of the cells and little fragments which project from them when a section is made for the microscope. At times, however, all difficulty ceases, and in potatoes affected with the Mould which bears so great a part in the production of the Potato murrain I have seen instances in which the tissues were almost entirely replaced by the spawn of the Fungus.

One peculiarity about the growth of Fungi is the tendency which they have to assume a circular disposition, and that not merely in cases where the spawn is perennial, but where the whole existence of the Fungus is confined to a few days or weeks. A mass of spawn, however, it must be observed, does not arise in general from a single spore, but from a collection of spores, which spread in every direction and form a common felt from whence the fruit rises. I will not enter upon the question whether it is possible that several spores, after making a common felt, may enter into the composition of the same fruit. This is indeed asserted by Ehrenberg, but the point is one of extreme delicacy, and requires much confirmation before it can be received as an established fact. Nevertheless, as the mass grows from a common centre, it is conceivable enough that at a common distance from that centre the spawn should be in a fit condition to produce fruit, and that as it continues to spread, the same process should take place again; and that, in this way, a concentric arrangement of the fruit should take place, as is the case in some Lichens; as, for example, in that formerly known under the name of *Lichen concentricus*.* This disposition is especially evident in some of the parasites which affect fruit, and in none more so than in *Oidium fructigenum*, a Mould which is extremely

* Now *Lecidea atro-alba*.

common in autumn on pears, apples, and other fruit, and frequently while yet hanging on the tree.

In the fields we see this tendency illustrated by the formation of fairy rings, which have for a long time puzzled philosophers, and are not without their difficulties now. These rings are sometimes of very ancient date, and attain enormous dimensions, so as to be distinctly visible on a hillside from a considerable distance. It is believed that they originate from a single Fungus, whose growth renders the soil immediately beneath unfit for its reproduction. The spawn, however, spreads all round, and in the second year produces a crop, whose spawn spreads again, the soil behind forbidding its return in that direction. Thus the circle is continually increased, and extends indefinitely till some cause intervenes to destroy it. If the spawn did not spread on all sides at first, an arc of a circle only is produced. The manure arising from the dead Fungi of the former years makes the grass peculiarly vigorous around, so as to render the circle visible even when there is no external appearance of the Fungus, and the contrast is often the stronger from that behind being killed by the old spawn. This mode of growth is far more common than is supposed, and may be observed constantly in our woods, where the spawn can spread only in the soil or amongst the leaves and decaying fragments which cover it.

The rapidity with which spawn penetrates, and the depth to which it enters, is often quite surprising. The most solid timber, in a few months, when exposed to the weather and in a damp situation favourable to the development of Fungi, will sometimes show unequivocal traces of spawn. I have seen, for instance, elm trunks which were perfectly sound when felled, penetrated by the end of the second year with spawn to within a few inches of the centre; and in this case

it must be remembered that vegetation goes on in the trunk for nearly a twelvemonth before any Fungi can establish themselves. The growth of Dry-rot is unfortunately familiar to all, and instances occur in which its spawn not only enters the wood, but penetrates solid structures of brick.

When spawn has once taken possession of a spot favourable to its growth, it is astonishing what an immense resistance it will sometimes overcome. Large flagstones, for instance, are sometimes raised by Mushrooms, and even tender species like the *Coprini* (Plate 12, fig. 1) will sometimes resist a considerable pressure.

Where the spawn of Fungi has high powers of vegetation, but no possibility of getting access to the external air, it assumes peculiar forms which are sometimes extremely puzzling. In the middle of a solid trunk, for instance, it forms black plates,—as in the case of the common scaly Sapball, *Polyporus squamosus*, and several of the more solid *Sphæriacci*,—while, when running between the bark and wood, it assumes the form of a flat, anastomosing, black seaweed, rather than of a Fungus, in which cases it is known under the name of *Rhizomorpha subcorticalis*, etc. This form is assumed by the spawn of various *Polypori* and *Xylariæ*, and in some cases the condition to a certain extent seems to be almost normal. The absence of light, too, impedes the proper development of Fungi, and hence a variety of forms occur, very few of which perfect their fruit. I have even found a *Coprinus*, which grew down from the interior of the roof of a hovel, though perfect in other respects, absolutely devoid of fruit.

Spawn, as said above, may exist for years without producing fruit, and it is probable that this is equally the case whether it runs through soil or decaying substances, or amongst living tissues, whether without or within their walls.

Wheat Mildew, for instance, often arrives at a certain stage of growth without perfecting its fruit, a fact which sufficiently accounts for the apparently sudden appearance which it makes in seasons favourable to its full development amongst our crops.

As regards the growth of individual Fungi, it takes place essentially in a direction from the centre to the circumference, or, in other words, it is centrifugal. Hence a *Polyporus*, such as *P. fraxineus*, involves every stick and blade of grass in its way as it increases in diameter. The mode of growth is admirably illustrated by a section of *Polyporus hispidus*, so common on apple-trees, in which the threads of which it is composed are seen to radiate in one direction towards the pileus, where their free ends form the hispid fascicles on the surface, and in another direction towards the hymenium, where they form the walls of the tubes and sporophores. It is not indeed intimated that no growth takes place in any other direction, but that the main direction is centrifugal.

Fungi are in general of short duration, but some go on increasing for years. *Polyporus fraxineus*, though only a few inches across, the first year, attains at length a breadth of as many feet. Some of the stipitate *Polypori* scarcely attain their full characters till the second year, and a few even of the softer species, if they get through the winter, sprout again from the portion of tissue which remains sound. In such case, though at first the nutriment was derived from the matrix, by means of the spawn which performs the functions of roots, life is carried on by the absorption of surrounding moisture, and perhaps partly at the expense of the dead Fungi. Even some Agarics, as *A. fusipes* (Plate 5, fig. 5), seem sometimes to sprout from the decayed stumps of the previous year, without any fresh mycelium.