

**GUIDE TO SOWERBY'S MODELS  
OF BRITISH FUNGI IN THE  
DEPARTMENT OF BOTANY,  
BRITISH MUSEUM (NATURAL  
HISTORY)**

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Guide to Sowerby's models of British fungi in the Department of botany, British Museum  
(Natural History) by Worthington G. Smith

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**WORTHINGTON G. SMITH**

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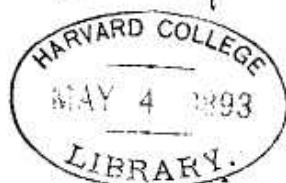
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BY  
WORTHINGTON G. SMITH, F.L.S.

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The British Museum.  
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## P R E F A C E .

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THE collection of models described in this Guide was made by James Sowerby in the course of the publication of his *English Fungi* (1797—1809). His purpose in their preparation was to exhibit to the public such a series of edible and poisonous species as would help to prevent the fatal mistakes so often made from eating poisonous fungi. His collection, consisting of more than two hundred models, was arranged in his house, and opened free to the public on two days each month.

After his death the models were acquired, in 1844, by the Museum from his son, James De Carle Sowerby.

The greater number were made of fragile unbaked pipe-clay. Many of the models were injured before they came into the possession of the Museum, and in the course of years the colouring had been greatly altered by light and dust. The injuries having been carefully repaired by a skilful formator, Mr. Worthington G. Smith undertook to restore the natural colours and to remount the models. By his deft manipulation the models have become once more faithful representations of the living plants.

The illustrations of the Hymenomyces in this Guide are from Stevenson's *British Fungi*, by the kindness of the publishers, Messrs. Blackwood and Sons, Edinburgh. The illustrations of the other groups were prepared by Mr. Smith for this publication.

WILLIAM CARRUTHERS.



## DIAGNOSTIC CHARACTERS.

*The Fungi represented in the Models are the larger forms. They belong to the several Orders of which the diagnostic characters are given in the following key:—*

CLASS I. BASIDIOMYCETES.—Spores borne *on* more or less club-shaped cells—basidia.

SUB-CLASS I. HYMENOMYCETES.—Spore-bearing surface or hymenium exposed during development.

- Order I. *Agaricinae*.—Hymenium spread over the surface of lamellae or gills.
- „ II. *Polyporeae*.—Hymenium lining the interior of tubes.
- „ III. *Hydnæe*.—Hymenium spread over spines.
- „ IV. *Thelephoreae*.—Hymenium smooth and horizontal.
- „ V. *Clavariæ*.—Hymenium smooth and vertical.
- „ VI. *Tremellinae*.—Hymenium covering entire surface. Gelatinous.

SUB-CLASS II. GASTEROMYCETES.—Spore-bearing surface or hymenium enclosed until maturity.

- Order VII. *Phalloideae*.—Hymenium enclosed in a volva with a middle gelatinous layer—at maturity volva ruptured and hymenium exposed.
- „ VIII. *Lycoperdaceae*.—Hymenium enclosed in a double deliscent peridium—spores borne on a capillitium.
- „ IX. *Sclerodermæ*.—Hymenium enclosed in a single, deliscent, thick peridium opening at the apex irregularly; capillitium absent or scanty.
- „ X. *Hymenogastreae*.—Hymenium enclosed in a single indehiscent peridium. Capillitium absent. Subterranean.

CLASS II. ASCOMYCETES.—Spores borne *within* more or less tubular cells—asci.

SUB-CLASS I. DISCOMYCETES.—Spore-bearing surface more or less basin-shaped, exposed. Bright coloured.

- „ II. PYRENOAMYCEES.—Spore-bearing surface flask-shaped, spores escaping through an ostiole. Black.
- „ III. TUBERACEÆ.—Spore-bearing surface enclosed in an indehiscent peridium. Subterranean.

CLASS III. MYXOMYCETES.—Consisting of masses of free, moving protoplasm, plasmodia, forming sporangia enclosing large numbers of spores.

## GUIDE TO THE MODELS OF FUNGI.

FUNGI are reproduced by microscopic cells named spores, which are the analogues of the seeds of flowering plants. The spores may be white, yellow, pink, red, brown, purple, or black; blue and green are very uncommon colours. The spores of the fungi represented by the models are either borne naked on a particular part of the surface of the fungus (*hymenium*), as in the *Agaricineæ*, *Polyporeæ*, etc.; naked within the substance of the fungus, as in the puff-balls, etc.; or in little transparent sacs (*asci*), as in the cup-fungi and some truffles.

### CLASS I.—BASIDIOMYCETES.

Nearly six-sevenths of the models belong to the naked-spored fungi (*Hymenomycetes*). In the first order (*Agaricineæ*) the *hymenium* is spread over the surface of gills; when ripe, the spores fall from the *hymenium* as a fine powder.

A microscopic examination of a portion of the gill shows that the spores AA are borne on slender and delicate supports (*sterigmata*) BB. The cells at CC are the ordinary cells of the mushroom; the larger ones at DD are termed *basidia*. In all the *Hymenomycetes* the spores are produced in fours. The delicate threads proceeding from the germinating spores form the *mycelium*, which is usually white, and is popularly termed "spawn." From this mycelium the perfect fungus arises, reproducing the parent form.

As a rule, the spores of the larger fungi are very short-lived, some retaining their vitality for only a few hours; while the mycelium is usually long-lived, waiting suitable conditions for growth.

Some of the higher fungi grow rapidly, and are fully developed from the spore in a few days, like some of those found on dung; while others take a much longer time. Some are very evanescent, living but a few hours; while others, which grow on trees, continue to increase in size for many years.

One of the smallest members of the *Agaricineæ* is *Coprinus*

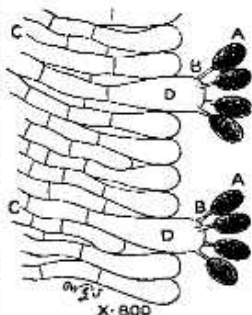


Fig. 1.—Section of a portion of the gill of a mushroom, showing the reproductive bodies or spores. (Enlarged 800 diameters.)

*radiatus*, usually less than half an inch high, and so delicate that it may be destroyed by a breath. It is so light that seventy-two thousand specimens would be required to weigh an ounce, and yet each individual is built up of more than twenty-five million cells.

In studying the *Agaricineæ*, the first point of importance is the determination of the colour of the spores, whether they are white, pink, brown, purple, or black. The colour of the spores is frequently the same as that of the gills; but this agreement cannot be depended upon, as the colour of the gills often changes during growth. Thus the gills of the common mushroom are first white, then pink, next purple-brown, and ultimately black; while the spores are dark purple-brown. The colour of the spores can be easily observed by removing the stalk of the fungus, and laying the cap, with the gills under, on a piece of paper or glass. In a few hours the fallen spores will form a coloured impression of the gills.

### SUB-CLASS I.—HYMENOMYCETES.

#### ORDER I.—AGARICINEÆ.

##### GENUS I.—AGARICUS L.

The genus *Agaricus* is divided into five series by the colour of the spores:—

- |                            |              |
|----------------------------|--------------|
| 1. White spores . . . . .  | LEUCOSPORI.  |
| 2. Pink spores . . . . .   | HYPORRHODII. |
| 3. Brown spores . . . . .  | DERMINI.     |
| 4. Purple spores . . . . . | PRATELLÆ.    |
| 5. Black spores . . . . .  | COPRINARIÆ.  |

These groups, except the last, are well represented in the models, and the outlines on the back of the case show, by the tint of the paper on which they are drawn, the colour of the spores.

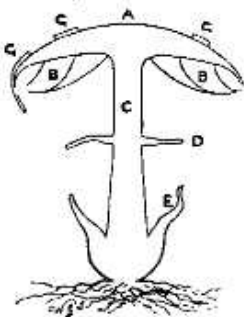


Fig. 2.—Section of *Agaricus phalloides* Fr.

These series, however, somewhat overlap, and some species exhibit relationships with other *Agaricineæ* not belonging to the genus *Agaricus*.

The colour of the spores having been determined, it is necessary to examine a section of the specimen, especially in relation to the attachment of the gills to the stem, and to observe the presence or absence of a ring (*annulus*) round the stem. The stem may be solid or hollow, and thickened upwards or downwards; it may be naked at the base, or spring from an enclosing wrapper (*volva*). The cap may be thick and fleshy, or thin and membranous; deeply depressed, or rounded and incurved. The gills may be thick or thin.

The material on which the fungus grows should be noted, whether on the earth, on dung, on dead or living plants or animals;