

589.22

B77g

Guide to Mr. Worthington Smith's
Drawings of Field and Cultivated
Mushrooms and Poisonous or
Worthless Fungi often Mistaken
for Mushrooms

UNIVERSITY OF ILLINOIS LIBRARY

FEB 4 1920

EXHIBITED IN THE

DEPARTMENT OF BOTANY

BRITISH MUSEUM

(NATURAL HISTORY)



LONDON

PRINTED BY ORDER OF THE TRUSTEES
OF THE BRITISH MUSEUM

1910



LIBRARY
OF THE
UNIVERSITY
OF ILLINOIS

589.22

B77g

Return this book on or before the
Latest Date stamped below.

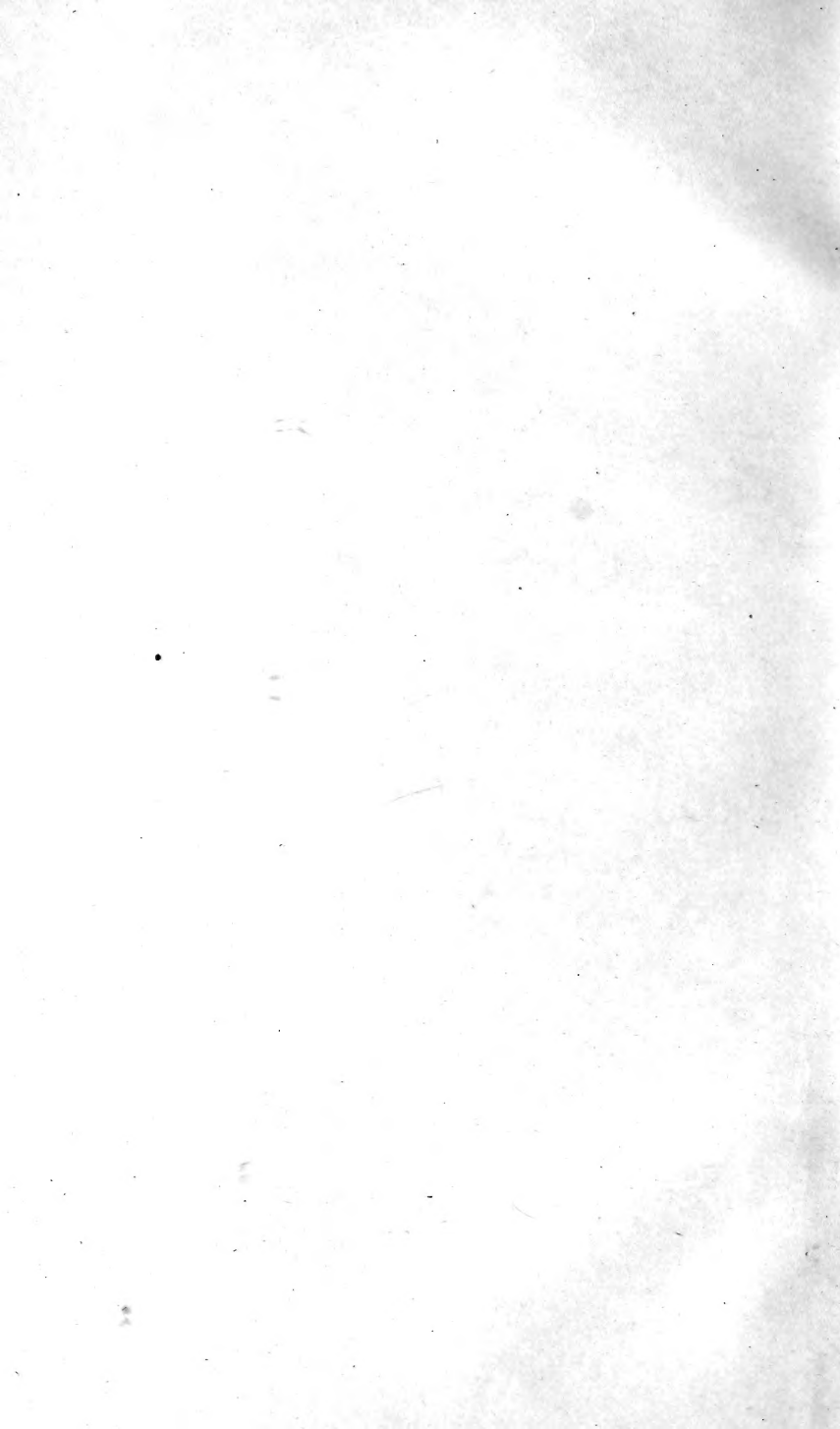
University of Illinois Library

JUN 15 1960

JUN 8 1960

NOV 28 1961

MAY 9 1967



Digitized by the Internet Archive
in 2015

<https://archive.org/details/guidetomrworthin00brit>



Guide to Mr. Worthington Smith's
Drawings of Field and Cultivated
Mushrooms and Poisonous or
Worthless Fungi often Mistaken
for Mushrooms

EXHIBITED IN THE
DEPARTMENT OF BOTANY
BRITISH MUSEUM
(NATURAL HISTORY)



LONDON
PRINTED BY ORDER OF THE TRUSTEES
OF THE BRITISH MUSEUM

1910

(All Rights Reserved)

P R E F A C E

MR. WORTHINGTON SMITH has recently prepared for exhibition in the Botanical Gallery a large sheet of coloured drawings illustrating the species and varieties of field and cultivated mushrooms, together with those poisonous or worthless species which are often mistaken for mushrooms.

These drawings have been reproduced on a reduced scale by lithography in the present Guide, which also provides descriptions, drawn up by Mr. Smith, of the species and varieties illustrated.

A. B. RENDLE.

DEPARTMENT OF BOTANY,
July 1910.

589.22
B77g

11 F 20 Curry

INTRODUCTION

THE following notes have been drawn up after fifty years' experience on the horticultural Press. As a mushroom and fungus referee to several horticultural papers, mushrooms and pseudo-mushrooms of all sorts, together with diverse edible and poisonous fungi, have been repeatedly sent by gardeners and others for naming and description. This long experience has led to a knowledge of probably all the known forms of the mushroom and its allies that grow in this country.

The easily acquired knowledge of habitat, structure, size, colour, odour, taste, etc., is alone to be relied upon in the determination of true and false mushrooms. Even with this knowledge unexplainable results sometimes occur, as in the difficult cases of ptomaine poisoning after the consumption of apparently sound meat and fish.

The numbers enclosed in brackets indicate the numbers on the general series of drawings of fungi on the upright stands in the Botanical Gallery.

The sizes given represent the diameter of the cap and the entire height.

W. G. SMITH.

FEB 6 '20

p 43029

LIST OF FIGURES

FORMS OF MUSHROOMS.

	PAGE
1. <i>Psalliota campestris</i> Quél. (Field Mushroom)	5
2. <i>P. campestris</i> Quél. <i>var.</i> <i>silvicola</i> Magnus	7
3. <i>P. campestris</i> Quél. <i>var.</i> <i>elongata</i> W. G. Sm.	8
4. <i>P. campestris var.</i> <i>subvolvacea</i> W. G. Sm.	8
5. <i>P. arvensis</i> Quél. (Horse-mushroom)	8
6. <i>P. arvensis</i> Quél. <i>var.</i> <i>intermedia</i> W. G. Sm.	9
7. <i>P. arvensis</i> Quél. <i>var.</i> <i>purpurascens</i> W. G. Sm.	10
8. <i>P. arvensis var.</i> <i>albo-squamosa</i> W. G. Sm.	10
9. <i>P. arvensis</i> Quél. <i>var.</i> <i>Buchananii</i> W. G. Sm.	11
10. <i>P. arvensis</i> Quél. <i>var.</i> <i>hortensis</i> W. G. Sm.	11
11. <i>P. arvensis form</i> <i>obesa</i> W. G. Sm.	11
12. <i>P. arvensis form</i> <i>epileata</i> W. G. Sm.	12
13. <i>P. xanthoderma</i> W. G. Sm.	12
14. <i>P. Elvensis</i> Henn.	12
15. <i>P. hæmorrhoidaria</i> Magnus	13
16. <i>P. villatica</i> Magnus (Giant Mushroom)	13

DISEASES OF MUSHROOMS.

17. <i>Mycogone perniciosa</i> Magnus, on mushrooms	14
---	----

FUNGI OFTEN MISTAKEN FOR MUSHROOMS.

18. <i>Amanita phalloides</i> Link	17
19. <i>Pluteus cervinus</i> Quél.	18
20. <i>Entoloma sinuatum</i> Quél.	19
21. <i>Togaria caperata</i> W. G. Sm.	20
22. <i>T. præcox</i> W. G. Sm.	20
23. <i>T. dura</i> W. G. Sm.	21
24. <i>Pholiota pudica</i> Gill.	21
25. <i>Hebeloma fastibile</i> Quél.	22
26. <i>Hypholoma lacrymabundum</i> Quél.	23
27. <i>H. velutinum</i> Quél.	23
28. <i>H. Candolleianum</i> Quél.	24

I. FIELD AND CULTIVATED MUSHROOMS AND THEIR VARIETIES

FOR the determination of the true mushroom as distinguished from all other fungi it is necessary that the structure of a young mushroom, as seen in vertical section, should be clearly understood ; second in importance to this is the coloration and habitat.

I. PSALLIOTA CAMPESTRIS Quél.

From the ring round the stem and the habitat, a field or plain.

THE TRUE EDIBLE MUSHROOM.

Fig. 1. (792.)

The accompanying illustration, Fig. 1, shows in vertical section three stages in the growth of a mushroom : B, young ; C, half grown ;

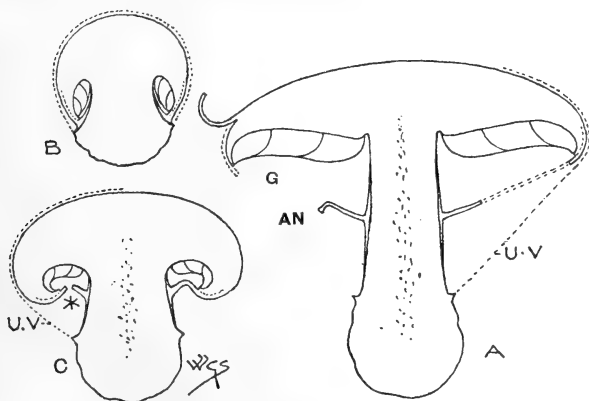


FIG. 1.

Three stages of growth in the mushroom as seen in vertical section.
Half natural size.

and A, mature. No other fungus shows the combined characters of a mushroom, therefore if the decisive points of structure and colour

are once understood there will be little chance of a mistake in determination. It will be seen that when quite young and unexpanded the whole plant is enclosed in a thin and feebly developed silky wrapper, shown by the external dotted line. This wrapper is termed the universal veil, *U. V.* The stem is furnished near the middle with a ring or *annulus*, *AN*, which forms a partial, not universal veil, and breaks as the cap expands, as shown at *. Part of this partial veil remains pendulous at the edge of the cap, and this can be peeled up as shown in the illustration at left of figure of the mature plant. The other part remains as a ring or *annulus*, *AN*, round the stem. It passes into the substance of the cap near the edge and under the universal veil, which latter forms a weak silky external covering. The cap is termed fleshy to distinguish it from other caps, which are sometimes much thinner or even membranous. In the mature example it will be seen that the gills, *G*, do not quite reach the stem, in some specimens they may just reach it, but they are never actually attached.

These points of structure are common to the mushroom and all its varieties, although any one feature may be strongly developed in one variety and only feebly so in another.

A true mushroom may be described as follows:—

Cap fleshy, silky, white.

Stem stuffed (neither hollow nor solid), furnished with a ring near the middle, white.

Gills free from the stem, at first white, then rose or salmon, at length vinous-brownish or blackish.

The coloration of the gills is caused by the presence of microscopic spores, the analogues of seeds in flowering plants. The spores grow upon and crowd the surface of the gills, and in process of growth change in colour from white to vinous-blackish. The spores may be seen free from the mature mushroom by removing the stem and placing the cap, gills lowermost, on a sheet of white paper, in a few hours the spores will be deposited as a vinous-brown dust on the paper.

Flesh firm, white, sometimes faintly clouded rose-colour, or, mostly at the base of the stem, pale brownish.

Taste, when raw not unpleasant, but cooking, especially broiling or frying with butter and salt, brings out a delicious and meat-like flavour. The flavour only persists whilst the mushrooms are quite hot; in cooling the flavour quickly passes away.

Mushrooms, though undoubtedly edible, very rarely act as nerve irritants and at times produce symptoms agreeing with ptomaine poisoning. The silver spoon test for the genuineness of mushrooms is fallacious.

Odour somewhat pleasant.

Size $4\frac{1}{4} \times 4\frac{1}{4}$ inches.

Habitat rich open pastures, grazed by horses, oxen and sheep, on rich garden soil, by grassy road-sides, and on downs. Not under trees, in woods, on stumps or trunks of trees, rarely on artificially made mushroom-beds.

There are ten varieties of the pasture mushroom :—

1. *alba* W. G. Sm. Silky-white.
2. *praticola* Magnus. Cap rufous-squamulose, flesh rufescent when cut.
3. *rufescens* W. G. Sm. Distinguished by its rufous-scaly cap varying lighter and its white, rose, then vinous-brown gills. It is remarkable for the change of colour, when touched, to rose. When cut the flesh changes to bright rose, sometimes crimson.
4. *umbrina* Magnus. Cap at length smooth, umber.
5. *fulvastera* W. G. Sm. Cap ochreous-tawny.
6. *costata* W. G. Sm. Cap sulcate or broadly furrowed.
7. *silvicola* Magnus. Illustrated in Fig. 2 and described below.
8. *elongata* W. G. Sm. Illustrated in Fig. 3 and described on p. 8.
9. *exannulata* W. G. Sm. Ring fugitive or obsolete.
10. *subvolvacea* W. G. Sm. Illustrated in Fig. 13 and described on p. 8.

2. *P. CAMPESTRIS* var. *SILVICOLA* Magnus.

From its habitat—woods.

Fig. 2. (792.7.)

Cap smooth, slightly scaly, not silky, pale yellowish.

Stem sub-bulbous, slender, hollow, whitish, furnished with a large floccose ring, which in part hangs in a ragged manner from the edge of the cap.

Gills free, at first pallid, then purple-brown.

Size $4\frac{1}{2} \times 6$ inches.

Habitat woods, especially in somewhat open places, often in hollows full of dead leaves.

It is nearly related to 5, the Horse-mushroom.

Owing to its suspicious habitat, so different from that of the pasture mushroom, it cannot be recommended as an article of food, although it is commonly eaten as well as used for ketchup. The poisonous *Amanita phalloides* Link, 18, is often confounded with this.

3. P. CAMPESTRIS var. ELONGATA W. G. Sm.

From the long stem.

Fig. 3. (792.8.)

Cap smooth, shining-white, margin appendiculate with the remains of the ring.

Stem long, sub-bulbous, stuffed, white, with the ring almost completely torn away and adherent to the edge of the cap.

Gills pallid, at length vinous-brown.

Habitat artificially made mushroom-beds.

Size $2\frac{1}{4} \times 5\frac{1}{4}$ inches.

Although regarded as a variety of the true mushroom, it bears a strong relationship to 5, the Horse-mushroom. Perhaps an intermediate form.

4. P. CAMPESTRIS var. SUBVOLVACEA W. G. Sm.

From the feeble adpressed volva or basal wrapper.

Fig. 13. (792.10.)

Cap pale brown with dark umber scales formed by the breaking up of the surface in the course of growth.

Stem hollow, pale brownish, furnished with a thin brown wrapper at the base, the starting point of the universal veil, and with a fugitive ring.

Gills pallid, becoming deep vinous-brown.

Flesh white, changing to pale bright reddish-brown on being cut or broken.

Size $5\frac{1}{2} \times 8$ inches.

Habitat fields and artificially made mushroom-beds.

Not unlike 16, *P. villatica* and 6, *P. arvensis* var. *intermedia* in the cap, but differing greatly in the long stem, and especially in the thin basal wrapper, the remains of the universal veil.

5. P. ARVENSIS Quél.

From its habitat—cultivated fields.

Fig. 4. (789.)

THE HORSE- OR HEDGE-MUSHROOM.

Cap floccose, squamulose, often becoming smooth, white, inclining to yellowish at the middle, the edge at first ragged with part of the ring.

Stem stuffed to hollow, whitish, with a large torn ring.

Gills for a long time pallid brownish, at length dark purple-brown.

Flesh white, soon becoming pale, dull yellowish or pale brownish (the change of colour in this and other mushrooms is no sign of an inferior or dangerous character).

Size $7\frac{3}{4} \times 7\frac{1}{2}$ inches.

Habitat amongst rank grass and near manure in fields, often near and under trees; cultivated on artificially made mushroom-beds. It is wholesome but sometimes tough. Inferior for the table as compared with 1, the true mushroom.

There are nine varieties and forms of the Horse-mushroom:—

1. *purpurascens* W. G. Sm. Illustrated in Fig. 6 and described on p. 10.
2. *albo-squamosa*. Illustrated in Fig. 8 and described on p. 10.
3. *vaporaria* W. G. Sm. Cap even, brown pilose; a cultivated form in mushroom-beds.
4. *hortensis* W. G. Sm. Illustrated in Fig. 14 and described on p. 11.
5. *Buchananii* W. G. Sm. Illustrated in Fig. 10 and described on p. 11.
6. *cryptarum* W. G. Sm. Cap white or brownish-white; a cultivated form in caves.
7. *intermedia* W. G. Sm. Illustrated in Fig. 5 and described on p. 9.
8. *epileata* W. G. Sm. Illustrated in Fig. 16 and described on p. 12.
9. *obesa* W. G. Sm. Illustrated in Fig. 15 and described on p. 11.

6. P. ARVENSIS var. INTERMEDIA W. G. Sm.

From its intermediate characters—as between *P. arvensis* and *P. villatica*.

Fig. 5. (789.7.)

Cap very fleshy, pale, livid brassy-yellow, with small rusty-yellowish spots at middle.

Stem very short, enlarged below, obese, stuffed, dull whitish, stained pale rusty, clad with a somewhat feeble, more or less fugitive ring.

Gills pallid, at length dark vinous-brown.

Flesh white then pale vinous-brown.

Size 9 × 4 inches.

Habitat amongst long rank grass in fields, often near trees.

Edible, juicy, sometimes tough.

7. *P. ARVENSIS* var. *PURPURASCENS* W. G. Sm.

From the colour.

Fig. 6. (789.1.)

Cap slightly viscid, pale purple-whitish at the ragged edge, middle vinous-purple, clad with purple, crimson-purple or dark vinous scales; the tints vary somewhat in different examples.

Stem stuffed, whitish or faintly ochreous, pale vinous at the base with a well developed ring.

Gills at first pallid and dull salmon, at length purple-brown.

Flesh white, then presenting rose-brown tints.

Odour strong, disagreeable, like some forms of 5, *P. arvensis*.

Size $4\frac{1}{2} \times 3\frac{1}{4}$ inches.

Habitat under trees in fields and plantations and by hedgesides.

May be edible, but the habitat is suspicious.

8. *P. ARVENSIS* var. *ALBO-SQUAMOSA* W. G. Sm.

From the white scales on the cap.

Fig. 8. (789.2.)

Cap silky-scaly, fawn-coloured, irregularly covered with snow-white patches, the remains of the broken up universal veil in which the plant was covered in infancy.

Stem stout, hollow, brownish, ring somewhat small.

Gills pallid, then vinous-brown.

Flesh white, becoming faintly yellowish-brown in the stem and pale vinous-brownish in the cap.

Taste like 5, the Horse-mushroom.

Size $4\frac{3}{4} \times 3\frac{1}{2}$ inches.

Habitat artificially made mushroom-beds, not uncommon.

9. P. ARVENSIS var. BUCHANANII W. G. Sm.

After a gardener named Buchanan.

Fig. 10. (789.5.)

Cap at length depressed, smooth, white, as if whitewashed, edge plain.

Stem stuffed, whitish, furnished with a slight, fugitive ring.

Gills at first only slightly tinged with rose-salmon, becoming darker.

Size 4 × 4½ inches.

Habitat artificially made mushroom-beds, an ally of 5, the Horse-mushroom.

10. P. ARVENSIS var. HORTENSIS W. G. Sm.

From its habitat, prepared beds in gardens.

Fig. 14. (789.4.)

Cap vinous-brown, clad with darker scales.

Stem stuffed, pale brown.

Gills pallid, becoming salmon-brown and then blackish.

Flesh white, becoming pale brown in the cap and faintly brownish and rose in the stem.

Size 3 × 3 inches, sometimes larger.

Habitat, artificially made mushroom-beds.

This is a common market variety but inferior to 1, the true mushroom.

11. P. ARVENSIS form OBESA W. G. Sm.

From the greatly inflated stem.

Fig. 15. (789.9.)

Cap slightly scaly, yellowish-white, with a somewhat ragged edge.

Stem hollow, whitish, obese, furnished with a narrow, membranous ring.

Gills narrow at first, pallid, then vinous-blackish.

Flesh white, sometimes changing to deep mahogany-brown.

Size 4 × 4½ inches, stem 4 inches in diameter.

Habitat artificially prepared mushroom-beds.

This form generally causes astonishment to gardeners, the abnormal change in appearance is probably brought about by the compost in which the plants are grown.

12. P. ARVENSIS form EPILEATA W. G. Sm.

From the absence of a cap or pileus.

Fig. 16. (789.8.)

Cap almost or quite obsolete.

Stem inflated below, whitish, ringless.

Gills obsolete.

Habitat artificially prepared mushroom-beds.

Size $3 \times 1\frac{3}{4}$ inches.

This form frequently surprises gardeners; the mushroom-bed becomes covered with a large number of stems without caps or rings. This condition frequently occurs late in the season when the spawn is exhausted. A sharp frost will produce a like effect on out-of-door beds. An opposite state of things sometimes occurs when the spawn is full of vigour and the condition of the bed, moisture and warmth are perfect; at this time double mushrooms are produced, the second example growing cap downwards, with the stem upwards, on the top of the original plant; this second stem occasionally produces a third cap, so that there are sometimes three caps to one mushroom. At other times a group of several examples will grow in a normal manner on the cap of a parent mushroom, and sometimes a second mushroom will grow horizontally from the stem of a favoured example. A form without a ring has been named *P. exannulata*.

13. P. XANTHODERMA W. G. Sm.

From the yellow stains.

Fig. 7. (789B.)

Cap smooth, white, stained with pale yellow, sometimes ochreous or pale sulphur, especially where touched or bruised. One form is furnished with pale, adpressed sulphur-coloured hairs.

Stem solid, stuffed or hollow, stained like the cap, ring ample.

Gills free, pallid, pale slate, then purplish-brown or pale dull purple to vinous-purple.

Flesh white, with a few faintly yellowish stains, especially at the base of the stem.

Size $3\frac{1}{2} \times 4\frac{1}{2}$ inches.

Habitat woods and fields, near trees.

Closely allied to the Horse-mushroom, *P. arvensis*.

14. P. ELVENSIS Henn.

From one place of growth, near the River Elwy, North Wales.

Fig. 9. (788.)

Cap vinous-brown, covered with persistent darker scales from the breaking up of the surface.

Stem solid, pale brownish, furnished with a large ring.

Gills at first pale, then brownish flesh-colour.

Flesh white, changing to pale rose or red.

Size 6 × 6 inches.

Taste excellent, perhaps superior to any other mushroom, although the habitat is suspicious; odour pleasant.

Habitat under oak, beech, fir, pear, often in tufts.

15. P. HÆMORRHOIDARIA Magnus

From the change of the flesh from white to blood-red on being cut or bruised.

Fig. 11. (794.)

Cap pale brownish near the edge, with a vinous-brown or dark purple-brown middle, clad with small reddish-brown scales, becoming reddish or blood-red where touched.

Stem hollow, enlarged below, sometimes strongly bulbous, white, changing in colour like the cap, furnished with a white ring which sometimes partially adheres to the edge of the cap.

Gills bright salmon, then purple-brown.

Flesh white, changing to rusty blood-colour on being cut or broken.

Size $4\frac{3}{4} \times 5\frac{1}{2}$ inches.

Habitat woods, parks, pastures, sometimes close to oaks.

The taste is that of the mushroom; it is said to be sometimes doubtfully edible. The quality may be varied by habitat, as mushrooms found growing in bushy places are always suspicious.

16. P. VILLATICA Magnus

From its frequent habitat, near country houses.

Fig. 12. (792A.)

Cap becoming depressed, vinous-brown, clad with darker scales, margin more or less ragged with hanging fragments of the ring.

Stem stuffed, pale brown, blotted and stained darker, furnished with an ample but fugitive ring.

Gills at first pallid, at length deep vinous-brown.

Flesh white, becoming reddish yellow when broken, odour rank.

Size in large examples 17 × 8 inches.

Habitat amongst long grass in richly manured fields, in pastures, on lawns, in gardens and yards, often close to out-houses and in cellars. It rarely appears on mushroom-beds.

This is distinguished from all other forms of mushroom by its great size. It is the "gigantic mushroom" of newspapers, and

although commonly of abnormal proportions, yet intermediate forms occur between it and *P. arvensis* var. *intermedia*.

It appears to be related to the Horse-mushroom and less so to the true mushroom, but it does not agree in all parts with either. It is somewhat tough and indigestible, but not more so than certain forms of the Horse-mushroom.

DISEASES OF MUSHROOMS.

17. MYCOGONE PERNICIOSA Magnus

From its being borne on fungi and its pernicious effects on cultivated mushrooms; a parasitic mould on mushrooms.

Fig. 17.

This microscopic mould A A A, white at first, then pale honey-colour, of which an outline, magnified 500 diameters, is shown at B on the left of Fig. 17, is the terror of mushroom growers. If it should once get into a mushroom house or into a prepared out-of-door bed it is almost impossible to extirpate it, spores by which it is reproduced remain alive from season to season, not only in the mushroom-bed or its remains, but upon any adjoining woodwork, bricks or glass. The spores of the mould consist of two cells as shown, the larger and upper being slightly spinulose and faintly tinted honey-colour, the lower and smaller smooth and colourless. This mould on the gills of the mushroom appears to the unaided eye to gradually change from white to pale honey-colour. *Mycogone* is believed to often exist in newly purchased spawn, so that the mushroom-bed contains the beginning of the disease at the time it is made up and spawned. Earth containing vegetable matter is unsuitable for mushroom-beds owing to the readiness with which moulds grow in it. Good loamy soil from a pasture is best, and this should have remained in a heap for at least a year, with no vegetable growth permitted. *Mycogone* attacks the gills and in bad cases by forming a matted white felt distorts and at length obliterates them. The mould makes fissures in the cap and affects the mushrooms to such an extent as to make them dangerous or even poisonous. Yet it is not uncommon to see these diseased growths exposed for sale in markets. Cases have been observed where every example has shown the disease. If such specimens are cooked for food bad effects frequently ensue.

Many other moulds in addition to *Mycogone* attack mushrooms,

one of these, *Gliocladium agaricinum* C. & M., causes the caps to crack all over into large scales, just as apples and pears are cracked under the attacks of other fungus parasites.

Moulds by their mycelium traverse every part of the mushroom. These as well as larvæ and many small insects may be kept in check by spraying the beds, woodwork and walls with a $2\frac{1}{2}$ per cent. solution of lysol, before the insertion of the spawn.

OTHER SPECIES OF THE GENUS PSALLIOTA.

Nearly all the species of the genus *Psalliota* to which the mushroom belongs are edible. These are all illustrated on the framed sheets exhibited on the stands in the Public Gallery.

- (787.) *P. augusta* Quél. A large species with a brown scaly cap, found in orchards and fir woods. It is remarkable for its faintly brownish gills, which do not become blackish. Its habitat is suspicious, and although considered esculent the plant is inferior as food. Size $7 \times 6\frac{1}{2}$ inches.
- (789A.) *P. perrara* Magnus. A large rare species not unlike the last. It grows under oaks and near conifers and is classed as edible. Its taste is sweet but the habitat suspicious. Size $5\frac{1}{2} \times 4$ inches.
- (790.) *P. cretacea* Quél. A rare, medium-sized, thin-fleshed, white species with pallid gills. It grows in pastures and stoves and is considered edible. Size $3\frac{3}{4} \times 4$ inches.
- (791.) *P. pratensis* Quél. A medium-sized species, with a whitish or greyish floccose cap. An inhabitant of pastures and woods. Size $3\frac{1}{2} \times 3$ inches. The taste and odour is pleasant; it is considered edible.
- (793.) *P. silvatica* Quél. A medium-sized species with somewhat thin flesh. Size $3\frac{5}{8} \times 3\frac{1}{4}$ inches. It grows under cedars and is edible, with a delicate flavour. The habitat is however suspicious.
- (794A.) *P. peronata* W. G. Sm. A somewhat large species related to 789 and 789A. Cap pale dull ochreous, clad with small brown silky scales; stem white, white scaly below the ring; flesh rather thin. Size $3\frac{1}{2} \times 6\frac{1}{4}$ inches. It grows in pine woods, and although the habitat is suspicious, it is placed in the edible series.
- (795.) *P. comptula* Quél. Very much like the true mushroom. Size $1\frac{1}{4}$ to $1\frac{1}{2}$ inches. It grows in woods and is reputed edible.

- (796.) *P. subgibbosa* Henn. Very much like the true mushroom, but with ashy-brown gills. Size $4 \times 3\frac{1}{4}$ inches. It grows in woods.
- (797.) *P. sagata* Henn. Resembles an attenuate mushroom with a yellowish-brown cap and a slender, hollow stem of the same colour. Size $2\frac{3}{8} \times 2\frac{5}{8}$ inches. It possesses the odour and taste of the true mushroom, but has a suspicious habitat under beeches.
- (798.) *P. rusiophylla* W. G. Sm. Much like a small mushroom with a fibrillose, pale flesh-coloured or pallid cap. Size $2\frac{1}{8} \times 2\frac{1}{8}$ inches. Much smaller examples of this species are sometimes found.
- (799.) *P. dulcidula* Henn. Much like a small attenuate mushroom. *Cap* smooth, whitish or ochreous white; *gills* slate-coloured. Size $2\frac{1}{8} \times 2$ inches. This has a sweet taste and is probably edible. It grows on heaths. Smaller examples occur.
- (800.) *P. echinata* Quél. *Cap* dark brown, floccoso-pulverulent with ragged margin; *stem* varying brown to crimson; *gills* rose to crimson or purple. *Odour* sulphurous, strong and disagreeable. It grows in greenhouses and beech woods. $1\frac{7}{8} \times 3$ inches. A small species of doubtful affinity, sometimes placed elsewhere than in *Psalliota*.
-

II. POISONOUS OR WORTHLESS FUNGI OFTEN MISTAKEN FOR MUSHROOMS

18. AMANITA PHALLOIDES Link

From an old name, and the sheath at the base of the stem.

Fig. 18. (2.)

The whole plant in infancy is enclosed in a wrapper as shown at B. In process of growth, this breaks up in volva form as at A, C, D, and leaves a few patches on the cap.

Cap usually white, sometimes lemon-tinted, viscid in moist weather, frequently marked with white patches from the universal veil, edge plain. The true mushroom is not viscid or furnished with

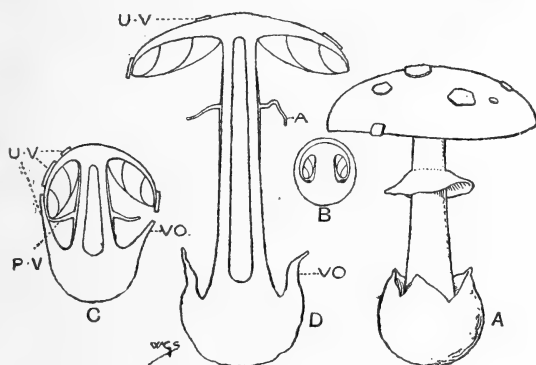


FIG. 3.

Sections of *Amanita phalloides* Link. One-third natural size.

a plain edge, but the white patches agree in nature with those seen on the variety of the mushroom named *albo-squamosa*, Fig. 8.

Stem hollow, white, furnished with a ring springing from a soft bulbous growth called a volva, vo. This volva only exists in one variety of the mushroom, and then in a very rudimentary state, Fig. 13, var. *sub-volvacea*.

Gills free or nearly so, shining white, never salmon, vinous-brown or blackish as in the mushroom.

Odour strong, penetrating, becoming foetid.

Habitat woods.

Size $3\frac{1}{2} \times 4\frac{3}{4}$ inches.

Many cases are on record of fatal poisoning from the consumption of this fungus, sometimes from eating small pieces in an uncooked state, at others from eating cooked specimens. The poison is a narcoto-irritant and quick in action.

See 2, *Psalliota campestris* var. *silvicola*, with which this plant is often confounded.

Closely allied species are: (1) *A. virosa* Quél., wholly white, $5 \times 7\frac{1}{2}$ inches; (3) *A. verna* Quél., wholly white, 3×5 inches; and (4) *A. mappa* Quél., white to palish-buff, with a white stem, $3 \times 3\frac{3}{4}$ inches. They all grow in woods and are highly poisonous. They are illustrated on the sheets on the upright stands.

19. PLUTEUS CERVINUS Quél.

From a fancied resemblance to the roof of a sentry-box and to the fawn-brown cap.

Fig. 19. (458.)

Cap fawn-coloured, at length broken up into blackish adpressed fibrils, edge plain, and in this differing from the ragged edge of the mushroom.

Stem solid, fibrillose, whitish, ringless, differing from the ringed stem

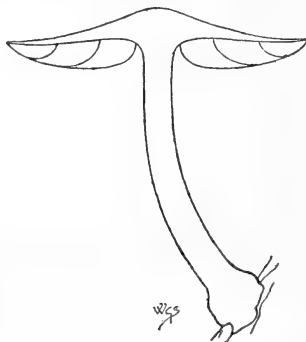


FIG. 4.

Section of *Pluteus cervinus* Quél. One-third natural size.

of the mushroom. The absence of a ring is unnoticed by those fungus-gatherers who merely cut off the caps for consumption.

Gills free from the stem, at first white, then salmon or rose, never attaining the vinous-blackish hues of the mushroom.

Taste insipid or sub-acid.

Habitat almost invariably stumps, rarely sawdust, earth, manure and straw.

Size $4\frac{3}{4} \times 5\frac{1}{4}$ inches.

Although one or two of the *Hyporhodie* (from the rose-coloured spores) to which this plant and the next belong are edible, yet, taken as a series, they are suspicious, and some are known to be highly poisonous.

20. ENTOLOMA SINUATUM Quél.

From the indefinite veil and the sinuate margin of the cap.

Fig. 20. (473.)

Cap at first white, then some shade of lavender, pale yellowish or brownish, edge plain, never ragged as in the mushroom.

Stem solid or stuffed, white, differing from the mushroom in being without a ring.

Gills reaching the stem, not free from it as in the mushroom; pale livid, at length becoming brownish-salmon, never vinous-blackish.

Taste pleasant when cooked, hence one of its dangers.

Odour strong, not unpleasant, somewhat of burnt sugar.

Habitat woods, growing in scattered groups.

Size 7×6 inches.

This poisonous plant, especially in young examples, bears a close general resemblance to Fig. 4, the Horse-mushroom.

An allied species (474) *E. lividum* Quél., has a pleasant odour of flour, but is poisonous.

One genus amongst the *Hyporhodie* named *Volvaria* contains several species which are poisonous; they are all uncommon, but when seen, are frequently gathered in mistake for mushrooms; all spring from a volva and are ringless. They are illustrated on the sheets on the upright stands.

(449.) *V. bombycina* Quél.

Cap and *stem* white, *gills* becoming rufous.

Decayed wood, stumps, hollow trees. $8\frac{1}{2} \times 7$ inches.

(450.) *V. volvacea* Quél.

Cap brown, *stem* white, *gills* salmon.

Stoves, on tan, roadsides. 5×7 inches.

(454.) *V. speciosa* Gill.

Cap whitish, greyish or brownish, *stem* white, *gills* salmon.

Odour strong. Roadsides, rubbish and manure heaps. $4 \times 6\frac{1}{2}$ inches.

(455.) *V. gloiocephala* Gill.

Cap whitish to brownish, *stem* pale brownish or tawny, *gills* salmon, becoming reddish.

Taste disagreeable, *odour* strong, offensive, like putrid broad beans.

$4\frac{1}{2} \times 6\frac{3}{4}$ inches.

21. TOGARIA CAPERATA W. G. Sm.

From the cloak-like ring and the wrinkled cap.

Fig. 21. (558.)

Cap usually lobed and wrinkled, yellowish to deep yellow, generally floccose or white-scurfy at the middle.

Stem solid, sub-bulbous, salmon-white or yellowish, white squamulose above the somewhat large ring.

Gills distinctly joining the stem, at first yellowish then brownish, sometimes colour of iron oxide, in these characters they differ from the free gills of the mushroom which are tinted rose, vinous-brown and blackish.

Flesh white, changing to pale yellow above and pale brown-salmon below.

Habitat woods, growing in a solitary manner.

Size $3\frac{1}{2} \times 4\frac{1}{2}$ inches.

Young pale-coloured examples have a strong resemblance to Fig. 4, the Horse-mushroom.

22. T. PRÆCOX W. G. Sm.

From its early appearance. May—lasting to October.

Fig. 22. (566.)

Cap smooth, whitish or whitish-ochre, often with a ragged edge as in the mushroom.

Stem partially hollow, white and mealy-floccose, the base often furnished with root-like growths, the ring is generally ample but sometimes evanescent as in 2, *Psalliota silvicola*.

Gills reaching the stem, pallid, at length dull brownish, never vinous-brown or blackish as in the mushroom.

Flesh white, becoming fairly yellowish or brownish when cut. The entire plant sometimes remains wholly whitish.

Taste rank.

Odour strong, not unpleasant.

Habitat gardens, pastures, roadsides, common in spring, less so in summer and autumn.

Size. There are two forms, the larger $3 \times 4\frac{1}{2}$ inches or more, the smaller, 1 to $2\frac{1}{4}$ inches or less. Examples intermediate in size are sometimes found. Said by some to be edible, but it is at least suspicious, as the next species, closely allied to this, is said to be possibly poisonous.

23. T. DURA W. G. Sm.

From its comparatively hard substance.

Fig. 23. (565.)

Cap compact, usually cracked, white or faintly ochreous, edge ragged.

Stem paler than the cap, commonly furnished with root-like growths at the base, and bearing an ample irregularly torn fugitive ring.

Gills broadly reaching the stem and forming slight decurrent lines on it, at first livid brown, then deep brown, with an oxide of iron tint, never becoming vinous-brown or blackish.

Habitat gardens and fields, from May to October.

Size $2\frac{3}{4} \times 3\frac{3}{4}$ inches.

Very much like a small mushroom, but differing greatly in the attachment of the gills to the stem and the gill colour.

24. PHOLIOTA PUDICA Gill.

From the scaly cap and modest coloration.

Fig. 24. (570.)

Cap generally wrinkled and moist, margin plain, whitish-buff, darker at the middle.

Stem solid, tawny-white, furnished with a persistent ring.

Gills reaching the stem, whitish, then dull tawny, never rose-colour or blackish. In their mode of attachment and colour varying greatly from the true mushroom, although in colour they agree with young forms of 5, the Horse-mushroom.

Odour strong, penetrating and disagreeable, very different from the mushroom.

Habitat stumps, sometimes in pastures and on lawns and downs.

Size about $2\frac{1}{2} \times 2\frac{3}{4}$ inches.

It appears from May to November. Qualities uncertain, but suspicious. This and 22 and 23 are every year sent to horticultural papers as questionable mushrooms.

Other species of *Pholiota* commonly confused as dubious mushrooms are (569) *P. radicata* when the long stem is cut off by the gatherer; *cap* viscid, pale brownish, *stem* whitish-tan, *gills* brown. It grows on stumps and has a threatening, unpleasant odour of prussic acid. Size $4\frac{1}{2} \times 10\frac{3}{4}$ inches. (572) *P. capistrata*; *cap* somewhat viscid, tan, *gills* and *stem* tan-white; this also grows on stumps. It is a close ally of the last, and the taste varies from pleasant to unpleasant. Size 4×4 inches.

25. *HEBELOMA FASTIBILE* Quél.

From the fringe-like veil seen in some species of *Hebeloma* and the disagreeable odour.

Fig. 25. (648.)

Cap clammy to the touch in damp weather, pale dull yellowish, almost white at the plain edge, darker at the middle.

Stem solid, white, white-scaly below the silky-floccose ring, which is often imperfect, and sometimes absent.

Gills reaching the stem, dull, pale yellow-brownish, never rose vinous-brown or blackish, as in the mushroom.

Flesh white, with pallid stains.

Taste bitter, with a suggestion of radishes.

Odour disagreeable, sometimes fœtid and disgusting.

Habitat woods, pastures near trees and bushy places, often in large compact rings; it sometimes appears on mushroom-beds, where its similarity with the cultivated mushroom is striking.

Size $4 \times 3\frac{1}{4}$ inches.

This highly poisonous species, which bears a strong superficial resemblance to the Horse-mushroom, is frequently mistaken with fatal results for that plant. It not uncommonly appears in markets in company with the cultivated mushroom, and although very poisonous, good cooking may sometimes dissipate some of its poisonous properties. It probably often accounts for "severe illness after eating mushrooms," so often reported in the newspapers. It is remarkable that *H. fastibile* should sometimes appear side-by-side with the cultivated mushroom on mushroom-beds, and that the superficial appearance of the two should almost agree. Attention should be paid to the gills, whitish clay-colour at first in both plants, but in *H. fastibile* never darker than tan-brownish, whilst in the mushroom the gills are at length vinous-blackish. The taste and odour must also be noticed. Often used with other fungi for inferior ketchup.

An allied plant (657) *H. senescens* Sacc. has an ochreous-tawny cap, a ringless stem and rounded cinnamon gills, its habitat is amongst firs; it has an acrid odour and is probably poisonous. *Size* $4 \times 3\frac{3}{8}$ inches. Another ringless species, (659) *H. crustuliniforme* Quél., has a sub-viscid whitish-ochreous cap, a whitish ringless stem, and clay-colour or brown gills; it grows in large rings in woods and pastures and on lawns; it generally possesses a fœtid odour, and is known to be poisonous; it is often mistaken for the Horse-mushroom, but in both these species the gills never become purple-blackish; at perfect ripeness they are never darker than cinnamon. *Size* $4\frac{1}{2} \times 2\frac{1}{2}$ inches. Both are used, with other fungi, for inferior ketchup.

26. HYPHOLOMA LACRYMABUNDUM Quél.

From the web or fringe-like veil and the tear-like drops on the gills.

Fig. 26. (832.)

Cap whitish, then dull, pale purple-slate, clad with small darker scales, edge pale, ragged.

Stem hollow, dull purplish-white, with no true ring, as at an early period of growth the ring is torn off by the growing cap, on which it hangs as a ragged fibrillose margin.

Gills broadly attached to the stem, in this they greatly differ from the mushroom, where the gills are free; dull purple-brownish in colour and studded with exuded drops of water, abundant in wet weather. The gills of the mushroom are not so studded.

Flesh white, changing to pale brown.

Habitat stumps, yards, waste places, on the ground, not growing in a solitary manner like the mushroom, but in groups of several attached individuals packed closely together.

Size 3 × 4 inches.

This plant, although not much like a mushroom, is not uncommonly mistaken for it. It sometimes appears in markets, and is in common use for the manufacture of inferior ketchup. For this purpose it is very useful, as it quickly exudes a comparatively large amount of black juice. It is probably not poisonous.

27. H. VELUTINUM Quél.

From the velvety cap when young.

Fig. 27. (834.)

Cap tawny-brownish, obscurely scaly, then brown, margin ragged, pendulous.

Stem hollow, fibrillose, provided with an obscure ring.

Gills broadly touching the stem, purplish-brown, minutely dark-spotted all over and studded with drops of water.

Flesh thin, of the same colour as the exterior.

Taste insipid.

Habitat rotten stumps, growing in tufts.

Size 4 × 5½ inches.

Said to be edible. Frequently gathered and cooked as a mushroom. It is sometimes seen in markets in company with mushrooms. Commonly used in the manufacture of ketchup. It differs from the mushroom in its fragile substance, in the attachment and colour of the gills, in its habitat, and in its tufted habit of growth.

28. *H. CANDOLLEANUM* Quél.

After Alphonse de Candolle, the famous botanist.

Fig. 28. (838.)

Cap brown, becoming white with an ochreous centre, margin slightly ragged.

Stem hollow, ringless, white.

Gills narrow, reaching the stem, slaty, at length dark cinnamon.

Flesh very thin.

Taste styptic, disagreeable.

Odour strong.

Habitat stumps, fields, gardens, growing in tufts.

Size $3\frac{1}{4} \times 3\frac{1}{2}$ inches.

This plant cannot be said to much resemble a mushroom, yet to untrained eyes it is frequently mistaken for one. It is also a frequent ingredient in inferior ketchup. The cooking and boiling may dissipate any dangerous properties.

Several allies of the last three species are considered dangerous or suspicious as (822) *H. sublateritium* Quél., *cap* tawny brick-red, *stem* yellow and ferruginous, *gills* yellow-greenish to pale purple. It has a bitter-nauseous taste. $3\frac{1}{2} \times 4\frac{3}{4}$ inches. (825) *S. elaeodes* Gill., *cap* and *stem* tan or buff, *gills* white to olivaceous, *taste* bitter, *odour* sour. $2\frac{3}{8} \times 2\frac{1}{8}$ inches. (826) *H. fasciculare* Quél., *cap* and *gills* sulphur-yellow, *gills* sulphur to green, *taste* acrid, nauseous, bitter, sickening. $2\frac{3}{8} \times 4\frac{3}{8}$ inches. They all grow in a clustered manner on stumps, (525) sometimes on the ground.

Some small species of other genera, not closely allied to the mushroom, bear a remarkable superficial resemblance to it and are sometimes gathered as mushrooms, as (805) *Stropharia coronilla* Quél., *cap* light yellow, margin ragged, *stem* white, *gills* attached to stem, vinous-brownish. Waysides, parks. $1\frac{1}{4} \times \frac{7}{8}$ inches. (806) *S. obturata* Quél., *cap* pale ochreous, *stem* white, with a membranous collapsing ring. $1\frac{1}{2} \times 1\frac{3}{8}$ inches. Grassy places. (807) *S. melasperma* Quél., *cap* biscuit-colour, *stem* white, *gills* rounded, purplish, then deep purple-brown. $2\frac{3}{8} \times 2$ inches. Meadows and borders of thickets, rare. The two latter are rare species.



P. **ELUSIVE** **PERNICIOSA** *MAGNUS*.
PARASITIC MOULD ON MUSHROOMS.
A. & B.

16. *P. ARVENSIS* *QUEL.* (789-8)
FORM *EPILEATA* *W.G.S.M.*

W.G.S.
1909.

FIELD AND CULTIVATED MUSHROOMS AND THEIR VARIETIES.



1. *PSALLIOTA CAMPESTRIS* QUÉL.
(FIELD MUSHROOM)

7. *P. XANTHODERMA* W.G.S.M.

10. *P. ARVENSIS* QUÉL.
VAR. *BUCHANANI* W.G.S.M.

11. *P. HEMORRHODARIA* MAGNUS.

4. *P. ARVENSIS* QUÉL. (HORSE MUSHROOM)

13. *P. CAMPESTRIS* QUÉL.
VAR. *SUBVOLVACEA* W.G.S.M.

14. *P. ARVENSIS* QUÉL.
VAR. *HORTENSIS* W.G.S.M.

2. *P. CAMPESTRIS* QUÉL.
VAR. *SILVICOLA* MAGNUS.

8. *P. ARVENSIS* QUÉL.
VAR. *ALBO-SQUAMOSA* W.G.S.M.

15. *P. ARVENSIS* QUÉL.
FORM *OBESA* W.G.S.M.

5. *P. ARVENSIS* QUÉL.
VAR. *INTERMEDIA* W.G.S.M.

3. *P. CAMPESTRIS* QUÉL.
VAR. *ELONGATA* W.G.S.M.

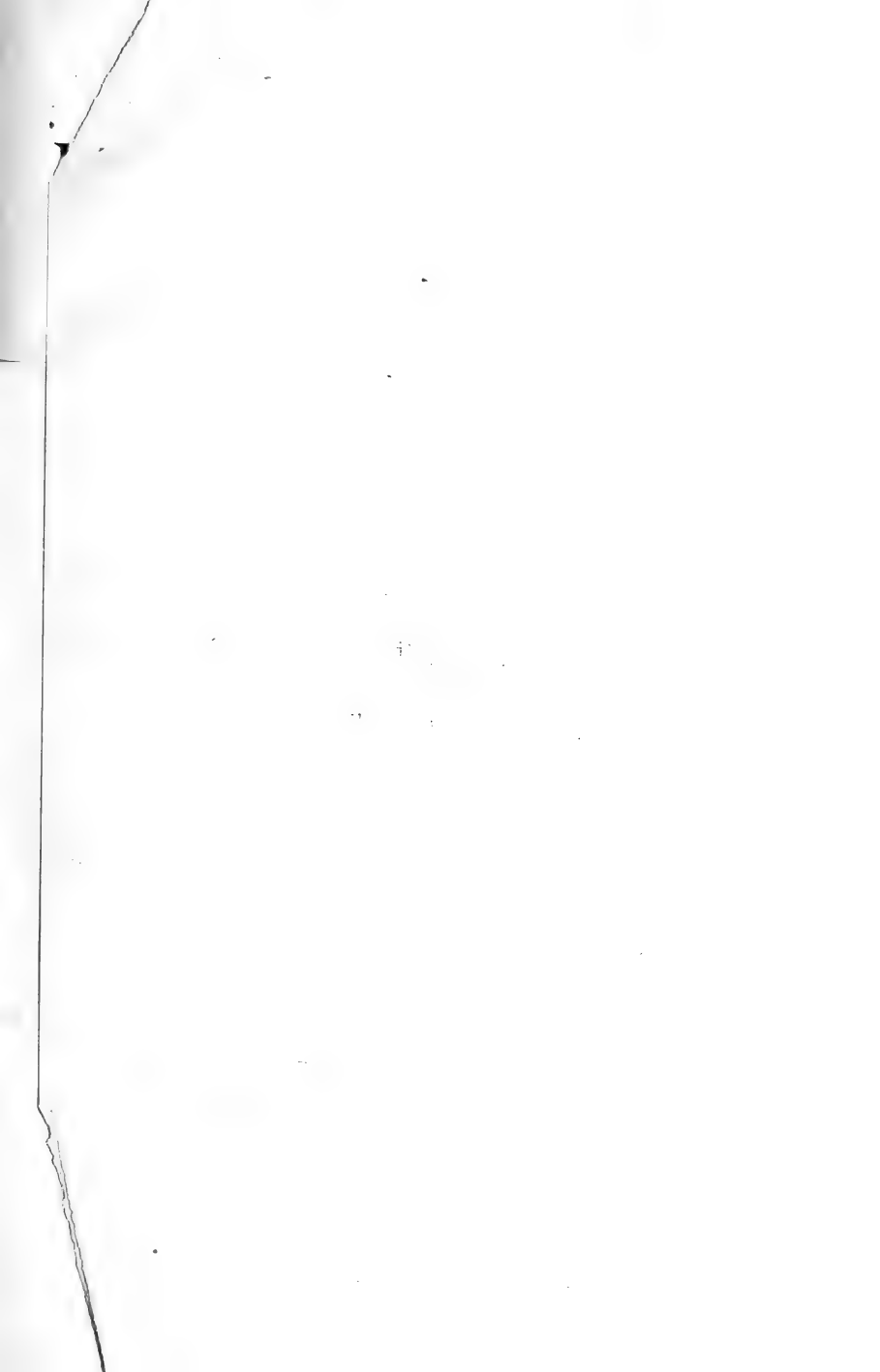
6. *P. ARVENSIS* QUÉL.
VAR. *PURPURASCENS* W.G.S.M.

9. *P. ELVENSIS* HENN.

12. *P. VILLATICA* MAGNUS.
("GIANT MUSHROOM")

17. *MYCOGONE PERNICIOSA* MAGNUS.
A PARASITIC MOULD ON MUSHROOMS.
A. & B.

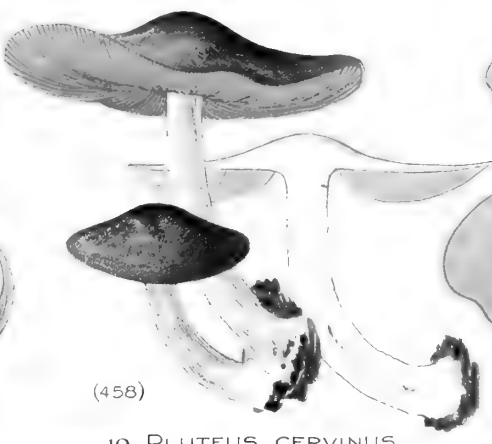
16. *P. ARVENSIS* QUÉL.
FORM *EPILEATA* W.G.S.M.



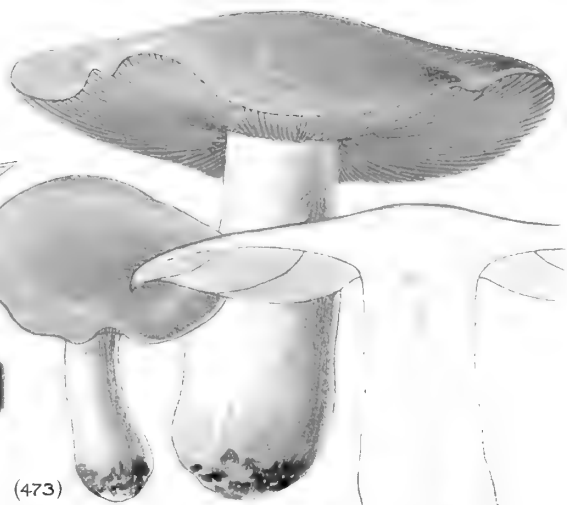
POISONOUS OR WORTHLESS FUNGI OFTEN MISTAKEN FOR MUSHROOMS.



18. AMANITA PHALLOIDES *Link.*



(458)
19. PLUTEUS CERVINUS *QUÉL.*



(473)
20. ENTOLOMA SINUATUM *QUÉL.*



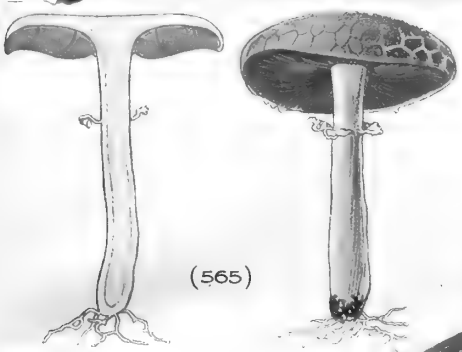
21. TROGARIA CAPERATA *W.G.S.M.*

(558)



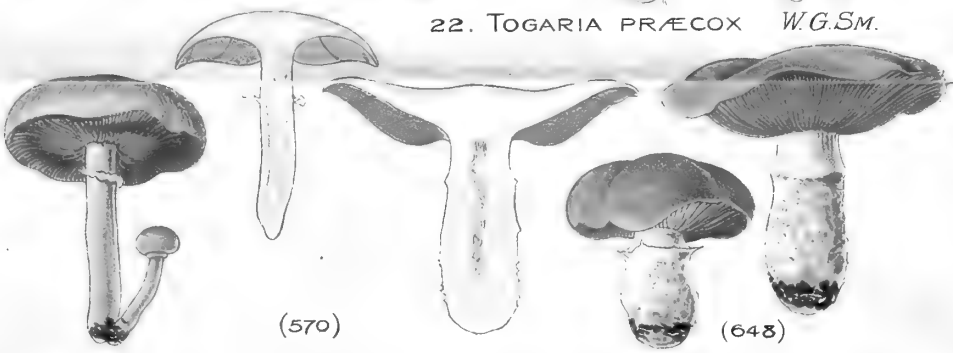
22. TROGARIA PRÆCOX *W.G.S.M.*

(566)



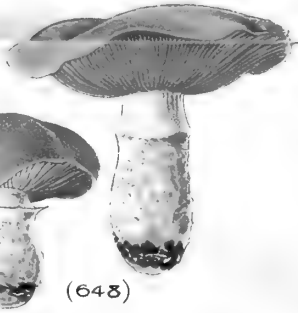
23. TROGARIA DURA *W.G.S.M.*

(565)



24. PHOLIOTA PUDICA *GILL.*

(570)



25. HEBELOMA FASTIBILE *QUÉL.*

(648)



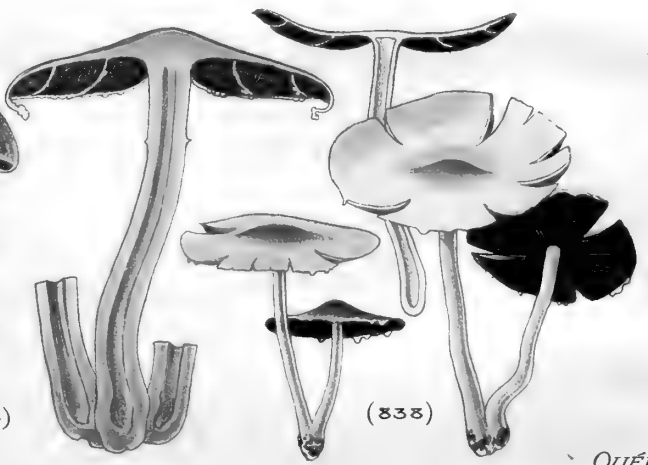
26. HYPHOLOMA LACRYMABUNDUM *QUÉL.*

(832)



27. HYPHOLOMA VELUTINUM *QUÉL.*

(834)



28. HYPHOLOMA CANDOLLEIANUM *QUÉL.*

(838)

W.G.S. 1909.

BRITISH MUSEUM

(NATURAL HISTORY).

DAYS AND HOURS OF ADMISSION.

The Exhibition Galleries are open to the Public, free, daily—

on WEEK-DAYS, throughout the year from 10 A.M., in

January	...	...	...	to	4	P.M.
February	1 to 14	...	...	„	4.30	„
„	15 to end	...	...	„	5	„
March	...	...	...	„	5.30	„
April to August	(inclusive)	...	...	„	6	„
September	...	...	...	„	5.30	„
October	...	...	...	„	5	„
November and December	...	...	...	„	4	„

(on MONDAYS and SATURDAYS, from the beginning of May to the middle of July, to 8 P.M., and from the middle of July to the end of August, to 7 P.M.);

on SUNDAYS, in

January	...	...	from	2	to	4	P.M.
February	1 to 14	...	„	2	„	4.30	„
„	15 to end	...	„	2	„	5	„
March	...	...	„	2	„	5.30	„
April	...	...	„	2	„	6	„
May to August	(inclusive)	...	„	2.30	„	7	„
September	...	...	„	2	„	5.30	„
October	...	...	„	2	„	5	„
November and December	...	...	„	2	„	4	„

The Museum is closed on Good Friday and Christmas Day.

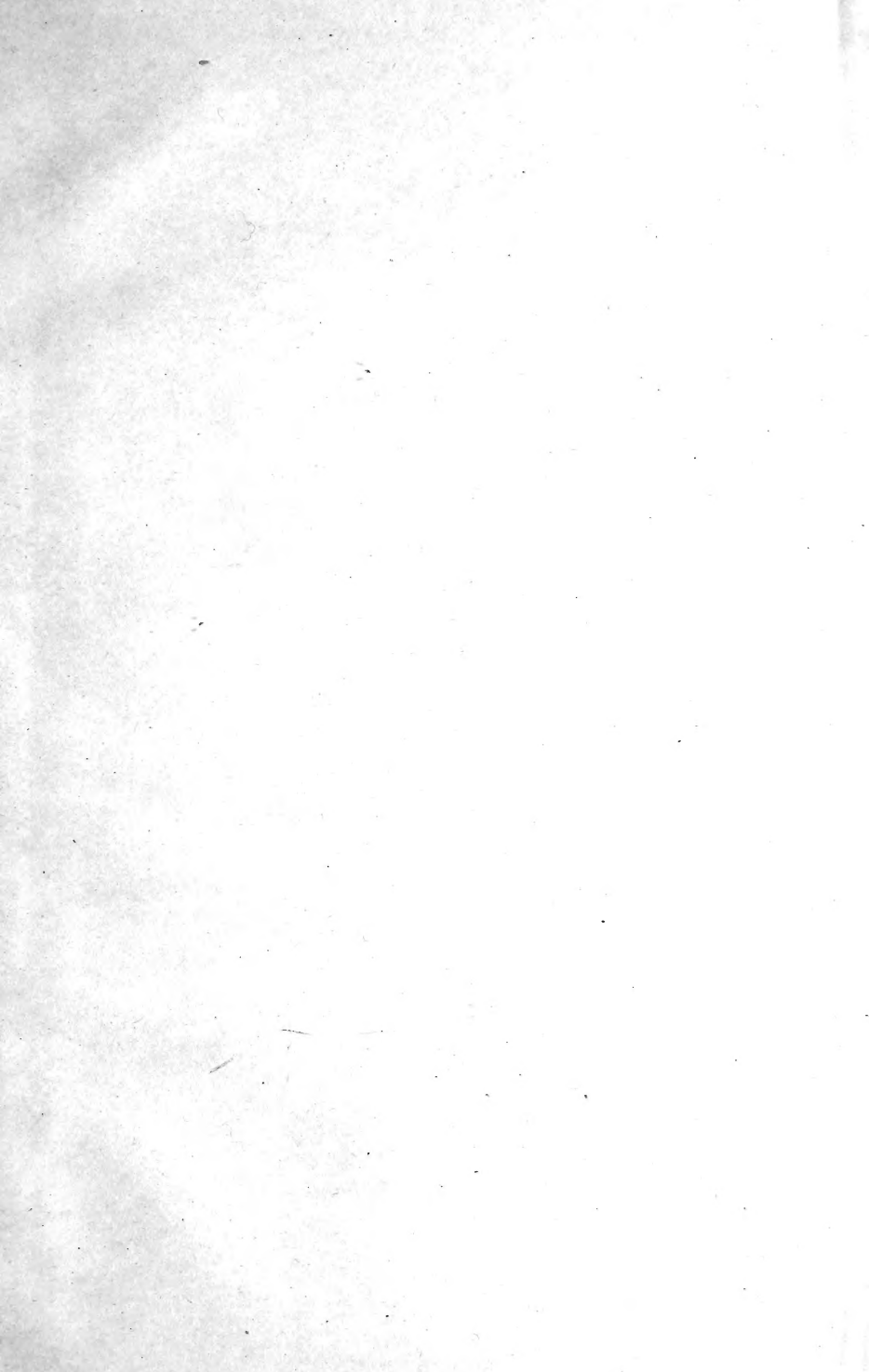
By Order of the Trustees,

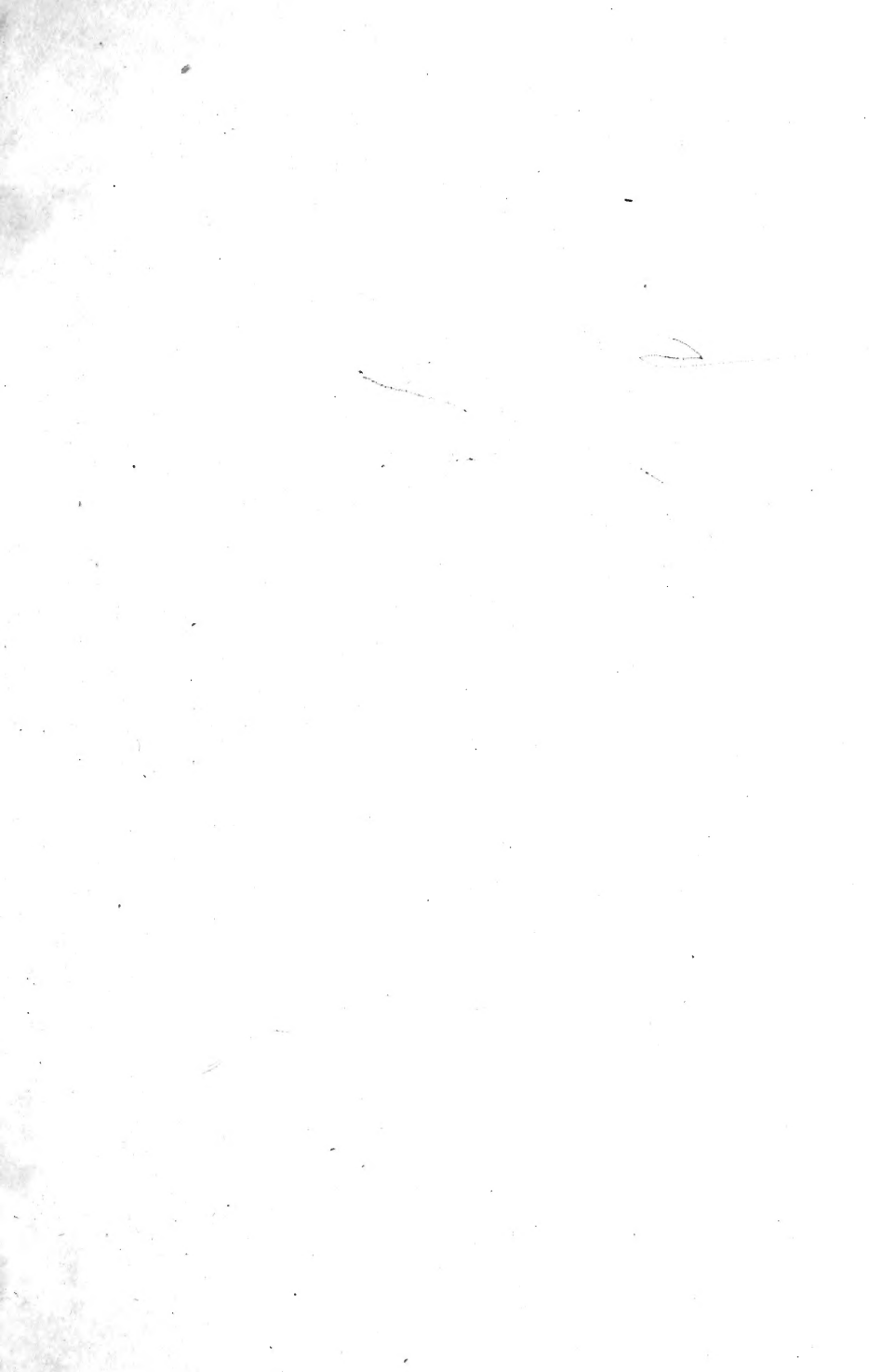
L. FLETCHER,

Director.









UNIVERSITY OF ILLINOIS-URBANA



3 0112 067914728